



**A BIODIVERSITY AND CONSERVATION ASSESSMENT
OF THE
SOUTHERN SHORTGRASS PRAIRIE ECOREGION**

April 2007

A Biodiversity and Conservation Assessment of the Southern Shortgrass Prairie Ecoregion



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Bison grazing on grasslands in eastern New Mexico

EXECUTIVE SUMMARY

Introduction

Conservation of the broad array of biological diversity that characterizes the southern Great Plains requires that we identify the highest priority places for conservation action. This report provides a first approximation of such a blueprint for conservation action in the Southern Shortgrass Prairie Ecoregion (Figure 1).



Figure 1. Southern Shortgrass Prairie Ecoregion highlighted in yellow

The Southern Shortgrass Prairie Ecoregion represents the southern end of the Great Plains. Encompassing more than 107,000 square miles, it includes portions of four states: Colorado, Oklahoma, New Mexico and Texas. Although quite diverse, the landscape can be characterized by its high plateaus (predominantly the Llano Estacado) and flat to rolling plains which are dissected by canyons, entrenched draws and caprock escarpments. These natural features were formed by the Canadian, Red, Brazos, Colorado and Pecos rivers, which feature wide and shallow

sandy-bedded channels that contain unique aquatic fauna adapted to the semi-arid climate. The ecoregion also includes a diversity of other aquatic habitats, from high gradient snowmelt-fed streams in the Southern Rocky Mountain foothills, to intermittent streams in the arid Pecos River valley and Llano Estacado, to medium-sized groundwater-fed perennial streams in the rolling plains and prairies in the east. Playas and saline lakes are wetland types that represent a significant resource for many terrestrial and aquatic species, including migratory waterfowl and shorebirds (Smith 2003). Playas also function as critical recharge features for the Ogallala Aquifer. The importance of these wetlands in sustaining the biodiversity of the Southern Shortgrass Prairie Ecoregion cannot be overemphasized.

Dominant terrestrial ecological systems are shortgrass prairie, mixedgrass prairie, pinyon-juniper woodland, and deep sand shrub-steppe. Montane conifer woodlands and forests are found in higher elevations to the west, while Chihuahuan Desert shrublands occupy lowlands in the southwest. Mesquite and juniper woodlands and shrublands currently occupy large areas of the ecoregion. The primary ecological processes that maintain these systems are climate, fire and grazing.

This predominantly rural region is economically centered upon agricultural and energy production. People here have long-standing ties to the land. If the Conservancy is to be successful within the Southern Shortgrass Prairie and true to our organizational values, we must facilitate the means by which people can live productively and sustainably while also conserving

biological diversity. Conservation as defined here means maintenance or return of ecological integrity and does not necessarily involve any change in land management or land tenure.

This ecoregional assessment is a step in the development of The Nature Conservancy's conservation vision: to efficiently and effectively conserve ecologically intact areas in order to preserve the rich biological diversity of the planet. We design portfolios of areas representing places in an ecoregion which best support native plants and animals as well as the ecological processes that sustain them—and us. Through this portfolio approach, and with many partners, we will strive to ensure conservation of the full array of native ecological systems, viable native communities, and species. The portfolios are meant to be a dynamic tool supporting the conservation of biodiversity. As new and better information becomes available, they will be refined.

Methods and Results

To develop a portfolio of areas of biodiversity significance, we began by identifying a representative subset of the full array of native species, communities and ecological systems in the ecoregion. An important underlying assumption of our planning approach is that this representative subset, referred to as “conservation targets”, functions as an umbrella for the remaining biodiversity. In the process of taking action to conserve this subset of biological diversity, we anticipate that most, if not all, other species, communities and systems in the ecoregion will be protected. Eighty-two terrestrial and aquatic species, two animal assemblages, two plant

communities, twenty-two terrestrial ecological systems, and ninety-four aquatic ecological systems were selected as conservation targets.

We then identified a network of “conservation areas” (areas of biodiversity significance) that were large enough to be ecologically functional and incorporated one or more known viable examples of the conservation targets. These conservation areas are collectively referred to as the ecoregional portfolio. The portfolio represents an optimization of those places which, if managed in a manner compatible with conservation, would ensure the long-term survival of the ecoregion's biodiversity. Two similar but separate processes were used to identify sets of aquatic conservation areas and sets of terrestrial conservation areas. The ecoregional portfolio for the Southern Shortgrass Prairie includes 126 conservation areas: 91 terrestrial and 35 aquatic. The portfolio represents approximately 39% of the area of the ecoregion. Forty-three provisional aquatic conservation areas were also identified as key sites for future survey and inventory efforts prior to inclusion in the portfolio.

While there are many intact conservation areas within the ecoregion, there are also a number of severe and widespread threats to biodiversity. The most prominent threats include conversion to agriculture and impacts from ongoing agricultural practices, climate change, incompatible grazing practices, groundwater extraction/manipulation, lack of a comprehensive water policy, invasive plants and inappropriate fire management/altered fire regimes. These threats must be addressed through implementation of creative strategies.

The vast majority of the ecoregion is privately owned and managed. Our analysis indicates that approximately 3.6% of the Southern Shortgrass Prairie Ecoregion is being managed for permanent biodiversity conservation. Looking at the conservation areas specifically, 6.1% of the terrestrial portfolio, 6.9% of the aquatic portfolio, and 6.5% of the provisional aquatic conservation areas are under legal and permanent protection from conversion of natural land cover.

The scope and scale of the assessment make it clear that successful conservation of biological diversity in the Southern Shortgrass Prairie Ecoregion will be dependent on the cooperation and active participation of many stakeholders, including private landowners, community groups, conservation organizations, businesses and government agencies. Likewise, the strategies and tools of conservation will vary. The portfolio that has been produced should not be interpreted as a land acquisition map. While direct conservation action (such as community-based projects, land acquisition or easements with willing landowners) may be most appropriate in certain areas, it will also be essential to consider broad-based strategies that will ensure the survival of biodiversity in areas where neither we nor our partners will be able to directly engage. In this ecoregion in particular, it is critical that methods of sustaining economic health be considered along with maintenance of natural resources. Here, the potential for working landscapes to be compatible with biodiversity conservation is real. It is imperative that stakeholders in the Southern Shortgrass Prairie Ecoregion work cooperatively to protect its native biodiversity. We hope that this

assessment will serve as an important resource to guide those ventures.

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I. Introduction and Ecological Setting

Ecoregional Assessment Approach

The Nature Conservancy has developed a strategic and operational framework that we call Conservation by Design (The Nature Conservancy 2001). The strategic part of the framework outlines the values, vision, goals, and general approach used in fulfilling our conservation mission. The operational framework consists of a series of steps: setting conservation priorities, developing and implementing conservation strategies, and measuring success. Ecoregional biodiversity assessments¹ are the first step: setting conservation priorities. We define biodiversity as the variety of living organisms, the ecological communities within which they occur, and the ways in which they interact with each other and the physical environment (Groves et al. 2002; Redford and Richter 1999). The act of setting priorities through biodiversity assessments is a complex, iterative approach that informs subsequent steps in the conservation process.

In its over 50 year history, the Nature Conservancy (the Conservancy) has continually adapted and expanded its conservation strategies and methods to make them more efficient and scientifically sound. Within the last 10 years, the Conservancy has adopted an assessment and action methodology that places emphasis on the conservation of *all* viable native species, communities and ecological systems (not just the rare ones). It also emphasizes conservation at multiple scales of biological organization and recognizes the value of biodiversity analyses within ecological, rather than geopolitical, units.

To aid in the analysis of the patterns of biodiversity at biologically meaningful scales, ecoregions have been identified as appropriate ecological units for setting conservation priorities. Ecoregions are large units of land and water defined by distinctive combinations of climate, geology, topography, and plant and animal species. Ecoregions are not restricted by arbitrary administrative boundaries that cut across the ecological landscape of most species. The 80 ecoregions of the U.S. used by the Conservancy are based on Bailey's (1995, 1998) descriptions of ecologically similar areas. In each of these 80 ecoregions, the Conservancy has conducted, or will conduct, assessments to identify and locate the most promising and important areas for conservation. These assessments are not meant to be used solely by the Conservancy. The Conservancy recognizes the vital importance of private landowners, citizen groups, public agencies, conservation organizations, businesses, and other interested parties in the ultimate success of conservation actions. For this reason, we create biodiversity assessments to be shared and used by all stakeholders.

¹ Terms that may be unfamiliar are underlined the first time they appear in the text; definitions are in the Glossary.

Overview of the Ecoregion

The Southern Shortgrass Prairie Ecoregion, as defined for this assessment, occupies more than 107,000 square miles of northeastern New Mexico, northern Texas, and small portions of western Oklahoma and southern Colorado (Figure 1). The Southern Shortgrass Prairie Ecoregion lies within the Southwest Plateau and Plains Dry Steppe and Shrub Province described by Bailey (1995). It is bordered on the north by the Central Shortgrass Prairie Ecoregion, on the south by the Edwards Plateau and Chihuahuan Desert ecoregions, on the east by the Central Mixedgrass Prairie and Crosstimbers and Southern Tallgrass Prairie ecoregions, and on the west by the Southern Rocky Mountains and Arizona-New Mexico Mountains ecoregions.



Figure 1. Southern Shortgrass Prairie Ecoregion highlighted in yellow

This large ecoregion harbors a varied landscape but is typified by flat to rolling plains, dissected on the east and west by canyons and caprock escarpments. Elevations range from less than 250 meters (above mean sea level) to an altitude of more than 2,500 meters on isolated volcanic peaks. The western portion of the ecoregion is characterized by plateaus of the High Plains, punctuated by escarpments, while the eastern portion harbors the Rolling Plains.

Soils range from dry Aridisols to rich, deep Mollisols (Figure 2). Surficial geology ranges from the

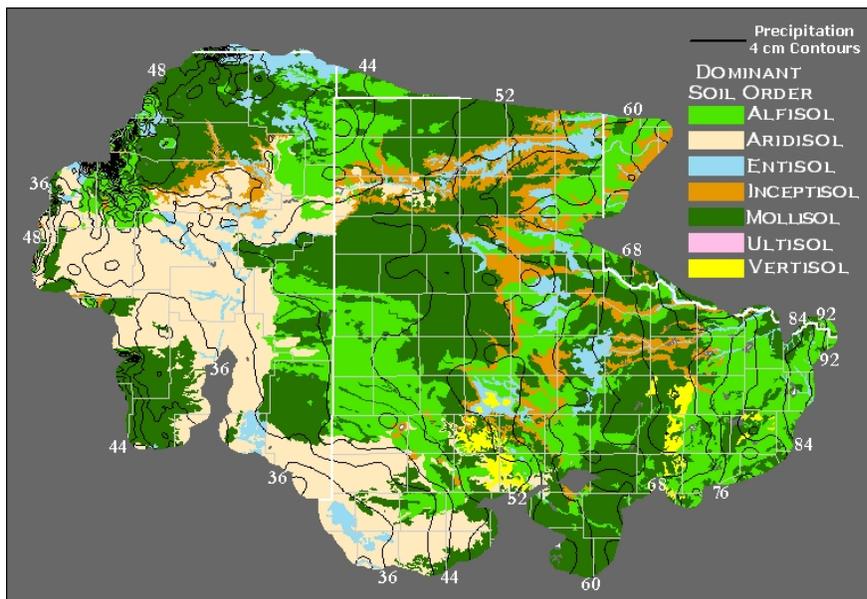
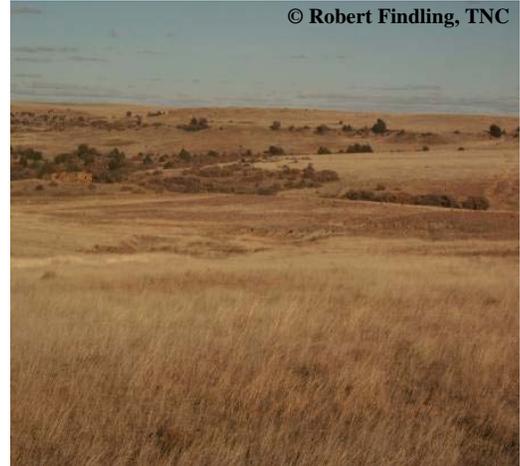


Figure 2. Dominant soil order and precipitation

Permian red clay and sand beds of the Western Rolling Plains, to the Tertiary Ogallala Formation underlying much of the southern High Plains, to the Quaternary basalt flows of the Capulin High Plains and Quaternary sand and loess deposits overlying much of the Llano Estacado. Average annual rainfall amounts decrease from a high of about 900 millimeters in the east to

about 300 millimeters in the southwestern part of the ecoregion. Annual mean daily average temperature varies between 10°C (50°F) and 17°C (63°F). Portions of the Pecos, Canadian, Red, Colorado and Brazos Rivers are located within the ecoregion. This generally rural region has few large cities; the largest are Amarillo, Lubbock, Abilene, Odessa-Midland, and Wichita Falls in Texas, and Clovis and Las Vegas in New Mexico.

Historically, the western portion of the ecoregion was dominated by immense expanses of shortgrass prairie. Blue grama (*Bouteloua gracilis*) is a common dominant in the shortgrass prairies, often in conjunction with buffalograss (*Buchloe dactyloides*). However, a variety of topographic and edaphic variants occur, and a mixture of grassland species can be found throughout the region. Western wheatgrass (*Pascopyrum smithii*), galleta (*Pleuraphis jamesii*), New Mexico feathergrass (*Hesperostipa neomexicana*), needle-and-thread (*Hesperostipa comata*), little bluestem (*Schizachyrium scoparium*) and side-oats grama (*Bouteloua curtipendula*) are commonly encountered. Areas of deep sands may be dominated by species such as sand bluestem (*Andropogon hallii*), little bluestem, and giant sand reed (*Calamovilfa gigantea*), and may contain extensive



Prairies of the southern high plains, New Mexico

areas dominated by woody cover of sandsage (*Artemisia filifolia*) and/or shinnery oak (*Quercus havardii*). Deep soils with basalt boulders, as in northeast New Mexico, provide mesic conditions which give rise to grasslands that may be dominated by big bluestem (*Andropogon gerardii*), little bluestem, and side-oats grama, with switchgrass (*Panicum virgatum*) and Indiangrass (*Sorghastrum nutans*) also present. These grass species are also common constituents of grasslands in the eastern third of the ecoregion.

Bison grazing, and its interaction with fire, were important processes that maintained the shortgrass prairie. Current grazers include livestock, pronghorn (*Antilocapra americana*), black-tailed prairie-dogs (*Cynomys ludovicianus*) and bison (*Bison bison*). Climate, however, has always been the dominant process in the region. The climate becomes more arid towards the southwestern part of the ecoregion, and here shortgrass prairie gives way to desert grasslands of the Chihuahuan Desert, where black grama (*Bouteloua eriopoda*), bush muhly (*Muhlenbergia porteri*), burrograss (*Scleropogon brevifolius*), sand dropseed (*Sporobolus cryptandrus*) and tobosa (*Pleuraphis mutica*) become more prominent. Tobosa is particularly important in swales, where soil moisture and texture conditions are favorable. With greater precipitation in the eastern part of the ecoregion, shortgrass prairie is replaced by mixedgrass prairie. Mixedgrass prairie historically dominated the eastern third of the ecoregion, where topographic position and edaphic factors drive variation in plant communities on a local scale. Mesic sites are often dominated by such species as little bluestem, sand bluestem, switchgrass and Indiangrass. On drier sites, mixed- and shortgrass species such as sideoats grama, blue grama and silver bluestem (*Bothriochloa laguroides* subsp. *torreyana*) become more prevalent. Changes in natural processes (e.g., fire and herbivory) in the different prairie systems have contributed to shrub

invasion — primarily mesquite (*Prosopis glandulosa*) in the east and south, and juniper (*Juniperus* sp.) throughout much of the ecoregion.

Other important habitats of the ecoregion include juniper (*Juniperus monosperma*) and pinyon-juniper (*Pinus edulis* - *Juniperus monosperma*) woodlands along breaks and canyons throughout the ecoregion, and deep-sand shrublands in the northeast and southwest, dominated by shinnery oak and sand sagebrush (*Artemisia filifolia*). Occurrences of ponderosa pine (*Pinus ponderosa*) forests and woodlands and spruce-dominated (*Picea engelmannii*) woodlands can be found in northwestern portions of the ecoregion, and outliers of juniper (*Juniperus ashei*) woodlands, more characteristic of the Edwards Plateau ecoregion, can be found in the southeast. Another habitat, riparian woodlands, is typically dominated by eastern cottonwood (*Populus deltoides*); however, tamarisk (*Tamarix* sp.) and Russian olive (*Eleagnus angustifolia*) are significant non-native invaders and are dominant in many places, such as the Canadian River.



Pinyon-oak-juniper woodlands along escarpment breaks, Palo Duro Canyon

Perhaps the most striking geologic features of the ecoregion are the canyon breaks and wide floodplains formed by the large rivers of the southern Great Plains. The Canadian, Red, Brazos, Colorado and Pecos rivers have wide, shallow sandy-bedded channels containing unique aquatic fauna adapted to the harsh climate. The ecoregion also includes a diversity of other aquatic habitats, from high gradient snowmelt-fed streams in the Southern Rocky Mountain foothills, to intermittent streams in the arid Pecos River valley and Llano Estacado, to medium-sized groundwater-fed perennial streams in the rolling plains and prairies in the east. The geology of the region, which contributes to the diversity of substrates of the aquatic systems, ranges from Precambrian granites of fairly restricted distribution, to the more extensive sands of the Ogallala Formation of Tertiary age, and the limestones, shales and sandstones of Permian age.

Over 25,000 round depressional basins, known as playas, are found throughout the relatively flat regions and represent a significant resource for migratory waterfowl, shorebirds, and other species; they also function as recharge features for the Ogallala Aquifer (Smith 2003). Other features important to some wetland-dependent species are saline lakes, which are characterized by freshwater springs and high salinity in the basins. More than 40 saline lakes are found within the ecoregion. These wetlands contribute disproportionately to the biodiversity of this semi-arid region.



Gruenerwald playa, New Mexico

The Changing Landscape

Temperate grasslands represent one of the most altered and least conserved habitat types on Earth, with more than 40 percent of their total area worldwide converted to agriculture. The biodiversity and ecological processes of the Southern Shortgrass Prairie face serious threats, habitat loss and degradation being two of the most significant. Agricultural production (primarily of cotton, wheat and grain sorghum) has replaced much of the historical shortgrass and mixedgrass prairie. This is especially evident on the Llano Estacado of Texas, noted as one of the most intensively cultivated region in the Western Hemisphere (Bolen and Guthery 1982). Analyses using the National Land Cover Dataset (Vogelmann et al. 2001) indicate that approximately 28% of the ecoregion is currently in agricultural production (Table 1). Most of this agricultural production relies on irrigation water extracted from the Ogallala Aquifer. As a result, excessive groundwater withdrawal for agricultural and municipal use currently vastly exceeds recharge in this aquifer (Terrell et al. 2002), resulting in reduced stream and river flow in many areas. Land conversion, water-use patterns, modifications of natural fire regime, and exotic species introductions have all had major impacts. Climate change is a concern in the region, though the exact nature of impacts remains unclear.

The Nature Conservancy and other conservation-minded landowners and organizations recognize the implications of these changes to the ecological and cultural landscape of the Shortgrass Prairie. This assessment represents The Nature Conservancy's initial effort to identify intact areas of biodiversity significance and summarize the critical conservation threats faced by biodiversity in these areas.

Table 1. Landcover in the Southern Shortgrass Prairie Ecoregion (1992 NLCD)

Land Cover	Percentage
Grasslands/Herbaceous	50.3
Row Crops	17.8
Shrublands	17.7
Small Grains	6.7
Pastures/Hay	3.1
Evergreen Forest	1.6
Bare Rock/Sand/Clay	0.7
Deciduous Forest	0.6
Open Water (<i>includes playa lakes</i>)	0.5
Low Intensity Residential	0.3
Commercial/Industrial/Transportation	0.2
Fallow	0.2
Mixed Forest	0.1
Emergent Herbaceous Wetland	0.1
High Intensity Residential	<0.1
Quarries/StripMines/Gravel Pits	<0.1
Urban/Residential Grasses	<0.1
Transitional	<0.1

II. Biodiversity Assessment Methodology

Assessment Process Overview

The first step in the Conservancy's conservation process is an ecoregional assessment that has two main purposes: to identify the native biodiversity of conservation concern, and to identify the ecological processes and land- and waterscapes needed to sustain it. Ecoregional biodiversity is explicitly represented by a selected subset of the entire array of biodiversity that we call conservation targets. Conservation targets are the building blocks of ecoregional assessments—the species, natural communities, ecological systems and abiotic features around which the Conservancy designs its portfolios of conservation areas. By using coarse scale targets such as natural communities and systems, we expect to identify areas that will support most of the biodiversity of the region. By also focusing on fine scale targets, such as species of conservation concern, we can ensure that rare or declining species receive particular attention.

These portfolios of conservation areas (functional sites and landscapes) are our best approximation of the places which, if managed correctly, will ensure the long-term protection of the ecoregion's native biodiversity. Conservation areas are not just habitat, or space, for our targets; they also sustain the ecological processes (e.g., fire or seasonal stream flow) important to the development and maintenance of that biodiversity.

The key steps in selection of conservation targets and conservation areas (Groves et al. 2002) are shown in the box below. Each step can be accomplished in a variety of ways. However, Conservancy assessment teams generally use the methods and techniques outlined in “Designing a Geography of Hope” (Groves et al. 2000).

The principal products of the ecoregional assessment are a geographically explicit database that contains key ecological information about the individual conservation targets (species, communities, ecosystems) and a map of the portfolio of conservation areas in which they occur. Maps and summary information about targets and conservation areas are included in this report.

Key Steps in the Biodiversity Assessment Process

- **Select conservation targets** — Targets are the species, communities, ecological systems, and abiotic features that are selected to represent the biodiversity of the ecoregion.
- **Map occurrences of targets** — A variety of methods (including rapid ecological assessments, biological inventories, literature review, GIS analysis, and expert workshops) are used to assemble information on the distribution and condition of occurrences of conservation targets. During this phase of data acquisition, significant gaps in our knowledge regarding the targets and ecological processes are identified and highlighted.
- **Evaluate target viability** — The ability of populations of species or occurrences of systems or communities to persist into the future is assessed using three criteria: size, condition, and landscape context.
- **Determine conservation goals** — Goals are set for each target to ensure that an adequate number of populations or occurrences are maintained across the full range of geographic variation and variation in ecological context. The goal represents an initial hypothesis as to the level of conservation effort needed to sustain a conservation target and guides selection of priority areas.
- **Assemble a conservation portfolio** — Areas are selected with representative coarse- and/or fine-filter targets, emphasizing the importance of areas that maintain naturally functioning ecological processes.
- **Prioritize conservation areas** — Areas are evaluated and prioritized with respect to their biodiversity value, urgency and severity of threat, opportunities for conservation, and other criteria.

The Nature Conservancy's ecoregional assessment process represents a shift away from conservation focused primarily on rarity to conservation based on functioning ecosystems. One trend emerging from this philosophical shift is an emphasis on conserving intact and functional landscapes. A functional landscape harbors many rare and common elements of biodiversity at several spatial scales and levels of biological organization (from species to communities to ecological systems). More importantly, it is of sufficient size to both enable and endure the environmental processes that naturally impact it, such as drought, flooding, disease and fire. Functional landscapes are identified with change in mind: by conserving ecosystem-level environmental processes, these landscapes — and the targets of biodiversity within them — will be more likely to persist through time. Not all areas of conservation value are landscape-sized: functional sites by definition may contain a small number of targets at only one or two spatial scales. Conservation of these smaller sites may in certain cases be appropriate and necessary, especially where very rare and localized populations occur.

The attention to functional landscapes is intended to improve the efficiency and effectiveness of conservation work. These landscapes are thought to provide more habitat, greater habitat diversity, and larger populations of species than those that are severely altered. Because of their complex and comprehensive

environmental gradients, they also offer greater protection against global climate change and other alterations. Functional landscapes are also exponentially more complex, and understanding and measuring them requires substantial resources.

Conservation Targets

Selecting Conservation Targets

Conservation targets are the species, natural communities, and ecological systems around which portfolios are designed. Terrestrial ecological systems are defined here as dynamic spatial assemblages of ecological plant communities that are tied together by similar ecological processes, underlying environmental features, and/or environmental gradients (Groves et al. 2000). They tend to form a robust, cohesive and distinguishable unit on the ground. Descriptions of the terrestrial ecological systems of the ecoregion are presented in Appendix A1. Similarly, freshwater aquatic ecological systems (hereafter “aquatic systems”) are dynamic spatial assemblages of ecological communities that occur together in an aquatic landscape, share similar geomorphological patterns, are tied together by similar ecological processes (e.g., hydrologic and nutrient regimes, access to floodplains) or environmental gradients (e.g., temperature, chemical and habitat diversity), and form a robust, cohesive and distinguishable unit on a hydrography map (Higgins 2003, Higgins et al. 2005).



Western Great Plains sandhill shrublands of western New Mexico

Because it is impractical to assess *all* elements of native biodiversity in an ecoregion, we select a representative subset of conservation targets at different spatial scales and levels of biological organization. Conservation targets considered in this assessment include all plant and animal species known to occur in the ecoregion with a NatureServe global conservation status rank of G1 to G3 (see Table 2 or Appendix B for rank definitions). These ranks are ascribed to plant communities and species by NatureServe (2006) and the Natural Heritage Network and are used by the Conservancy and other organizations to describe their status. Global conservation status ranks have not been attributed to ecological systems.

Plant community types identified as targets are associations from the International Classification of Ecological Communities (Association for Biodiversity Information 2001). Like species targets, communities ranked G1 to G3 were considered. Fourteen associations attributed to the ecoregion had ranks of G1, G2 or G3. All but two of these associations were excluded as specific targets because analysis indicated that using terrestrial ecological systems as a “coarse filter” would adequately capture occurrences of the other 12 associations. The coarse-filter approach assumes that by protecting representative examples of all of the terrestrial and aquatic system types (coarse scale targets), most species and communities that exist within these systems will also be protected (e.g., Noss and Cooperrider 1994, Noss 1996). Ecological system descriptions

can be found in Appendices A1 (terrestrial systems) and C3 (aquatic systems). All ecological systems identified for the ecoregion were included as targets.

Table 2. Definitions of NatureServe global conservation status ranks

Rank Code	Rank Name	Rank Description
GX	PRESUMED EXTINCT	Not located despite intensive searches.
GH	PRESUMED ELIMINATED (HISTORIC)	Presumed eliminated throughout its range, with no or virtually no likelihood that it will be rediscovered, but with the potential for restoration.
G1	CRITICALLY IMPERILED	Generally 5 or fewer <u>occurrences</u> and/or very few remaining acres or very vulnerable to elimination throughout its range due to other factor(s).
G2	IMPERILED	Generally 6-20 occurrences and/or few remaining acres or very vulnerable to elimination throughout its range due to other factor(s).
G3	VULNERABLE	Generally 21-100 occurrences. Either very rare and local throughout its range or found locally, even abundantly, within a restricted range or vulnerable to elimination throughout its range due to specific factors.
G4	APPARENTLY SECURE	Uncommon, but not rare (although it may be quite rare in parts of its range, especially at the periphery). Apparently not vulnerable in most of its range.
G5	SECURE	Common, widespread and abundant (though it may be quite rare in parts of its range, especially at the periphery). Not vulnerable in most of its range.

The inclusion of rare elements, combined with the coarse filter approach, does not automatically ensure protection of every element in need of conservation. Thus, as a final step, more common species and plant communities were included as targets if data or expert opinion suggested they were: 1) declining, 2) endemic, 3) disjunct, 4) vulnerable, or 5) focal (definitions are provided in the box on pg.10).

The aquatic ecological system classification used in this assessment only includes lotic habitats. Because of this, playa wetlands and saline lakes are included in the suite of terrestrial ecological system targets. These wetland habitats are of an importance far greater than the physical area they occupy on the landscape, and certain aquatic species, including invertebrates, amphibians and some fish, are dependent on them. While retaining the dichotomy between lotic and lentic habitats, we recognize the importance of playas and saline lakes to the biodiversity of the region. By treating them as terrestrial ecological systems, we anticipate that they will serve as a coarse-filter for the myriad number of species that depend on them, and recognize that many of those species will indeed be aquatic. Conservation of playa wetlands and saline lakes is critical to the success of this plan since they are considered keystone systems within the Southern Shortgrass Prairie Ecoregion.

The final results of the conservation target selection process are summarized in Table 3. A total of 93 terrestrial and 109 aquatic targets were selected. For a list of all the targets and their global/state conservation status ranks, see Appendices C and D.

Criteria Used to Select Species and Plant Community Targets

Global Rank	Species and communities with a global rank of G1 to G3 were considered as possible targets. Potential targets with ranks of G4 or G5 were considered if they met at least one of the criteria shown below.
Declining	Exhibiting significant, long-term declines in habitat and/or numbers, are subject to a high degree of threat, or may have unique habitat or behavioral requirements that expose them to great risk.
Endemic	Restricted to the ecoregion, or entirely dependent on a single area for survival, and therefore often more vulnerable.
Disjunct	Having populations that are geographically isolated from other populations due to natural or anthropomorphic factors.
Vulnerable	Usually abundant, but having some aspect of life history that makes them especially vulnerable.
Focal	Elements that have spatial, compositional and/or functional requirements that may encompass those of other elements in the region and may help address the functionality of ecological systems.

Table 3. Conservation targets by major taxonomic group and level of biological organization

Taxonomic Group	Number of Targets Selected
Vascular Plants	33
Crustaceans	1
Insects	5
Fish	12
Reptiles	5
Birds	20
Mammals	6
Level of Biological Organization	Number of Targets Selected
Species	82
Animal Assemblages	2
Plant Communities	2
Terrestrial Ecological Systems	22
Aquatic Ecological Systems	94

Geographic Distribution and Scale of Targets

To determine the number and locations of target occurrences needed to ensure their long-term viability, each target was assessed in terms of its range-wide distribution pattern and the spatial scale across which it naturally occurs. Species, plant communities and terrestrial ecological system targets were assigned to one of five categories describing their distribution pattern in the ecoregion relative to their range-wide distribution: endemic/restricted, limited, widespread, disjunct, or peripheral. Distribution patterns for these targets are shown in Appendices E1 and E2.

The spatial scale of conservation targets refers to the land area, length of watercourse, or size of waterbody presumed to be necessary to sustain a population or other occurrence. These spatial scales are

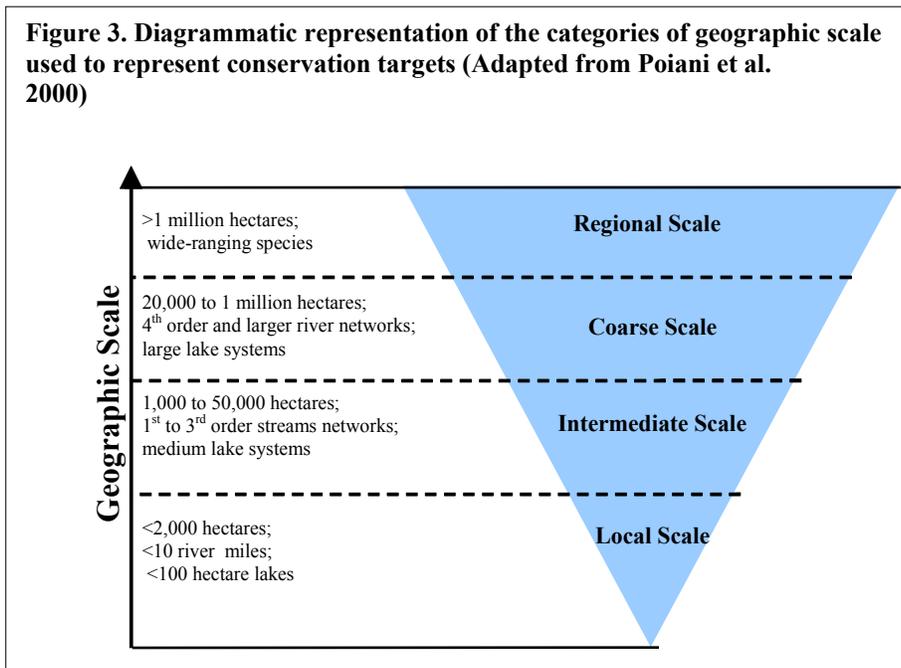
thought to be associated with different levels of biological organization or spatial patterns (Figure 3, Poiani et al. 2000).

Species targets exhibit a wide range of patterns of scale. In this case, scale requirements refer to the land area, length of watercourse, or size of waterbody needed for a population to persist. For long-distance migrants or species with vastly different seasonal requirements, species are classified relative to those different needs. For example, neotropical migrant birds that only occur in the Southern Shortgrass Prairie during the breeding season are classified based on their spatial needs during that period of time. Categories used to describe the range of spatial-scale requirements of terrestrial and aquatic species targets were: local, intermediate, coarse or regional (Figure 3). Each of these categories is associated with a range of area required for functionality. For example, the sand dune lizard (*Sceloporus arenicolus*) is known to occur in a few localized areas of loose sand at a scale of < 2,000 hectares. As such, this species is classified as a local-scale conservation target. Spatial scales for species targets are shown in Appendix E1.

- Restricted/endemic: occurs primarily in one ecoregion
- Limited: occurs in the ecoregion and a few other adjacent ecoregions
- Widespread: widely distributed in several to many ecoregions
- Disjunct: occurs in ecoregion as a disjunct from the core of its distribution
- Peripheral: more commonly found in other ecoregions

Terrestrial plant communities and terrestrial ecological system types vary greatly in size and the environmental conditions in which they occur. Typically a few of these are dominant, forming extensive cover encompassing hundreds to millions of hectares. These matrix communities and systems exist under a broad

Figure 3. Diagrammatic representation of the categories of geographic scale used to represent conservation targets (Adapted from Poiani et al. 2000)



range of environmental conditions, are driven by regional-scale ecological processes, and are important habitat for wide-ranging species. Most communities and ecological systems are embedded within these matrix-forming types and cover relatively smaller portions of land area. Typically, specific environmental features, rather than disturbance processes, maintain these smaller patch

communities and systems. Spatial patterns for the terrestrial ecological systems are shown in Appendix A1.

We categorized terrestrial plant communities and ecological system types into three broad categories of scale associated with these different spatial patterns: local, intermediate and coarse (Figure 3). Spatial scales for terrestrial communities and systems are shown in Appendix E2. Similarly, we categorized aquatic system types into one of four size classes based on the geographic scope of their key ecological processes: creek/headwater, small river, medium river and large river. We defined these aquatic classes based on expert knowledge of physical and biotic changes in stream and river characteristics associated with size (as measured by Shreve order (Shreve 1966), Table 4). Size classes for each aquatic system type are shown in Appendix C3.

Mapping Occurrences of Conservation Targets

Developing a meaningful assessment of the biodiversity in the Southern Shortgrass Prairie required some understanding of the current distribution and viability (ability to persist over the long term) of target occurrences across the ecoregion. Occurrences are the geographically explicit units of each target. They are used as the primary accounting units in assessing the conservation value of an area. In the case of species, occurrences represent populations of the species. In the case of communities and ecological systems, occurrences represent contiguous areas of the system or community, distinct from surrounding or adjoining areas of different system or community types.

Data used to determine the location and extent of individual occurrences and their viability were assembled from a variety of sources, including literature, museum records, rapid ecological assessments (Sayre et al. 2000), expert knowledge, and the Biological and Conservation Data Systems of New Mexico (Natural Heritage New Mexico), Texas (Texas Natural History Survey and Texas Parks and Wildlife Department) and Oklahoma (Oklahoma Natural Heritage Inventory). The abundance of terrestrial target occurrences was greatest in the western half of the ecoregion, with a noticeable paucity of data in the eastern half of the ecoregion, which may cause the value of areas in this part of the ecoregion to be underestimated.

Whenever possible, we represented occurrences of terrestrial plant communities and ecological systems with areas (polygons); these were delineated using field survey data, satellite imagery or aerial photography, and Geographic Information System (GIS) models. In an effort to make our occurrences more meaningful for assessing conservation status, we combined individual records of conservation targets when we thought that they most likely represented a single population, community or ecological system occurrence. This analysis resulted in a new set of occurrences that we refer to as functional occurrences. Future references to “occurrences” in this document and all of the appendices refer to these functional occurrences.

Due to the sparse nature of the data available for this ecoregion, we carried out rapid ecological assessments (REAs) in various areas throughout the ecoregion, providing additional information relative to terrestrial systems, communities and species. Teams of observers, consisting of Nature Conservancy staff and contracted biologists, visited areas that had previously been identified as relatively intact landscapes through analysis of satellite imagery. These REAs focused on gathering information on occurrences of ecological systems, though data pertaining to other targets were also collected. Data gathered during these focused field

surveys served to inform and refine the classification of ecological systems, provide information relative to the size, condition and landscape context of terrestrial system occurrences, and provide information on the presence and viability of occurrences of terrestrial species targets.

Mapping Terrestrial Targets

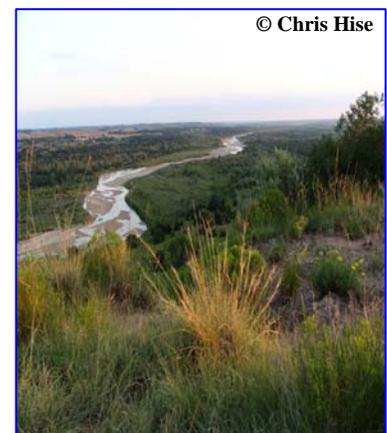
For mapping and analysis, we represented most local- and intermediate-scale terrestrial target occurrences as buffered points in a Geographic Information System (GIS). Points were buffered by an area proportional to their assigned scale (1.6 km radius for local-scale targets and 8.0 km radius for intermediate-scale targets) or by an area thought to represent the extent of the occurrence based on literature review and expert opinion. As mentioned above, occurrences of the same target whose buffers overlapped were combined to create a single functional occurrence. Where data were available, we represented local- and intermediate-scale occurrences as polygons showing the known extent of that occurrence (e.g., population). This was most commonly done for restricted plant populations and plant communities.

To evaluate the distribution of occurrences of coarse-scale ecological systems, we used a delineation of untilled landscapes to determine the location of least impacted representatives of these occurrences. The dominant system was attributed to subsets of these delineated areas using field surveys, satellite imagery, and other publicly available data describing physical and biotic characteristics of the landscape (e.g., digital elevation models, vegetation maps). Contiguous areas of a single dominant system type were subdivided to create multiple occurrences if they exceeded the dominant system's estimated minimum dynamic area. The minimum dynamic area of an ecological system is the area required to allow persistence of the ecological processes (e.g., fire) critical to maintenance of that system. We estimated the minimum dynamic area for each coarse-scale system type through a review of relevant literature and discussions with experts. Other systems were attributed to dominant system blocks using available field data or by evaluating remotely sensed data. Occurrences of targets classified as regional in scale, particularly migratory birds, were mapped to represent functional occurrences during the time they are present in the ecoregion.

Mapping Aquatic Targets

Analysis and mapping of aquatic systems focused on lotic aquatic habitats, treating playas and saline lakes as aspects of the terrestrial landscape. All of the aquatic species selected as targets were associated with lotic systems, and therefore treated within the context of the aquatic analysis. We grouped aquatic species occurrences into functional occurrences based on potential population separation distances relative to the geographic scale of the target. This distance was 5 km, 15 km and 40 km for local, intermediate and coarse scale species, respectively.

For example, occurrences of a local scale species less than 5 km apart were treated as a single functional occurrence.



Canadian River in Oklahoma

Aquatic ecological systems were mapped using a GIS-based classification protocol developed by The Nature Conservancy (Higgins 2003, Higgins et al. 2005). The framework is based upon the hierarchical relationship between macrohabitats, ecological systems, and higher levels of organization, and is depicted in Figure 4.

We developed the aquatic system classification model by consulting literature and regional experts to determine the most important physical variables that distinguish natural aquatic communities in freshwater ecosystems. We identified stream size, gradient, flow permanence, elevation (because of higher elevations in mountain foothills in western portions of the ecoregion) and geology (as it relates to substrate type, hydrologic regime and water chemistry) as the five critical physical variables for classification. We then obtained GIS layers for these variables and used them to classify stream reaches (Environmental Protection Agency 1994) into valley/stream segment types called macrohabitats. To do this, we partitioned each physical variable into discrete classes corresponding to major differences in ecosystem structure and/or function (Table 4). All stream reaches were then assigned a class for each variable, and the macrohabitat type is the concatenation of the classes for the five variables.

Aquatic systems were then classified by analyzing patterns of macrohabitat types within watersheds. Five watershed size classes were defined according to the five macrohabitat stream size classes (Table 4). We then delineated watersheds for these five size classes. Within the three smallest size classes, watersheds that contain similar numbers and types of macrohabitats were grouped into aquatic ecological systems using a clustering analysis (Gauch 1982, McCune et al. 2002) (PC-ORD V. 4 software; McCune and Mefford 1999).

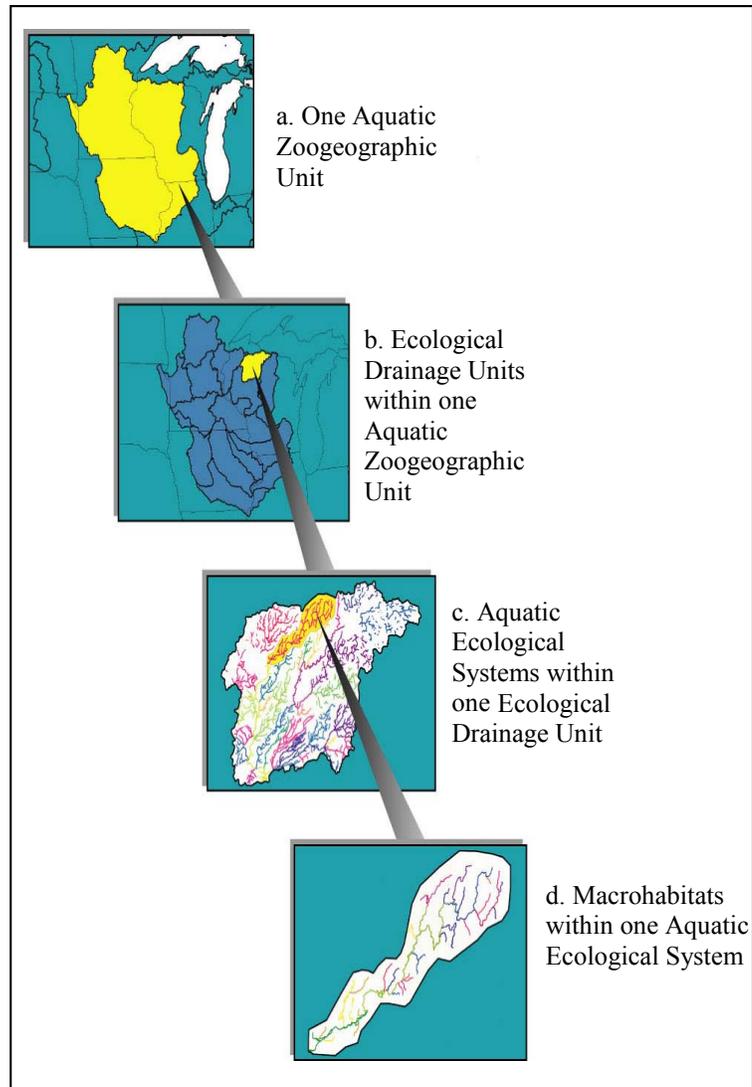


Figure 4. A four-tiered hierarchical classification framework of aquatic ecosystems (Higgins et al. 2005)

The output of the clustering analysis was manually inspected, reviewed by experts and revised to allow better treatment of patterns that the clustering algorithm did not discern.

The two largest size classes were classified only by a manual process due to the small number of river types and low number of occurrences. Classification of these systems was based primarily on location of channels (geologic substrata and ecoregion), location of the rivers' headwaters (physiography), and types of ecological systems included within the watersheds of these large river system types.

Table 4. Physical variables used in classification of aquatic macrohabitats

Stream Size (Shreve Order)	Stream Gradient (m/m)	Flow Permanence	Elevation (ft)	Geology
Headwater (1-10)	Low (<0.03)	Intermittent	Low (0-1000)	Recent alluvium, colluvium
Creek (11-50)	Moderate (0.03-0.13)	Perennial	Moderate (1000-3000)	Surficial sand
Small River (51-120)	High (>0.13)		High (>3000)	Aquifer sands
Medium River (120-700)				Mudstone/shale and clay
Large River (>700)				Fine sandstone, sands
				Coarse sandstone, gravels
				Moderately calcareous rocks
				Calcareous clay, marl
				Limestone, dolomite
				Evaporite, anhydrite
				Schist
				Granitic/silicic
				Basaltic/mafic

Target Viability Assessment

Assessing target viability helps to direct scarce conservation resources toward populations of species, communities and ecological systems that have a reasonable chance for survival. In the context of this biodiversity assessment, viability is the likelihood that an occurrence (e.g., population) of a conservation target will survive over a 100-year time horizon. We assessed viability for each known occurrence of our conservation targets to prevent non-viable occurrences from driving the design of the final conservation portfolio. Occurrences of conservation targets considered to have a very low chance for survival or with unknown viability were mapped and tracked in our biodiversity database but not counted toward meeting target goals.

Terrestrial and aquatic target occurrences were assigned to one of six qualitative descriptors of overall viability: Very Good, Good, Fair, Poor, Not Viable or Unknown. Occurrences with unknown viability will become priorities for future inventory and assessment. Where possible, overall viability ranks were calculated from aggregated ranks of three viability criteria (see below). Functional occurrences made up of multiple, overlapping occurrences were assigned the average overall viability rank of each individual occurrence they included.

In most cases, we used three viability criteria to assess the overall viability of an occurrence: *size*, *condition*, and *landscape context*. At the population level, *size* is an indication of the number of reproductive units. For communities and ecosystems, size is an indication of areal extent (relative to minimum dynamic area for coarse scale targets). *Condition* is an integrated estimate of the quality of biotic and abiotic factors and processes that sustain a target. Factors used to assess condition include success and regularity of reproduction, presence/absence of competitors/predators, and degree of anthropogenic impacts. *Landscape context* for species is an integrated estimate of connectivity of a population to other populations and intactness of surrounding ecological processes and environmental regimes. For communities and systems, landscape context refers to the position of the occurrence within a matrix of preferably natural habitats that can maintain appropriate function of critical ecological processes. In other words, is the community or system embedded within a landscape that can maintain external inputs necessary for its maintenance, or does it occur in isolation from such naturally occurring processes? Each of these three criteria was assigned a qualitative rank of Very Good, Good, Fair, Poor or Unknown.

When present, we used Natural Heritage Element Occurrence Ranks to assign viability ranks to species and community occurrences of terrestrial targets. Where possible, these Element Occurrence Ranks are assigned by biologists at the Natural Heritage programs based on specifications that describe viability parameters for each species in comparison with the occurrence under consideration. These ranks are meant to reflect an integrated estimation of the size, condition, and landscape context criteria as they are applied to the occurrence. However, Heritage Element Occurrence Ranks were often unavailable. In these cases, we assigned viability ranks based on expert opinion. For terrestrial targets, if Element Occurrence Ranks and expert opinion were lacking, we assigned an occurrence viability rank identical to that of the matrix ecological system occurrence within which it was embedded. Viability ranks for matrix terrestrial system occurrences were based on the results of rapid ecological assessments, expert opinion, or visual interpretation of aerial photography and/or satellite imagery. So, for species occurrences lacking other viability information, the viability of the matrix community in which it is located was assigned to the occurrences.

Viability screening of aquatic system occurrences was accomplished using a GIS-based methodology for assessing indicators of ecosystem integrity and condition. Five indicator variables were selected, representing some of the major threats to aquatic systems in the ecoregion. The five variables used in the analysis were: percent watershed area in cultivation, percent watershed area in urban development, storage volume in major reservoirs per unit watershed area, number of point sources of pollution per unit watershed area, and density of roads (unit road length per unit watershed area). GIS was used to analyze spatially explicit datasets representing these variables to estimate overall viability of each occurrence.

Setting Conservation Target Goals

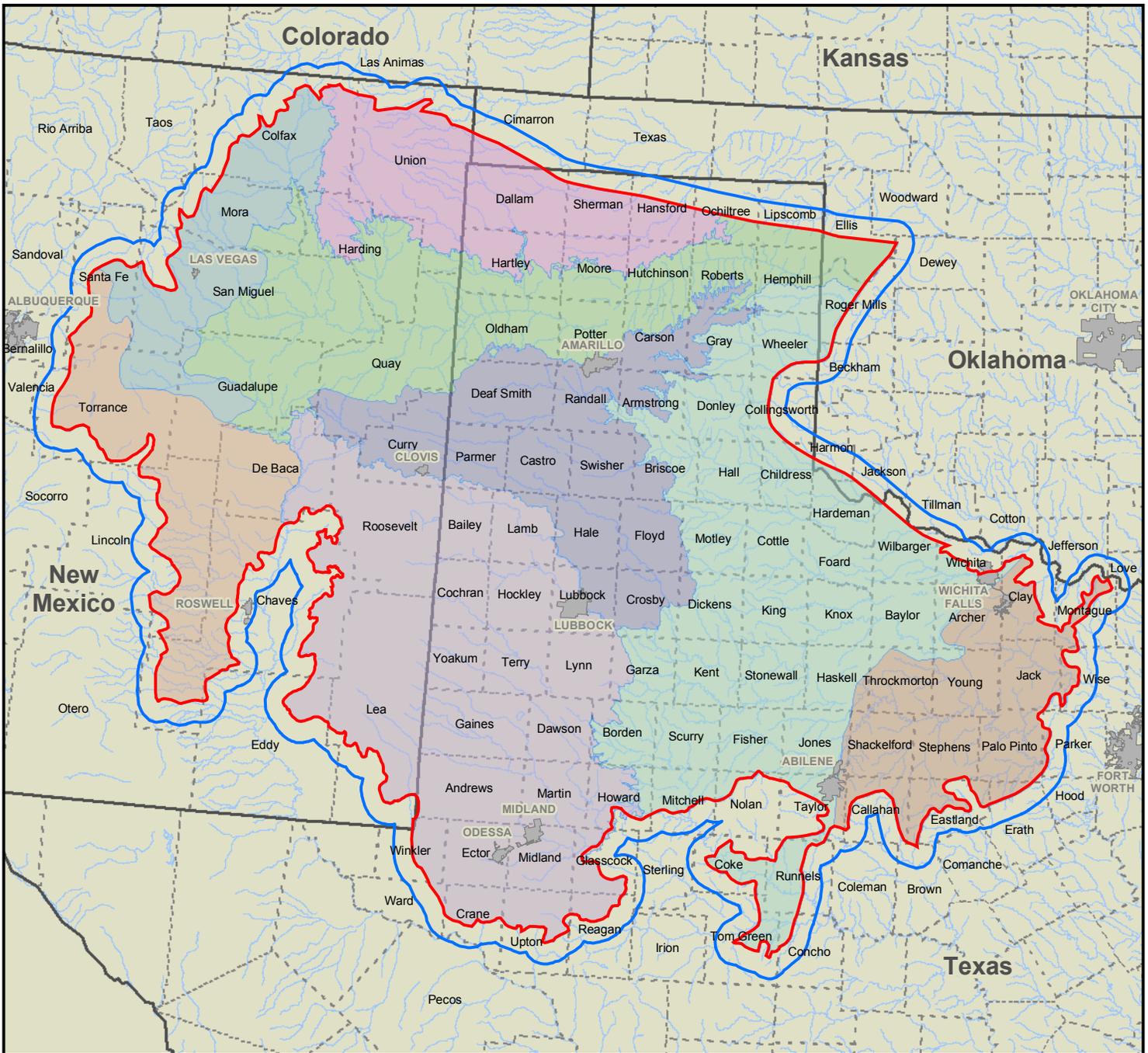
Although it is impossible to say with certainty the exact number or distribution of any species, community or ecological system that will ensure its persistence in the face of climatic or other environmental changes, conservation target goals provide guidance as to what is needed, where, and in what quantity. Goals for conservation targets are an estimate of the number and distribution of viable occurrences necessary to sustain a conservation target in the ecoregion and across its range over the long term. The chance of extinction decreases as the number and size of viable populations (or areas, in the case of plant communities or ecological systems) increases, but goal setting provides guidelines to optimize the design of a portfolio by circumscribing the amount of redundancy required. These goals will be revised as additional information regarding targets and target viability becomes available. Progress toward goals (tallying of occurrences for which effective conservation has been achieved) is one measure of conservation success.

Refining Target Goals with Stratification Units

To ensure that the full range of genetic variation and ecological context for each target was considered for terrestrial targets, we subdivided the ecoregion into eight ecologically defined stratification units: Montane Ecotone, Capulin High Plains, New Mexico High Plains, Canadian River Corridor, Northern Llano Estacado, Southern Llano Estacado, Western Rolling Plains and Middle Brazos (Figure 5). We set goals for conservation targets within those units to ensure that conservation action is applied to occurrences of targets across their natural range of genetic and environmental variation, and that adequate numbers or areal extent of target occurrences persist in the face of environmental stochasticity or predicted change. For instance, if the range of a particular species spans the entire ecoregion, it is preferable to select viable occurrences throughout the ecoregion rather than clustered in one local area.

To set goals for aquatic targets, the ecoregion was also stratified using Ecological Drainage Units (EDUs). EDUs are groups of watersheds with similar patterns of zoogeography, connectivity, climate and hydrologic characteristics. Numeric goals for representation of aquatic targets in the ecoregional portfolio were stratified across EDUs. Ten EDUs were mapped (Figure 6) by aggregating U. S. Geological Survey subbasins (i.e., eight digit Hydrologic Unit Code, or HUC8) according to their inclusion in one of four aquatic zoogeographic units (Maxwell et al. 1995, Abell et al. 2000) and according to major physiographic patterns within the zoogeographic units. As one might expect, an aggregation of EDUs that represents the full extent of a terrestrial ecoregion generally do not exactly coincide with the boundary of the terrestrial unit. Thus, in order to develop meaningful data for planning from the aquatic perspective, we included areas beyond the boundaries of the terrestrial planning unit.

Figure 5: Southern Shortgrass Prairie Terrestrial Stratification Units



- ▭ Southern Shortgrass Prairie Ecoregion Boundary
- ▭ Southern Shortgrass Prairie Ecoregion Buffer (10mi)

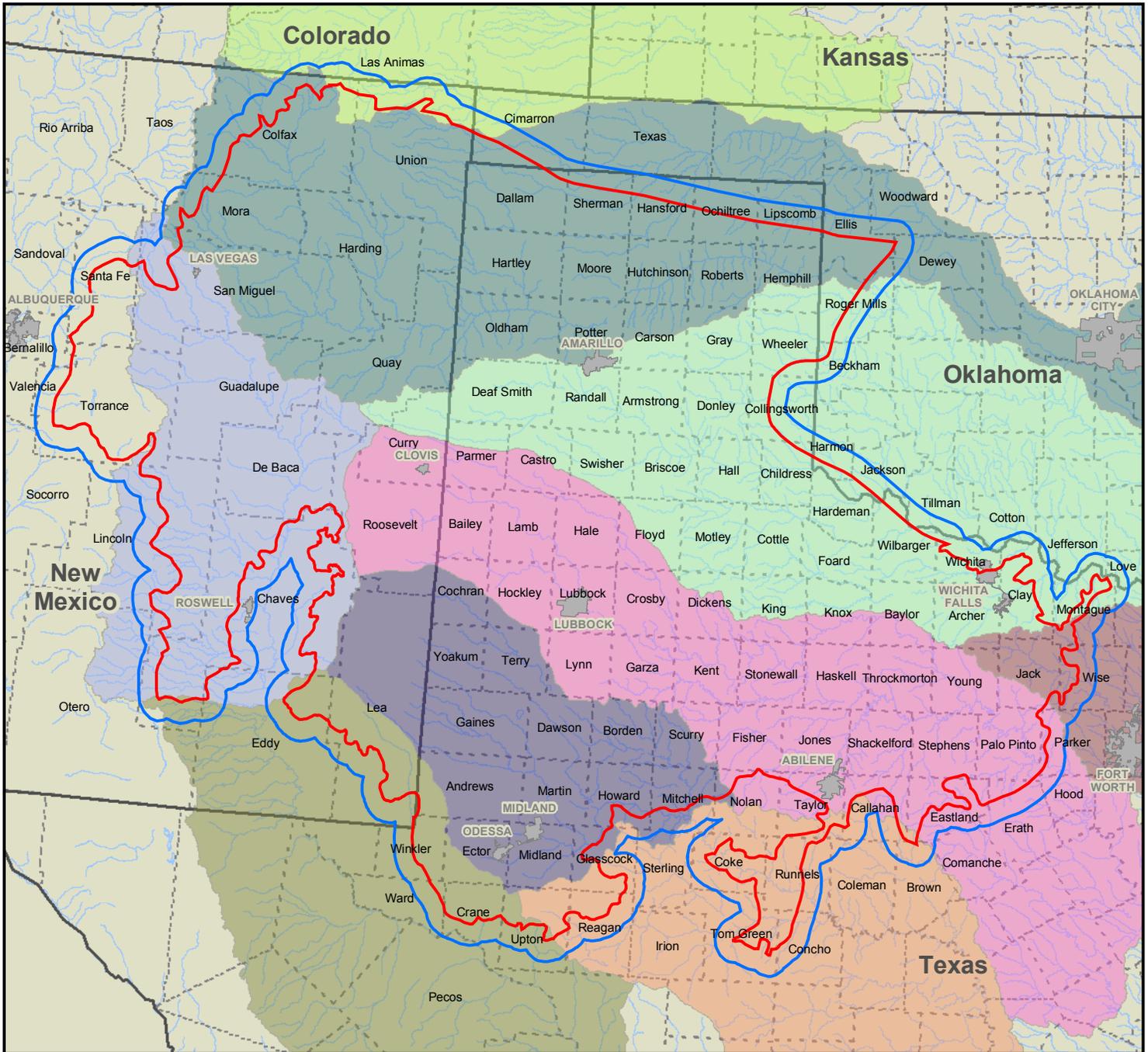
Ecoregion Stratification Units

- ▭ Canadian River Corridor
- ▭ Capulin High Plains
- ▭ Middle Brazos
- ▭ Montane Ecotone
- ▭ New Mexico High Plains
- ▭ Northern Llano Estacado
- ▭ Southern Llano Estacado
- ▭ Western Rolling Plains

- ~ Rivers
- + Cities
- County Lines
- State Boundaries



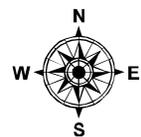
Figure 6: Southern Shortgrass Prairie Ecological Drainage Units



Ecological Drainage Units

- Arkansas River - West
- Brazos River - Prairie
- Canadian River
- Colorado River - Edwards Plateau
- Colorado River - Prairie
- Lower Pecos River
- Upper Pecos River
- Upper Red River
- Upper Trinity River

- Southern Shortgrass Prairie Ecoregion Boundary
- Southern Shortgrass Prairie Ecoregion Buffer (10mi)
- Rivers
- Cities
- County Lines
- State Boundaries



Finalizing Conservation Target Goals

Conservation goal values for most species and small-scale community and system targets were set using default values developed by The Nature Conservancy (Comer 2001). These default values account for both the geographic scale and distribution of targets (Table 5), and provide a baseline framework to assure adequate representation of targets of various scales throughout their geographic range. Within this framework, endemic local-scale targets require increased representation compared to coarse- and regional-scale targets that occur across numerous ecoregions. Conservation goals for coarse- and regional-scale targets were considered on a case-by-case basis.

We occasionally adjusted goals from the default when this value did not adequately represent the historical range and/or life history of the target. In cases where the number of historical populations was known with certainty, and taxonomic status precluded discovery of other populations, the goal was set at the number of historical populations. Where the number of historical populations was not known with certainty, and taxonomic status was not certain, but it was highly unlikely that the number of populations could ever be as high as the default goal, the goal was set at a reasonable intermediate value. Finally, if ancillary information from experts or species recovery plans suggested a value different from the default, we adjusted the value appropriately.

Because conservation efforts in different ecoregions should complement each other, an additional criterion for targets shared with other ecoregions was that they—and their goals—be in alignment with associated ecoregional assessments. This is a particular challenge for widespread species (e.g., migrant birds) whose populations may be abundant in one ecoregion but exhibit significant declines in other parts of their ranges.

Table 5. Default conservation goals (# of occurrences) for conservation targets

Geographic Scale	Intermediate	Local
Distribution		
Endemic	18	25
Limited	9	13
Disjunct	9	13
Widespread	5	7
Peripheral	2	3

Terrestrial system targets were assigned areal goals in stratification units where they represented a matrix-type system. Goals were set equal to 30% of the estimated historical (*circa* 1860) extent of the system in the ecoregion. We used areal extent rather than individual occurrences of these targets due to their distribution over large areas and our ability to map them as large polygons across the landscape. Our estimates of the historical extent of these large-scale system types were developed by examining relevant literature and current landcover data, combined with expert opinion. Ecoregion-wide goals for all terrestrial targets can be found in Appendices E1 and E2. Goals by stratification unit are shown in Appendices F1 and G1.

Goals for aquatic system targets were set at one occurrence of each system target. Because aquatic system targets were nested within EDUs (i.e., each aquatic system type only occurs within one EDU), there was no stratification of the goal within EDUs. Goals for system targets are shown in Appendices F3 and G3. For aquatic species targets, ecoregion-wide goals are shown in Appendix E1, and goals by EDU are shown in Appendices F2 and G2.



Male lesser prairie-chicken, Milnesand Prairie Preserve, New Mexico

Portfolio Assembly

Building the Terrestrial Portfolio

Because the determination of ecological systems differed between aquatic and terrestrial systems, portfolios of terrestrial and aquatic conservation areas were assembled through two independent processes. The terrestrial portfolio was assembled by selecting from among a set of potential terrestrial conservation areas. Most of these potential conservation areas were characterized by at least one matrix-type ecological system, often containing multiple occurrences of other conservation targets. Areas that had been altered such that they no longer appeared to support a native matrix system type (e.g., areas with significant landcover dominated by row crops) were excluded from consideration as potential conservation areas. The boundaries of potential conservation areas were generally coincident with the extent of the dominant vegetation type associated with that system. Some potential conservation areas did not represent a matrix-system type, but rather captured one or more local or intermediate-scale occurrences of a species or community. We developed a preliminary portfolio of all potential terrestrial conservation areas in the ecoregion.

Once identified, each potential conservation area was given a conservation value score. This score is the weighted average of: 1) the number of different targets found there (diversity), 2) the variety in scale of those targets, and 3) the area's overall viability. Weights applied to diversity, variety, and viability were .25, .25, and .5, respectively. These weights were chosen to balance the importance of variability (diversity and variety) with integrity (viability). Data for all terrestrial targets, their scale, and viability of occurrences were tracked using a Microsoft Access-based database tool known as the Conservation Planning Tool (CPT).

The diversity score reflects the number of unique targets found within each area, while the variety score reflects the number and nature of different geographic scales represented by the targets found there. For example, an area with conservation targets representing multiple scales (e.g., coarse, intermediate and local) would receive a higher variety score than one with targets representing only one or two of these three scales. For this analysis we weighted the number and variety scores equally (50:50) to calculate their combined value.

The overall viability for each area was calculated using a weighted average of scores assigned to each viability category (size, condition and landscape context) for each captured target occurrence (see Target Viability Assessment section). Among these three categories, size was weighted more heavily than condition or landscape context, due to its importance for sustaining key ecological processes in these typically large landscapes.

Once all potential conservation areas were attributed with conservation value scores, we reviewed each in rank order from highest to lowest, examining what proportion of target goals would be met by selecting a particular area for the final portfolio. An area was selected for the portfolio if it contributed one or more target occurrences for which conservation goals had not yet been met, and contained one of the best remaining occurrences of the target(s) for which it was being selected. Areas with high conservation value scores were examined first and thus most likely to make non-redundant contributions to goals. They were also most likely to contain high-quality occurrences of targets. Therefore, these areas were most likely to be

selected. As we moved down the ranked list, the percentage of goals met for some targets began to exceed 100%. In these cases we assessed the importance of the area for contributing to goals for other targets. We rejected areas if they did not contain occurrences of targets for which we still needed representation. We also rejected them if we felt that there were significantly better examples of a conservation target in a lower overall-ranked area. After one complete pass reviewing all the areas, we calculated goals met by the selected portfolio. We chose additional areas if they contributed to any unmet goals. This process was facilitated by the use of a Microsoft Access-based decision support tool developed for the Conservancy, known as the Ecoregional Portfolio Assembly Tool (EPAT). A map showing the conservation areas in the terrestrial portfolio can be found in Figure 7. The terrestrial portfolio is also shown in Figure 9 with the aquatic portfolio.

Building the Aquatic Portfolio

We also selected a set of aquatic conservation areas from a set of potential areas. Due to differences in the amount and type of data available, selection methods for the aquatic portfolio varied from those used for the terrestrial portfolio. Aquatic conservation areas were selected in two steps. First, we considered areas identified by experts as 1) those supporting the best or last remaining viable populations of species targets, and 2) those representing high quality streams, rivers, springs and other aquatic habitats. Where possible, the condition of these expert-nominated areas was validated using the same GIS indicators used to assess the condition of modeled aquatic systems (see Viability Assessment). These expert-nominated areas were overlaid on top of the aquatic system occurrences. Areas of overlap were selected as the first components of the portfolio. Second, we evaluated progress toward aquatic system target goals in expert-derived areas. If goals were not yet met for any system targets, we added the highest quality system target occurrences to the portfolio. We selected examples of each system with the lowest (best) values for GIS condition indicators until goals were met. As with the terrestrial portfolio, we used delineations of functional occurrences to capture species targets that did not fall within a system occurrence.

Conservation areas delineated solely on the basis of GIS indicators carry a lower certainty of conservation value. As a result, we placed each aquatic conservation area into one of two confidence categories. The Aquatic Portfolio represents very important areas in which we have high confidence that viable target populations and high quality system occurrences are present. Provisional Aquatic Conservation Areas are areas selected to represent potentially high quality examples of aquatic systems, based on GIS indicators, but where target occurrence viability or condition of biota requires more validation. These areas will require field verification before they can be included in the portfolio.

Spatial representation of aquatic conservation areas in the Southern Shortgrass Ecoregion portfolio maps follows two conventions: 1) areas delineated to capture headwaters and creeks are shown as the entire watershed area, and 2) areas capturing small, medium and large rivers are shown as stream lines buffered to 1 km. In some cases, we kept adjacent or connecting reaches as separate areas if the targets captured in them were distinct in life history and/or size of stream occupied from adjacent ones. We also maintained separation among conservation areas occurring in separate EDUs. A map showing the aquatic portfolio and provisional

conservation areas can be found in Figure 8. The aquatic portfolio is also shown in Figure 9 with the terrestrial portfolio.

Portfolio Prioritization

While development of the portfolios provides a necessary step in prioritizing conservation action in the region, the portfolio still represents a significant proportion of the ecoregion. It is therefore necessary to rank conservation areas within the portfolio relative to biodiversity significance to help direct limited resources towards areas where conservation action can be accomplished most efficiently.

For the aquatic and terrestrial portfolios we calculated several metrics that may be used to rank biodiversity significance (Appendices K1-K2), and they include: 1) number of targets in the conservation area; 2) number of targets in the conservation area that are endemic to the ecoregion and/or have a G1-G2, T1-T2 global conservation status rank; and 3) a measure of irreplaceability. Irreplaceability is a measure of the importance of a conservation area to a given target, summed for all the targets occurring in the conservation area. It is calculated by summing, for all the targets in a conservation area, the inverse of the total number of conservation areas in which the target occurs. Therefore, targets that occur in only one conservation area will contribute the highest value (1) to the sum for that conservation area, while targets that occur in numerous conservation areas will contribute smaller values to the sum for the conservation areas in which they occur.

For the terrestrial conservation areas, we also calculated a single, relatively simple metric of biodiversity value that we attributed to each terrestrial conservation area and used to rank the areas. We refer to this value as the representation value. For each target within a terrestrial conservation area, we determined the number of viable occurrences present within the area, divided it by the number of viable occurrences present in all of the conservation areas, and converted the result to a percentage. We then summed these percentages for all the targets present in each conservation area, resulting in an overall representation value for that area. We then sorted the areas from highest value to lowest value and ranked them by quartiles, with areas having the highest biodiversity value receiving a rank of 1 (very high) and those with the lowest value receiving a rank of 4 (low). The values for each terrestrial conservation area can be found in Appendix K1. The number of “potential” playas, playa area, playa perimeter and average circularity ratio of playas in each conservation area is also provided in Appendix K1. Circularity ratio for playas was calculated as the ratio of area of the playa to the area of a circle with the same perimeter as the playa. Actual playas tend to be circular, so this ratio provides an indication of whether or not a particular “potential” playa represents an actual playa.

Aquatic conservation areas were partially prioritized according to whether they were part of the aquatic portfolio or one of the provisional aquatic conservation areas, with areas of the aquatic portfolio having known biodiversity significance and provisional aquatic conservation areas having suspected significance based on GIS analyses. We also calculated a measure that quantifies the contribution that each conservation area, portfolio or provisional, makes towards meeting conservation goals for all targets (Appendix K2). For each conservation area, we summed the percent of the conservation goal met by captured

occurrences for each target present in the conservation area. For this measure, we used both viable occurrences and occurrences of unknown viability. Targets with a greater number of occurrences than the conservation goal were considered to contribute only 100 to the total for a conservation area. For instance, if a target had a goal of one, and three occurrences were attributed to a conservation area, the percent contribution would be 300% but the value used for the prioritization index for that target would be 100.

All of the metrics described above are dependent on adequate data representing biodiversity in the ecoregion. If such data is lacking, these biodiversity scores and ranks may fail to accurately reflect the true significance of some areas. There are also various other methods that could be used to prioritize areas relative to biodiversity value, each with strengths and weaknesses. While we have provided rankings of the conservation areas based on specific measures of biodiversity value that we believe to be useful, it may be necessary to prioritize conservation areas using numerous factors. The indices that we have calculated can be used in conjunction with information on other pertinent factors—such as feasibility, leverage and threats—to guide and develop program or project priorities.

Table 6. Terrestrial Conservation Area Names with Map IDs

Conservation Area Name	Assessment Map ID	Conservation Area Name	Assessment Map ID
Albany	MB90	Middle Clear Fork of the Brazos River	MB89
Antelope Ridge	S59	Middle Water	C22
Bell Ranch Grasslands	CR34	Milagro Springs	CR36
Big Juan (Juan Largo)	N29	Milnesand	S55
Big Lake	S67	Monument Draw	S60
Black Kettle	W69	Mora River Grasslands	M8
Blackwater Draw	S51	Mora River Valley	M5
Blanco Canyon	W86	Morita	S65
Bueyeros Grasslands	CR38	Mt. Dora Shortgrass	C17
Canadian River - Punta de Agua	CR42	Mulberry Creek	W73
Canadian River East	CR47	Muleshoe NWR	S53
Canadian River Gorge	CR32	North Fork Red River	W71
Canyon Largo	CR33	Northeast of Kirkland	W81
Canyon Playas	NL50	Northeast Quanah	W82
Capitan / Sacramento Mountain Foothills	N30	Ocate Creek Grasslands	M7
Capulin Volcano	C14	Packsaddle	CR48
Carpenter Mesa	CR35	Palo Duro Canyon	W75
Central Matador WMA	W80	Palo Pinto Mountains	MB91
Charco Creek Mesas	CR41	Pasamonte Shortgrass	C15
Chico Creek Grasslands	M3	Pastura Grasslands	M11
Copper Breaks	W84	Pecos Canyon and Mesas	M9
Double Lakes	S63	Pintada Arroyo	M10
Dunken	N31	Querecho Plains	S58
Duran Grasslands	N27	Quitaque Creek	W78
Duran Lakes	N28	Raton Mesa and Volcanoes	M2
Dutch Canyon	W74	Red Deer Creek	CR45
Eagle Tail	M1	Rita Blanca Alkaline Lakes	C21
East of Matador	W79	Salt Fork Red River	W72
Encino Grasslands	N25	San Juan de Dios	CR37
Encino Lake	N26	Sand Springs	CR39
Estancia Basin Wetlands	N23	Sierra Grande	C16
Estancia Grasslands	N24	South of Quanah	W83
Goat Mountain	W88	Tahoka Lake	S64
Grulla NWR	S52	Tramperos Creek Shortgrass	C20
Harold	W85	Turkey Mountains Grasslands	M6
Hulver	W77	Upper Dry Cimarron Mesas	C12
Johnson Draw	S66	Upper Washita River	W68
Jones City	S61	Ute - Tramperos Canyons	C19
Lake Meredith	CR43	Vega Playas	NL49
Little Red River	W76	Western Callahan Divide	W87
Logan	CR40	Wheeler Sandhills	W70
Lone Wolf Sandhills	S54	White Deer Creek	CR44
Lower Dry Cimarron Mesas	C13	Winkler Sandhills	S62
Mescalero Caprock	S57	Wolf Creek	CR46
Mescalero Sands	S56	Yates Carbonate Glades	C18
Miami	M4		

Figure 7: Southern Shortgrass Prairie Ecoregion Terrestrial Portfolio

This map identifies a set of priority areas for the protection of biological diversity in the Southern Shortgrass Prairie Ecoregion. This is not a map of land acquisition priorities. The Nature Conservancy is working cooperatively with private landowners, natural resource agencies and other conservation organizations to achieve conservation success at these sites. A broad array of strategies is essential for achieving long-term conservation of native species, plant communities and ecosystems within this ecoregion. Protection of places that are not identified on this map, or are located outside the boundaries of these priority areas, may still contribute to conservation success. This selection of conservation areas is based on current knowledge and will be refined over time.

- ▭ Southern Shortgrass Prairie Ecoregion Boundary
- ▭ Southern Shortgrass Prairie Ecoregion Buffer (10mi)
- ▭ Terrestrial Conservation Areas
- ▭ Southern Shortgrass Prairie Stratification Units (SU)

Montane Ecotone SU

- M1. Eagle Tail
- M2. Raton Mesa and Volcanoes
- M3. Chico Creek Grasslands
- M4. Miami
- M5. Mora River Valley
- M6. Turkey Mountains Grasslands
- M7. Ocate Creek Grasslands
- M8. Mora River Grasslands
- M9. Pecos Canyon and Mesas
- M10. Pintada Arroyo
- M11. Pastura Grasslands

Capulin High Plains SU

- C12. Upper Dry Cimarron Mesas
- C13. Lower Dry Cimarron Mesas
- C14. Capulin Volcano
- C15. Pasamonte Shortgrass
- C16. Sierra Grande
- C17. Mt. Dora Shortgrass
- C18. Yates Carbonate Glades
- C19. Ute - Tramperos Canyons
- C20. Tramperos Creek Shortgrass
- C21. Rita Blanca Alkaline Lakes
- C22. Middle Water

New Mexico High Plains SU

- N23. Estancia Basin Wetlands
- N24. Estancia Grasslands
- N25. Encino Grasslands
- N26. Encino Lake
- N27. Duran Grasslands
- N28. Duran Lakes
- N29. Big Juan (Juan Largo)
- N30. Capitan / Sacramento Mountain Foothills
- N31. Dunken

Canadian River Corridor SU

- CR32. Canadian River Gorge
- CR33. Canyon Largo
- CR34. Bell Ranch Grasslands
- CR35. Carpenter Mesa
- CR36. Milagro Springs
- CR37. San Juan de Dios
- CR38. Bueyeros Grasslands
- CR39. Sand Springs
- CR40. Logan
- CR41. Charco Creek Mesas
- CR42. Canadian River - Punta de Agua
- CR43. Lake Meredith
- CR44. White Deer Creek
- CR45. Red Deer Creek
- CR46. Wolf Creek
- CR47. Canadian River East
- CR48. Packsaddle

Northern Llano Estacado SU

- NL49. Vega Playas
- NL50. Canyon Playas

Southern Llano Estacado SU

- S51. Blackwater Draw
- S52. Grulla NWR
- S53. Muleshoe NWR
- S54. Lone Wolf Sandhills
- S55. Milnesand
- S56. Mescalero Sands
- S57. Mescalero Caprock
- S58. Querecho Plains
- S59. Antelope Ridge
- S60. Monument Draw
- S61. Jones City
- S62. Winkler Sandhills
- S63. Double Lakes
- S64. Tahoka Lake
- S65. Morita
- S66. Johnson Draw
- S67. Big Lake

Western Rolling Plains SU

- W68. Upper Washita River
- W69. Black Kettle
- W70. Wheeler Sandhills
- W71. North Fork Red River
- W72. Salt Fork Red River
- W73. Mulberry Creek
- W74. Dutch Canyon
- W75. Palo Duro Canyon
- W76. Little Red River
- W77. Hulver
- W78. Quitaque Creek
- W79. East of Matador
- W80. Central Matador WMA
- W81. Northeast of Kirkland
- W82. Northeast Quanah
- W83. South of Quanah
- W84. Copper Breaks
- W85. Harrold
- W86. Blanco Canyon
- W87. Western Callahan Divide
- W88. Goat Mountain

Middle Brazos SU

- MB89. Middle Clear Fork of the Brazos River
- MB90. Albany
- MB91. Palo Pinto Mountains

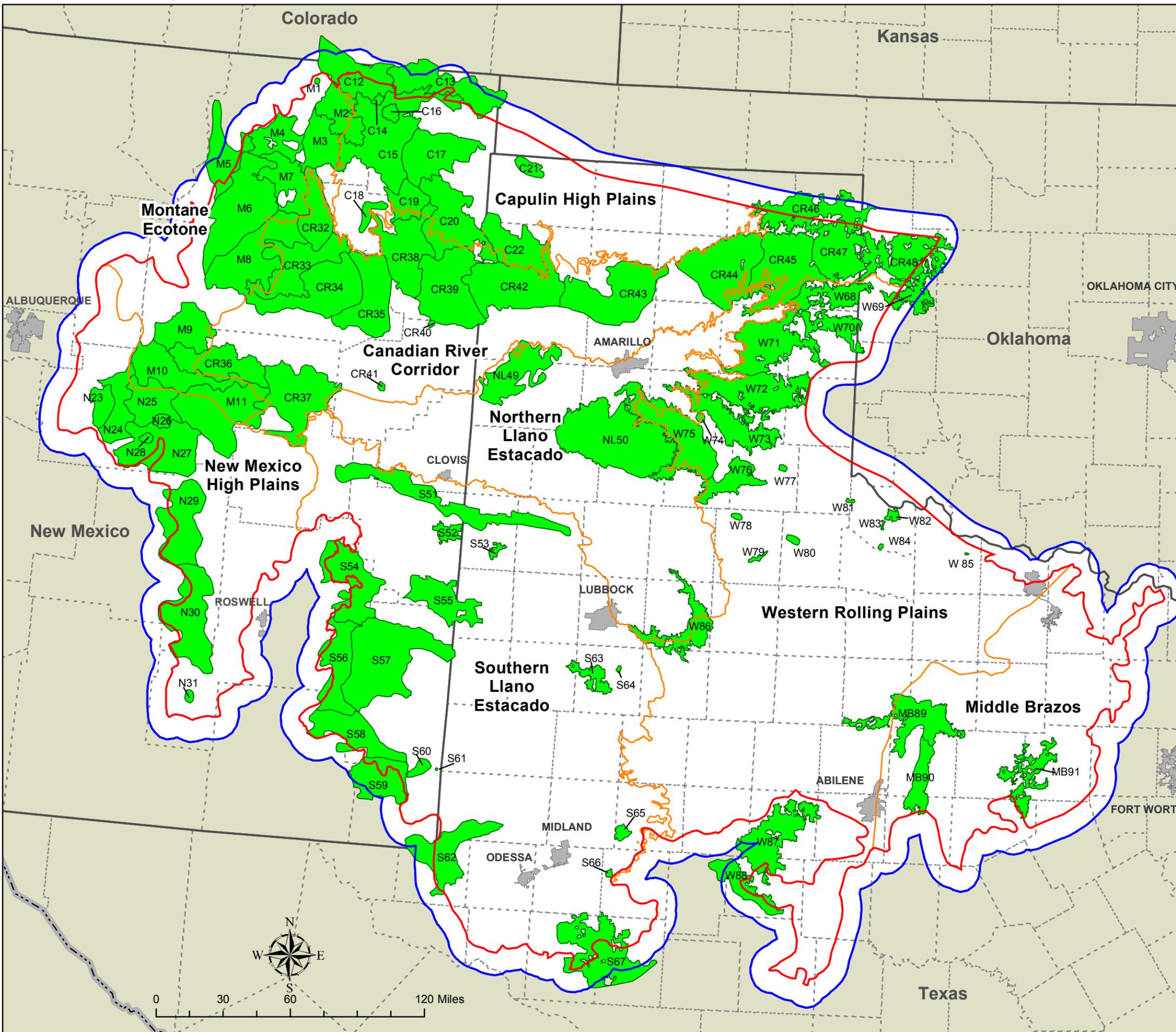


Table 7. Aquatic Conservation Area Names with Map IDs

Conservation Area Name	Assessment Map ID	Conservation Area Name	Assessment Map ID
Arroyo de la Mora	UP30	Pecos River Headwaters	UP20
Arroyo del Macho	UP31	Ponil Creek	C6
Beals Creek / Mustang Draw	CP73	Prairie Dog Town Fork Red River	U40
Beaver Creek	U42	Rayado Creek	C8
Beaver River	C3	Red River	U44
Belknap Creek	U45	Red River (Colorado)	CE78
Big Sandy Creek	UT47	Revuelto Creek	C15
Brazos River	B63	Rio Agua Negra	UP25
Bull Creek	CP71	Rio Hondo	UP33
Carrizozo Creek	A2	Rio Penasco	UP34
Charo Creek	C14	Rocky Creek	B65
Cimarron River	C7	Rough Creek	B57
Clear Fork Brazos River	B61	Salado Creek	UP26
Clear Fork Brazos River Headwaters	B58	Salt Creek (Pecos)	UP32
Colony Creek	B68	Salt Fork Brazos River	B53
Colorado River Headwaters	CP70	Salt Fork Red River	U39
Conchas River	C11	Taiban Creek	UP28
Concho River	CE77	Tecolote Creek	UP22
Coyote Creek	C9	Tule Creek	U35
Croton Creek	B54	Turkey Creek	B64
Deadman Creek	B59	Upper Brazos River	B62
Deer Creek	C19	Upper Canadian River	C4
Denton Creek	UT48	Upper Colorado River	CE76
Double Mountain Fork Brazos River	B56	Upper Pecos River	UP21
Dry Cimarron River	A1	Upper Prairie Dog Town Fork Red River	U36
El Rito Creek	UP24	Ute Creek	C13
Elm Creek	CE75	Valley Creek	CE74
Farmer's Creek	U46	Vermejo River	C5
Gallinas River	UP23	West Fork Trinity River	UT51
Gavett Creek	CP72	West Fork Trinity River Tributary	UT49
Hubbard Creek	B60	White Deer Creek	C18
Ioni Creek	B66	Whitefish Creek	U38
Jasper Creek	UT50	Yeso Creek	UP29
Leon River	B69		
Lower Canadian River	C17		
Lower Canadian River Tributaries	C16		
Middle Canadian River	C12		
Middle Pecos River	UP27		
Mora River	C10		
Mulberry Creek	U37		
North Croton Creek	B55		
North Fork Double Mountain Fork Brazos River	B52		
North Wichita River	U41		
Palo Pinto Creek	B67		
Pease River	U43		

Figure 8: Southern Shortgrass Prairie Ecoregion Aquatic Portfolio

This map identifies a set of priority areas for the protection of biological diversity in the Southern Shortgrass Prairie Ecoregion. This is not a map of land acquisition priorities. The Nature Conservancy is working cooperatively with private landowners, natural resource agencies and other conservation organizations to achieve conservation success at these sites. A broad array of strategies is essential for achieving long-term conservation of native species and aquatic ecosystems within this ecoregion. Protection of places that are not identified on this map, or are located outside the boundaries of these priority areas, may still contribute to conservation success. This selection of conservation areas is based on current knowledge and will be refined over time.

- ▭ Southern Shortgrass Prairie Ecoregion Buffer (10mi)
- ▭ Ecological Drainage Units (EDU)
- ▭ Aquatic Conservation Area *
- ▭ Provisional Aquatic Conservation Area **

* Aquatic Conservation Areas: High priority areas known to have healthy freshwater ecosystems and/or populations of rare species. This set of areas is collectively referred to as the aquatic portfolio.

** Provisional Aquatic Conservation Areas: Potentially important areas identified through GIS modeling that merit future survey and inventory efforts prior to inclusion in the aquatic portfolio.



Arkansas River - West EDU

- A1. Dry Cimarron River
- A2. Carrizozo Creek

Canadian River EDU

- C3. Beaver River
- C4. Upper Canadian River
- C5. Vermejo River
- C6. Ponil Creek
- C7. Cimarron River
- C8. Rayado Creek
- C9. Coyote Creek
- C10. Mora River
- C11. Conchas River
- C12. Middle Canadian River
- C13. Ute Creek
- C14. Charo Creek
- C15. Revuelto Creek
- C16. Lower Canadian River Tributaries
- C17. Lower Canadian River
- C18. White Deer Creek
- C19. Deer Creek

Upper Pecos River EDU

- UP20. Pecos River Headwaters
- UP21. Upper Pecos River
- UP22. Tecolote Creek
- UP23. Gallinas River
- UP24. El Rito Creek
- UP25. Rio Agua Negra
- UP26. Salado Creek
- UP27. Middle Pecos River
- UP28. Taiban Creek
- UP29. Yeso Creek
- UP30. Arroyo de la Mora
- UP31. Arroyo del Macho
- UP32. Salt Creek (Pecos)
- UP33. Rio Hondo
- UP34. Rio Penasco

Upper Red River EDU

- U35. Tule Creek
- U36. Upper Prairie Dog Town Fork Red River
- U37. Mulberry Creek
- U38. Whitefish Creek
- U39. Salt Fork Red River
- U40. Prairie Dog Town Fork Red River
- U41. North Wichita River
- U42. Beaver Creek

Upper Red River EDU - continued

- U43. Pease River
- U44. Red River
- U45. Belknap Creek
- U46. Farmer's Creek

Upper Trinity EDU

- UT47. Big Sandy Creek
- UT48. Denton Creek
- UT49. West Fork Trinity River Tributaries
- UT50. Jasper Creek
- UT51. West Fork Trinity River

Brazos River - Prairie EDU

- B52. North Fork Double Mountain Fork Brazos River
- B53. Salt Fork Brazos River
- B54. Croton Creek
- B55. North Croton Creek
- B56. Double Mountain Fork Brazos River
- B57. Rough Creek
- B58. Clear Fork Brazos River Headwaters
- B59. Deadman Creek
- B60. Hubbard Creek
- B61. Clear Fork Brazos River
- B62. Upper Brazos River
- B63. Brazos River
- B64. Turkey Creek
- B65. Rocky Creek
- B66. Ioni Creek
- B67. Palo Pinto Creek
- B68. Colony Creek
- B69. Leon River

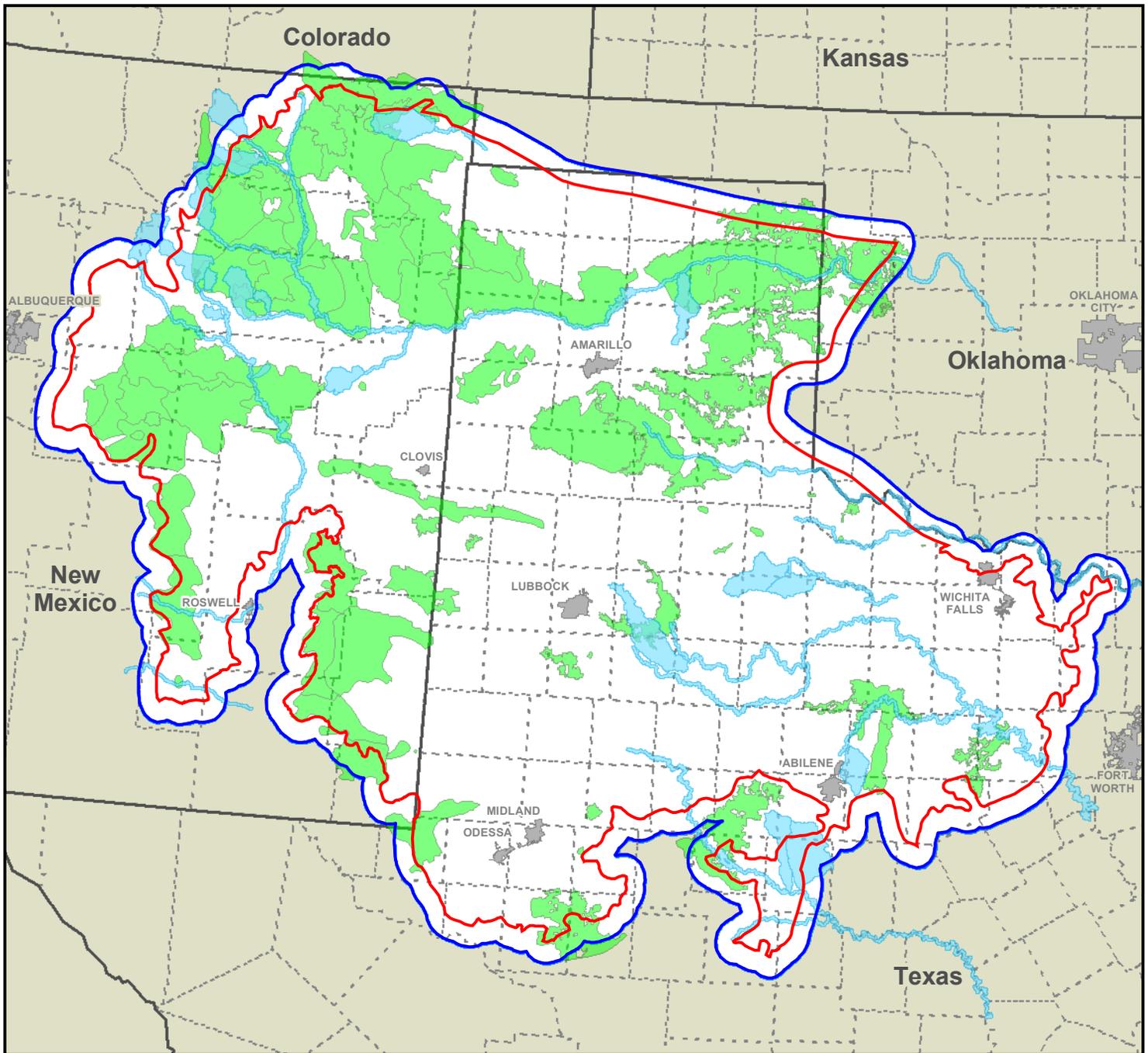
Colorado River - Prairie EDU

- CP70. Colorado River Headwaters
- CP71. Bull Creek
- CP72. Gavett Creek
- CP73. Beals Creek / Mustang Draw

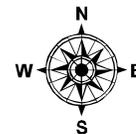
Colorado River - Edwards Plateau EDU

- CE74. Valley Creek
- CE75. Elm Creek
- CE76. Upper Colorado River
- CE77. Concho River
- CE78. Red River (Colorado)

**Figure 9: Southern Shortgrass Prairie Ecoregion
Aquatic and Terrestrial Portfolios**



- Southern Shortgrass Prairie Ecoregion Boundary
- Southern Shortgrass Prairie Ecoregion Buffer (10mi)
- Terrestrial Conservation Areas
- Aquatic Conservation Areas
- Cities
- County Lines
- State Boundaries



III. Results and Next Steps

Portfolio Results

The portfolio assembly process resulted in 91 terrestrial conservation areas, ranging in size from 248 hectares (613 acres) to 304,228 hectares (751,764 acres), and including areas from each of the eight stratification units (Figure 7). The total area of the terrestrial portfolio covers approximately 31% of the ecoregion, or 8,797,436 hectares (21,738,938 acres). This percentage is consistent with the average for The Nature Conservancy’s other conservation portfolios in the continental U.S. There are 35 conservation areas in the aquatic portfolio (and 43 provisional aquatic conservation areas) that represent a diversity of system types in each of the EDUs (Figure 8). Both portfolios are illustrated together in one map, Figure 9.

As a measure of the general status of habitat in the portfolio, the percentage of each conservation area in natural land cover was calculated using the National Land Cover Dataset (Vogelmann et al. 2001). These data reflect the land cover present during the mid-1990s. The percentage of each conservation area represented by each National Land Cover Data cover class was calculated and reported in Appendix H.

To better understand the current status of biodiversity protection in the ecoregion, we applied the Gap Analysis Program (GAP) Management Status categories (shown below) to lands under a recognized obligation to be managed for permanent biodiversity protection. The data source for this analysis was derived from the Conservation Biology Institute’s Protected Area Database – Version 4 (Conservation Biology Institute 2006). Management status categories were assigned to each property according to National Gap Analysis Program guidelines provided by Crist (2000). Overlapping these lands with our aquatic and terrestrial portfolios gave us a measure of the proportion of area protected from conversion of natural or semi-natural cover to urban land, cropland and other developed land (Figures 10 and 11).

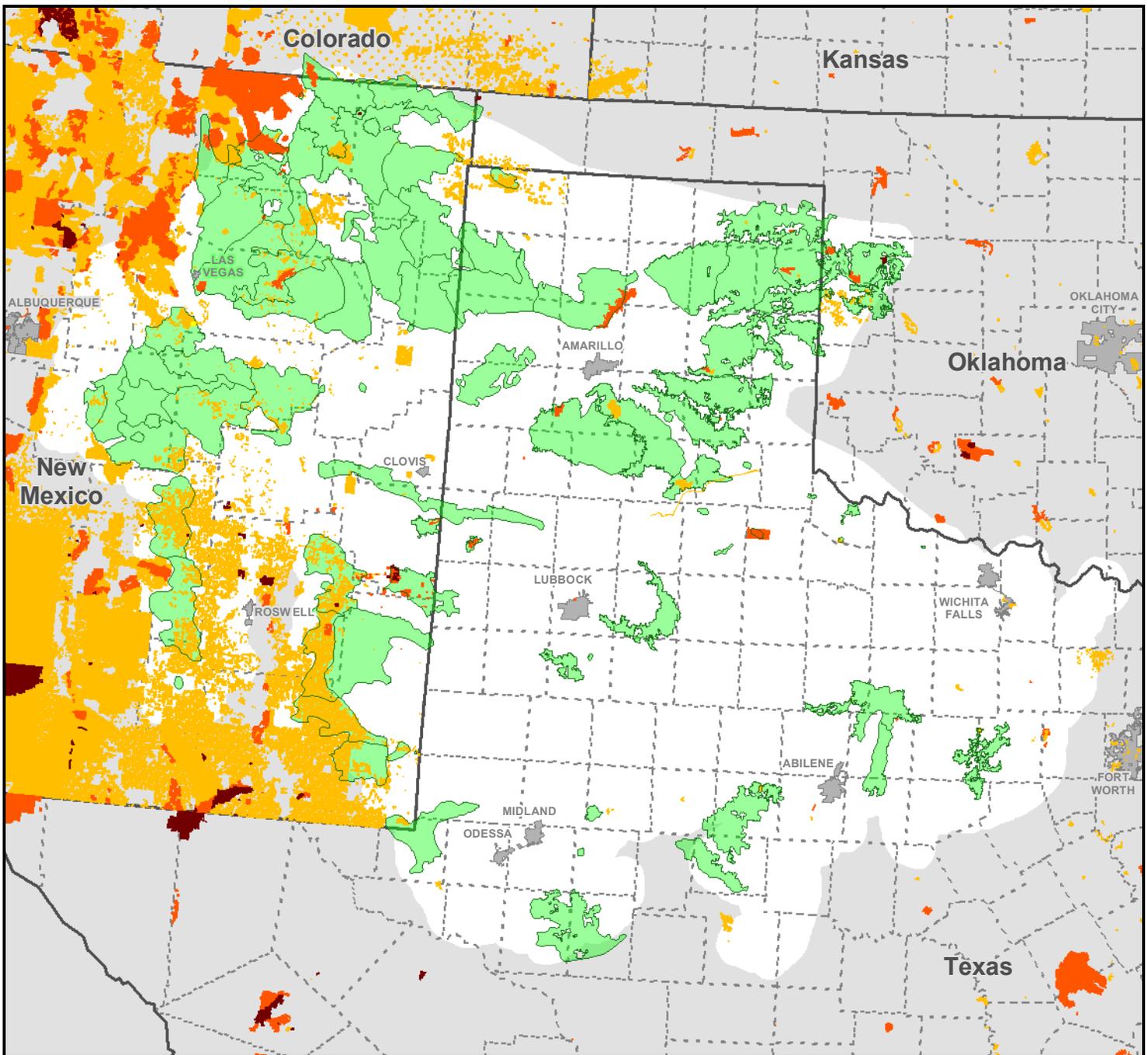
Because protection of land in the riparian zone of streams of any size class can have significant positive effects on aquatic systems of those streams, we quantified the spatial overlap of the protected areas

GAP Management Status Categories

- Status 1:** An area having permanent protection from conversion of natural land cover and a mandated management plan in operation to maintain a natural state within which disturbance events are allowed to proceed without interference or are mimicked through management.
- Status 2:** An area having permanent protection from conversion of natural land cover and a mandated management plan in operation to maintain a primarily natural state, but which may receive uses or management practices that degrade the quality of existing natural communities, including suppression of natural disturbance.
- Status 3:** An area having permanent protection from conversion of natural land cover for the majority of the area, but subject to extractive uses of either a broad, low-intensity type or localized intense type. It also confers protection to federally listed endangered and threatened species throughout the area.
- Status 4:** There are no known public or private institutional mandates or legally recognized easements or deed restrictions held by the managing entity to prevent conversion of natural habitat types to anthropogenic habitat types. The area generally allows conversion to unnatural land cover throughout.

with streams buffered by amounts determined by their size class. Streams of size class 1 through 5 were buffered on each side by 30 meters, 90 meters, 200 meters, 300 meters, and 500 meters, respectively. The buffered stream segments within the aquatic portfolio and provisional conservation areas were overlapped with the protected area locations, and the area of intersect was calculated. For the terrestrial portfolio, the portfolio itself was overlapped with the protected area locations and the intersect calculated. Using these methods, our results indicate that approximately 6.1% of the terrestrial portfolio, 6.9% of the aquatic portfolio, and 6.5% of the provisional aquatic conservation areas are already being managed for permanent biodiversity conservation (GAP status 1-3). The percentage of each portfolio area that is under management at the level of GAP Status 1 through 3, and the percentage of each area in different ownership types (private, local, state or federal) are reported in Appendix H. In addition to the above analysis, results from an analysis examining protected area status relative to watersheds of smaller stream classes in portfolio and provisional aquatic areas are also presented in Appendix H. Locations of lands currently managed to the benefit of biodiversity but without legal and permanent protection status were not available spatially, and thus could not be included in any of the protected area analyses. It was also beyond the scope of this assessment to evaluate how effectively the mapped lands are being managed to abate threats and sustain their biodiversity values.

Figure 10: Southern Shortgrass Prairie Managed Areas with Terrestrial Portfolio



■ Terrestrial Conservation Areas

GAP Land Stewardship Status

■ Status 1

Permanent protection from conversion of natural land cover, management plan in place, disturbance events are allowed to happen or mimicked through management

■ Status 2

Permanent protection from conversion of natural land cover, management plan in place, may have some uses or management practices that degrade quality of natural communities

■ Status 3

Permanent protection from conversion of natural land cover for majority of area, but subject to extractive uses

 Cities

County Lines

State Boundaries

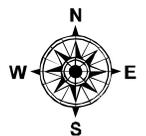
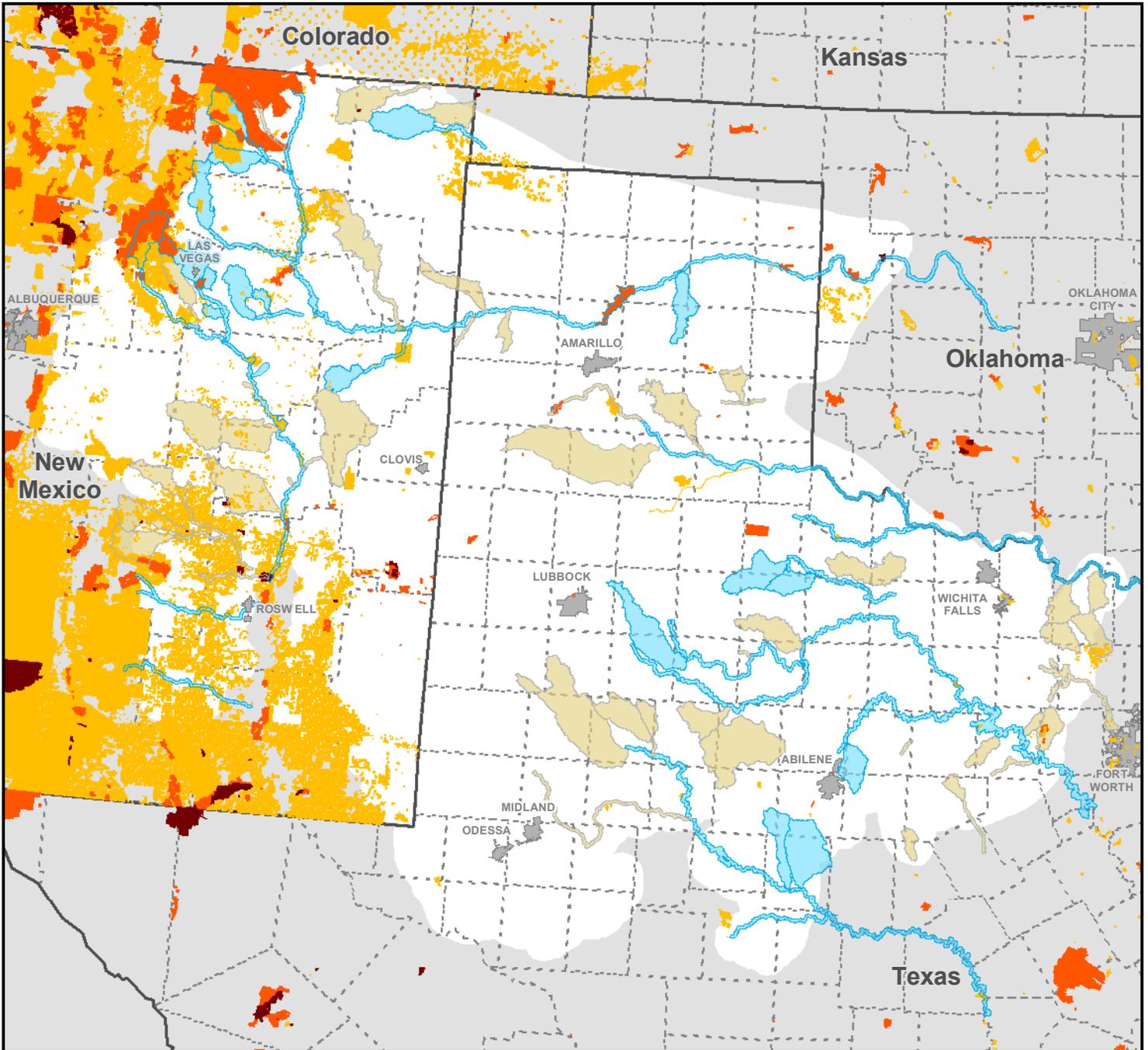


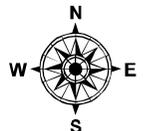
Figure 11: Southern Shortgrass Prairie Managed Areas with Aquatic Portfolio



 Aquatic Conservation Areas	 Cities
 Provisional Aquatic Conservation Areas	 County Lines
GAP Land Stewardship Status	
 Status 1	 State Boundaries
Permanent protection from conversion of natural land cover, management plan in place, disturbance events are allowed to happen or mimicked through management	
 Status 2	
Permanent protection from conversion of natural land cover, management plan in place, may have some uses or management practices that degrade quality of natural communities	
 Status 3	
Permanent protection from conversion of natural land cover for majority of area, but subject to extractive uses	

Aquatic Conservation Areas:
High priority areas known to have healthy freshwater ecosystems and/or populations of rare species. This set of areas is collectively referred to as the aquatic portfolio.

Provisional Aquatic Conservation Areas:
Potentially important conservation areas identified through GIS modeling that merit future survey and inventory efforts prior to inclusion in the aquatic portfolio.



Success at Meeting Conservation Target Goals within the Portfolio

We evaluated the conservation implications of the portfolio by assessing whether or not we met the goals set for each of the targets. For a target to be considered as having met goals, it is necessary that goals for that target be met in each of the stratification units in which it occurs. Conservation target goals and the progress towards meeting those goals are shown in Appendices E through G. Appendices E1 and E2 show overall goals for the ecoregion. Appendices F1-F3 and G1-G3 show goals relative to terrestrial stratification units and EDUs.

The terrestrial portfolio captured viable occurrences sufficient to meet the conservation goals for just 4 out of 93 terrestrial conservation targets. Of the four, two were peripheral vertebrates (Interior Least Tern, *Sterna antillarum athalassos*, and Southwestern Willow Flycatcher, *Empidonax traillii extimus*) with low goals, and the other two were ecological systems, the Great Plains Mixedgrass Prairie and the Great Plains Playa Lakes. The low success at meeting goals for terrestrial targets is partly a reflection of scarce data and may not accurately represent the abundance of viable targets in all cases. Because progress toward goals is an important measure of conservation success at the ecoregional scale, these uncertain results highlight the extreme need for additional data on the locations and viability of target occurrences in the ecoregion. However, for targets for which adequate information is available, failure to meet goals may identify a need for habitat restoration.

The Aquatic Portfolio captured sufficient occurrences to meet goals for 42 of 94 aquatic system targets, including 16 of 50 creeks/headwaters, 12 of 26 small rivers, 10 of 14 medium rivers, and 4 of 4 large river type. The Aquatic Portfolio also met goals (i.e., met the goal for all EDUs in which the target occurs) for 4 of 15 species targets. All of the four targets that met goals are fishes: Rio Grande Chub (*Gila pandora*), Peppered Chub (*Macrhybopsis tetranema*), Rio Grande Shiner (*Notropis jemezianus*) and Pecos Bluntnose Shiner (*Notropis simus pecosensis*). As with terrestrial targets, unmet aquatic species goals are often the result of limited data. However, it is also likely, especially for well-studied species, that sufficient populations of many aquatic targets simply do not exist. As they are identified, these targets may need restoration strategies.

The combination of the Aquatic Portfolio and Provisional Aquatic Conservation Areas would have resulted in goals being met for 89 of 94 aquatic system targets: 48 of 50 creeks/headwaters, 24 of 26 small rivers, 13 of 14 medium rivers, and 4 of 4 large river systems. However, system occurrences captured in the Provisional Aquatic Conservation Areas were not counted toward goals, because there is a need to validate that these system examples meet some minimum criteria for functionality, and because it cannot be assumed that adequate examples of characteristic regional fauna have been captured.

Playa wetlands are an especially important component of the Southern Shortgrass Prairie landscape, and goal setting for this target inadequately reflected the critical role they play in the maintenance of biodiversity in the region. We therefore performed an additional analysis to evaluate the portfolio relative to playas. A tally was made of the number of playa lakes within each conservation area, using the playa dataset

developed by Ducks Unlimited for the Playa Lakes Joint Venture (2003). For areas outside the Playa Lakes Joint Venture area (the western periphery of the ecoregion), National Wetlands Inventory data and features of the RF3 hydrology layer (Environmental Protection Agency 1994) lacking external drainage were used to determine the potential presence of playas within a conservation area. Results of this analysis for each conservation area are shown in Appendix H under the summary of target occurrences and also in Appendix K. While this analysis does provide some assessment of the distribution of playas within the portfolio, prioritization of these playas relative to conservation need and importance is still generally lacking. Given the importance of these landscape features to the region's biodiversity and ecosystem services, a more thorough assessment is needed. Playa delineations made using remotely-sensed data will require ground-truthing to validate those results.

Another significant element of biodiversity in the ecoregion is prairie dog towns and their associated animal assemblages. As this plan was nearing completion, Texas Parks and Wildlife Department was completing a statewide survey of prairie dogs for Texas. A preliminary assessment of survey results relative to the conservation portfolio in Texas is provided in Appendix I. Analysis of this target in other states, the development of a meaningful method of prioritization, and acquisition of additional occurrence information are needed.

Threats Assessment

After identifying conservation targets and a portfolio of conservation areas, we undertook a threats assessment for the ecoregion. This assessment was intended to give an overview of critical threats likely to impact the viability of conservation targets or the integrity of conservation areas. It is not meant to provide a detailed analysis of threats to biodiversity at each conservation area, but rather to provide a broader and more general evaluation of threats to targets throughout the ecoregion. The threats assessment illustrates the geographic distribution of threats and provides information that can be used to identify multi-site strategies which may not be apparent during evaluation of threats at a single conservation area.

The primary threats assessment was performed using expert input. Experts were provided a map of the conservation areas, a list of targets attributed to each conservation area, and a list of potential threats that might affect the targets within the area. They were then asked to consider threats to targets for each conservation area, and rank each threat relative to its severity, immediacy and reversibility. Each threat parameter was scored from 1 to 3 as outlined in Table 8. The assessment of threats provided by each expert was averaged for each conservation area; critical threats (those with a severity score of 3) are shown for each conservation area in Appendix H, and additional information about all threat scores can be found in Appendix J1-J3. Experts provided information only for areas with which they were familiar, so not all conservation areas were evaluated by every expert. Experts are generally knowledgeable about certain specific areas, making interpretation of relative levels of threat across the ecoregion problematic. For some threats, we developed additional data to confirm patterns identified by the experts. Much of the additional data analyzed came from

the National Agricultural Statistics Service (<http://www.nass.usda.gov/index.asp>). These data, provided at the county level, are from the 1997 and 2002 agricultural censuses. Generally, analyses of ancillary data served to clarify the distribution of threats identified by experts as critical and pervasive throughout significant areas of the ecoregion.

Table 8. Description of levels of threat parameters attributed to each conservation area relative to threats to targets within the area

Threat Parameter	1	2	3
Severity	Low degree of threat to integrity of targets within area	Moderate degree of threat to integrity of targets within area	High degree of threat to integrity of targets within area
Immediacy	Likely to occur within the next 20 years	Likely to occur within the next 5 years	Occurring now
Reversibility	Easily reversible	Can be reversed with high cost and effort	Effect not reversible

Threats Assessment

Experts reviewed the portfolio after it was assembled and were asked to assess threats to targets for each conservation area. The following list of potential threats was provided, and experts rated each threat at each site with respect to severity, immediacy, and reversibility. Experts were asked to consider conservation areas with which they were familiar and to consider threats relative to the targets present at the area.

- | | |
|---|--|
| <ul style="list-style-type: none"> • Channelization of rivers and streams • Dam construction/operation • Groundwater extraction/manipulation and lack of comprehensive water management strategy • Ditches, dikes, and diversions • Conversion to agriculture • Unsustainable grazing practices • Crop production practices (including erosion impacting playas through sedimentation) • Livestock production practices • Altered fire regime • Single species management | <ul style="list-style-type: none"> • Windfarm development • Excessive harvesting/poaching/eradication • Invasive plants • Invasive non-native animals • Parasites/pathogens • Residential development • Recreation use • Recreational vehicles (ORVs) • Ownership fragmentation of large ranches • Transportation infrastructure • Commercial/industrial development • Oil and gas development • Climate change |
|---|--|

In evaluating the geographic distribution of threats, we focused on those threats identified as having high severity (severity score = 3) in at least one conservation area. Several threats were identified by experts as having high severity at numerous conservation areas. The six threats identified as having high severity in the largest number of conservation areas were: 1) climate change, 2) unsustainable grazing practices, 3) groundwater extraction/manipulation and lack of a comprehensive water management strategy, 4) conversion to agriculture, 5) invasive plants, and 6) altered fire regime. Considered separately, other threats were not as frequently identified as severe. However, several of them, if considered together, would contribute to habitat fragmentation which was recognized by several experts as a severe threat. These include wind farm development, oil and gas development, transportation infrastructure and dam construction/operation. With respect to playa wetlands, sedimentation resulting from agricultural practices is the most significant threat.

Climate Change

Ojima et al. (2002) provided a review of information relative to climate change in the central Great Plains, but much of the information presented is pertinent for the southern Great Plains as well. The report suggests that changes in winter moisture may impact cool season invasives, the extent of woody perennials on the range, shallow aquifer recharge, streamflow timing, forage availability and timing, and disease incidence. Warmer winters may impact soil organic matter, community composition, and invasion by exotics, though these potential impacts appear to be less severe in the southern portion of the Great Plains. Extreme events (drought and flood) may become more frequent, leading to problems of their own, while climate change may lead to a frequency and severity of weather conditions conducive for fire. A general increase in evapotranspiration (largely resulting from increased temperatures) will lead to higher agricultural water demands and shorter hydroperiods in wetlands of the region. The report suggests that stresses to aquatic systems resulting from climate change may be disproportionately high. The authors looked at results from two climate models, the Canadian Climate Centre (CCC) model and the UKMO-Hadley Center (Had) model. The CCC model predicts that the ecoregion will experience slight to moderate drying by the year 2090, while the Had model does not have the same magnitude of outcomes due to differences in predicted patterns of precipitation. One strategy identified for addressing all climate change impacts is to maintain a high degree of landscape heterogeneity and connectivity in terrestrial and aquatic systems.

Unsustainable Grazing Practices

While grazing has a significant historical context in the ecoregion, it was suggested by several experts that unsustainable grazing practices have negatively impacted targets in some areas. Historical grazing by herds of bison and other native ungulates, and its effect on fire relative to the development of adequate fuel levels, is widely recognized as being a major, if not dominant, process in the maintenance of grassland condition in the ecoregion. The transitory nature of grazing by these ungulates, along with its interaction with fire, served to support a robust and heterogeneous mosaic of grasslands in various stages of disturbance. The application of uniform, and often heavy and year-long grazing pressure by domestic livestock, along with

active fire suppression, has led to a more homogeneous landscape with decreased habitat diversity, and conditions less suitable for a range of species dependant on healthy, diverse and heterogeneous grassland systems (Fuhlendorf and Engle 2001). Uniform grazing or heavy year-long grazing, in combination with the concomitant reduction in fuels available for fire, has also been suggested as a major factor leading to invasion of grasslands by shrub species (Van Auken 2000). The spread of seeds of invasive woody species such as mesquite (*Prosopis glandulosus*) has also been attributed to livestock. Excessive grazing in riparian areas can also have major effects on aquatic habitats including increased deposition of fine sediments, nutrient enrichment, and alterations to stream channel processes and evolution. Experts identified this as a severe threat for most of the terrestrial and aquatic conservation areas in Texas, and for terrestrial conservation areas of the Southern Llano Estacado in New Mexico. Additional information is needed to more clearly define the extent and severity of this threat, and to identify strategies that may be used to ameliorate any impacts.

Groundwater Extraction, Manipulation and Management Issues

Experts identified groundwater extraction and/or manipulation as a severe threat, particularly in Texas. The Ogallala Aquifer is the primary source of groundwater for most of the ecoregion, and while recharge is slow, extraction for agricultural production, urban uses and industrial purposes is increasing. Water levels are dropping, with the most significant declines documented in the southern part of the aquifer (Dugan and Sharpe 1995). The rate of recharge has been estimated to be approximately 11 mm/year, and the numerous playa lakes likely constitute the primary areas of recharge (Wood 2000). Rates of extraction outpace this slow rate of recharge. Water withdrawals impact spring flows and pose the most significant threat to salt lakes and the numerous species that depend on them (Smith, pers. comm.).

The National Agricultural Statistics Service reported that in 2002, the largest amount of irrigated cropland in the region (percent of county in irrigated crops) occurred in counties of the Northern and Southern Llano Estacado, and the western portion of the Capulin High Plains stratification units (United States Department of Agriculture 2004). However, a comparison of irrigated acres in 2002 to irrigated acres reported for 1997 suggests a very slight overall decrease in acreage under irrigation. This may be due in part to the increased cost of water extraction resulting from decreased aquifer levels, making irrigation of crops more difficult. Increases in acreage under irrigation have occurred in counties of eastern New Mexico, including Union, Roosevelt and Lea counties. Those increases are offset by losses of irrigated farmland concentrated in counties that previously had the highest acreage under irrigation. More recently, proliferation of feedlots and dairies has facilitated an increase in the amount of center pivot operations used to produce livestock feed.

In addition to several Groundwater Conservation Districts in the panhandle of Texas, two interstate compacts affect water allocation in the ecoregion. The Canadian River Compact establishes a commission to allocate and apportion waters of that river in New Mexico, Texas and Oklahoma; and the Pecos River Compact establishes a commission to administer provisions for storage, diversion, and use of waters of that river in New Mexico and Texas. While groundwater management districts in New Mexico have adopted

policies to deny new water permits if water availability in surrounding wells would be significantly reduced, such restrictions are not possible under current Texas law.

Conversion to Agriculture

Conversion of land to crop production was identified by experts as a severe threat within numerous conservation areas, especially in Texas. The concentration of row crop production is primarily in the Northern and Southern Llano Estacado of Texas. Much of the conversion has already taken place and a comparison of acres used for crop production in 1997 to acres in crops in 2002 indicates only a slight increase for counties in the ecoregion (United States Department of Agriculture 2004). Declines in counties with already intense agriculture are offset by increases in acreage under cultivation in Mora, Curry and Roosevelt Counties in



Lands used for intensive agriculture

New Mexico; Hartley, Hemphill and Gray Counties in Texas; and Roger Mills County in Oklahoma. These counties are of particular relevance because conservation areas cover significant portions of them.

Major changes in Farm Bill programs may lead to many acres currently under the Conservation Reservation Program falling back into crop production. Likewise, the current focus on alternative fuel sources may create a higher demand for ethanol production and a renewed emphasis on corn production. Increased demand may also result from increased dairy production in the region. In order to ensure the maintenance of biodiversity, the region needs adequate implementation of the conservation strategies available through various agricultural policies.

Though conversion to agricultural production is only one of many threats to the viability of playa lakes in the region, development of effective strategies to protect the playas and grassland buffers around them need to be undertaken. Sedimentation of playas represents the most significant threat to playas (Luo et al. 1997), and this threat is associated with existing crop production as well as ongoing conversion of natural land cover. Currently, no regulatory mechanism exists to protect these important wetland resources, and incentives for landowners to maintain them are lacking, poorly implemented or inadequate. The development of Wetland Management Districts may be a viable means of permanently protecting some playas from numerous threats that they currently face. Permanent conservation protection of playa lakes (and other systems) by state, federal and non-governmental organizations has been minimal in this ecoregion.

Invasive Species

Threats from invasive species in this ecoregion are generally perceived as resulting from invasive non-native species that may dominate and/or disrupt natural systems, and the spread of native invasive shrub species into grasslands.

The species implicated in the former category include Russian olive (*Eleagnus angustifolia*) and saltcedar (*Tamarix* sp.) in riparian areas, and grasses such as rescuegrass (*Bromus catharticus*), barnyardgrass

(*Echinochloa crus-galli*), crested wheatgrass (*Agropyron cristatum*), Old World bluestem (*Bothriochloa ischaemum*), weeping lovegrass (*Eragrostis curvula*) and Kentucky bluegrass (*Poa pratensis*) elsewhere. Invasion of riparian areas by Russian olive and saltcedar has numerous consequences including increased evapotranspiration (affecting water availability) and modification of natural plant communities that would typically occupy the riparian zone.

The invasion of grasslands by native shrubs has been discussed earlier and reviewed by Van Auken (2000). Mesquite and several species of juniper are native species that have been implicated in this shift from open grasslands to habitats with more woody structure. Large areas of the eastern third of the ecoregion are currently dominated by mesquite woodlands and shrublands. *Juniperus* species important in this process vary with geographic location and include oneseed juniper (*J. monosperma*) to the north and west, redberry juniper (*J. pinchotii*) in the central portion of the ecoregion, Ashe's juniper (*J. ashei*) to the southeast, and eastern redcedar (*J. virginiana*) to the northeast.

Altered Fire Regime

As previously mentioned, fire ranks among the most important processes responsible for maintaining various prairie types throughout the ecoregion. It is acknowledged that Native Americans used fire extensively. Whether caused by lightning or man-ignited, fire played an important role in the shortgrass prairie. Fire helped maintain a mosaic of grasslands in various stages of disturbance, providing a heterogeneous landscape appropriate for the maintenance of biodiversity. Fire also served to reduce the invasion of woody species and discourage invasion by non-native species. The frequency and extent of fire on the landscape varied markedly across the region. Such variability was expressed on a large scale related to the more xeric conditions in the western portion of the ecoregion, where fuels accumulated more slowly resulting in lower fire frequency. In addition, on a more local scale, fire effects are related to topographic and edaphic conditions that are more or less conducive to the spread of fire and the production of adequate fuel for fire maintenance.

Experts identified altered fire regime as severe in conservation areas across the ecoregion. Several factors have resulted in the disruption of the natural fire process (Brockway et al. 2002). During the mid-to-late 19th century, the introduction and spread of livestock grazing led to a decrease in standing biomass of grass and a reduction of available fine fuels. Conversion of prairie to row crops, and the growth of transportation corridors destroyed and fragmented the existing prairies, disrupting the natural spread of fire further. Active fire suppression since the 1950s has resulted in the virtual elimination of fire as a natural process, especially at the scale at which it historically occurred. However, the severe wildfire season of spring 2006 (http://www.tx.nrcs.usda.gov/news/Highlights/panhandle_fires.html) shows that the Southern



Use of prescribed fire in the landscape

Shortgrass Prairie Ecoregion can support landscape level fires; these destructive wildfires also demonstrate a need to return balance to the ecoregion's fire regime, for the sake of biodiversity and human safety. Safe re-establishment of fire as an ecological process in the region will require significant application of prescribed fire.

Multiple Sources of Threat Leading to Habitat Fragmentation

Several threats were not particularly pervasive, but contribute cumulatively to significant habitat fragmentation. These include windfarm development, oil and gas development, transportation infrastructure and dam construction/operation. Wind resources that are likely to be developed with existing technology occur in a few areas within the ecoregion. In New Mexico, sites with wind power classes of greater than three (wind power density greater than 200 watts per square meter at 10 meters above ground) are found in a small area southwest of Tucumcari, and a north-south trending area, primarily in eastern Torrance County. In Texas, the greatest concentrations of areas with wind classes greater than three occur along the Canadian River and along the escarpment from south of Amarillo, north and east to Gray and Wheeler Counties. Many new windfarms are going in along the eastern Llano Estacado. Much of the area within the northern four tiers of counties has wind classes of four as well. In Oklahoma, development of wind resources may occur within or near the portfolio. The location of these wind resources are consistent with the threat status identified by experts for conservation areas in the ecoregion.

Oil and gas production is a significant contributor to local economies. Impacts from production facilities, as well as associated infrastructure, were identified for conservation areas in the northeastern portion of the ecoregion, along the Canadian River corridor, and in the southwestern portion of the ecoregion, associated with the Permian Basin. Transportation infrastructure was identified as a severe threat in a very limited number of conservation areas, which is consistent with the lack of significant urban centers. However, it contributes cumulatively to habitat fragmentation and is linked with multiple other threats, such as invasion of non-native species.

Dams, particularly those on the mainstems of major rivers, have a number of negative impacts: they change the hydrologic regime, alter sediment transport, modify riparian vegetation, and disrupt connectivity precluding upstream movement of aquatic species. Within the ecoregion, mainstem dams occur on every major river, including Sumner and Santa Rosa Dams on the Pecos; Conchas, Ute and Sanford Dams on the Canadian; Lake Tanglewood and Umbarger Dams on the Prairie Dog Town Fork of the Red River; Robert Lee and Lake J. B. Thomas Dams on the Colorado River; and De Cordova Bend and Morris Sheppard Dams on the Brazos River.

Next Steps

Conservation work in the Southern Shortgrass Prairie ecoregion will involve engagement with both internal and external partners. The ecoregion is shared by New Mexico, Oklahoma and Texas, with a small

portion in Colorado. The Conservancy has begun work in New Mexico, with recent emphasis in the Southern Llano Estacado, acquiring the Milnesand Prairie Preserve, and working with private landowners and public agencies to assist them in maintaining a sustainable economy while ensuring long-term survival of the numerous species and ecological systems. A plan for biodiversity conservation focusing on the Mescalero Sands Conservation Area of New Mexico has been initiated (The Nature Conservancy 2003). In Oklahoma, the Conservancy has developed a focused effort at the Four Canyon Preserve, with in-depth planning for biodiversity conservation at the larger scale of the Packsaddle Conservation Area (<http://www.oklanature.com/prod/Packsaddle.pdf>).

Federal (including the U.S. Fish and Wildlife Service, Bureau of Land Management, National Park Service, U.S. Forest Service and National Resource Conservation Service) and state wildlife agencies have been engaged in biodiversity conservation in the region. Partnerships have been established to address issues such as conservation of the lesser prairie-chicken, prairie dogs, invasive species and playa lakes. These partnerships should be strengthened and expanded, with an emphasis on assisting private landowners in their efforts to maintain biodiversity while retaining the rural lifestyle that is so emblematic of the region.

Regional experts have identified several areas of common interest that could be pursued in the region, including work on invasive plants, better local implementation of conservation programs within the Farm Bill, work on hydrologic modifications and groundwater management, and increasing landowner outreach to enhance conservation interest in communities. Conservation of playa lakes remains a high priority for the region, along with conservation of habitat for federally listed and candidate species (especially the lesser prairie-chicken).

Playa lakes are key resources for migratory waterfowl and shorebirds and occur in high concentrations within the ecoregion. These lakes occur within relatively small watersheds (average playa size is 6.3 hectares (Guthery and Bryant 1982)) and serve, in some cases, as islands of biodiversity in a matrix of agricultural production (Haukos and Smith 1994, Smith and Haukos 2002). These wetlands are also critical recharge features for the Ogallala Aquifer. The protection of these lakes will require action at multiple levels, using multiple strategies. The Playa Lakes Joint Venture is an organization whose mission is the conservation of playas, other wetlands and associated landscapes for the benefit of birds through partnerships. They have worked to accomplish conservation projects, develop information, and provide outreach for the benefit of playas and other resources in the region. Additionally, the development of a Wetland Management District may provide a useful vehicle for achieving conservation of this critical resource. The district, an administrative designation of the U. S. Fish and Wildlife Service, would allow the Service to hold, and with appropriations, purchase conservation easements. Similarly, saline lakes are highly significant features for numerous species of the ecoregion, and they too deserve focused attention.

Prairie dog towns are another feature commonly encountered on the prairie. These towns contribute to a heterogeneous landscape crucial for the maintenance of biodiversity. They provide habitat for several target species, including mountain plovers, swift foxes, ferruginous hawks and burrowing owls. More data are

required to effectively prioritize conservation of prairie dog towns. Data on prairie dogs are generally managed by the state wildlife agencies, although a cohesive strategy for conservation of prairie dog towns across the ecoregion will require continued coordination across state boundaries.

There remain significant data gaps concerning the distribution and viability of targets in the ecoregion. In many cases, this lack of data has resulted in the portfolios falling short of reaching goals for conservation targets. Coordinated aggregation of data from numerous sources is required to improve the information used in the development of assessments such as this one. The Natural Heritage Network is well positioned to collect information in a format compatible with the development of ecoregional assessments and other planning documents addressing the conservation of biodiversity. State Wildlife Grants, implemented through the state wildlife agencies, may be one avenue to fund development of this much-needed information (Oklahoma Department of Wildlife Conservation 2005, New Mexico Department of Game and Fish 2006, Texas Parks and Wildlife Department 2006).

The provisional aquatic conservation areas also highlight significant data gaps. These sites have been identified as potentially high quality aquatic sites through GIS analysis, but they require further investigation to provide the information required to conclusively identify them as portfolio sites. Field investigations will be required to confirm the presence of intact ecological systems and/or viable populations of target species.

Much work remains, but we hope that this assessment will provide a useful blueprint—a vision for conservation success—for all who wish to conserve the natural diversity of this unique and threatened ecoregion.



Blue Hole Cienega, New Mexico

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GLOSSARY

- Aquatic portfolio:** High priority aquatic conservation areas known to have healthy freshwater ecosystems and populations of species of conservation concern.
- Association:** A group of plant species with similar habitat requirements that are found growing together (alternative term: *plant community*).
- Biodiversity:** The full variety of species, communities and ecological systems or ecosystems found in a particular environment or habitat.
- Coarse-filter:** Term applied to the use of large scale targets in the design of conservation areas in order to maximize the likelihood that smaller scale species and communities will be incorporated into the design along with them.
- Coarse scale:** The coarse geographic scale at which some conservation targets occur and function; coarse scale for species is roughly defined as 20,000 - 1,000,000 hectares, 4th order and larger river networks, or >2,500-acre lakes. Coarse scale for terrestrial communities and ecological systems is 20,000 - 1,000,000 hectares, and for aquatic systems 4th order and larger river networks, or >1,000 hectares lakes. See also *local scale*, *intermediate scale* and *regional scale*.
- Community:** A level of biodiversity defined as an assemblage of species that re-occurs in similar environmental settings and is regulated by similar ecological processes. It is usually defined by vegetative characteristics.
- Conservation area:** A geographic area indicating the location of occurrence of conservation targets, resulting from an ecoregional assessment process; the area is *roughly* delineated to contain viable examples of conservation targets that are necessary to meet the conservation goals of those targets. Previously, The Nature Conservancy's preferred term was *area of biodiversity significance* (Groves et al. 2000). *Site* or *conservation site* were also used. The collection of conservation areas that results from a single ecoregional assessment is referred to as a *portfolio*. Conservation area boundaries resulting from an ecoregional assessment are preliminary, first approximations that are intended to be refined within conservation area plans.
- Conservation area plan:** Known also in The Nature Conservancy as *site conservation plan* or *conservation action plan*. An iterative, adaptive plan for one or more conservation areas or projects that identifies the area's conservation targets, their biological requirements, and their threats, and uses that foundation to develop two other components: (1) a series of strategies that will mitigate or abate the threats so that the viability of the targets is maintained or improved; and (2) a series of measures or indicators that determine whether the strategies were successful.
- Conservation goal:** In ecoregional plans or assessments, the ecologically based number and geographic distribution of occurrences of a target species, community, or ecological system that are needed to maintain the long-term viability of that target within an ecoregion; a conservation goal is a science-based, initial hypothesis of the minimum number and distribution of occurrences required, taking into account factors such as metapopulation requirements, the consequences of catastrophic events, and the need to maintain environmental and genetic variability.
- Conservation targets:** Specific components of biodiversity (such as individual ecological systems, plant communities, species, or other ecological features) around which ecoregional portfolios are designed and conservation strategies developed and prioritized; see also *target*.

Ecological community: A level of biodiversity; defined as an assemblage of species that re-occurs in similar environmental settings and is regulated by similar ecological processes. In practice, communities used in the conservation planning process are usually defined by vegetation characteristics.

Ecological integrity: See also *integrity*. Ecological integrity is a term applied to communities and ecosystem targets. It is the capacity to support and maintain a functional and ecological system that has its full range of expected biotic elements and processes. A target possessing integrity can withstand and recover from most natural and human perturbations.

Ecological system: A dynamic assemblage of native plant and/or animal communities that occur together on the landscape or in the water, and share ecological processes (e.g., fire, hydrology), underlying environmental features (e.g., soils, geology) or environmental gradients (e.g., elevation).

Ecoregion: A relatively large geographic area of land and water defined by similar ecological characteristics, such as similar climate, geology, landforms, or other shared environmental characteristics.

Ecoregional assessment: Formerly referred to as an *ecoregional plan*; sometimes also referred to as a *conservation blueprint*. A process of developing conservation priorities for an ecoregion using the following general steps: (1) identifying conservation targets that represent the full native biodiversity of the ecoregion; (2) setting conservation goals that specify the number and distribution of viable target occurrences needed to maintain the long-term viability of those targets in that ecoregion; (3) assembling or selecting a portfolio of conservation areas that efficiently meets all targets' conservation goals.

Edaphic: Of or pertaining to the soil.

Element occurrence: See also *target occurrence*. *Element occurrence* is the term used by NatureServe and its member programs to describe the documented geographic location or area where a particular species, community or other element of biodiversity was observed.

Fine-filter: Term applied to the use of small scale targets (generally species, as opposed to communities or systems) in the design of conservation areas in order to ensure that those species that cannot be reliably conserved through the coarse-filter approach are accounted for in the planning process.

Functional landscape: Similar to a *functional site*, but supports a large number of species over a large area.

Functional occurrence: For assessment purposes, multiple records of conservation targets that represent a single population, community, or ecological system occurrence were combined to create a functional occurrence.

Functional site: A site that maintains species and their supporting ecological processes. A functional conservation site typically supports a small number of species.

GIS: Geographic Information System. Using computer programs for capturing, storing, checking, integrating, analyzing and displaying data that is spatially referenced.

Global ranks, G-ranks: The conservation rank of an element within a given area is designated by a G (Global) or S (Subnational) as appropriate and followed by a rank number, 1 to 5. Species of conservation concern usually are those with global (G-ranks) ranks of 1-3; however, some species with lower global ranks may be of conservation concern in a particular area due to national, state, or local conditions. These ranks are assigned by NatureServe and the Natural Heritage Network.

Heritage: A term used loosely to describe the network of natural heritage programs and conservation data centers of North and South America, or to describe the standardized methodologies used by these programs.

These programs are members of NatureServe; see www.natureserve.org/visitLocal/index.jsp. See also *NatureServe*.

HUC8 – An acronym for the eight digit Hydrologic Unit Code. This is one of the hierarchical hydrologic units defined by the U. S. Geological Survey, and used to define watersheds or drainage basins in the United States.

Integrity: Term applied to communities and ecosystem targets. It is the capacity to support and maintain a functional and ecological system that has its full range of expected biotic elements and processes. A target possessing integrity can withstand and recover from most natural and human perturbations.

Intermediate scale: The intermediate geographic scale at which some conservation targets occur and function; intermediate scale for species, communities, or systems is roughly defined as 1,000 - 50,000 hectares, 1st - 3rd order stream networks, or medium-sized lakes. See also *local scale*, *coarse scale*, and *regional scale*.

Landscape: A heterogeneous land area of interacting ecosystems that are repeated in similar form throughout.

Landscape context: An integrated measure of two factors: the dominant environmental regimes and processes that establish and maintain target occurrences, and connectivity

Lentic: Refers to standing waters (e.g., lakes and ponds).

Local scale: The fine geographic scale at which some conservation targets occur and function; local scale for species, communities, or systems is roughly defined as <2,000 hectares, <10 river miles, or <100 hectare lakes. See also *intermediate scale*, *coarse scale*, and *regional scale*.

Lotic: Refers to flowing waters (e.g., creeks, streams and rivers).

Matrix community: An extensive plant community (usually about 4,950-1,235,000 acres) that encompasses islands of different plant community types and is (or was historically) dominant across the landscape. Plant community types within the matrix community may be *large patch* or *small patch*.

Mesic: Characterized by, relating to, or requiring a moderate amount of moisture..

Minimum Dynamic Area: The minimum area required to allow recovery from disturbance and support ecological processes necessary to sustain the community.

Natural community: An assemblage of species that repeatedly occurs under similar habitat conditions and environmental regimes. Also referred to as a *community* or an *ecological community*.

NatureServe: A non-profit conservation organization that provides the scientific information and tools needed to help guide effective conservation action. NatureServe and its network of natural heritage programs are the leading source for information about rare and endangered species and threatened ecosystems. See www.natureserve.org. See also *Heritage*.

Patch community, large: Plant communities that form large (usually about 120 to 4,950 acres) areas of vegetation. Large patch communities depend on less specialized landscape formations than do small patch communities (see *small patch community*).

Patch community, small: Plant communities that form small (usually about 2.5-120 acres), discrete areas of vegetation. Small patch communities often depend on specialized landscape formations or unusual microhabitats.

Portfolio: The suite of conservation areas within an ecoregion selected to represent and conserve the conservation targets and their genetic and ecological variation.

Provisional aquatic conservation areas: Potentially important aquatic conservation areas identified through GIS modeling that merit future survey and inventory efforts prior to inclusion in the portfolio.

Regional scale: The regional geographic scale at which some conservation target species occur and function; regional scale for species is roughly defined as >1,000,000 hectares and/or wide-ranging species or those that migrate long distances. See also local scale, intermediate scale and coarse scale.

Shreve order: Stream link ordering system defining the upstream/downstream order of water and material flow. 1st order links are at the top of the river network.

Stratification unit: A geographic subset of an ecoregion or other assessment area; typically, stratification units are delineated as nested, progressively smaller geographic units within the larger ecoregion. Spatial stratification is used to represent variation in each target's genetic and ecological expression across its geographic range within the ecoregion, and to ensure long-term viability of the target by buffering against degradation in subsets of its range.

Sustainable: Allowing the continued use and viability of natural resources.

Targets: Specific elements or components of biodiversity (such as individual ecological systems, plant communities, species, or other ecological features) around which ecoregional portfolios are designed and conservation strategies developed and prioritized; see also conservation targets.

Target occurrence: See also Element occurrence. The mapped location where a particular species, community, ecological system, or other element of biodiversity that is a target in an ecoregional assessment was observed or modeled.

Viability: The ability of a conservation target to persist for many generations or over long time periods.

~APPENDICES~

Appendix A1. Southern Shortgrass Prairie Ecological Systems

Systems names are in bold. Associations are followed by the CEGL (Community Element Global, prefix for element code) number. A plus sign preceding the CEGL indicates that the association had not previously been attributed to the ecoregion. No CEGL number indicates that the association is provisional and does not currently occur in the National Vegetation Classification System (TX = Texas expert recommended, NMHP = New Mexico Heritage Program recommended, NM = New Mexico expert recommended, TPWD = Frye et al. 1984). The G-Rank is assigned by NatureServe and its network of natural heritage programs. This rank is a numeric assessment of the association's relative imperilment and conservation status across its global range of distribution. Rank definitions can be found in Appendix B. *Although most ranks do not change frequently, the ranks shown here may have been updated since the ecoregional assessment was completed. The most current ranks should be obtained from the appropriate state natural heritage program. It is also possible that CEGL numbers have changed since the ecoregional assessment was completed.* The list of associations is not meant to be a complete inventory of associations of the system, but rather representative associations known to occur in the system.

Chihuahuan Desert Grasslands (Swales)

Associations included:

ASSOCIATION	CEGL	G-RANK
Pleuraphis mutica - Panicum obtusum Herbaceous Vegetation	1639	G3
Pleuraphis mutica - Bouteloua gracilis Herbaceous Vegetation	1638	GNRQ

Patch Size: Small to Large Patch

Distribution Pattern: Peripheral

Description: This system is often referred to as Tobosa swales and is frequently encountered in the Chihuahuan Desert Ecoregion. Occurrences are found in small catchments or depressions that allow water to spread and are typically encountered in the southwestern part of the ecoregion. These sites are characterized by generally clayey soils. May be mixed with Alkali Sacaton (*Sporobolus airoides*).

Chihuahuan Desert Gypsophilous Vegetation

Patch Size: Small Patch

Distribution Pattern: Disjunct

Description: This system would probably include members of the *Tiquilia hispidissima* Dwarf-shrubland Alliance such as *Tiquilia hispidissima* / *Sporobolus nealleyi* Dwarf-shrubland. The extent of this system in this ecoregion is limited. Occurrences of this system are better represented in the Chihuahuan Desert ecoregion.

Chihuahuan Desert Xeric Shrublands

Associations included:

ASSOCIATION	CEGL	G-RANK
Larrea tridentata / Dasyochloa pulchella Shrubland	1269	G5
Fouquieria splendens / Parthenium incanum Shrubland	1378	GNR
Larrea tridentata - Flourensia cernua Shrubland	1270	G5?
Larrea tridentata - Parthenium incanum Shrubland	1274	G5
Larrea tridentata / Bouteloua eriopoda Shrubland	1265	G4

Patch Size: Small Patch

Distribution Pattern: Peripheral

Description: This system is only represented in this ecoregion as peripheral, rather disjunct inclusions from the neighboring Chihuahuan Desert Ecoregion.

Cross Timbers Oak Forests and Woodlands

Associations included:

ASSOCIATION	CEGL	G-RANK
Quercus stellata - Quercus marilandica / Schizachyrium scoparium Woodland	2147	G4

Patch size: Large Patch

Distribution Pattern: Limited

Description: As the name implies, this system is better represented in the Crosstimbers and Tallgrass Prairie ecoregion to the east. It often occurs on relatively acid soil types and is most common in the eastern part of the ecoregion. It may occur on sandy soils or on redland rangesites. In the Southern Shortgrass Prairie, this system is poorly represented and occurs on sites on ridgetops. In this ecoregion, the presence of tallgrass prairie species suggests that overgrazing has not been an important factor for a given occurrence of this system.

Great Plains Carbonate Glades and Barrens

Associations included:

ASSOCIATION	CEGL	G-RANK
Lesquerella (gordonii, ovalifolia) - Schizachyrium scoparium Herbaceous Vegetation	4917	G2G3

Patch Size: Small Patch

Distribution Pattern: Limited

Description: This system occurs on thin-soiled situations, typically in areas of exposed limestone. Locally, this system may be referred to as calcareous balds and may host several interesting, rare, and endemic plant species. Locations with significant aerial extent of this system have been identified in the New Mexico portion of this ecoregion.

Great Plains Carbonate Glades and Barrens (cont'd)

Processes: The processes important for this system include geology and topography. This system occurs on limestone exposures with no, or little, soil development on convex topography.

Great Plains Freshwater Emergent Marshes

Associations included:

ASSOCIATION	CEGL	G-RANK
Juncus balticus - Agrostis gigantea Herbaceous Vegetation	NMHP	GM
Juncus effusus - Sporobolus airoides Herbaceous Vegetation	NMHP	G?
Schoenoplectus pungens - Distichlis spicata Herbaceous Vegetation	NMHP	G4?
Schoenoplectus pungens - Eleocharis palustris Herbaceous Vegetation	NMHP	G2G4
Schoenoplectus pungens - Equisetum laevigatum Herbaceous Vegetation	NMHP	G4
Schoenoplectus pungens Monotype Herbaceous Vegetation	NMHP	G3
Schoenoplectus tabernaemontani - Typha latifolia	NMHP	G5
Typha latifolia - Schoenoplectus pungens Herbaceous Vegetation	NMHP	G5
Sagittaria latifolia - Sagittaria longiloba Herbaceous Vegetation	4525	GNR

Patch Size: Small Patch

Distribution Pattern: Widespread

Description: Though historically this system was not well-represented in the Southern Shortgrass Prairie, it is now associated with riparian systems and may occur as small patches where canopy openings and calm water provide sufficient substrate and sunlight. Associations within the system may also be found in the Great Plains Playa Lakes system when deep water conditions persist, at least as moist soil, perennially. Playa systems, the dominant wetland system of the ecoregion, are treated separately. In the current landscape, occurrences generally represent man-made wetlands, such as stock tanks. Associations of this system may also occur in interdunal swales within deep sands habitats.

Great Plains Limestone Upland Forests and Woodlands

Associations included:

ASSOCIATION	CEGL	G-RANK
Juniperus ashei - Quercus (buckleyi, sinuata, fusiformis, pungens var. vaseyana) Woodland	2126	G4

Patch size: Large Patch

Distribution Pattern: Disjunct

Description: This community forms a matrix in the Edwards Plateau ecoregion and occurs on limestone within the Southern Shortgrass Prairie ecoregion. Representatives of this system are generally restricted to the southeastern part of the ecoregion (particularly in Palo Pinto and Stephens Counties, Texas) as disjunct occurrences of the matrix type from the Edwards Plateau. This system typically occurs on dissected Pennsylvanian limestone formations.

Great Plains Mixedgrass Prairies

Associations included:

ASSOCIATION	CEGL	G-RANK
<i>Bouteloua curtipendula</i> / <i>Yucca glauca</i> Herbaceous Vegetation	NMHP	G5?
<i>Bothriochloa saccharoides</i> - <i>Nassella leucotricha</i> Herbaceous Vegetation	TPWD	G?
<i>Hesperostipa neomexicana</i> - <i>Bouteloua curtipendula</i> Herbaceous Vegetation	1709	G3?
<i>Panicum obtusum</i> - <i>Panicum hallii</i> Herbaceous Vegetation	1575	GNR
<i>Pascopyrum smithii</i> - <i>Bouteloua gracilis</i> Herbaceous Vegetation	1578	G5
<i>Schizachyrium scoparium</i> - <i>Bouteloua curtipendula</i> Western Great Plains Herbaceous Vegetation	1594	G3
<i>Schizachyrium scoparium</i> - <i>Bouteloua curtipendula</i> - <i>Nassella leucotricha</i> Herbaceous Vegetation	4070	GNR
<i>Schizachyrium scoparium</i> - <i>Sorghastrum nutans</i> - <i>Bouteloua curtipendula</i> Herbaceous Vegetation		
<i>Schizachyrium scoparium</i> / <i>Yucca Glauca</i> Shrub Herbaceous Vegetation	NMHP	G?
<i>Sporobolus cryptandrus</i> - <i>Bouteloua curtipendula</i> Herbaceous Vegetation	NMHP	G5
<i>Sporobolus cryptandrus</i> / <i>Yucca glauca</i> Shrub Herbaceous Vegetation	NMHP	G5

Patch Size: Large Patch to Small Patch (historically, Matrix)

Distribution Pattern: Widespread

Description: Historically, this system primarily occurred in the eastern half of the ecoregion as an extension of the Central Mixedgrass Prairie. It has been invaded by *Prosopis glandulosa*, *Quercus* sp., and/or *Juniperus* sp. to form extensive shrublands (especially in the eastern half of the ecoregion), and very little mixedgrass prairie currently exists without shrub invasion. Grazing, fire, and climate interact as major processes within this system. Lack of fire and conversion to agricultural production has led to the reduction of the aerial extent of this system. To the west, as the climate becomes more arid, this system gives way to Great Plains Shortgrass Prairie, and may occur where edaphic conditions lead to more mesic conditions. Small patch occurrences of this system may exist in scattered locations, often within a mosaic of grasslands dominated by *Bouteloua gracilis*. Large patch occurrences often exist on slopes and on convex ridge lines of rolling hills. Overgrazing favors shortgrass species (Fuhlendorf and Smeins 1997) such as *Bouteloua gracilis*, *Bouteloua hirsuta*, and *Buchloe dactyloides* that occur as components of the system. In New Mexico, *Pascopyrum smithii* may codominate with *B. gracilis* in a narrow belt adjacent to foothills and mountains in an arc extending from Las Vegas to Raton and Clayton (Weaver and Albertson 1956). Other grass species that may occur in this system include *Digitaria californica*, *Bothriochloa barbinodis*, and *Hilaria belangeri*. Some intact and more extensive occurrences of this system can be found at elevations above the Great Plains Shortgrass Prairie on mountain slopes in the northwestern part of the ecoregion.

Processes: Climate, elevation and edaphic factors are important in the formation of this system. This system may occur as a band of vegetation on mountain slopes above Great Plains Shortgrass Prairie in New Mexico. It often occurs in moderately deep to deep loamy uplands. The progressively drier climate grading from east to west results in a shift in dominance of this system, from being a fairly widespread system east of the caprock in Texas (at least historically), to being limited to more mesic situations mediated by edaphic and elevational factors to the west. Fire and grazing have been important processes driving patch dynamics within this system. Historically, fire and grazing probably occurred at a scale somewhat smaller than the scale of these processes in the Great Plains Shortgrass Prairie system of this ecoregion, due to increased topographic variation where this system predominated. This increased topographic variation likely led to variable local wind conditions and fuel moistures. On the other hand, bison herd size and movement patterns are thought to be similar to those found in the shortgrass regions of the western part of the ecoregion. Given the smaller scale processes, a minimum dynamic area of 100,000 acres (~40,000 ha) should be adequate to capture the normal range of scale of disturbance for this system.

Great Plains Playa Lakes

Associations included:

ASSOCIATION	CEGL	G-RANK
Heteranthera limosa - Bacopa rotundifolia - Sagittaria latifolia Herbaceous Vegetation	2279	GNR
Sagittaria latifolia - Sagittaria longiloba Herbaceous Vegetation	4525	GNR
Pascopyrum smithii - Buchloe dactyloides - (Phyla cuneifolia, Oenothera canescens) Herbaceous Vegetation	2038	G2G3
Schoenoplectus americanus - Eleocharis spp. Herbaceous Vegetation	1586	GNR
Rorippa sinuata - Pascopyrum smithii Herbaceous Vegetation	NMHP	G3?
Rorippa sinuata - Eleocharis palustris Herbaceous Vegetation	NMHP	G3?

Patch Size: Small Patch

Distribution Pattern: Limited

Description: In some areas of the Southern Shortgrass Prairie, playa lakes may occur at a density of nearly 1 per square mile. Playa lakes occur in areas of limited topographic relief and are closed basins to which surrounding lands drain. Vegetation of the playa lakes is dependent on wet-dry cycles to rejuvenate, but other disturbances such as overgrazing can cause a decrease in species diversity. *Pascopyrum smithii*, *Ambrosia grayi*, *Buchloe dactyloides*, *Chenopodium leptophyllum*, *Eleocharis macrostachya*, *Helianthus ciliaris*, *Phyla nodiflora*, *Malvella leprosa*, and *Oenothera canescens* are some of the more common components of the flora (Smith and Haukos 2002). Conversion to agricultural crops has also led to a decrease in the abundance, distribution, and quality of this system. Landscape context for this system is often dictated by the intensity of agricultural production in the vicinity of occurrences. This is extremely important, since sedimentation is a highly significant threat to this system (Luo et al. 1997). In addition to landscape context, hydrology is a key factor determining the viability and species composition of occurrences of this system. Depth, frequency, and duration of flooding is a major determinant of the communities (both plant and animal) present. Occurrences of this system, especially those occurring in relatively intact landscapes, may be important for assemblages of amphibian species. In addition, this system is a critical resource for waterfowl and shorebirds in the ecoregion. Vegetation within playas appears to occur along a moisture gradient forming concentric bands of vegetation around the central (more moist) playa center (Wood and Muldavin 2000), though this banding may shift temporally as soil-moisture conditions change (Haukos and Smith 1994). Haukos (unpublished manuscript) has done a thorough analysis of 224 playas and this analysis suggests that vegetation characteristics can be used to group playas into 12 major groups.

Great Plains Saline Wet Prairies and Meadows

Associations included:

ASSOCIATION	CEGL	G-RANK
Sporobolus airoides Monotype Herbaceous Vegetation	1688	GUQ
Distichlis spicata Monotype Herbaceous Vegetation	NMHP	G?

Patch Size: Small Patch

Distribution Pattern: Widespread

Description: This system is often associated with riparian areas, especially in the northwestern portion of the ecoregion. *Sporobolus airoides* and *Distichlis spicata* are species commonly associated with this system. In these floodplain situations, secondary grass species include *Muhlenbergia asperifolia* and *Puccinellia nuttalliana* (= *P. airoides*). *Sueada moquinii* (= *S. torreyana*) and *Allenrolfea occidentalis* occur on the most alkaline sites. *Sarcobatus vermiculatus* may also be a common shrub component (Weaver and Albertson 1956). These wet prairies and meadows may also occur in basins where alkaline conditions exist. Constituents of this system may also occur within the Southern Great Plains Saline Lakes system.

Great Plains Shortgrass Prairies

Associations included:

ASSOCIATION	CEGL	G-RANK
<i>Bouteloua curtipendula</i> - <i>Bouteloua (eriopoda, gracilis)</i> Herbaceous Vegetation	+2250	G4
<i>Bouteloua eriopoda</i> - <i>Bouteloua curtipendula</i> Herbaceous Vegetation	+1747	G2
<i>Bouteloua eriopoda</i> - <i>Bouteloua gracilis</i> Herbaceous Vegetation	+1748	G2
<i>Bouteloua eriopoda</i> - <i>Bouteloua hirsuta</i> Herbaceous Vegetation	+1749	G2
<i>Bouteloua eriopoda</i> - <i>Tridens muticus</i> Herbaceous Vegetation	TX	G?
<i>Bouteloua gracilis</i> – <i>Bouteloua curtipendula</i> Herbaceous Vegetation	+1754	G5
<i>Bouteloua gracilis</i> – <i>Bouteloua hirsuta</i> Herbaceous Vegetation	+1755	G3G4
<i>Bouteloua gracilis</i> – <i>Buchloe dactyloides</i> Herbaceous Vegetation	1756	G?
<i>Bouteloua gracilis</i> – <i>Pleuraphis jamesii</i> Herbaceous Vegetation	+1759	G2G4
<i>Bouteloua gracilis</i> Herbaceous Vegetation	+1760	G4Q
<i>Bouteloua gracilis</i> – <i>Panicum obtusum</i> Herbaceous Vegetation	NMHP	G4?
<i>Bouteloua hirsuta</i> – <i>Bouteloua curtipendula</i> Herbaceous Vegetation	1764	G4
<i>Buchloe dactyloides</i> Monotypic Herbaceous Vegetation	NMHP	G5
With Subshrubs		
<i>Bouteloua gracilis</i> / <i>Yucca glauca</i> Shrub Herbaceous Vegetation	NMHP	G5
<i>Bouteloua gracilis</i> – <i>Mimosa aculeaticarpa</i> Shrub Herbaceous Vegetation	TX	G5
<i>Bouteloua gracilis</i> – <i>Buchloe dactyloides</i> / <i>Opuntia imbricata</i> Shrub Herbaceous Vegetation	TX	G5
<i>Bouteloua hirsuta</i> – <i>Bouteloua gracilis</i> / <i>Yucca glauca</i> Shrub Herbaceous Vegetation	NMHP	G5
<i>Bouteloua hirsuta</i> / <i>Yucca glauca</i> Shrub Herbaceous Vegetation	NMHP	G4
<i>Bouteloua hirsuta</i> / <i>Dalea formosa</i> Shrub Herbaceous Vegetation	NMHP	G4
<i>Buchloe dactyloides</i> / <i>Yucca glauca</i> Shrub Herbaceous Vegetation	NMHP	G5
<i>Hesperostipa neomexicana</i> / <i>Dalea formosa</i> Shrub Herbaceous Vegetation	NMHP	G3?
<i>Hesperostipa neomexicana</i> / <i>Yucca glauca</i> Shrub Herbaceous Vegetation	NMHP	G3?
<i>Prosopis glandulosa</i> / <i>Pleuraphis mutica</i> Shrub Herbaceous Vegetation	+1641	G5

Patch Size: Matrix

Distribution Pattern: Widespread

Description: This system forms the matrix of the western half of this ecoregion. It forms extensive areas of shortgrass prairie and is frequently converted to crops, especially in areas of the Llano Estacado. More xeric sites are likely to be dominated by various species of *Bouteloua* such as *B. gracilis* or *B. eriopoda*. In areas where grazing is limited or conditions are more mesic, mixedgrass (or even tallgrass) species become more likely to occur in the system. Several of the associations in this system have subshrubs and tall shrubs as codominants. It may be necessary to pull these communities out of this system and erect a separate system. Some of the shrub species that may be important components in these shortgrass steppes are *Prosopis glandulosa*, *Krascheninnikovia lanata* (*Eurotia lanata*), *Nolina microcarpa*, *Opuntia imbricata* and other *Opuntia* sp. (increasers) and *Dalea formosa*. On shallow, often caliche, soils (including hard scabble) *Yucca glauca* may be common. *Gutierrezia sarothrae* may be abundant and is a common indicator of overgrazing. Other grasses that may occur within this system are *Tridens muticus* and *Aristida purpurea*. Occurrences of this shortgrass system with tall shrubs may occur as *Bouteloua gracilis*, and sometimes *Bouteloua hirsuta*, grasslands in valleys between Pinyon-Juniper ridges where deeper soils have accumulated. This system also includes areas of the Capitan Mountains in New Mexico that are dominated by a species of *Aristida purpurea* and *Hesperostipa comata* with scattered *Yucca*, *Acacia*, and *Opuntia* (cholla).

Great Plains Shortgrass Prairies (cont'd)

Processes: The processes influencing the distribution and condition of this system are very large in scale. The major processes influencing this system include climate, fire, and grazing. The scale and frequency of fire has been markedly reduced from pre-settlement conditions (Umbanhowar 1996). Because of the more xeric climatic conditions that shape the development of this system, slow development of adequate fuel loads--supporting large-scale fire--may decrease the fire frequency in the system relative to other grasslands systems of the Great Plains. The relative homogeneous nature of large areas of the system, and the lack of significant topographic variation over large areas, likely led to extensive fires (Ford 2000). Some fires have been noted to extend for more than a hundred miles in parts of the Texas panhandle and adjacent areas (Joern and Keeler 1995). Weniger (1984) also references explorers' reports of fires of this scale in the early 1800's. Likewise, bison herds of hundred of thousands of animals have been mentioned in reports of early explorers (Doughty 1983). Herds of this scale were no doubt sufficient to reduce fuels, and thus dramatically influence the pattern and frequency of fires in the ecoregion. In addition, the direct effects of grazing and trampling likely occurred at a large scale. Fire and grazing may have occurred, not infrequently, at a scale of close to a million acres (~400,000 ha). And this does not incorporate the frequency of recurrence that may have been on the order of once every five years. These processes are not likely to occur naturally at this scale in the ecoregion under present circumstances. It may be necessary to think of the scale of conservation actions as a function of the ability to effectively replicate some of these important processes through management. A scale of about 50,000 acres (~20,000 ha) may reflect an areal extent of smaller, perhaps more frequent, disturbances resulting from fire and grazing. Given the likely periodicity of such smaller scale disturbances, a minimum dynamic area of 250,000 acres (~100,000 ha) may reflect a more workable scale. This may not reflect the true minimum dynamic area for the system, which could be in the millions of acres.

Great Plains Tallgrass Prairies

Associations included:

ASSOCIATION	CEGL	G-RANK
Tripsacum dactyloides - Panicum virgatum - Sorghastrum nutans Herbaceous Vegetation	2217	G1
Andropogon gerardii - Schizachyrium scoparium Herbaceous Vegetation		
Andropogon hallii - Calamovilfa gigantea Herbaceous Vegetation	4016	G2G3

Patch Size: Intermediate/Local

Distribution Pattern: Widespread

Description: This system occurs in areas where topographic and edaphic factors have produced more mesic conditions. This may be on deep sandy soils where grazing pressure is not extreme. Occurrences of this system may also be associated with riparian systems where topographic position leads to more mesic conditions. While these mesic conditions may occur more frequently in the eastern part of the ecoregion, this system may occur as interesting, less frequent, small patch inclusions within the Great Plains Shortgrass Prairie as well. For instance, on the predominately silty clay loam of volcanic derivation in the northeast corner of New Mexico, *Andropogon gerardii*, *Schizachyrium scoparium*, and *Bouteloua curtipendula* may dominate with secondary grasses such as *Panicum virgatum* and *Sorghastrum nutans* (Weaver and Albertson 1956). The presence of this system is an indicator that grazing is not occurring at substantial levels. With deterioration of condition, tall and mid-grass species are replaced by shortgrass species. Associations found in this system may also be found as small inclusions within other systems, such as the Great Plains Deep Sands Shrublands and Great Plains Riparian Forests and Woodlands.

Processes: The processes important for this system include edaphic, climatic, and topographic factors, as well as fire and grazing. The more xeric climate of the ecoregion (compared to prairie ecoregions to the east), means that this system occurs in more restricted to mesic edaphic and topographic situations. It is commonly associated with

Great Plains Tallgrass Prairies (cont'd)

deep sands, along drainages, and in areas that have not been heavily impacted by grazing. This system occurs at smaller scales in this ecoregion than in other ecoregions.

Montane Riparian Woodlands and Shrublands

Associations included:

ASSOCIATION	CEGL	G-RANK
Populus angustifolia - Juniperus scopulorum Woodland	2640	G2G3

Patch Size: Linear

Distribution Pattern: Peripheral

Description: This riparian system occurs almost exclusively within the Montane Ecotone stratification unit of the ecoregion. It is closely tied to elevations above 1800 m along the mountain front, and corresponds to the lower elevation representatives of the montane riparian vegetation described by Dick-Peddie (1993).

Pinyon - Oak - Juniper Woodlands and Shrublands

Associations included:

ASSOCIATION	CEGL	G-RANK
Juniperus (monosperma, pinchottii) - Quercus mohriana Woodland	~2120	GNR
Juniperus monosperma / Bouteloua curtipendula Woodland	0708	G5
Juniperus monosperma - Rhus trilobata / Schizachyrium scoparium Woodland	2121	GNR
Juniperus pinchotii / Bouteloua curtipendula - Bouteloua hirsuta Woodland	4940	GNR
Juniperus monosperma - Dalea formosa / Bouteloua curtipendula Shrubland	TX	
Juniperus monosperma / Bouteloua hirsuta Woodland	0711	GNR
Juniperus monosperma / Cercocarpus montanus Woodland	0713	GNR
Juniperus scopulorum / Muhlenbergia montana Woodland	NMHP	
Quercus mohriana - Juniperus pinchotii / Bouteloua curtipendula Shrubland	2173	G4
Pinus edulis - Juniperus monosperma / Bouteloua gracilis Woodland	+2151	G5
Pinus edulis / Quercus X pauciloba Woodland	+0793	G5
Juniperus pinchotii / Bouteloua gracilis Woodland	2122	G4

Patch Size: Large Patch

Distribution Pattern: Widespread

Description: This system occurs on mesas and low ridges on the Llano Estacado. At higher elevations, where moisture becomes more available, *Pinus edulis* becomes more abundant. Juniper woodlands can be found, with various codominants, on escarpments throughout much of the ecoregion. These escarpment woodlands occur in areas dominated by grassland systems where relatively high moisture conditions result from cracks and fissures in bedrock where moisture accumulates (Dick-Peddie 1993). In parts of the ecoregion, *Juniperus* woodlands may have *Quercus mohriana* as the codominant. *Juniperus pinchotii* dominates in the eastern part of the ecoregion, while *Juniperus monosperma* dominates this system to the west. In this ecoregion, this system may be better developed to the west, in New Mexico and along caprock escarpments to the east. At lower elevation, this system grades into *Juniperus*-dominated savannah and the Southern Great Plains Shortgrass Prairie system.

Pinyon - Oak - Juniper Woodlands and Shrublands (cont'd)

Processes: Elevation, geology, climate, grazing and fire have been suggested as major processes for this system. Caprock escarpments, both in the eastern and western part of the ecoregion, are characterized by occurrences of this system. In addition, this system occurs on slopes at elevations above those where grasslands predominate. Fire serves to limit the spread of this system into surrounding grassland systems. The savannah transition between this system and those grasslands systems at lower elevations is restricted with the occurrence of fires at historic frequency and scale. In addition, under heavy grazing, the competitive advantage enjoyed by grasses is lost and junipers can encroach into grasslands systems. Erosion resulting from grazing can also result in local moisture catchments, thus leading to the development of juniper in areas that would otherwise be too dry. In some areas it may also be true that current perceptions of juniper encroachment into adjoining grasslands may actually result from re-establishment of juniper in areas where it had been removed to improve pasture conditions and to provide fuel and building materials.

Rocky Mountain Dry Ponderosa Pine Forests and Woodlands

Associations included:

ASSOCIATION	CEGL	G-RANK
Pinus ponderosa / Bouteloua gracilis Woodland	0848	G4
Pinus ponderosa / Schizachyrium scoparium Woodland	0201	G3G4

Patch Size: Small Patch

Distribution Pattern: Peripheral

Description: This system may occur as small disjunct patches in New Mexico, in higher elevations of hills in the northwestern part of the ecoregion and in the Mesa de Maya site of the adjoining Central Shortgrass Prairie ecoregion. Well-developed and extensive occurrences of the system occur in the vicinity of Mills Canyon, in the northwestern portion of the ecoregion. Generally, this system is not well-developed in the ecoregion, but constitutes a system of significant conservation interest. It occurs at elevations below the Rocky Mountain Subalpine Woodlands in the Sierra Grande, occupying an area of about 15 square kilometers (Hubbard 1977).

Rocky Mountain Subalpine Forests and Woodlands

Patch Size: Large Patch

Distribution Pattern: Disjunct

Stratification Unit Distribution: Capulin High Plains

Description: This system is represented by woodlands of *Picea engelmannii* in Sierra Grande and occupies an area of about 5 square kilometers (Hubbard 1977). This woodland occurs at elevations above 2300 meters. Early seral stages of the woodland are dominated by *Populus tremuloides*. Other woody species include species of *Salix*, *Rosa*, *Ribes*, and locally, *Acer glabrum*. This system forms a mosaic with the Southern Rocky Mountain Grasslands system.

Southern Great Plains Deep Sand Shrublands

Associations included:

ASSOCIATION	CEGL	G-RANK
Artemisia filifolia / Andropogon hallii Shrubland	1459	G3?
Artemisia filifolia / Bouteloua (curtipendula, gracilis) Shrubland	2176	GNR
Artemisia filifolia / Schizachyrium scoparium - Andropogon hallii Shrubland	2178	GNR
Artemisia filifolia / Sporobolus cryptandrus Shrubland	2179	GNR
Artemisia filifolia / Bouteloua hirsuta Shrubland	NMHP	G4?
Artemisia filifolia / Hesperostipa neomexicana Shrubland	NMHP	G4?
Quercus havardii - Quercus mohriana - Quercus prinoides / Schizachyrium scoparium Shrubland (dropped from classification)	2172?	G?
Quercus havardii / Sporobolus cryptandrus - Schizachyrium scoparium Shrubland	2171	G3
Quercus havardii - Artemisia filifolia Shrubland	TX	G3
Quercus havardii - Juniperus (monosperma, scopulorum) Shrubland		
Prosopis glandulosa / Quercus havardii / Bouteloua hirsuta - Aristida purpurea Shrubland	NM	
Prosopis glandulosa / Quercus havardii / Aristida purpurea - Sporobolus cryptandrus Shrubland	NM	
Prunus angustifolia / Schizachyrium scoparium Shrubland	2180	GM
Andropogon hallii - Calamovilfa gigantea Herbaceous Vegetation	4016	G2G3
Sapindus saponaria var. drummondii Woodland	+4535	GNR

Patch size: Large Patch

Distribution Pattern: Limited

Description: This shrubland occurs on deep sands such as shifting dunes of the southwestern corner of the ecoregion on the Seminole Sandsheet. It also occurs in areas of deep sands in the northeastern corner of the ecoregion and along the caprock escarpment where *Quercus havardii* may occur along with *Prosopis glandulosa* as an important shrub component. This system is often associated with the deep sands on the shoulders of post-Pleistocene floodplains (Dick-Peddie 1993), such as those of the Pecos and Canadian Rivers, and their tributaries. In some areas, this system may result from overgrazing of Great Plains Tallgrass Prairies on deep sands which may occupy such sites. Early successional stages in this system may have *Prosopis glandulosa* as an important dominant where it occurs as low *Prosopis* coppice dunes. Grasses that may be commonly found in this system include *Andropogon hallii*, *Sporobolus cryptandrus*, *Aristida purpurea*, *Calamovilfa gigantea*, *Schizachyrium scoparium*, *Bouteloua curtipendula*, *B. gracilis*, and *B. hirsuta*. Other shrubs that may be found in the system include *Rhus trilobata*, *Prosopis glandulosa* and *Prunus angustifolia*. Some occurrences of this system are important habitat for Lesser Prairie Chickens (*Tympanuchus pallidicinctus*) in the ecoregion. Small patches of *Sapindus saponaria* var. *drummondii* Woodland occur in small catchments within the system. Interdunal swales may also have *Salix* species where moisture permits.

Processes: The major processes influencing the distribution and condition of this system are climatic and edaphic factors, though under current conditions, grazing greatly affects condition. This system is defined by the deep sands associated with dune systems and ancient floodplains. Fire may be a major determinant of dominance in this system, as is grazing. Early successional phases of the system are thought to be dominated by *Artemisia filifolia*, while *Quercus havardii* shrublands are thought to develop over time following disturbance. *Quercus havardii* will, however, resprout after fire and is not eliminated by it. This transitional pathway is not clearly represented in all locations, but represents one of many pathways that may be possible. Others have suggested that disturbance to *Q. havardii* shrublands may result in significant increases in *Prosopis glandulosa* in the shrubland. Grazing also influences the grass components of the system, favoring species such as *Aristida purpurea*, *Sporobolus cryptandrus*, and *Leptoloma cognatum*. Species such as *Andropogon hallii*, *Calamovilfa gigantea*, and *Schizachyrium scoparium* decrease with grazing.

Southern Great Plains Mesquite Woodlands and Shrublands

Associations included:

ASSOCIATION	CEGL	G-RANK
Prosopis glandulosa / Atriplex canescens Shrubland	+1382	G5
Prosopis glandulosa / Muhlenbergia porteri Shrubland	1511	G5
Prosopis glandulosa var. glandulosa / Bouteloua gracilis – Buchloe dactyloides Shrubland	1383	G5
Prosopis glandulosa / Pleuraphis mutica - Buchloe dactyloides Shrubland	+1641	G5
Prosopis glandulosa / Bouteloua curtipendula - Nassella leucotricha Woodland	2133	G3?
Prosopis glandulosa / Bouteloua curtipendula Shrubland	2194	GNR
Prosopis glandulosa - Ziziphus obtusifolia Shrubland	4939	G2G3
Prosopis glandulosa / Bouteloua gracilis - Buchloe dactyloides Shrubland	3877	G?

Patch size: Large Patch to Matrix

Distribution: Limited?

Description: This system is well represented in the Southern Shortgrass Prairie ecoregion. In many cases it occurs in areas which have been subjected to overgrazing and may occupy sites that would normally be occupied by grassland types. This is a widespread type in much of the ecoregion with understory species common to surrounding grassland systems. This system may currently occupy up to 20% of the ecoregion, while it is likely that it historically occupied closer to 5% of the ecoregion. The dominance of this system is particularly evident in the eastern part of the ecoregion, in Texas, where nearly 7 million hectares may be characterized as some type of mesquite shrubland (from Frye et al. 1984). *Prosopis glandulosa* woodlands, co-dominated by *Ziziphus obtusifolia*, are particularly common in the eastern part of the ecoregion. *Prosopis* woodlands with shortgrass species as the understory become more frequent in the western part of the ecoregion. Heavy grazing in this system typically brings about an understory with *Opuntia* species as a significant component. By decreasing available fine-fuel (that would otherwise support an adequate fire cycle), spreading *Prosopis* seed, and reducing above and below-ground biomass of the grass cover, overgrazing has led to the increase of the cover of *Prosopis glandulosa* in many areas. This system now shares dominance in the landscape of the Texas Southern Shortgrass Prairie with agricultural crops. Historically, this system probably occurred as a natural component on sites with more fertile soils and along drainages. While this woodland may be anthropogenic in many cases, it does provide habitat for certain zoological species of interest. Occurrences of this system could now be considered, in many cases, to be restoration sites for Shortgrass and Mixedgrass Prairies. However, this system has established a steady state condition and will require significant effort to achieve restoration of historical processes.

Processes: The processes which currently determine the distribution of this system are primarily anthropogenic. Historically, the system was controlled by fire (which limited the development of woody cover) and edaphic and topographic factors (with the system occupying deep alluvial soils in relatively low topographic conditions along broad valley floors). With the introduction of cattle and the removal of fire, along with other factors (Van Auken 2000), this system has spread and now occupies areas previously occupied by Mixedgrass and Shortgrass prairies. Reintroduction of fire, even at historic scales and frequencies, is not likely to achieve the restoration of the coverage of historic systems currently occupied by mesquite woodlands and shrublands. It may be necessary to incorporate the use of herbicides to initially control the coverage of mesquite, followed by the reinstatement of fire regimes. The scale and frequency of fire would not serve as a recurring, regenerative process in this system, but would restrict the size and distribution of the system to historic patterns. However, fire within the current system would tend to cause sprouting from top-killed trees, resulting in thicker, and perhaps lower stature, mesquite woodlands or shrublands.

Southern Great Plains Riverfront and Scour Woodlands

Note: This system was not selected as a separate target. It is considered a fine-scale system nested within the Southern Great Plains Riparian Forest, Woodlands and Shrublands system.

Associations included:

ASSOCIATION	CEGL	G-RANK
Populus deltoides - Salix nigra Woodland	4919	G3G4Q

Patch Size: Linear

Distribution Pattern: Widespread

Description: This occurs as strands of woody vegetation along river courses and drainages, often on gravel or cobble substrates.

Southern Great Plains Riparian Forests, Woodlands and Shrublands

Associations included:

ASSOCIATION	CEGL	G-RANK
Populus deltoides / Panicum virgatum - Schizachyrium scoparium Woodland	1454	G2
Populus deltoides / Andropogon gerardii - Panicum virgatum Sparse Woodland		
Populus deltoides / Bouteloua curtipendula Woodland	NMHP	G3?
Populus deltoides / Equisetum laevigatum Woodland	NMHP	G3?
Populus deltoides - Salix amygdaloides Woodland	NMHP	G?
Populus deltoides - Salix exigua Woodland	2685	G3
Populus deltoides Sparse Woodland	NMHP	G2?
Populus deltoides / Sporobolus airoides Woodland	NMHP	G3
Populus deltoides - (Salix amygdaloides) / Salix (exigua, interior) Woodland	0659	G3G4
Ulmus americana - Celtis (laevigata, reticulata) - Sapindus saponaria var. drummondii Woodland		
Salix exigua / Muhlenbergia rigens Shrubland		
Salix exigua / Barren Shrubland	+1200	G5
Sapindus saponaria var. drummondii Woodland	+4535	GNR
Juglans microcarpa - Sapindus saponaria var. drummondii Woodland		

Patch Size: Linear

Distribution Pattern: Widespread

Description: This system occurs along riparian corridors of the ecoregion. In many areas the system has been impacted by removal of tree species for fuel and building material. In addition, non-native species such as *Elaeagnus angustifolia* (Russian olive) and *Tamarix* sp. have impacted the system throughout the region. Modification of the flooding regime on rivers and tributaries has had deleterious effects on this system by changing the processes (such as over-bank flooding) by which this system maintains itself. Grazing also effects maintenance of this system, as young canopy trees are selected by grazing herbivores. This system is also shrinking and degrading due to senescence of the overstory and drought stress resulting from de-watering of aquifers and lack of over-bank flooding necessary to allow germination and rejuvenation.

Southern Great Plains Saline Lakes

Associations included:

ASSOCIATION	CEGL	G-RANK
Distichlis spicata - (Hordeum jubatum, Poa arida, Sporobolus airoides) Herbaceous Vegetation	2042	G3
Schoenoplectus americanus - Carex spp. Herbaceous Vegetation	4144	GNR
Sporobolus airoides Monotype Herbaceous Vegetation	1688	GUQ
Distichlis spicata Herbaceous Vegetation	1770	G5
Distichlis spicata – Sarcocornia utahensis Herbaceous Vegetation		G5?

Patch Size: Large Patch

Distribution Pattern: Limited

Description: This system occurs in depressional topographic features with sufficient moisture available, but with significant salt accumulations resulting from leaching of salts and subsequent evaporation. Freshwater springs are often associated with this system. *Distichlis spicata*, *Salicornia* sp., and *Sporobolus airoides* are common constituents of the system, with *Tamarix* sp. becoming a common invader. Halophytic forbs are common in the lower portions of these situations, with *Distichlis spicata* and *Sporobolus airoides* occupying areas around the edges. *Atriplex canescens* is a common constituent of this system, but typically does not occur as extensive shrublands. *Sporobolus airoides* and *Muhlenbergia asperifolia* may also be present in this system. Some saline lake systems may have extensive areas dominated by *Sporobolus airoides* surrounding them, and in some cases these sacaton flats may occur in the absence of actual lakes. Such sacaton flats typically occur under similar climatic/topographic/edaphic conditions to alkaline lakes and are maintained in this system, though they could be considered as a separate grassland system. Certain occurrences of this system may be important for several breeding shorebirds, including the Snowy Plover (*Charadrius alexandrinus*) and American Avocet (*Recurvirostra americana*) (Conway et al. 2005), as well as providing significant roosting sites for Sandhill Cranes (*Grus canadensis*). Extensive unvegetated areas associated with these saline lakes should be recognized as important constituents of the system, particularly those flats associated with some open water that provide foraging habitat for many shorebirds (Andrei et al. 2006). Water withdrawal for agricultural uses is negatively impacting occurrences of this system through its influence on the freshwater springs that maintain them.

Southern Great Plains Saline Shrublands

Associations included:

ASSOCIATION	CEGL	G-RANK
Atriplex canescens / Sporobolus airoides Shrubland	1291	G5?
Atriplex canescens / Pleuraphis jamesii Shrubland	1288	G3G4
Atriplex canescens / Bouteloua gracilis Shrubland	1283	G3

Patch Size: Small Patch (in this ecoregion)

Distribution Pattern: Peripheral

Description: This system occurs in xeric areas of high salinity or alkalinity, particularly in the southwestern corner of the Southern Shortgrass Prairie, and is more common in the Chihuahuan Desert. In this ecoregion, this system is relatively limited in distribution. Representatives probably occur as relatively small patches, and may be a result of disturbance. It also may occur around the margin of occurrences of the Southern Great Plains Saline Lakes system.

Southern Rocky Mountain Grasslands

Associations included:

ASSOCIATION	CEGL	G-RANK
Festuca arizonica - Muhlenbergia montana Herbaceous Vegetation	1606	G3

Patch Size: Small Patch

Distribution Pattern: Disjunct

Description: This system forms a mosaic at high elevations in the Sierra Grande, and perhaps other high elevations in the western part of the ecoregion. These grasslands form a mosaic with occurrences of the Rocky Mountain Dry Ponderosa Pine Forests and Woodlands and the Rocky Mountain Subalpine Woodlands systems, and species present in this system may occur as understory species in these other systems. It is also closely related to representatives of the *Juniperus scopulorum* - *Muhlenbergia montana* Woodland Association of the Pinyon - Oak - Juniper Woodlands and Shrublands system.

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Appendix A2. Crosswalk to NatureServe Ecological Systems

SSP Terrestrial Ecological System Name	NatureServe Ecological System Name (System Code)
Chihuahuan Desert Grasslands (swales)	Chihuahuan-Sonoran Desert Bottomland and Swale Grassland (CES302.746)
Chihuahuan Desert Gypsophilous Vegetation	Chihuahuan Gypsophilous Grassland and Steppe (CES302.732)
Chihuahuan Desert Xeric Shrublands	Chihuahuan Mixed Desert and Thorn Scrub (CES302.734), Chihuahuan Creosotebush Desert Scrub (CES302.731)
Crosstimbers Oak Forests and Woodlands	Crosstimbers Oak Forest and Woodland (CES205.682)
Great Plains Carbonate Glades and Barrens	Western Great Plains Cliff and Outcrop (CES303.665)
Great Plains Freshwater Emergent Marshes	Western Great Plains Open Freshwater Depression Wetland (CES303.675)
Great Plains Limestone Upland Forests and Woodlands	Edwards Plateau Limestone Savanna and Woodland (CES303.660)
Great Plains Mixedgrass Prairies	Central Mixedgrass Prairie (CES303.659), Western Great Plains Foothill and Piedmont Grassland (CES303.817)
Great Plains Playa Lakes	Western Great Plains Closed Depression Wetland (CES303.666)
Great Plains Saline Wet Prairies and Meadows	Chihuahuan-Sonoran Desert Bottomland and Swale Grassland (CES302.746)

SSP Terrestrial Ecological System Name	NatureServe Ecological System Name (System Code)
Great Plains Shortgrass Prairies	Western Great Plains Shortgrass Prairie (CES303.672)
Great Plains Tallgrass Prairies	Western Great Plains Tallgrass Prairie (CES303.673), Western Great Plains Sand Prairie (CES303.670)
Montane Riparian Woodlands and Shrublands	Rocky Mountain Lower Montane-Foothill Riparian Woodland and Shrubland (CES306.821)
Pinyon - Oak - Juniper Woodlands and Shrublands	Southern Rocky Mountain Pinyon-Juniper Woodland (CES306.835), Southern Rocky Mountain Juniper Woodland and Savanna (CES306.834), Southwestern Great Plains Canyon (CES303.664)
Rocky Mountain Dry Ponderosa Pine Forests and Woodlands	Southern Rocky Mountain Ponderosa Pine Woodland (CES303.648), Southern Rocky Mountain Ponderosa Pine Savanna (CES303.649)
Rocky Mountain Subalpine Forests and Woodlands	Rocky Mountain Subalpine Dry-Mesic Spruce-Fir Forest and Woodland (CES306.828), Rocky Mountain Subalpine Mesic-Wet Spruce-Fir Forest and Woodland (CES306.830)
Southern Great Plains Deep Sand Shrublands	Western Great Plains Sandhill Steppe (CES303.671)
Southern Great Plains Mesquite Woodlands and Shrublands	Western Great Plains Mesquite Woodland and Shrubland (CES303.668)
Southern Great Plains Riparian Forests, Woodlands and Shrublands	Western Great Plains Riparian Woodland and Shrubland (CES303.956), Western Great Plains Floodplain (CES303.678), Western Great Plains Wooded Draw and Ravine (CES303.680)
Southern Great Plains Saline Lakes	Western Great Plains Saline Depression Wetland (CES303.669)
Southern Great Plains Saline Shrublands	Chihuahuan Mixed Salt Desert Scrub (CES302.017)

SSP Terrestrial Ecological System Name	NatureServe Ecological System Name (System Code)
Southern Rocky Mountain Grasslands	Southern Rocky Mountain Montane-Subalpine Grassland (CES306.824)

Appendix B. Interpreting NatureServe's Conservation Status Ranks and Federal Status Abbreviations

Deciphering NatureServe's Conservation Status Ranks

The conservation status rank of an element within a given area is designated by a G (Global), N (National) or S (State) as appropriate and followed by a rank number, 1 to 5. If the element is a subspecies or variety, the G, N, or S rank will be followed by a T-Rank. T-Ranks indicate the relative abundance of that subspecies or variety. Species of conservation concern usually are those with global ranks (G-ranks) of 1-3; however, some species with higher global ranks may be of conservation concern in a particular area due to national, state, or local conditions. These rank numbers have the following meaning:

- 1 = **critically imperiled**, at very high risk of extinction due to extreme rarity, very steep declines or other factors; often 5 or fewer known populations of the species.
- 2 = **imperiled**, at high risk of extinction due to very restricted range; usually only 6-20 known populations of the species.
- 3 = **vulnerable**, at moderate risk of extinction due to a restricted range, relatively few populations, recent and widespread declines, or other factors; often 80 or fewer populations.
- 4 = **apparently secure**, uncommon but not rare (though may be quite rare in parts of its range); some cause for long-term concern due to declines or other factors.
- 5 = **secure**, common, widespread, abundant (though may still be quite rare in parts of its range).

Rank numbers may be combined when there is uncertainty over the status (e.g., an element may be given a G-rank of G2G3, indicating global status is somewhere between imperiled and vulnerable).

Other Rank Symbols

? = inexact numeric rank. May also be seen as a combination of numbers (G2G3)

B = breeding; basic rank refers to the breeding population of the species element in the nation or subnation

H = historic; possibly extinct (species), presumed eliminated (ecological communities)

M = 1) migrant; basic rank refers to the transient/migratory population of the **species** element in the nation or subnation *OR* 2) modified/managed; rank refers to **vegetation** resulting from the management or modification of natural/near natural vegetation, but producing a structural and floristic combination not clearly known to have a natural analogue

N = nonbreeding; basic rank refers to the non-breeding population of the species element in the nation or subnation

NA= not applicable; a conservation status rank is not applicable because the species is not a suitable target for conservation activities.

NR = unranked; global/state rank not yet assessed

Q = questionable taxonomy that may reduce conservation priority

U = unrankable due to lack of information or substantially conflicting information about status or trends

X = presumed extirpated

Rank Criteria, Relationship to Other Status Designations

Ranking is a qualitative process, with multiple factors going into rank decisions. For species elements, the following factors are applied: 1) total number and condition of occurrences (sighting/records) of that species, 2) population size, 3) range extent and area of occupancy, 4) short and long-term trends in the first three factors, 5) threats to the element, and 6) fragility of the element.

NatureServe's conservation status ranks are often, but not always, comparable to statuses assigned by government agencies. For instance, the Heritage subnational ranking for an endangered species may not be S1. For this reason, Federal and State status ranks are also given for species of conservation concern when possible.

Federal Status Abbreviations

Abbreviations used to indicate the federal status of a target under the U.S. Endangered Species Act follow the system used by NatureServe. Definitions of these abbreviations are as follows:

C = candidate species for federal imperiled status

LE = federally endangered

LT = federally threatened

PE = proposed for listing as federally endangered

PT = proposed for listing as federally threatened

SE = state endangered

ST = state threatened

PS or PS:Value = partial status; status in only a portion of the species' range. Typically indicated in a "full" species record where at least one but not all of a species' infraspecific taxa or populations has U.S. ESA status.

*For more information or to look up the most current NatureServe conservation status ranks (species and communities) or USESA status ranks (species), visit the NatureServe website:
<http://www.natureserve.org/explorer>*

Appendix C1. Terrestrial and Aquatic Species Target List

Target Name*: An asterisk after the scientific name indicates that this target was treated within the aquatic assessment; i.e., its known occurrences were mapped using the aquatic assessment protocol, and areas proposed for conservation of this target are shown in the aquatic portfolio.

G-Rank: Assigned by NatureServe, a global rank is a numeric assessment of a biological element's relative imperilment and conservation status across its global range of distribution. Ranks can range from G1 (critically imperiled) to G5 (secure). If the element is a subspecies or variety, the G-Rank will be followed by a T-Rank. T-Ranks indicate the relative abundance of that subspecies or variety. Refer to Appendix B for rank definitions. *Although most ranks do not change frequently, the ranks shown here may have been updated since the ecoregional assessment was completed. The most current ranks should be obtained from the appropriate state natural heritage program or from <http://www.natureserve.org/explorer/>.*

ESA Status: Abbreviations provided by NatureServe that reflect the status of a species under the U.S. Endangered Species Act (USES). Definitions of these abbreviations can be found in Appendix B. *Since the status may have changed since the ecoregional assessment was completed, the most current ESA status should be obtained from <http://www.natureserve.org/explorer/> or from the U.S. Fish and Wildlife Service website directly: <http://www.fws.gov/Endangered/wildlife.html>.*

Group	Scientific Name	Common Name	G-Rank	ESA Status
Animal Assemblages				
	Intact Prairie Dog Towns and Associated Animal Assemblages		G4	
	Migratory Waterbird Assemblage (incl. Shorebirds, Waterfowl, and Cranes)		Unranked	
Birds				
	<i>Aimophila cassinii</i>	Cassin's Sparrow	G5	
	<i>Anthus spragueii</i> (wintering)	Sprague's Pipit	G4	
	<i>Athene cunicularia hypugaea</i>	Western Burrowing Owl	G4T4	
	<i>Buteo regalis</i>	Ferruginous Hawk	G4	
	<i>Calamospiza melanocorys</i> (breeding)	Lark Bunting	G5	
	<i>Calamospiza melanocorys</i> (wintering)	Lark Bunting	G5	

Group	Scientific Name	Common Name	G-Rank	ESA Status
Birds (cont'd)				
	<i>Calcarius mccownii</i> (wintering)	McCown's Longspur	G4	
	<i>Calcarius ornatus</i> (wintering)	Chestnut-collared Longspur	G5	
	<i>Callipepla squamata</i>	Scaled Quail	G5	
	<i>Charadrius alexandrinus nivosus</i> (breeding)	Western Snowy Plover	G4T3	PS:LT ¹
	<i>Charadrius montanus</i> (breeding)	Mountain Plover	G2	
	<i>Dendroica chrysoparia</i> (breeding)	Golden-cheeked Warbler	G2	LE
	<i>Empidonax traillii extimus</i>	Southwestern Willow Flycatcher	G5T1T2	LE
	<i>Melanerpes erythrocephalus</i>	Red-headed Woodpecker	G5	
	<i>Numenius americanus</i> (breeding)	Long-billed Curlew	G5	
	<i>Sternula antillarum athalassos</i> (breeding)	Interior Least Tern	G4T2Q	PS:LE ²
	<i>Tympanuchus pallidicinctus</i>	Lesser Prairie-chicken	G3	C
	<i>Vireo atricapilla</i> (breeding)	Black-capped Vireo	G2G3	LE
	<i>Vireo bellii</i> (breeding)	Bell's Vireo	G5	
	<i>Zonotrichia querula</i> (wintering)	Harris' Sparrow	G5	
Crustaceans				
	<i>Orconectes deanae</i> *	Conchas Crayfish	G3	

¹ Only the Pacific coast populations of *Charadrius alexandrinus nivosus* are listed by the USFWS as threatened.

² Listed by USFWS as endangered with the following caveats: in Louisiana, populations along the Mississippi River and tributaries north of Baton Rouge only; in Mississippi, populations along the Mississippi River only; and in Texas, populations everywhere except the Texas coast and a 50 mile zone inland from the coast.

Group	Scientific Name	Common Name	G-Rank	ESA Status
Fishes				
	<i>Gambusia nobilis</i> *	Pecos Gambusia	G2	LE
	<i>Gila pandora</i> *	Rio Grande Chub	G3	
	<i>Macrhybopsis tetranema</i> *	Peppered Chub	G1	
	<i>Micropterus treculi</i> *	Guadalupe Bass	G3	
	<i>Notropis bairdi</i> *	Red River Shiner	G3	
	<i>Notropis buccula</i> *	Smalleye Shiner	G2Q	
	<i>Notropis girardi</i> *	Arkansas River Shiner	G2	PS:LT ³
	<i>Notropis jemezianus</i> *	Rio Grande Shiner	G3	
	<i>Notropis oxyrhynchus</i> *	Sharpnose Shiner	G3	
	<i>Notropis simus pecosensis</i> *	Pecos Bluntnose Shiner	G2T2	LT
	<i>Percina macrolepida</i> *	Bigscale Logperch	G5	
	<i>Phenacobius mirabilis</i> *	Suckermouth Minnow	G5	
Insects				
	<i>Amblyscirtes simius</i>	Simius Roadside-skipper	G4	
	<i>Amblyscirtes texanae</i>	Texas Roadside-skipper	G3G4	
	<i>Cicindela formosa rutilovirescens</i>	Mescalero Sands Tiger Beetle	G5TNR	
	<i>Poladryas minuta minuta</i>	Dotted Checkerspot	G5T2T3	

³The introduced population of *Notropis girardi* in the Pecos River in New Mexico is not included in the threatened status listing by USFWS; only native populations are listed.

Group	Scientific Name	Common Name	G-Rank	ESA Status
Insects (cont'd)				
	<i>Polites rhesus</i>	Rhesus Skipper	G4	
Mammals				
	<i>Dipodomys elator</i>	Texas Kangaroo Rat	G2	
	<i>Geomys knoxjonesi</i>	Jones' Pocket Gopher	G3Q	
	<i>Microtus mogollonensis (mexicanus)</i>	Mogollon Vole	G5	PS ⁴
	<i>Peromyscus truei comanche</i>	Palo Duro Mouse	G5T2	
	<i>Spilogale putorius interrupta</i>	Plains Spotted Skunk	G5T4	
	<i>Vulpes velox</i>	Swift Fox	G3	PS:LE ⁵
Reptiles				
	<i>Nerodia harteri*</i>	Brazos Water Snake	G2	
	<i>Nerodia paucimaculata*</i>	Concho Water Snake	G2	LT
	<i>Sceloporus arenicolus</i>	Sand Dune Lizard	G2G3	C
	<i>Sistrurus catenatus</i>	Massasauga	G3G4	PS ⁶
	<i>Thamnophis sirtalis annectens</i>	Texas Garter Snake	G5T4	

⁴Although *Microtus mogollonensis* itself is not formally listed by the USFWS, USESA status is implied because of a taxonomic relationship with the formally listed (as endangered) subspecies, *Microtus mogollonensis hualpaiensis*. This subspecies is not found in the Southern Shortgrass Prairie Ecoregion.

⁵Only the populations in Canada have been formally listed as endangered by the USFWS.

⁶The subspecies *Sistrurus catenatus catenatus* is a candidate for listing as threatened or endangered under the USESA. This subspecies is not found in the Southern Shortgrass Prairie Ecoregion.

Group	Scientific Name	Common Name	G-Rank	ESA Status
Vascular Plants				
	<i>Agalinis densiflora</i>	Osage Plains Foxglove	G3	
	<i>Argythamnia aphoroides</i>	Hill Country Wild Mercury	G2	
	<i>Asclepias uncialis</i>	Greene Milkweed	G3G4	
	<i>Astragalus mollissimus</i> var. <i>coryi</i>	Cory's Woolly Loco	G5T3	
	<i>Astragalus siliceus</i>	Flint Mountains Milk-vetch	G3	
	<i>Astragalus wittmannii</i>	Wittmann's Milk-vetch	G3	
	<i>Callirhoe scabriuscula</i>	Texas Poppy-mallow	G2	LE
	<i>Chamaesyce jejuna</i>	Dwarf Broomsurge	G2	
	<i>Cirsium wrightii</i>	Wright's Marsh Thistle	G2	
	<i>Cyperus onerosus</i>	Dune Flat-sedge	G2	
	<i>Echinocereus fendleri</i> var. <i>kuenzleri</i>	Kuenzler's Hedgehog Cactus	G4G5T1	LE
	<i>Echinocereus reichenbachii</i> var. <i>baileyi</i>	Bailey's Lace Cactus	G5T3	
	<i>Ephedra coryi</i>	Cory's Mormon-tea	G3	
	<i>Eriogonum aliquidum</i>	Cimarron Wild Buckwheat	G3	
	<i>Eriogonum correllii</i>	Correll's Wild Buckwheat	G3	
	<i>Eriogonum nealleyi</i>	Irion County Wild Buckwheat	G2	
	<i>Euphorbia strictior</i>	Panhandle Spurge	G3	
	<i>Eurytaenia hinckleyi</i>	Hinckley's Spread-wing	G3	
	<i>Helianthus paradoxus</i>	Pecos Sunflower	G2	LT

Group	Scientific Name	Common Name	G-Rank	ESA Status
Vascular Plants (cont'd)				
	<i>Herrickia horrida</i>	Horrid Herrickia	G2?	
	<i>Heteranthera mexicana</i>	Mexican Mud-plantain	G2G3	
	<i>Hexalectris nitida</i>	Glass Mountain Coral-root	G3	
	<i>Hexalectris warnockii</i>	Purple-spike Coral-root	G2G3	
	<i>Mentzelia strictissima</i>	Grassland Stickleaf	G4	
	<i>Muhlenbergia villiflora</i> var. <i>villosa</i>	Villous Muhly	G5T3	
	<i>Oenothera coryi</i>	Cory's Evening-primrose	G3G4	
	<i>Penstemon guadalupensis</i>	Guadalupe Beardtongue	G3	
	<i>Phlox drummondii</i> ssp. <i>johnstonii</i>	Johnston's Phlox	G5T3	
	<i>Proboscidea sabulosa</i>	Dune Unicorn-plant	G3	
	<i>Pseudoclapia arenaria</i>	Trans-pecos False-clappia	G3	
	<i>Selenia jonesii</i>	Jones' Selenia	G4	
	<i>Senecio spellenbergii</i>	Spellenberg's Groundsel	G2	
	<i>Solidago mollis</i> var. <i>angustata</i>	A Goldenrod	G5T3	

Appendix C2. Terrestrial Plant Communities and Ecological Systems Target List

G-Rank: Assigned by NatureServe, a global rank is a numeric assessment of a biological element's relative imperilment and conservation status across its global range of distribution. Ranks can range from G1 (critically imperiled) to G5 (secure). Global ranks have only been assigned to species and plant communities; currently, ecological systems are unranked. Refer to Appendix B for rank definitions. *Although most ranks do not change frequently, the ranks shown here may have been updated since the ecoregional assessment was completed. The most current ranks should be obtained from the appropriate state natural heritage program or from <http://www.natureserve.org/explorer/>.*

Group	Scientific Name	Common Name	G-Rank
Terrestrial Plant Communities			
	<i>Populus deltoides</i> / <i>Panicum virgatum</i> - <i>Schizachyrium scoparium</i> Woodland	Eastern Cottonwood / Switchgrass - Little Bluestem Woodland	G2
	<i>Tripsacum dactyloides</i> - <i>Panicum virgatum</i> - <i>Sorghastrum nutans</i> Herbaceous Vegetation	Eastern Gammagrass - Switchgrass - Yellow Indiangrass Herbaceous Vegetation	G1
Terrestrial Ecological Systems			
	Chihuahuan Desert Grasslands (swales)		Unranked
	Chihuahuan Desert Gypsophilous Vegetation		Unranked
	Chihuahuan Desert Xeric Shrublands		Unranked
	Crosstimbers Oak Forests and Woodlands		Unranked
	Great Plains Carbonate Glades and Barrens		Unranked
	Great Plains Freshwater Emergent Marshes		Unranked
	Great Plains Limestone Upland Forests and Woodlands		Unranked
	Great Plains Mixedgrass Prairies		Unranked

Group	Scientific Name	Common Name	G-Rank
Terrestrial Ecological Systems (cont'd)			
	Great Plains Playa Lakes		Unranked
	Great Plains Saline Wet Prairies and Meadows		Unranked
	Great Plains Shortgrass Prairies		Unranked
	Great Plains Tallgrass Prairies		Unranked
	Montane Riparian Woodlands and Shrublands		Unranked
	Pinyon - Oak - Juniper Woodlands and Shrublands		Unranked
	Rocky Mountain Dry Ponderosa Pine Forests and Woodlands		Unranked
	Rocky Mountain Subalpine Forests and Woodlands		Unranked
	Southern Great Plains Deep Sand Shrublands		Unranked
	Southern Great Plains Mesquite Woodlands and Shrublands		Unranked
	Southern Great Plains Riparian Forests, Woodlands and Shrublands		Unranked
	Southern Great Plains Saline Lakes		Unranked
	Southern Great Plains Saline Shrublands		Unranked
	Southern Rocky Mountain Grasslands		Unranked

Appendix C3. Aquatic Ecological Systems Target List

Aquatic ecological systems represent distinctive habitat types and gradients nested within Ecological Drainage Units (EDUs). The system descriptions are based on the following attributes: permanence of flow, channel gradient, stream/river size, elevation, and geologic characteristics of the watershed. While systems with the same physical attributes may occur in several EDUs, they are treated as separate conservation targets because the native species distribution and composition in each EDU is distinct. The system codes are used for data management purposes. Each code is constructed in the following way: abbreviated EDU name_stream/river size class_two-digit number.

Ecological Drainage Unit (EDU) Name

System Code System Description

Arkansas River – West

Ark_2_15	Intermittent moderate and high gradient streams in western Southern Shortgrass Prairie sandstone/sand
Ark_2_34	Perennial moderate and high gradient streams in western Southern Shortgrass Prairie sandstone and mafic rock
Ark_3_17	Small perennial rivers in western Southern Shortgrass Prairie sandstone/sand with headwaters in mafic rock

Brazos River – Prairie

Bra_2_23	Mostly intermittent moderate and low gradient streams in central Southern Shortgrass Prairie redbed shale
Bra_2_24	Mostly intermittent moderate and low gradient streams in eastern Southern Shortgrass Prairie clay mud, sandstone, and shale
Bra_2_25	Perennial and intermittent moderate and low gradient streams in central Southern Shortgrass Prairie redbed shale and sand
Bra_2_26	Mostly intermittent moderate and low gradient streams in eastern Southern Shortgrass Prairie shale and sandstone/sand with heavy limestone, marl, and caliche components
Bra_2_28	Intermittent low and moderate gradient streams in Ogallala Formation sand, sandstone, and caliche
Bra_2_29	Perennial moderate gradient streams in aquifer sand along the Southern Shortgrass Prairie and Edwards Plateau margins
Bra_2_33	Perennial moderate and low gradient creeks on the Edwards Plateau margin in gravel, conglomerate, sand, and marl
Bra_2_38	Perennial moderate gradient creeks in recharge sand and redbed shale along the Canadian River breaks and escarpment breaks

Ecological Drainage Unit (EDU) Name

System Code System Description

Brazos River – Prairie (cont'd)

Bra_2_39	Perennial and intermittent moderate and low gradient streams in evaporite-rich areas of the central Southern Shortgrass Prairie
Bra_3_06	Small perennial rivers in sandstone, shale, and alluvium with intermittent headwaters in Ogallala Formation sand
Bra_3_08	Small intermittent rivers in central Southern Shortgrass Prairie redbed shale and sand
Bra_3_09	Small perennial rivers in eastern Southern Shortgrass Prairie clay mud, sandstone, and shale
Bra_3_10	Small perennial rivers in Southern Shortgrass Prairie/Edwards Plateau transition zone shale and sandstone/sand with heavy limestone, marl, and caliche components
Bra_3_11	Small perennial rivers in aquifer sand along the Edwards Plateau/Blackland Prairie boundary
Bra_4_06	Medium perennial rivers in central Southern Shortgrass Prairie/Edwards Plateau shale and sandstone/sand with heavy limestone, marl, and caliche components
Bra_4_07	Medium perennial rivers in sandstone, shale, and alluvium with intermittent headwaters in Ogallala Formation sand
Bra_4_08	Medium perennial rivers in central and eastern Southern Shortgrass Prairie clay mud, redbed shale, and sandstone
Bra_5_03	Large perennial rivers of the Southern Shortgrass Prairie

Canadian River

Can_2_04	Perennial high and moderate gradient tributaries flowing from Southern Rocky Mountain foothill limestone and granite to Southern Shortgrass Prairie sandstone and shale
Can_2_10	Intermittent high and moderate gradient streams in Southern Shortgrass Prairie Quaternary piedmont alluvium
Can_2_15	Intermittent moderate and high gradient streams in western Southern Shortgrass Prairie sandstone/sand
Can_2_27	Intermittent and perennial moderate and high gradient streams in western Southern Shortgrass Prairie shale and limestone
Can_2_28	Intermittent low and moderate gradient streams in Ogallala Formation sand, sandstone, and caliche
Can_2_34	Perennial moderate and high gradient streams in western Southern Shortgrass Prairie sandstone and mafic rock

Ecological Drainage Unit (EDU) Name

System Code System Description

Canadian River (cont'd)

Can_2_35	Perennial high and moderate gradient tributaries in Southern Rocky Mountain foothill sandstone and moderately calcareous rock
Can_2_36	Perennial high and moderate gradient tributaries in Southern Rocky Mountain foothill mafic rock, sandstone, and moderately calcareous rock
Can_2_37	Perennial moderate gradient creeks in recharge sand along the Canadian River breaks and escarpment breaks
Can_2_38	Perennial moderate gradient creeks in recharge sand and redbed shale along the Canadian River breaks and escarpment breaks
Can_3_05	Small perennial rivers in Arizona-New Mexico Mountains and Rocky Mountains foothill sandstone and limestone
Can_3_06	Small perennial rivers in sandstone, shale, and alluvium with intermittent headwaters in Ogallala Formation sand
Can_3_17	Small perennial rivers in western Southern Shortgrass Prairie sandstone/sand with headwaters in mafic rock
Can_3_18	Small perennial rivers in Southern Shortgrass Prairie sandstone and shale with headwaters in Southern Rocky Mountain limestone and granite
Can_3_19	Small perennial rivers in Southern Shortgrass Prairie calcareous sandstone with headwaters in Southern Rocky Mountain sandstone
Can_3_20	Small intermittent rivers in Quaternary piedmont alluvium and western Southern Shortgrass Prairie shale
Can_4_03	Medium perennial rivers in Arizona-New Mexico Mountains and Rocky Mountains foothill sandstone and limestone flowing to shale and alluvium
Can_4_08	Medium perennial rivers in central and eastern Southern Shortgrass Prairie clay mud, redbed shale, and sandstone
Can_4_10	Medium intermittent/perennial rivers in Ogallala Formation sandstone and eolian sand
Can_4_11	Medium intermittent rivers in western Southern Shortgrass Prairie sandstone/sand with headwaters in mafic rock
Can_5_05	Large perennial rivers of the Southern Shortgrass Prairie with headwaters in the Southern Rocky Mountains

Colorado River – Edwards Plateau

Col_2_23	Mostly intermittent moderate and low gradient streams in central Southern Shortgrass Prairie redbed shale
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Ecological Drainage Unit (EDU) Name

System Code System Description

Colorado River – Edwards Plateau (cont'd)

Col_2_26	Mostly intermittent moderate and low gradient streams in eastern Southern Shortgrass Prairie shale and sandstone/sand with heavy limestone, marl, and caliche components
Col_2_29	Perennial moderate gradient streams in aquifer sand along the Southern Shortgrass Prairie and Edwards Plateau margins
Col_4_05	Medium perennial rivers in Edwards Plateau limestone

Colorado River – Prairie

Col_2_17	Perennial moderate and low gradient creeks in Edwards Plateau recharge sand
Col_2_23	Mostly intermittent moderate and low gradient streams in central Southern Shortgrass Prairie redbed shale
Col_2_28	Intermittent low and moderate gradient streams in Ogallala Formation sand, sandstone, and caliche
Col_2_38	Perennial moderate gradient creeks in recharge sand and redbed shale along the Canadian River breaks and escarpment breaks
Col_3_06	Small perennial rivers in sandstone, shale, and alluvium with intermittent headwaters in Ogallala Formation sand
Col_3_08	Small intermittent rivers in central Southern Shortgrass Prairie redbed shale and sand
Col_4_07	Medium perennial rivers in sandstone, shale, and alluvium with intermittent headwaters in Ogallala Formation sand

Lower Pecos River

Pec_2_05	Intermittent high gradient streams in Arizona-New Mexico Mountain foothill and Southern Shortgrass Prairie limestone
Pec_3_01	Small intermittent rivers in Arizona-New Mexico Mountain foothill and Southern Shortgrass Prairie limestone

Upper Pecos River

Pec_2_02	Intermittent high gradient streams draining from Arizona-New Mexico Mountain sandstone and limestone to Southern Shortgrass Prairie
Pec_2_03	Mostly intermittent moderate gradient direct tributaries of the upper Pecos in fine sandstone and sand
Pec_2_04	Perennial high and moderate gradient tributaries flowing from Southern Rocky Mountain foothill limestone and granite to Southern Shortgrass Prairie sandstone and shale

Ecological Drainage Unit (EDU) Name

System Code System Description

Upper Pecos River (cont'd)

Pec_2_05	Intermittent high gradient streams in Arizona-New Mexico Mountain foothill and Southern Shortgrass Prairie limestone
Pec_2_10	Intermittent high and moderate gradient streams in Southern Shortgrass Prairie Quaternary piedmont alluvium
Pec_2_11	Intermittent moderate gradient streams draining the western Llano Estacado to the Pecos River
Pec_2_15	Intermittent moderate and high gradient streams in western Southern Shortgrass Prairie sandstone/sand
Pec_2_22	Perennial high gradient streams in Arizona-New Mexico Mountain granite and sandstone
Pec_2_27	Intermittent and perennial moderate and high gradient streams in western Southern Shortgrass Prairie shale and limestone
Pec_3_01	Small intermittent rivers in Arizona-New Mexico Mountain foothill and Southern Shortgrass Prairie limestone
Pec_3_05	Small perennial rivers in Arizona-New Mexico Mountains and Rocky Mountains foothill sandstone and limestone
Pec_3_06	Small perennial rivers in sandstone, shale, and alluvium with intermittent headwaters in Ogallala Formation sand
Pec_3_07	Small perennial rivers in Arizona-New Mexico Mountain foothill granite, sandstone and limestone
Pec_3_18	Small perennial rivers in Southern Shortgrass Prairie sandstone and shale with headwaters in Southern Rocky Mountain limestone and granite
Pec_3_20	Small intermittent rivers in Quaternary piedmont alluvium and western Southern Shortgrass Prairie shale
Pec_4_01	Medium intermittent rivers in Arizona-New Mexico Mountain foothill and Southern Shortgrass Prairie limestone and alluvium
Pec_4_03	Medium perennial rivers in Arizona-New Mexico Mountains and Rocky Mountains foothill sandstone and limestone flowing to shale and alluvium
Pec_5_01	Large perennial rivers of the Southern Shortgrass Prairie and Chihuahuan Desert with headwaters in the Southern Rocky Mountains and Arizona-New Mexico Mountains

Upper Red River

Red_2_23	Mostly intermittent moderate and low gradient streams in central Southern Shortgrass Prairie redbed shale
Red_2_24	Mostly intermittent moderate and low gradient streams in eastern Southern Shortgrass Prairie clay mud, sandstone, and shale

Ecological Drainage Unit (EDU) Name

System Code System Description

Upper Red River (cont'd)

Red_2_25	Perennial and intermittent moderate and low gradient streams in central Southern Shortgrass Prairie redbed shale and sand
Red_2_28	Intermittent low and moderate gradient streams in Ogallala Formation sand, sandstone, and caliche
Red_2_29	Perennial moderate gradient streams in aquifer sand along the Southern Shortgrass Prairie and Edwards Plateau margins
Red_2_37	Perennial moderate gradient creeks in recharge sand along the Canadian River breaks and escarpment breaks
Red_2_38	Perennial moderate gradient creeks in recharge sand and redbed shale along the Canadian River breaks and escarpment breaks
Red_2_39	Perennial and intermittent moderate and low gradient streams in evaporite-rich areas of the central Southern Shortgrass Prairie
Red_3_06	Small perennial rivers in sandstone, shale, and alluvium with intermittent headwaters in Ogallala Formation sand
Red_3_08	Small intermittent rivers in central Southern Shortgrass Prairie redbed shale and sand
Red_3_09	Small perennial rivers in eastern Southern Shortgrass Prairie clay mud, sandstone, and shale
Red_3_21	Small perennial rivers in Ogallala Formation sand with large amounts of evaporite
Red_4_07	Medium perennial rivers in sandstone, shale, and alluvium with intermittent headwaters in Ogallala Formation sand
Red_4_08	Medium perennial rivers in central and eastern Southern Shortgrass Prairie clay mud, redbed shale, and sandstone
Red_5_03	Large perennial rivers of the Southern Shortgrass Prairie

Upper Trinity River

Tri_2_24	Mostly intermittent moderate and low gradient streams in eastern Southern Shortgrass Prairie clay mud, sandstone, and shale
Tri_2_26	Mostly intermittent moderate and low gradient streams in eastern Southern Shortgrass Prairie shale and sandstone/sand with heavy limestone, marl, and caliche components
Tri_2_29	Perennial moderate gradient streams in aquifer sand along the Southern Shortgrass Prairie and Edwards Plateau margins
Tri_2_33	Perennial moderate and low gradient creeks on the Edwards Plateau margin in gravel, conglomerate, sand, and marl

Ecological Drainage Unit (EDU) Name

System Code System Description

Upper Trinity River (cont'd)

Tri_3_09	Small perennial rivers in eastern Southern Shortgrass Prairie clay mud, sandstone, and shale
Tri_4_09	Medium perennial rivers in recharge sand and Blackland Prairie limey mud with headwaters in Southern Shortgrass Prairie

Appendix D. Terrestrial and Aquatic Species Targets–State Ranks

Target Name*: An asterisk after the scientific name indicates that this target was treated within the aquatic assessment; i.e., its known occurrences were mapped using the aquatic assessment protocol, and areas proposed for conservation of this target are shown in the aquatic portfolio.

S-Rank: Assigned by the state natural heritage programs, a state rank is a numeric assessment of a biological element’s relative imperilment and conservation status within a state where it occurs. Ranks can range from S1 (critically imperiled) to S5 (secure). If no S-Rank is listed here for a particular state, the target either does not occur in that state or the state natural heritage program does not track that specific target. Plant communities and ecological systems do not have state ranks. Refer to Appendix B for rank definitions. *Although most ranks do not change frequently, the ranks shown here may have been updated since the ecoregional assessment was completed. The most current ranks should be obtained from the appropriate state natural heritage program.*

Group	Scientific Name	Common Name	CO S-Rank	NM S-Rank	OK S-Rank	TX S-Rank
Animal Assemblages						
	Intact Prairie Dog Towns and Associated Animal Assemblages					
	Migratory Waterbird Assemblage (incl. Shorebirds, Waterfowl, and Cranes)					
Birds						
	<i>Aimophila cassinii</i>	Cassin's Sparrow	S4B	S5B, S5N	SNR	S4B
	<i>Anthus spragueii</i>	Sprague's Pipit	SNA	S2N	SNRN	S3N
	<i>Athene cunicularia hypugaea</i>	Western Burrowing Owl		S3B, S3N		S2B
	<i>Buteo regalis</i>	Ferruginous Hawk	S3B, S4N	S2B, S4N	SNR	S2B, S4N
	<i>Calamospiza melanocorys</i>	Lark Bunting	S4	S3B, S5N	SNR	S4B

Group	Scientific Name	Common Name	CO S-Rank	NM S-Rank	OK S-Rank	TX S-Rank
Birds (cont'd)						
	<i>Calcarius mccownii</i>	McCown's Longspur	S2B	S3N	S2N	S4
	<i>Calcarius ornatus</i>	Chestnut-collared Longspur	S1B	S3N	S4N	S3
	<i>Callipepla squamata</i>	Scaled Quail	S4	S3B, S4N	S3	S4B
	<i>Charadrius alexandrinus nivosus</i>	Western Snowy Plover	S1B	S3B, S3N	S3B	S2B
	<i>Charadrius montanus</i>	Mountain Plover	S2B	S2B, S4N	S2B	S2
	<i>Dendroica chrysoparia</i>	Golden-cheeked Warbler				S2B
	<i>Empidonax traillii extimus</i>	Southwestern Willow Flycatcher		S1B, S1N		S1B
	<i>Melanerpes erythrocephalus</i>	Red-headed Woodpecker	S3B	S3B, S3N	SNR	S3B
	<i>Numenius americanus</i>	Long-billed Curlew	S2B	S3B, S4N	S2B	S3B, S5N
	<i>Sternula antillarum athalassos</i>	Interior Least Tern	S1B	S1B, S2N	S2B	S1B
	<i>Tympanuchus pallidicinctus</i>	Lesser Prairie-chicken	S2	S2B, S2N	S1	S2B
	<i>Vireo atricapilla</i>	Black-capped Vireo			S1B	S2B
	<i>Vireo bellii</i>	Bell's Vireo	S1B	S2B, S3N	S3B	S3B
	<i>Zonotrichia querula</i>	Harris' Sparrow	S4N	S4N	S5N	S4

Group	Scientific Name	Common Name	CO S-Rank	NM S-Rank	OK S-Rank	TX S-Rank
Crustaceans						
	<i>Orconectes deanae</i> *	Conchas Crayfish		S1	SNR	
Fishes						
	<i>Gambusia nobilis</i> *	Pecos Gambusia		S1		S2
	<i>Gila pandora</i> *	Rio Grande Chub	S1?	S3		S1
	<i>Macrhybopsis tetranema</i> *	Arkansas River Speckled Chub	SX	S1	SNR	S1
	<i>Micropterus treculi</i> *	Guadalupe Bass				S3
	<i>Notropis bairdi</i> *	Red River Shiner			S3	S3
	<i>Notropis buccula</i> *	Smalleye Shiner				S2
	<i>Notropis girardi</i> *	Arkansas River Shiner		S1	S1	S2
	<i>Notropis jemezianus</i> *	Rio Grande Shiner		S2		S3
	<i>Notropis oxyrinchus</i> *	Sharpnose Shiner				S3
	<i>Notropis simus pecosensis</i> *	Pecos Bluntnose Shiner		S2		
	<i>Percina macrolepida</i> *	Bigscale Logperch	SNA	S2	S4	S5
	<i>Phenacobius mirabilis</i> *	Suckermouth Minnow	S2?	S2	S4	S4

Group	Scientific Name	Common Name	CO S-Rank	NM S-Rank	OK S-Rank	TX S-Rank
Insects						
	<i>Amblyscirtes simius</i>	Simius Roadside-skipper	S3	SNR		SNR
	<i>Amblyscirtes texanae</i>	Texas Roadside-skipper		SNR		SNR
	<i>Cicindela formosa rutilovirescens</i>	Mescalero Sands Tiger Beetle		SNR		SNR
	<i>Poladryas minuta minuta</i>	Dotted Checkerspot	SNR	SNR		SNR
	<i>Polites rhesus</i>	Rhesus Skipper	S2S3	SNR	SNR	
Mammals						
	<i>Dipodomys elator</i>	Texas Kangaroo Rat			S1	S2
	<i>Geomys knoxjonesi</i>	Jones' Pocket Gopher		SU		S2
	<i>Microtus mogollonensis (mexicanus)</i>	Mogollon Vole	S3			SNR
	<i>Peromyscus truei comanche</i>	Palo Duro Mouse				S2
	<i>Spilogale putorius interrupta</i>	Plains Spotted Skunk	S2		S2	S3
	<i>Vulpes velox</i>	Swift Fox	S3	S2	S1	S3?
Reptiles						
	<i>Nerodia harteri*</i>	Brazos Water Snake				S2
	<i>Nerodia paucimaculata*</i>	Concho Water Snake				S2

Group	Scientific Name	Common Name	CO S-Rank	NM S-Rank	OK S-Rank	TX S-Rank
Reptiles (cont'd)						
	<i>Sceloporus arenicolus</i>	Sand Dune Lizard		S1		S2
	<i>Sistrurus catenatus</i>	Massasauga	S2	S3S4	S4	S3S4
	<i>Thamnophis sirtalis annectens</i>	Texas Garter Snake			S4	S3
Vascular Plants						
	<i>Agalinis densiflora</i>	Osage Plains Foxglove			SNR	S3
	<i>Argythamnia apheroides</i>	Hill Country Wild Mercury				S2
	<i>Asclepias uncialis</i>	Greene Milkweed	S2	S2S3	S1	
	<i>Astragalus mollissimus</i> var. <i>coryi</i>	Cory's Woolly Loco				S3
	<i>Astragalus siliceus</i>	Flint Mountains Milk-vetch		S3		
	<i>Astragalus wittmannii</i>	Wittmann's Milk-vetch		S3		
	<i>Callirhoe scabriuscula</i>	Texas Poppy-mallow				S2
	<i>Chamaesyce jejuna</i>	Dwarf Broomspurge				S2
	<i>Cirsium wrightii</i>	Wright's Marsh Thistle		S2		
	<i>Cyperus onerosus</i>	Dune Flat-sedge				S2
	<i>Echinocereus fendleri</i> var. <i>kuenzleri</i>	Kuenzler's Hedgehog Cactus		S1		

Group	Scientific Name	Common Name	CO S-Rank	NM S-Rank	OK S-Rank	TX S-Rank
Vascular Plants (cont'd)						
	<i>Echinocereus reichenbachii</i> var. <i>baileyi</i>	Bailey's Lace Cactus		SNR	SNR	S1
	<i>Ephedra coryi</i>	Cory's Mormon-tea		SNR		S3
	<i>Eriogonum aliquantum</i>	Cimarron Wild Buckwheat		S3		
	<i>Eriogonum correllii</i>	Correll's Wild Buckwheat				S3
	<i>Eriogonum nealleyi</i>	Irion County Wild Buckwheat				S2
	<i>Euphorbia strictior</i>	Panhandle Spurge		S3		S3
	<i>Eurytaenia hinckleyi</i>	Hinckley's Spread-wing				S3
	<i>Helianthus paradoxus</i>	Pecos Sunflower		S2		S1
	<i>Herrickia horrida</i>	Horrid Herrickia	S1	S2?		
	<i>Heteranthera mexicana</i>	Mexican Mud-plantain				S1
	<i>Hexalectris nitida</i>	Glass Mountain Coral-root		S1		S3
	<i>Hexalectris warnockii</i>	Purple-spike Coral-root				S2
	<i>Mentzelia strictissima</i>	Grassland Stickleaf		SNR		S4
	<i>Muhlenbergia villiflora</i> var. <i>villosa</i>	Villous Muhly		SNR		S2
	<i>Oenothera coryi</i>	Cory's Evening-primrose				S3

Group	Scientific Name	Common Name	CO S-Rank	NM S-Rank	OK S-Rank	TX S-Rank
Vascular Plants (cont'd)						
	<i>Penstemon guadalupensis</i>	Guadalupe Beardtongue				S3
	<i>Phlox drummondii</i> ssp. <i>johnstonii</i>	Johnston's Phlox				S3
	<i>Proboscidea sabulosa</i>	Dune Unicorn-plant		S3		S2
	<i>Pseudoclapia arenaria</i>	Trans-pecos False-clappia		S3	S1	S2
	<i>Selenia jonesii</i>	Jones' Selenia				S4
	<i>Senecio spellenbergii</i>	Spellenberg's Groundsel		S2		
	<i>Solidago mollis</i> var. <i>angustata</i>	A Goldenrod			SNR	S2

Appendix E1. Terrestrial and Aquatic Species Targets–Progress Towards Overall Ecoregional Conservation Goals

Target Name*: An asterisk after the scientific name indicates that this target was treated within the aquatic assessment; i.e., its known occurrences were mapped using the aquatic assessment protocol, and areas proposed for conservation of this target are shown in the aquatic portfolio.

Distribution: The relative proportion of the target’s natural range occurring within a given ecoregion. Categories used are endemic, widespread, limited, disjunct and peripheral. Please refer to the glossary section for definitions of these categories.

Geographic Scale: Refers to the land area or length of watercourse presumed to be necessary to sustain an occurrence of a species, community or ecological system. Categories used are local, intermediate, coarse and regional.

Conservation Goal: Conservation goals represent an initial science-based hypothesis as to the number or areal extent of occurrences needed to ensure the long-term persistence of the target in the ecoregion. This number is the **sum** of the goals set for each stratification unit or ecological drainage unit within which a target occurs. Goals are expressed as discrete numbers of occurrences. See Appendices F1 and G1 for terrestrial species targets’ goal information by stratification unit, Appendices F2 and G2 for aquatic species targets’ goal information by ecological drainage units.

Target Amount Captured: Total amount of known occurrences of a particular target that 1) meet minimum viability criteria **and** 2) are selected to count toward goals and therefore included in the final portfolio of conservation areas. The amount is expressed as discrete numbers of occurrences.

Target Amount Known: Total amount of known occurrences of a particular target in the ecoregion; includes occurrences that are viable, non-viable, and of undetermined viability. The amount is expressed as discrete numbers of occurrences.

All Goals Met: Numeric goals are set for each stratification unit or ecological drainage unit within which a target occurs (See Appendices F1-F2,G1-G2). For a conservation goal to be considered fully met, the goals for each individual stratification unit/ecological drainage unit (where a goal was set) have to be met. Failure to meet goals can be attributed to the following: a) we have inadequate data for locations of target occurrences; b) the viability of the occurrences are unknown; and/or c) the occurrences have been determined to be non-viable. Those instances where all goals have been met are shown in bold.

Group	Scientific Name Common Name	Distribution	Geographic Scale	Conservation Goal	Target Amount Captured	Target Amount Known	All Goals Met
Animal Assemblages							
	Intact Prairie Dog Towns and Associated Animal Assemblages ¹	Widespread	Intermediate	29	19	N/A	No
	Migratory Waterbird Assemblage (includes Shorebirds, Waterfowl, and Cranes)	Widespread	Regional	13	3	6	No

¹ Lack of knowledge as to what constitutes a functional occurrence for setting and counting progress towards appropriate conservation goals led to the following decision: All prairie dog towns located within a particular conservation area are counted as one occurrence, though the actual number varies widely within conservation areas. Because of this accounting decision, no comparable information is available for prairie dog towns outside of conservation areas and a meaningful total for the number of known target occurrences in the ecoregion (Target Amount Known) cannot be provided.

Group	Scientific Name Common Name	Distribution	Geographic Scale	Conservation Goal	Target Amount Captured	Target Amount Known	All Goals Met
Birds							
	<i>Aimophila cassinii</i> Cassin's Sparrow	Widespread	Regional	16	30	112	No
	<i>Anthus spragueii</i> (wintering) Sprague's Pipit	Widespread	Regional	7	1	4	No
	<i>Athene cunicularia hypugaea</i> Western Burrowing Owl	Widespread	Regional	16	23	64	No
	<i>Buteo regalis</i> Ferruginous Hawk	Widespread	Regional	14	22	55	No
	<i>Calamospiza melanocorys</i> (breeding) Lark Bunting	Widespread	Regional	14	17	48	No
	<i>Calamospiza melanocorys</i> (wintering) Lark Bunting	Widespread	Regional	14	7	22	No
	<i>Calcarius mccownii</i> (wintering) Mccown's Longspur	Widespread	Regional	14	5	11	No
	<i>Calcarius ornatus</i> (wintering) Chestnut-collared Longspur	Widespread	Regional	16	6	14	No
	<i>Callipepla squamata</i> Scaled Quail	Widespread	Intermediate	16	23	71	No
	<i>Charadrius alexandrinus nivosus</i> (breeding) Western Snowy Plover	Widespread	Regional	10	5	13	No
	<i>Charadrius montanus</i> (breeding) Mountain Plover	Widespread	Regional	12	27	44	No

Group	Scientific Name Common Name	Distribution	Geographic Scale	Conservation Goal	Target Amount Captured	Target Amount Known	All Goals Met
Birds (cont'd)							
	<i>Dendroica chrysoparia</i> (breeding) Golden-cheeked Warbler	Peripheral	Regional	2	1	3	No
	<i>Empidonax traillii extimus</i> Southwestern Willow Flycatcher	Peripheral	Regional	1	1	3	Yes
	<i>Melanerpes erythrocephalus</i> Red-headed Woodpecker	Widespread	Regional	10	10	26	No
	<i>Numenius americanus</i> (breeding) Long-billed Curlew	Widespread	Regional	12	15	53	No
	<i>Sternula antillarum athalassos</i> (breeding) Interior Least Tern	Widespread	Regional	5	6	9	Yes
	<i>Tympanuchus pallidicinctus</i> Lesser Prairie-chicken	Limited	Intermediate	18	30	51	No
	<i>Vireo atricapilla</i> (breeding) Black-capped Vireo	Peripheral	Regional	4	2	14	No
	<i>Vireo bellii</i> (breeding) Bell's Vireo	Widespread	Regional	10	6	15	No
	<i>Zonotrichia querula</i> Harris' Sparrow (wintering)	Widespread	Regional	11	5	20	No
Crustaceans							
	<i>Orconectes deanae</i> * Conchas Crayfish	Endemic	Local/Intermediate	25	0	1	No

Group	Scientific Name Common Name	Distribution	Geographic Scale	Conservation Goal	Target Amount Captured	Target Amount Known	All Goals Met
Fishes							
	<i>Gambusia nobilis</i> * Pecos Gambusia	Peripheral	Intermediate	2	1	1	No
	<i>Gila pandora</i> * Rio Grande Chub	Widespread	Intermediate	5	5	10	Yes
	<i>Macrhybopsis tetranema</i> * Arkansas River Speckled Chub	Limited	Intermediate	1	1	1	Yes
	<i>Micropterus treculi</i> * Guadalupe Bass	Peripheral	Intermediate	2	0	2	No
	<i>Notropis bairdi</i> * Red River Shiner	Limited	Intermediate	9	3	7	No
	<i>Notropis buccula</i> * Smalleye Shiner	Limited	Intermediate	9	1	5	No
	<i>Notropis girardi</i> * Arkansas River Shiner	Widespread	Intermediate	5	2	3	No
	<i>Notropis jemezanus</i> * Rio Grande Shiner	Widespread	Local/Intermediate	1	1	1	Yes
	<i>Notropis oxyrhynchus</i> * Sharpnose Shiner	Widespread	Coarse/Intermediate	5	1	6	No
	<i>Notropis simus pecosensis</i> * Pecos Bluntnose Shiner	Limited	Intermediate	1	1	1	Yes
	<i>Percina macrolepida</i> * Bigscale Logperch	Widespread	Intermediate	5	3	5	No

Group	Scientific Name Common Name	Distribution	Geographic Scale	Conservation Goal	Target Amount Captured	Target Amount Known	All Goals Met
Fishes (cont'd)							
	<i>Phenacobius mirabilis</i> * Suckermouth Minnow	Widespread	Intermediate	5	2	9	No
Insects							
	<i>Amblyscirtes simius</i> Simius Roadside-skipper	Peripheral	Regional	6	1	1	No
	<i>Amblyscirtes texanae</i> Texas Roadside-skipper	Limited	Regional	5	0	0	No
	<i>Cicindela formosa rutilovirescens</i> Mescalero Sands Tiger Beetle	Endemic	Intermediate	25	1	1	No
	<i>Poladryas minuta minuta</i> Dotted Checkerspot	Limited	Regional	5	0	0	No
	<i>Polites rhesus</i> Rhesus Skipper	Disjunct	Regional	3	1	1	No
Mammals							
	<i>Dipodomys elator</i> Texas Kangaroo Rat	Endemic	Local	25	6	11	No
	<i>Geomys knoxjonesi</i> Jones' Pocket Gopher	Endemic	Local	25	0	0	No
	<i>Microtus mogollonensis (mexicanus)</i> Mogollon Vole	Peripheral	Intermediate	2	1	1	No
	<i>Peromyscus truei comanche</i> Palo Duro Mouse	Endemic	Local	25	14	14	No

Group	Scientific Name Common Name	Distribution	Geographic Scale	Conservation Goal	Target Amount Captured	Target Amount Known	All Goals Met
Mammals (cont'd)							
	<i>Spilogale putorius interrupta</i> Plains Spotted Skunk	Widespread	Intermediate	4	0	2	No
	<i>Vulpes velox</i> Swift Fox	Widespread	Coarse	6	1	19	No
Reptiles							
	<i>Nerodia harteri</i> * Brazos Water Snake	Limited	Intermediate	9	4	5	No
	<i>Nerodia paucimaculata</i> * Concho Water Snake	Limited	Intermediate	9	2	3	No
	<i>Sceloporus arenicolus</i> Sand Dune Lizard	Endemic	Local	25	19	20	No
	<i>Sistrurus catenatus</i> Massasauga	Widespread	Intermediate	6	2	2	No
	<i>Thamnophis sirtalis annectens</i> Texas Garter Snake	Limited	Intermediate	11	2	3	No
Vascular Plants							
	<i>Agalinis densiflora</i> Osage Plains Foxglove	Limited	Local	13	0	0	No
	<i>Argythamnia aphoroides</i> Hill Country Wild Mercury	Peripheral	Local	3	0	0	No

Group	Scientific Name Common Name	Distribution	Geographic Scale	Conservation Goal	Target Amount Captured	Target Amount Known	All Goals Met
	<i>Asclepias uncialis</i> Greene Milkweed	Limited	Local	13	0	0	No
	<i>Astragalus mollissimus</i> var. <i>coryi</i> Cory's Woolly Loco	Limited	Local	13	0	0	No
	<i>Astragalus siliceus</i> Flint Mountains Milk-vetch	Endemic	Local	25	9	9	No
	<i>Astragalus wittmannii</i> Wittmann's Milk-vetch	Endemic	Local	25	1	1	No
	<i>Callirhoe scabriuscula</i> Texas Poppy-mallow	Limited	Local	13	0	10	No
	<i>Chamaesyce jejuna</i> Dwarf Broomspurge	Peripheral	Local	3	0	0	No
	<i>Cirsium wrightii</i> Wright's Marsh Thistle	Limited	Local	13	3	3	No
	<i>Cyperus onerosus</i> Dune Flat-sedge	Limited	Local	13	3	4	No
	<i>Echinocereus fendleri</i> var. <i>kuenzleri</i> Kuenzler's Hedgehog Cactus	Peripheral	Local	3	2	34	No
	<i>Echinocereus reichenbachii</i> var. <i>baileyi</i> Bailey's Lace Cactus	Limited	Local	13	0	0	No
	<i>Ephedra coryi</i> Cory's Mormon-tea	Limited	Local	13	0	0	No
	<i>Eriogonum aliquidum</i> Cimarron Wild Buckwheat	Endemic	Local	25	6	7	No

Group	Scientific Name Common Name	Distribution	Geographic Scale	Conservation Goal	Target Amount Captured	Target Amount Known	All Goals Met
	<i>Eriogonum correllii</i> Correll's Wild Buckwheat	Limited	Local	13	1	1	No
	<i>Eriogonum nealleyi</i> Irion County Wild Buckwheat	Limited	Local	13	0	0	No
	<i>Euphorbia strictior</i> Panhandle Spurge	Endemic	Local	27	6	7	No
	<i>Eurytaenia hinckleyi</i> Hinckley's Spread-wing	Limited	Local	13	0	1	No
	<i>Helianthus paradoxus</i> Pecos Sunflower	Limited	Local	14	2	3	No
	<i>Herrickia horrida</i> Horrid Herrickia	Limited	Local	14	1	1	No
	<i>Heteranthera mexicana</i> Mexican Mud-plantain	Disjunct	Local	13	0	1	No
	<i>Hexalectris nitida</i> Glass Mountain Coral-root	Peripheral	Local	3	0	2	No
	<i>Hexalectris warnockii</i> Purple-spike Coral-root	Peripheral	Local	3	0	2	No
	<i>Mentzelia strictissima</i> Grassland Stickleaf	Limited	Local	13	0	0	No
	<i>Muhlenbergia villiflora</i> var. <i>villosa</i> Villous Muhly	Peripheral	Local	3	2	2	No
	<i>Oenothera coryi</i> Cory's Evening-primrose	Endemic	Local	25	0	0	No

Group	Scientific Name Common Name	Distribution	Geographic Scale	Conservation Goal	Target Amount Captured	Target Amount Known	All Goals Met
Vascular Plants (cont'd)							
	<i>Penstemon guadalupensis</i> Guadalupe Beardtongue	Limited	Local	13	0	0	No
	<i>Phlox drummondii</i> ssp. <i>johnstonii</i> Johnston's Phlox	Endemic	Local	25	0	0	No
	<i>Proboscidea sabulosa</i> Dune Unicorn-plant	Limited	Local	14	8	11	No
	<i>Pseudoclappia arenaria</i> Trans-pecos False-clappia	Peripheral	Local	3	0	0	No
	<i>Selenia jonesii</i> Jones' Selenia	Limited	Local	14	1	7	No
	<i>Senecio spellenbergii</i> Spellenberg's Groundsel	Endemic	Local	25	9	9	No
	<i>Solidago mollis</i> var. <i>angustata</i> A Goldenrod	Limited	Local	13	0	0	No

Appendix E2. Terrestrial Plant Community and Ecological System Targets–Progress Towards Overall Ecoregional Conservation Goals

Distribution: The relative proportion of the target’s natural range occurring within a given ecoregion. Categories used are endemic, widespread, limited, disjunct and peripheral. Please refer to the glossary section for definitions of these categories.

Geographic Scale: Refers to the land area or length of watercourse presumed to be necessary to sustain an occurrence of a species, community or ecological system. Categories used are local, intermediate, coarse and regional.

Conservation Goal: Conservation goals represent an initial science-based hypothesis as to the number or areal extent of occurrences needed to ensure the long-term persistence of the target in the ecoregion. This number is the **sum** of the goals set for each stratification unit within which a target occurs. Goals are expressed as discrete numbers of occurrences for all targets other than matrix systems. Matrix systems’ goals are expressed as hectares since they occur over large areas and can be mapped as large polygons across the landscape. See Appendices F1 and G1 for goal information by stratification unit.

Target Amount Captured: Total amount of known occurrences of a particular target in the ecoregion that 1) meet minimum viability criteria **and** 2) are selected to count toward goals and therefore included in the final portfolio of conservation areas. The amount is expressed as discrete numbers of occurrences for all targets other than matrix systems. Matrix systems are expressed in hectares.

Target Amount Known: Total amount of known occurrences of a particular target in the ecoregion; includes occurrences that are viable, non-viable, and of undetermined viability. The amount is expressed as discrete numbers of occurrences for all targets other than matrix systems. Matrix systems are expressed in hectares.

All Goals Met: Numeric goals are set for each stratification unit within which a target occurs (See Appendices F1 and G1). For a conservation goal to be considered fully met, the goals for each individual stratification unit (where a stratification unit goal was set) have to be met. Failure to meet goals can be attributed to the following: a) we have inadequate data for locations of target occurrences; b) the viability of the occurrences are unknown; and/or c) the occurrences have been determined to be non-viable. Those instances where all goals have been met or exceeded are shown in bold.

<i>Group</i>	<i>Scientific Name Common Name</i>	Distribution	Geographic Scale	Conservation Goal	Target Amount Captured	Target Amount Known	All Goals Met
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Terrestrial Plant Communities

	<i>Populus deltoides</i> / <i>Panicum virgatum</i> - <i>Schizachyrium scoparium</i> Woodland Eastern Cottonwood / Switchgrass - Little Bluestem Woodland	Limited	Local	13	0	0	No
	<i>Tripsacum dactyloides</i> - <i>Panicum virgatum</i> - <i>Sorghastrum nutans</i> Herbaceous Vegetation Eastern Gammagrass - Switchgrass - Yellow Indiangrass Herbaceous Vegetation	Widespread	Local	7	0	0	No

<i>Group</i>	<i>Scientific Name</i> <i>Common Name</i>	<i>Distribution</i>	<i>Geographic Scale</i>	<i>Conservation Goal</i>	<i>Target Amount Captured</i>	<i>Target Amount Known</i>	<i>All Goals Met</i>
Terrestrial Ecological Systems							
	Chihuahuan Desert Grasslands (swales)	Peripheral	Local	10	3	13	No
	Chihuahuan Desert Gypsophilous Vegetation	Disjunct	Local	5	0	1	No
	Chihuahuan Desert Xeric Shrublands	Peripheral	Local	10	0	0	No
	Crosstimbers Oak Forests and Woodlands	Limited	Intermediate	13	0	12	No
	Great Plains Carbonate Glades and Barrens	Limited	Local	10	3	3	No
	Great Plains Freshwater Emergent Marshes	Widespread	Local	15	3	4	No
	Great Plains Limestone Upland Forests and Woodlands	Disjunct	Intermediate	14	3	18	No
	Great Plains Mixedgrass Prairies	Widespread	Intermediate	16	28	76	No
	Great Plains Playa Lakes ¹	Limited	Local	34	81	N/A	Yes
	Great Plains Saline Wet Prairies and Meadows	Widespread	Local	15	5	6	No
	Great Plains Shortgrass Prairies	Widespread	Coarse	13,975,730 (ha)	2,417,139 (ha)	4,882,741 (ha)	No
	Great Plains Tallgrass Prairies	Widespread	Intermediate/Local	15	9	11	No
	Montane Riparian Woodlands and Shrublands	Peripheral	Local	6	1	2	No
	Pinyon - Oak - Juniper Woodlands and Shrublands	Widespread	Intermediate	22	31	63	No
	Rocky Mountain Dry Ponderosa Pine Forests and Woodlands	Peripheral	Local	15	7	9	No
	Rocky Mountain Subalpine Forests and Woodlands	Disjunct	Intermediate	2	2	2	Yes
	Southern Great Plains Deep Sand Shrublands	Limited	Intermediate	20	28	64	No
	Southern Great Plains Mesquite Woodlands and Shrublands	Limited	Coarse	1,518,500 (ha)	1,233,439 (ha)	5,612,916 (ha)	No

¹ *Lack of knowledge as to what constitutes a functional occurrence for setting and counting progress towards appropriate conservation goals led to the following decision: All playas located within a particular conservation area are counted as one occurrence, though the number of “potential” playas identified through satellite imagery varies widely within conservation areas. This latter number is shown in Appendices H1 and K1. Because of this accounting decision, a meaningful total for the number of known target occurrences in the ecoregion (Target Amount Known) cannot be provided.*

<i>Group</i>	<i>Scientific Name</i> Common Name	Distribution	Geographic Scale	Conservation Goal	Target Amount Captured	Target Amount Known	All Goals Met
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Terrestrial Ecological Systems

	Southern Great Plains Riparian Forests, Woodlands and Shrublands	Widespread	Local	40	21	69	No
	Southern Great Plains Saline Lakes	Limited	Intermediate	16	16	45	No
	Southern Great Plains Saline Shrublands	Peripheral	Local	5	1	1	No
	Southern Rocky Mountain Grasslands	Disjunct	Local	5	1	1	No

Appendix F1. Terrestrial Conservation Targets (Species, Plant Communities and Ecological Systems) – Progress Towards Stratification Unit Goals

Stratification Unit Goal: An initial science-based hypothesis as to the number or areal extent of occurrences required to sustain a conservation target within a particular stratification unit. Goals are expressed as discrete numbers of occurrences for all targets other than terrestrial matrix systems. Matrix systems' goals are expressed as hectares since they occur over large areas and can be mapped as large polygons across the landscape. Goals are set only for those stratification units within which a target is believed to occur.

Target Amount Captured: Total amount of known occurrences of a particular target in a stratification unit that 1) meet minimum viability criteria **and** 2) are selected to count toward goals and therefore included in the final portfolio of conservation areas. The amount is expressed as discrete numbers of occurrences for all targets other than matrix systems. Matrix systems are expressed in hectares.

Target Amount Known: Total amount of known occurrences of a particular target in the ecoregion; includes occurrences that are viable, non-viable, and of undetermined viability. The amount is expressed as discrete numbers of occurrences for all targets other than matrix systems. Matrix systems are expressed in hectares.

% of Stratification Goal Met: The number of viable occurrences as a percentage of the stratification unit goal. Those instances where a stratification unit goal has been met or exceeded are shown in bold and underlined.

Stratification Unit Name	Group	Scientific Name Common Name	Stratification Unit Goal	Target Amount Captured	Target Amount Known	% of Stratification Unit Goal Met
Canadian River Corridor						
Animal Assemblages						
		Intact Prairie Dog Towns and Associated Animal Assemblages ¹	5	6	N/A	<u>120</u>

¹ Lack of knowledge as to what would constitute a functional occurrence for setting and counting progress towards appropriate conservation goals led to the following decision: All prairie dog towns located within a particular conservation area are counted as one occurrence, though the actual number varies widely within conservation areas. Because of this accounting decision, no comparable information is available for prairie dog towns outside of conservation areas and a meaningful total for the number of known target occurrences in the ecoregion (Target Amount Known) cannot be provided.

Stratification Unit Name	Group	Scientific Name Common Name	Stratification Unit Goal	Target Amount Captured	Target Amount Known	% of Stratification Unit Goal Met
Canadian River Corridor (cont'd)						
Birds						
		<i>Aimophila cassinii</i> Cassin's Sparrow	2	9	15	<u>450</u>
		<i>Athene cunicularia hypugaea</i> Western Burrowing Owl	2	5	9	<u>250</u>
		<i>Buteo regalis</i> Ferruginous Hawk	2	4	6	<u>200</u>
		<i>Calamospiza melanocorys</i> (breeding) Lark Bunting	2	5	9	<u>250</u>
		<i>Calamospiza melanocorys</i> (wintering) Lark Bunting	2	1	2	50
		<i>Calcarius mccownii</i> (wintering) McCown's Longspur	2	0	0	0
		<i>Calcarius ornatus</i> (wintering) Chestnut-collared Longspur	2	0	0	0
		<i>Callipepla squamata</i> Scaled Quail	2	4	7	<u>200</u>
		<i>Charadrius alexandrinus nivosus</i> (breeding) Western Snowy Plover	2	1	1	50
		<i>Charadrius montanus</i> (breeding) Mountain Plover	2	4	5	<u>200</u>
		<i>Melanerpes erythrocephalus</i> Red-headed Woodpecker	2	5	8	<u>250</u>
		<i>Numenius americanus</i> (breeding) Long-billed Curlew	2	5	6	<u>250</u>
		<i>Sternula antillarum athalassos</i> (breeding) Interior Least Tern	2	3	3	<u>150</u>

Stratification Unit Name	Group	Scientific Name Common Name	Stratification Unit Goal	Target Amount Captured	Target Amount Known	% of Stratification Unit Goal Met
Canadian River Corridor (cont'd)						
Birds (cont'd)						
		<i>Tympanuchus pallidicinctus</i> Lesser Prairie-chicken	5	4	6	80
		<i>Vireo bellii</i> (breeding) Bell's Vireo	2	2	3	<u>100</u>
		<i>Zonotrichia querula</i> (wintering) Harris' Sparrow	2	1	2	50
Insects						
		<i>Amblyscirtes simius</i> Simius Roadside-skipper	1	0	0	0
		<i>Amblyscirtes texanae</i> Texas Roadside-skipper	1	0	0	0
		<i>Poladryas minuta minuta</i> Dotted Checkerspot	1	0	0	0
		<i>Polites rhesus</i> Rhesus Skipper	1	0	0	0
Mammals						
		<i>Spilogale putorius interrupta</i> Plains Spotted Skunk	1	0	0	0
		<i>Vulpes velox</i> Swift Fox	1	0	0	0

Stratification Unit Name	Group	Scientific Name Common Name	Stratification Unit Goal	Target Amount Captured	Target Amount Known	% of Stratification Unit Goal Met
Canadian River Corridor (cont'd)						
Reptiles						
		<i>Sistrurus catenatus</i> Massasauga	1	1	1	<u>100</u>
		<i>Thamnophis sirtalis annectens</i> Texas Garter Snake	3	0	0	0
Vascular Plants						
		<i>Asclepias uncialis</i> Greene Milkweed	6	0	0	0
		<i>Cirsium wrightii</i> Wright's Marsh Thistle	13	3	3	23
		<i>Euphorbia strictior</i> Panhandle Spurge	9	5	6	56
		<i>Helianthus paradoxus</i> Pecos Sunflower	7	2	2	29
		<i>Herrickia horrida</i> Horrid Herrickia	7	1	1	14
		<i>Proboscidea sabulosa</i> Dune Unicorn-plant	1	1	1	<u>100</u>
		<i>Senecio spellenbergii</i> Spellenberg's Groundsel	2	1	1	50
Terrestrial Plant Communities						
		<i>Populus deltoides</i> / <i>Panicum virgatum</i> - <i>Schizachyrium scoparium</i> Woodland Eastern Cottonwood / Switchgrass - Little Bluestem Woodland	5	0	0	0

Stratification Unit Name	Group	Scientific Name Common Name	Stratification Unit Goal	Target Amount Captured	Target Amount Known	% of Stratification Unit Goal Met
Canadian River Corridor (cont'd)						
Terrestrial Plant Communities (cont'd)						
		<i>Tripsacum dactyloides</i> - <i>Panicum virgatum</i> - <i>Sorghastrum nutans</i> Herbaceous Vegetation	3	0	0	0
		Eastern Gammagrass - Switchgrass - Yellow Indiangrass Herbaceous Vegetation				
Terrestrial Ecological Systems						
		Great Plains Carbonate Glades and Barrens	3	1	1	33
		Great Plains Freshwater Emergent Marshes	5	1	2	20
		Great Plains Mixedgrass Prairies	3	7	8	<u>233</u>
		Great Plains Playa Lakes ²	4	16	N/A	<u>400</u>
		Great Plains Saline Wet Prairies and Meadows	5	1	1	20
		Great Plains Shortgrass Prairies	2,705,254 (ha)	756,017 (ha)	1,010,533 (ha)	28
		Great Plains Tallgrass Prairies	3	3	3	<u>100</u>
		Montane Riparian Woodlands and Shrublands	1	1	1	<u>100</u>
		Pinyon - Oak - Juniper Woodlands and Shrublands	3	8	13	<u>267</u>
		Rocky Mountain Dry Ponderosa Pine Forests and Woodlands	5	2	2	40
		Southern Great Plains Deep Sand Shrublands	4	9	9	<u>225</u>

² Lack of knowledge as to what constitutes a functional occurrence for setting and counting progress towards appropriate conservation goals led to the following decision: All playas located within a particular conservation area are counted as one occurrence, though the number of "potential" playas identified through satellite imagery varies widely within conservation areas. This latter number is shown in Appendices H1 and K1. Because of this accounting decision, a meaningful total for the number of known target occurrences in the ecoregion (Target Amount Known) cannot be provided.

Stratification Unit Name	Group	Scientific Name Common Name	Stratification Unit Goal	Target Amount Captured	Target Amount Known	% of Stratification Unit Goal Met
Canadian River Corridor (cont'd)						
Terrestrial Ecological Systems (cont'd)						
		Southern Great Plains Mesquite Woodlands and Shrublands	215,229 (ha)	363,569 (ha)	1,181,415 (ha)	<u>169</u>
		Southern Great Plains Riparian Forests, Woodlands and Shrublands	5	9	13	<u>180</u>
		Southern Great Plains Saline Lakes	3	2	2	67
Capulin High Plains						
Animal Assemblages						
		Intact Prairie Dog Towns and Associated Animal Assemblages ¹	5	2	N/A	40
		Migratory Waterbird Assemblage (incl. Shorebirds, Waterfowl, and Cranes)	1	0	1	0
Birds						
		<i>Aimophila cassinii</i> Cassin's Sparrow	2	4	13	<u>200</u>
		<i>Athene cunicularia hypugaea</i> Western Burrowing Owl	2	4	11	<u>200</u>
		<i>Buteo regalis</i> Ferruginous Hawk	2	4	14	<u>200</u>

¹ Lack of knowledge as to what would constitute a functional occurrence for setting and counting progress towards appropriate conservation goals led to the following decision: All prairie dog towns located within a particular conservation area are counted as one occurrence, though the actual number varies widely within conservation areas. Because of this accounting decision, no comparable information is available for prairie dog towns outside of conservation areas and a meaningful total for the number of known target occurrences in the ecoregion (Target Amount Known) cannot be provided.

Stratification Unit Name	Group	Scientific Name Common Name	Stratification Unit Goal	Target Amount Captured	Target Amount Known	% of Stratification Unit Goal Met
Capulin High Plains (cont'd)						
Birds (cont'd)						
		<i>Calamospiza melanocorys</i> (breeding) Lark Bunting	2	3	15	<u>150</u>
		<i>Calamospiza melanocorys</i> (wintering) Lark Bunting	2	0	1	0
		<i>Calcarius mccownii</i> (wintering) McCown's Longspur	2	0	0	0
		<i>Calcarius ornatus</i> (wintering) Chestnut-collared Longspur	2	0	0	0
		<i>Callipepla squamata</i> Scaled Quail	2	4	6	<u>200</u>
		<i>Charadrius montanus</i> (breeding) Mountain Plover	4	10	21	<u>250</u>
		<i>Melanerpes erythrocephalus</i> Red-headed Woodpecker	2	2	4	<u>100</u>
		<i>Numenius americanus</i> (breeding) Long-billed Curlew	2	4	16	<u>200</u>
Insects						
		<i>Amblyscirtes simius</i> Simius Roadside-skipper	2	1	1	50
		<i>Poladryas minuta minuta</i> Dotted Checkerspot	1	0	0	0
		<i>Polites rhesus</i> Rhesus Skipper	2	1	1	50

Stratification Unit Name	Group	Scientific Name Common Name	Stratification Unit Goal	Target Amount Captured	Target Amount Known	% of Stratification Unit Goal Met
Capulin High Plains (cont'd)						
Mammals						
		<i>Microtus mogollonensis (mexicanus)</i> Mogollon Vole	1	1	1	<u>100</u>
		<i>Spilogale putorius interrupta</i> Plains Spotted Skunk	1	0	0	0
		<i>Vulpes velox</i> Swift Fox	1	1	16	<u>100</u>
Vascular Plants						
		<i>Asclepias uncialis</i> Greene Milkweed	7	0	0	0
		<i>Astragalus wittmannii</i> Wittmann's Milk-vetch	25	1	1	4
		<i>Herrickia horrida</i> Horrid Herrickia	7	0	0	0
		<i>Senecio spellenbergii</i> Spellenberg's Groundsel	23	8	8	35
Terrestrial Plant Communities						
		<i>Populus deltoides / Panicum virgatum - Schizachyrium scoparium</i> Woodland Eastern Cottonwood / Switchgrass - Little Bluestem Woodland	4	0	0	0
Terrestrial Ecological Systems						
		Great Plains Carbonate Glades and Barrens	3	1	1	33
		Great Plains Mixedgrass Prairies	3	8	13	<u>267</u>

Stratification Unit Name	Group	Scientific Name Common Name	Stratification Unit Goal	Target Amount Captured	Target Amount Known	% of Stratification Unit Goal Met
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Capulin High Plains (cont'd)

Terrestrial Ecological Systems (cont'd)

		Great Plains Playa Lakes ²	5	11	N/A	<u>220</u>
		Great Plains Shortgrass Prairies	1,541,569 (ha)	435,587 (ha)	940,440 (ha)	28
		Great Plains Tallgrass Prairies	3	4	6	<u>133</u>
		Pinyon - Oak - Juniper Woodlands and Shrublands	3	5	9	<u>167</u>
		Rocky Mountain Dry Ponderosa Pine Forests and Woodlands	5	4	4	80
		Rocky Mountain Subalpine Forests and Woodlands	2	2	2	<u>100</u>
		Southern Great Plains Deep Sand Shrublands	2	2	5	<u>100</u>
		Southern Great Plains Mesquite Woodlands and Shrublands	224,850 (ha)	15,994 (ha)	114,495 (ha)	7
		Southern Great Plains Riparian Forests, Woodlands and Shrublands	5	0	4	0
		Southern Great Plains Saline Lakes	1	1	1	<u>100</u>
		Southern Rocky Mountain Grasslands	5	1	1	20

Middle Brazos

Birds

		<i>Aimophila cassinii</i> Cassin's Sparrow	2	1	6	50
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² Lack of knowledge as to what constitutes a functional occurrence for setting and counting progress towards appropriate conservation goals led to the following decision: All playas located within a particular conservation area are counted as one occurrence, though the number of "potential" playas identified through satellite imagery varies widely within conservation areas. This latter number is shown in Appendices H1 and K1. Because of this accounting decision, a meaningful total for the number of known target occurrences in the ecoregion (Target Amount Known) cannot be provided.

Stratification Unit Name	Group	Scientific Name Common Name	Stratification Unit Goal	Target Amount Captured	Target Amount Known	% of Stratification Unit Goal Met
Middle Brazos (cont'd)						
Birds (cont'd)						
		<i>Athene cunicularia hypugaea</i> Western Burrowing Owl	2	0	1	0
		<i>Buteo regalis</i> Ferruginous Hawk	1	0	1	0
		<i>Calamospiza melanocorys</i> (wintering) Lark Bunting	2	0	1	0
		<i>Calcarius ornatus</i> (wintering) Chestnut-collared Longspur	2	0	1	0
		<i>Callipepla squamata</i> Scaled Quail	2	0	3	0
		<i>Dendroica chrysoparia</i> (breeding) Golden-cheeked Warbler	2	1	3	50
		<i>Melanerpes erythrocephalus</i> Red-headed Woodpecker	2	0	1	0
		<i>Vireo atricapilla</i> (breeding) Black-capped Vireo	2	1	6	50
		<i>Vireo bellii</i> (breeding) Bell's Vireo	2	1	3	50
		<i>Zonotrichia querula</i> (wintering) Harris' Sparrow	2	0	1	0
Mammals						
		<i>Spilogale putorius interrupta</i> Plains Spotted Skunk	1	0	0	0

Stratification Unit Name	Group	Scientific Name Common Name	Stratification Unit Goal	Target Amount Captured	Target Amount Known	% of Stratification Unit Goal Met
Middle Brazos (cont'd)						
Reptiles						
		<i>Sistrurus catenatus</i> Massasauga	1	0	0	0
		<i>Thamnophis sirtalis annectens</i> Texas Garter Snake	3	0	0	0
Vascular Plants						
		<i>Agalinis densiflora</i> Osage Plains Foxglove	13	0	0	0
		<i>Oenothera coryi</i> Cory's Evening-primrose	9	0	0	0
Terrestrial Plant Communities						
		<i>Tripsacum dactyloides</i> - <i>Panicum virgatum</i> - <i>Sorghastrum nutans</i> Herbaceous Vegetation Eastern Gammagrass - Switchgrass - Yellow Indiangrass Herbaceous Vegetation	2	0	0	0
Terrestrial Ecological Systems						
		Crosstimbers Oak Forests and Woodlands	7	0	12	0
		Great Plains Limestone Upland Forests and Woodlands	7	1	12	14
		Great Plains Mixedgrass Prairies	3	1	21	33
		Great Plains Playa Lakes ²	1	2	N/A	<u>200</u>

² Lack of knowledge as to what constitutes a functional occurrence for setting and counting progress towards appropriate conservation goals led to the following decision: All playas located within a particular conservation area are counted as one occurrence, though the number of "potential" playas identified through satellite imagery varies widely within conservation areas. This latter number is shown in Appendices H1 and K1. Because of this accounting decision, a meaningful total for the number of known target occurrences in the ecoregion (Target Amount Known) cannot be provided.

Stratification Unit Name	Group	Scientific Name Common Name	Stratification Unit Goal	Target Amount Captured	Target Amount Known	% of Stratification Unit Goal Met
Middle Brazos (cont'd)						
Terrestrial Ecological Systems (cont'd)						
		Great Plains Tallgrass Prairies	3	0	0	0
		Southern Great Plains Mesquite Woodlands and Shrublands	116,637 (ha)	115,021 (ha)	640,611 (ha)	99
		Southern Great Plains Riparian Forests, Woodlands and Shrublands	5	1	16	20
Montane Ecotone						
Animal Assemblages						
		Intact Prairie Dog Towns and Associated Animal Assemblages ¹	5	2	2	40
		Migratory Waterbird Assemblage (incl. Shorebirds, Waterfowl, and Cranes)	1	0	0	0
Birds						
		<i>Aimophila cassinii</i> Cassin's Sparrow	2	3	5	<u>150</u>
		<i>Athene cucularia hypugaea</i> Western Burrowing Owl	2	4	4	<u>200</u>

¹ Lack of knowledge as to what would constitute a functional occurrence for setting and counting progress towards appropriate conservation goals led to the following decision: All prairie dog towns located within a particular conservation area are counted as one occurrence, though the actual number varies widely within conservation areas. Because of this accounting decision, no comparable information is available for prairie dog towns outside of conservation areas and a meaningful total for the number of known target occurrences in the ecoregion (Target Amount Known) cannot be provided.

Stratification Unit Name	Group	Scientific Name Common Name	Stratification Unit Goal	Target Amount Captured	Target Amount Known	% of Stratification Unit Goal Met
Montane Ecotone (cont'd)						
Birds (cont'd)						
		<i>Buteo regalis</i> Ferruginous Hawk	2	4	4	<u>200</u>
		<i>Calamospiza melanocorys</i> (breeding) Lark Bunting	2	3	4	<u>150</u>
		<i>Calcarius mccownii</i> (wintering) McCown's Longspur	2	1	1	50
		<i>Calcarius ornatus</i> (wintering) Chestnut-collared Longspur	2	2	2	<u>100</u>
		<i>Callipepla squamata</i> Scaled Quail	2	2	4	<u>100</u>
		<i>Charadrius montanus</i> (breeding) Mountain Plover	2	11	11	<u>550</u>
		<i>Empidonax traillii extimus</i> Southwestern Willow Flycatcher	1	1	2	<u>100</u>
		<i>Numenius americanus</i> (breeding) Long-billed Curlew	2	4	8	<u>200</u>
		<i>Zonotrichia querula</i> (wintering) Harris' Sparrow	1	1	2	<u>100</u>
Insects						
		<i>Amblyscirtes simius</i> Simius Roadside-skipper	1	0	0	0
		<i>Poladryas minuta minuta</i> Dotted Checkerspot	1	0	0	0

Stratification Unit Name	Group	Scientific Name Common Name	Stratification Unit Goal	Target Amount Captured	Target Amount Known	% of Stratification Unit Goal Met
Montane Ecotone (cont'd)						
Mammals						
		<i>Microtus mogollonensis (mexicanus)</i> Mogollon Vole	1	0	0	0
		<i>Vulpes velox</i> Swift Fox	1	0	0	0
Vascular Plants						
		<i>Astragalus siliceus</i> Flint Mountains Milk-vetch	8	1	1	12
		<i>Eriogonum aliquidum</i> Cimarron Wild Buckwheat	25	6	7	24
Terrestrial Ecological Systems						
		Great Plains Carbonate Glades and Barrens	4	1	1	25
		Great Plains Freshwater Emergent Marshes	5	0	0	0
		Great Plains Mixedgrass Prairies	3	6	8	200
		Great Plains Playa Lakes ²	5	11	N/A	220
		Great Plains Shortgrass Prairies	1,081,142 (ha)	278,982 (ha)	421,874 (ha)	26
		Great Plains Tallgrass Prairies	3	2	2	67
		Montane Riparian Woodlands and Shrublands	5	0	0	0

² Lack of knowledge as to what constitutes a functional occurrence for setting and counting progress towards appropriate conservation goals led to the following decision: All playas located within a particular conservation area are counted as one occurrence, though the number of "potential" playas identified through satellite imagery varies widely within conservation areas. This latter number is shown in Appendices H1 and K1. Because of this accounting decision, a meaningful total for the number of known target occurrences in the ecoregion (Target Amount Known) cannot be provided.

Stratification Unit Name	Group	Scientific Name Common Name	Stratification Unit Goal	Target Amount Captured	Target Amount Known	% of Stratification Unit Goal Met
Montane Ecotone (cont'd)						
Terrestrial Ecological Systems (cont'd)						
		Pinyon - Oak - Juniper Woodlands and Shrublands	5	6	11	<u>120</u>
		Rocky Mountain Dry Ponderosa Pine Forests and Woodlands	5	1	3	20
		Southern Great Plains Riparian Forests, Woodlands and Shrublands	5	2	2	40
		Southern Great Plains Saline Lakes	3	0	0	0
New Mexico High Plains						
Animal Assemblages						
		Intact Prairie Dog Towns and Associated Animal Assemblages ¹	2	1	N/A	50
		Migratory Waterbird Assemblage (incl. Shorebirds, Waterfowl, and Cranes)	1	0	0	0
Birds						
		<i>Aimophila cassinii</i> Cassin's Sparrow	2	2	10	<u>100</u>
		<i>Anthus spragueii</i> (wintering) Sprague's Pipit	1	1	1	<u>100</u>
		<i>Athene cunicularia hypugaea</i> Western Burrowing Owl	2	1	5	50

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Stratification Unit Name	Group	Scientific Name Common Name	Stratification Unit Goal	Target Amount Captured	Target Amount Known	% of Stratification Unit Goal Met
New Mexico High Plains (cont'd)						
Birds (cont'd)						
		<i>Buteo regalis</i> Ferruginous Hawk	2	1	3	50
		<i>Calamospiza melanocorys</i> (breeding) Lark Bunting	2	0	2	0
		<i>Calamospiza melanocorys</i> (wintering) Lark Bunting	2	1	1	50
		<i>Calcarius mccownii</i> (wintering) McCown's Longspur	2	1	2	50
		<i>Calcarius ornatus</i> (wintering) Chestnut-collared Longspur	2	1	2	50
		<i>Callipepla squamata</i> Scaled Quail	2	1	7	50
		<i>Charadrius alexandrinus nivosus</i> (breeding) Western Snowy Plover	2	1	2	50
		<i>Charadrius montanus</i> (breeding) Mountain Plover	2	1	3	50
		<i>Numenius americanus</i> (breeding) Long-billed Curlew	2	0	1	0
		<i>Vireo bellii</i> (breeding) Bell's Vireo	2	1	2	50
Insects						
		<i>Amblyscirtes simius</i> Simius Roadside-skipper	1	0	0	0
		<i>Poladryas minuta minuta</i> Dotted Checkerspot	1	0	0	0

Stratification Unit Name	Group	Scientific Name Common Name	Stratification Unit Goal	Target Amount Captured	Target Amount Known	% of Stratification Unit Goal Met
New Mexico High Plains (cont'd)						
Mammals						
		<i>Vulpes velox</i> Swift Fox	1	0	1	0
Reptiles						
		<i>Sistrurus catenatus</i> Massasauga	1	0	0	0
Vascular Plants						
		<i>Astragalus siliceus</i> Flint Mountains Milk-vetch	17	8	8	47
		<i>Echinocereus fendleri</i> var. <i>kuenzleri</i> Kuenzler's Hedgehog Cactus	3	2	34	67
		<i>Helianthus paradoxus</i> Pecos Sunflower	7	0	1	0
Terrestrial Ecological Systems						
		Chihuahuan Desert Grasslands (swales)	5	0	0	0
		Chihuahuan Desert Gypsophilous Vegetation	5	0	1	0
		Chihuahuan Desert Xeric Shrublands	5	0	0	0
		Great Plains Playa Lakes ²	4	6	N/A	<u>150</u>

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Stratification Unit Name	Group	Scientific Name Common Name	Stratification Unit Goal	Target Amount Captured	Target Amount Known	% of Stratification Unit Goal Met
New Mexico High Plains (cont'd)						
Terrestrial Ecological Systems (cont'd)						
		Great Plains Saline Wet Prairies and Meadows	5	4	4	80
		Great Plains Shortgrass Prairies	1,497,273 (ha)	756,505 (ha)	1,424,623 (ha)	51
		Pinyon - Oak - Juniper Woodlands and Shrublands	2	3	3	150
		Southern Great Plains Deep Sand Shrublands	2	0	2	0
		Southern Great Plains Mesquite Woodlands and Shrublands	100,000 (ha)	55,620 (ha)	660,450 (ha)	56
		Southern Great Plains Riparian Forests, Woodlands and Shrublands	5	1	2	20
		Southern Great Plains Saline Lakes	3	3	3	100
		Southern Great Plains Saline Shrublands	5	1	1	20
Northern Llano Estacado						
Animal Assemblages						
		Intact Prairie Dog Towns and Associated Animal Assemblages ¹	5	2	86	40
		Migratory Waterbird Assemblage (incl. Shorebirds, Waterfowl, and Cranes)	4	0	0	0
Birds						
		<i>Aimophila cassinii</i> Cassin's Sparrow	2	2	10	100

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Stratification Unit Name	Group	Scientific Name Common Name	Stratification Unit Goal	Target Amount Captured	Target Amount Known	% of Stratification Unit Goal Met
Northern Llano Estacado (cont'd)						
Birds (cont'd)						
		<i>Anthus spragueii</i> (wintering) Sprague's Pipit	2	0	1	0
		<i>Athene cucularia hypugaea</i> Western Burrowing Owl	2	2	7	100
		<i>Buteo regalis</i> Ferruginous Hawk	2	2	4	100
		<i>Calamospiza melanocorys</i> (breeding) Lark Bunting	2	2	6	100
		<i>Calamospiza melanocorys</i> (wintering) Lark Bunting	2	1	3	50
		<i>Calcarius mccownii</i> (wintering) McCown's Longspur	2	2	3	100
		<i>Calcarius ornatus</i> (wintering) Chestnut-collared Longspur	2	1	2	50
		<i>Callipepla squamata</i> Scaled Quail	2	3	6	150
		<i>Charadrius alexandrinus nivosus</i> (breeding) Western Snowy Plover	2	0	0	0
		<i>Charadrius montanus</i> (breeding) Mountain Plover	2	1	3	50
		<i>Numenius americanus</i> (breeding) Long-billed Curlew	2	0	5	0
		<i>Zonotrichia querula</i> (wintering) Harris' Sparrow	2	1	3	50

Stratification Unit Name	Group	Scientific Name Common Name	Stratification Unit Goal	Target Amount Captured	Target Amount Known	% of Stratification Unit Goal Met
Northern Llano Estacado (cont'd)						
Insects						
		<i>Amblyscirtes simius</i> Simius Roadside-skipper	1	0	0	0
		<i>Amblyscirtes texanae</i> Texas Roadside-skipper	1	0	0	0
		<i>Poladryas minuta minuta</i> Dotted Checkerspot	1	0	0	0
Mammals						
		<i>Peromyscus truei comanche</i> Palo Duro Mouse	4	1	1	25
		<i>Vulpes velox</i> Swift Fox	1	0	2	0
Reptiles						
		<i>Sistrurus catenatus</i> Massasauga	1	0	0	0
		<i>Thamnophis sirtalis annectens</i> Texas Garter Snake	2	0	1	0
Vascular Plants						
		<i>Eriogonum correllii</i> Correll's Wild Buckwheat	7	0	0	0
		<i>Euphorbia strictior</i> Panhandle Spurge	9	0	0	0
		<i>Heteranthera mexicana</i> Mexican Mud-plantain	7	0	0	0

Stratification Unit Name	Group	Scientific Name Common Name	Stratification Unit Goal	Target Amount Captured	Target Amount Known	% of Stratification Unit Goal Met
Northern Llano Estacado (cont'd)						
Vascular Plants (cont'd)						
		<i>Oenothera coryi</i> Cory's Evening-primrose	8	0	0	0
Terrestrial Plant Communities						
		<i>Populus deltoides</i> / <i>Panicum virgatum</i> - <i>Schizachyrium scoparium</i> Woodland Eastern Cottonwood / Switchgrass - Little Bluestem Woodland	4	0	0	0
Terrestrial Ecological Systems						
		Great Plains Mixedgrass Prairies	1	1	1	100
		Great Plains Playa Lakes ²	5	5	N/A	100
		Great Plains Shortgrass Prairies	2,164,144 (ha)	0	145,030 (ha)	0
		Pinyon - Oak - Juniper Woodlands and Shrublands	3	2	2	67
		Southern Great Plains Deep Sand Shrublands	2	0	1	0
		Southern Great Plains Mesquite Woodlands and Shrublands	172,179 (ha)	104,712 (ha)	111,656 (ha)	61
		Southern Great Plains Riparian Forests, Woodlands and Shrublands	5	2	3	40
		Southern Great Plains Saline Lakes	3	0	0	0

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Stratification Unit Name	Group	Scientific Name Common Name	Stratification Unit Goal	Target Amount Captured	Target Amount Known	% of Stratification Unit Goal Met
Southern Llano Estacado						
Animal Assemblages						
		Intact Prairie Dog Towns and Associated Animal Assemblages ¹	5	5	N/A	<u>100</u>
		Migratory Waterbird Assemblage (incl. Shorebirds, Waterfowl, and Cranes)	5	2	3	40
Birds						
		<i>Aimophila cassinii</i> Cassin's Sparrow	2	8	33	<u>400</u>
		<i>Anthus spragueii</i> (wintering) Sprague's Pipit	2	0	0	0
		<i>Athene cunicularia hypugaea</i> Western Burrowing Owl	2	5	18	<u>250</u>
		<i>Buteo regalis</i> Ferruginous Hawk	2	4	15	<u>200</u>
		<i>Calamospiza melanocorys</i> (breeding) Lark Bunting	2	4	9	<u>200</u>
		<i>Calamospiza melanocorys</i> (wintering) Lark Bunting	2	1	5	50
		<i>Calcarius mccownii</i> (wintering) McCown's Longspur	2	0	2	0
		<i>Calcarius ornatus</i> (wintering) Chestnut-collared Longspur	2	0	2	0

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Stratification Unit Name	Group	Scientific Name Common Name	Stratification Unit Goal	Target Amount Captured	Target Amount Known	% of Stratification Unit Goal Met
Southern Llano Estacado (cont'd)						
Birds (cont'd)						
		<i>Callipepla squamata</i> Scaled Quail	2	5	22	<u>250</u>
		<i>Charadrius alexandrinus nivosus</i> (breeding) Western Snowy Plover	2	3	9	<u>150</u>
		<i>Melanerpes erythrocephalus</i> Red-headed Woodpecker	2	1	5	50
		<i>Numenius americanus</i> (breeding) Long-billed Curlew	2	2	13	<u>100</u>
		<i>Sternula antillarum athalassos</i> (breeding) Interior Least Tern	1	1	1	<u>100</u>
		<i>Tympanuchus pallidicinctus</i> Lesser Prairie-chicken	8	20	35	<u>250</u>
		<i>Vireo bellii</i> (breeding) Bell's Vireo	2	1	1	50
		<i>Zonotrichia querula</i> (wintering) Harris' Sparrow	2	0	5	0
Insects						
		<i>Amblyscirtes texanae</i> Texas Roadside-skipper	3	0	0	0
		<i>Cicindela formosa rutilovirescens</i> Mescalero Sands Tiger Beetle	25	1	1	4
Mammals						
		<i>Geomys knoxjonesi</i> Jones' Pocket Gopher	25	0	0	0

Stratification Unit Name	Group	Scientific Name Common Name	Stratification Unit Goal	Target Amount Captured	Target Amount Known	% of Stratification Unit Goal Met
Southern Llano Estacado (cont'd)						
Mammals (cont'd)						
		<i>Vulpes velox</i> Swift Fox	1	0	0	0
Reptiles						
		<i>Sceloporus arenicolus</i> Sand Dune Lizard	25	19	20	76
		<i>Sistrurus catenatus</i> Massasauga	1	0	0	0
Vascular Plants						
		<i>Astragalus mollissimus</i> var. <i>coryi</i> Cory's Woolly Loco	13	0	0	0
		<i>Cyperus onerosus</i> Dune Flat-sedge	13	3	4	23
		<i>Ephedra coryi</i> Cory's Mormon-tea	13	0	0	0
		<i>Eurytaenia hinckleyi</i> Hinckley's Spread-wing	13	0	1	0
		<i>Heteranthera mexicana</i> Mexican Mud-plantain	6	0	1	0
		<i>Mentzelia strictissima</i> Grassland Stickleaf	13	0	0	0
		<i>Muhlenbergia villiflora</i> var. <i>villosa</i> Villous Muhly	3	2	2	67
		<i>Proboscidea sabulosa</i> Dune Unicorn-plant	13	7	10	54

Stratification Unit Name	Group	Scientific Name Common Name	Stratification Unit Goal	Target Amount Captured	Target Amount Known	% of Stratification Unit Goal Met
Southern Llano Estacado (cont'd)						
Vascular Plants (cont'd)						
		<i>Pseudoclappia arenaria</i> Trans-pecos False-clappia	2	0	0	0
		<i>Selenia jonesii</i> Jones' Selenia	7	1	4	14
Terrestrial Ecological Systems						
		Chihuahuan Desert Grasslands (swales)	5	3	12	60
		Chihuahuan Desert Xeric Shrublands	5	0	0	0
		Great Plains Playa Lakes ²	5	15	N/A	<u>300</u>
		Great Plains Saline Wet Prairies and Meadows	5	0	1	0
		Great Plains Shortgrass Prairies	4,357,688 (ha)	165,915 (ha)	823,872 (ha)	4
		Pinyon - Oak - Juniper Woodlands and Shrublands	1	2	3	<u>200</u>
		Southern Great Plains Deep Sand Shrublands	6	10	26	<u>167</u>
		Southern Great Plains Mesquite Woodlands and Shrublands	346,696 (ha)	356,246 (ha)	1,380,649 (ha)	<u>103</u>
		Southern Great Plains Riparian Forests, Woodlands and Shrublands	5	0	1	0
		Southern Great Plains Saline Lakes	3	10	38	<u>333</u>

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Stratification Unit Name	Group	Scientific Name Common Name	Stratification Unit Goal	Target Amount Captured	Target Amount Known	% of Stratification Unit Goal Met
Western Rolling Plains						
Animal Assemblages						
		Intact Prairie Dog Towns and Associated Animal Assemblages ¹	2	1	N/A	50
		Migratory Waterbird Assemblage (incl. Shorebirds, Waterfowl, and Cranes)	1	1	2	100
Birds						
		<i>Aimophila cassinii</i> Cassin's Sparrow	2	1	20	50
		<i>Anthus spragueii</i> (wintering) Sprague's Pipit	2	0	2	0
		<i>Athene cunicularia hypugaea</i> Western Burrowing Owl	2	2	9	100
		<i>Buteo regalis</i> Ferruginous Hawk	1	3	8	300
		<i>Calamospiza melanocorys</i> (breeding) Lark Bunting	2	0	2	0
		<i>Calamospiza melanocorys</i> (wintering) Lark Bunting	2	3	9	150
		<i>Calcarius mccownii</i> (wintering) McCown's Longspur	2	1	3	50
		<i>Calcarius ornatus</i> (wintering) Chestnut-collared Longspur	2	2	5	100
		<i>Callipepla squamata</i> Scaled Quail	2	4	16	200

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Stratification Unit Name	Group	Scientific Name Common Name	Stratification Unit Goal	Target Amount Captured	Target Amount Known	% of Stratification Unit Goal Met
Western Rolling Plains (cont'd)						
Birds (cont'd)						
		<i>Charadrius alexandrinus nivosus</i> (breeding) Western Snowy Plover	2	0	1	0
		<i>Melanerpes erythrocephalus</i> Red-headed Woodpecker	2	1	7	50
		<i>Sternula antillarum athalassos</i> (breeding) Interior Least Tern	2	2	5	<u>100</u>
		<i>Tympanuchus pallidicinctus</i> Lesser Prairie-chicken	5	6	9	<u>120</u>
		<i>Vireo atricapilla</i> (breeding) Black-capped Vireo	2	1	8	50
		<i>Vireo bellii</i> (breeding) Bell's Vireo	2	1	6	50
		<i>Zonotrichia querula</i> (wintering) Harris' Sparrow	2	2	7	<u>100</u>
Mammals						
		<i>Dipodomys elator</i> Texas Kangaroo Rat	25	6	11	24
		<i>Peromyscus truei comanche</i> Palo Duro Mouse	21	13	13	62
		<i>Spilogale putorius interrupta</i> Plains Spotted Skunk	1	0	2	0

Stratification Unit Name	Group	Scientific Name Common Name	Stratification Unit Goal	Target Amount Captured	Target Amount Known	% of Stratification Unit Goal Met
Western Rolling Plains (cont'd)						
Reptiles						
		<i>Sistrurus catenatus</i> Massasauga	1	1	1	<u>100</u>
		<i>Thamnophis sirtalis annectens</i> Texas Garter Snake	3	2	2	67
Vascular Plants						
		<i>Argythamnia aphoroides</i> Hill Country Wild Mercury	3	0	0	0
		<i>Callirhoe scabriuscula</i> Texas Poppy-mallow	13	0	10	0
		<i>Chamaesyce jejuna</i> Dwarf Broomspurge	3	0	0	0
		<i>Echinocereus reichenbachii</i> var. <i>baileyi</i> Bailey's Lace Cactus	13	0	0	0
		<i>Eriogonum correllii</i> Correll's Wild Buckwheat	6	1	1	17
		<i>Eriogonum nealleyi</i> Irion County Wild Buckwheat	13	0	0	0
		<i>Euphorbia strictior</i> Panhandle Spurge	9	1	1	11
		<i>Hexalectris nitida</i> Glass Mountain Coral-root	3	0	2	0
		<i>Hexalectris warnockii</i> Purple-spike Coral-root	3	0	2	0
		<i>Oenothera coryi</i> Cory's Evening-primrose	8	0	0	0

Stratification Unit Name	Group	Scientific Name Common Name	Stratification Unit Goal	Target Amount Captured	Target Amount Known	% of Stratification Unit Goal Met
Western Rolling Plains (cont'd)						
Vascular Plants (cont'd)						
		<i>Penstemon guadalupensis</i> Guadalupe Beardtongue	13	0	0	0
		<i>Phlox drummondii</i> ssp. <i>johnstonii</i> Johnston's Phlox	25	0	0	0
		<i>Pseudoclappia arenaria</i> Trans-pecos False-clappia	1	0	0	0
		<i>Selenia jonesii</i> Jones' Selenia	7	0	3	0
		<i>Solidago mollis</i> var. <i>angustata</i> A Goldenrod	13	0	0	0
Terrestrial Plant Communities						
		<i>Tripsacum dactyloides</i> - <i>Panicum virgatum</i> - <i>Sorghastrum nutans</i> Herbaceous Vegetation Eastern Gammagrass - Switchgrass - Yellow Indiangrass Herbaceous Vegetation	2	0	0	0
Terrestrial Ecological Systems						
		Crosstimbers Oak Forests and Woodlands	6	0	0	0
		Great Plains Freshwater Emergent Marshes	5	2	2	40
		Great Plains Limestone Upland Forests and Woodlands	7	2	6	29
		Great Plains Mixedgrass Prairies	3	5	24	<u>167</u>
		Great Plains Playa Lakes	5	15	N/A	<u>300</u>
		Great Plains Shortgrass Prairies	628,660 (ha)	24,133 (ha)	114,141 (ha)	4

Stratification Unit Name	Group	Scientific Name Common Name	Stratification Unit Goal	Target Amount Captured	Target Amount Known	% of Stratification Unit Goal Met
Western Rolling Plains (cont'd)						
Terrestrial Ecological Systems (cont'd)						
		Great Plains Tallgrass Prairies	3	0	0	0
		Pinyon - Oak - Juniper Woodlands and Shrublands	5	4	22	80
		Southern Great Plains Deep Sand Shrublands	4	7	21	<u>175</u>
		Southern Great Plains Mesquite Woodlands and Shrublands	342,909 (ha)	222,277 (ha)	1,523,640 (ha)	65
		Southern Great Plains Riparian Forests, Woodlands and Shrublands	5	6	28	<u>120</u>

Appendix F2. Aquatic Species Targets–Progress Towards Ecological Drainage Unit (EDU) Goals

EDU Goal: An initial science-based hypothesis as to the number of occurrences required to sustain a conservation target within a particular ecological drainage unit. Goals are set only for those ecological drainage units within which a target is believed to occur.

Target Amount Captured: Total amount of known occurrences of a particular target in an EDU that 1) meet minimum viability criteria **and** 2) are selected to count toward goals and therefore included in the final portfolio of conservation areas. The amount is expressed as discrete numbers of occurrences.

Target Amount Known: Total amount of known occurrences of a particular target in the ecoregion; includes occurrences that are viable, non-viable, and of undetermined viability.

% of EDU Goal Met: The number of viable occurrences as a percentage of the ecological drainage unit goal. Those instances where an EDU goal has been met or exceeded are shown in bold and underlined.

EDU Name	Group	<i>Scientific Name</i> Common Name	EDU Goal	Target Amount Captured	Target Amount Known	% of EDU Goal Met
Brazos River - Prairie						
	Fishes					
		<i>Notropis buccula</i> Smalleye Shiner	9	1	5	11

EDU Name	Group	Scientific Name Common Name	EDU Goal	Target Amount Captured	Target Amount Known	% of EDU Goal Met
Brazos River – Prairie (cont'd)						
Fishes (cont'd)						
		<i>Notropis oxyrhynchus</i> Sharpnose Shiner	2	1	6	50
		<i>Percina macrolepida</i> Bigscale Logperch	1	0	5	0
Reptiles						
		<i>Nerodia harteri</i> Brazos Water Snake	9	4	5	44
Canadian River						
Crustaceans						
		<i>Orconectes deanae</i> Conchas Crayfish	25	0	1	0
Fishes						
		<i>Macrhybopsis tetranema</i> Peppered Chub	1	1	1	<u>100</u>
		<i>Notropis girardi</i> Arkansas River Shiner	3	2	3	67
		<i>Phenacobius mirabilis</i> Suckermouth Minnow	3	2	9	67

EDU Name	Group	Scientific Name Common Name	EDU Goal	Target Amount Captured	Target Amount Known	% of EDU Goal Met
Colorado River - Edwards Plateau						
	Fishes					
		<i>Micropterus treculi</i> Guadalupe Bass	2	0	2	0
		<i>Percina macrolepida</i> Bigscale Logperch	1	0	5	0
	Reptiles					
		<i>Nerodia paucimaculata</i> Concho Water Snake	9	2	3	22
Upper Pecos River						
	Fishes					
		<i>Gambusia nobilis</i> Pecos Gambusia	2	1	1	50
		<i>Gila pandora</i> Rio Grande Chub	5	5	10	<u>100</u>
		<i>Notropis jemezanus</i> Rio Grande Shiner	1	1	1	<u>100</u>
		<i>Notropis simus pecosensis</i> Pecos Bluntnose Shiner	1	1	1	<u>100</u>
		<i>Percina macrolepida</i> Bigscale Logperch	1	3	5	<u>300</u>

EDU Name	Group	Scientific Name Common Name	EDU Goal	Target Amount Captured	Target Amount Known	% of EDU Goal Met
Upper Red River						
	Fishes					
		<i>Notropis bairdi</i> Red River Shiner	9	3	7	33
		<i>Notropis girardi</i> Arkansas River Shiner	2	0	3	0
		<i>Notropis oxyrhynchus</i> Sharpnose Shiner	3	0	6	0
		<i>Percina macrolepida</i> Bigscale Logperch	1	0	5	0
		<i>Phenacobius mirabilis</i> Suckermouth Minnow	2	0	9	0
Upper Trinity						
	Fishes					
		<i>Percina macrolepida</i> Bigscale Logperch	1	0	5	0

Appendix F3. Aquatic System Targets–Progress Towards Ecological Drainage Unit (EDU) Goals

EDU Goal: An initial science-based hypothesis as to the number of occurrences required to sustain a conservation target within a particular ecological drainage unit.

Portfolio Captured: Total number of occurrences of a particular system target in an EDU selected for inclusion in the aquatic portfolio. These occurrences 1) meet minimum viability criteria for ecological integrity and condition based on GIS analysis, and 2) have been verified as healthy freshwater ecosystems and/or supporting viable populations of target species through expert review. Only these occurrences are counted towards meeting EDU goals.

Provisional Captured: Total number of occurrences of a particular target in an EDU selected for potential inclusion in the aquatic portfolio, pending further field verification. These occurrences meet minimum viability criteria based on GIS analysis, but need further survey and inventory to validate ecological integrity and condition before they can be considered priorities for conservation action. Because of their provisional status, these occurrences have been highlighted as key systems for future fieldwork, but are not counted towards goal attainment.

% of EDU Goal Met: The number of system occurrences captured in the portfolio as a percentage of the EDU goal. “# Provisional Captured” is NOT included in this calculation. Those instances where an EDU goal has been met or exceeded are shown in bold and underlined.

EDU NAME

System Code	System Description	EDU Goal	# Portfolio Captured	# Provisional Captured	% of EDU Goal Met
Arkansas River - West					
Ark_2_15	Intermittent moderate and high gradient streams in western Southern Shortgrass Prairie sandstone/sand	1	0	1	0
Ark_2_34	Perennial moderate and high gradient streams in western Southern Shortgrass Prairie sandstone and mafic rock	1	0	1	0
Ark_3_17	Small perennial rivers in western Southern Shortgrass Prairie sandstone/sand with headwaters in mafic rock	1	0	1	0
Brazos River - Prairie					
Bra_2_23	Mostly intermittent moderate and low gradient streams in central Southern Shortgrass Prairie redbed shale	1	0	1	0
Bra_2_24	Mostly intermittent moderate and low gradient streams in eastern Southern Shortgrass Prairie clay mud, sandstone, and shale	1	0	1	0
Bra_2_25	Perennial and intermittent moderate and low gradient streams in central Southern Shortgrass Prairie redbed shale and sand	1	0	1	0

EDU NAME**System Code System Description****EDU Goal # Portfolio # Provisional % of EDU
Captured Captured Goal Met****Brazos River - Prairie (cont'd)**

System Code	System Description	EDU Goal	# Portfolio Captured	# Provisional Captured	% of EDU Goal Met
Bra_2_26	Mostly intermittent moderate and low gradient streams in eastern Southern Shortgrass Prairie shale and sandstone/sand with heavy limestone, marl, and caliche components	1	1	1	<u>100</u>
Bra_2_28	Intermittent low and moderate gradient streams in Ogallala Formation sand, sandstone, and caliche	1	1	0	<u>100</u>
Bra_2_29	Perennial moderate gradient streams in aquifer sand along the Southern Shortgrass Prairie and Edwards Plateau margins	1	0	1	0
Bra_2_33	Perennial moderate and low gradient creeks on the Edwards Plateau margin in gravel, conglomerate, sand, and marl	1	0	1	0
Bra_2_38	Perennial moderate gradient creeks in recharge sand and redbed shale along the Canadian River breaks and escarpment breaks	1	1	0	<u>100</u>
Bra_2_39	Perennial and intermittent moderate and low gradient streams in evaporite-rich areas of the central Southern Shortgrass Prairie	1	0	1	0
Bra_3_06	Small perennial rivers in sandstone, shale, and alluvium with intermittent headwaters in Ogallala Formation sand	1	2	0	<u>200</u>
Bra_3_08	Small intermittent rivers in central Southern Shortgrass Prairie redbed shale and sand	1	0	1	0
Bra_3_09	Small perennial rivers in eastern Southern Shortgrass Prairie clay mud, sandstone, and shale	1	0	1	0
Bra_3_10	Small perennial rivers in Southern Shortgrass Prairie/Edwards Plateau transition zone shale and sandstone/sand with heavy limestone, marl, and caliche components	1	0	1	0
Bra_3_11	Small perennial rivers in aquifer sand along the Edwards Plateau/Blackland Prairie boundary	1	0	1	0
Bra_4_06	Medium perennial rivers in central Southern Shortgrass Prairie/Edwards Plateau shale and sandstone/sand with heavy limestone, marl, and caliche components	1	1	0	<u>100</u>
Bra_4_07	Medium perennial rivers in sandstone, shale, and alluvium with intermittent headwaters in Ogallala Formation sand	1	3	0	<u>300</u>

EDU NAME

System Code System Description

EDU Goal # Portfolio # Provisional % of EDU
Captured Captured Goal Met**Brazos River - Prairie (cont'd)**

Bra_4_08	Medium perennial rivers in central and eastern Southern Shortgrass Prairie clay mud, redbed shale, and sandstone	1	0	1	0
Bra_5_03	Large perennial rivers of the Southern Shortgrass Prairie	1	1	0	<u>100</u>

Canadian River

Can_2_04	Perennial high and moderate gradient tributaries flowing from Southern Rocky Mountain foothill limestone and granite to Southern Shortgrass Prairie sandstone and shale	1	1	0	<u>100</u>
Can_2_10	Intermittent high and moderate gradient streams in Southern Shortgrass Prairie Quaternary piedmont alluvium	1	1	0	<u>100</u>
Can_2_15	Intermittent moderate and high gradient streams in western Southern Shortgrass Prairie sandstone/sand	1	0	1	0
Can_2_27	Intermittent and perennial moderate and high gradient streams in western Southern Shortgrass Prairie shale and limestone	1	2	0	<u>200</u>
Can_2_28	Intermittent low and moderate gradient streams in Ogallala Formation sand, sandstone, and caliche	1	1	0	<u>100</u>
Can_2_34	Perennial moderate and high gradient streams in western Southern Shortgrass Prairie sandstone and mafic rock	1	1	0	<u>100</u>
Can_2_35	Perennial high and moderate gradient tributaries in Southern Rocky Mountain foothill sandstone and moderately calcareous rock	1	1	0	<u>100</u>
Can_2_36	Perennial high and moderate gradient tributaries in Southern Rocky Mountain foothill mafic rock, sandstone, and moderately calcareous rock	1	1	0	<u>100</u>
Can_2_37	Perennial moderate gradient creeks in recharge sand along the Canadian River breaks and escarpment breaks	1	0	1	0
Can_2_38	Perennial moderate gradient creeks in recharge sand and redbed shale along the Canadian River breaks and escarpment breaks	1	0	1	0
Can_3_05	Small perennial rivers in Arizona-New Mexico Mountains and Rocky Mountains foothill sandstone and limestone	1	1	0	<u>100</u>

EDU NAME

System Code System Description

EDU Goal # Portfolio # Provisional % of EDU
Captured Captured Goal Met**Canadian River (cont'd)**

EDU NAME	System Code	System Description	EDU Goal	# Portfolio Captured	# Provisional Captured	% of EDU Goal Met
Can_3_06		Small perennial rivers in sandstone, shale, and alluvium with intermittent headwaters in Ogallala Formation sand	1	0	1	0
Can_3_17		Small perennial rivers in western Southern Shortgrass Prairie sandstone/sand with headwaters in mafic rock	1	1	0	<u>100</u>
Can_3_18		Small perennial rivers in Southern Shortgrass Prairie sandstone and shale with headwaters in Southern Rocky Mountain limestone and granite	1	1	0	<u>100</u>
Can_3_19		Small perennial rivers in Southern Shortgrass Prairie calcareous sandstone with headwaters in Southern Rocky Mountain sandstone	1	2	1	<u>200</u>
Can_3_20		Small intermittent rivers in Quaternary piedmont alluvium and western Southern Shortgrass Prairie shale	1	1	1	<u>100</u>
Can_4_03		Medium perennial rivers in Arizona-New Mexico Mountains and Rocky Mountains foothill sandstone and limestone flowing to shale and alluvium	1	3	0	<u>300</u>
Can_4_08		Medium perennial rivers in central and eastern Southern Shortgrass Prairie clay mud, redbed shale, and sandstone	1	1	0	<u>100</u>
Can_4_10		Medium intermittent/perennial rivers in Ogallala Formation sandstone and eolian sand	1	0	0	0
Can_4_11		Medium intermittent rivers in western Southern Shortgrass Prairie sandstone/sand with headwaters in mafic rock	1	0	1	0
Can_5_05		Large perennial rivers of the Southern Shortgrass Prairie with headwaters in the Southern Rocky Mountains	1	1	0	<u>100</u>

Colorado River - Edwards Plateau

Col_2_23		Mostly intermittent moderate and low gradient streams in central Southern Shortgrass Prairie redbed shale	1	0	0	0
Col_2_26		Mostly intermittent moderate and low gradient streams in eastern Southern Shortgrass Prairie shale and sandstone/sand with heavy limestone, marl, and caliche components	1	2	0	<u>200</u>

EDU NAME

System Code System Description

EDU Goal # Portfolio # Provisional % of EDU
Captured Captured Goal Met**Colorado River - Edwards Plateau (cont'd)**

Col_2_29	Perennial moderate gradient streams in aquifer sand along the Southern Shortgrass Prairie and Edwards Plateau margins	1	0	1	0
Col_4_05	Medium perennial rivers in Edwards Plateau limestone	1	1	0	<u>100</u>

Colorado River - Prairie

Col_2_17	Perennial moderate and low gradient creeks in Edwards Plateau recharge sand	1	0	1	0
Col_2_23	Mostly intermittent moderate and low gradient streams in central Southern Shortgrass Prairie redbed shale	1	0	1	0
Col_2_28	Intermittent low and moderate gradient streams in Ogallala Formation sand, sandstone, and caliche	1	0	1	0
Col_2_38	Perennial moderate gradient creeks in recharge sand and redbed shale along the Canadian River breaks and escarpment breaks	1	0	1	0
Col_3_06	Small perennial rivers in sandstone, shale, and alluvium with intermittent headwaters in Ogallala Formation sand	1	1	1	<u>100</u>
Col_3_08	Small intermittent rivers in central Southern Shortgrass Prairie redbed shale and sand	1	0	1	0
Col_4_07	Medium perennial rivers in sandstone, shale, and alluvium with intermittent headwaters in Ogallala Formation sand	1	1	0	<u>100</u>

Lower Pecos River

Pec_2_05	Intermittent high gradient streams in Arizona-New Mexico Mountain foothill and Southern Shortgrass Prairie limestone	1	0	0	0
Pec_3_01	Small intermittent rivers in Arizona-New Mexico Mountain foothill and Southern Shortgrass Prairie limestone	1	0	0	0

EDU NAME

System Code System Description

**EDU Goal # Portfolio # Provisional % of EDU
Captured Captured Goal Met**

Upper Pecos River

System Code	System Description	EDU Goal	# Portfolio Captured	# Provisional Captured	% of EDU Goal Met
Pec_2_02	Intermittent high gradient streams draining from Arizona-New Mexico Mountain sandstone and limestone to Southern Shortgrass Prairie	1	0	1	0
Pec_2_03	Mostly intermittent moderate gradient direct tributaries of the upper Pecos in fine sandstone and sand	1	0	1	0
Pec_2_04	Perennial high and moderate gradient tributaries flowing from Southern Rocky Mountain foothill limestone and granite to Southern Shortgrass Prairie sandstone and shale	1	2	1	<u>200</u>
Pec_2_05	Intermittent high gradient streams in Arizona-New Mexico Mountain foothill and Southern Shortgrass Prairie limestone	1	0	1	0
Pec_2_10	Intermittent high and moderate gradient streams in Southern Shortgrass Prairie Quaternary piedmont alluvium	1	0	1	0
Pec_2_11	Intermittent moderate gradient streams draining the western Llano Estacado to the Pecos River	1	0	1	0
Pec_2_15	Intermittent moderate and high gradient streams in western Southern Shortgrass Prairie sandstone/sand	1	1	0	<u>100</u>
Pec_2_22	Perennial high gradient streams in Arizona-New Mexico Mountain granite and sandstone	1	0	1	0
Pec_2_27	Intermittent and perennial moderate and high gradient streams in western Southern Shortgrass Prairie shale and limestone	1	1	0	<u>100</u>
Pec_3_01	Small intermittent rivers in Arizona-New Mexico Mountain foothill and Southern Shortgrass Prairie limestone	1	1	3	<u>100</u>
Pec_3_05	Small perennial rivers in Arizona-New Mexico Mountains and Rocky Mountains foothill sandstone and limestone	1	1	0	<u>100</u>
Pec_3_06	Small perennial rivers in sandstone, shale, and alluvium with intermittent headwaters in Ogallala Formation sand	1	0	1	0
Pec_3_07	Small perennial rivers in Arizona-New Mexico Mountain foothill granite, sandstone and limestone	1	2	0	<u>200</u>
Pec_3_18	Small perennial rivers in Southern Shortgrass Prairie sandstone and shale with headwaters in Southern Rocky Mountain limestone and granite	1	1	1	<u>100</u>

EDU NAME

System Code System Description

EDU Goal # Portfolio # Provisional % of EDU
Captured Captured Goal Met**Upper Pecos River (cont'd)**

Pec_3_20	Small intermittent rivers in Quaternary piedmont alluvium and western Southern Shortgrass Prairie shale	1	0	1	0
Pec_4_01	Medium intermittent rivers in Arizona-New Mexico Mountain foothill and Southern Shortgrass Prairie limestone and alluvium	1	2	2	<u>200</u>
Pec_4_03	Medium perennial rivers in Arizona-New Mexico Mountains and Rocky Mountains foothill sandstone and limestone flowing to shale and alluvium	1	2	0	<u>200</u>
Pec_5_01	Large perennial rivers of the Southern Shortgrass Prairie and Chihuahuan Desert with headwaters in the Southern Rocky Mountains and Arizona-New Mexico Mountains	1	1	0	<u>100</u>

Upper Red River

Red_2_23	Mostly intermittent moderate and low gradient streams in central Southern Shortgrass Prairie redbed shale	1	1	0	<u>100</u>
Red_2_24	Mostly intermittent moderate and low gradient streams in eastern Southern Shortgrass Prairie clay mud, sandstone, and shale	1	0	1	0
Red_2_25	Perennial and intermittent moderate and low gradient streams in central Southern Shortgrass Prairie redbed shale and sand	1	0	1	0
Red_2_28	Intermittent low and moderate gradient streams in Ogallala Formation sand, sandstone, and caliche	1	0	1	0
Red_2_29	Perennial moderate gradient streams in aquifer sand along the Southern Shortgrass Prairie and Edwards Plateau margins	1	0	1	0
Red_2_37	Perennial moderate gradient creeks in recharge sand along the Canadian River breaks and escarpment breaks	1	0	1	0
Red_2_38	Perennial moderate gradient creeks in recharge sand and redbed shale along the Canadian River breaks and escarpment breaks	1	0	1	0
Red_2_39	Perennial and intermittent moderate and low gradient streams in evaporite-rich areas of the central Southern Shortgrass Prairie	1	1	0	<u>100</u>
Red_3_06	Small perennial rivers in sandstone, shale, and alluvium with intermittent headwaters in Ogallala Formation sand	1	0	1	0

EDU NAME

System Code System Description

EDU Goal # Portfolio # Provisional % of EDU
Captured Captured Goal Met**Upper Red River (cont'd)**

Red_3_08	Small intermittent rivers in central Southern Shortgrass Prairie redbed shale and sand	1	1	1	<u>100</u>
Red_3_09	Small perennial rivers in eastern Southern Shortgrass Prairie clay mud, sandstone, and shale	1	0	0	0
Red_3_21	Small perennial rivers in Ogallala Formation sand with large amounts of evaporite	1	0	1	0
Red_4_07	Medium perennial rivers in sandstone, shale, and alluvium with intermittent headwaters in Ogallala Formation sand	1	2	0	<u>200</u>
Red_4_08	Medium perennial rivers in central and eastern Southern Shortgrass Prairie clay mud, redbed shale, and sandstone	1	1	0	<u>100</u>
Red_5_03	Large perennial rivers of the Southern Shortgrass Prairie	1	1	0	<u>100</u>

Upper Trinity

Tri_2_24	Mostly intermittent moderate and low gradient streams in eastern Southern Shortgrass Prairie clay mud, sandstone, and shale	1	0	1	0
Tri_2_26	Mostly intermittent moderate and low gradient streams in eastern Southern Shortgrass Prairie shale and sandstone/sand with heavy limestone, marl, and caliche components	1	0	1	0
Tri_2_29	Perennial moderate gradient streams in aquifer sand along the Southern Shortgrass Prairie and Edwards Plateau margins	1	0	1	0
Tri_2_33	Perennial moderate and low gradient creeks on the Edwards Plateau margin in gravel, conglomerate, sand, and marl	1	0	1	0
Tri_3_09	Small perennial rivers in eastern Southern Shortgrass Prairie clay mud, sandstone, and shale	1	0	1	0
Tri_4_09	Medium perennial rivers in recharge sand and Blackland Prairie limey mud with headwaters in Southern Shortgrass Prairie	1	0	1	0

Appendix G1. Terrestrial Conservation Targets–Progress Toward Stratification Unit Goals By Target

Stratification Unit Goal: An initial science-based hypothesis as to the number of occurrences required to sustain a conservation target within a particular stratification unit. Goals are set only for those stratification units within which a target is believed to occur.

Target Amount Captured: Total amount of known occurrences of a particular target in a stratification unit that 1) meet minimum viability criteria **and** 2) are selected to count toward goals and therefore included in the final portfolio of conservation areas. Goals are expressed as discrete numbers of occurrences for all targets other than matrix systems. Matrix systems' goals are expressed as hectares since they occur over large areas and can be mapped as large polygons across the landscape.

Target Amount Known: Total amount of known occurrences of a particular target in the ecoregion; includes occurrences that are viable, non-viable, and of undetermined viability. The amount is expressed as discrete numbers of occurrences for all targets other than matrix systems. Matrix systems are expressed in hectares.

% of Strat Unit Goal Met: The number of viable occurrences as a percentage of the stratification unit goal. Those instances where a stratification unit goal has been completely met or exceeded are shown in bold and underlined.

All Goals Met (%): This number, calculated for each target, represents the percentage of stratification units for which a goal has been set and a sufficient number of viable occurrences are captured in the portfolio of conservation areas to meet the goal. For example, if a target had 4 stratification unit goals and only 3 of those goals were met, the value for All Goals Met would be 75. Failure to meet goals can be attributed to the following: a) we have inadequate data for locations of target occurrences; b) the viability of the occurrences are unknown; and/or c) the occurrences have been determined to be non-viable. Those instances where all goals have been met or exceeded are shown in bold and underlined.

Group	Scientific Name Common Name	Stratification Unit Name	Stratification Unit Goal	Target Amount Captured	Target Amount Known	% of Strat Unit Goal Met	All Goals Met (%)
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Animal Assemblages

Intact Prairie Dog Towns and Associated Animal Assemblage¹

29

Canadian River Corridor	5	6	N/A	<u>120</u>
Capulin High Plains	5	2	N/A	40
Montane Ecotone	5	2	N/A	40
New Mexico High Plains	2	1	N/A	50
Northern Llano Estacado	5	2	N/A	40
Southern Llano Estacado	5	5	N/A	<u>100</u>
Western Rolling Plains	2	1	N/A	50

¹Lack of knowledge as to what constitutes a functional occurrence for setting and counting progress towards appropriate conservation goals led to the following decision: All prairie dog towns located within a particular conservation area are counted as one occurrence, though the actual number varies widely within conservation areas. Because of this accounting decision, no comparable information is available for prairie dog towns outside of conservation areas and a meaningful total for the number of known target occurrences in the ecoregion (Target Amount Known) cannot be provided.

Group	Scientific Name Common Name	Stratification Unit Name	Stratification Unit Goal	Target Amount Captured	Target Amount Known	% of Strat Unit Goal Met	All Goals Met (%)
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Animal Assemblages (cont'd)

Migratory Waterbird Assemblage (incl. Shorebirds, Waterfowl, and Cranes) 17

Capulin High Plains	1	0	1	0
Montane Ecotone	1	0	0	0
New Mexico High Plains	1	0	0	0
Northern Llano Estacado	4	0	0	0
Southern Llano Estacado	5	2	3	40
Western Rolling Plains	1	1	2	100

Birds

***Aimophila cassinii* 75**

Cassin's Sparrow

Canadian River Corridor	2	9	15	450
Capulin High Plains	2	4	13	200
Middle Brazos	2	1	6	50
Montane Ecotone	2	3	5	150
New Mexico High Plains	2	2	10	100
Northern Llano Estacado	2	2	10	100
Southern Llano Estacado	2	8	33	400
Western Rolling Plains	2	1	20	50

***Anthus spragueii* (wintering) 25**

Sprague's Pipit

New Mexico High Plains	1	1	1	100
Northern Llano Estacado	2	0	1	0
Southern Llano Estacado	2	0	0	0
Western Rolling Plains	2	0	2	0

Group	Scientific Name Common Name	Stratification Unit Name	Stratification Unit Goal	Target Amount Captured	Target Amount Known	% of Strat Unit Goal Met	All Goals Met (%)
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Birds (cont'd)

Athene cunicularia hypugaea

75

Western Burrowing Owl

Canadian River Corridor	2	5	9	<u>250</u>
Capulin High Plains	2	4	11	<u>200</u>
Middle Brazos	2	0	1	0
Montane Ecotone	2	4	4	<u>200</u>
New Mexico High Plains	2	1	5	50
Northern Llano Estacado	2	2	7	<u>100</u>
Southern Llano Estacado	2	5	18	<u>250</u>
Western Rolling Plains	2	2	9	<u>100</u>

Buteo regalis

75

Ferruginous Hawk

Canadian River Corridor	2	4	6	<u>200</u>
Capulin High Plains	2	4	14	<u>200</u>
Middle Brazos	1	0	1	0
Montane Ecotone	2	4	4	<u>200</u>
New Mexico High Plains	2	1	3	50
Northern Llano Estacado	2	2	4	<u>100</u>
Southern Llano Estacado	2	4	15	<u>200</u>
Western Rolling Plains	1	3	8	<u>300</u>

Group	Scientific Name Common Name	Stratification Unit Name	Stratification Unit Goal	Target Amount Captured	Target Amount Known	% of Strat Unit Goal Met	All Goals Met (%)
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Birds (cont'd)

***Calamospiza melanocorys* (breeding)**

71

Lark Bunting

Canadian River Corridor	2	5	9	<u>250</u>
Capulin High Plains	2	3	15	<u>150</u>
Montane Ecotone	2	3	4	<u>150</u>
New Mexico High Plains	2	0	2	0
Northern Llano Estacado	2	2	6	<u>100</u>
Southern Llano Estacado	2	4	9	<u>200</u>
Western Rolling Plains	2	0	2	0

***Calamospiza melanocorys* (wintering)**

14

Lark Bunting

Canadian River Corridor	2	1	2	50
Capulin High Plains	2	0	1	0
Middle Brazos	2	0	1	0
New Mexico High Plains	2	1	1	50
Northern Llano Estacado	2	1	3	50
Southern Llano Estacado	2	1	5	50
Western Rolling Plains	2	3	9	<u>150</u>

***Calcarius mccownii* (wintering)**

14

McCown's Longspur

Canadian River Corridor	2	0	0	0
Capulin High Plains	2	0	0	0
Montane Ecotone	2	1	1	50
New Mexico High Plains	2	1	2	50
Northern Llano Estacado	2	2	3	<u>100</u>
Southern Llano Estacado	2	0	2	0
Western Rolling Plains	2	1	3	50

Group	Scientific Name Common Name	Stratification Unit Name	Stratification Unit Goal	Target Amount Captured	Target Amount Known	% of Strat Unit Goal Met	All Goals Met (%)
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Birds (cont'd)

***Calcarius ornatus* (wintering) 25**

Chestnut-collared Longspur

Canadian River Corridor	2	0	0	0
Capulin High Plains	2	0	0	0
Middle Brazos	2	0	1	0
Montane Ecotone	2	2	2	<u>100</u>
New Mexico High Plains	2	1	2	50
Northern Llano Estacado	2	1	2	50
Southern Llano Estacado	2	0	2	0
Western Rolling Plains	2	2	5	<u>100</u>

***Callipepla squamata* 75**

Scaled Quail

Canadian River Corridor	2	4	7	<u>200</u>
Capulin High Plains	2	4	6	<u>200</u>
Middle Brazos	2	0	3	0
Montane Ecotone	2	2	4	<u>100</u>
New Mexico High Plains	2	1	7	50
Northern Llano Estacado	2	3	6	<u>150</u>
Southern Llano Estacado	2	5	22	<u>250</u>
Western Rolling Plains	2	4	16	<u>200</u>

***Charadrius alexandrinus nivosus* (breeding) 20**

Western Snowy Plover

Canadian River Corridor	2	1	1	50
New Mexico High Plains	2	1	2	50
Northern Llano Estacado	2	0	0	0
Southern Llano Estacado	2	3	9	<u>150</u>
Western Rolling Plains	2	0	1	0

Group	Scientific Name Common Name	Stratification Unit Name	Stratification Unit Goal	Target Amount Captured	Target Amount Known	% of Strat Unit Goal Met	All Goals Met (%)
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Birds (cont'd)

<i>Charadrius montanus</i> (breeding)							60
Mountain Plover							
		Canadian River Corridor	2	4	5	200	
		Capulin High Plains	4	10	21	250	
		Montane Ecotone	2	11	11	550	
		New Mexico High Plains	2	1	3	50	
		Northern Llano Estacado	2	1	3	50	
<i>Dendroica chrysoparia</i> (breeding)							0
Golden-cheeked Warbler							
		Middle Brazos	2	1	3	50	
<i>Empidonax traillii extimus</i>							100
Southwestern Willow Flycatcher							
		Montane Ecotone	1	1	2	100	
<i>Melanerpes erythrocephalus</i>							40
Red-headed Woodpecker							
		Canadian River Corridor	2	5	8	250	
		Capulin High Plains	2	2	4	100	
		Middle Brazos	2	0	1	0	
		Southern Llano Estacado	2	1	5	50	
		Western Rolling Plains	2	1	7	50	

Group	Scientific Name Common Name	Stratification Unit Name	Stratification Unit Goal	Target Amount Captured	Target Amount Known	% of Strat Unit Goal Met	All Goals Met (%)
Birds (cont'd)							
<i>Numenius americanus</i> (breeding)							67
Long-billed Curlew							
		Canadian River Corridor	2	5	6	<u>250</u>	
		Capulin High Plains	2	4	16	<u>200</u>	
		Montane Ecotone	2	4	8	<u>200</u>	
		New Mexico High Plains	2	0	1	0	
		Northern Llano Estacado	2	0	5	0	
		Southern Llano Estacado	2	2	13	<u>100</u>	
<i>Sternula antillarum athalassos</i> (breeding)							<u>100</u>
Interior Least Tern							
		Canadian River Corridor	2	3	3	<u>150</u>	
		Southern Llano Estacado	1	1	1	<u>100</u>	
		Western Rolling Plains	2	2	5	<u>100</u>	
<i>Tympanuchus pallidicinctus</i>							67
Lesser Prairie-chicken							
		Canadian River Corridor	5	4	6	80	
		Southern Llano Estacado	8	20	35	<u>250</u>	
		Western Rolling Plains	5	6	9	<u>120</u>	
<i>Vireo atricapilla</i> (breeding)							0
Black-capped Vireo							
		Middle Brazos	2	1	6	50	
		Western Rolling Plains	2	1	8	50	

Group	Scientific Name Common Name	Stratification Unit Name	Stratification Unit Goal	Target Amount Captured	Target Amount Known	% of Strat Unit Goal Met	All Goals Met (%)
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Birds (cont'd)

***Vireo bellii* (breeding) 20**

Bell's Vireo

Canadian River Corridor	2	2	3	100
Middle Brazos	2	1	3	50
New Mexico High Plains	2	1	2	50
Southern Llano Estacado	2	1	1	50
Western Rolling Plains	2	1	6	50

***Zonotrichia querula* (wintering) 33**

Harris' Sparrow

Canadian River Corridor	2	1	2	50
Middle Brazos	2	0	1	0
Montane Ecotone	1	1	2	100
Northern Llano Estacado	2	1	3	50
Southern Llano Estacado	2	0	5	0
Western Rolling Plains	2	2	7	100

Insects

***Amblyscirtes simius* 0**

Simius Roadside-skipper

Canadian River Corridor	1	0	0	0
Capulin High Plains	2	1	1	50
Montane Ecotone	1	0	0	0
New Mexico High Plains	1	0	0	0
Northern Llano Estacado	1	0	0	0

Group	Scientific Name Common Name	Stratification Unit Name	Stratification Unit Goal	Target Amount Captured	Target Amount Known	% of Strat Unit Goal Met	All Goals Met (%)
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Insects (cont'd)

<i>Amblyscirtes texanae</i>							0
Texas Roadside-skipper							
		Canadian River Corridor	1	0	0	0	
		Northern Llano Estacado	1	0	0	0	
		Southern Llano Estacado	3	0	0	0	
<i>Cicindela formosa rutilovirescens</i>							0
Mescalero Sands Tiger Beetle							
		Southern Llano Estacado	25	1	1	4	
<i>Poladryas minuta minuta</i>							0
Dotted Checkerspot							
		Canadian River Corridor	1	0	0	0	
		Capulin High Plains	1	0	0	0	
		Montane Ecotone	1	0	0	0	
		New Mexico High Plains	1	0	0	0	
		Northern Llano Estacado	1	0	0	0	
<i>Polites rhesus</i>							0
Rhesus Skipper							
		Canadian River Corridor	1	0	0	0	
		Capulin High Plains	2	1	1	50	

Group	Scientific Name Common Name	Stratification Unit Name	Stratification Unit Goal	Target Amount Captured	Target Amount Known	% of Strat Unit Goal Met	All Goals Met (%)
Mammals							
	<i>Dipodomys elator</i>						0
	Texas Kangaroo Rat						
		Western Rolling Plains	25	6	11	24	
	<i>Geomys knoxjonesi</i>						0
	Jones' Pocket Gopher						
		Southern Llano Estacado	25	0	0	0	
	<i>Microtus mogollonensis (mexicanus)</i>						50
	Mogollon Vole						
		Capulin High Plains	1	1	1	100	
		Montane Ecotone	1	0	0	0	
	<i>Peromyscus truei comanche</i>						0
	Palo Duro Mouse						
		Northern Llano Estacado	4	1	1	25	
		Western Rolling Plains	21	13	13	62	
	<i>Spilogale putorius interrupta</i>						0
	Plains Spotted Skunk						
		Canadian River Corridor	1	0	0	0	
		Capulin High Plains	1	0	0	0	
		Middle Brazos	1	0	0	0	
		Western Rolling Plains	1	0	2	0	

Group	Scientific Name Common Name	Stratification Unit Name	Stratification Unit Goal	Target Amount Captured	Target Amount Known	% of Strat Unit Goal Met	All Goals Met (%)
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Mammals (cont'd)

<i>Vulpes velox</i>							17
Swift Fox							
		Canadian River Corridor	1	0	0	0	
		Capulin High Plains	1	1	16	<u>100</u>	
		Montane Ecotone	1	0	0	0	
		New Mexico High Plains	1	0	1	0	
		Northern Llano Estacado	1	0	2	0	
		Southern Llano Estacado	1	0	0	0	

Reptiles

<i>Sceloporus arenicolus</i>							0
Sand Dune Lizard							
		Southern Llano Estacado	25	19	20	76	
<i>Sistrurus catenatus</i>							33
Massasauga							
		Canadian River Corridor	1	1	1	<u>100</u>	
		Middle Brazos	1	0	0	0	
		New Mexico High Plains	1	0	0	0	
		Northern Llano Estacado	1	0	0	0	
		Southern Llano Estacado	1	0	0	0	
		Western Rolling Plains	1	1	1	<u>100</u>	

Group	Scientific Name Common Name	Stratification Unit Name	Stratification Unit Goal	Target Amount Captured	Target Amount Known	% of Strat Unit Goal Met	All Goals Met (%)
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Reptiles (cont'd)

<i>Thamnophis sirtalis annectens</i>							0
Texas Garter Snake							
	Canadian River Corridor	3	0	0	0		
	Middle Brazos	3	0	0	0		
	Northern Llano Estacado	2	0	1	0		
	Western Rolling Plains	3	2	2	67		

Vascular Plants

<i>Agalinis densiflora</i>							0
Osage Plains Foxglove							
	Middle Brazos	13	0	0	0		
<i>Argythamnia aphoroides</i>							0
Hill Country Wild Mercury							
	Western Rolling Plains	3	0	0	0		
<i>Asclepias uncialis</i>							0
Greene Milkweed							
	Canadian River Corridor	6	0	0	0		
	Capulin High Plains	7	0	0	0		

Group	Scientific Name Common Name	Stratification Unit Name	Stratification Unit Goal	Target Amount Captured	Target Amount Known	% of Strat Unit Goal Met	All Goals Met (%)
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Vascular Plants (cont'd)

<i>Astragalus mollissimus</i> var. <i>coryi</i>							0
Cory's Woolly Loco							
		Southern Llano Estacado	13	0	0	0	
<i>Astragalus siliceous</i>							0
Flint Mountains Milk-vetch							
		Montane Ecotone	8	1	1	12	
		New Mexico High Plains	17	8	8	47	
<i>Astragalus wittmannii</i>							0
Wittmann's Milk-vetch							
		Capulin High Plains	25	1	1	4	
<i>Callirhoe scabriuscula</i>							0
Texas Poppy-mallow							
		Western Rolling Plains	13	0	10	0	
<i>Chamaesyce jejuna</i>							0
Dwarf Broomspurge							
		Western Rolling Plains	3	0	0	0	
<i>Cirsium wrightii</i>							0
Wright's Marsh Thistle							
		Canadian River Corridor	13	3	3	23	

Group	Scientific Name Common Name	Stratification Unit Name	Stratification Unit Goal	Target Amount Captured	Target Amount Known	% of Strat Unit Goal Met	All Goals Met (%)
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Vascular Plants (cont'd)

<i>Cyperus onerosus</i>							0
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Dune Flat-sedge

Southern Llano Estacado	13	3	4	23
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<i>Echinocereus fendleri var. kuenzleri</i>							0
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Kuenzler's Hedgehog Cactus

New Mexico High Plains	3	2	34	67
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<i>Echinocereus reichenbachii var. baileyi</i>							0
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Bailey's Lace Cactus

Western Rolling Plains	13	0	0	0
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<i>Ephedra coryi</i>							0
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Cory's Mormon-tea

Southern Llano Estacado	13	0	0	0
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<i>Eriogonum aliquidum</i>							0
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Cimarron Wild Buckwheat

Montane Ecotone	25	6	7	24
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<i>Eriogonum correllii</i>							0
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Correll's Wild Buckwheat

Northern Llano Estacado	7	0	0	0
Western Rolling Plains	6	1	1	17

Group	Scientific Name Common Name	Stratification Unit Name	Stratification Unit Goal	Target Amount Captured	Target Amount Known	% of Strat Unit Goal Met	All Goals Met (%)
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Vascular Plants (cont'd)

Eriogonum nealleyi 0

Irion County Wild Buckwheat

Western Rolling Plains	13	0	0	0
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Euphorbia strictior 0

Panhandle Spurge

Canadian River Corridor	9	5	6	56
Northern Llano Estacado	9	0	0	0
Western Rolling Plains	9	1	1	11

Eurytaenia hinckleyi 0

Hinckley's Spread-wing

Southern Llano Estacado	13	0	1	0
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Helianthus paradoxus 0

Pecos Sunflower

Canadian River Corridor	7	2	2	29
New Mexico High Plains	7	0	1	0

Herrickia horrida 0

Horrid Herrickia

Canadian River Corridor	7	1	1	14
Capulin High Plains	7	0	0	0

Group	Scientific Name Common Name	Stratification Unit Name	Stratification Unit Goal	Target Amount Captured	Target Amount Known	% of Strat Unit Goal Met	All Goals Met (%)
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Vascular Plants (cont'd)

<i>Heteranthera mexicana</i>							0
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Mexican Mud-plantain

Northern Llano Estacado	7	0	0	0
Southern Llano Estacado	6	0	1	0

<i>Hexalectris nitida</i>							0
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Glass Mountain Coral-root

Western Rolling Plains	3	0	2	0
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<i>Hexalectris warnockii</i>							0
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Purple-spike Coral-root

Western Rolling Plains	3	0	2	0
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<i>Mentzelia strictissima</i>							0
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Grassland Stickleaf

Southern Llano Estacado	13	0	0	0
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<i>Muhlenbergia villiflora var. villosa</i>							0
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Villous Muhly

Southern Llano Estacado	3	2	2	67
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Group	Scientific Name Common Name	Stratification Unit Name	Stratification Unit Goal	Target Amount Captured	Target Amount Known	% of Strat Unit Goal Met	All Goals Met (%)
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Vascular Plants (cont'd)

<i>Oenothera coryi</i>							0
Cory's Evening-primrose							
		Middle Brazos	9	0	0	0	
		Northern Llano Estacado	8	0	0	0	
		Western Rolling Plains	8	0	0	0	
<i>Penstemon guadalupensis</i>							0
Guadalupe Beardtongue							
		Western Rolling Plains	13	0	0	0	
<i>Phlox drummondii</i> ssp. <i>johnstonii</i>							0
Johnston's Phlox							
		Western Rolling Plains	25	0	0	0	
<i>Proboscidea sabulosa</i>							50
Dune Unicorn-plant							
		Canadian River Corridor	1	1	1	<u>100</u>	
		Southern Llano Estacado	13	7	10	54	
<i>Pseudoclappia arenaria</i>							0
Trans-pecos False-clappia							
		Southern Llano Estacado	2	0	0	0	
		Western Rolling Plains	1	0	0	0	

Group	Scientific Name Common Name	Stratification Unit Name	Stratification Unit Goal	Target Amount Captured	Target Amount Known	% of Strat Unit Goal Met	All Goals Met (%)
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Vascular Plants (cont'd)

<i>Selenia jonesii</i>							0
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Jones' Selenia

Southern Llano Estacado	7	1	4	14
Western Rolling Plains	7	0	3	0

<i>Senecio spellenbergii</i>							0
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Spellenberg's Groundsel

Canadian River Corridor	2	1	1	50
Capulin High Plains	23	8	8	35

<i>Solidago mollis var. angustata</i>							0
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A Goldenrod

Western Rolling Plains	13	0	0	0
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Terrestrial Plant Communities

<i>Populus deltoides / Panicum virgatum - Schizachyrium scoparium</i> Woodland							0
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Eastern Cottonwood / Switchgrass - Little Bluestem Woodland

Canadian River Corridor	5	0	0	0
Capulin High Plains	4	0	0	0
Northern Llano Estacado	4	0	0	0

Group	Scientific Name Common Name	Stratification Unit Name	Stratification Unit Goal	Target Amount Captured	Target Amount Known	% of Strat Unit Goal Met	All Goals Met (%)
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Terrestrial Plant Communities (cont'd)

<i>Tripsacum dactyloides - Panicum virgatum - Sorghastrum nutans</i> Herbaceous Vegetation							0
Eastern Gammagrass - Switchgrass - Yellow Indiangrass Herbaceous Vegetation							
		Canadian River Corridor	3	0	0	0	
		Middle Brazos	2	0	0	0	
		Western Rolling Plains	2	0	0	0	

Terrestrial Ecological Systems

Chihuahuan Desert Grasslands (swales)							0
		New Mexico High Plains	5	0	0	0	
		Southern Llano Estacado	5	3	12	60	
Chihuahuan Desert Gypsophilous Vegetation							0
		New Mexico High Plains	5	0	1	0	
Chihuahuan Desert Xeric Shrublands							0
		New Mexico High Plains	5	0	0	0	
		Southern Llano Estacado	5	0	0	0	

Group	Scientific Name Common Name	Stratification Unit Name	Stratification Unit Goal	Target Amount Captured	Target Amount Known	% of Strat Unit Goal Met	All Goals Met (%)
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Terrestrial Ecological Systems (cont'd)

Crosstimbers Oak Forests and Woodlands							0
	Middle Brazos		7	0	12	0	
	Western Rolling Plains		6	0	0	0	
Great Plains Carbonate Glades and Barrens							0
	Canadian River Corridor		3	1	1	33	
	Capulin High Plains		3	1	1	33	
	Montane Ecotone		4	1	1	25	
Great Plains Freshwater Emergent Marshes							0
	Canadian River Corridor		5	1	2	20	
	Montane Ecotone		5	0	0	0	
	Western Rolling Plains		5	2	2	40	
Great Plains Limestone Upland Forests and Woodlands							0
	Middle Brazos		7	1	12	14	
	Western Rolling Plains		7	2	6	29	
Great Plains Mixedgrass Prairies							83
	Canadian River Corridor		3	7	8	<u>233</u>	
	Capulin High Plains		3	8	13	<u>267</u>	
	Middle Brazos		3	1	21	33	
	Montane Ecotone		3	6	8	<u>200</u>	
	Northern Llano Estacado		1	1	1	<u>100</u>	
	Western Rolling Plains		3	5	24	<u>167</u>	

Group	Scientific Name Common Name	Stratification Unit Name	Stratification Unit Goal	Target Amount Captured	Target Amount Known	% of Strat Unit Goal Met	All Goals Met (%)
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Terrestrial Ecological Systems (cont'd)

Great Plains Playa Lakes² 100

Canadian River Corridor	4	16	N/A	400
Capulin High Plains	5	11	N/A	220
Middle Brazos	1	2	N/A	200
Montane Ecotone	5	11	N/A	220
New Mexico High Plains	4	6	N/A	150
Northern Llano Estacado	5	5	N/A	100
Southern Llano Estacado	5	15	N/A	300
Western Rolling Plains	5	15	N/A	300

Great Plains Saline Wet Prairies and Meadows 0

Canadian River Corridor	5	1	1	20
New Mexico High Plains	5	4	4	80
Southern Llano Estacado	5	0	1	0

Great Plains Shortgrass Prairies 0

Canadian River Corridor	2,705,254 (ha)	756,017 (ha)	1,010,533 (ha)	28
Capulin High Plains	1,541,569 (ha)	435,587 (ha)	940,440 (ha)	28
Montane Ecotone	1,081,142 (ha)	278,982 (ha)	421,874 (ha)	26
New Mexico High Plains	1,497,273 (ha)	756,505 (ha)	1,424,623 (ha)	51
Northern Llano Estacado	2,164,144 (ha)	0 (ha)	145,030 (ha)	0
Southern Llano Estacado	4,357,688 (ha)	165,915 (ha)	823,872 (ha)	4
Western Rolling Plains	628,660 (ha)	24,133 (ha)	114,141 (ha)	4

²Lack of knowledge as to what constitutes a functional occurrence for setting and counting progress towards appropriate conservation goals led to the following decision: All playas located within a particular conservation area are counted as one occurrence, though the number of "potential" playas identified through satellite imagery varies widely within conservation areas. This latter number is shown in Appendices H1 and K1. Because of this accounting decision, a meaningful total for the number of known target occurrences in the ecoregion (Target Amount Known) cannot be provided.

Group	Scientific Name Common Name	Stratification Unit Name	Stratification Unit Goal	Target Amount Captured	Target Amount Known	% of Strat Unit Goal Met	All Goals Met (%)
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Terrestrial Ecological Systems (cont'd)

Great Plains Tallgrass Prairies							40
		Canadian River Corridor	3	3	3	<u>100</u>	
		Capulin High Plains	3	4	6	<u>133</u>	
		Middle Brazos	3	0	0	0	
		Montane Ecotone	3	2	2	67	
		Western Rolling Plains	3	0	0	0	
Montane Riparian Woodlands and Shrublands							50
		Canadian River Corridor	1	1	1	<u>100</u>	
		Montane Ecotone	5	0	0	0	
Pinyon - Oak - Juniper Woodlands and Shrublands							71
		Canadian River Corridor	3	8	13	<u>267</u>	
		Capulin High Plains	3	5	9	<u>167</u>	
		Montane Ecotone	5	6	11	<u>120</u>	
		New Mexico High Plains	2	3	3	<u>150</u>	
		Northern Llano Estacado	3	2	2	67	
		Southern Llano Estacado	1	2	3	<u>200</u>	
		Western Rolling Plains	5	4	22	80	
Rocky Mountain Dry Ponderosa Pine Forests and Woodlands							0
		Canadian River Corridor	5	2	2	40	
		Capulin High Plains	5	4	4	80	
		Montane Ecotone	5	1	3	20	

Group	Scientific Name Common Name	Stratification Unit Name	Stratification Unit Goal	Target Amount Captured	Target Amount Known	% of Strat Unit Goal Met	All Goals Met (%)
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Terrestrial Ecological Systems (cont'd)

Rocky Mountain Subalpine Forests and Woodlands							<u>100</u>
		Capulin High Plains	2	2	2	<u>100</u>	
Southern Great Plains Deep Sand Shrublands							67
		Canadian River Corridor	4	9	9	<u>225</u>	
		Capulin High Plains	2	2	5	<u>100</u>	
		New Mexico High Plains	2	0	2	0	
		Northern Llano Estacado	2	0	1	0	
		Southern Llano Estacado	6	10	26	<u>167</u>	
		Western Rolling Plains	4	7	21	<u>175</u>	
Southern Great Plains Mesquite Woodlands and Shrublands							29
		Canadian River Corridor	215,229 (ha)	363,569 (ha)	1,181,415 (ha)	<u>169</u>	
		Capulin High Plains	224,850 (ha)	15,994 (ha)	114,495 (ha)	7	
		Middle Brazos	116,637 (ha)	115,021 (ha)	640,611 (ha)	99	
		New Mexico High Plains	100,000 (ha)	55,620 (ha)	660,450 (ha)	56	
		Northern Llano Estacado	172,179 (ha)	104,712 (ha)	111,656 (ha)	61	
		Southern Llano Estacado	346,696 (ha)	356,246 (ha)	1,380,649 (ha)	<u>103</u>	
		Western Rolling Plains	342,909 (ha)	222,277(ha)	1,523,640 (ha)	65	
Southern Great Plains Riparian Forests, Woodlands and Shrublands							25
		Canadian River Corridor	5	9	13	<u>180</u>	
		Capulin High Plains	5	0	4	0	
		Middle Brazos	5	1	16	20	
		Montane Ecotone	5	2	2	40	
		New Mexico High Plains	5	1	2	20	
		Northern Llano Estacado	5	2	3	40	
		Southern Llano Estacado	5	0	1	0	
		Western Rolling Plains	5	6	28	<u>120</u>	

Group	Scientific Name Common Name	Stratification Unit Name	Stratification Unit Goal	Target Amount Captured	Target Amount Known	% of Strat Unit Goal Met	All Goals Met (%)
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Terrestrial Ecological Systems (cont'd)

Southern Great Plains Saline Lakes							50
		Canadian River Corridor	3	2	2	67	
		Capulin High Plains	1	1	1	<u>100</u>	
		Montane Ecotone	3	0	0	0	
		New Mexico High Plains	3	3	3	<u>100</u>	
		Northern Llano Estacado	3	0	0	0	
		Southern Llano Estacado	3	10	38	<u>333</u>	
Southern Great Plains Saline Shrublands							0
		New Mexico High Plains	5	1	1	20	
Southern Rocky Mountain Grasslands							0
		Capulin High Plains	5	1	1	20	

Appendix G2. Aquatic Species Targets–Progress Toward Ecological Drainage Unit (EDU) Goals By Target

EDU Goal: An initial science-based hypothesis as to the number of occurrences required to sustain a conservation target within a particular ecological drainage unit. Goals are set only for those ecological drainage units within which a target is believed to occur.

Target Amount Captured: Total amount of known occurrences of a particular target in an EDU that 1) meet minimum viability criteria **and** 2) are selected to count toward goals and therefore included in the final portfolio of conservation areas.

Target Amount Known: Total amount of known occurrences of a particular target in the ecoregion; includes occurrences that are viable, non-viable, and of undetermined viability. The amount is expressed as discrete numbers of occurrences.

% of EDU Goal Met: The number of viable occurrences as a percentage of the ecological drainage unit goal. Those instances where an ecological drainage unit goal has been completely met or exceeded are shown in bold and underlined.

All Goals Met (%): This number, calculated for each target, represents the percentage of ecological drainage units for which a goal has been set and a sufficient number of viable occurrences are captured in the portfolio of conservation areas to meet the goal. For example, if a target had 4 ecological drainage unit goals and only 3 of those goals were met, the value for All Goals Met would be 75. Failure to meet goals can be attributed to the following: a) we have inadequate data for locations of target occurrences; b) the viability of the occurrences are unknown; and/or c) the occurrences have been determined to be non-viable. Those instances where all goals have been met or exceeded are shown in bold and underlined.

Group	Scientific Name Common Name	EDU Name	EDU Goal	Target Amount Captured	Target Amount Known	% of EDU Goal Met	All Goals Met (%)
Crustaceans							
	Orconectes deanae Conchas Crayfish						0
		Canadian River	25	0	1	0	
Fishes							
	Gambusia nobilis Pecos Gambusia						0
		Upper Pecos River	2	1	1	50	

Group	Scientific Name Common Name	EDU Name	EDU Goal	Target Amount Captured	Target Amount Known	% of EDU Goal Met	All Goals Met (%)
Fishes (cont'd)							
	Gila pandora						<u>100</u>
	Rio Grande Chub	Upper Pecos River	5	5	10	<u>100</u>	
	Macrhybopsis tetranema						<u>100</u>
	Peppered Chub	Canadian River	1	1	1	<u>100</u>	
	Micropterus treculi						0
	Guadalupe Bass	Colorado River - Edwards Plateau	2	0	2	0	
	Notropis bairdi						0
	Red River Shiner	Upper Red River	9	3	7	33	
	Notropis buccula						0
	Smalleye Shiner	Brazos River - Prairie	9	1	5	11	

Group	Scientific Name Common Name	EDU Name	EDU Goal	Target Amount Captured	Target Amount Known	% of EDU Goal Met	All Goals Met (%)
Fishes (cont'd)							
Notropis girardi 0							
	Arkansas River Shiner						
		Canadian River	3	2	3	67	
		Upper Red River	2	0	3	0	
Notropis jemezanus <u>100</u>							
	Rio Grande Shiner						
		Upper Pecos River	1	1	1	<u>100</u>	
Notropis oxyrhynchus 0							
	Sharpnose Shiner						
		Brazos River - Prairie	2	1	6	50	
		Upper Red River	3	0	6	0	
Notropis simus pecosensis <u>100</u>							
	Pecos Bluntnose Shiner						
		Upper Pecos River	1	1	1	<u>100</u>	

Group	Scientific Name Common Name	EDU Name	EDU Goal	Target Amount Captured	Target Amount Known	% of EDU Goal Met	All Goals Met (%)
Fishes (cont'd)							
Percina macrolepida							20
Bigscale Logperch							
		Brazos River - Prairie	1	0	5	0	
		Colorado River - Edwards Plateau	1	0	5	0	
		Upper Pecos River	1	3	5	<u>300</u>	
		Upper Red River	1	0	5	0	
		Upper Trinity	1	0	5	0	
Phenacobius mirabilis							0
Suckermouth Minnow							
		Canadian River	3	2	9	67	
		Upper Red River	2	0	9	0	
Reptiles							
Nerodia harteri							0
Brazos Water Snake							
		Brazos River - Prairie	9	4	5	44	
Nerodia paucimaculata							0
Concho Water Snake							
		Colorado River - Edwards Plateau	9	2	3	22	

Appendix G3. Aquatic System Targets–Progress Towards Ecological Drainage Unit (EDU) Goals By Target

EDU Goal: An initial science-based hypothesis as to the number of occurrences required to sustain a conservation target within a particular ecological drainage unit.

Portfolio Captured: Total number of occurrences of a particular system target in an EDU selected for inclusion in the aquatic portfolio. These occurrences 1) meet minimum viability criteria for ecological integrity and condition based on GIS analysis, and 2) have been verified as healthy freshwater ecosystems and/or supporting viable populations of target species through expert review. Only these occurrences are counted towards meeting EDU goals.

Provisional Captured: Total number of occurrences of a particular target in an EDU selected for potential inclusion in the aquatic portfolio, pending further field verification. These occurrences meet minimum viability criteria based on GIS analysis, but need further survey and inventory to validate ecological integrity and condition before they can be considered priorities for conservation action. Because of their provisional status, these occurrences have been highlighted as key locations for future fieldwork, but are not counted towards goal attainment.

% of EDU Goal Met: The number of system occurrences captured in the portfolio as a percentage of the EDU goal. “# Provisional Captured” is NOT included in this calculation. Those instances where an EDU goal has been met or exceeded are shown in bold and underlined.

System Code/Description	EDU Name	EDU Goal	# Portfolio Captured	# Provisional Captured	% of EDU Goal Met
2_02	Intermittent high gradient streams draining from Arizona-New Mexico Mountain sandstone and limestone to Southern Shortgrass Prairie				
	Upper Pecos River	1	0	1	0
2_03	Mostly intermittent moderate gradient direct tributaries of the upper Pecos in fine sandstone and sand				
	Upper Pecos River	1	0	1	0

System Code/Description	EDU Name	EDU Goal	# Portfolio Captured	# Provisional Captured	% of EDU Goal Met
2_04	Perennial high and moderate gradient tributaries flowing from Southern Rocky Mountain foothill limestone and granite to Southern Shortgrass Prairie sandstone and shale				
	Canadian River	1	1	0	<u>100</u>
	Upper Pecos River	1	2	1	<u>200</u>
2_05	Intermittent high gradient streams in Arizona-New Mexico Mountain foothill and Southern Shortgrass Prairie limestone				
	Lower Pecos River	1	0	0	0
	Upper Pecos River	1	0	1	0
2_10	Intermittent high and moderate gradient streams in Southern Shortgrass Prairie Quaternary piedmont alluvium				
	Canadian River	1	1	0	<u>100</u>
	Upper Pecos River	1	0	1	0
2_11	Intermittent moderate gradient streams draining the western Llano Estacado to the Pecos River				
	Upper Pecos River	1	0	1	0
2_15	Intermittent moderate and high gradient streams in western Southern Shortgrass Prairie sandstone/sand				
	Arkansas River - West	1	0	1	0
	Canadian River	1	0	1	0
	Upper Pecos River	1	1	0	<u>100</u>
2_17	Perennial moderate and low gradient creeks in Edwards Plateau recharge sand				
	Colorado River - Prairie	1	0	1	0

System Code/Description	EDU NAME	EDU Goal	# Portfolio Captured	# Provisional Captured	% of EDU Goal Met
2_22	Perennial high gradient streams in Arizona-New Mexico Mountain granite and sandstone				
	Upper Pecos River	1	0	1	0
2_23	Mostly intermittent moderate and low gradient streams in central Southern Shortgrass Prairie redbed shale				
	Brazos River - Prairie	1	0	1	0
	Colorado River - Edwards Plateau	1	0	0	0
	Colorado River - Prairie	1	0	1	0
	Upper Red River	1	1	0	<u>100</u>
2_24	Mostly intermittent moderate and low gradient streams in eastern Southern Shortgrass Prairie clay mud, sandstone, and shale				
	Brazos River - Prairie	1	0	1	0
	Upper Red River	1	0	1	0
	Upper Trinity	1	0	1	0
2_25	Perennial and intermittent moderate and low gradient streams in central Southern Shortgrass Prairie redbed shale and sand				
	Brazos River - Prairie	1	0	1	0
	Upper Red River	1	0	1	0
2_26	Mostly intermittent moderate and low gradient streams in eastern Southern Shortgrass Prairie shale and sandstone/sand with heavy limestone, marl, and caliche components				
	Brazos River - Prairie	1	1	1	<u>100</u>
	Colorado River - Edwards Plateau	1	2	0	<u>200</u>
	Upper Trinity	1	0	1	0

System Code/Description	EDUNAME	EDU Goal	# Portfolio Captured	# Provisional Captured	% of EDU Goal Met
2_27	Intermittent and perennial moderate and high gradient streams in western Southern Shortgrass Prairie shale and limestone				
	Canadian River	1	2	0	<u>200</u>
	Upper Pecos River	1	1	0	<u>100</u>
2_28	Intermittent low and moderate gradient streams in Ogallala Formation sand, sandstone, and caliche				
	Brazos River - Prairie	1	1	0	<u>100</u>
	Canadian River	1	1	0	<u>100</u>
	Colorado River - Prairie	1	0	1	0
	Upper Red River	1	0	1	0
2_29	Perennial moderate gradient streams in aquifer sand along the Southern Shortgrass Prairie and Edwards Plateau margins				
	Brazos River - Prairie	1	0	1	0
	Colorado River - Edwards Plateau	1	0	1	0
	Upper Red River	1	0	1	0
	Upper Trinity	1	0	1	0
2_33	Perennial moderate and low gradient creeks on the Edwards Plateau margin in gravel, conglomerate, sand, and marl				
	Brazos River - Prairie	1	0	1	0
	Upper Trinity	1	0	1	0

System Code/Description	EDUNAME	EDU Goal	# Portfolio Captured	# Provisional Captured	% of EDU Goal Met
2_34	Perennial moderate and high gradient streams in western Southern Shortgrass Prairie sandstone and mafic rock				
	Arkansas River - West	1	0	1	0
	Canadian River	1	1	0	<u>100</u>
2_35	Perennial high and moderate gradient tributaries in Southern Rocky Mountain foothill sandstone and moderately calcareous rock				
	Canadian River	1	1	0	<u>100</u>
2_36	Perennial high and moderate gradient tributaries in Southern Rocky Mountain foothill mafic rock, sandstone, and moderately calcareous rock				
	Canadian River	1	1	0	<u>100</u>
2_37	Perennial moderate gradient creeks in recharge sand along the Canadian River breaks and escarpment breaks				
	Canadian River	1	0	1	0
	Upper Red River	1	0	1	0
2_38	Perennial moderate gradient creeks in recharge sand and redbed shale along the Canadian River breaks and escarpment breaks				
	Brazos River - Prairie	1	1	0	<u>100</u>
	Canadian River	1	0	1	0
	Colorado River - Prairie	1	0	1	0
	Upper Red River	1	0	1	0

System Code/Description	EDUNAME	EDU Goal	# Portfolio Captured	# Provisional Captured	% of EDU Goal Met
2_39	Perennial and intermittent moderate and low gradient streams in evaporite-rich areas of the central Southern Shortgrass Prairie				
	Brazos River - Prairie	1	0	1	0
	Upper Red River	1	1	0	<u>100</u>
3_01	Small intermittent rivers in Arizona-New Mexico Mountain foothill and Southern Shortgrass Prairie limestone				
	Lower Pecos River	1	0	0	0
	Upper Pecos River	1	1	3	<u>100</u>
3_05	Small perennial rivers in Arizona-New Mexico Mountains and Rocky Mountains foothill sandstone and limestone				
	Canadian River	1	1	0	<u>100</u>
	Upper Pecos River	1	1	0	<u>100</u>
3_06	Small perennial rivers in sandstone, shale, and alluvium with intermittent headwaters in Ogallala Formation sand				
	Brazos River - Prairie	1	2	0	<u>200</u>
	Canadian River	1	0	1	0
	Colorado River - Prairie	1	1	1	<u>100</u>
	Upper Pecos River	1	0	1	0
	Upper Red River	1	0	1	0
3_07	Small perennial rivers in Arizona-New Mexico Mountain foothill granite, sandstone and limestone				
	Upper Pecos River	1	2	0	<u>200</u>

System Code/Description	EDUNAME	EDU Goal	# Portfolio Captured	# Provisional Captured	% of EDU Goal Met
3_08	Small intermittent rivers in central Southern Shortgrass Prairie redbed shale and sand				
	Brazos River - Prairie	1	0	1	0
	Colorado River - Prairie	1	0	1	0
	Upper Red River	1	1	1	<u>100</u>
3_09	Small perennial rivers in eastern Southern Shortgrass Prairie clay mud, sandstone, and shale				
	Brazos River - Prairie	1	0	1	0
	Upper Red River	1	0	0	0
	Upper Trinity	1	0	1	0
3_10	Small perennial rivers in Southern Shortgrass Prairie/Edwards Plateau transition zone shale and sandstone/sand with heavy limestone, marl, and caliche components				
	Brazos River - Prairie	1	0	1	0
3_11	Small perennial rivers in aquifer sand along the Edwards Plateau/Blackland Prairie boundary				
	Brazos River - Prairie	1	0	1	0
3_17	Small perennial rivers in western Southern Shortgrass Prairie sandstone/sand with headwaters in mafic rock				
	Arkansas River - West	1	0	1	0
	Canadian River	1	1	0	<u>100</u>

System Code/Description	EDUNAME	EDU Goal	# Portfolio Captured	# Provisional Captured	% of EDU Goal Met
3_18	Small perennial rivers in Southern Shortgrass Prairie sandstone and shale with headwaters in Southern Rocky Mountain limestone and granite				
	Canadian River	1	1	0	<u>100</u>
	Upper Pecos River	1	1	1	<u>100</u>
3_19	Small perennial rivers in Southern Shortgrass Prairie calcareous sandstone with headwaters in Southern Rocky Mountain sandstone				
	Canadian River	1	2	1	<u>200</u>
3_20	Small intermittent rivers in Quaternary piedmont alluvium and western Southern Shortgrass Prairie shale				
	Canadian River	1	1	1	<u>100</u>
	Upper Pecos River	1	0	1	0
3_21	Small perennial rivers in Ogallala Formation sand with large amounts of evaporite				
	Upper Red River	1	0	1	0
4_01	Medium intermittent rivers in Arizona-New Mexico Mountain foothill and Southern Shortgrass Prairie limestone and alluvium				
	Upper Pecos River	1	2	2	<u>200</u>
4_03	Medium perennial rivers in Arizona-New Mexico Mountains and Rocky Mountains foothill sandstone and limestone flowing to shale and alluvium				
	Canadian River	1	3	0	<u>300</u>
	Upper Pecos River	1	2	0	<u>200</u>
4_05	Medium perennial rivers in Edwards Plateau limestone				
	Colorado River - Edwards Plateau	1	1	0	<u>100</u>

System Code/Description	EDUNAME	EDU Goal	# Portfolio Captured	# Provisional Captured	% of EDU Goal Met
4_06	Medium perennial rivers in central Southern Shortgrass Prairie/Edwards Plateau shale and sandstone/sand with heavy limestone, marl, and caliche components				
	Brazos River - Prairie	1	1	0	<u>100</u>
4_07	Medium perennial rivers in sandstone, shale, and alluvium with intermittent headwaters in Ogallala Formation sand				
	Brazos River - Prairie	1	3	0	<u>300</u>
	Colorado River - Prairie	1	1	0	<u>100</u>
	Upper Red River	1	2	0	<u>200</u>
4_08	Medium perennial rivers in central and eastern Southern Shortgrass Prairie clay mud, redbed shale, and sandstone				
	Brazos River - Prairie	1	0	1	0
	Canadian River	1	1	0	<u>100</u>
	Upper Red River	1	1	0	<u>100</u>
4_09	Medium perennial rivers in recharge sand and Blackland Prairie limey mud with headwaters in Southern Shortgrass Prairie				
	Upper Trinity	1	0	1	0
4_10	Medium intermittent/perennial rivers in Ogallala Formation sandstone and eolian sand				
	Canadian River	1	0	0	0
4_11	Medium intermittent rivers in western Southern Shortgrass Prairie sandstone/sand with headwaters in mafic rock				
	Canadian River	1	0	1	0

System Code/Description	EDUNAME	EDU Goal	# Portfolio Captured	# Provisional Captured	% of EDU Goal Met
5_01	Large perennial rivers of the Southern Shortgrass Prairie and Chihuahuan Desert with headwaters in the Southern Rocky Mountains and Arizona-New Mexico Mountains				
	Upper Pecos River	1	1	0	<u>100</u>
5_03	Large perennial rivers of the Southern Shortgrass Prairie				
	Brazos River - Prairie	1	1	0	<u>100</u>
	Upper Red River	1	1	0	<u>100</u>
5_05	Large perennial rivers of the Southern Shortgrass Prairie with headwaters in the Southern Rocky Mountains				
	Canadian River	1	1	0	<u>100</u>

Appendix H1. Terrestrial Conservation Areas Summary

Known Threats: Threats that were given a score of **3** for severity in the threats analysis. Severity is the degree to which an identified source of stress threatens the ecological integrity of a conservation area and the targets within that area. Possible scores for severity are: (1) Low, (2) Medium, (3) High. The full set of threats information collected during the assessment is shown in Appendix J1.

Protected Lands: Extent of each conservation area (in hectares and percentages) that is legally and permanently protected from conversion of natural land cover. These calculations are summarized by ownership type (private, local, state and federal) and GAP management status categories. The data source for the protected areas is a modified and updated version of Conservation Biology Institute's Protected Area Database-Version 4 (Conservation Biology Institute 2006). While places under short-term protection (such as Conservation Reserve Program or Wetlands Reserve Program lands) can play an important role in biodiversity conservation, locations of these areas were not available spatially and thus could not be included in the protected lands summary. It was also beyond the scope of this assessment to evaluate how effectively the mapped lands are being managed to abate threats and sustain their biodiversity values.

GAP management status categories are defined as follows (Crist 2000):

- Status 1: An area having permanent protection from conversion of natural land cover and a mandated management plan in operation to maintain a natural state within which disturbance events are allowed to proceed without interference or are mimicked through management.
- Status 2: An area having permanent protection from conversion of natural land cover and a mandated management plan in operation to maintain a primarily natural state, but which may receive uses or management practices that degrade the quality of existing natural communities, including suppression of natural disturbance.
- Status 3: An area having permanent protection from conversion of natural land cover for the majority of the area, but subject to extractive uses of either a broad, low-intensity type or localized intense type. It also confers protection to federally listed endangered and threatened species throughout the area.
- Status 4: There are no known public or private institutional mandates or legally recognized easements or deed restrictions held by the managing entity to prevent conversion of natural habitat types to anthropogenic habitat types. The area generally allows conversion to unnatural land cover throughout.

Only GAP management status categories 1-3 are reported in this appendix.

NLCD Composition: Percent of National Land Cover Data cover classes within the conservation area. If the percentage of a certain class is less than 0.1, it is not reported in this appendix. Data source: USGS 1992 National Land Cover Dataset (Vogelmann et al. 2001).

Target Occurrences Determined to be Viable:

Number This Area: Number of known viable occurrences within each conservation area.

Number All Areas: Total number of known viable occurrences within the entire portfolio of conservation areas.

Percent This Area: Percentage of known viable occurrences captured in each conservation area as compared to the entire portfolio of conservation areas.

Percent Overall Goal Contribution: Percentage of known viable occurrences captured in each conservation area as compared to the overall conservation goal.

Occurrence counts are expressed as discrete numbers of occurrences with three exceptions:

- 1) Matrix systems' goals are expressed as hectares since they occur over large areas and can be mapped as large polygons across the landscape;
- 2) All prairie dog towns located within a particular conservation area are counted as one target occurrence for goal accounting purposes, though the actual number varies widely within conservation areas;
- 3) All playa lakes located within a particular conservation area are counted as one target occurrence for goal accounting purposes, though the number of "potential" playas identified through satellite imagery varies widely within conservation areas. This latter number is shown in parentheses under Number This Area and should be interpreted with caution since most of these "potential" playas have not been ground-truthed to confirm their presence and to distinguish between playas and saline lakes. Locations and numbers of potential playas are derived from Ducks Unlimited and Texas Tech University's datasets, along with further in-house analyses of satellite imagery for the ecoregion. An asterisk next to the count in Number This Area indicates that the conservation area is confirmed to have at least one playa based on information from internal staff, partners or literature.

Target Occurrences Determined to be Non-Viable: Number of known occurrences within each conservation area that are considered to be non-viable.

Albany

CA Type: Terrestrial
Map #: MB90
State: TX
Size: 57,198 hectares

Stratification Unit: Middle Brazos

KNOWN THREATS (with Severity Score=3)

Inappropriate Grazing Practices
Lack of Comprehensive Water Strategy
Ownership Fragmentation of Large Ranches

PROTECTED LANDS

None

[Size of conservation area=57,198 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Open Water	0.7
Deciduous Forest	2.3
Evergreen Forest	1.2
Mixed Forest	0.1
Shrubland	36.5
Herbaceous Grassland	54.4
Pasture-Hay	3.1
Row Crops	0.5
Small Grains	1.1

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Terrestrial Ecological Systems				
Great Plains Playa Lakes	1 (1)	81	1	3
Southern Great Plains Mesquite Woodlands and Shrublands	34,528 (ha)	1,233,439 (ha)	3	2

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Antelope Ridge

CA Type: Terrestrial
 Map #: S59
 State: NM
 Size: 105,615 hectares

Stratification Unit: Southern Llano Estacado

KNOWN THREATS (with Severity Score=3)

Climate Change
 Windfarm Development

PROTECTED LANDS

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
FEDERAL	32,855.30 (31.11)
<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
3	32,855.30 (31.11)

Total Protected: 32,855.30 hectares, 31.11% of the conservation area [Size of conservation area=105,615 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Commercial-Industrial-Transportation	0.1
Bare Rock-Sand-Clay	1.6
Shrubland	71.7
Herbaceous Grassland	26.5

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Birds				
<i>Aimophila cassinii</i> Cassin's Sparrow	1	30	3	6
<i>Athene cunicularia hypugaea</i> Western Burrowing Owl	1	23	4	6
<i>Buteo regalis</i> Ferruginous Hawk	1	22	5	7
<i>Callipepla squamata</i> Scaled Quail	1	23	4	6
<i>Tympanuchus pallidicinctus</i> Lesser Prairie-chicken	2	30	7	11
Vascular Plants				
<i>Proboscidea sabulosa</i> Dune Unicorn-plant	2	8	25	14

Antelope Ridge (cont'd)

TARGET OCCURRENCES DETERMINED TO BE VIABLE (cont'd)

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Terrestrial Ecological Systems				
Great Plains Playa Lakes	1 (47)*	81	1	3
Southern Great Plains Deep Sand Shrublands	1	29	3	5
Southern Great Plains Mesquite Woodlands and Shrublands	42,234 (ha)	1,233,439 (ha)	3	3

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Bell Ranch Grasslands

CA Type: Terrestrial
 Map #: CR34
 State: NM
 Size: 186,659 hectares

Stratification Unit: Canadian River Corridor

KNOWN THREATS (with Severity Score=3)

Climate Change

PROTECTED LANDS

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
STATE	413.75 (0.22)
FEDERAL	754.02 (0.40)
<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
2	6.13 (<0.01)
3	1,161.64 (0.62)

Total Protected: 1,167.77 hectares, 0.62% of the conservation area [Size of conservation area=186,659 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Open Water	1.8
Evergreen Forest	0.2
Shrubland	12.2
Herbaceous Grassland	85.6
Small Grains	0.1

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Birds				
<i>Aimophila cassinii</i> Cassin's Sparrow	1	30	3	6
<i>Athene cucularia hypugaea</i> Western Burrowing Owl	1	23	4	6
<i>Calamospiza melanocorys</i> (breeding) Lark Bunting	1	17	6	7
<i>Callipepla squamata</i> Scaled Quail	1	23	4	6
<i>Melanerpes erythrocephalus</i> Red-headed Woodpecker	1	10	10	10
<i>Numenius americanus</i> (breeding) Long-billed Curlew	1	15	7	8

Bell Ranch Grasslands (cont'd)

TARGET OCCURRENCES DETERMINED TO BE VIABLE (cont'd)

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Terrestrial Ecological Systems				
Great Plains Playa Lakes	1 (8)	81	1	3
Great Plains Shortgrass Prairies	130,571 (ha)	2,467,146 (ha)	5	1
Pinyon - Oak - Juniper Woodlands and Shrublands	1	31	3	5
Southern Great Plains Mesquite Woodlands and Shrublands	27,980 (ha)	1,233,439 (ha)	2	2

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Big Juan (Juan Largo)

CA Type: Terrestrial
 Map #: N29
 State: NM
 Size: 150,633 hectares

Stratification Unit: New Mexico High Plains

KNOWN THREATS (with Severity Score=3)

Climate Change

PROTECTED LANDS

Ownership Type # of Hectares Protected (Percent Protected)

FEDERAL 51,275.18 (34.04)

Gap Category # of Hectares Protected (Percent Protected)

1 206.23 (0.14)

3 51,068.95 (33.90)

Total Protected: 51,275.18 hectares, 34.04% of the conservation area [Size of conservation area=150,633 hectares]

NLCD COMPOSITION

Class Percent of Conservation Area

Shrubland 16.6

Herbaceous Grassland 83.4

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Birds				
<i>Aimophila cassinii</i> Cassin's Sparrow	1 (4)	30	3	6
<i>Charadrius montanus</i> (breeding) Mountain Plover	1	27	4	8
Terrestrial Ecological Systems				
Great Plains Playa Lakes	1	81	1	3
Great Plains Saline Wet Prairies and Meadows	1	5	20	7
Great Plains Shortgrass Prairies	135,463 (ha)	2,467,146 (ha)	5	1
Pinyon - Oak - Juniper Woodlands and Shrublands	1	31	3	5

Big Juan (Juan Largo) (cont'd)

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Big Lake

CA Type: Terrestrial
 Map #: S67
 State: TX
 Size: 186,787 hectares

Stratification Unit: Southern Llano Estacado

KNOWN THREATS (with Severity Score=3)

Crop Production Practices
 Inappropriate Grazing Practices
 Lack of Comprehensive Water Strategy

PROTECTED LANDS

None

[Size of conservation area=186,787 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Commercial-Industrial-Transportation	0.3
Bare Rock-Sand-Clay	0.4
Shrubland	68.3
Herbaceous Grassland	28.3
Pasture – Hay	0.1
Row Crops	2.5

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Birds				
<i>Aimophila cassinii</i> Cassin's Sparrow	1	30	3	6
<i>Athene cunicularia hypugaea</i> Western Burrowing Owl	1	23	4	6
<i>Callipepla squamata</i> Scaled Quail	1	23	4	6
<i>Vireo bellii</i> (breeding) Bell's Vireo	1	6	17	10
Vascular Plants				
<i>Selenia jonesii</i> Jones' Selenia	1	1	100	7
Terrestrial Ecological Systems				
Chihuahuan Desert Grasslands (swales)	1	3	33	3
Great Plains Playa Lakes	1 (146)	81	1	10
Southern Great Plains Mesquite Woodlands and Shrublands	140,310 (ha)	1,233,439 (ha)	11	9

Big Lake (cont'd)

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Black Kettle

CA Type: Terrestrial
 Map #: W69
 State: OK
 Size: 46,485 hectares

Stratification Unit: Western Rolling Plains

KNOWN THREATS (with Severity Score=3)

Conversion to Agriculture

PROTECTED LANDS

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
FEDERAL	1,645.37 (3.54)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
3	1,645.37 (3.54)

Total Protected: 1,645.37 hectares, 3.54% of the conservation area [Size of conservation area=46,485 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Open Water	0.6
Bare Rock-Sand-Clay	0.1
Evergreen Forest	0.5
Mixed Forest	0.3
Shrubland	21.1
Herbaceous Grassland	75.4
Pasture – Hay	0.3
Row Crops	0.4
Small Grains	1.1

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Reptiles				
<i>Thamnophis sirtalis annectens</i> Texas Garter Snake	1	2	50	9
Terrestrial Ecological Systems				
Great Plains Mixedgrass Prairies	1	28	4	6
Great Plains Playa Lakes	1 (3)	81	1	3
Southern Great Plains Deep Sand Shrublands	1	29	3	5

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Blackwater Draw

CA Type: Terrestrial
 Map #: S51
 States: NM and TX
 Size: 162,831 hectares

Stratification Unit: Southern Llano Estacado, Northern Llano Estacado

KNOWN THREATS (with Severity Score=3)

Crop Production Practices
 Parasites/Pathogens

PROTECTED LANDS

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
STATE	207.02 (0.13)
FEDERAL	572.03 (0.35)
<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
3	779.05 (0.48)

Total Protected: 779.05 hectares, 0.48% of the conservation area [Size of conservation area=162,831 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Commercial-Industrial-Transportation	0.1
Bare Rock-Sand-Clay	1.1
Shrubland	21.9
Herbaceous Grassland	66.3
Pasture - Hay	2.3
Row Crops	6.2
Small Grains	1.8
Fallow	0.2
Emergent Herbaceous Wetlands	0.2

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Animal Assemblages				
Intact Prairie Dog Towns and Associated Animal Assemblages	1	19	5	3
Birds				
<i>Calamospiza melanocorys</i> (breeding)	1	17	6	7
Lark Bunting				
Terrestrial Ecological Systems				
Great Plains Playa Lakes	1 (58)*	81	1	3
Southern Great Plains Deep Sand Shrublands	1	29	3	5

Blackwater Draw (cont'd)

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Blanco Canyon

CA Type: Terrestrial
 Map #: W86
 State: TX
 Size: 88,756 hectares

Stratification Unit: Western Rolling Plains, Northern Llano Estacado

KNOWN THREATS (with Severity Score=3)

Channelization of Rivers and Streams
 Crop Production Practices
 Groundwater Extraction/Manipulation
 Inappropriate Grazing Practices
 Lack of Comprehensive Water Strategy
 Windfarm Development

PROTECTED LANDS

None

[Size of conservation area=88,756 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Open Water	0.9
Low Intensity Residential	0.1
Commercial-Industrial-Transportation	0.1
Bare Rock-Sand-Clay	1.7
Quarries-Strip Mines-Gravel Pits	0.1
Shrubland	30.7
Herbaceous Grassland	61.5
Pasture – Hay	1.0
Row Crops	3.9
Small Grains	0.1
Emergent Herbaceous Wetlands	0.1

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Birds				
<i>Aimophila cassinii</i> Cassin's Sparrow	1	30	3	6
<i>Athene cunicularia hypugaea</i> Western Burrowing Owl	1	23	4	6
<i>Buteo regalis</i> Ferruginous Hawk	1	22	5	7
<i>Calamospiza melanocorys</i> (breeding) Lark Bunting	1	17	6	7
<i>Calamospiza melanocorys</i> (wintering) Lark Bunting	1	7	14	7

Blanco Canyon (cont'd)

TARGET OCCURRENCES DETERMINED TO BE VIABLE (cont'd)

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Birds (cont'd)				
<i>Calcarius ornatus</i> (wintering) Chestnut-collared Longspur	1	6	17	6
<i>Callipepla squamata</i> Scaled Quail	1	23	4	6
<i>Zonotrichia querula</i> (wintering) Harris' Sparrow	1	5	20	9
Terrestrial Ecological Systems				
Great Plains Playa Lakes	1 (95)*	81	1	3
Pinyon - Oak - Juniper Woodlands and Shrublands	1	31	3	5
Southern Great Plains Deep Sand Shrublands	1	29	3	5
Southern Great Plains Mesquite Woodlands and Shrublands	66,714 (ha)	1,233,439 (ha)	5	4
Southern Great Plains Riparian Forests, Woodlands and Shrublands	1	21	5	2

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Bueyeros Grasslands

CA Type: Terrestrial
 Map #: CR38
 State: NM
 Size: 154,050 hectares

Stratification Unit: Canadian River Corridor

KNOWN THREATS (with Severity Score=3)

Climate Change
 Conversion to Agriculture
 Lack of Comprehensive Water Strategy

PROTECTED LANDS

None

[Size of conservation area=154,050 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Bare Rock-Sand-Clay	0.2
Evergreen Forest	0.3
Shrubland	9.2
Herbaceous Grassland	89.7
Row Crops	0.3
Small Grains	0.3

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Animal Assemblages				
Intact Prairie Dog Towns and Associated Animal Assemblages	1	19	5	3
Birds				
<i>Aimophila cassinii</i> Cassin's Sparrow	1	30	3	6
<i>Athene cunicularia hypugaea</i> Western Burrowing Owl	1	23	4	6
<i>Buteo regalis</i> Ferruginous Hawk	1	22	5	7
<i>Calamospiza melanocorys</i> (breeding) Lark Bunting	1	17	6	7
<i>Numenius americanus</i> (breeding) Long-billed Curlew	1	15	7	8

Bueyeros Grasslands (cont'd)

TARGET OCCURRENCES DETERMINED TO BE VIABLE (cont'd)

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Vascular Plants				
<i>Senecio spellenbergii</i> Spellenberg's Groundsel	1	9	11	4
Terrestrial Ecological Systems				
Great Plains Playa Lakes	1 (14)*	81	1	3
Great Plains Shortgrass Prairies	123,188 (ha)	2,467,146 (ha)	5	1
Pinyon - Oak - Juniper Woodlands and Shrublands	1	31	3	5
Southern Great Plains Deep Sand Shrublands	1	29	3	5
Southern Great Plains Saline Lakes	1	16	6	6

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Canadian River – Punta de Agua

CA Type: Terrestrial
 Map #: CR42
 State: NM and TX
 Size: 204,220 hectares

Stratification Unit: Canadian River Corridor

KNOWN THREATS (with Severity Score=3)

Invasive Plants
 Parasites/Pathogens

PROTECTED LANDS

None

[Size of conservation area=204,220 hectares]

NLCD COMPOSITION

Class	Percent of Conservation Area
Bare Rock-Sand-Clay	0.1
Shrubland	26.4
Herbaceous Grassland	72.8
Pasture – Hay	0.1
Row Crops	0.4
Small Grains	0.2

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	Number This Area	Number All Areas	Percent This Area	Percent Overall Goal Contribution
Birds				
<i>Aimophila cassinii</i> Cassin's Sparrow	1	30	3	6
<i>Numenius americanus</i> (breeding) Long-billed Curlew	1	15	7	8
Terrestrial Ecological Systems				
Great Plains Playa Lakes	1 (22)*	81	1	3
Great Plains Shortgrass Prairies	81,706 (ha)	2,467,146 (ha)	3	1
Great Plains Tallgrass Prairies	1	9	11	7
Southern Great Plains Deep Sand Shrublands	1	29	3	5
Southern Great Plains Mesquite Woodlands and Shrublands	61,280 (ha)	1,233,439 (ha)	5	4
Southern Great Plains Riparian Forests, Woodlands and Shrublands	1	21	5	2

Canadian River – Punta de Agua (cont'd)

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Canadian River East

CA Type: Terrestrial
 Map #: CR47
 States: OK and TX
 Size: 117,030 hectares

Stratification Unit: Canadian River Corridor

KNOWN THREATS (with Severity Score=3)

Channelization of Rivers and Streams
 Groundwater Extraction/Manipulation
 Lack of Comprehensive Water Strategy

PROTECTED LANDS

Ownership Type # of Hectares Protected (Percent Protected)

STATE	2,396.10 (2.05)
FEDERAL	233.36 (0.20)

Gap Category # of Hectares Protected (Percent Protected)

2	2,396.10 (2.05)
3	233.36 (0.20)

Total Protected: 2,629.46 hectares, 2.25% of the conservation area [Size of conservation area=117,030 hectares]

NLCD COMPOSITION

Class	Percent of Conservation Area
Open Water	0.6
Commercial-Industrial-Transportation	0.2
Bare Rock-Sand-Clay	1.2
Shrubland	21.1
Herbaceous Grassland	74.1
Pasture - Hay	0.2
Row Crops	1.3
Small Grains	1.0
Woody Wetlands	0.1
Emergent Herbaceous Wetlands	0.2

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	Number This Area	Number All Areas	Percent This Area	Percent Overall Goal Contribution
Birds				
<i>Sternula antillarum athalassos</i> (breeding)	1	6	17	20
Interior Least Tern				
Reptiles				
<i>Sistrurus catenatus</i>	1	2	50	17
Massasauga				

Canadian River East (cont'd)

TARGET OCCURRENCES DETERMINED TO BE VIABLE (cont'd)

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Terrestrial Ecological Systems				
Great Plains Mixedgrass Prairies	1	28	4	6
Great Plains Playa Lakes	1 (45)*	81	1	3
Southern Great Plains Deep Sand Shrublands	1	29	3	5
Southern Great Plains Riparian Forests, Woodlands and Shrublands	1	21	5	2

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Canadian River Gorge

CA Type: Terrestrial
 Map #: CR32
 State: NM
 Size: 90,108 hectares

Stratification Unit: Canadian River Corridor, Montane Ecotone

KNOWN THREATS (with Severity Score=3)

Climate Change

PROTECTED LANDS

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
FEDERAL	12,050.99 (13.37)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
3	12,050.99 (13.37)

Total Protected: 12,050.99 hectares, 13.37% of the conservation area [Size of conservation area=90,108 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Evergreen Forest	4.5
Shrubland	27.5
Herbaceous Grassland	67.3
Pasture - Hay	0.6

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Vascular Plants				
<i>Herrickia horrida</i> Horrid Herrickia	1	1	100	7
Terrestrial Ecological Systems				
Great Plains Carbonate Glades and Barrens	1	3	33	10
Great Plains Freshwater Emergent Marshes	1	3	33	7
Great Plains Mixedgrass Prairies	1	28	4	6
Great Plains Playa Lakes	1 (53)*	81	1	3
Great Plains Shortgrass Prairies	49,524 (ha)	2,467,146 (ha)	2	0.4
Montane Riparian Woodlands and Shrublands	1	1	100	17
Pinyon - Oak - Juniper Woodlands and Shrublands	1	31	3	5
Rocky Mountain Dry Ponderosa Pine Forests and Woodlands	1	7	14	7
Southern Great Plains Riparian Forests, Woodlands and Shrublands	1	21	5	2

Canadian River Gorge (cont'd)

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Canyon Largo

CA Type: Terrestrial
 Map #: CR33
 State: NM
 Size: 149,222 hectares

Stratification Unit: Canadian River Corridor, Montane Ecotone

KNOWN THREATS (with Severity Score=3)

Climate Change

PROTECTED LANDS

Ownership Type *# of Hectares Protected (Percent Protected)*

FEDERAL 11,951.10 (8.01)

Gap Category *# of Hectares Protected (Percent Protected)*

2 6,703.20 (4.49)

3 5,247.90 (3.52)

Total Protected: 11,951.10 hectares, 8.01% of the conservation area [Size of conservation area=149,222 hectares]

NLCD COMPOSITION

Class *Percent of Conservation Area*

Evergreen Forest 13.5

Shrubland 39.3

Herbaceous Grassland 47.1

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Birds				
<i>Aimophila cassinii</i> Cassin's Sparrow	1	30	3	6
Terrestrial Ecological Systems				
Great Plains Playa Lakes	1 (12)	81	1	3
Pinyon - Oak - Juniper Woodlands and Shrublands	1	31	3	5
Rocky Mountain Dry Ponderosa Pine Forests and Woodlands	1	7	14	7
Southern Great Plains Riparian Forests, Woodlands and Shrublands	1	21	5	2

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Canyon Playas

CA Type: Terrestrial
 Map #: NL50
 State: TX
 Size: 304,223 hectares

Stratification Unit: Northern Llano Estacado

KNOWN THREATS (with Severity Score=3)

- Crop Production Practices
- Groundwater Extraction/Manipulation
- Lack of Comprehensive Water Strategy
- Livestock Production Practices
- Parasites/Pathogens
- Windfarm Development

PROTECTED LANDS

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
STATE	33.91 (0.01)
FEDERAL	3,059.83 (1.01)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
2	3,059.83 (1.01)
3	33.91 (0.01)

Total Protected: 3,093.74 hectares, 1.02% of the conservation area [Size of conservation area=304,223 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Open Water	0.2
Low Intensity Residential	0.1
Commercial-Industrial-Transportation	0.3
Shrubland	0.5
Herbaceous Grassland	33.3
Pasture – Hay	1.0
Row Crops	30.3
Small Grains	33.6
Fallow	0.5

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Animal Assemblages				
Intact Prairie Dog Towns and Associated Animal Assemblages	1	19	5	3
Birds				
<i>Calcarius mccownii</i> (wintering) McCown's Longspur	1	5	20	7
<i>Callipepla squamata</i> Scaled Quail	1	23	4	6

Canyon Playas (cont'd)

TARGET OCCURRENCES DETERMINED TO BE VIABLE (cont'd)

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Terrestrial Ecological Systems				
Great Plains Playa Lakes	1 (1,346)*	81	1	3

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

	<i>Number This Area</i>
Birds	
<i>Aimophila cassinii</i> Cassin's Sparrow	1
<i>Anthus spragueii</i> (wintering) Sprague's Pipit	1
<i>Athene cunicularia hypugaea</i> Western Burrowing Owl	1
<i>Buteo regalis</i> Ferruginous Hawk	1
<i>Calamospiza melanocorys</i> (wintering) Lark Bunting	1
<i>Calcarius ornatus</i> (wintering) Chestnut-collared Longspur	1
<i>Charadrius montanus</i> (breeding) Mountain Plover	1
<i>Numenius americanus</i> (breeding) Long-billed Curlew	1
<i>Zonotrichia querula</i> (wintering) Harris' Sparrow	1

Capitan / Sacramento Mountain Foothills

CA Type: Terrestrial
 Map #: N30
 State: NM
 Size: 180,242 hectares

Stratification Unit: New Mexico High Plains

KNOWN THREATS (with Severity Score=3)

Climate Change

PROTECTED LANDS

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
FEDERAL	29,067.12 (16.13)
<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
3	29,067.12 (16.13)

Total Protected: 29,067.12 hectares, 16.13% of the conservation area [Size of conservation area=180,242 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Evergreen Forest	0.3
Shrubland	25.8
Herbaceous Grassland	72.8
Pasture - Hay	0.1
Row Crops	0.4
Small Grains	0.5

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Birds				
<i>Aimophila cassinii</i> Cassin's Sparrow	1	30	3	6
<i>Anthus spragueii</i> (wintering) Sprague's Pipit	1	1	100	14
<i>Athene cunicularia hypugaea</i> Western Burrowing Owl	1	23	4	6
<i>Calamospiza melanocorys</i> (wintering) Lark Bunting	1	7	14	7
<i>Calcarius mccownii</i> (wintering) McCown's Longspur	1	5	20	7
<i>Calcarius ornatus</i> (wintering) Chestnut-collared Longspur	1	6	17	6
<i>Callipepla squamata</i> Scaled Quail	1	23	4	6

Capitan / Sacramento Mountain Foothills (cont'd)

TARGET OCCURRENCES DETERMINED TO BE VIABLE (cont'd)

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Birds (cont'd)				
<i>Vireo bellii</i> (breeding) Bell's Vireo	1	6	17	10
Vascular Plants				
<i>Echinocereus fendleri</i> var. <i>kuenzleri</i> Kuenzler's Hedgehog Cactus	1	2	50	33
Terrestrial Ecological Systems				
Great Plains Playa Lakes	1 (13)	81	1	3
Great Plains Shortgrass Prairies	117,065 (ha)	2,467,146 (ha)	5	1
Pinyon - Oak - Juniper Woodlands and Shrublands	1	31	3	5
Southern Great Plains Mesquite Woodlands and Shrublands	45,025 (ha)	1,233,439 (ha)	4	3
Southern Great Plains Riparian Forests, Woodlands and Shrublands	1	21	5	2

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Capulin Volcano

CA Type: Terrestrial
 Map #: C14
 State: NM
 Size: 4,534 hectares

Stratification Unit: Capulin High Plains

KNOWN THREATS (with Severity Score=3)

Climate Change

PROTECTED LANDS

Ownership Type **# of Hectares Protected (Percent Protected)**

FEDERAL 644.08 (14.21)

Gap Category **# of Hectares Protected (Percent Protected)**

1 644.08 (14.21)

Total Protected: 644.08 hectares, 14.21% of the conservation area [Size of conservation area=4,534 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Commercial-Industrial-Transportation	0.2
Deciduous Forest	1.3
Evergreen Forest	26.7
Shrubland	15.7
Herbaceous Grassland	56.1

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Terrestrial Ecological Systems				
Great Plains Mixedgrass Prairies	1	28	4	6
Great Plains Playa Lakes	1 (2)	81	1	3
Great Plains Tallgrass Prairies	1	9	11	7
Rocky Mountain Dry Ponderosa Pine Forests and Woodlands	1	7	14	7

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Carpenter Mesa

CA Type: Terrestrial
 Map #: CR35
 State: NM
 Size: 149,818 hectares

Stratification Unit: Canadian River Corridor

KNOWN THREATS (with Severity Score=3)

Climate Change

PROTECTED LANDS

Ownership Type # of Hectares Protected (Percent Protected)

STATE	93.23 (0.06)
FEDERAL	4.62 (<0.01)

Gap Category # of Hectares Protected (Percent Protected)

3	97.85 (0.06)
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Total Protected: 97.85 hectares, 0.06% of the conservation area [Size of conservation area=149,818 hectares]

NLCD COMPOSITION

Class Percent of Conservation Area

Bare Rock-Sand-Clay	0.1
Evergreen Forest	0.9
Shrubland	35.5
Herbaceous Grassland	63.4

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Vascular Plants				
<i>Euphorbia strictior</i>	1	6	17	4
Panhandle Spurge				
Terrestrial Ecological Systems				
Great Plains Playa Lakes	1 (11)	81	1	3
Pinyon - Oak - Juniper Woodlands and Shrublands	1	31	3	5
Southern Great Plains Mesquite Woodlands and Shrublands	29,947 (ha)	1,233,439 (ha)	2	2

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Central Matador WMA

CA Type: Terrestrial
 Map #: W80
 State: TX
 Size: 4,479 hectares

Stratification Unit: Western Rolling Plains

KNOWN THREATS (with Severity Score=3)

Invasive Plants

PROTECTED LANDS

Ownership Type # of Hectares Protected (Percent Protected)

STATE 4,418.88 (98.66)

Gap Category # of Hectares Protected (Percent Protected)

2 4,418.88 (98.66)

Total Protected: 4,418.88 hectares, 98.66% of the conservation area [Size of conservation area=4,479 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Open Water	0.1
Bare Rock-Sand-Clay	0.1
Evergreen Forest	0.1
Mixed Forest	0.2
Shrubland	60.3
Herbaceous Grassland	39.1
Pasture - Hay	0.1
Small Grains	0.1

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Reptiles				
<i>Sistrurus catenatus</i>	1	2	50	17
Massasauga				

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Charco Creek Mesas

CA Type: Terrestrial
Map #: CR41
State: NM
Size: 2,594 hectares

Stratification Unit: Canadian River Corridor

KNOWN THREATS (with Severity Score=3)

Climate Change

PROTECTED LANDS

None

[Size of conservation area=2,594 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Bare Rock-Sand-Clay	0.1
Shrubland	4.7
Herbaceous Grassland	95.2

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Vascular Plants				
<i>Euphorbia strictior</i>	1	6	17	4
Panhandle Spurge				
Terrestrial Ecological Systems				
Great Plains Playa Lakes	1 (3)	81	1	3

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Chico Creek Grasslands

CA Type: Terrestrial
 Map #: M3
 State: NM
 Size: 83,382 hectares

Stratification Unit: Montane Ecotone

KNOWN THREATS (with Severity Score=3)

Climate Change

PROTECTED LANDS

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
PRIVATE	57.38 (0.07)
FEDERAL	33.79 (0.04)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
2	57.38 (0.07)
3	33.79 (0.04)

Total Protected: 91.17 hectares, 0.11% of the conservation area [Size of conservation area=83,382 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Deciduous Forest	0.1
Evergreen Forest	0.1
Shrubland	10.9
Herbaceous Grassland	88.8

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Birds				
<i>Charadrius montanus</i> (breeding) Mountain Plover	5	27	19	42
Terrestrial Ecological Systems				
Great Plains Mixedgrass Prairies	1	28	4	6
Great Plains Playa Lakes	1 (10)	81	1	3
Great Plains Shortgrass Prairies	33,329 (ha)	2,467,146 (ha)	1	0.2

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Copper Breaks

CA Type: Terrestrial
 Map #: W84
 State: TX
 Size: 1,011 hectares

Stratification Unit: Western Rolling Plains

KNOWN THREATS (with Severity Score=3)

None

PROTECTED LANDS

Ownership Type # of Hectares Protected (Percent Protected)

STATE 498.70 (49.33)

Gap Category # of Hectares Protected (Percent Protected)

3 498.70 (49.33)

Total Protected: 498.70 hectares, 49.33% of the conservation area [Size of conservation area=1,011 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Open Water	3.0
Bare Rock-Sand-Clay	0.1
Deciduous Forest	0.5
Evergreen Forest	0.3
Mixed Forest	1.0
Shrubland	45.4
Herbaceous Grassland	20.3
Pasture – Hay	7.1
Row Crops	5.0
Small Grains	17.3

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Mammals				
<i>Dipodomys elator</i>	1	6	17	4
Texas Kangaroo Rat				
Terrestrial Ecological Systems				
Great Plains Playa Lakes	1 (4)	81	1	3

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Double Lakes

CA Type: Terrestrial
 Map #: S63
 State: TX
 Size: 29,745 hectares

Stratification Unit: Southern Llano Estacado

KNOWN THREATS (with Severity Score=3)

Groundwater Extraction/Manipulation
 Invasive Non-native Animals
 Invasive Plants
 Lack of Comprehensive Water Strategy
 Oil and Gas Development
 Parasites/Pathogens
 Windfarm Development

PROTECTED LANDS

None

[Size of conservation area=29,745 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Open Water	0.7
Bare Rock-Sand-Clay	0.4
Shrubland	50.9
Herbaceous Grassland	21.7
Row Crops	19.3
Small Grains	7.0

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Animal Assemblages				
Intact Prairie Dog Towns and Associated Animal Assemblages	1	19	5	3
Birds				
<i>Aimophila cassinii</i> Cassin's Sparrow	1	30	3	6
<i>Charadrius alexandrinus nivosus</i> (breeding) Western Snowy Plover	1	5	20	10
Terrestrial Ecological Systems				
Great Plains Playa Lakes	1 (117)*	81	1	3
Southern Great Plains Deep Sand Shrublands	1	29	3	5
Southern Great Plains Saline Lakes	5	16	31	31

Double Lakes (cont'd)

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Dunken

CA Type: Terrestrial
 Map #: N31
 State: NM
 Size: 4,634 hectares

Stratification Unit: New Mexico High Plains

KNOWN THREATS (with Severity Score=3)

None

PROTECTED LANDS

None

[Size of conservation area=4,634 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Evergreen Forest	0.1
Shrubland	66.9
Herbaceous Grassland	33.1

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Vascular Plants				
<i>Echinocereus fendleri</i> var. <i>kuenzleri</i>	1	2	50	33
Kuenzler's Hedgehog Cactus				

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Duran Grasslands

CA Type: Terrestrial
 Map #: N27
 State: NM
 Size: 169,495 hectares

Stratification Unit: New Mexico High Plains

KNOWN THREATS (with Severity Score=3)

Climate Change
 Groundwater Extraction/Manipulation

PROTECTED LANDS

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
FEDERAL	13,249.32 (7.82)
<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
3	13,249.32 (7.82)

Total Protected: 13,249.32 hectares, 7.82% of the conservation area [Size of conservation area=169,495 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Bare Rock-Sand-Clay	0.1
Evergreen Forest	0.4
Shrubland	6.2
Herbaceous Grassland	93.3

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Vascular Plants				
<i>Astragalus siliceus</i>	3	9	33	12
Flint Mountains Milk-vetch				
Terrestrial Ecological Systems				
Great Plains Playa Lakes	1 (5)	81	1	3
Great Plains Shortgrass Prairies	152,430 (ha)	2,467,146 (ha)	6	1

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Duran Lakes

CA Type: Terrestrial
Map #: N28
State: NM
Size: 5,212 hectares

Stratification Unit: New Mexico High Plains

KNOWN THREATS (with Severity Score=3)

Climate Change
Groundwater Extraction/Manipulation
Lack of Comprehensive Water Strategy

PROTECTED LANDS

None

[Size of conservation area=5,212 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Open Water	8.3
Bare Rock-Sand-Clay	16.7
Shrubland	0.9
Herbaceous Grassland	74.1

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Terrestrial Ecological Systems				
Great Plains Saline Wet Prairies and Meadows	1	5	20	7
Southern Great Plains Saline Lakes	1	16	6	6

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Dutch Canyon

CA Type: Terrestrial
Map #: W74
State: TX
Size: 3,310 hectares

Stratification Unit: Western Rolling Plains, Northern Llano Estacado

KNOWN THREATS (with Severity Score=3)

Inappropriate Grazing Practices
Lack of Comprehensive Water Strategy
Ownership Fragmentation of Large Ranches

PROTECTED LANDS

None

[Size of conservation area=3,310 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Open Water	4.0
Bare Rock-Sand-Clay	1.1
Evergreen Forest	0.2
Mixed Forest	0.5
Shrubland	24.1
Herbaceous Grassland	66.6
Row Crops	3.5
Emergent Herbaceous Wetlands	0.1

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Mammals				
<i>Peromyscus truei comanche</i> Palo Duro Mouse	1	14	7	4
Terrestrial Ecological Systems				
Great Plains Playa Lakes	1 (25)	81	1	3

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Eagle Tail

CA Type: Terrestrial
 Map #: M1
 State: NM
 Size: 1,304 hectares

Stratification Unit: Montane Ecotone

KNOWN THREATS (with Severity Score=3)

None

PROTECTED LANDS

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
PRIVATE	542.78 (41.62)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
2	542.78 (41.62)

Total Protected: 542.78 hectares, 41.62% of the conservation area [Size of conservation area=1,304 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Deciduous Forest	0.3
Evergreen Forest	23.8
Shrubland	36.7
Herbaceous Grassland	39.3

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Vascular Plants				
<i>Eriogonum aliquidum</i>	1	6	17	4
Cimarron Wild Buckwheat				

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

East of Matador

CA Type: Terrestrial
 Map #: W79
 State: TX
 Size: 3,262 hectares

Stratification Unit: Western Rolling Plains

KNOWN THREATS (with Severity Score=3)

Conversion to Agriculture

PROTECTED LANDS

None

[Size of conservation area=3,262 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Open Water	0.8
Low Intensity Residential	0.1
Commercial-Industrial-Transportation	1.0
Shrubland	14.8
Herbaceous Grassland	44.5
Pasture – Hay	3.2
Row Crops	27.9
Small Grains	7.8

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Mammals				
<i>Dipodomys elator</i>	1	6	17	4
Texas Kangaroo Rat				
Terrestrial Ecological Systems				
Great Plains Playa Lakes	1 (5)	81	1	3

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Encino Grasslands

CA Type: Terrestrial
 Map #: N25
 State: NM
 Size: 90,898 hectares

Stratification Unit: New Mexico High Plains, Montane Ecotone

KNOWN THREATS (with Severity Score=3)

Climate Change
 Groundwater Extraction/Manipulation

PROTECTED LANDS

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
FEDERAL	16.54 (0.02)
<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
3	16.54 (0.02)

Total Protected: 16.54 hectares, 0.02% of the conservation area [Size of conservation area=90,898 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Commercial-Industrial-Transportation	0.1
Bare Rock-Sand-Clay	0.1
Quarries-Strip Mines-Gravel Pits	0.1
Shrubland	11.0
Herbaceous Grassland	88.7

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Vascular Plants				
<i>Astragalus siliceus</i>	3	9	33	12
Flint Mountains Milk-vetch				
Terrestrial Ecological Systems				
Great Plains Playa Lakes	1 (3)	81	1	3
Great Plains Shortgrass Prairies	86,289 (ha)	2,467,146 (ha)	3	1
Pinyon - Oak - Juniper Woodlands and Shrublands	1	31	3	5

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Encino Lake

CA Type: Terrestrial
Map #: N26
State: NM
Size: 9,737 hectares

Stratification Unit: New Mexico High Plains

KNOWN THREATS (with Severity Score=3)

Climate Change
Groundwater Extraction/Manipulation
Lack of Comprehensive Water Strategy

PROTECTED LANDS

None

[Size of conservation area=9,737 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Open Water	0.3
Bare Rock-Sand-Clay	4.1
Shrubland	3.5
Herbaceous Grassland	92.2

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Terrestrial Ecological Systems				
Great Plains Playa Lakes	1 (1)	81	1	3
Great Plains Saline Wet Prairies and Meadows	1	5	20	7
Southern Great Plains Saline Lakes	1	16	6	6

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Estancia Basin Wetlands

CA Type: Terrestrial
 Map #: N23
 State: NM
 Size: 37,297 hectares

Stratification Unit: New Mexico High Plains

KNOWN THREATS (with Severity Score=3)

Climate Change
 Groundwater Extraction/Manipulation
 Lack of Comprehensive Water Strategy

PROTECTED LANDS

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
FEDERAL	1,821.55 (4.88)
<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
3	1,821.55 (4.88)

Total Protected: 1,821.55 hectares, 4.88% of the conservation area [Size of conservation area=37,297 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Open Water	7.9
Commercial-Industrial-Transportation	0.2
Bare Rock-Sand-Clay	12.3
Shrubland	4.1
Herbaceous Grassland	75.5

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Animal Assemblages				
Intact Prairie Dog Towns and Associated Assemblages	1	19	5	3
Birds				
<i>Buteo regalis</i> Ferruginous Hawk	1	22	5	7
<i>Charadrius alexandrinus nivosus</i> (breeding) Western Snowy Plover	1	5	20	10
Terrestrial Ecological Systems				
Great Plains Playa Lakes	1 (70)*	81	1	3
Great Plains Saline Wet Prairies and Marshes	1	5	20	7
Southern Great Plains Saline Lakes	1	16	6	6
Southern Great Plains Saline Shrublands	1	1	100	20

Estancia Basin Wetlands (cont'd)

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Estancia Grasslands

CA Type: Terrestrial
 Map #: N24
 State: NM
 Size: 78,524 hectares

Stratification Unit: New Mexico High Plains

KNOWN THREATS (with Severity Score=3)

Climate Change

PROTECTED LANDS

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
FEDERAL	580.08 (0.74)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
3	580.08 (0.74)

Total Protected: 580.08 hectares, 0.74% of the conservation area [Size of conservation area=78,524 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Commercial-Industrial-Transportation	0.1
Bare Rock-Sand-Clay	1.1
Shrubland	6.5
Herbaceous Grassland	91.3
Row Crops	1.0

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Terrestrial Ecological Systems				
Great Plains Playa Lakes	1 (1)	81	1	3
Great Plains Shortgrass Prairies	74,548 (ha)	2,467,146 (ha)	3	1

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Goat Mountain

CA Type: Terrestrial
 Map #: W88
 State: TX
 Size: 66,975 hectares

Stratification Unit: Western Rolling Plains

KNOWN THREATS (with Severity Score=3)

Conversion to Agriculture
 Groundwater Extraction/Manipulation
 Lack of Comprehensive Water Strategy
 Oil and Gas Development

PROTECTED LANDS

None

[Size of conservation area=66,975 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Open Water	0.1
Low Intensity Residential	0.2
Commercial-Industrial-Transportation	0.1
Bare Rock-Sand-Clay	0.4
Deciduous Forest	11.6
Evergreen Forest	5.5
Shrubland	67.0
Herbaceous Grassland	13.9
Pasture – Hay	0.9
Row Crops	0.4

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Birds				
<i>Vireo atricapilla</i> (breeding)	1	2	50	25
Black-capped Vireo				
Terrestrial Ecological Systems				
Great Plains Limestone Upland Forests and Woodlands	1	3	33	7
Great Plains Playa Lakes	1 (2)	81	1	3
Southern Great Plains Mesquite Woodlands and Shrublands	13,439 (ha)	1,233,439 (ha)	1	1

Goat Mountain (cont'd)

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Grulla NWR

CA Type: Terrestrial
 Map #: S52
 State: NM and TX
 Size: 18,937 hectares

Stratification Unit: Southern Llano Estacado

KNOWN THREATS (with Severity Score=3)

Climate Change

PROTECTED LANDS

Ownership Type # of Hectares Protected (Percent Protected)

FEDERAL 322.76 (1.70)

Gap Category # of Hectares Protected (Percent Protected)

2 322.76 (1.70)

Total Protected: 322.76 hectares, 1.70% of the conservation area [Size of conservation area=18,937 hectares]

NLCD COMPOSITION

Class	Percent of Conservation Area
Open Water	0.7
Shrubland	3.3
Herbaceous Grassland	89.8
Row Crops	4.6
Small Grains	1.5
Fallow	0.1

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	Number This Area	Number All Areas	Percent This Area	Percent Overall Goal Contribution
Animal Assemblages				
Intact Prairie Dog Towns and Associated Animal Assemblages	1	19	5	3
Migratory Waterbird Assemblage (incl. Shorebirds, Waterfowl and Cranes)	1	3	33	8
Birds				
<i>Athene cunicularia hypugaea</i> Western Burrowing Owl	1	23	4	6
<i>Buteo regalis</i> Ferruginous Hawk	1	22	5	7
<i>Calamospiza melanocorys</i> (breeding) Lark Bunting	1	17	6	7
<i>Charadrius alexandrinus nivosus</i> (breeding) Western Snowy Plover	1	5	20	10

Grulla NWR (cont'd)

TARGET OCCURRENCES DETERMINED TO BE VIABLE (cont'd)

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Birds (cont'd)				
<i>Sternula antillarum athalassos</i> (breeding) Interior Least Tern	1	6	17	20
<i>Tympanuchus pallidicinctus</i> Lesser Prairie-chicken	1	30	3	6
Terrestrial Ecological Systems				
Great Plains Playa Lakes	1 (11)*	81	1	3
Southern Great Plains Deep Sand Shrublands	1	29	3	5
Southern Great Plains Saline Lakes	1	16	6	6

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Harrold

CA Type: Terrestrial
Map #: W85
State: TX
Size: 317 hectares

Stratification Unit: Western Rolling Plains

KNOWN THREATS (with Severity Score=3)

Conversion to Agriculture

PROTECTED LANDS

None

[Size of conservation area=317 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Open Water	0.5
Commercial-Industrial-Transportation	2.9
Bare Rock-Sand-Clay	0.1
Mixed Forest	0.6
Shrubland	45.6
Herbaceous Grassland	45.6
Pasture – Hay	2.0
Row Crops	0.7
Small Grains	1.2
Emergent Herbaceous Wetlands	0.9

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Mammals				
<i>Dipodomys elator</i>	1	6	17	4
Texas Kangaroo Rat				

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Hulver

CA Type: Terrestrial
Map #: W77
State: TX
Size: 2,187 hectares

Stratification Unit: Western Rolling Plains

KNOWN THREATS (with Severity Score=3)

Inappropriate Grazing Practices
Invasive Plants
Lack of Comprehensive Water Strategy
Windfarm Development

PROTECTED LANDS

None

[Size of conservation area=2,187 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Open Water	0.3
Bare Rock-Sand-Clay	11.3
Shrubland	28.3
Herbaceous Grassland	37.7
Pasture - Hay	2.3
Row Crops	19.6
Small Grains	0.5

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Birds				
<i>Sternula antillarum athalassos</i> (breeding)	1	6	17	20
Interior Least Tern				

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Johnson Draw

CA Type: Terrestrial
Map #: S66
State: TX
Size: 2,142 hectares

Stratification Unit: Southern Llano Estacado

KNOWN THREATS (with Severity Score=3)

Oil and Gas Development

PROTECTED LANDS

None

[Size of conservation area=2,142 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Commercial-Industrial-Transportation	0.5
Bare Rock-Sand-Clay	0.6
Shrubland	73.4
Herbaceous Grassland	15.5
Pasture – Hay	0.3
Row Crops	9.7
Emergent Herbaceous Wetlands	0.1

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Vascular Plants				
<i>Muhlenbergia villiflora</i> var. <i>villosa</i> Villous Muhly	1	2	50	33
Terrestrial Ecological Systems				
Great Plains Playa Lakes	1 (1)	81	1	3

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Jones City

CA Type: Terrestrial
Map #: S61
State: NM
Size: 248 hectares

Stratification Unit: Southern Llano Estacado

KNOWN THREATS (with Severity Score=3)

Climate Change
Oil and Gas Development

PROTECTED LANDS

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
FEDERAL	0.75 (0.30)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
3	0.75 (0.30)

Total Protected: 0.75 hectares, 0.30% of the conservation area [Size of conservation area=248 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Bare Rock-Sand-Clay	0.5
Herbaceous Grassland	99.5

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Reptiles				
<i>Sceloporus arenicolus</i>	1	20	5	4
Sand Dune Lizard				

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Lake Meredith

CA Type: Terrestrial
 Map #: CR43
 State: TX
 Size: 206,368 hectares

Stratification Unit: Canadian River Corridor, Capulin High Plains

KNOWN THREATS (with Severity Score=3)

Channelization of Rivers and Streams
 Dam Construction/Operation
 Groundwater Extraction/Manipulation
 Invasive Plants
 Lack of Comprehensive Water Strategy
 Parasites/Pathogens
 Recreational Vehicles (ORVs)

PROTECTED LANDS

Ownership Type	# of Hectares Protected (Percent Protected)
FEDERAL	10,039.30 (4.86)

Gap Category	# of Hectares Protected (Percent Protected)
2	10,039.30 (4.86)

Total Protected: 10,039.30 hectares, 4.86% of the conservation area [Size of conservation area=206,368 hectares]

NLCD COMPOSITION

Class	Percent of Conservation Area
Open Water	0.8
Commercial-Industrial-Transportation	0.1
Bare Rock-Sand-Clay	0.5
Shrubland	30.3
Herbaceous Grassland	66.7
Row Crops	0.8
Small Grains	0.6
Emergent Herbaceous Wetlands	0.1

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	Number This Area	Number All Areas	Percent This Area	Percent Overall Goal Contribution
Animal Assemblages				
Intact Prairie Dog Towns and Associated Animal Assemblages	1	19	5	3
Birds				
<i>Aimophila cassinii</i> Cassin's Sparrow	1	30	3	6
<i>Athene cunicularia hypugaea</i> Western Burrowing Owl	1	23	4	6
<i>Buteo regalis</i> Ferruginous Hawk	2	22	9	14

Lake Meredith (cont'd)

TARGET OCCURRENCES DETERMINED TO BE VIABLE (cont'd)

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Birds (cont'd)				
<i>Calamospiza melanocorys</i> (breeding) Lark Bunting	1	17	6	7
<i>Calamospiza melanocorys</i> (wintering) Lark Bunting	1	7	14	7
<i>Callipepla squamata</i> Scaled Quail	1	23	4	6
<i>Charadrius montanus</i> (breeding) Mountain Plover	1	27	4	8
<i>Melanerpes erythrocephalus</i> Red-headed Woodpecker	1	10	10	10
<i>Numenius americanus</i> (breeding) Long-billed Curlew	1	15	7	8
<i>Tympanuchus pallidicinctus</i> Lesser Prairie-chicken	1	30	3	6
<i>Zonotrichia querula</i> (wintering) Harris' Sparrow	1	5	20	9
Terrestrial Ecological Systems				
Great Plains Mixedgrass Prairies	1	28	4	6
Great Plains Playa Lakes	1 (37)*	81	1	3
Great Plains Shortgrass Prairies	30,989 (ha)	2,467,146 (ha)	1	0.2
Great Plains Tallgrass Prairies	1	9	11	7
Southern Great Plains Deep Sand Shrublands	1	29	3	5
Southern Great Plains Mesquite Woodlands and Shrublands	24,791(ha)	1,233,439 (ha)	2	2
Southern Great Plains Riparian Forests, Woodlands and Shrublands	1	21	5	2

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Little Red River

CA Type: Terrestrial

Map #: W76

State: TX

Stratification Unit: Western Rolling Plains, Northern Llano Estacado

Size: 63,259 hectares

KNOWN THREATS (with Severity Score=3)

Inappropriate Grazing Practices
 Invasive Plants
 Lack of Comprehensive Water Strategy

PROTECTED LANDS

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
STATE	5,556.36 (8.78)
<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
3	5,556.36 (8.78)

Total Protected: 5,556.36 hectares, 8.78% of the conservation [Size of conservation area=63,259 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Open Water	0.4
Bare Rock-Sand-Clay	2.9
Transitional	0.3
Evergreen Forest	1.4
Mixed Forest	2.2
Shrubland	48.6
Herbaceous Grassland	38.3
Pasture – Hay	0.5
Row Crops	5.0
Small Grains	0.4

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Birds				
<i>Athene cunicularia hypugaea</i> Western Burrowing Owl	1	23	4	6
<i>Buteo regalis</i> Ferruginous Hawk	1	22	5	7
<i>Calamospiza melanocorys</i> (wintering) Lark Bunting	1	7	14	7
<i>Calcarius mccownii</i> (wintering) McCown's Longspur	1	5	20	7
<i>Calcarius ornatus</i> (wintering) Chestnut-collared Longspur	1	6	17	6

Little Red River (cont'd)

TARGET OCCURRENCES DETERMINED TO BE VIABLE (cont'd)

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Birds (cont'd)				
<i>Callipepla squamata</i> Scaled Quail	1	23	4	6
<i>Zonotrichia querula</i> (wintering) Harris' Sparrow	1	5	20	9
Mammals				
<i>Peromyscus truei comanche</i> Palo Duro Mouse	3	14	21	12
Vascular Plants				
<i>Eriogonum correllii</i> Correll's Wild Buckwheat	1	1	100	8
Terrestrial Ecological Systems				
Great Plains Playa Lakes	1 (79)*	81	1	3
Pinyon - Oak - Juniper Woodlands and Shrublands	1	31	3	5
Southern Great Plains Deep Sand Shrublands	1	29	3	5
Southern Great Plains Mesquite Woodlands and Shrublands	25,370 (ha)	1,233,439 (ha)	2	2
Southern Great Plains Riparian Forests, Woodlands and Shrublands	1	21	5	2

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Logan

CA Type: Terrestrial
Map #: CR40
State: NM
Size: 1,855 hectares

Stratification Unit: Canadian River Corridor

KNOWN THREATS (with Severity Score=3)

None

PROTECTED LANDS

None

[Size of conservation area=1,855 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Low Intensity Residential	2.1
Commercial-Industrial-Transportation	0.8
Bare Rock-Sand-Clay	0.2
Shrubland	10.1
Herbaceous Grassland	74.6
Row Crops	2.6
Small Grains	9.6

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Vascular Plants				
<i>Euphorbia strictior</i>	2	6	33	7
Panhandle Spurge				

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Lone Wolf Sandhills

CA Type: Terrestrial
 Map #: S54
 State: NM
 Size: 153,143 hectares

Stratification Unit: Southern Llano Estacado

KNOWN THREATS (with Severity Score=3)

Climate Change
 Inappropriate Fire Management
 Inappropriate Grazing Practices
 Recreational Vehicles (ORVs)
 Windfarm Development

PROTECTED LANDS

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
STATE	612.10 (0.40)
FEDERAL	41,534.96 (27.12)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
1	378.03 (0.25)
2	612.10 (0.40)
3	41,156.93 (26.87)

Total Protected: 42,147.06 hectares, 27.52% of the conservation area [Size of conservation area=153,143 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Bare Rock-Sand-Clay	0.3
Shrubland	16.3
Herbaceous Grassland	83.3
Small Grains	0.1

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Birds				
<i>Aimophila cassinii</i> Cassin's Sparrow	1	30	3	6
<i>Tympanuchus pallidicinctus</i> Lesser Prairie-chicken	3	30	10	17
Reptiles				
<i>Sceloporus arenicolus</i> Sand Dune Lizard	8	20	40	32
Terrestrial Ecological Systems				
Great Plains Playa Lakes	1 (9)*	81	1	3

Lone Wolf Sandhills (cont'd)

TARGET OCCURRENCES DETERMINED TO BE VIABLE (cont'd)

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Terrestrial Ecological Systems (cont'd)				
Southern Great Plains Deep Sand Shrublands	1	29	3	5
Southern Great Plains Mesquite Woodlands and Shrublands	30,612 (ha)	1,233,439 (ha)	2	2

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Lower Dry Cimarron Mesas

CA Type: Terrestrial
 Map #: C13
 States: CO, OK, and NM
 Size: 144,713 hectares

Stratification Unit: Capulin High Plains

KNOWN THREATS (with Severity Score=3)

None

PROTECTED LANDS

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
STATE	560.62 (0.39)
FEDERAL	79.91 (0.06)
<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
3	640.54 (0.45)

Total Protected: 640.54 hectares, 0.44% of the conservation area [Size of conservation area=144,713 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Deciduous Forest	0.3
Evergreen Forest	24.8
Shrubland	10.2
Herbaceous Grassland	64.4
Pasture – Hay	0.1
Row Crops	0.1

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Terrestrial Ecological Systems				
Great Plains Mixedgrass Prairies	1	28	4	6
Great Plains Playa Lakes	1 (6)	81	1	3
Great Plains Shortgrass Prairies	43,402 (ha)	2,467,146 (ha)	2	0.3
Pinyon - Oak - Juniper Woodlands and Shrublands	1	31	3	5

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Mescalero Caprock

CA Type: Terrestrial
 Map #: S57
 State: NM and TX
 Size: 276,623 hectares

Stratification Unit: Southern Llano Estacado

KNOWN THREATS (with Severity Score=3)

Climate Change
 Oil and Gas Development
 Windfarm Development

PROTECTED LANDS

Ownership Type # of Hectares Protected (Percent Protected)

FEDERAL 1,335.76 (0.48)

Gap Category # of Hectares Protected (Percent Protected)

3 1,335.76 (0.48)

Total Protected: 1,335.76 hectares, 0.48% of the conservation area [Size of conservation area=276,623 hectares]

NLCD COMPOSITION

Class	Percent of Conservation Area
Bare Rock-Sand-Clay	0.2
Shrubland	7.4
Herbaceous Grassland	90.9
Row Crops	1.3
Small Grains	0.1

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	Number This Area	Number All Areas	Percent This Area	Percent Overall Goal Contribution
Birds				
<i>Aimophila cassinii</i> Cassin's Sparrow	1	30	3	6
<i>Athene cunicularia hypugaea</i> Western Burrowing Owl	1	23	4	6
<i>Buteo regalis</i> Ferruginous Hawk	1	22	5	7
<i>Calamospiza melanocorys</i> (breeding) Lark Bunting	1	17	6	7
<i>Callipepla squamata</i> Scaled Quail	1	23	4	6
<i>Melanerpes erythrocephalus</i> Red-headed Woodpecker	1	10	10	10

Mescalero Caprock (cont'd)

TARGET OCCURRENCES DETERMINED TO BE VIABLE (cont'd)

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Birds (cont'd)				
<i>Numenius americanus</i> (breeding) Long-billed Curlew	1	15	7	8
<i>Tympanuchus pallidicinctus</i> Lesser Prairie-chicken	2	30	7	11
Terrestrial Ecological Systems				
Great Plains Playa Lakes	1 (238)*	81	1	3
Great Plains Shortgrass Prairies	165,915 (ha)	2,467,146 (ha)	7	1
Pinyon - Oak - Juniper Woodlands and Shrublands	1	31	3	5
Southern Great Plains Deep Sand Shrublands	1	29	3	5
Southern Great Plains Mesquite Woodlands and Shrublands	96,784 (ha)	1,233,439 (ha)	8	6
Southern Great Plains Saline Lakes	1	16	6	6

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Mescalero Sands

CA Type: Terrestrial
 Map #: S56
 State: NM
 Size: 115,403 hectares

Stratification Unit: Southern Llano Estacado

KNOWN THREATS (with Severity Score=3)

- Climate Change
- Inappropriate Fire Management
- Inappropriate Grazing Practices
- Oil and Gas Development
- Recreational Vehicles (ORVs)
- Windfarm Development

PROTECTED LANDS

Ownership Type *# of Hectares Protected (Percent Protected)*

STATE	13.13 (0.01)
FEDERAL	81,196.73 (70.36)

Gap Category *# of Hectares Protected (Percent Protected)*

2	3,201.99 (2.77)
3	78,007.86 (67.60)

Total Protected: 81,209.86 hectares, 70.37% of the conservation area [Size of conservation area=115,403 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Bare Rock-Sand-Clay	1.5
Shrubland	24.1
Herbaceous Grassland	74.4

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Birds				
<i>Aimophila cassinii</i> Cassin's Sparrow	1	30	3	6
<i>Tympanuchus pallidicinctus</i> Lesser Prairie-chicken	3	30	10	17
Insects				
<i>Cicindela formosa rutilovirescens</i> Mescalero Sands Tiger Beetle	1	1	100	4
Reptiles				
<i>Sceloporus arenicolus</i> Sand Dune Lizard	2	19	11	8

Mescalero Sands (cont'd)

TARGET OCCURRENCES DETERMINED TO BE VIABLE (cont'd)

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Terrestrial Ecological Systems				
Chihuahuan Desert Grasslands (swales)	1	3	33	10
Great Plains Playa Lakes	1 (5)*	81	1	3
Pinyon - Oak - Juniper Woodlands and Shrublands	1	31	3	5
Southern Great Plains Deep Sand Shrublands	1	29	3	5
Southern Great Plains Mesquite Woodlands and Shrublands	22,884 (ha)	1,233,439 (ha)	2	2

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Miami

CA Type: Terrestrial
 Map #: M4
 State: NM
 Size: 73,730 hectares

Stratification Unit: Montane Ecotone

KNOWN THREATS (with Severity Score=3)

Channelization of Rivers and Streams
 Climate Change
 Conversion to Agriculture

PROTECTED LANDS

Ownership Type # of Hectares Protected (Percent Protected)

PRIVATE	29,759.30 (40.36)
FEDERAL	717.07 (0.97)

Gap Category # of Hectares Protected (Percent Protected)

2	25,434.59 (34.50)
3	5,041.77 (6.84)

Total Protected: 30,476.37 hectares, 41.33% of the conservation area [Size of conservation area=73,730 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Open Water	1.3
Low Intensity Residential	0.1
Evergreen Forest	1.9
Shrubland	16.9
Herbaceous Grassland	78.8
Pasture – Hay	0.3
Row Crops	0.6

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Animal Assemblages				
Intact Prairie Dog Towns and Associated Animal Assemblages	1	19	5	3
Birds				
<i>Aimophila cassinii</i> Cassin's Sparrow	1	30	3	6
<i>Athene cunicularia hypugaea</i> Western Burrowing Owl	1	23	4	6
<i>Buteo regalis</i> Ferruginous Hawk	1	22	5	7

Miami (cont'd)

TARGET OCCURRENCES DETERMINED TO BE VIABLE (cont'd)

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Birds (cont'd)				
<i>Calamospiza melanocorys</i> (breeding) Lark Bunting	1	17	6	7
<i>Numenius americanus</i> (breeding) Long-billed Curlew	1	15	7	8
Vascular Plants				
<i>Eriogonum aliquidum</i> Cimarron Wild Buckwheat	5	6	83	20
Terrestrial Ecological Systems				
Great Plains Mixedgrass Prairies	1	28	4	6
Great Plains Playa Lakes	1 (48)	81	1	3
Great Plains Tallgrass Prairies	1	9	11	7
Southern Great Plains Riparian Forests, Woodlands and Shrublands	1	21	5	2

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Middle Clear Fork of the Brazos River

CA Type: Terrestrial
 Map #: MB89
 State: TX
 Size: 121,777 hectares

Stratification Unit: Middle Brazos, Western Rolling Plains

KNOWN THREATS (with Severity Score=3)

Inappropriate Grazing Practices
 Lack of Comprehensive Water Strategy
 Ownership Fragmentation of Large Ranches

PROTECTED LANDS

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
LOCAL	61.71 (0.05)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
3	61.71 (0.05)

Total Protected: 61.71 hectares, 0.05% of the conservation area [Size of conservation area=121,777 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Open Water	2.1
Bare Rock-Sand-Clay	0.2
Deciduous Forest	0.7
Evergreen Forest	0.9
Mixed Forest	0.1
Shrubland	29.1
Herbaceous Grassland	57.1
Pasture – Hay	5.4
Row Crops	1.0
Small Grains	2.8
Emergent Herbaceous Wetlands	0.5

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Terrestrial Ecological Systems				
Great Plains Mixedgrass Prairies	1	28	4	6
Great Plains Playa Lakes	1 (7)	81	1	3
Pinyon - Oak - Juniper Woodlands and Shrublands	1	31	3	5
Southern Great Plains Mesquite Woodlands and Shrublands	67,372 (ha)	1,233,439 (ha)	5	4
Southern Great Plains Riparian Forests, Woodlands and Shrublands	1	21	5	2

Middle Clear Fork of the Brazos River (cont'd)

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Middle Water

CA Type: Terrestrial

Map #: C22

State: NM and TX

Size: 106,606 hectares

Stratification Unit: Capulin High Plains, Canadian River Corridor

KNOWN THREATS (with Severity Score=3)

- Invasive Plants
- Lack of Comprehensive Water Strategy
- Parasites/Pathogens
- Windfarm Development

PROTECTED LANDS

None

[Size of conservation area=106,606 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Shrubland	16.4
Herbaceous Grassland	76.5
Pasture - Hay	0.5
Row Crops	5.5
Small Grains	1.2

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Birds				
<i>Aimophila cassinii</i> Cassin's Sparrow	1	30	3	6
<i>Athene cunicularia hypugaea</i> Western Burrowing Owl	1	23	4	6
<i>Callipepla squamata</i> Scaled Quail	1	23	4	6
<i>Melanerpes erythrocephalus</i> Red-headed Woodpecker	1	10	10	10
<i>Numenius americanus</i> (breeding) Long-billed Curlew	1	15	7	8
Terrestrial Ecological Systems				
Great Plains Playa Lakes	1 (12)*	81	1	3
Great Plains Shortgrass Prairies	63,976 (ha)	2,467,146 (ha)	3	0.5

Middle Water (cont'd)

TARGET OCCURRENCES DETERMINED TO BE VIABLE (cont'd)

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Terrestrial Ecological Systems (cont'd)				
Southern Great Plains Deep Sand Shrublands	1	29	3	5
Southern Great Plains Mesquite Woodlands and Shrublands	15,994 (ha)	1,233,439 (ha)	1	1

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Milagro Springs

CA Type: Terrestrial
 Map #: CR36
 State: NM
 Size: 124,473 hectares

Stratification Unit: Canadian River Corridor, Montane Ecotone

KNOWN THREATS (with Severity Score=3)

Climate Change
 Ditches, Dikes, and Diversions
 Lack of Comprehensive Water Strategy

PROTECTED LANDS

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
FEDERAL	276.94 (0.22)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
3	276.94 (0.22)

Total Protected: 276.94 hectares, 0.22% of the conservation area [Size of conservation area=124,473 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Commercial-Industrial-Transportation	0.2
Bare Rock-Sand-Clay	0.1
Quarries-Strip Mines-Gravel Pits	0.1
Shrubland	3.6
Herbaceous Grassland	95.9

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Animal Assemblages				
Intact Prairie Dog Towns and Associated Animal Assemblages	1	19	5	3
Vascular Plants				
<i>Cirsium wrightii</i> Wright's Marsh Thistle	1	3	33	8
<i>Helianthus paradoxus</i> Pecos Sunflower	1	2	50	7
Terrestrial Ecological Systems				
Great Plains Playa Lakes	1 (41)	81	1	3
Great Plains Saline Wet Prairies and Marshes	1	5	20	7
Great Plains Shortgrass Prairies	120,644 (ha)	2,467,146 (ha)	5	1
Pinyon - Oak - Juniper Woodlands and Shrublands	1	31	3	5
Southern Great Plains Saline Lakes	1	16	6	6

Milagro Springs (cont'd)

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Milnesand

CA Type: Terrestrial
 Map #: S55
 State: NM and TX
 Size: 97,974 hectares

Stratification Unit: Southern Llano Estacado

KNOWN THREATS (with Severity Score=3)

Groundwater Extraction/Manipulation
 Inappropriate Grazing Practices
 Parasites/Pathogens

PROTECTED LANDS

Ownership Type # of Hectares Protected (Percent Protected)

PRIVATE	5,739.19 (5.86)
STATE	3,195.46 (3.26)

Gap Category # of Hectares Protected (Percent Protected)

1	2,317.07 (2.36)
2	6,617.59 (6.75)

Total Protected: 8,934.65 hectares, 9.12% of the conservation area [Size of conservation area=97,974 hectares]

NLCD COMPOSITION

Class	Percent of Conservation Area
Shrubland	9.3
Herbaceous Grassland	70.0
Row Crops	19.2
Small Grains	1.4

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	Number This Area	Number All Areas	Percent This Area	Percent Overall Goal Contribution
Animal Assemblages				
Intact Prairie Dog Towns and Associated Animal Assemblages	1	19	5	3
Birds				
<i>Aimophila cassinii</i> Cassin's Sparrow	1	30	3	6
<i>Athene cunicularia hypugaea</i> Western Burrowing Owl	1	23	4	6
<i>Buteo regalis</i> Ferruginous Hawk	1	22	5	7
<i>Calamospiza melanocorys</i> (breeding) Lark Bunting	1	17	6	7

Milnesand (cont'd)

TARGET OCCURRENCES DETERMINED TO BE VIABLE (cont'd)

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Birds (cont'd)				
<i>Callipepla squamata</i> Scaled Quail	1	23	4	6
<i>Numenius americanus</i> (breeding) Long-billed Curlew	1	15	7	8
<i>Tympanuchus pallidicinctus</i> Lesser Prairie-chicken	6	30	20	33
Reptiles				
<i>Sceloporus arenicolus</i> Sand Dune Lizard	1	20	5	4
Terrestrial Ecological Systems				
Great Plains Playa Lakes	1 (13)*	81	1	3
Southern Great Plains Deep Sand Shrublands	1	29	3	5

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Monument Draw

CA Type: Terrestrial
Map #: S60
State: NM
Size: 12,476 hectares

Stratification Unit: Southern Llano Estacado

KNOWN THREATS (with Severity Score=3)

Climate Change
Crop Production Practices
Oil and Gas Development

PROTECTED LANDS

Ownership Type # of Hectares Protected (Percent Protected)

FEDERAL 1,520.06 (12.18)

Gap Category # of Hectares Protected (Percent Protected)

3 1,520.06 (12.18)

Total Protected: 1,520.06 hectares, 12.18% of the conservation area [Size of conservation area=12,476 hectares]

NLCD COMPOSITION

Class Percent of Conservation Area

Commercial-Industrial-Transportation 1.1
Bare Rock-Sand-Clay 4.7
Shrubland 41.4
Herbaceous Grassland 52.7

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Birds				
<i>Tympanuchus pallidicinctus</i> Lesser Prairie-chicken	1	30	3	6
Reptiles				
<i>Sceloporus arenicolus</i> Sand Dune Lizard	2	20	10	8

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Mora River Grasslands

CA Type: Terrestrial
 Map #: M8
 State: NM
 Size: 198,916 hectares

Stratification Unit: Montane Ecotone, Canadian River Corridor

KNOWN THREATS (with Severity Score=3)

Climate Change

PROTECTED LANDS

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
FEDERAL	4,792.53 (2.41)
<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
2	3,586.94 (1.80)
3	1,205.59 (0.61)

Total Protected: 4,792.53 hectares, 2.41% of the conservation area [Size of conservation area=198,916 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Open Water	0.3
Low Intensity Residential	0.1
Quarries-Strip Mines-Gravel Pits	0.1
Evergreen Forest	3.2
Shrubland	11.6
Herbaceous Grassland	84.2
Pasture – Hay	0.2
Row Crops	0.2

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Birds				
<i>Aimophila cassinii</i> Cassin's Sparrow	1	30	3	6
<i>Athene cunicularia hypugaea</i> Western Burrowing Owl	1	23	4	6
<i>Buteo regalis</i> Ferruginous Hawk	1	22	5	7
<i>Calamospiza melanocorys</i> (breeding) Lark Bunting	1	17	6	7
<i>Calcarius mccownii</i> (wintering) McCown's Longspur	1	5	20	7

Mora River Grasslands (cont'd)

TARGET OCCURRENCES DETERMINED TO BE VIABLE (cont'd)

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Birds (cont'd)				
<i>Calcarius ornatus</i> (wintering) Chestnut-collared Longspur	1	6	17	6
<i>Charadrius montanus</i> (breeding) Mountain Plover	4	27	15	33
<i>Numenius americanus</i> (breeding) Long-billed Curlew	1	15	7	8
Terrestrial Ecological Systems				
Great Plains Mixedgrass Prairie	1	28	4	6
Great Plains Playa Lakes	1 (135)	81	1	3
Great Plains Shortgrass Prairies	39,753 (ha)	2,467,146 (ha)	2	0.3
Pinyon - Oak - Juniper Woodlands and Shrublands	1	31	3	5

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Mora River Valley

CA Type: Terrestrial
 Map #: M5
 State: NM
 Size: 96,741 hectares

Stratification Unit: Montane Ecotone

KNOWN THREATS (with Severity Score=3)

Climate Change

PROTECTED LANDS

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
PRIVATE	10,932.83 (11.30)
STATE	3,045.70 (3.15)
FEDERAL	1,568.70 (1.62)
<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
2	2,644.90 (2.73)
3	12,902.34 (13.33)

Total Protected: 15,547.24 hectares, 16.07% of the conservation area [Size of conservation area=96,741 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Open Water	1.0
Low Intensity Residential	0.1
Commercial-Industrial-Transportation	0.1
Quarries-Strip Mines-Gravel Pits	0.1
Deciduous Forest	1.2
Evergreen Forest	70.2
Shrubland	4.6
Herbaceous Grassland	22.2
Pasture – Hay	0.6

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Birds				
<i>Empidonax traillii extimus</i>	1	1	100	5
Southwestern Willow Flycatcher				
Terrestrial Ecological Systems				
Great Plains Playa Lakes	1 (45)	81	1	3
Great Plains Shortgrass Prairies	33,833 (ha)	2,467,146 (ha)	1	0.2
Pinyon - Oak - Juniper Woodlands and Shrublands	1	31	3	5
Rocky Mountain Dry Ponderosa Pine Forests and Woodlands	1	7	14	7

Mora River Valley (cont'd)

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Morita

CA Type: Terrestrial
 Map #: S65
 State: TX
 Size: 8,979 hectares

Stratification Unit: Southern Llano Estacado

KNOWN THREATS (with Severity Score=3)

Oil and Gas Development

PROTECTED LANDS

None

[Size of conservation area=8,979 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Open Water	9.6
Low Intensity Residential	0.4
Commercial-Industrial-Transportation	0.4
Bare Rock-Sand-Clay	0.6
Evergreen Forest	0.1
Shrubland	63.6
Herbaceous Grassland	20.5
Pasture - Hay	0.3
Row Crops	4.2
Emergent Herbaceous Wetlands	0.3

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Vascular Plants				
<i>Muhlenbergia villiflora</i> var. <i>villosa</i>	1	2	50	33
Villous Muhly				
Terrestrial Ecological Systems				
Great Plains Playa Lakes	1 (11)	81	1	3

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Mt. Dora Shortgrass

CA Type: Terrestrial
 Map #: C17
 State: NM
 Size: 138,721 hectares

Stratification Unit: Capulin High Plains

KNOWN THREATS (with Severity Score=3)

Climate Change

PROTECTED LANDS

Ownership Type # of Hectares Protected (Percent Protected)

STATE	116.08 (0.08)
FEDERAL	1,154.40 (0.83)

Gap Category # of Hectares Protected (Percent Protected)

3	1,270.48 (0.91)
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Total Protected: 1,270.48 hectares, 0.91% of the conservation area [Size of conservation area=138,721 hectares]

NLCD COMPOSITION

Class	Percent of Conservation Area
Commercial-Industrial-Transportation	0.3
Evergreen Forest	3.3
Shrubland	4.7
Herbaceous Grassland	91.3
Row Crops	0.2
Small Grains	0.1

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	Number This Area	Number All Areas	Percent This Area	Percent Overall Goal Contribution
Birds				
<i>Aimophila cassinii</i> Cassin's Sparrow	1	30	3	6
<i>Athene cunicularia hypugaea</i> Western Burrowing Owl	1	23	4	6
<i>Buteo regalis</i> Ferruginous Hawk	1	22	5	7
<i>Calamospiza melanocorys</i> (breeding) Lark Bunting	1	17	6	7
<i>Callipepla squamata</i> Scaled Quail	1	23	4	6
<i>Charadrius montanus</i> (breeding) Mountain Plover	5	27	19	42

Mt. Dora Shortgrass (cont'd)

TARGET OCCURRENCES DETERMINED TO BE VIABLE (cont'd)

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Birds (cont'd)				
<i>Melanerpes erythrocephalus</i> Red-headed Woodpecker	1	10	10	10
<i>Numenius americanus</i> (breeding) Long-billed Curlew	1	15	7	8
Terrestrial Ecological Systems				
Great Plains Mixedgrass Prairies	1	28	4	6
Great Plains Playa Lakes	1 (73)*	81	1	3
Great Plains Shortgrass Prairies	83,206 (ha)	2,467,146 (ha)	3	1

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Mulberry Creek

CA Type: Terrestrial
 Map #: W73
 State: TX
 Size: 112,265 hectares

Stratification Unit: Western Rolling Plains, Northern Llano Estacado

KNOWN THREATS (with Severity Score=3)

Inappropriate Grazing Practices
 Invasive Plants
 Lack of Comprehensive Water Strategy

PROTECTED LANDS

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
STATE	33.80 (0.03)
<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
2	33.80 (0.03)

Total Protected: 33.80 hectares, 0.03% of the conservation area [Size of conservation area=112,265 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Open Water	0.2
Commercial-Industrial-Transportation	0.1
Bare Rock-Sand-Clay	1.4
Transitional	0.2
Evergreen Forest	0.8
Mixed Forest	0.7
Shrubland	29.7
Herbaceous Grassland	55.8
Pasture – Hay	0.2
Row Crops	9.9
Small Grains	1.0

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Animal Assemblages				
Migratory Waterbird Assemblage (incl. Shorebirds, Waterfowl and Cranes)	1	3	33	8
Mammals				
<i>Peromyscus truei comanche</i> Palo Duro Mouse	1	14	7	4
Terrestrial Ecological Systems				
Great Plains Freshwater Emergent Marshes	1	3	33	7

Mulberry Creek (cont'd)

TARGET OCCURRENCES DETERMINED TO BE VIABLE (cont'd)

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Terrestrial Ecological Systems (cont'd)				
Great Plains Mixedgrass Prairies	1	28	4	6
Great Plains Playa Lakes	1 (62)*	81	1	3
Pinyon - Oak - Juniper Woodlands and Shrublands	1	31	3	5
Southern Great Plains Mesquite Woodlands and Shrublands	39,394 (ha)	1,233,439 (ha)	3	3
Southern Great Plains Riparian Forests, Woodlands and Shrublands	1	21	5	2

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Muleshoe NWR

CA Type: Terrestrial
 Map #: S53
 State: TX
 Size: 6,650 hectares

Stratification Unit: Southern Llano Estacado

KNOWN THREATS (with Severity Score=3)

Invasive Plants
 Parasites/Pathogens

PROTECTED LANDS

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
FEDERAL	2,240.66 (33.69)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
2	2,240.66 (33.69)

Total Protected: 2,240.66 hectares, 33.69% of the conservation area [Size of conservation area=6,650 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Open Water	0.1
Bare Rock-Sand-Clay	0.1
Quarries-Strip Mines-Gravel Pits	0.1
Shrubland	53.1
Herbaceous Grassland	30.9
Row Crops	13.3
Small Grains	0.5
Fallow	1.8

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Animal Assemblages				
Intact Prairie Dog Towns and Associated Animal Assemblages	1	19	5	3
Migratory Waterbird Assemblage (incl. Shorebirds, Waterfowl and Cranes)	1	3	33	8
Birds				
<i>Calamospiza melanocorys</i> (wintering) Lark Bunting	1	7	14	7
Terrestrial Ecological Systems				
Great Plains Playa Lakes	1 (10)*	81	1	3
Southern Great Plains Saline Lakes	1	16	6	6

Muleshoe NWR (cont'd)

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

	<i>Number This Area</i>
Birds	
<i>Athene cunicularia hypugaea</i> Western Burrowing Owl	1
<i>Buteo regalis</i> Ferruginous Hawk	1
<i>Calcarius mccownii</i> (wintering) McCown's Longspur	1
<i>Calcarius ornatus</i> (wintering) Chestnut-collared Longspur	1
<i>Callipepla squamata</i> Scaled Quail	1
<i>Zonotrichia querula</i> (wintering) Harris' Sparrow	1

North Fork Red River

CA Type: Terrestrial
 Map #: W71
 State: TX
 Size: 150,094 hectares

Stratification Unit: Western Rolling Plains

KNOWN THREATS (with Severity Score=3)

- Groundwater Extraction/Manipulation
- Inappropriate Grazing Practices
- Invasive Plants
- Lack of Comprehensive Water Strategy
- Oil and Gas Development

PROTECTED LANDS

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
FEDERAL	1,717.99 (1.14)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
2	1,148.31 (0.77)
3	569.68 (0.38)

Total Protected: 1,717.99 hectares, 1.14% of the conservation area [Size of conservation area=150,094 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Open Water	0.3
Low Intensity Residential	0.1
Commercial-Industrial-Transportation	0.2
Bare Rock-Sand-Clay	1.8
Shrubland	16.4
Herbaceous Grassland	77.9
Pasture-Hay	0.3
Row Crops	2.5
Small Grains	0.3
Emergent Herbaceous Wetlands	0.1

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Birds				
<i>Tympanuchus pallidicinctus</i> Lesser Prairie-chicken	3	30	10	17
Terrestrial Ecological Systems				
Great Plains Playa Lakes	1 (26)	81	1	3
Pinyon - Oak - Juniper Woodlands and Shrublands	1	31	3	5

North Fork Red River (cont'd)

TARGET OCCURRENCES DETERMINED TO BE VIABLE (cont'd)

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Terrestrial Ecological Systems (cont'd)				
Southern Great Plains Deep Sand Shrublands	1	29	3	5
Southern Great Plains Mesquite Woodlands and Shrublands	37,636 (ha)	1,233,439 (ha)	3	2
Southern Great Plains Riparian Forests, Woodlands and Shrublands	1	21	5	2

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Northeast of Kirkland

CA Type: Terrestrial
 Map #: W81
 State: TX
 Size: 1,350 hectares

Stratification Unit: Western Rolling Plains

KNOWN THREATS (with Severity Score=3)

Conversion to Agriculture

PROTECTED LANDS

None

[Size of conservation area=1,350 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Open Water	0.1
Bare Rock-Sand-Clay	0.1
Deciduous Forest	0.1
Mixed Forest	0.1
Shrubland	11.4
Herbaceous Grassland	30.4
Pasture - Hay	13.6
Row Crops	19.9
Small Grains	24.5

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Mammals				
<i>Dipodomys elator</i>	1	6	17	4
Texas Kangaroo Rat				
Terrestrial Ecological Systems				
Great Plains Playa Lakes	1 (1)	81	1	3

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Northeast Quanah

CA Type: Terrestrial
Map #: W82
State: TX
Size: 6,337 hectares

Stratification Unit: Western Rolling Plains

KNOWN THREATS (with Severity Score=3)

None

PROTECTED LANDS

None

[Size of conservation area=6,337 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Open Water	0.2
Bare Rock-Sand-Clay	0.1
Mixed Forest	0.1
Shrubland	25.4
Herbaceous Grassland	50.3
Pasture - Hay	6.4
Row Crops	6.5
Small Grains	10.9
Emergent Herbaceous Wetlands	0.1

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Mammals				
<i>Dipodomys elator</i>	1	6	17	4
Texas Kangaroo Rat				
Terrestrial Ecological Systems				
Great Plains Playa Lakes	1 (2)	81	1	3

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Ocate Creek Grasslands

CA Type: Terrestrial
 Map #: M7
 State: NM
 Size: 88,913 hectares

Stratification Unit: Montane Ecotone

KNOWN THREATS (with Severity Score=3)

Climate Change

PROTECTED LANDS

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
PRIVATE	174.10 (0.20)
STATE	151.77 (0.17)
FEDERAL	199.31 (0.22)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
2	325.87 (0.37)
3	199.31 (0.22)

Total Protected: 525.19 hectares, 0.59% of the conservation area [Size of conservation area=88,913 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Open Water	0.2
Evergreen Forest	0.6
Shrubland	11.5
Herbaceous Grassland	87.0
Pasture - Hay	0.3

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Terrestrial Ecological Systems				
Great Plains Mixedgrass Prairies	1	28	4	6
Great Plains Playa Lakes	1 (52)*	81	1	3
Great Plains Shortgrass Prairies	53,308 (ha)	2,467,146 (ha)	2	0.4
Great Plains Tallgrass Prairies	1	9	11	7

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Packsaddle

CA Type: Terrestrial
 Map #: CR48
 State: OK and TX
 Size: 144,155 hectares

Stratification Unit: Canadian River Corridor

KNOWN THREATS (with Severity Score=3)

Conversion to Agriculture

PROTECTED LANDS

Ownership Type # of Hectares Protected (Percent Protected)

PRIVATE	1,348.29 (0.94)
STATE	4,783.56 (3.32)
FEDERAL	292.66 (0.20)

Gap Category # of Hectares Protected (Percent Protected)

1	1,348.29 (0.94)
2	4,783.56 (3.32)
3	292.66 (0.20)

Total Protected: 6,424.51 hectares, 4.46% of the conservation area [Size of conservation area=144,155 hectares]

NLCD COMPOSITION

Class Percent of Conservation Area

Open Water	0.6
Bare Rock-Sand-Clay	0.3
Deciduous Forest	0.1
Evergreen Forest	2.3
Mixed Forest	0.6
Shrubland	26.0
Herbaceous Grassland	66.3
Pasture – Hay	0.3
Row Crops	1.6
Small Grains	1.6
Emergent Herbaceous Wetlands	0.1

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Birds				
<i>Charadrius alexandrinus nivosus</i> (breeding) Western Snowy Plover	1	5	20	10
<i>Sternula antillarum athalassos</i> (breeding) Interior Least Tern	1	6	17	20
<i>Tympanuchus pallidicinctus</i> Lesser Prairie-chicken	1	30	3	6

Packsaddle (cont'd)

TARGET OCCURRENCES DETERMINED TO BE VIABLE (cont'd)

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Birds (cont'd)				
<i>Vireo bellii</i> (breeding) Bell's Vireo	1	6	17	10
Terrestrial Ecological Systems				
Great Plains Mixedgrass Prairies	1	28	4	6
Great Plains Playa Lakes	1 (10)	81	1	3
Southern Great Plains Deep Sand Shrublands	1	29	3	5

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Palo Duro Canyon

CA Type: Terrestrial
 Map #: W75
 State: TX
 Size: 189,630 hectares

Stratification Unit: Western Rolling Plains, Northern Llano Estacado

KNOWN THREATS (with Severity Score=3)

Parasites/Pathogens
 Residential Development
 Windfarm Development

PROTECTED LANDS

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
STATE	7,430.83 (3.92)
<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
3	7,430.83 (3.92)

Total Protected: 7,430.83 hectares, 3.92% of the conservation area [Size of conservation area=189,630 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Open Water	0.5
Commercial-Industrial-Transportation	0.1
Bare Rock-Sand-Clay	2.4
Evergreen Forest	1.8
Mixed Forest	2.1
Shrubland	39.9
Herbaceous Grassland	43.1
Pasture – Hay	0.2
Row Crops	8.8
Small Grains	1.1

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Birds				
<i>Athene cunicularia hypugaea</i> Western Burrowing Owl	1	23	4	6
<i>Buteo regalis</i> Ferruginous Hawk	1	22	5	7
<i>Calamospiza melanocorys</i> (wintering) Lark Bunting	1	7	14	7
<i>Calcarius mccownii</i> (wintering) McCown's Longspur	1	5	20	7

Palo Duro Canyon (cont'd)

TARGET OCCURRENCES DETERMINED TO BE VIABLE (cont'd)

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Birds (cont'd)				
<i>Calcarius ornatus</i> (wintering) Chestnut-collared Longspur	1	6	17	6
<i>Callipepla squamata</i> Scaled Quail	1	23	4	6
<i>Zonotrichia querula</i> (wintering) Harris' Sparrow	1	5	20	9
Mammals				
<i>Peromyscus truei comanche</i> Palo Duro Mouse	9	14	64	36
Vascular Plants				
<i>Euphorbia strictior</i> Panhandle Spurge	1	6	17	4
Terrestrial Ecological Systems				
Great Plains Mixedgrass Prairies	1	28	4	6
Great Plains Playa Lakes	1 (367)*	81	1	3
Pinyon - Oak - Juniper Woodlands and Shrublands	1	31	3	5
Southern Great Plains Mesquite Woodlands and Shrublands	37,998 (ha)	1,233,439 (ha)	3	2
Southern Great Plains Riparian Forests, Woodlands and Shrublands	1	21	5	2

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Palo Pinto Mountains

CA Type: Terrestrial
 Map #: MB91
 State: TX
 Size: 66,718 hectares

Stratification Unit: Middle Brazos

KNOWN THREATS (with Severity Score=3)

Lack of Comprehensive Water Strategy

PROTECTED LANDS

Ownership Type # of Hectares Protected (Percent Protected)

STATE 726.52 (1.09)

Gap Category # of Hectares Protected (Percent Protected)

3 726.52 (1.09)

Total Protected: 726.52 hectares, 1.09% of the conservation area [Size of conservation area=66,718 hectares]

NLCD COMPOSITION

Class	Percent of Conservation Area
Open Water	0.5
Deciduous Forest	5.4
Evergreen Forest	61.7
Mixed Forest	0.1
Shrubland	13.7
Herbaceous Grassland	15.1
Pasture - Hay	3.1
Row Crops	0.1
Small Grains	0.1

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	Number This Area	Number All Areas	Percent This Area	Percent Overall Goal Contribution
Birds				
<i>Aimophila cassinii</i> Cassin's Sparrow	1	30	3	6
<i>Dendroica chrysoparia</i> (breeding) Golden-cheeked Warbler	1	1	100	50
<i>Vireo atricapilla</i> (breeding) Black-capped Vireo	1	2	50	25
<i>Vireo bellii</i> (breeding) Bell's Vireo	1	6	17	10
Terrestrial Ecological Systems				
Great Plains Limestone Upland Forests and Woodlands	1	3	33	7
Southern Great Plains Mesquite Woodlands and Shrublands	13,121(ha)	1,233,439 (ha)	1	1

Palo Pinto Mountains (cont'd)

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Pasamonte Shortgrass

CA Type: Terrestrial
 Map #: C15
 State: NM
 Size: 255,426 hectares

Stratification Unit: Capulin High Plains

KNOWN THREATS (with Severity Score=3)

Climate Change

PROTECTED LANDS

Ownership Type # of Hectares Protected (Percent Protected)

STATE	8,533.16 (3.34)
FEDERAL	16.03 (0.01)

Gap Category # of Hectares Protected (Percent Protected)

3	8,549.19 (3.35)
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Total Protected: 8,549.19 hectares, 3.35% of the conservation area [Size of conservation area=255,426 hectares]

NLCD COMPOSITION

Class	Percent of Conservation Area
Commercial-Industrial-Transportation	0.2
Evergreen Forest	1.7
Shrubland	5.0
Herbaceous Grassland	92.7
Row Crops	0.3
Small Grains	0.1

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	Number This Area	Number All Areas	Percent This Area	Percent Overall Goal Contribution
Animal Assemblages				
Intact Prairie Dog Towns and Associated Assemblages	1	19	5	3
Birds				
<i>Aimophila cassinii</i> Cassin's Sparrow	1	30	3	6
<i>Athene cunicularia hypugaea</i> Western Burrowing Owl	1	23	4	6
<i>Buteo regalis</i> Ferruginous Hawk	1	22	5	7
<i>Calamospiza melanocorys</i> (breeding) Lark Bunting	1	17	6	7

Pasamonte Shortgrass (cont'd)

TARGET OCCURRENCES DETERMINED TO BE VIABLE (cont'd)

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Birds (cont'd)				
<i>Callipepla squamata</i> Scaled Quail	1	23	4	6
<i>Charadrius montanus</i> (breeding) Mountain Plover	5	27	19	42
<i>Numenius americanus</i> (breeding) Long-billed Curlew	1	15	7	8
Vascular Plants				
<i>Astragalus wittmannii</i> Wittmann's Milk-vetch	1	1	100	4
Terrestrial Ecological Systems				
Great Plains Mixedgrass Prairies	1	28	4	6
Great Plains Playa Lakes	1 (246)*	81	1	3
Great Plains Tallgrass Prairies	1	9	11	7
Pinyon - Oak - Juniper Woodlands and Shrublands	1	31	3	5
Rocky Mountain Dry Ponderosa Pine Forests and Woodlands	1	7	14	7

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Pastura Grasslands

CA Type: Terrestrial
 Map #: M11
 State: NM

Stratification Unit: Montane Ecotone, New Mexico High Plains, Canadian River Corridor Size: 212,069 hectares

KNOWN THREATS (with Severity Score=3)

Climate Change
 Windfarm Development

PROTECTED LANDS

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
FEDERAL	5,875.78 (2.77)
<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
3	5,875.78 (2.77)

Total Protected: 5,875.78 hectares, 2.77% of the conservation area [Size of conservation area=212,069 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Bare Rock-Sand-Clay	0.1
Evergreen Forest	0.1
Shrubland	3.8
Herbaceous Grassland	96.0

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Birds				
<i>Aimophila cassinii</i> Cassin's Sparrow	1	30	3	6
<i>Athene cunicularia hypugaea</i> Western Burrowing Owl	1	23	4	6
<i>Buteo regalis</i> Ferruginous Hawk	1	22	5	7
<i>Calamospiza melanocorys</i> (breeding) Lark Bunting	1	17	6	7
<i>Callipepla squamata</i> Scaled Quail	1	23	4	6
<i>Melanerpes erythrocephalus</i> Red-headed Woodpecker	1	10	10	10

Pastura Grasslands (cont'd)

TARGET OCCURRENCES DETERMINED TO BE VIABLE (cont'd)

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Birds (cont'd)				
<i>Numenius americanus</i> (breeding) Long-billed Curlew	1	15	7	8
Vascular Plants				
<i>Astragalus siliceus</i> Flint Mountains Milk-vetch	2	9	22	8
Terrestrial Ecological Systems				
Great Plains Playa Lakes	1 (18)	81	1	3
Great Plains Shortgrass Prairies	190,710 (ha)	2,467,146 (ha)	8	1
Southern Great Plains Mesquite Woodlands and Shrublands	10,595 (ha)	1,233,439 (ha)	1	1

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Pecos Canyon and Mesas

CA Type: Terrestrial
 Map #: M9
 State: NM
 Size: 99,200 hectares

Stratification Unit: Montane Ecotone, Canadian River Corridor

KNOWN THREATS (with Severity Score=3)

Climate Change

PROTECTED LANDS

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
STATE	648.99 (0.65)
FEDERAL	12,910.07 (13.01)
<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
1	285.80 (0.29)
3	13,273.26 (13.38)

Total Protected: 13,559.06 hectares, 13.67% of the conservation area [Size of conservation area=99,200 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Evergreen Forest	5.8
Shrubland	5.9
Herbaceous Grassland	87.7
Pasture - Hay	0.1
Row Crops	0.4

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Terrestrial Ecological Systems				
Great Plains Playa Lakes	1 (4)	81	1	3
Pinyon - Oak - Juniper Woodlands and Shrublands	1	31	3	5
Southern Great Plains Riparian Forests, Woodlands and Shrublands	1	21	5	2

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Pintada Arroyo

CA Type: Terrestrial
 Map #: M10
 State: NM
 Size: 124,459 hectares

Stratification Unit: Montane Ecotone, Canadian River Corridor

KNOWN THREATS (with Severity Score=3)

None

PROTECTED LANDS

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
FEDERAL	103.93 (0.08)
<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
3	103.93 (0.08)

Total Protected: 103.93 hectares, 0.08% of the conservation area [Size of conservation area=124,459 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Commercial-Industrial-Transportation	0.2
Bare Rock-Sand-Clay	0.3
Evergreen Forest	2.8
Shrubland	4.9
Herbaceous Grassland	91.8

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Vascular Plants				
<i>Astragalus siliceus</i>	1	9	11	4
Flint Mountains Milk-vetch				
Terrestrial Ecological Systems				
Great Plains Carbonate Glades and Barrens	1	3	33	10
Great Plains Playa Lakes	1 (3)	81	1	3
Great Plains Shortgrass Prairies	74,619 (ha)	2,467,146 (ha)	3	1
Pinyon - Oak - Juniper Woodlands and Shrublands	1	31	3	5

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Querecho Plains

CA Type: Terrestrial
 Map #: S58
 State: NM
 Size: 117,164 hectares

Stratification Unit: Southern Llano Estacado

KNOWN THREATS (with Severity Score=3)

- Climate Change
- Inappropriate Fire Management
- Inappropriate Grazing Practices
- Oil and Gas Development
- Recreational Vehicles (ORVs)
- Windfarm Development

PROTECTED LANDS

Ownership Type	# of Hectares Protected (Percent Protected)
FEDERAL	79,406.06 (67.77)

Gap Category	# of Hectares Protected (Percent Protected)
3	79,406.06 (67.77)

Total Protected: 79,406.06 hectares, 67.77% of the conservation area [Size of conservation area=117,164 hectares]

NLCD COMPOSITION

Class	Percent of Conservation Area
Commercial-Industrial-Transportation	0.5
Bare Rock-Sand-Clay	3.8
Shrubland	19.9
Herbaceous Grassland	75.7

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	Number This Area	Number All Areas	Percent This Area	Percent Overall Goal Contribution
Birds				
<i>Tympanuchus pallidicinctus</i> Lesser Prairie-chicken	2	30	7	11
Reptiles				
<i>Sceloporus arenicolus</i> Sand Dune Lizard	5	20	25	20
Terrestrial Ecological Systems				
Great Plains Playa Lakes	1 (8)*	81	1	3
Southern Great Plains Deep Sand Shrublands	1	29	3	5
Southern Great Plains Mesquite Woodlands and Shrublands	23,422 (ha)	1,233,439 (ha)	2	2

Querecho Plains (cont'd)

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Quitaque Creek

CA Type: Terrestrial
 Map #: W78
 State: TX
 Size: 2,802 hectares

Stratification Unit: Western Rolling Plains

KNOWN THREATS (with Severity Score=3)

- Crop Production Practices
- Inappropriate Grazing Practices
- Invasive Plants
- Lack of Comprehensive Water Strategy
- Windfarm Development

PROTECTED LANDS

None

[Size of conservation area=2,802 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Bare Rock-Sand-Clay	2.5
Mixed Forest	0.1
Shrubland	10.2
Herbaceous Grassland	46.0
Pasture – Hay	0.1
Row Crops	41.1

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Reptiles				
<i>Thamnophis sirtalis annectens</i>	1	2	50	9
Texas Garter Snake				
Terrestrial Ecological Systems				
Great Plains Playa Lakes	1 (4)	81	1	3

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Raton Mesa and Volcanoes

CA Type: Terrestrial
 Map #: M2
 State: NM
 Size: 85,223 hectares

Stratification Unit: Montane Ecotone, Capulin High Plains

KNOWN THREATS (with Severity Score=3)

None

PROTECTED LANDS

Ownership Type # of Hectares Protected (Percent Protected)

STATE	10,019.86 (11.76)
FEDERAL	161.50 (0.19)

Gap Category # of Hectares Protected (Percent Protected)

3	10,181.36 (11.95)
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Total Protected: 10,181.36 hectares, 11.95% of the conservation area [Size of conservation area=85,223 hectares]

NLCD COMPOSITION

Class	Percent of Conservation Area
Commercial-Industrial-Transportation	0.1
Deciduous Forest	0.3
Evergreen Forest	17.9
Shrubland	30.6
Herbaceous Grassland	51.0

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	Number This Area	Number All Areas	Percent This Area	Percent Overall Goal Contribution
Birds				
<i>Charadrius montanus</i> (breeding) Mountain Plover	1	27	4	8
Terrestrial Ecological Systems				
Great Plains Mixedgrass Prairies	1	28	4	6
Great Plains Playa Lakes	1 (13)	81	1	3
Great Plains Shortgrass Prairies	21,292 (ha)	2,467,146 (ha)	1	0.2
Pinyon - Oak - Juniper Woodlands and Shrublands	1	31	3	5

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Red Deer Creek

CA Type: Terrestrial
 Map #: CR45
 State: TX
 Size: 199,255 hectares

Stratification Unit: Canadian River Corridor, Western Rolling Plains,
 Northern Llano Estacado

KNOWN THREATS (with Severity Score=3)

Groundwater Extraction/Manipulation
 Lack of Comprehensive Water Strategy
 Oil and Gas Development
 Windfarm Development

PROTECTED LANDS

None

[Size of conservation area=199,255 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Open Water	0.2
Commercial-Industrial-Transportation	0.1
Bare Rock-Sand-Clay	1.4
Shrubland	18.9
Herbaceous Grassland	77.3
Pasture – Hay	0.2
Row Crops	1.3
Small Grains	0.4
Emergent Herbaceous Wetlands	0.3

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Birds				
<i>Aimophila cassinii</i> Cassin's Sparrow	1	30	3	6
<i>Sternula antillarum athalassos</i> (breeding) Interior Least Tern	1	6	17	20
<i>Tympanuchus pallidicinctus</i> Lesser Prairie-chicken	1	30	3	6
Terrestrial Ecological Systems				
Great Plains Mixedgrass Prairies	1	28	4	6
Great Plains Playa Lakes	1 (28)*	81	1	3
Great Plains Shortgrass Prairies	39,974 (ha)	2,467,146 (ha)	2	0.3
Pinyon - Oak - Juniper Woodlands and Shrublands	1	31	3	5

Red Deer Creek (cont'd)

TARGET OCCURRENCES DETERMINED TO BE VIABLE (cont'd)

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Terrestrial Ecological Systems (cont'd)				
Southern Great Plains Deep Sand Shrublands	1	29	3	5
Southern Great Plains Mesquite Woodlands and Shrublands	19,987 (ha)	1,233,439 (ha)	2	1
Southern Great Plains Riparian Forests, Woodlands and Shrublands	1	21	5	2

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Rita Blanca Alkaline Lakes

CA Type: Terrestrial
 Map #: C21
 State: TX
 Size: 18,526 hectares

Stratification Unit: Capulin High Plains

KNOWN THREATS (with Severity Score=3)

Groundwater Extraction/Manipulation
 Lack of Comprehensive Water Strategy
 Parasites/Pathogens
 Windfarm Development

PROTECTED LANDS

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
FEDERAL	10,535.95(56.87)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
3	10,535.95 (56.87)

Total Protected: 10,535.95 hectares, 56.87% of the conservation area [Size of conservation area=18,526 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Bare Rock-Sand-Clay	0.4
Shrubland	0.5
Herbaceous Grassland	88.6
Pasture - Hay	1.2
Row Crops	4.9
Small Grains	4.4
Fallow	0.1

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Animal Assemblages				
Intact Prairie Dog Towns and Associated Animal Assemblages	1	19	5	3
Birds				
<i>Aimophila cassinii</i> Cassin's Sparrow	1	30	3	6
<i>Athene cunicularia hypugaea</i> Western Burrowing Owl	1	23	4	6
<i>Buteo regalis</i> Ferruginous Hawk	1	22	5	7
<i>Calamospiza melanocorys</i> (breeding) Lark Bunting	1	17	6	7

Rita Blanca Alkaline Lakes (cont'd)

TARGET OCCURRENCES DETERMINED TO BE VIABLE (cont'd)

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Birds (cont'd)				
<i>Callipepla squamata</i> Scaled Quail	1	23	4	6
<i>Charadrius montanus</i> (breeding) Mountain Plover	1	27	4	8
<i>Numenius americanus</i> (breeding) Long-billed Curlew	1	15	7	8
Mammals				
<i>Vulpes velox</i> Swift Fox	1	1	100	17
Terrestrial Ecological Systems				
Great Plains Playa Lakes	1 (21)*	81	1	3
Southern Great Plains Saline Lakes	1	16	6	6

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Salt Fork Red River

CA Type: Terrestrial
 Map #: W72
 State: TX
 Size: 160,427 hectares

Stratification Unit: Western Rolling Plains, Northern Llano Estacado

KNOWN THREATS (with Severity Score=3)

Invasive Plants
 Lack of Comprehensive Water Strategy

PROTECTED LANDS

None

[Size of conservation area=160,427 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Open Water	0.5
Bare Rock-Sand-Clay	2.5
Shrubland	15.7
Herbaceous Grassland	72.7
Pasture - Hay	0.2
Row Crops	8.1
Small Grains	0.4

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Animal Assemblages				
Intact Prairie Dog Towns and Associated Animal Assemblages	1	19	5	3
Birds				
<i>Aimophila cassinii</i> Cassin's Sparrow	1	30	3	6
<i>Callipepla squamata</i> Scaled Quail	1	23	4	6
<i>Melanerpes erythrocephalus</i> Red-headed Woodpecker	1	10	10	10
<i>Sternula antillarum athalassos</i> (breeding) Interior Least Tern	1	6	17	20
<i>Tympanuchus pallidicinctus</i> Lesser Prairie-chicken	1	30	3	6
<i>Vireo bellii</i> (breeding) Bell's Vireo	1	6	17	10

Salt Fork Red River (cont'd)

TARGET OCCURRENCES DETERMINED TO BE VIABLE (cont'd)

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Terrestrial Ecological Systems				
Great Plains Freshwater Emergent Marshes	1	3	33	7
Great Plains Mixedgrass Prairies	1	28	4	6
Great Plains Playa Lakes	1 (72)	81	1	3
Great Plains Shortgrass Prairies	24,133 (ha)	2,467,146 (ha)	1	0.2
Southern Great Plains Deep Sand Shrublands	1	29	3	5
Southern Great Plains Mesquite Woodlands and Shrublands	40,222 (ha)	1,233,439 (ha)	3	3
Southern Great Plains Riparian Forests, Woodlands and Shrublands	1	21	5	2

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

San Juan de Dios

CA Type: Terrestrial
 Map #: CR37
 State: NM
 Size: 188,367 hectares

Stratification Unit: Canadian River Corridor, Montane Ecotone, Northern Llano Estacado

KNOWN THREATS (with Severity Score=3)

Climate Change

PROTECTED LANDS

Ownership Type # of Hectares Protected (Percent Protected)

STATE	365.71 (0.19)
FEDERAL	4,462.92 (2.37)

Gap Category # of Hectares Protected (Percent Protected)

3	4,828.63 (2.56)
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Total Protected: 4,828.64 hectares, 2.56% of the conservation area [Size of conservation area=188,367 hectares]

NLCD COMPOSITION

Class Percent of Conservation Area

Open Water	0.5
Commercial-Industrial-Transportation	0.1
Bare Rock-Sand-Clay	0.1
Shrubland	7.1
Herbaceous Grassland	91.8
Row Crops	0.2
Small Grains	0.1

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Birds				
<i>Melanerpes erythrocephalus</i> Red-headed Woodpecker	1	10	10	10
<i>Vireo bellii</i> (breeding) Bell's Vireo	1	6	17	10
Vascular Plants				
<i>Cirsium wrightii</i> Wright's Marsh Thistle	2	3	67	15
<i>Helianthus paradoxus</i> Pecos Sunflower	1	2	50	7

San Juan de Dios (cont'd)

TARGET OCCURRENCES DETERMINED TO BE VIABLE (cont'd)

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Terrestrial Ecological Systems				
Great Plains Playa Lakes	1 (21)	81	1	3
Great Plains Shortgrass Prairies	103,528 (ha)	2,467,146 (ha)	4	1
Southern Great Plains Mesquite Woodlands and Shrublands	75,293 (ha)	1,233,439 (ha)	6	5

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Sand Springs

CA Type: Terrestrial
 Map #: CR39
 State: NM and TX
 Size: 197,757 hectares

Stratification Unit: Canadian River Corridor

KNOWN THREATS (with Severity Score=3)

Climate Change
 Conversion to Agriculture

PROTECTED LANDS

None

[Size of conservation area=197,757 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Commercial-Industrial-Transportation	0.2
Bare Rock-Sand-Clay	0.2
Shrubland	17.5
Herbaceous Grassland	80.3
Row Crops	1.3
Small Grains	0.4

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Animal Assemblages				
Intact Prairie Dog Towns and Associated Animal Assemblages	1	19	5	3
Birds				
<i>Aimophila cassinii</i> Cassin's Sparrow	1	30	3	6
Vascular Plants				
<i>Euphorbia strictior</i> Panhandle Spurge	1	6	17	4
<i>Proboscidea sabulosa</i> Dune Unicorn-plant	1	8	12	7
Terrestrial Ecological Systems				
Great Plains Playa Lakes	1 (1)	81	1	3
Southern Great Plains Deep Sand Shrublands	1	29	3	5
Southern Great Plains Mesquite Woodlands and Shrublands	49,430 (ha)	1,233,439 (ha)	4	3

Sand Springs (cont'd)

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Sierra Grande

CA Type: Terrestrial
 Map #: C16
 State: NM
 Size: 11,818 hectares

Stratification Unit: Capulin High Plains

KNOWN THREATS (with Severity Score=3)

None

PROTECTED LANDS

None

[Size of conservation area=11,818 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Low Intensity Residential	0.1
Quarries-Strip Mines-Gravel Pits	0.1
Evergreen Forest	33.2
Shrubland	13.6
Herbaceous Grassland	52.9

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Birds				
<i>Buteo regalis</i> Ferruginous Hawk	1	22	5	7
Insects				
<i>Amblyscirtes simius</i> Simius Roadside-skipper	1	1	100	17
<i>Polites rhesus</i> Rhesus Skipper	1	1	100	33
Mammals				
<i>Microtus mogollonensis (mexicanus)</i> Mogollon Vole	1	1	100	50
Terrestrial Ecological Systems				
Great Plains Mixedgrass Prairies	1	28	4	6
Great Plains Playa Lakes	1 (2)	81	1	3
Great Plains Tallgrass Prairies	1	9	11	7
Pinyon - Oak - Juniper Woodlands and Shrublands	1	31	3	5
Rocky Mountain Dry Ponderosa Pine Forests and Woodlands	1	7	14	7

Sierra Grande (cont'd)

TARGET OCCURRENCES DETERMINED TO BE VIABLE (cont'd)

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Terrestrial Ecological Systems (cont'd)				
Rocky Mountain Subalpine Forests and Woodlands	1	2	50	50
Southern Rocky Mountain Grasslands	1	1	100	20

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

South of Quanah

CA Type: Terrestrial
Map #: W83
State: TX
Size: 956 hectares

Stratification Unit: Western Rolling Plains

KNOWN THREATS (with Severity Score=3)

Conversion to Agriculture

PROTECTED LANDS

None

[Size of conservation area=956 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Low Intensity Residential	0.7
Shrubland	3.5
Herbaceous Grassland	24.2
Pasture - Hay	19.5
Row Crops	26.2
Small Grains	25.7
Urban - Residential Grasses	0.2

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Mammals				
<i>Dipodomys elator</i>	1	6	17	4
Texas Kangaroo Rat				
Terrestrial Ecological Systems				
Great Plains Playa Lakes	1 (3)	81	1	3

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Tahoka Lake

CA Type: Terrestrial
 Map #: S64
 State: TX
 Size: 1,163 hectares

Stratification Unit: Southern Llano Estacado

KNOWN THREATS (with Severity Score=3)

- Crop Production Practices
- Groundwater Extraction/Manipulation
- Invasive Non-native Animals
- Invasive Plants
- Lack of Comprehensive Water Strategy
- Parasites/Pathogens
- Windfarm Development

PROTECTED LANDS

None

[Size of conservation area=1,163 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Open Water	21.3
Commercial-Industrial-Transportation	0.7
Bare Rock-Sand-Clay	1.5
Shrubland	57.4
Herbaceous Grassland	19.1

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Birds				
<i>Charadrius alexandrinus nivosus</i> (breeding) Western Snowy Plover	1	5	20	10
Terrestrial Ecological Systems				
Great Plains Playa Lakes	1 (4)	81	1	3
Southern Great Plains Saline Lakes	2	16	12	12

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Tramperos Creek Shortgrass

CA Type: Terrestrial
 Map #: C20
 State: NM and TX
 Size: 172,477 hectares

Stratification Unit: Capulin High Plains, Canadian River Corridor

KNOWN THREATS (with Severity Score=3)

Climate Change

PROTECTED LANDS

None

[Size of conservation area=172,477 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Evergreen Forest	0.1
Shrubland	1.9
Herbaceous Grassland	96.4
Pasture - Hay	0.2
Row Crops	1.1
Small Grains	0.2

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Animal Assemblages				
Intact Prairie Dog Towns and Associated Animal Assemblages	1	19	5	3
Birds				
<i>Aimophila cassinii</i> Cassin's Sparrow	1	30	3	6
<i>Athene cunicularia hypugaea</i> Western Burrowing Owl	1	23	4	6
<i>Buteo regalis</i> Ferruginous Hawk	1	22	5	7
<i>Calamospiza melanocorys</i> (breeding) Lark Bunting	1	17	6	7
<i>Callipepla squamata</i> Scaled Quail	1	23	4	6
<i>Charadrius montanus</i> (breeding) Mountain Plover	2	27	7	17
<i>Numenius americanus</i> (breeding) Long-billed Curlew	1	15	7	8

Tramperos Creek Shortgrass (cont'd)

TARGET OCCURRENCES DETERMINED TO BE VIABLE (cont'd)

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Terrestrial Ecological Systems				
Great Plains Mixedgrass Prairies	1	28	4	6
Great Plains Playa Lakes	1 (32)	81	1	3
Great Plains Shortgrass Prairies	172,481(ha)	2,467,146(ha)	7	1
Southern Great Plains Deep Sand Shrublands	1	29	3	5

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Turkey Mountains Grasslands

CA Type: Terrestrial
 Map #: M6
 State: NM
 Size: 228,660 hectares

Stratification Unit: Montane Ecotone

KNOWN THREATS (with Severity Score=3)

Climate Change

PROTECTED LANDS

Ownership Type # of Hectares Protected (Percent Protected)

PRIVATE	717.10 (0.31)
STATE	392.81 (0.17)
FEDERAL	2,262.53 (0.99)

Gap Category # of Hectares Protected (Percent Protected)

2	130.76 (0.06)
3	3,241.68 (1.42)

Total Protected: 3,372.44 hectares, 1.47% of the conservation area [Size of conservation area=228,660 hectares]

NLCD COMPOSITION

Class	Percent of Conservation Area
Open Water	0.5
Low Intensity Residential	0.2
Deciduous Forest	0.3
Evergreen Forest	19.4
Shrubland	17.4
Herbaceous Grassland	61.6
Pasture - Hay	0.5

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	Number This Area	Number All Areas	Percent This Area	Percent Overall Goal Contribution
Birds				
<i>Athene cunicularia hypugaea</i> Western Burrowing Owl	1	23	4	6
<i>Buteo regalis</i> Ferruginous Hawk	1	22	5	7
<i>Calcarius ornatus</i> (wintering) Chestnut-collared Longspur	1	6	17	6
<i>Callipepla squamata</i> Scaled Quail	1	23	4	6

Turkey Mountains Grasslands (cont'd)

TARGET OCCURRENCES DETERMINED TO BE VIABLE (cont'd)

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Birds (cont'd)				
<i>Charadrius montanus</i> (breeding) Mountain Plover	1	27	4	8
<i>Numenius americanus</i> (breeding) Long-billed Curlew	1	15	7	8
<i>Zonotrichia querula</i> (wintering) Harris' Sparrow	1	5	20	9
Terrestrial Ecological Systems				
Great Plains Mixedgrass Prairie	1	28	4	6
Great Plains Playa Lakes	1 (186)	81	1	3
Great Plains Shortgrass Prairie	22,848 (ha)	2,467,146 (ha)	1	0.2
Pinyon - Oak - Juniper Woodlands and Shrublands	1	31	3	5

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Upper Dry Cimarron Mesas

CA Type: Terrestrial
 Map #: C12
 State: CO and NM
 Size: 127,861 hectares

Stratification Unit: Capulin High Plains

KNOWN THREATS (with Severity Score=3)

Climate Change

PROTECTED LANDS

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
PRIVATE	27.85 (0.02)
STATE	7,405.86 (5.79)
FEDERAL	34.66 (0.03)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
2	7,145.75 (5.59)
3	322.63 (0.25)

Total Protected: 7,468.38 hectares, 5.84% of the conservation area [Size of conservation area=127,861 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Open Water	0.2
Deciduous Forest	25.3
Evergreen Forest	25.6
Mixed Forest	0.5
Shrubland	25.8
Herbaceous Grassland	21.7
Pasture - Hay	0.8
Row Crops	0.1

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Terrestrial Ecological Systems				
Great Plains Mixedgrass Prairie	1	28	4	6
Great Plains Playa Lakes	1 (40)	81	1	3
Great Plains Shortgrass Prairie	31,945 (ha)	2,467,146 (ha)	1	0.2
Great Plains Tallgrass Prairie	1	9	11	7
Pinyon - Oak - Juniper Woodlands and Shrublands	1	31	3	5
Rocky Mountain Dry Ponderosa Pine Forests and Woodlands	1	7	14	7
Rocky Mountain Subalpine Forests and Woodlands	1	2	50	50

Upper Dry Cimarron Mesas (cont'd)

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Upper Washita River

CA Type: Terrestrial
 Map #: W68
 State: OK and TX
 Size: 66,679 hectares

Stratification Unit: Western Rolling Plains

KNOWN THREATS (with Severity Score=3)

Groundwater Extraction/Manipulation
 Inappropriate Grazing Practices
 Lack of Comprehensive Water Strategy
 Oil and Gas Development
 Windfarm Development

PROTECTED LANDS

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
FEDERAL	797.11 (1.20)
<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
3	797.11 (1.20)

Total Protected: 797.11 hectares, 1.20% of the conservation area [Size of conservation area=66,679 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Open Water	0.3
Bare Rock-Sand-Clay	0.4
Shrubland	17.6
Herbaceous Grassland	74.1
Pasture - Hay	0.5
Row Crops	5.2
Small Grains	1.6
Woody Wetlands	0.1
Emergent Herbaceous Wetlands	0.1

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Birds				
<i>Tympanuchus pallidicinctus</i> Lesser Prairie-chicken	1	30	3	6
Terrestrial Ecological Systems				
Great Plains Mixedgrass Prairies	1	28	4	6
Great Plains Playa Lakes	1 (16)	81	1	3
Southern Great Plains Deep Sand Shrublands	1	29	3	5

Upper Washita River (cont'd)

TARGET OCCURRENCES DETERMINED TO BE VIABLE (cont'd)

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Terrestrial Ecological Systems (cont'd)				
Southern Great Plains Mesquite Woodlands and Shrublands	9,628 (ha)	1,233,439 (ha)	1	1
Southern Great Plains Riparian Forests, Woodlands and Shrublands	1	21	5	2

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Ute - Tramperos Canyons

CA Type: Terrestrial
 Map #: C19
 State: NM
 Size: 57,992 hectares

Stratification Unit: Capulin High Plains, Canadian River Corridor

KNOWN THREATS (with Severity Score=3)

None

PROTECTED LANDS

None

[Size of conservation area=57,992 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Evergreen	1.6
Shrubland	16.5
Herbaceous Grassland	81.5
Row Crops	0.3

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Vascular Plants				
<i>Senecio spellenbergii</i> Spellenberg's Groundsel	3	9	33	12
Terrestrial Ecological Systems				
Great Plains Mixedgrass Prairies	1	28	4	6
Great Plains Playa Lakes	1 (10)	81	1	3
Great Plains Shortgrass Prairies	40,577 (ha)	2,467,146 (ha)	2	0.3
Pinyon - Oak - Juniper Woodlands and Shrublands	1	31	3	5

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Vega Playas

CA Type: Terrestrial

Map #: NL49

State: TX

Stratification Unit: Northern Llano Estacado, Canadian River Corridor

Size: 121,991 hectares

KNOWN THREATS (with Severity Score=3)

Groundwater Extraction/Manipulation
 Inappropriate Grazing Practices
 Lack of Comprehensive Water Strategy
 Livestock Production Practices
 Parasites/Pathogens
 Windfarm Development

PROTECTED LANDS

None

[Size of conservation area=121,991 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Open Water	0.1
Low Intensity Residential	0.1
Commercial-Industrial-Transportation	0.2
Shrubland	0.1
Herbaceous Grassland	35.7
Pasture – Hay	1.3
Row Crops	19.8
Small Grains	40.1
Fallow	2.4
Woody Wetlands	0.1
Emergent Herbaceous Wetlands	0.1

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Animal Assemblages				
Intact Prairie Dog Towns and Associated Animal Assemblages	1	19	5	3
Birds				
<i>Charadrius montanus</i> (breeding) Mountain Plover	1	27	4	8
Terrestrial Ecological Systems				
Great Plains Playa Lakes	1 (195)*	81	1	3

Vega Playas (cont'd)

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Western Callahan Divide

CA Type: Terrestrial
 Map #: W87
 State: TX
 Size: 140,950 hectares

Stratification Unit: Western Rolling Plains

KNOWN THREATS (with Severity Score=3)

- Ditches, Dikes, and Diversions
- Groundwater Extraction/Manipulation
- Invasive Plants
- Lack of Comprehensive Water Strategy
- Ownership Fragmentation of Large Ranches

PROTECTED LANDS

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
LOCAL	19.77 (0.01)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
3	19.77 (0.01)

Total Protected: 19.77 hectares, 0.01% of the conservation area [Size of conservation area=140,950 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Low Intensity Residential	0.1
Commercial-Industrial-Transportation	0.2
Bare Rock-Sand-Clay	0.1
Deciduous Forest	6.1
Evergreen Forest	2.3
Mixed Forest	0.1
Shrubland	74.8
Herbaceous Grassland	12.8
Pasture - Hay	0.4
Row Crops	2.8

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Birds				
<i>Buteo regalis</i> Ferruginous Hawk	1	22	5	7
<i>Calamospiza melanocorys</i> (wintering) Lark Bunting	1	7	14	7
<i>Callipepla squamata</i> Scaled Quail	1	23	4	6

Western Callahan Divide (cont'd)

TARGET OCCURRENCES DETERMINED TO BE VIABLE (cont'd)

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Terrestrial Ecological Systems				
Great Plains Limestone Upland Forests and Woodlands	1	3	33	7
Great Plains Mixedgrass Prairies	1	28	4	6
Great Plains Playa Lakes	1 (58)	81	1	3
Southern Great Plains Mesquite Woodlands and Shrublands	56,588 (ha)	1,233,439 (ha)	5	4

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Wheeler Sandhills

CA Type: Terrestrial
 Map #: W70
 State: OK and TX
 Size: 55,463 hectares

Stratification Unit: Western Rolling Plains

KNOWN THREATS (with Severity Score=3)

Groundwater Extraction/Manipulation
 Inappropriate Grazing Practices
 Lack of Comprehensive Water Strategy
 Oil and Gas Development
 Windfarm Development

PROTECTED LANDS

None

[Size of conservation area=55,463 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Open Water	0.2
Bare Rock-Sand-Clay	0.9
Shrubland	19.3
Herbaceous Grassland	69.3
Pasture - Hay	0.3
Row Crops	8.9
Small Grains	0.8
Emergent Herbaceous Wetlands	0.1

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Birds				
<i>Tympanuchus pallidicinctus</i> Lesser Prairie-chicken	1	30	3	6
Terrestrial Ecological Systems				
Great Plains Playa Lakes	1 (15)	81	1	3
Pinyon - Oak - Juniper Woodlands and Shrublands	1	31	3	5
Southern Great Plains Deep Sand Shrublands	1	29	3	5
Southern Great Plains Riparian Forests, Woodlands and Shrublands	1	21	5	2

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

White Deer Creek

CA Type: Terrestrial
 Map #: CR44
 State: TX
 Size: 206,029 hectares

Stratification Unit: Canadian River Corridor, Northern Llano Estacado

KNOWN THREATS (with Severity Score=3)

Groundwater Extraction/Manipulation
 Inappropriate Grazing Practices
 Lack of Comprehensive Water Strategy
 Parasites/Pathogens

PROTECTED LANDS

None

[Size of conservation area=206,029 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Open Water	0.1
Bare Rock-Sand-Clay	1.7
Shrubland	23.6
Herbaceous Grassland	73.0
Pasture - Hay	0.1
Row Crops	0.7
Small Grains	0.3
Emergent Herbaceous Wetlands	0.4

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Animal Assemblages				
Intact Prairie Dog Towns and Associated Animal Assemblages	1	19	5	3
Birds				
<i>Aimophila cassinii</i> Cassin's Sparrow	1	30	3	6
<i>Athene cunicularia hypugaea</i> Western Burrowing Owl	1	23	4	6
<i>Buteo regalis</i> Ferruginous Hawk	1	22	5	7
<i>Calamospiza melanocorys</i> (breeding) Lark Bunting	1	17	6	7
<i>Callipepla squamata</i> Scaled Quail	1	23	4	6
<i>Melanerpes erythrocephalus</i> Red-headed Woodpecker	1	10	10	10

White Deer Creek (cont'd)

TARGET OCCURRENCES DETERMINED TO BE VIABLE (cont'd)

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Terrestrial Ecological Systems				
Great Plains Mixedgrass Prairies	1	28	4	6
Great Plains Playa Lakes	1 (21)*	81	1	3
Great Plains Shortgrass Prairies	28,910 (ha)	2,467,146 (ha)	1	0.2
Great Plains Tallgrass Prairies	1	9	11	7
Pinyon - Oak - Juniper Woodlands and Shrublands	1	31	3	5
Southern Great Plains Deep Sand Shrublands	1	29	3	5
Southern Great Plains Mesquite Woodlands and Shrublands	41,301 (ha)	1,233,439 (ha)	3	3
Southern Great Plains Riparian Forests, Woodlands and Shrublands	1	21	5	2

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Winkler Sandhills

CA Type: Terrestrial
 Map #: S62
 State: NM and TX
 Size: 130,764 hectares

Stratification Unit: Southern Llano Estacado

KNOWN THREATS (with Severity Score=3)

Invasive Plants
 Lack of Comprehensive Water Strategy
 Windfarm Development

PROTECTED LANDS

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
FEDERAL	2,766.89 (2.12)
<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
3	2,766.89 (2.12)

Total Protected: 2,766.89 hectares, 2.12% of the conservation area [Size of conservation area=130,764 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Commercial-Industrial-Transportation	0.6
Bare Rock-Sand-Clay	13.3
Shrubland	37.6
Herbaceous Grassland	48.5

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Birds				
<i>Aimophila cassinii</i> Cassin's Sparrow	1	30	3	6
<i>Callipepla squamata</i> Scaled Quail	1	23	4	6
Vascular Plants				
<i>Cyperus onerosus</i> Dune Flat-sedge	3	3	100	23
<i>Proboscidea sabulosa</i> Dune Unicorn-plant	5	8	62	36
Terrestrial Ecological Systems				
Chihuahuan Desert Grasslands (swales)	1	3	33	10
Great Plains Playa Lakes	1 (1)	81	1	3
Southern Great Plains Deep Sand Shrublands	1	29	3	5

Winkler Sandhills (cont'd)

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Wolf Creek

CA Type: Terrestrial
 Map #: CR46
 State: OK and TX
 Size: 133,782 hectares

Stratification Unit: Canadian River Corridor

KNOWN THREATS (with Severity Score=3)

Groundwater Extraction/Manipulation
 Inappropriate Grazing Practices
 Lack of Comprehensive Water Strategy
 Oil and Gas Development
 Windfarm Development

PROTECTED LANDS

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
LOCAL	236.75 (0.18)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
3	236.75 (0.18)

Total Protected: 236.75 hectares, 0.18% of the conservation area [Size of conservation area=133,782 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Open Water	0.1
Commercial-Industrial-Transportation	0.1
Bare Rock-Sand-Clay	0.5
Shrubland	13.4
Herbaceous Grassland	81.1
Pasture – Hay	0.4
Row Crops	2.9
Small Grains	1.4

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Animal Assemblages				
Intact Prairie Dog Towns and Associated Animal Assemblages	1	19	5	3
Birds				
<i>Aimophila cassinii</i> Cassin's Sparrow	1	30	3	6
<i>Athene cunicularia hypugaea</i> Western Burrowing Owl	1	23	4	6
<i>Calamospiza melanocorys</i> (breeding) Lark Bunting	1	17	6	7

Wolf Creek (cont'd)

TARGET OCCURRENCES DETERMINED TO BE VIABLE (cont'd)

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Birds (cont'd)				
<i>Callipepla squamata</i> Scaled Quail	1	23	4	6
<i>Melanerpes erythrocephalus</i> Red-headed Woodpecker	1	10	10	10
<i>Tympanuchus pallidicinctus</i> Lesser Prairie-chicken	1	30	3	6
Terrestrial Ecological Systems				
Great Plains Mixedgrass Prairies	1	28	4	6
Great Plains Playa Lakes	1 (15)*	81	1	3
Great Plains Shortgrass Prairies	46,983 (ha)	2,467,146 (ha)	2	0.3
Southern Great Plains Deep Sand Shrublands	1	29	3	5
Southern Great Plains Mesquite Woodlands and Shrublands	33,560 (ha)	1,233,439 (ha)	3	2
Southern Great Plains Riparian Forests, Woodlands and Shrublands	2	21	10	5

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Yates Carbonate Glades

CA Type: Terrestrial
 Map #: C18
 State: NM
 Size: 18,091 hectares

Stratification Unit: Capulin High Plains

KNOWN THREATS (with Severity Score=3)

None

PROTECTED LANDS

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
FEDERAL	81.52 (0.45)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
3	81.52 (0.45)

Total Protected: 81.52 hectares, 0.45% of the conservation area [Size of conservation area=18,091 hectares]

NLCD COMPOSITION

<i>Class</i>	<i>Percent of Conservation Area</i>
Shrubland	3.3
Herbaceous Grassland	96.3

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent Overall Goal Contribution</i>
Vascular Plants				
<i>Senecio spellenbergii</i> Spellenberg's Groundsel	5	9	56	20
Terrestrial Ecological Systems				
Great Plains Carbonate Glades and Barrens	1	3	33	10
Great Plains Playa Lakes	1 (8)	81	1	3

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

None

Appendix H2. Aquatic Conservation Areas Summary

Known Threats: Threats that were given a score of **3** for severity in the threats analysis. Severity is the degree to which an identified source of stress threatens the ecological integrity of a conservation area and the targets within that area. Possible scores for severity are: (1) Low, (2) Medium, (3) High. The full set of threats information collected during the assessment is shown in Appendix J2.

Protected Lands: Extent (in hectares and percentages) of the riparian buffer zones and/or watersheds in each aquatic conservation area that is legally and permanently protected from conversion of natural land cover. An explanation of why and how these riparian buffer zones and watersheds were used in the calculations is shown below. These calculations are summarized by ownership type (private, local, state and federal) and GAP management status categories. The data source for the protected areas is a modified and updated version of Conservation Biology Institute's Protected Area Database-Version 4 (Conservation Biology Institute 2006). While lands under short-term legal protection (such as Conservation Reserve Program or Wetlands Reserve Program lands) and lands without legal protection but with conservation management in place play an important role in biodiversity conservation, locations of these areas were not available spatially and thus could not be included in the protected lands summary. It was also beyond the scope of this assessment to evaluate how effectively the mapped lands are being managed to abate threats and sustain their biodiversity values.

Aquatic ecological system health can be affected by land use in both the riparian zone and the entire watershed area, depending on spatial scale (e.g., Arya 2002, Harding et al. 1998, Jones et al. 1999, Lammert and Allan 1999). Therefore, we quantified land ownership and management status in the riparian buffer zone and/or the entire watershed for each aquatic conservation area, based on the type of ecological system target(s)¹ represented in that conservation area. We assumed that protection of land in the riparian buffer zone of any stream size class could have positive and tangible effects on aquatic biodiversity. On the other hand, watershed-wide protection is likely to be more effective for the smaller stream sizes (headwaters and creeks) than for the larger stream size classes (small, medium and large rivers). As a result of these two assumptions, the protocol for protected lands calculations was as follows:

- 1) For conservation areas that included just the small, medium, and large river systems (size classes 3-5), ownership/management percentages were only calculated for the riparian buffer zone. The riparian buffer width varied depending on the stream size class; size class 3 streams (small rivers) were buffered by 200m on each side, size class 4 streams (medium rivers) by 300m, and size class 5 streams (large rivers) by 500m.
- 2) For conservation areas that included just the smaller headwater and creek systems (size classes 1-2), ownership/management percentages were calculated for both the riparian buffer zone and the entire watershed area. The riparian buffer width varied depending on the stream size class; size class 1 streams (headwaters) were buffered by 30m on each side, size class 2 streams (creeks) by 90m.
- 3) Some conservation areas included segments of river systems *and* the smaller headwater/creek systems. For these conservation areas the riparian buffer calculations included percentages for both the river systems and the smaller headwater/creek systems in aggregate, but the watershed calculations only included the smaller headwater/creek systems.

GAP management status categories are defined as follows (Crist 2000):

- Status 1: An area having permanent protection from conversion of natural land cover and a mandated management plan in operation to maintain a natural state within which disturbance events are allowed to proceed without interference or are mimicked through management.
- Status 2: An area having permanent protection from conversion of natural land cover and a mandated management plan in operation to maintain a primarily natural state, but which may receive uses or management practices that degrade the quality of existing natural communities, including suppression of natural disturbance.
- Status 3: An area having permanent protection from conversion of natural land cover for the majority of the area, but subject to extractive uses of either a broad, low-intensity type or localized intense type. It also confers protection to federally listed endangered and threatened species throughout the area.
- Status 4: There are no known public or private institutional mandates or legally recognized easements or deed restrictions held by the managing entity to prevent conversion of natural habitat types to anthropogenic habitat types. The area generally allows conversion to unnatural land cover throughout.

Only GAP management status categories 1-3 are reported in this appendix.

¹Please note that playas and saline lakes—critical ecological system types supporting biodiversity in this ecoregion—are represented in the terrestrial conservation areas and associated analyses, not in the aquatic conservation areas.

Target Occurrences Determined to be Viable:

Number This Area: Number of known viable occurrences within each conservation area.

Number All Areas: Total number of known viable occurrences within the entire set of conservation areas—portfolio and provisional.

Percent This Area: Percentage of known viable occurrences captured in each conservation area as compared to the entire set of conservation areas—portfolio and provisional.

Percent EDU Goal Contribution: Percentage of known viable occurrences captured in each conservation area as compared to the ecological drainage unit goal. Occurrences in provisional aquatic conservation areas are not counted towards goal attainment; hence, the contribution value for those occurrences is 0.

Percent Overall Goal Contribution: Percentage of known viable occurrences captured in each area as compared to the overall conservation goal. Occurrences in provisional aquatic conservation areas are not counted towards goal attainment; hence, the contribution value for those occurrences is 0. There are no overall conservation goals for aquatic systems since each aquatic system is unique to a given EDU.

Target Occurrences Determined to be Non-Viable or of Unknown Viability: Number of known occurrences within each conservation area that are considered to be non-viable or for which there is insufficient information to assess viability.

Arroyo de la Mora

CA Type: Provisional Aquatic
 Map #: UP30
 State: New Mexico

Ecological Drainage Unit: Upper Pecos River

KNOWN THREATS (with Severity Score=3)

Lack of Comprehensive Water Strategy
 Invasive Plants

PROTECTED LANDS

IN THE RIPARIAN BUFFER ZONE:

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
FEDERAL	143.20 (7.01)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
1	6.91 (0.34)
3	136.28 (6.68)

Total Protected: 143.20 hectares, 7.01% of the riparian buffer zone [Size of riparian buffer zone=2,042 hectares]

IN THE WATERSHED:

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
FEDERAL	8,780.66 (7.26)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
1	221.91 (0.18)
3	8,558.75 (7.08)

Total Protected: 8,780.66 hectares, 7.26% of the watershed [Size of watershed=120,959 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
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Aquatic Ecological Systems

(Pec_2_03) Mostly intermittent moderate gradient direct tributaries of the upper Pecos in fine sandstone and sand

1	1	100	0	N/A
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TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

Arroyo del Macho

CA Type: Provisional Aquatic
 Map #: UP31
 State: New Mexico

Ecological Drainage Unit: Upper Pecos River

KNOWN THREATS (with Severity Score=3)

Lack of Comprehensive Water Strategy
 Invasive Plants

PROTECTED LANDS

IN THE RIPARIAN BUFFER ZONE:

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
FEDERAL	2,856.54 (21.20)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
1	13.59 (0.10)
2	110.76 (0.82)
3	2,732.19 (20.28)

Total Protected: 2,856.54 hectares, 21.20% of the riparian buffer zone [Size of riparian buffer zone=13,473 hectares]

IN THE WATERSHED:

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
FEDERAL	47,726.03 (23.92)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
1	401.38 (0.20)
2	3,336.20 (1.67)
3	43,988.45 (22.04)

Total Protected: 47,726.03 hectares, 23.92% of the watershed [Size of watershed=199,552 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
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Aquatic Ecological Systems

(Pec_2_02) Intermittent high gradient streams draining from Arizona-New Mexico Mountain sandstone and limestone to Southern Shortgrass Prairie	1	1	100	0	N/A
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(Pec_2_05) Intermittent high gradient streams in Arizona-New Mexico Mountain foothill and Southern Shortgrass Prairie limestone	1	1	100	0	N/A
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(Pec_2_22) Perennial high gradient streams in Arizona-New Mexico Mountain granite and sandstone	1	1	100	0	N/A
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Arroyo del Macho (cont'd)

TARGET OCCURRENCES DETERMINED TO BE VIABLE (cont'd)

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
Aquatic Ecological Systems (cont'd)					
(Pec_3_01) Small intermittent rivers in Arizona-New Mexico Mountain foothill and Southern Shortgrass Prairie limestone	2	4	50	0	N/A
(Pec_4_01) Medium intermittent rivers in Arizona-New Mexico Mountain foothill and Southern Shortgrass Prairie limestone and alluvium	1	4	25	0	N/A

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

Beals Creek / Mustang Draw

CA Type: Provisional Aquatic
Map #: CP73
State: Texas

Ecological Drainage Unit: Colorado River – Prairie

KNOWN THREATS (with Severity Score=3)

Lack of Comprehensive Water Strategy
Inappropriate Grazing Practices

PROTECTED LANDS

None
[Size of riparian buffer zone=6,184 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
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Aquatic Ecological Systems

(Col_2_28) Intermittent low and moderate gradient streams in Ogallala Formation sand, sandstone, and caliche

1	1	100	0	N/A
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(Col_3_06) Small perennial rivers in sandstone, shale, and alluvium with intermittent headwaters in Ogallala Formation sand

1	2	50	0	N/A
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TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

Beaver Creek

CA Type: Provisional Aquatic

Map #: U42

State: Texas

Ecological Drainage Unit: Upper Red River

KNOWN THREATS (with Severity Score=3)

Groundwater Extraction/Manipulation
 Lack of Comprehensive Water Strategy
 Conversion to Agriculture
 Inappropriate Grazing Practices

PROTECTED LANDS

None

[Size of riparian buffer zone=4,460 hectares; size of watershed=87,984 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
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Aquatic Ecological Systems

(Red_2_25) Perennial and intermittent moderate and low gradient streams in central Southern Shortgrass Prairie redbed shale and sand

1	1	100	0	N/A
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TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

	<i>Number This Area</i>	<i>Viability Rank</i>
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Fishes

Notropis oxyrhynchus
 Sharpnose Shiner

1	Unknown
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Beaver River

CA Type: Aquatic

Map #: C3

State: Oklahoma, New Mexico

Ecological Drainage Unit: Canadian River

KNOWN THREATS (with Severity Score=3)

None

PROTECTED LANDS

IN THE RIPARIAN BUFFER ZONE:

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
FEDERAL	23.97 (0.38)
<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
3	23.97 (0.38)

Total Protected: 23.97 hectares, 0.38% of the riparian buffer zone [Size of riparian buffer zone=6,342 hectares]

IN THE WATERSHED:

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
FEDERAL	16.00 (0.02)
<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
3	16.00 (0.02)

Total Protected: 16.00 hectares, 0.02% of the watershed [Size of watershed=82,889 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
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Aquatic Ecological Systems

(Can_2_34) Perennial moderate and high gradient streams in western Southern Shortgrass Prairie sandstone and mafic rock	1	1	100	100	N/A
(Can_3_17) Small perennial rivers in western Southern Shortgrass Prairie sandstone/sand with headwaters in mafic rock	1	1	100	100	N/A

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

Belknap Creek

CA Type: Provisional Aquatic

Map #: U45

State: Texas

Ecological Drainage Unit: Upper Red River

KNOWN THREATS (with Severity Score=3)

Groundwater Extraction/Manipulation
Lack of Comprehensive Water Strategy
Conversion to Agriculture
Inappropriate Grazing Practices

PROTECTED LANDS

None

[Size of riparian buffer zone=1,822 hectares; size of watershed=48,953 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
Aquatic Ecological Systems					
(Red_2_24) Mostly intermittent moderate and low gradient streams in eastern Southern Shortgrass Prairie clay mud, sandstone, and shale	1	1	100	0	N/A

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

Big Sandy Creek

CA Type: Provisional Aquatic

Map #: UT47

State: Texas

Ecological Drainage Unit: Upper Trinity River

KNOWN THREATS (with Severity Score=3)

- Groundwater Extraction/Manipulation
- Lack of Comprehensive Water Strategy
- Conversion to Agriculture
- Inappropriate Grazing Practices

PROTECTED LANDS

IN THE RIPARIAN BUFFER ZONE:

None

[Size of riparian buffer zone=2,544 hectares]

IN THE WATERSHED:

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
FEDERAL	51.53 (0.12)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
3	51.53 (0.12)

Total Protected: 51.53 hectares, 0.12% of the watershed [Size of watershed=42,530 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
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Aquatic Ecological Systems

(Tri_2_24) Mostly intermittent moderate and low gradient streams in eastern Southern Shortgrass Prairie clay mud, sandstone, and shale	1	1	100	0	N/A
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TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

Brazos River

CA Type: Aquatic
 Map #: B63
 State: Texas

Ecological Drainage Unit: Brazos River - Prairie

KNOWN THREATS (with Severity Score=3)

- Groundwater Extraction/Manipulation
- Lack of Comprehensive Water Strategy
- Conversion to Agriculture
- Inappropriate Grazing Practices
- Ownership Fragmentation of Large Ranches

PROTECTED LANDS

IN THE RIPARIAN BUFFER ZONE:

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
LOCAL	391.39 (0.65)
STATE	340.97 (0.57)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
3	732.35 (1.23)

Total Protected: 732.35 hectares, 1.23% of the riparian buffer zone [Size of riparian buffer zone=59,777 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
Fishes					
<i>Nerodia harteri</i>	2	4	50	22	22
Brazos Water Snake					
Aquatic Ecological Systems					
(Bra_5_03) Large perennial rivers of the Southern Shortgrass Prairie	1	1	100	100	N/A

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

	<i>Number This Area</i>	<i>Viability Rank</i>
Fishes		
<i>Notropis buccula</i>	1	Non-viable
Smalleye Shiner		

Bull Creek

CA Type: Provisional Aquatic
Map #: CP71
State: Texas

Ecological Drainage Unit: Colorado River – Prairie

KNOWN THREATS (with Severity Score=3)

Conversion to Agriculture
Inappropriate Grazing Practices

PROTECTED LANDS

None

[Size of riparian buffer zone=3,750 hectares; size of watershed=72,234 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
Aquatic Ecological Systems					
(Col_2_23) Mostly intermittent moderate and low gradient streams in central Southern Shortgrass Prairie redbed shale	1	1	100	0	N/A
(Col_3_08) Small intermittent rivers in central Southern Shortgrass Prairie redbed shale and sand	1	1	100	0	N/A

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

Carrizozo Creek

CA Type: Provisional Aquatic
Map #: A2
State: Oklahoma, New Mexico

Ecological Drainage Unit: Arkansas River – West

KNOWN THREATS (with Severity Score=3)

None

PROTECTED LANDS

IN THE RIPARIAN BUFFER ZONE:

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
FEDERAL	1.61 (0.07)
<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
3	1.61 (0.07)

Total Protected: 1.61 hectares, 0.07% of the riparian buffer zone [Size of riparian buffer zone=2,468 hectares]

IN THE WATERSHED:

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
FEDERAL	32.62 (0.06)
<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
3	32.62 (0.06)

Total Protected: 32.62 hectares, 0.06% of the watershed [Size of watershed=51,007 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
Aquatic Ecological Systems (Ark_2_15) Intermittent moderate and high gradient streams in western Southern Shortgrass Prairie sandstone/sand	1	1	100	0	N/A

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

Charo Creek

CA Type: Aquatic
Map #: C14
State: New Mexico

Ecological Drainage Unit: Canadian River

KNOWN THREATS (with Severity Score=3)

Lack of Comprehensive Water Strategy
Invasive Plants

Note: The scope of the conservation area was changed after the threats assessment. Charo Creek was originally part of a larger conservation area (called Revuelto Creek) that also included Plaza Largo Creek, Barranca Creek and Revuelto Creek. Charo Creek and Revuelto Creek are now each represented in separate conservation areas, and Plaza Largo Creek and Barranca Creek are no longer part of any conservation area.

PROTECTED LANDS

IN THE RIPARIAN BUFFER ZONE:

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
FEDERAL	14.30 (0.83)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
3	14.30 (0.83)

Total Protected: 14.30 hectares, 0.83% of the riparian buffer zone [Size of riparian buffer zone=1,729 hectares]

IN THE WATERSHED:

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
FEDERAL	254.04 (0.65)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
3	254.04 (0.65)

Total Protected: 254.04 hectares, 0.65% of the watershed [Size of watershed=39,036 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
Aquatic Ecological Systems (Can_2_10) Intermittent high and moderate gradient streams in Southern Shortgrass Prairie Quaternary piedmont alluvium	1	1	100	100	N/A

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

Cimarron River

CA Type: Aquatic
 Map #: C7
 State: New Mexico

Ecological Drainage Unit: Canadian River

KNOWN THREATS (with Severity Score=3)

Lack of Comprehensive Water Strategy

Note: The scope of the conservation area was changed after the threats assessment. The Cimarron River was originally part of a larger conservation area (called Cimarron River) that also included Cimarron Creek, Ponil Creek and Rayado Creek. The conservation area now only includes the Cimarron River mainstem. Ponil Creek and Rayado Creek are currently each represented in separate conservation areas, and Cimarron Creek is not included in any conservation area.

PROTECTED LANDS

IN THE RIPARIAN BUFFER ZONE:

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
PRIVATE	565.88 (19.01)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
2	565.88 (19.01)

Total Protected: 565.88 hectares, 19.01% of the riparian buffer zone [Size of riparian buffer zone=2,977 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
Aquatic Ecological Systems					
(Can_3_19) Small perennial rivers in Southern Shortgrass Prairie calcareous sandstone with headwaters in Southern Rocky Mountain sandstone	1	3	33	100	N/A
(Can_4_03) Medium perennial rivers in Arizona-New Mexico Mountains and Rocky Mountains foothill sandstone and limestone flowing to shale and alluvium	1	3	33	100	N/A

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

	<i>Number This Area</i>	<i>Viability Rank</i>
Fishes		
<i>Phenacobius mirabilis</i> Suckermouth Minnow	1	Unknown

Clear Fork Brazos River

CA Type: Aquatic
 Map #: B61
 State: Texas

Ecological Drainage Unit: Brazos River – Prairie

KNOWN THREATS (with Severity Score=3)

Conversion to Agriculture
 Inappropriate Grazing Practices

PROTECTED LANDS

None

[Size of riparian buffer zone=15,869 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
Fishes					
<i>Nerodia harteri</i>	1	4	25	11	11
Brazos Water Snake					
Aquatic Ecological Systems					
(Bra_4_06) Medium perennial rivers in central Southern Shortgrass Prairie/Edwards Plateau shale and sandstone/sand with heavy limestone, marl, and caliche components					
	1	1	100	100	N/A

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

Clear Fork Brazos River Headwaters

CA Type: Provisional Aquatic

Map #: B58

State: Texas

Ecological Drainage Unit: Brazos River – Prairie

KNOWN THREATS (with Severity Score=3)

Conversion to Agriculture
Inappropriate Grazing Practices

PROTECTED LANDS

None

[Size of riparian buffer zone=3,895 hectares; size of watershed=193,962 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
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Aquatic Ecological Systems

(Bra_2_25) Perennial and intermittent moderate and low gradient streams in central Southern Shortgrass Prairie redbed shale and sand	1	1	100	0	N/A
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TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

Colony Creek

CA Type: Provisional Aquatic
Map #: B68
State: Texas

Ecological Drainage Unit: Brazos River – Prairie

KNOWN THREATS (with Severity Score=3)

Groundwater Extraction/Manipulation
Lack of Comprehensive Water Strategy
Conversion to Agriculture
Inappropriate Grazing Practices

PROTECTED LANDS

None

[Size of riparian buffer zone=680 hectares; size of watershed=16,683 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
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Aquatic Ecological Systems

(Bra_2_29) Perennial moderate gradient streams in aquifer sand along the Southern Shortgrass Prairie and Edwards Plateau margins	1	1	100	0	N/A
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TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

Colorado River Headwaters

CA Type: Provisional Aquatic
Map #: CP70
State: Texas

Ecological Drainage Unit: Colorado River – Prairie

KNOWN THREATS (with Severity Score=3)

Conversion to Agriculture
Inappropriate Grazing Practices

PROTECTED LANDS

None

[Size of riparian buffer zone=4,130 hectares; size of watershed=243,281 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
Aquatic Ecological Systems (Col_2_38) Perennial moderate gradient creeks in recharge sand and redbed shale along the Canadian River breaks and escarpment breaks	1	1	100	0	N/A

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

Conchas River

CA Type: Aquatic
 Map #: C11
 State: New Mexico

Ecological Drainage Unit: Canadian River

KNOWN THREATS (with Severity Score=3)

Lack of Comprehensive Water Strategy
 Invasive Plants

PROTECTED LANDS

IN THE RIPARIAN BUFFER ZONE:

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
FEDERAL	14.54 (0.27)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
3	14.54 (0.27)

Total Protected: 14.54 hectares, 0.27% of the riparian buffer zone [Size of riparian buffer zone=5,344 hectares]

IN THE WATERSHED:

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
FEDERAL	616.24 (0.91)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
3	616.24 (0.91)

Total Protected: 616.24 hectares, 0.91% of the watershed [Size of watershed=67,420 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
Aquatic Ecological Systems					
(Can_2_27) Intermittent and perennial moderate and high gradient streams in western Southern Shortgrass Prairie shale and limestone	2	2	100	200	N/A
(Can_3_05) Small perennial rivers in Arizona-New Mexico Mountains and Rocky Mountains foothill sandstone and limestone	1	1	100	100	N/A

Conchas River (cont'd)

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

	<i>Number This Area</i>	<i>Viability Rank</i>
Crustaceans		
<i>Orconectes deanae</i>	1	Unknown
Conchas Crayfish		

Concho River

CA Type: Aquatic
 Map #: CE77
 State: Texas

Ecological Drainage Unit: Colorado River – Edwards Plateau

KNOWN THREATS (with Severity Score=3)

Groundwater Extraction/Manipulation
 Lack of Comprehensive Water Strategy
 Conversion to Agriculture
 Inappropriate Grazing Practices

PROTECTED LANDS

None

[Size of riparian buffer zone=6,705 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
Fishes					
<i>Nerodia paucimaculata</i>	1	2	50	11	11
Concho Water Snake					
Aquatic Ecological Systems					
(Col_4_05) Medium perennial rivers in Edwards Plateau limestone	1	1	100	100	N/A

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

	<i>Number This Area</i>	<i>Viability Rank</i>
Fishes		
<i>Micropterus treculi</i>	1	Non-viable
Guadalupe Bass		

Coyote Creek

CA Type: Aquatic
 Map #: C9
 State: New Mexico

Ecological Drainage Unit: Canadian River

KNOWN THREATS (with Severity Score=3)

Lack of Comprehensive Water Strategy

Note: The scope of the conservation area was changed after the threats assessment. Coyote Creek was originally part of a larger conservation area (called Mora River) that also included Mora Creek, Sapello River and the Mora River mainstem. The Mora River mainstem and Coyote Creek are now each represented in separate conservation areas, and Mora Creek and Sapello River are no longer part of any conservation area.

PROTECTED LANDS

IN THE RIPARIAN BUFFER ZONE:

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
STATE	180.87 (7.12)
FEDERAL	83.75 (3.29)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
3	264.62 (10.41)

Total Protected: 264.62 hectares, 10.41% of the riparian buffer [Size of riparian buffer zone=2,542 hectares]

IN THE WATERSHED:

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
STATE	2,836.48 (4.67)
FEDERAL	2,851.45 (4.70)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
3	5,687.93 (9.37)

Total Protected: 5,687.93 hectares, 9.37% of the watershed [Size of watershed=60,689 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
Aquatic Ecological Systems (Can_2_04) Perennial high and moderate gradient tributaries flowing from Southern Rocky Mountain foothill limestone and granite to Southern Shortgrass Prairie sandstone and shale	1	1	100	100	N/A

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

Croton Creek

CA Type: Provisional Aquatic
Map #: B54
State: Texas

Ecological Drainage Unit: Brazos River – Prairie

KNOWN THREATS (with Severity Score=3)

Conversion to Agriculture
Inappropriate Grazing Practices

PROTECTED LANDS

None

[Size of riparian buffer zone=622 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
Aquatic Ecological Systems (Bra_3_08) Small intermittent rivers in central Southern Shortgrass Prairie redbed shale and sand	1	1	100	0	N/A

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

Deadman Creek

CA Type: Aquatic
Map #: B59
State: Texas

Ecological Drainage Unit: Brazos River – Prairie

KNOWN THREATS (with Severity Score=3)

- Groundwater Extraction/Manipulation
- Lack of Comprehensive Water Strategy
- Conversion to Agriculture
- Inappropriate Grazing Practices

PROTECTED LANDS

None

[Size of riparian buffer zone=1,570 hectares; size of watershed=49,606 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
Fishes					
<i>Nerodia harteri</i>	1	4	25	11	11
Brazos Water Snake					
Aquatic Ecological Systems					
(Bra_2_26) Mostly intermittent moderate and low gradient streams in eastern Southern Shortgrass Prairie shale and sandstone/sand with heavy limestone, marl, and caliche components	1	2	50	100	N/A

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

Deer Creek

CA Type: Provisional Aquatic

Map #: C19

State: Texas

Ecological Drainage Unit: Canadian River

KNOWN THREATS (with Severity Score=3)

Lack of Comprehensive Water Strategy

Conversion to Agriculture

Inappropriate Grazing Practices

PROTECTED LANDS

None

[Size of riparian buffer zone=262 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
Aquatic Ecological Systems (Can_3_06) Small perennial rivers in sandstone, shale, and alluvium with intermittent headwaters in Ogallala Formation sand	1	1	100	0	N/A

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

Denton Creek

CA Type: Provisional Aquatic
Map #: UT48
State: Texas

Ecological Drainage Unit: Upper Trinity

KNOWN THREATS (with Severity Score=3)

Groundwater Extraction/Manipulation
Lack of Comprehensive Water Strategy
Conversion to Agriculture
Inappropriate Grazing Practices

PROTECTED LANDS

IN THE RIPARIAN BUFFER ZONE:

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
FEDERAL	201.82 (8.82)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
3	201.82 (8.82)

Total Protected: 201.82 hectares, 8.82% of the riparian buffer [Size of riparian buffer zone=2,287 hectares]

IN THE WATERSHED:

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
FEDERAL	3,797.50 (7.40)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
3	3,797.50 (7.40)

Total Protected: 3,797.50 hectares, 7.40% of the watershed [Size of watershed=51,301 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
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Aquatic Ecological Systems

(Tri_2_29) Perennial moderate gradient streams in aquifer sand along the Southern Shortgrass Prairie and Edwards Plateau margins	1	1	100	0	N/A
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TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

Double Mountain Fork Brazos River

CA Type: Aquatic
 Map #: B56
 State: Texas

Ecological Drainage Unit: Brazos River – Prairie

KNOWN THREATS (with Severity Score=3)

- Lack of Comprehensive Water Strategy
- Conversion to Agriculture
- Inappropriate Grazing Practices
- Livestock Production Practices
- Ownership Fragmentation of Large Ranches
- Transportation Infrastructure

PROTECTED LANDS

None

[Size of riparian buffer zone=13,040 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
Fishes					
<i>Notropis buccula</i> Smalleye Shiner	1*	1	100	11	11
<i>Notropis oxyrhynchus</i> Sharpnose Shiner	1*	1	100	50	20

*The full extent of this population includes two other conservation areas: Salt Fork Brazos River and Upper Brazos River.

Aquatic Ecological Systems

(Bra_3_06) Small perennial rivers in sandstone, shale, and alluvium with intermittent headwaters in Ogallala Formation sand	1	2	50	100	N/A
(Bra_4_07) Medium perennial rivers in sandstone, shale, and alluvium with intermittent headwaters in Ogallala Formation sand	1	3	33	100	N/A

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

Dry Cimarron River

CA Type: Provisional Aquatic
 Map #: A1
 State: New Mexico

Ecological Drainage Unit: Arkansas River – West

KNOWN THREATS (with Severity Score=3)

Lack of Comprehensive Water Strategy

PROTECTED LANDS

IN THE RIPARIAN BUFFER ZONE:

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
FEDERAL	10.21 (0.25)
<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
3	10.21 (0.25)

Total Protected: 10.21 hectares, 0.25% of the riparian buffer zone [Size of riparian buffer zone=4,117 hectares]

IN THE WATERSHED:

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
FEDERAL	691.49 (0.81)
<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
1	644.08 (0.75)
3	47.41 (0.06)

Total Protected: 691.49 hectares, 0.81% of the watershed [Size of watershed=85,427 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
Aquatic Ecological Systems					
(Ark_2_34) Perennial moderate and high gradient streams in western Southern Shortgrass Prairie sandstone and mafic rock	1	1	100	0	N/A
(Ark_3_17) Small perennial rivers in western Southern Shortgrass Prairie sandstone/sand with headwaters in mafic rock	1	1	100	0	N/A

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

El Rito Creek

CA Type: Aquatic
Map #: UP24
State: New Mexico

Ecological Drainage Unit: Upper Pecos River

KNOWN THREATS (with Severity Score=3)

Lack of Comprehensive Water Strategy
Invasive Plants

PROTECTED LANDS

None

[Size of riparian buffer zone=230 hectares; size of watershed=6,365 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
Fishes					
<i>Gila pandora</i>	1*	5	20	20	20
Rio Grande Chub					

* The full extent of the *Gila pandora* population present in this area includes two other conservation areas: Middle Pecos River and Rio Agua Negra.

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

Elm Creek

CA Type: Aquatic
Map #: CE75
State: Texas

Ecological Drainage Unit: Colorado River – Edwards Plateau

KNOWN THREATS (with Severity Score=3)

Groundwater Extraction/Manipulation
Lack of Comprehensive Water Strategy
Conversion to Agriculture
Inappropriate Grazing Practices

PROTECTED LANDS

None

[Size of riparian buffer zone=4,303 hectares; size of watershed=120,786 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
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Aquatic Ecological Systems

(Col_2_26) Mostly intermittent moderate and low gradient streams in eastern Southern Shortgrass Prairie shale and sandstone/sand with heavy limestone, marl, and caliche components

1	2	50	100	N/A
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TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

Farmer's Creek

CA Type: Provisional Aquatic
Map #: U46
State: Texas

Ecological Drainage Unit: Upper Red River

KNOWN THREATS (with Severity Score=3)

Groundwater Extraction/Manipulation
Lack of Comprehensive Water Strategy
Conversion to Agriculture
Inappropriate Grazing Practices

PROTECTED LANDS

None

[Size of riparian buffer zone=1,522 hectares; size of watershed=32,633 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
Aquatic Ecological Systems (Red_2_29) Perennial moderate gradient streams in aquifer sand along the Southern Shortgrass Prairie and Edwards Plateau margins	1	1	100	0	N/A

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

Gallinas River

CA Type: Aquatic
 Map #: UP23
 State: New Mexico

Ecological Drainage Unit: Upper Pecos River

KNOWN THREATS (with Severity Score=3)

Lack of Comprehensive Water Strategy
 Invasive Plants

PROTECTED LANDS

IN THE RIPARIAN BUFFER ZONE:

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
STATE	6.60 (0.08)
FEDERAL	506.57 (6.40)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
2	504.91 (6.37)
3	8.26 (0.10)

Total Protected: 513.17 hectares, 6.48% of the riparian buffer [Size of riparian buffer zone=7,920 hectares]

IN THE WATERSHED:

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
PRIVATE	5.51 (0.01)
STATE	52.47 (0.07)
FEDERAL	13,544.31 (16.96)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
2	12,803.58 (16.04)
3	798.711 (1.00)

Total Protected: 13,602.29 hectares, 17.04% of the watershed [Size of watershed=79,838 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
Fishes					
<i>Gila pandora</i>	1	5	20	20	20
Rio Grande Chub					

Aquatic Ecological Systems

(Pec_2_04) Perennial high and moderate gradient tributaries flowing from Southern Rocky Mountain foothill limestone and granite to Southern Shortgrass Prairie sandstone and shale

1	3	33	100	N/A
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(Pec_2_15) Intermittent moderate and high gradient streams in western Southern Shortgrass Prairie sandstone/sand

1	1	100	100	N/A
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Gallinas River (cont'd)

TARGET OCCURRENCES DETERMINED TO BE VIABLE (cont'd)

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
Aquatic Ecological Systems (cont'd)					
(Pec_2_27) Intermittent and perennial moderate and high gradient streams in western Southern Shortgrass Prairie shale and limestone	1	1	100	100	N/A
(Pec_3_05) Small perennial rivers in Arizona-New Mexico Mountains and Rocky Mountains foothill sandstone and limestone	1	1	100	100	N/A
(Pec_4_03) Medium perennial rivers in Arizona-New Mexico Mountains and Rocky Mountains foothill sandstone and limestone flowing to shale and alluvium	1	2	50	100	N/A

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE

	<i>Number This Area</i>	<i>Viability Rank</i>
Fishes		
<i>Gila pandora</i> Rio Grande Chub	1	Unknown

Gavett Creek

CA Type: Provisional Aquatic
Map #: CP72
State: Texas

Ecological Drainage Unit: Colorado River – Prairie

KNOWN THREATS (with Severity Score=3)

Conversion to Agriculture
Inappropriate Grazing Practices

PROTECTED LANDS

None

[Size of riparian buffer zone=1,263 hectares; size of watershed=24,515 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
Aquatic Ecological Systems (Col_2_17) Perennial moderate and low gradient creeks in Edwards Plateau recharge sand	1	1	100	0	N/A

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

Hubbard Creek

CA Type: Provisional Aquatic
Map #: B60
State: Texas

Ecological Drainage Unit: Brazos River – Prairie

KNOWN THREATS (with Severity Score=3)

- Groundwater Extraction/Manipulation
- Lack of Comprehensive Water Strategy
- Conversion to Agriculture
- Inappropriate Grazing Practices

PROTECTED LANDS

None

[Size of riparian buffer zone=699 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
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Aquatic Ecological Systems

(Bra_3_10) Small perennial rivers in Southern Shortgrass Prairie/Edwards Plateau transition zone shale and sandstone/sand with heavy limestone, marl, and caliche components

1	1	100	0	N/A
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TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

Ioni Creek

CA Type: Provisional Aquatic
Map #: B66
State: Texas

Ecological Drainage Unit: Brazos River – Prairie

KNOWN THREATS (with Severity Score=3)

Groundwater Extraction/Manipulation
Lack of Comprehensive Water Strategy
Conversion to Agriculture
Inappropriate Grazing Practices

PROTECTED LANDS

None

[Size of riparian buffer zone=1,434 hectares; size of watershed=25,244 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
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Aquatic Ecological Systems

(Bra_2_26) Mostly intermittent moderate and low gradient streams in eastern Southern Shortgrass Prairie shale and sandstone/sand with heavy limestone, marl, and caliche components

1	2	50	0	N/A
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TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

Jasper Creek

CA Type: Provisional Aquatic
Map #: UT50
State: Texas

Ecological Drainage Unit: Upper Trinity

KNOWN THREATS (with Severity Score=3)

Groundwater Extraction/Manipulation
Lack of Comprehensive Water Strategy
Conversion to Agriculture
Inappropriate Grazing Practices

PROTECTED LANDS

None

[Size of riparian buffer zone=266 hectares; size of watershed=6,098 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
Aquatic Ecological Systems (Tri_2_33) Perennial moderate and low gradient creeks on the Edwards Plateau margin in gravel, conglomerate, sand, and marl	1	1	100	0	N/A

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

Leon River

CA Type: Provisional Aquatic
Map #: B69
State: Texas

Ecological Drainage Unit: Brazos River – Prairie

KNOWN THREATS (with Severity Score=3)

Groundwater Extraction/Manipulation
Lack of Comprehensive Water Strategy
Conversion to Agriculture
Inappropriate Grazing Practices

PROTECTED LANDS

None

[Size of riparian buffer zone=2,208 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
Aquatic Ecological Systems					
(Bra_3_11) Small perennial rivers in aquifer sand along the Edwards Plateau/Blackland Prairie boundary	1	1	100	0	N/A

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

Lower Canadian River

CA Type: Aquatic

Map #: C17

State: Oklahoma, New Mexico, and Texas

Ecological Drainage Unit: Canadian River

KNOWN THREATS (with Severity Score=3)

Invasive Plants

PROTECTED LANDS

IN THE RIPARIAN BUFFER ZONE:

Ownership Type # of Hectares Protected (Percent Protected)

PRIVATE	264.83 (0.31)
STATE	1,185.87 (1.39)
FEDERAL	11,611.60 (13.62)

Gap Category # of Hectares Protected (Percent Protected)

1	264.83 (0.31)
2	12,567.36 (14.75)
3	230.11 (0.27)

Total Protected: 13,062.31 hectares, 15.33% of the riparian buffer [Size of riparian buffer zone=85,229 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
Fishes					
<i>Macrhybopsis tetranema</i> Peppered Chub	1	1	100	100	100
<i>Notropis girardi</i> Arkansas River Shiner	2	2	100	67	40

Aquatic Ecological Systems

(Can_5_05) Large perennial rivers of the Southern Shortgrass Prairie with headwaters in the Southern Rocky Mountains	1*	1	100	100	N/A
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*The full extent of this system occurrence includes one other conservation area: Middle Canadian River.

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

	<i>Number This Area</i>	<i>Viability Rank</i>
Fishes		
<i>Phenacobius mirabilis</i> Suckermouth Minnow	1	Unknown

Lower Canadian River Tributaries

CA Type: Provisional Aquatic
Map #: C16
State: New Mexico, Texas

Ecological Drainage Unit: Canadian River

KNOWN THREATS (with Severity Score=3)

Lack of Comprehensive Water Strategy
Inappropriate Grazing Practices

PROTECTED LANDS

None

[Size of riparian buffer zone=4,439 hectares; size of watershed=68,645 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
Aquatic Ecological Systems					
(Can_2_37) Perennial moderate gradient creeks in recharge sand along the Canadian River breaks and escarpment breaks	1	1	100	0	N/A
(Can_2_38) Perennial moderate gradient creeks in recharge sand and redbed shale along the Canadian River breaks and escarpment breaks	1	1	100	0	N/A
(Can_3_20) Small intermittent rivers in Quaternary piedmont alluvium and western Southern Shortgrass Prairie shale	1	2	50	0	N/A

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

Middle Canadian River

CA Type: Aquatic
 Map #: C12
 State: New Mexico

Ecological Drainage Unit: Canadian River

KNOWN THREATS (with Severity Score=3)

Lack of Comprehensive Water Strategy
 Invasive Plants

PROTECTED LANDS

IN THE RIPARIAN BUFFER ZONE:

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
STATE	856.26 (2.51)
FEDERAL	2,447.48 (7.18)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
2	122.54 (0.36)
3	3,181.20 (9.34)

Total Protected: 3,304.75 hectares, 9.70% of the riparian buffer [Size of riparian buffer zone=34,071 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
Fishes					
<i>Phenacobius mirabilis</i> Suckermouth Minnow	1	2	50	33	20
Aquatic Ecological Systems					
(Can_5_05) Large perennial rivers of the Southern Shortgrass Prairie with headwaters in the Southern Rocky Mountains	1*	1	100	100	N/A

*The full extent of this system occurrence includes one other conservation area: Lower Canadian River.

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

	<i>Number This Area</i>	<i>Viability Rank</i>
Fishes		
<i>Phenacobius mirabilis</i> Suckermouth Minnow	3	Unknown

Middle Pecos River

CA Type: Aquatic
 Map #: UP27
 State: New Mexico

Ecological Drainage Unit: Upper Pecos River

KNOWN THREATS (with Severity Score=3)

Lack of Comprehensive Water Strategy
 Invasive Plants
 Invasive Non-native Animals

PROTECTED LANDS

IN THE RIPARIAN BUFFER ZONE:

Ownership Type	# of Hectares Protected (Percent Protected)
LOCAL	518.91 (1.82)
STATE	367.82 (1.29)
FEDERAL	6,802.72 (23.80)

Gap Category	# of Hectares Protected (Percent Protected)
1	739.31 (2.59)
2	1,604.54 (5.61)
3	5,345.60 (18.70)

Total Protected: 7,689.45 hectares, 26.90% of the riparian buffer [Size of riparian buffer zone=28,580 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	Number This Area	Number All Areas	Percent This Area	Percent EDU Goal Contribution	Percent Overall Goal Contribution
Fishes					
<i>Gambusia nobilis</i> Pecos Gambusia	1	1	100	50	50
<i>Gila pandora</i> Rio Grande Chub	1*	5	20	20	20
<i>Notropis jemezianus</i> Rio Grande Shiner	1	1	100	100	100
<i>Notropis simus pecosensis</i> Pecos Bluntnose Shiner	1	1	100	100	100
<i>Percina macrolepida</i> Bigscale Logperch	3	3	100	300	60

*The full extent of the viable *Gila pandora* population present in this area includes two other conservation areas: El Rito Creek and Rio Agua Negra.

Middle Pecos River (cont'd)

TARGET OCCURRENCES DETERMINED TO BE VIABLE

Aquatic Ecological Systems

(Pec_4_03) Medium perennial rivers in Arizona-New Mexico Mountains and Rocky Mountains foothill sandstone and limestone flowing to shale and alluvium

1*	2	50	100	N/A
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(Pec_5_01) Large perennial rivers of the Southern Shortgrass Prairie and Chihuahuan Desert with headwaters in the Southern Rocky Mountains and Arizona-New Mexico Mountains

1	1	100	100	N/A
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*The full extent of this system occurrence includes one other conservation area: Upper Pecos River.

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

	<i>Number This Area</i>	<i>Viability Rank</i>
Fishes		
<i>Gila pandora</i> Rio Grande Chub	1	Unknown
<i>Percina macrolepida</i> Bigscale Logperch	1	Unknown

Mora River

CA Type: Aquatic
Map #: C10
State: New Mexico

Ecological Drainage Unit: Canadian River

KNOWN THREATS (with Severity Score=3)

Lack of Comprehensive Water Strategy

Note: The scope of the conservation area was changed after the threats assessment. The Mora River mainstem was originally part of a larger conservation area (called Mora River) that also included Coyote Creek, Mora Creek and Sapello River. The Mora River mainstem and Coyote Creek are now each represented in separate conservation areas, and Mora Creek and Sapello River are no longer part of any conservation area.

PROTECTED LANDS

IN THE RIPARIAN BUFFER ZONE:

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
FEDERAL	242.47 (3.88)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
3	242.47 (3.88)

Total Protected: 242.47 hectares, 3.88% of the riparian buffer [Size of riparian buffer zone=6,242 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
Aquatic Ecological Systems					
(Can_3_18) Small perennial rivers in Southern Shortgrass Prairie sandstone and shale with headwaters in Southern Rocky Mountain limestone and granite	1	1	100	100	N/A
(Can_4_03) Medium perennial rivers in Arizona-New Mexico Mountains and Rocky Mountains foothill sandstone and limestone flowing to shale and alluvium	1	3	33	100	N/A

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

Mulberry Creek

CA Type: Provisional Aquatic
Map #: U37
State: Texas

Ecological Drainage Unit: Upper Red River

KNOWN THREATS (with Severity Score=3)

Conversion to Agriculture
Inappropriate Grazing Practices
Livestock Production Practices
Ownership Fragmentation of Large Ranches

PROTECTED LANDS

None

[Size of riparian buffer zone=4,035 hectares; size of watershed=82,513 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
Aquatic Ecological Systems					
(Red_2_38) Perennial moderate gradient creeks in recharge sand and redbed shale along the Canadian River breaks and escarpment breaks	1	1	100	0	N/A
(Red_3_08) Small intermittent rivers in central Southern Shortgrass Prairie redbed shale and sand	1	2	50	0	N/A

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

North Croton Creek

CA Type: Provisional Aquatic
Map #: B55
State: Texas

Ecological Drainage Unit: Brazos River – Prairie

KNOWN THREATS (with Severity Score=3)

Conversion to Agriculture
Inappropriate Grazing Practices

PROTECTED LANDS

None

[Size of riparian buffer zone=3,091 hectares; size of watershed=70,805 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
Aquatic Ecological Systems (Bra_2_39) Perennial and intermittent moderate and low gradient streams in evaporite-rich areas of the central Southern Shortgrass Prairie	1	1	100	0	N/A

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

KNOWN THREATS (with Severity Score=3)

- Groundwater Extraction/Manipulation
- Lack of Comprehensive Water Strategy
- Conversion to Agriculture
- Inappropriate Grazing Practices
- Residential Development
- Recreational Use
- Ownership Fragmentation of Large Ranches
- Transportation Infrastructure
- Commercial/Industrial Development
- Oil and Gas Development

PROTECTED LANDS

None

[Size of riparian buffer zone=1,542 hectares; size of watershed=13,689 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
Aquatic Ecological Systems					
(Bra_2_28) Intermittent low and moderate gradient streams in Ogallala Formation sand, sandstone, and caliche	1	1	100	100	N/A

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

North Wichita River

CA Type: Aquatic
 Map #: U41
 State: Texas

Ecological Drainage Unit: Upper Red River

KNOWN THREATS (with Severity Score=3)

- Conversion to Agriculture
- Inappropriate Grazing Practices
- Invasive Plants
- Ownership Fragmentation of Large Ranches

PROTECTED LANDS

None

[Size of riparian buffer zone=14,163 hectares; size of watershed=123,310 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
Aquatic Ecological Systems					
(Red_2_23) Mostly intermittent moderate and low gradient streams in central Southern Shortgrass Prairie redbed shale	1	1	100	100	N/A
(Red_2_39) Perennial and intermittent moderate and low gradient streams in evaporite-rich areas of the central Southern Shortgrass Prairie	1	1	100	100	N/A
(Red_3_08) Small intermittent rivers in central Southern Shortgrass Prairie redbed shale and sand	1	2	50	100	N/A
(Red_4_08) Medium perennial rivers in central and eastern Southern Shortgrass Prairie clay mud, redbed shale, and sandstone	1	1	100	100	N/A

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

	<i>Number This Area</i>	<i>Viability Rank</i>
Fishes		
<i>Notropis bairdi</i> Red River Shiner	1	Non-viable
<i>Notropis oxyrhynchus</i> Sharpnose Shiner	1	Unknown

Palo Pinto Creek

CA Type: Provisional Aquatic
Map #: B67
State: Texas

Ecological Drainage Unit: Brazos River – Prairie

KNOWN THREATS (with Severity Score=3)

Groundwater Extraction/Manipulation
Lack of Comprehensive Water Strategy
Conversion to Agriculture
Inappropriate Grazing Practices

PROTECTED LANDS

None

[Size of riparian buffer zone=3,407 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
Aquatic Ecological Systems					
(Bra_3_09) Small perennial rivers in eastern Southern Shortgrass Prairie clay mud, sandstone, and shale	1	1	100	0	N/A
(Bra_4_08) Medium perennial rivers in central and eastern Southern Shortgrass Prairie clay mud, redbed shale, and sandstone	1	1	100	0	N/A

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

Pease River

CA Type: Aquatic
Map #: U43
State: Texas

Ecological Drainage Unit: Upper Red River

KNOWN THREATS (with Severity Score=3)

No threats information is available. This conservation area was selected after the threats assessment was already completed.

PROTECTED LANDS

IN THE RIPARIAN BUFFER ZONE:

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
STATE	46.38 (0.53)
<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
3	46.38 (0.53)

Total Protected: 46.38 hectares, 0.53% of the riparian buffer zone [Size of riparian buffer zone=8,764 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
Aquatic Ecological Systems (Red_4_07) Medium perennial rivers in sandstone, shale, and alluvium with intermittent headwaters in Ogallala Formation sand	1	2	50	100	N/A

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

Pecos River Headwaters

CA Type: Aquatic
 Map #: UP20
 State: New Mexico

Ecological Drainage Unit: Upper Pecos River

KNOWN THREATS (with Severity Score=3)

Lack of Comprehensive Water Strategy

PROTECTED LANDS

IN THE RIPARIAN BUFFER ZONE:

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
STATE	124.93 (5.12)
FEDERAL	1,907.50 (78.25)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
2	1,357.26 (55.68)
3	675.16 (27.70)

Total Protected: 2,032.42 hectares, 83.37% of the riparian buffer zone [Size of riparian buffer zone=2,438 hectares]

IN THE WATERSHED:

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
STATE	449.16 (0.77)
FEDERAL	54,625.29 (93.21)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
2	39,920.27 (68.12)
3	15,154.18 (25.86)

Total Protected: 55,074.45 hectares, 93.97% of the watershed [Size of watershed=58,607 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
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Aquatic Ecological Systems

(Pec_2_04) Perennial high and moderate gradient tributaries flowing from Southern Rocky Mountain foothill limestone and granite to Southern Shortgrass Prairie sandstone and shale

1	3	33	100	N/A
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Pecos River Headwaters (cont'd)

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

	<i>Number This Area</i>	<i>Viability Rank</i>
Fishes		
<i>Gila pandora</i>	1	Unknown
Rio Grande Chub		

Ponil Creek

CA Type: Aquatic
 Map #: C6
 State: New Mexico

Ecological Drainage Unit: Canadian River

KNOWN THREATS (with Severity Score=3)

Lack of Comprehensive Water Strategy

Note: The scope of the conservation area was changed after the threats assessment. Ponil Creek was originally part of a larger conservation area (called Cimarron River) that included Cimarron Creek and Rayado Creek, as well as the Cimarron River mainstem. Ponil Creek, Rayado Creek and the Cimarron River mainstem are currently each represented in separate conservation areas, and Cimarron Creek is not part of any conservation area.

PROTECTED LANDS

IN THE RIPARIAN BUFFER ZONE:

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
PRIVATE	1169.70 (43.21)
STATE	91.58 (3.38)
FEDERAL	787.79 (29.11)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
2	428.38 (15.83)
3	1,620.69 (59.88)

Total Protected: 2,049.07 hectares, 75.70% of the riparian buffer zone [Size of riparian buffer zone=2,707 hectares]

IN THE WATERSHED:

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
PRIVATE	22,396.11 (37.19)
STATE	2,264.75 (3.76)
FEDERAL	22,798.22 (37.86)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
2	10,881.16 (18.07)
3	36,577.93 (60.74)

Total Protected: 47,459.09 hectares, 78.81% of the watershed [Size of watershed=60,220 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
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Aquatic Ecological Systems

(Can_2_35) Perennial high and moderate gradient tributaries in Southern Rocky Mountain foothill sandstone and moderately calcareous rock

1	1	100	100	N/A
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Ponil Creek (cont'd)

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

Prairie Dog Town Fork Red River

CA Type: Aquatic
 Map #: U40
 State: Oklahoma, Texas

Ecological Drainage Unit: Upper Red River

KNOWN THREATS (with Severity Score=3)

Invasive Plants

PROTECTED LANDS

None

[Size of riparian buffer zone=19,733 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
Fishes					
<i>Notropis bairdi</i> Red River Shiner	1	3	33	11	11
Aquatic Ecological Systems					
(Red_4_07) Medium perennial rivers in sandstone, shale, and alluvium with intermittent headwaters in Ogallala Formation sand	1	2	50	100	N/A

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

	<i>Number This Area</i>	<i>Viability Rank</i>
Fishes		
<i>Phenacobius mirabilis</i> Suckermouth Minnow	1	Non-viable

Rayado Creek

CA Type: Aquatic
 Map #: C8
 State: New Mexico

Ecological Drainage Unit: Canadian River

KNOWN THREATS (with Severity Score=3)

Lack of Comprehensive Water Strategy

Note: The scope of the conservation area was changed after the threats assessment. Rayado Creek was originally part of a larger conservation area (called Cimarron River) that included Cimarron Creek and Ponil Creek, as well as the Cimarron River mainstem. Rayado Creek, Ponil Creek and the Cimarron River mainstem are currently each represented in separate conservation areas, and Cimarron Creek is not part of any conservation area.

PROTECTED LANDS

IN THE RIPARIAN BUFFER ZONE:

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
PRIVATE	612.48 (28.56)
STATE	1.95 (0.09)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
2	1.95 (0.09)
3	612.48 (28.56)

Total Protected: 614.43 hectares, 28.65% of the riparian buffer zone [Size of riparian buffer zone=2,144 hectares]

IN THE WATERSHED:

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
PRIVATE	20,103.78 (37.23)
STATE	179.59 (0.33)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
2	179.59 (0.33)
3	20,103.78 (37.23)

Total Protected: 20,283.37 hectares, 37.56% of the watershed [Size of watershed=53,999 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
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Aquatic Ecological Systems

(Can_2_36) Perennial high and moderate gradient tributaries in Southern Rocky Mountain foothill mafic rock, sandstone, and moderately calcareous rock

1	1	100	100	N/A
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TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

Red River

CA Type: Aquatic
 Map #: U44
 State: Oklahoma, Texas

Ecological Drainage Unit: Upper Red River

KNOWN THREATS (with Severity Score=3)

Invasive Plants

PROTECTED LANDS

IN THE RIPARIAN BUFFER ZONE:

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
STATE	149.12 (0.34)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
2	149.12 (0.34)

Total Protected: 149.12 hectares, 0.34% of the riparian buffer zone [Size of riparian buffer zone=43,942 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
Fishes					
<i>Notropis bairdi</i> Red River Shiner	2	3	67	22	22
Aquatic Ecological Systems					
(Red_5_03) Large perennial rivers of the Southern Shortgrass Prairie	1	1	100	100	N/A

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

	<i>Number This Area</i>	<i>Viability Rank</i>
Fishes		
<i>Notropis bairdi</i> Red River Shiner	1	Non-viable
<i>Percina macrolepida</i> Bigscale Logperch	1	Non-viable
<i>Phenacobius mirabilis</i> Suckermouth Minnow	1	Non-viable

Red River (Colorado)

CA Type: Provisional Aquatic
Map #: CE78
State: Texas

Ecological Drainage Unit: Colorado River – Edwards Plateau

KNOWN THREATS (with Severity Score=3)

Groundwater Extraction/Manipulation
Lack of Comprehensive Water Strategy
Conversion to Agriculture
Inappropriate Grazing Practices
Ownership Fragmentation of Large Ranches

PROTECTED LANDS

None

[Size of riparian buffer zone=503 hectares; size of watershed=18,378 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
Aquatic Ecological Systems					
(Col_2_29) Perennial moderate gradient streams in aquifer sand along the Southern Shortgrass Prairie and Edwards Plateau margins	1	1	100	0	N/A

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

Revuelto Creek

CA Type: Aquatic
Map #: C15
State: New Mexico

Ecological Drainage Unit: Canadian River

KNOWN THREATS (with Severity Score=3)

Lack of Comprehensive Water Strategy
Invasive Plants

Note: The scope of the conservation area was changed after the threats assessment. Revuelto Creek was originally part of a larger conservation area (called Revuelto Creek) that also included Plaza Largo Creek, Barranca Creek and Charo Creek. Charo Creek and Revuelto Creek are now each separate conservation areas, and Plaza Largo Creek and Barranca Creek are no longer part of any conservation area.

PROTECTED LANDS

IN THE RIPARIAN BUFFER ZONE:

Ownership Type	# of Hectares Protected (Percent Protected)
FEDERAL	978.74 (25.16)

Gap Category	# of Hectares Protected (Percent Protected)
3	978.74 (25.16)

Total Protected: 978.74 hectares, 25.16% of the riparian buffer zone [Size of riparian buffer zone=3,890 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
Aquatic Ecological Systems					
(Can_3_20) Small intermittent rivers in Quaternary piedmont alluvium and western Southern Shortgrass Prairie shale	1	2	50	100	N/A
(Can_4_08) Medium perennial rivers in central and eastern Southern Shortgrass Prairie clay mud, redbed shale, and sandstone	1	1	100	100	N/A

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

Rio Agua Negra

CA Type: Provisional Aquatic
Map #: UP25
State: New Mexico

Ecological Drainage Unit: Upper Pecos River

KNOWN THREATS (with Severity Score=3)

Lack of Comprehensive Water Strategy
Invasive Plants

PROTECTED LANDS

None

[Size of riparian buffer zone=425 hectares; size of watershed=2,833 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
Fishes					
<i>Gila pandora</i>	1*	5	20	0	0
Rio Grande Chub					

* The full extent of the *Gila pandora* population present in this area includes two other conservation areas: El Rito Creek and Middle Pecos River.

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

Rio Hondo

CA Type: Aquatic
 Map #: UP33
 State: New Mexico

Ecological Drainage Unit: Upper Pecos River

KNOWN THREATS (with Severity Score=3)

Lack of Comprehensive Water Strategy
 Invasive Plants
 Invasive Non-native Animals

PROTECTED LANDS

IN THE RIPARIAN BUFFER ZONE:

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
FEDERAL	689.38 (7.95)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
3	689.38 (7.95)

Total Protected: 689.38 hectares, 7.95% of the riparian buffer zone [Size of riparian buffer zone=8,671 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
Fishes					
<i>Gila pandora</i>	1	5	20	20	20
Rio Grande Chub					
Aquatic Ecological Systems					
(Pec_3_07) Small perennial rivers in Arizona-New Mexico Mountain foothill granite, sandstone and limestone	2	2	100	200	N/A
(Pec_4_01) Medium intermittent rivers in Arizona-New Mexico Mountain foothill and Southern Shortgrass Prairie limestone and alluvium	1	4	25	100	N/A

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

Rio Penasco

CA Type: Aquatic
 Map #: UP34
 State: New Mexico

Ecological Drainage Unit: Upper Pecos River

KNOWN THREATS (with Severity Score=3)

Lack of Comprehensive Water Strategy
 Invasive Plants
 Invasive Non-native Animals

PROTECTED LANDS

IN THE RIPARIAN BUFFER ZONE:

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
FEDERAL	573.78 (7.48)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
3	573.78 (7.48)

Total Protected: 573.78 hectares, 7.48% of the riparian buffer zone [Size of riparian buffer zone=7,676 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
Fishes					
<i>Gila pandora</i>	1	5	20	20	20
Rio Grande Chub					
Aquatic Ecological Systems					
(Pec_3_01) Small intermittent rivers in Arizona-New Mexico Mountain foothill and Southern Shortgrass Prairie limestone	1	4	25	100	N/A
(Pec_4_01) Medium intermittent rivers in Arizona-New Mexico Mountain foothill and Southern Shortgrass Prairie limestone and alluvium	1	4	25	100	N/A

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

Rocky Creek

CA Type: Provisional Aquatic
 Map #: B65
 State: Texas

Ecological Drainage Unit: Brazos River – Prairie

KNOWN THREATS (with Severity Score=3)

- Groundwater Extraction/Manipulation
- Lack of Comprehensive Water Strategy
- Conversion to Agriculture
- Inappropriate Grazing Practices

PROTECTED LANDS

IN THE RIPARIAN BUFFER ZONE:

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
PRIVATE	10.87 (0.63)
STATE	251.14 (14.65)
FEDERAL	60.38 (3.52)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
2	71.25 (4.16)
3	251.13 (14.65)

Total Protected: 322.39 hectares, 18.81 % of the riparian buffer [Size of riparian buffer zone=1,714 hectares]

IN THE WATERSHED:

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
PRIVATE	303.14 (0.74)
STATE	1,150.41 (2.81)
FEDERAL	1,591.02 (3.88)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
2	1,894.15 (4.62)
3	1,150.41 (2.81)

Total Protected: 3044.56 hectares, 7.43% of the watershed [Size of watershed=40,973 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
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Aquatic Ecological Systems

(Bra_2_33) Perennial moderate and low gradient creeks on the Edwards Plateau margin in gravel, conglomerate, sand, and marl	1	1	100	0	N/A
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TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

Rough Creek

CA Type: Provisional Aquatic
Map #: B57
State: Texas

Ecological Drainage Unit: Brazos River – Prairie

KNOWN THREATS (with Severity Score=3)

Conversion to Agriculture
Inappropriate Grazing Practices

PROTECTED LANDS

None

[Size of riparian buffer zone=1,808 hectares; size of watershed=55,754 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
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Aquatic Ecological Systems

(Bra_2_23) Mostly intermittent moderate and low gradient streams in central Southern Shortgrass Prairie redbed shale

1	1	100	0	N/A
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TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

Salado Creek

CA Type: Provisional Aquatic
 Map #: UP26
 State: New Mexico

Ecological Drainage Unit: Upper Pecos River

KNOWN THREATS (with Severity Score=3)

Lack of Comprehensive Water Strategy
 Invasive Plants

PROTECTED LANDS

IN THE RIPARIAN BUFFER ZONE:

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
FEDERAL	6.60 (1.25)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
3	6.60 (1.25)

Total Protected: 6.60 hectares, 1.25% of the riparian buffer [Size of riparian buffer zone=526 hectares]

IN THE WATERSHED:

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
FEDERAL	3,582.80 (1.98)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
3	3,582.80 (1.98)

Total Protected: 3,582.80 hectares, 1.98% of the watershed [Size of watershed=181,327 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
Aquatic Ecological Systems (Pec_2_10) Intermittent high and moderate gradient streams in Southern Shortgrass Prairie Quaternary piedmont alluvium	1	1	100	0	N/A

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

Salt Creek (Pecos)

CA Type: Provisional Aquatic
 Map #: UP32
 State: New Mexico

Ecological Drainage Unit: Upper Pecos River

KNOWN THREATS (with Severity Score=3)

Lack of Comprehensive Water Strategy
 Invasive Plants

PROTECTED LANDS

IN THE RIPARIAN BUFFER ZONE:

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
FEDERAL	1,926.73 (48.51)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
1	528.34 (13.30)
2	522.68 (13.16)
3	875.71 (22.05)

Total Protected: 1,926.73 hectares, 48.51% of the riparian buffer [Size of riparian buffer zone=3,972 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
Aquatic Ecological Systems					
(Pec_3_01) Small intermittent rivers in Arizona-New Mexico Mountain foothill and Southern Shortgrass Prairie limestone	1	4	25	0	N/A
(Pec_4_01) Medium intermittent rivers in Arizona-New Mexico Mountain foothill and Southern Shortgrass Prairie limestone and alluvium	1	4	25	0	N/A

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

Salt Fork Brazos River

CA Type: Aquatic
 Map #: B53
 State: Texas

Ecological Drainage Unit: Brazos River – Prairie

KNOWN THREATS (with Severity Score=3)

Lack of Comprehensive Water Strategy
 Conversion to Agriculture
 Inappropriate Grazing Practices
 Ownership Fragmentation of Large Ranches

PROTECTED LANDS

None

[Size of riparian buffer zone=16,881 hectares; size of watershed=119,337 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
Fishes					
<i>Notropis buccula</i> Smalleye Shiner	1*	1	100	11	11
<i>Notropis oxyrhynchus</i> Sharpnose Shiner	1*	1	100	50	20

*The full extent of this population includes two other conservation areas: Double Mountain Fork Brazos River and Upper Brazos River.

Aquatic Ecological Systems

(Bra_2_38) Perennial moderate gradient creeks in recharge sand and redbed shale along the Canadian River breaks and escarpment breaks

1	1	100	100	N/A
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(Bra_3_06) Small perennial rivers in sandstone, shale, and alluvium with intermittent headwaters in Ogallala Formation sand

1	2	50	100	N/A
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(Bra_4_07) Medium perennial rivers in sandstone, shale, and alluvium with intermittent headwaters in Ogallala Formation sand

1	3	33	100	N/A
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TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

Salt Fork Red River

CA Type: Provisional Aquatic
Map #: U39
State: Texas

Ecological Drainage Unit: Upper Red River

KNOWN THREATS (with Severity Score=3)

Lack of Comprehensive Water Strategy
Conversion to Agriculture
Livestock Production Practices
Invasive Plants
Ownership Fragmentation of Large Ranches

PROTECTED LANDS

None

[Size of riparian buffer zone=1,607 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
Aquatic Ecological Systems (Red_3_21) Small perennial rivers in Ogallala Formation sand with large amounts of evaporite	1	1	100	0	N/A

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

Taiban Creek

CA Type: Provisional Aquatic
 Map #: UP28
 State: New Mexico

Ecological Drainage Unit: Upper Pecos River

KNOWN THREATS (with Severity Score=3)

Lack of Comprehensive Water Strategy
 Invasive Plants

PROTECTED LANDS

IN THE RIPARIAN BUFFER ZONE:

None

[Size of riparian buffer zone=3,130 hectares]

IN THE WATERSHED:

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
FEDERAL	18.54 (0.01)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
3	18.54 (0.01)

Total Protected: 18.54 hectares, 0.01% of the watershed [Size of watershed=176,902 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
Aquatic Ecological Systems					
(Pec_2_11) Intermittent moderate gradient streams draining the western Llano Estacado to the Pecos River	1	1	100	0	N/A
(Pec_3_06) Small perennial rivers in sandstone, shale, and alluvium with intermittent headwaters in Ogallala Formation sand	1	1	100	0	N/A

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

Tecolote Creek

CA Type: Provisional Aquatic
 Map #: UP22
 State: New Mexico

Ecological Drainage Unit: Upper Pecos River

KNOWN THREATS (with Severity Score=3)

Lack of Comprehensive Water Strategy
 Invasive Plants

PROTECTED LANDS

IN THE RIPARIAN BUFFER ZONE:

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
FEDERAL	430.38 (13.14)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
3	430.38 (13.14)

Total Protected: 430.38 hectares, 13.14% of the riparian buffer [Size of riparian buffer zone=3,274 hectares]

IN THE WATERSHED:

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
FEDERAL	8,168.58 (18.79)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
2	9.81 (0.02)
3	8,158.76 (18.77)

Total Protected: 8,168.58 hectares, 18.79% of the watershed [Size of watershed=43,471 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
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Aquatic Ecological Systems

(Pec_2_04) Perennial high and moderate gradient tributaries flowing from Southern Rocky Mountain foothill limestone and granite to Southern Shortgrass Prairie sandstone and shale

1	3	33	0	N/A
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(Pec_3_18) Small perennial rivers in Southern Shortgrass Prairie sandstone and shale with headwaters in Southern Rocky Mountain limestone and granite

1	2	50	0	N/A
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Tecolote Creek (cont'd)

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

	<i>Number This Area</i>	<i>Viability Rank</i>
Fishes		
<i>Gila pandora</i>	1	Unknown
Rio Grande Chub		

Tule Creek

CA Type: Provisional Aquatic

Map #: U35

State: Texas

Ecological Drainage Unit: Upper Red River

KNOWN THREATS (with Severity Score=3)

- Lack of Comprehensive Water Strategy
- Conversion to Agriculture
- Inappropriate Grazing Practices
- Ownership Fragmentation of Large Ranches

PROTECTED LANDS

None

[Size of riparian buffer zone=2,438 hectares; size of watershed=275,346 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
Aquatic Ecological Systems					
(Red_2_28) Intermittent low and moderate gradient streams in Ogallala Formation sand, sandstone, and caliche	1	1	100	0	N/A

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

Turkey Creek

CA Type: Provisional Aquatic
Map #: B64
State: Texas

Ecological Drainage Unit: Brazos River – Prairie

KNOWN THREATS (with Severity Score=3)

- Groundwater Extraction/Manipulation
- Lack of Comprehensive Water Strategy
- Conversion to Agriculture
- Inappropriate Grazing Practices

PROTECTED LANDS

None

[Size of riparian buffer zone=588 hectares; size of watershed=13,258 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
Aquatic Ecological Systems					
(Bra_2_24) Mostly intermittent moderate and low gradient streams in eastern Southern Shortgrass Prairie clay mud, sandstone, and shale	1	1	100	0	N/A

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

Upper Brazos River

CA Type: Aquatic
 Map #: B62
 State: Texas

Ecological Drainage Unit: Brazos River – Prairie

KNOWN THREATS (with Severity Score=3)

- Conversion to Agriculture
- Inappropriate Grazing Practices
- Invasive Plants
- Ownership Fragmentation of Large Ranches

PROTECTED LANDS

None

[Size of riparian buffer zone=13,368 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
Fishes					
<i>Notropis buccula</i> Smalleye Shiner	1*	1	100	11	11
<i>Notropis oxyrhynchus</i> Sharpnose Shiner	1*	1	100	50	20

*The full extent of this population includes two other conservation areas: Double Mountain Fork Brazos River and Salt Fork Brazos River.

Aquatic Ecological Systems

(Bra_4_07) Medium perennial rivers in sandstone, shale, and alluvium with intermittent headwaters in Ogallala Formation sand

1	3	33	100	N/A
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TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

Upper Canadian River

CA Type: Aquatic
 Map #: C4
 State: New Mexico

Ecological Drainage Unit: Canadian River

KNOWN THREATS (with Severity Score=3)

Lack of Comprehensive Water Strategy

Note: The scope of the conservation area was changed after the threats assessment. The original conservation area included Una de Gato, Blosser Arroyo, Crow Creek, Chicorica Creek, as well as the Upper Canadian mainstem. The conservation area now only includes the Upper Canadian River mainstem; Una de Gato, Blosser Arroyo, Crow Creek, Chicorica Creek are no longer part of any conservation area.

PROTECTED LANDS

IN THE RIPARIAN BUFFER ZONE:

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
PRIVATE	67.99 (1.41)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
2	67.99 (1.41)

Total Protected: 67.99 hectares, 1.41% of the riparian buffer zone [Size of riparian buffer zone=4,834 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
Fishes					
<i>Phenacobius mirabilis</i> Suckermouth Minnow	1	2	50	33	20
Aquatic Ecological Systems					
(Can_3_19) Small perennial rivers in Southern Shortgrass Prairie calcareous sandstone with headwaters in Southern Rocky Mountain sandstone	1	3	33	100	N/A
(Can_4_03) Medium perennial rivers in Arizona-New Mexico Mountains and Rocky Mountains foothill sandstone and limestone flowing to shale and alluvium	1	3	33	100	N/A

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

Upper Colorado River

CA Type: Aquatic
 Map #: CE76
 State: Texas

Ecological Drainage Unit: Colorado River – Edwards Plateau, Colorado River – Prairie

KNOWN THREATS (with Severity Score=3)

- Groundwater Extraction/Manipulation
- Lack of Comprehensive Water Strategy
- Conversion to Agriculture
- Inappropriate Grazing Practices
- Ownership Fragmentation of Large Ranches

PROTECTED LANDS

IN THE RIPARIAN BUFFER ZONE:

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
STATE	452.86 (0.78)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
3	452.86 (0.78)

Total Protected: 452.86 hectares, 0.78% of the riparian buffer zone [Size of riparian buffer zone=58,258 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
Fishes					
<i>Nerodia paucimaculata</i> Concho Water Snake	1	2	50	11	11
Aquatic Ecological Systems					
(Col_3_06) Small perennial rivers in sandstone, shale, and alluvium with intermittent headwaters in Ogallala Formation sand	1	2	50	100	N/A
(Col_4_07) Medium perennial rivers in sandstone, shale, and alluvium with intermittent headwaters in Ogallala Formation sand	1	1	100	100	N/A

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

	<i>Number This Area</i>	<i>Viability Rank</i>
Fishes		
<i>Micropterus treculi</i> Guadalupe Bass	1	Non-viable
<i>Nerodia paucimaculata</i> Concho Water Snake	1	Unknown

Upper Pecos River

CA Type: Aquatic
 Map #: UP21
 State: New Mexico

Ecological Drainage Unit: Upper Pecos River

KNOWN THREATS (with Severity Score=3)

Lack of Comprehensive Water Strategy
 Invasive Plants

PROTECTED LANDS

IN THE RIPARIAN BUFFER ZONE:

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
STATE	87.74 (1.15)
FEDERAL	661.12 (8.64)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
2	190.21 (2.49)
3	558.65 (7.30)

Total Protected: 748.86 hectares, 9.79% of the riparian buffer zone [Size of riparian buffer zone=7,653 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
Fishes					
<i>Gila pandora</i>	1	5	20	20	20
Rio Grande Chub					
Aquatic Ecological Systems					
(Pec_3_18) Small perennial rivers in Southern Shortgrass Prairie sandstone and shale with headwaters in Southern Rocky Mountain limestone and granite	1	2	50	100	N/A
(Pec_4_03) Medium perennial rivers in Arizona-New Mexico Mountains and Rocky Mountains foothill sandstone and limestone flowing to shale and alluvium	1*	2	50	100	N/A

*The full extent of this system occurrence includes one other conservation area: Middle Pecos River.

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

Upper Prairie Dog Town Fork Red River

CA Type: Provisional Aquatic

Map #: U36

State: Texas

Ecological Drainage Unit: Upper Red River

KNOWN THREATS (with Severity Score=3)

Lack of Comprehensive Water Strategy
 Conversion to Agriculture
 Invasive Plants

PROTECTED LANDS

IN THE RIPARIAN BUFFER ZONE:

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
STATE	521.59 (9.27)
FEDERAL	568.15 (10.10)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
2	568.15 (10.10)
3	521.59 (9.27)

Total Protected: 1,089.75 hectares, 19.38% of the riparian buffer zone [Size of riparian buffer zone=5,624 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
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Aquatic Ecological Systems

(Red_3_06) Small perennial rivers in sandstone, shale, and alluvium with intermittent headwaters in Ogallala Formation sand

1	1	100	0	N/A
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TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

Ute Creek

CA Type: Provisional Aquatic
 Map #: C13
 State: New Mexico

Ecological Drainage Unit: Canadian River

KNOWN THREATS (with Severity Score=3)

Lack of Comprehensive Water Strategy
 Invasive Plants

PROTECTED LANDS

IN THE RIPARIAN BUFFER ZONE:

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
FEDERAL	119.00 (1.84)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
3	119.00 (1.84)

Total Protected: 119.00 hectares, 1.84% of the riparian buffer zone [Size of riparian buffer zone=6,469 hectares]

IN THE WATERSHED:

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
FEDERAL	7,526.98 (6.82)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
3	7,526.98 (6.82)

Total Protected: 7,526.98 hectares, 6.82% of the watershed [Size of watershed=110,286 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
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Aquatic Ecological Systems

(Can_2_15) Intermittent moderate and high gradient streams in western Southern Shortgrass Prairie sandstone/sand	1	1	100	0	N/A
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(Can_4_11) Medium intermittent rivers in western Southern Shortgrass Prairie sandstone/sand with headwaters in mafic rock	1	1	100	0	N/A
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TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

Valley Creek

CA Type: Aquatic
Map #: CE74
State: Texas

Ecological Drainage Unit: Colorado River – Edwards Plateau

KNOWN THREATS (with Severity Score=3)

Groundwater Extraction/Manipulation
Lack of Comprehensive Water Strategy
Conversion to Agriculture
Inappropriate Grazing Practices

PROTECTED LANDS

None

[Size of riparian buffer zone=2,386 hectares; size of watershed=59,693 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
Aquatic Ecological Systems (Col_2_26) Mostly intermittent moderate and low gradient streams in eastern Southern Shortgrass Prairie shale and sandstone/ sand with heavy limestone, marl, and caliche components	1	2	50	100	N/A

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

Vermejo River

CA Type: Provisional Aquatic
Map #: C5
State: New Mexico

Ecological Drainage Unit: Canadian River

KNOWN THREATS (with Severity Score=3)

Lack of Comprehensive Water Strategy

PROTECTED LANDS

IN THE RIPARIAN BUFFER ZONE:

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
PRIVATE	941.92 (37.39)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
2	941.92 (37.39)

Total Protected: 941.92 hectares, 37.39% of the riparian buffer zone [Size of riparian buffer zone=2,519 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
Aquatic Ecological Systems (Can_3_19) Small perennial rivers in Southern Shortgrass Prairie calcareous sandstone with headwaters in Southern Rocky Mountain sandstone	1	3	33	0	N/A

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

West Fork Trinity River

CA Type: Provisional Aquatic
 Map #: UT51
 State: Texas

Ecological Drainage Unit: Upper Trinity

KNOWN THREATS (with Severity Score=3)

Groundwater Extraction/Manipulation
 Lack of Comprehensive Water Strategy
 Conversion to Agriculture
 Inappropriate Grazing Practices

PROTECTED LANDS

IN THE RIPARIAN BUFFER ZONE:

<i>Ownership Type</i>	<i># of Hectares Protected (Percent Protected)</i>
PRIVATE	42.00 (0.31)
STATE	83.65 (0.62)

<i>Gap Category</i>	<i># of Hectares Protected (Percent Protected)</i>
3	125.65 (0.93)

Total Protected: 125.65 hectares, 0.93% of the riparian buffer zone [Size of riparian buffer zone=13,555 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
Aquatic Ecological Systems					
(Tri_3_09) Small perennial rivers in eastern Southern Shortgrass Prairie clay mud, sandstone, and shale	1	1	100	0	N/A
(Tri_4_09) Medium perennial rivers in recharge sand and Blackland Prairie limey mud with headwaters in Southern Shortgrass Prairie	1	1	100	0	N/A

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

West Fork Trinity River Tributary

CA Type: Provisional Aquatic
Map #: UT49
State: Texas

Ecological Drainage Unit: Upper Trinity

KNOWN THREATS (with Severity Score=3)

Groundwater Extraction/Manipulation
Lack of Comprehensive Water Strategy
Conversion to Agriculture
Inappropriate Grazing Practices

PROTECTED LANDS

None

[Size of riparian buffer zone=133 hectares; size of watershed=2,794 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
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Aquatic Ecological Systems

(Tri_2_26) Mostly intermittent moderate and low gradient streams in eastern Southern Shortgrass Prairie shale and sandstone/sand with heavy limestone, marl, and caliche components

1	1	100	0	N/A
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TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

White Deer Creek

CA Type: Aquatic
Map #: C18
State: Texas

Ecological Drainage Unit: Canadian River

KNOWN THREATS (with Severity Score=3)

Groundwater Extraction/Manipulation
Lack of Comprehensive Water Strategy
Conversion to Agriculture
Inappropriate Grazing Practices

PROTECTED LANDS

None

[Size of riparian buffer zone=877 hectares; size of watershed=55,462 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
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Aquatic Ecological Systems

(Can_2_28) Intermittent low and moderate gradient streams in Ogallala Formation sand, sandstone, and caliche

1	1	100	100	N/A
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TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

Whitefish Creek

CA Type: Provisional Aquatic

Map #: U38

State: Texas

Ecological Drainage Unit: Upper Red River

KNOWN THREATS (with Severity Score=3)

Lack of Comprehensive Water Strategy
Conversion to Agriculture
Inappropriate Grazing Practices
Ownership Fragmentation of Large Ranches

PROTECTED LANDS

None

[Size of riparian buffer zone=1,210 hectares; size of watershed=30,529 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
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Aquatic Ecological Systems

(Red_2_37) Perennial moderate gradient creeks in recharge sand along the Canadian River breaks and escarpment breaks

1	1	100	0	N/A
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TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

Yeso Creek

CA Type: Provisional Aquatic
Map #: UP29
State: New Mexico

Ecological Drainage Unit: Upper Pecos River

KNOWN THREATS (with Severity Score=3)

Lack of Comprehensive Water Strategy
Invasive Plants

PROTECTED LANDS

None

[Size of riparian buffer zone=330 hectares]

TARGET OCCURRENCES DETERMINED TO BE VIABLE

	<i>Number This Area</i>	<i>Number All Areas</i>	<i>Percent This Area</i>	<i>Percent EDU Goal Contribution</i>	<i>Percent Overall Goal Contribution</i>
Aquatic Ecological Systems (Pec_3_20) Small intermittent rivers in Quaternary piedmont alluvium and western Southern Shortgrass Prairie shale	1	1	100	0	N/A

TARGET OCCURRENCES DETERMINED TO BE NON-VIABLE OR OF UNKNOWN VIABILITY

None

Appendix I. Survey of Prairie Dog Colonies in the Terrestrial Conservation Areas in Texas

Assessment only includes conservation areas within Texas or the portions of conservation areas that occur within Texas. Data is the result of a review of the conservation areas by Texas Parks and Wildlife Department in August 2004, relative to ongoing work on a prairie dog inventory for Texas.

¹Active colony(s) assigned to this conservation area have boundaries overlapping into adjacent conservation areas or outside of any conservation area.

²No data collected in the majority of this conservation area.

³Active colony(s) partially within this area are assigned to an adjoining conservation area.

Conservation Area Name (MAP ID)	Active Colony Size>1000 acres	Active Colony Size>250 acres	Active Colony Size<250 acres	Inactive Colony	# of Colonies Not Assessed	% of Colonies Assessed
Big Lake (S67)	0	0	13	30	24	64%
Blackwater Draw ¹ (S51)	0	0	9	N/A ²	N/A ²	N/A ²
Canadian River East (CR47)	0	0	8	10	32	36%
Canyon Playas (NL50)	2	3	63	N/A ²	N/A ²	N/A ²
Central Matador WMA (W80)	0	0	0	0	0	N/A
Copper Breaks (W84)	0	0	0	0	0	N/A
Double Lakes (S63)	1	1	1	1	17	19%
Dutch Canyon (W74)	0	0	0	0	0	N/A
East of Matador (W79)	0	0	0	1	0	100%
Grulla NWR (S52)	0	0	0	0	1	0%
Harrold (W85)	0	0	0	0	0	N/A
Canadian River – Punta de Agua ¹ (CR42)	0	0	2	1	8	27%
Hulver (W77)	0	0	0	0	0	N/A
Johnson Draw (S66)	0	0	0	1	0	10%
Lake Meredith (CR43)	0	2	14	3	22	46%
Little Red River (W76)	0	0	0	0	0	N/A

Conservation Area Name (MAP ID)	Active Colony Size>1000 acres	Active Colony Size>250 acres	Active Colony Size<250 acres	Inactive Colony	# of Colonies Not Assessed	% of Colonies Assessed
Mescalero Caprock (S57)	0	0	1	3	1	80%
Middle Clear Fork of the Brazos River (MB89)	0	0	0	0	3	0%
Middle Water (C22)	0	0	6	2	19	30%
Milnesand ¹ (S55)	0	0	5	5	8	56%
Morita ¹ (S65)	0	0	2	2	0	100%
Mulberry Creek (W73)	0	0	0	2	1	67%
Muleshoe NWR ¹ (S53)	0	0	3	3	6	50%
North Fork Red River ¹ (W71)	0	0	7	6	12	52%
Northeast of Kirkland (W81)	0	0	0	0	0	N/A
Northeast Quanah (W82)	0	0	0	0	0	N/A
Packsaddle ³ (CR48)	0	0	0	0	0	N/A
Palo Duro Canyon (W75)	0	0	2	0	0	100%
Quitaque Creek (W78)	0	0	0	0	0	N/A
Red Deer Creek ¹ (CR45)	0	0	8	7	9	63%
Rita Blanca Alkaline Lakes (C21)	0	3	11	4	6	75%
Salt Fork Red River (W72)	0	0	1	3	1	80%
Sand Springs (CR39)	0	0	0	0	0	N/A
South of Quanah (W83)	0	0	0	1	0	100%
Tahoka Lake (S64)	0	0	0	0	0	N/A
Tramperos Creek Shortgrass (C20)	0	0	1	0	3	25%
Upper Washita River ³ (W68)	0	0	7	11	13	58%
Vega Playas ¹ (NL49)	0	0	16	16	22	59%
Wheeler Sandhills (W70)	0	0	2	10	9	57%
White Deer Creek (CR44)	0	0	10	4	28	33%
Winkler Sandhills (S62)	0	0	0	0	0	N/A
Wolf Creek (CR46)	0	0	15	12	22	55%

Appendix J3. Descriptions of the Threat Categories

Threat Category	Threat Description
Channelization of Rivers and Streams	Refers to the modification, usually the straightening out, of a stream channel, sometimes including the lining of the channel with concrete, in order to move water through the system more rapidly and efficiently in order to lessen local flood threat or to transmit water to reservoirs or delivery systems.
Dam Construction/Operation	Includes building of new dams or operating existing dams in ways that are deleterious to biodiversity. Generally refers to large, permanent dam structures, although the dam may be made of a variety of materials including concrete, rock or compacted soil.
Groundwater Extraction/Manipulation	Generally refers to groundwater pumping from wells, but could also refer to purposeful lowering of groundwater levels through construction of drainage canals.
Ditches, Dikes, and Diversions	Refers to taking water out of the stream channel for purposes of irrigation or water delivery.
Lack of Comprehensive Water Strategy	Focuses on the lack of regulation of water extraction for water ranching, and lack of adequate recognition that water use in the area is drawing on largely fossil water. Also need to consider interstate transfers and responsibilities.
Conversion to Agriculture	Refers specifically to the destruction of native habitat in creating new agricultural lands. Conversion may include problems related to water use or run-off, but these should be referred to under the appropriate “source of threat” section dealing with water and waste.
Inappropriate Grazing Practices	Production of livestock including cattle, sheep, goats, and other hoofed grazing animals in ways that are non-sustainable and are deleterious to the biodiversity of an area. May also include native species that are having major deleterious impacts on an area.
Crop Production Practices	Includes impacts associated with the operation of existing crop agriculture (as separate from conversion to agriculture), so may include runoff, erosion, pesticide or fertilizer discharge, etc. Problems associated with sedimentation of playas would fall under this threat.
Livestock Production Practices	Activities dealing with livestock production that are not related to grazing practices such as feedlot operation. Pork operations are of particular importance in portions of this ecoregion.
Inappropriate Fire Management	May refer to the loss of a natural fire regime through fire suppression or lack of fuels as well as to the inappropriate use of fire.
Single Species Management	Wildlife or vegetation management activities designed to manipulate populations of particular species or vegetation types (e.g., shrub control or supplemental feeding that maintains a game animal at an unnaturally high population level).

Threat Category	Threat Description
Excessive Harvest/Poaching/Eradication	May include both legally mandated exploitation that is unsustainable (e.g., permitted firewood gathering, fishing or hunting) as well as illegal activities such as poaching. In this ecoregion, this may pertain mainly to lesser prairie-chickens and prairie dogs.
Invasive Plants	Refers to species not native to an area that have been introduced, either purposefully or inadvertently. Does not usually refer to species that have expanded their ranges naturally, although it may include species that have expanded due to the activities of humans. Note, though, that juniper or mesquite invasion would not be included; although these are species native to this ecoregion which are expanding their ranges, they are not, in and of themselves, the SOURCE of a problem and are more properly addressed through the source (e.g., fire management). In this ecoregion, tamarisk and Russian olive are obvious examples.
Invasive Non-native Animals	Refers to species not native to an area that have been introduced, either purposefully or inadvertently. Does not usually refer to species that have expanded their ranges naturally, although it may include species that have expanded due to the activities of humans.
Parasites/Pathogens	For both plants and animals; may include problems such as bark beetle infestations, fungal diseases of trees, chytrid fungus in amphibians, whirling disease in fish, and plague in prairie dogs.
Residential Development	Direct conversion of habitat to housing and may also include indirect effects of the resulting population that cannot be dealt with through other threat sources listed.
Recreational Use	May include boating, camping and excessive trail use, but should not include hunting, fishing or recreational vehicles which are treated separately (Excessive Harvesting/Poaching, Recreational Vehicles (ORVs)).
Recreational Vehicles (ORVs)	Refers to Off Road Vehicles (ORV) or Off Highway Vehicles (OHV) which includes 4X4 trucks, dune-buggies, motorcycles, dune-buggies, etc. Does not refer to motor homes or travel trailers.
Ownership Fragmentation of Large Ranches	May impact the ability to effectively develop strategies to implement appropriate grazing and burning practices.
Transportation Infrastructure	Construction and/or operation of linear infrastructure facilities including roads, railroads and power lines. May include both large, hard-surfaced highways or small, local dirt roads as long as the impact to the biodiversity is significant.
Commercial/Industrial Development	Direct destruction of habitat to build commercial or industrial facilities.
Oil and Gas Development	Includes activities associated with searching for new oil or gas sources, installation of new wells, the activities and infrastructure associated with servicing wells and delivering oil and gas, the operating of wells and pipelines, as well as the problem posed by deteriorating sealed wells that may ultimately result in gas or oil infiltration into groundwater.

Threat Category	Threat Description
Windfarm Development	Includes activities associated with the development and maintenance of windfarms, including fragmentation of ecological systems by project footprints and infrastructure, and impacts in other ways to associated species. In addition, potential impacts to prairie-chickens and species using migratory pathways need to be considered.
Climate Change	May include the effects of changing temperature regimes, changes in rainfall, and the resultant effects on biotic systems. Includes both changes in amount and in seasonality of distribution, but it refers specifically to long-term changes in patterns of temperature and precipitation, not to cyclic changes brought about by natural patterns such as the Pacific Oscillation.

Appendix K1. Terrestrial Conservation Areas with Biodiversity Value Scores and Ranks

*These scores and ranks are also shown in the Excel workbook called "SSP Conservation Areas with Biodiversity Value Scores and Ranks"

*Ranks for Representation Value, Irreplaceability Value, and # of Targets are based on quartiles. **1=Highest quartile, 4=Lowest quartile**

Representation Value: Sum of the percentages of each terrestrial target's viable occurrences that are present in this conservation area relative to all the conservation areas. Methodology: For each target within a conservation area, we determined the number of viable occurrences present within the area, divided it by the number of viable occurrences present in all of the conservation areas, and converted the result to a percentage. These percentages were then summed for each target present in the conservation area to arrive at an overall representation value for that conservation area. Note: A target must have at least one viable occurrence in the conservation area to be counted as present in the conservation area.

Irreplaceability Value: Sum of the presence of terrestrial targets in this conservation area as compared to other conservation areas. Methodology: For each target, we determined the number of conservation areas in which the target occurs, and then calculated the inverse of that number, resulting in an index value. We then summed up index values for all targets present in a conservation area to arrive at an overall irreplaceability value score for that conservation area. Note: A target must have at least one viable occurrence in the conservation area to be counted as present in the conservation area.

of Targets: Total number of terrestrial species, communities and/or ecological systems targets present in this conservation area. Note: A target must have at least one viable occurrence in the conservation area to be counted as present in the conservation area.

of G1-G2/T1-T2 or Endemic Targets: Total number of terrestrial targets present in this conservation area that have a rank of G1 or G2, a rank of T1 or T2, and/or are endemic to the ecoregion. Note: A target must have at least one viable occurrence in the conservation area to be counted as present in the conservation area.

of Playas: Total number of "potential" playas present in this conservation area. Methodology: This information is derived from Ducks Unlimited and Texas Tech University's datasets, along with further in-house analyses of satellite imagery for the ecoregion. These numbers should be interpreted with caution since most of these "potential" playas have not been ground-truthed to confirm their presence and to distinguish between playas and saline lakes.

Total Playa Area: Sum of area (in hectares) of all "potential" playas present in this conservation area. Methodology: This information is derived from Ducks Unlimited and Texas Tech University's datasets, along with further in-house analyses of satellite imagery for the ecoregion. These numbers should be interpreted with caution since most of these "potential" playas have not been ground-truthed to confirm their presence and to distinguish between playas and saline lakes.

Total Playa Perimeter: Sum of perimeter (in kilometers) of all "potential" playas present in this conservation area. Methodology: This information is derived from Ducks Unlimited and Texas Tech University's datasets, along with further in-house analyses of satellite imagery for the ecoregion. These numbers should be interpreted with caution since most of these "potential" playas have not been ground-truthed to confirm their presence and to distinguish between playas and saline lakes.

Playa Average Circular Ratio: Average circular ratio of all "potential" playas present in this conservation area. Methodology: The circularity ratio for a playa was calculated as the ratio of the area of the playa to the area of a circle with the same perimeter as the playa. Actual playas tend to be circular, so this ratio provides an indication of whether or not a particular "potential" playa represents an actual playa.

Assessment Map ID	Conservation Area Name	Conservation Area Size (hectares)	Representation Value	Representation Value Rank	Irreplaceability Value	Irreplaceability Value Rank	# of Targets	# of Targets Rank	# of G1-G2/T1-T2 or Endemic Targets	# of Playas	Total Playa Area (hectares)	Total Playa Perimeter (km)	Playa Average Circular Ratio
MB90	Albany	57198	4.03	4	0.05	4	2	4	0	1	3.37	0.76	0.73
S59	Antelope Ridge	105615	56.35	2	0.65	2	9	2	0	47	126.83	29.19	0.82
CR34	Bell Ranch Grasslands	186659	46.60	3	0.46	3	10	2	0	8	32.47	5.37	0.80
N29	Big Juan (Juan Largo)	150633	36.99	3	0.40	3	6	2	1	4	12.55	2.69	0.87
S67	Big Lake	186787	174.64	1	1.67	1	8	2	0	146	943.53	121.21	0.82
W69	Black Kettle	46485	58.25	2	0.58	2	4	3	0	3	3.77	1.22	0.91
S51	Blackwater Draw	162831	15.83	4	0.16	4	4	3	0	58	414.79	45.13	0.76
W86	Blanco Canyon	88756	91.49	1	0.90	1	13	1	0	95	178.40	46.14	0.82
CR38	Bueyeros Grasslands	154050	60.30	2	0.84	2	12	1	1	14	18.67	6.21	0.80
CR42	Canadian River - Punta de Agua	204220	38.84	3	0.37	3	8	2	0	22	113.16	18.02	0.74
CR47	Canadian River East	117030	79.68	2	0.80	2	6	2	1	45	76.87	24.34	0.68
CR32	Canadian River Gorge	90108	295.75	1	2.97	1	10	2	1	53	178.00	35.16	0.87
CR33	Canyon Largo	149222	26.84	3	0.27	3	5	3	0	12	45.63	8.41	0.85
NL50	Canyon Playas	304223	30.85	3	0.31	3	4	3	0	1346	8999.64	1145.55	0.83
N30	Capitan / Sacramento Mountain Foothills	180242	247.27	1	2.46	1	14	1	1	13	31.51	8.28	0.76
C14	Capulin Volcano	4534	30.20	3	0.30	3	4	3	0	2	7.18	1.39	0.82
CR35	Carpenter Mesa	149818	23.55	3	0.28	3	4	3	1	11	13.24	4.82	0.75
W80	Central Matador WMA	4479	50.00	3	0.50	3	1	4	0	0	N/A	N/A	N/A
CR41	Charco Creek Mesas	2594	17.90	4	0.21	4	2	4	1	3	20.17	2.89	0.80
M3	Chico Creek Grasslands	83382	24.68	3	0.17	4	4	3	1	10	30.43	6.23	0.84
W84	Copper Breaks	1011	17.90	4	0.18	4	2	4	1	4	5.03	1.82	0.75
S63	Double Lakes	29745	64.53	2	0.42	3	6	2	0	117	1393.14	104.04	0.87
N31	Dunken	4634	50.00	3	0.50	3	1	4	1	0	N/A	N/A	N/A
N27	Duran Grasslands	169495	40.75	3	0.29	3	3	4	1	5	19.22	3.58	0.78
N28	Duran Lakes	5212	26.25	3	0.29	3	2	4	0	0	N/A	N/A	N/A
W74	Dutch Canyon	3310	8.38	4	0.26	3	2	4	1	25	123.39	15.57	0.88
M1	Eagle Tail	1304	16.67	4	0.50	3	1	4	1	0	N/A	N/A	N/A
W79	East of Matador	3262	17.90	4	0.18	4	2	4	1	5	69.16	5.88	0.71
N25	Encino Grasslands	90898	41.29	3	0.33	3	4	3	1	3	24.07	3.59	0.68
N26	Encino Lake	9737	27.48	3	0.30	3	3	4	0	1	55.85	3.02	0.77
N23	Estancia Basin Wetlands	37297	157.29	1	1.60	1	7	2	0	70	4851.38	251.02	0.58
N24	Estancia Grasslands	78524	4.26	4	0.04	4	2	4	0	1	4.36	0.84	0.78
W88	Goat Mountain	66975	85.66	2	0.88	1	4	3	1	2	4.09	1.12	0.79
S52	Grolla NWR	18937	104.30	1	1.10	1	11	1	1	11	99.48	12.18	0.81

Assessment Map ID	Conservation Area Name	Conservation Area Size (hectares)	Representation Value	Representation Value Rank	Irreplaceability Value	Irreplaceability Value Rank	# of Targets	# of Targets Rank	# of G1-G2/T1-T2 or Endemic Targets	# of Playas	Total Playa Area (hectares)	Total Playa Perimeter (km)	Playa Average Circular Ratio
W85	Harold	317.00	16.67	4	0.17	4	1	4	1	0	N/A	N/A	N/A
W77	Hulver	2187.00	16.67	4	0.17	4	1	4	1	0	N/A	N/A	N/A
S66	Johnson Draw	2142.00	51.23	3	0.51	2	2	4	0	1	0.60	0.33	0.71
S61	Jones City	248.00	5.00	4	0.17	4	1	4	1	0	N/A	N/A	N/A
CR43	Lake Meredith	206368.00	117.65	1	1.25	1	19	1	1	37	83.74	22.35	0.71
W76	Little Red River	63259.00	220.35	1	2.26	1	14	1	1	79	241.28	47.91	0.80
CR40	Logan	1855.00	33.33	3	0.20	4	1	4	1	0	N/A	N/A	N/A
S54	Lone Wolf Sandhills	153143.00	60.50	2	0.34	3	6	2	1	9	86.88	9.84	0.80
C13	Lower Dry Cimarron Mesas	144713.00	9.79	4	0.11	4	4	3	0	6	18.77	3.77	0.86
S57	Mescalero Caprock	276623.00	74.52	2	0.69	2	14	1	0	238	756.88	152.49	0.83
S56	Mescalero Sands	115403.00	166.96	1	1.71	1	9	2	2	5	7.87	2.40	0.84
M4	Miami	73730.00	134.05	1	1.01	1	11	1	1	48	145.29	29.58	0.80
MB89	Middle Clear Fork of the Brazos River	121777.00	18.26	4	0.16	4	5	3	0	7	8.59	2.94	0.79
C22	Middle Water	106606.00	37.27	3	0.40	3	9	2	0	12	80.83	11.30	0.77
CR36	Milagro Springs	124473.00	124.20	1	1.42	1	8	2	2	41	163.87	29.32	0.84
S55	Milnesand	97974.00	64.07	2	0.62	2	11	1	1	13	23.73	5.95	0.93
S60	Monument Draw	12476.00	13.33	4	0.23	3	2	4	1	0	N/A	N/A	N/A
M8	Mora River Grasslands	198916.00	85.90	1	0.82	2	12	1	1	135	1003.89	124.72	0.78
M5	Mora River Valley	96741.00	120.12	1	1.22	1	5	3	1	45	289.78	42.91	0.82
S65	Morita	8979.00	51.23	3	0.51	2	2	4	0	11	31.76	7.36	0.73
C17	Mt. Dora Shortgrass	138721.00	65.82	2	0.56	2	11	1	1	73	281.50	50.34	0.85
W73	Mulberry Creek	112265.00	89.80	1	1.08	1	8	2	1	62	170.81	38.13	0.78
S53	Muleshoe NWR	6650.00	60.37	2	0.63	2	5	3	0	10	37.28	6.84	0.81
W71	North Fork Red River	150094.00	25.72	3	0.23	4	6	2	0	26	60.41	15.39	0.77
W81	Northeast of Kirkland	1350.00	17.90	4	0.18	4	2	4	1	1	0.84	0.33	0.95
W82	Northeast Quanah	6337.00	17.90	4	0.18	4	2	4	1	2	2.96	0.96	0.80
M7	Ocate Creek Grasslands	88913.00	18.08	4	0.19	4	4	3	0	52	249.87	38.82	0.79
CR48	Packsaddle	144155.00	64.92	2	0.68	2	7	2	1	10	12.99	4.13	0.83
W75	Palo Duro Canyon	189630.00	181.02	1	1.46	1	14	1	2	367	1293.49	227.93	0.85
MB91	Palo Pinto Mountains	66718.00	204.40	1	2.07	1	6	2	2	0	N/A	N/A	N/A
C15	Pasamonte Shortgrass	255426.00	186.33	1	1.77	1	14	1	2	246	730.32	154.72	0.84
M11	Pastura Grasslands	212069.00	71.17	2	0.72	2	11	1	1	18	108.44	17.27	0.77
M9	Pecos Canyon and Mesas	99200.00	9.22	4	0.09	4	3	4	0	4	9.48	2.35	0.85
M10	Pintada Arroyo	124459.00	51.93	2	0.66	2	5	3	1	3	10.60	1.92	0.87
S58	Querecho Plains	117164.00	38.25	3	0.31	3	5	3	1	8	33.47	6.34	0.67
W78	Quitaque Creek	2802.00	51.23	3	0.51	2	2	4	0	4	8.29	2.17	0.82
M2	Raton Mesa and Volcanoes	85223.00	12.60	4	0.20	4	5	3	1	13	20.26	6.70	0.69
CR45	Red Deer Creek	199255.00	42.82	3	0.49	3	10	2	1	28	53.42	14.40	0.80
C21	Rita Blanca Alkaline Lakes	18526.00	145.57	1	1.54	1	11	1	1	21	179.84	23.14	0.75
W72	Salt Fork Red River	160427.00	110.20	1	1.16	1	14	1	1	72	380.90	51.99	0.81
CR37	San Juan de Dios	188367.00	154.87	1	1.34	1	7	2	2	21	71.97	15.92	0.72
CR39	Sand Springs	197757.00	46.45	3	0.70	2	7	2	1	1	11.60	1.46	0.68
C16	Sierra Grande	11818.00	487.97	1	4.88	1	11	1	0	2	1.82	0.77	0.77
W83	South of Quanah	956.00	17.90	4	0.18	4	2	4	1	3	6.67	1.76	0.81
S64	Tahoka Lake	1163.00	33.73	3	0.30	3	3	4	0	4	271.48	12.41	0.63
C20	Tramperos Creek Shortgrass	172477.00	57.04	2	0.55	2	12	1	1	32	216.81	26.53	0.86
M6	Turkey Mountains Grasslands	228660.00	69.24	2	0.77	2	11	1	1	186	655.06	126.33	0.81
C12	Upper Dry Cimarron Mesas	127861.00	84.72	2	0.87	1	7	2	0	40	166.33	29.68	0.78
W68	Upper Washita River	66679.00	17.13	4	0.23	3	6	2	0	16	34.96	8.49	0.79
C19	Ute - Tramperos Canyons	57992.00	43.01	3	0.45	3	5	3	1	10	16.82	4.68	0.88
NL49	Vega Playas	121991.00	10.20	4	0.16	4	3	4	1	195	1728.88	185.02	0.85
W87	Western Callahan Divide	140950.00	65.91	2	0.65	2	7	2	0	58	223.83	41.79	0.82
W70	Wheeler Sandhills	55463.00	16.00	4	0.19	4	5	3	0	15	27.91	8.32	0.68
CR44	White Deer Creek	206029.00	69.59	2	0.72	2	15	1	0	21	45.50	12.78	0.67
S62	Winkler Sandhills	130764.00	208.20	1	1.79	1	7	2	1	1	0.79	0.35	0.84
CR46	Wolf Creek	133782.00	58.91	2	0.59	2	13	1	0	15	39.38	9.51	0.62
C18	Yates Carbonate Glades	18091.00	90.12	1	0.68	2	3	4	1	8	17.47	4.44	0.87

Appendix K2. Aquatic Conservation Areas with Biodiversity Value Scores and Ranks

*These scores and ranks are also shown in the Excel workbook called "SSP Conservation Areas with Biodiversity Value Scores and Ranks"

*Ranks for Goal Contribution Value and Irreplaceability Value are based on quartiles. **1=Highest quartile, 4=Lowest quartile**

Goal Contribution Value: Sum of the percentage of each aquatic target's occurrences (viable and of unknown viability) that are present in this conservation area as compared to the EDU goal. Methodology: For each target within a conservation area, we determined the number of occurrences (considered to be viable or of unknown viability) present within the area, divided it by the EDU goal, and converted the result to a percentage. If a particular target exceeded its EDU goal in the conservation area, the percentage was capped at a 100. These percentages were then summed for each target present in the conservation area to arrive at an overall goal contribution value for that conservation area. Note: A target must have at least one occurrence that is considered to be viable or of unknown viability to be counted as present in the conservation area.

Irreplaceability Value: Sum of the presence of aquatic targets in this conservation area as compared to all the other conservation areas (portfolio and provisional). Methodology: For each target, we determined the number of conservation areas (portfolio and provisional) in which the target occurs, and then calculated the inverse of that number, resulting in an index value. We then summed up index values for all targets present in a conservation area to arrive at an overall irreplaceability value score for that conservation area. Note: A target must have at least one occurrence that is considered to be viable or of unknown viability to be counted as present in the conservation area.

of Targets: Total number of aquatic species and aquatic ecological systems targets present in this conservation area. Note: A target must have at least one occurrence that is considered to be viable or of unknown viability to be counted as present in the conservation area.

of G1-G2/T1-T2 or Endemic Targets: Total number of aquatic species targets present in this conservation area that have a rank of G1 or G2, a rank of T1 or T2, and/or are endemic to the ecoregion. Note: A target must have at least one occurrence that is considered to be viable or of unknown viability to be counted as present in the conservation area.

Assessment Map ID	Conservation Area Name	Conservation Area Type	Goal Contribution Value	Goal Contribution Value Rank (Portfolio Conservation Areas Only)	Goal Contribution Value Rank (All Conservation Areas)	Irreplaceability Value	Irreplaceability Value Rank (Portfolio Conservation Areas Only)	Irreplaceability Value Rank (All Conservation Areas)	# of Targets	# of G1-G2/T1-T2 or Endemic Targets
UP30	Arroyo de la Mora	Provisional Aquatic Conservation Area	100.00		3	1.00		3	1	0
UP31	Arroyo del Macho	Provisional Aquatic Conservation Area	500.00		1	3.58		1	5	0
CP73	Beals Creek / Mustang Draw	Provisional Aquatic Conservation Area	200.00		2	1.50		2	2	0
U42	Beaver Creek	Provisional Aquatic Conservation Area	133.33		2	1.20		2	2	0
C3	Beaver River	Aquatic Conservation Area	200.00	2	2	2.00	1	1	2	0
U45	Belknap Creek	Provisional Aquatic Conservation Area	100.00		3	1.00		3	1	0
UT47	Big Sandy Creek	Provisional Aquatic Conservation Area	100.00		3	1.00		3	1	0
B63	Brazos River	Aquatic Conservation Area	122.22	3	2	1.33	2	2	2	1
CP71	Bull Creek	Provisional Aquatic Conservation Area	200.00		2	2.00		1	2	0
A2	Carrizozo Creek	Provisional Aquatic Conservation Area	100.00		3	1.00		3	1	0
C14	Charo Creek	Aquatic Conservation Area	100.00	4	3	1.00	3	3	1	0
C7	Cimarron River	Aquatic Conservation Area	233.33	1	1	0.92	3	4	3	0
B61	Clear Fork Brazos River	Aquatic Conservation Area	111.11	3	2	1.33	2	2	2	1
B58	Clear Fork Brazos River Headwaters	Provisional Aquatic Conservation Area	100.00		3	1.00		3	1	0
B68	Colony Creek	Provisional Aquatic Conservation Area	100.00		3	1.00		3	1	0
CP70	Colorado River Headwaters	Provisional Aquatic Conservation Area	100.00		3	1.00		3	1	0
C11	Conchas River	Aquatic Conservation Area	204.00	2	1	3.00	1	1	3	1
CE77	Concho River	Aquatic Conservation Area	111.11	3	2	1.50	2	2	2	1
C9	Coyote Creek	Aquatic Conservation Area	100.00	4	3	1.00	3	3	1	0
B54	Croton Creek	Provisional Aquatic Conservation Area	100.00		3	1.00		3	1	0
B59	Deadman Creek	Aquatic Conservation Area	111.11	3	2	0.83	4	4	2	1
C19	Deer Creek	Provisional Aquatic Conservation Area	100.00		3	1.00		3	1	0
UT48	Denton Creek	Provisional Aquatic Conservation Area	100.00		3	1.00		3	1	0
B56	Double Mountain Fork Brazos River	Aquatic Conservation Area	261.11	1	1	1.37	2	2	4	1
A1	Dry Cimarron River	Provisional Aquatic Conservation Area	200.00		2	2.00		1	2	0
UP24	El Rito Creek	Aquatic Conservation Area	20.00	4	4	0.11	4	4	1	0
CE75	Elm Creek	Aquatic Conservation Area	100.00	4	3	0.50	4	4	1	0
U46	Farmer's Creek	Provisional Aquatic Conservation Area	100.00		3	1.00		3	1	0
UP23	Gallinas River	Aquatic Conservation Area	540.00	1	1	3.78	1	1	6	0
CP72	Gavett Creek	Provisional Aquatic Conservation Area	100.00		3	1.00		3	1	0
B60	Hubbard Creek	Provisional Aquatic Conservation Area	100.00		3	1.00		3	1	0
B66	Ioni Creek	Provisional Aquatic Conservation Area	100.00		3	0.50		4	1	0
UT50	Jasper Creek	Provisional Aquatic Conservation Area	100.00		3	1.00		3	1	0
B69	Leon River	Provisional Aquatic Conservation Area	100.00		3	1.00		3	1	0
C17	Lower Canadian River	Aquatic Conservation Area	300.00	1	1	2.75	1	1	4	2
C16	Lower Canadian River Tributaries	Provisional Aquatic Conservation Area	300.00		1	2.50		1	3	0
C12	Middle Canadian River	Aquatic Conservation Area	200.00	2	2	0.75	4	4	2	0
UP27	Middle Pecos River	Aquatic Conservation Area	590.00	1	1	5.44	1	1	7	2
C10	Mora River	Aquatic Conservation Area	200.00	2	2	1.33	2	2	2	0
U37	Mulberry Creek	Provisional Aquatic Conservation Area	200.00		2	1.50		2	2	0
B55	North Croton Creek	Provisional Aquatic Conservation Area	100.00		3	1.00		3	1	0
B52	North Fork Double Mountain Fork Brazos River	Aquatic Conservation Area	100.00	4	3	1.00	3	3	1	0
U41	North Wichita River	Aquatic Conservation Area	433.33	1	1	3.70	1	1	5	0
B67	Palo Pinto Creek	Provisional Aquatic Conservation Area	200.00		2	2.00		1	2	0
U43	Pease River	Aquatic Conservation Area	100.00	4	3	0.50	4	4	1	0
UP20	Pecos River Headwaters	Aquatic Conservation Area	120.00	3	2	0.44	4	4	2	0
C6	Ponil Creek	Aquatic Conservation Area	100.00	4	3	1.00	3	3	1	0
U40	Prairie Dog Town Fork Red River	Aquatic Conservation Area	111.11	3	2	1.00	2	3	2	0
C8	Rayado Creek	Aquatic Conservation Area	100.00	4	3	1.00	3	3	1	0
U44	Red River	Aquatic Conservation Area	122.22	3	2	1.50	2	2	2	0
CE78	Red River (Colorado)	Provisional Aquatic Conservation Area	100.00		3	1.00		3	1	0
C15	Revuelto Creek	Aquatic Conservation Area	200.00	2	2	1.50	2	2	2	0
UP25	Rio Agua Negra	Provisional Aquatic Conservation Area	20.00		4	0.11		4	1	0
UP33	Rio Hondo	Aquatic Conservation Area	220.00	2	1	1.36	2	2	3	0
UP34	Rio Penasco	Aquatic Conservation Area	220.00	2	1	0.69	4	4	3	0
B65	Rocky Creek	Provisional Aquatic Conservation Area	100.00		3	1.00		3	1	0
B57	Rough Creek	Provisional Aquatic Conservation Area	100.00		3	1.00		3	1	0
UP26	Salado Creek	Provisional Aquatic Conservation Area	100.00		3	1.00		3	1	0
UP32	Salt Creek (Pecos)	Provisional Aquatic Conservation Area	200.00		2	0.58		4	2	0

Assessment Map ID	Conservation Area Name	Conservation Area Type	Goal Contribution Value	Goal Contribution Value Rank (Portfolio Conservation Areas Only)	Goal Contribution Value Rank (All Conservation Areas)	Irreplaceability Value	Irreplaceability Value Rank (Portfolio Conservation Areas Only)	Irreplaceability Value Rank (All Conservation Areas)	# of Targets	# of G1-G2/T1-T2 or Endemic Targets
B53	Salt Fork Brazos River	Aquatic Conservation Area	361.11	1	1	2.37	1	1	5	1
U39	Salt Fork Red River	Provisional Aquatic Conservation Area	100.00		3	1.00		3	1	0
UP28	Taiban Creek	Provisional Aquatic Conservation Area	200.00		2	2.00		1	2	0
UP22	Tecolote Creek	Provisional Aquatic Conservation Area	220.00		1	0.94		4	3	0
U35	Tule Creek	Provisional Aquatic Conservation Area	100.00		3	1.00		3	1	0
B64	Turkey Creek	Provisional Aquatic Conservation Area	100.00		3	1.00		3	1	0
B62	Upper Brazos River	Aquatic Conservation Area	161.11	3	2	0.87	4	4	3	1
C4	Upper Canadian River	Aquatic Conservation Area	233.33	1	1	0.92	3	4	3	0
CE76	Upper Colorado River	Aquatic Conservation Area	222.22	1	1	2.00	1	1	3	1
UP21	Upper Pecos River	Aquatic Conservation Area	220.00	2	1	0.94	3	4	3	0
U36	Upper Prairie Dog Town Fork Red River	Provisional Aquatic Conservation Area	100.00		3	1.00		3	1	0
C13	Ute Creek	Provisional Aquatic Conservation Area	200.00		2	2.00		1	2	0
CE74	Valley Creek	Aquatic Conservation Area	100.00	4	3	0.50	4	4	1	0
C5	Vermejo River	Provisional Aquatic Conservation Area	100.00		3	0.33		4	1	0
UT51	West Fork Trinity River	Provisional Aquatic Conservation Area	200.00		2	2.00		1	2	0
UT49	West Fork Trinity River Tributary	Provisional Aquatic Conservation Area	100.00		3	1.00		3	1	0
C18	White Deer Creek	Aquatic Conservation Area	100.00	4	3	1.00	3	3	1	0
U38	Whitefish Creek	Provisional Aquatic Conservation Area	100.00		3	1.00		3	1	0
UP29	Yeso Creek	Provisional Aquatic Conservation Area	100.00		3	1.00		3	1	0