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Estimated Historical Distribution of Grassland Communities of the Southern Great Plains

By Gordon C. Reese, Daniel J. Manier, Natasha B. Carr, Ramana Callan, Ian I. F. Leinwand, Timothy J. Assal, Lucy Burris, and Drew A. Ignizio

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Contents

Figures

Tables

Conversion Factors

U.S. customary units to International System of Units

Multiply	By length	To obtain
foot (ft)	0.3048	meter (m)
yard (yd)	0.9144	meter (m)

Datum

Vertical coordinate information is referenced to the North American Datum of 1983 (NAD 83).
Horizontal coordinate information is referenced to the North American Datum of 1983 (NAD 83).

Abbreviations

BLM	Bureau of Land Management
BpS	Biophysical Settings
ESDs	Ecological Site Descriptions
ESI	Ecological Site Inventory
ESIS	Ecological Site Information System
EVT	Existing Vegetation Type
GAP	Gap Analysis Project
GPLCC	Great Plains Landscape Conservation Cooperative
LANDFIRE	Landscape Fire and Resource Management Planning Tools
NRCS	Natural Resources Conservation Service
REA	Rapid Ecoregional Assessment
SSURGO	Soil Survey Geographic Database
USGS	U.S. Geological Survey

Scientific Names for Species Mentioned in This Report

Common Name	**Scientific Name**
Alkali cordgrass	*Spartina gracilis*
Alkali sacaton	*Sporobolus airoides*
Arizona cottontop	*Digitaria californica*
Arizona fescue	*Festuca arizonica*
Big bluestem	*Andropogon gerardii*
Black grama	*Bouteloua eriopoda*
Blue grama	*Bouteloua gracilis*
Bluebunch wheatgrass	*Pseudoroegneria spicata spicata*
Buffalograss	*Bouteloua dactyloides*
Cane bluestem	*Bothriochloa barbinodis*
Green needlegrass	*Nassella viridula*
Gypsum grama	*Bouteloua breviseta*
Idaho fescue	*Festuca idahoensis*
Indiangrass	*Sorghastrum nutans*
Inland saltgrass	*Distichlis spicata*
Little bluestem	*Schizachyrium scoparium*
Mountain brome	*Bromus marginatus*
Mountain muhly	*Muhlenbergia montana*
Needle and thread	*Hesperostipa comata*
Prairie sandreed	*Calamovilfa longifolia*
Sand bluestem	*Andropogon hallii*
Sand sagebrush	*Aretemesia filifolia*
Sand dropseed	*Sporobolus cryptandrus*
Shinnery oak	*Quercus havardii*
Sideoats grama	*Bouteloua curtipendula*

Scientific Names for Species Mentioned in This Report—Continued

Common Name	Scientific Name
Silver beardgrass	*Bothriochloa laguroides torreyana*
Streambank wheatgrass	*Elymus lanceolatus lanceolatus*
Switchgrass	*Panicum virgatum*
Threadleaf sedge	*Carex filifolia*
Tobosagrass	*Pleuraphis mutica*
Vine mesquite	*Panicum obtusum*
Western wheatgrass	*Pascopyrum smithii*

Acknowledgments

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Estimated Historical Distribution of Grassland Communities of the Southern Great Plains

By Gordon C. Reese,[1] Daniel J. Manier,[1] Natasha B. Carr,[1] Ramana Callan,[2] Ian I. F. Leinwand,[2] Timothy J. Assal,[1] Lucy Burris,[1] and Drew A. Ignizio[1]

Abstract

The purpose of this project was to map the estimated distribution of grassland communities of the Southern Great Plains prior to Euro-American settlement. The Southern Great Plains Rapid Ecoregional Assessment (REA), under the direction of the Bureau of Land Management and the Great Plains Landscape Conservation Cooperative, includes four ecoregions: the High Plains, Central Great Plains, Southwestern Tablelands, and the Nebraska Sand Hills. The REA advisors and stakeholders determined that the mapping accuracy of available national land-cover maps was insufficient in many areas to adequately address management questions for the REA. Based on the recommendation of the REA stakeholders, we estimated the potential historical distribution of 10 grassland communities within the Southern Great Plains project area using data on soils, climate, and vegetation from the Natural Resources Conservation Service (NRCS) including the Soil Survey Geographic Database (SSURGO) and Ecological Site Information System (ESIS). The dominant grassland communities of the Southern Great Plains addressed as conservation elements for the REA area are shortgrass, mixed-grass, and sand prairies. We also mapped tall-grass, mid-grass, northwest mixed-grass, and cool season bunchgrass prairies, saline and foothill grasslands, and semi-desert grassland and steppe. Grassland communities were primarily defined using the annual productivity of dominant species in the ESIS data. The historical grassland community classification was linked to the SSURGO data using vegetation types associated with the predominant component of mapped soil units as defined in the ESIS data. We augmented NRCS data with Landscape Fire and Resource Management Planning Tools (LANDFIRE) Biophysical Settings classifications 1) where NRCS data were unavailable and 2) where fifth-level watersheds intersected the boundary of the High Plains ecoregion in Wyoming. Spatial data representing the estimated historical distribution of grassland communities of the Southern Great Plains are provided as a 30 x 30-meter gridded surface (raster dataset). This information will help to address the priority management questions for grassland communities for the Southern Great Plains REA and can be used to inform other regional-level land management decisions.

Purpose and Scope

The Bureau of Land Management (BLM) is implementing a landscape approach that incorporates multiscale information to assess the condition and trends of resources (http://www.blm.gov/wo/st/en/prog/more/Landscape_Approach.html). A major component of the BLM

[1]U.S. Geological Survey.
[2]Cherokee Nation Technologies.

landscape approach is the Rapid Ecoregional Assessment (REA) program, which provides information to facilitate development of broad-scale management strategies across jurisdictional boundaries. The REAs identify and map priority ecological communities and species for particular ecoregions, determine the degree of risk from development and other change agents, and provide assessments of ecological conditions including conservation and restoration potential. The purpose of this project was to map the estimated distribution of grassland communities of the Southern Great Plains prior to Euro-American settlement.

The BLM partnered with the Great Plains Landscape Conservation Cooperative (GPLCC) to ensure that the results of the Southern Great Plains REA provide information useful for addressing management issues identified by a diverse set of stakeholders representing the REA and GPLCC. The Southern Great Plains REA project area includes the full extent of the GPLCC's area (http://www.greatplainslcc.org/about/), as well as the following Omernik Level III ecoregions (Omernik, 1987): High Plains, Central Great Plains, Southwestern Tablelands, and the Nebraska Sand Hills (and an adjacent buffer delineated by fifth-level watersheds intersecting the ecoregion boundaries) (fig. 1*A*). The dominant vegetation communities in these four ecoregions are shortgrass, mixed-grass, and sand prairies, which were identified as priority ecological communities by the Southern Great Plains REA stakeholders (Assal and others, 2015). A priority management issue for this REA is how development (including agricultural, energy, transportation, and urban) has fragmented and reduced connectivity of Great Plains ecological communities (Assal and others, 2015). Our objective was to map the estimated distribution of grassland communities of the Southern Great Plains prior to Euro-American settlement to address management questions for the REA.

Both current and estimated historical land-cover maps were needed to quantify how development has altered landscape structure. For previous REAs, regional or national land-cover datasets, such as those from the Gap Analysis Program (GAP) and the Landscape Fire and Resource Management Planning Tools (LANDFIRE) program were used to map ecological communities (Bryce and others, 2012; Carr and Melcher, 2015; Comer and others, 2013). Because of the accuracy limitations of existing land-cover datasets and challenges associated with mapping the estimated distribution of grasslands prior to land-use conversions, REA stakeholders suggested using the Ecological Site Information System (ESIS) (National Resources Conservation Service, 2015a) and Soil Survey Geographic Database (SSURGO) (National Resources Conservation Service, 2015b) to map the estimated historical distribution of native grassland communities across the Southern Great Plains for the REA.

We conducted a preliminary review and analysis of the suitability of using existing land-cover datasets, including GAP (http://gapanalysis.usgs.gov/) and LANDFIRE (Landscape Fire and Resource Management Planning Tools, 2012), to map the priority grassland communities for the REA project area. The large size of the project area (spanning eight states) required two GAP regions (northwest and southwest); pronounced classification discrepancies along the boundaries precluded the use of the GAP data for mapping grasslands for the REA. We evaluated two LANDFIRE datasets for use: Biophysical Settings (BpS), representing the potential natural vegetation prior to Euro-American settlement, and Existing Vegetation Type (EVT) (Rollins, 2009).

LANDFIRE was developed to map fuels and typically depicts woody fuels more accurately than herbaceous fuels in rangelands because of limited field data in rangelands (Reeves and others, 2009). For comparison purposes, we used the Texas Ecological Systems Classification vegetation map, developed by the Missouri Resource Assessment Program (Elliot, 2010), as our reference map in the area of overlap between the Texas vegetation map and the REA project area because the finer resolution (10 x 10-meter raster dataset) and extensive field data (14,000 survey plots) were assumed to provide a

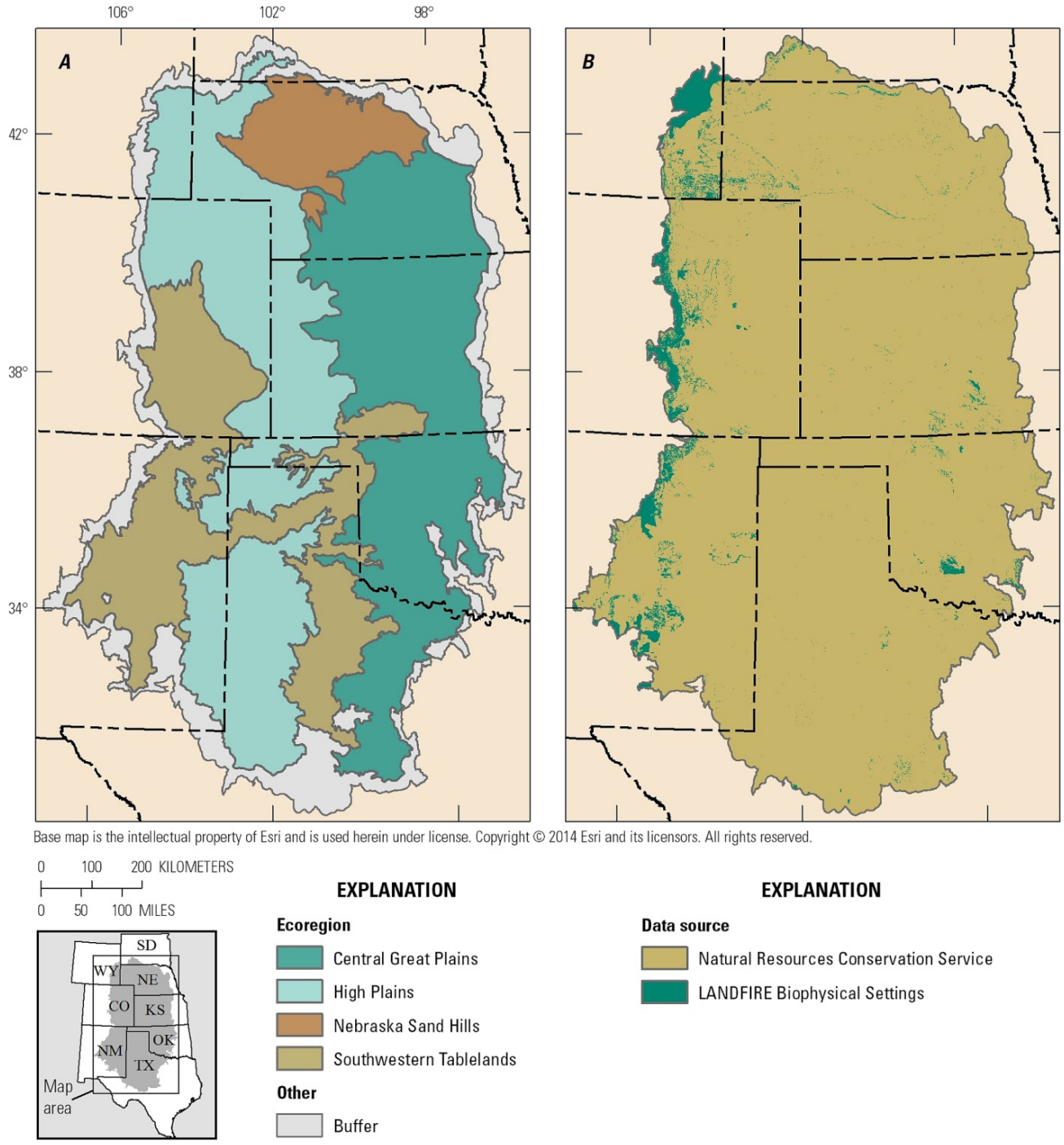

Figure 1. Map of the Southern Great Plains Rapid Ecoregional Assessment project area. *A*, Omernik Level III ecoregions and the buffer region, which includes fifth-level watersheds intersected by the ecoregion boundaries and covers the full extent of the Great Plains Landscape Conservation Cooperative. *B*, Spatial coverage of the primary (National Resources Conservation Service) and supplemental (Landscape Fire and Resource Management Planning Tools) data sources used to estimate the historical distribution of grassland and other community types.

more accurate map than LANDFIRE or NRCS data. Our preliminary analysis indicated that NRCS-derived classifications, which combine information from both ESIS and SSURGO, generally had the best correspondence with the Texas Ecological Systems Classification, compared to LANDFIRE EVT and BpS, supporting the REA stakeholders' recommendation to use NRCS data to map grasslands for the Southern Great Plains REA. This approach assumes that the combination of substrate and climate is correlated with the composition and productivity of prairie vegetation. Understanding of these relations is in accord with common assumptions that underlie the development and use of Ecological Site Descriptions (ESDs) and is well established in practice and empirical research (for example, Epstein and others, 1998).

Methods

The potential distribution (Zerbe, 1998) of grass-dominated ecological communities in the Southern Great Plains was estimated using soil composition, annual precipitation, and vegetation plot data developed by the NRCS. SSURGO contains soil information delineated by map units and we used the dominant soils component, as represented by the largest percentage, for any map unit with multiple soil components to map the distribution of soil types.

Plant communities for each SSURGO map unit were identified using the ESIS (https://esis.sc.egov.usda.gov). Ecological sites are characterized by soil and physical characteristics, associated plant communities, vegetation productivity, and the potential for a given community to respond similarly to management actions and natural disturbances. The ESIS includes the Ecological Site Inventory (ESI) database and ESDs. The ESI provides plot-level survey data on soils and plant species productivity for each ecological site. The ESDs are peer reviewed reports that include summarized plot-level survey data and synthesize information on physical factors (soils, temperature, precipitation, hydrology, geology, physiographic features), biotic features (plant species occurrence, plant community composition, plant production), and ecological dynamics (disturbance regimes such as grazing, fire, drought). To associate each spatial map unit with the appropriate ecological site, the Soil Component and Ecoclass tables in SSURGO were used.

We classified the composition of sites for the project area into 10 grassland community types (shortgrass, mixed-grass, sand, tall-grass, mid-grass, northwest mixed-grass, and cool season bunchgrass prairies; semi-desert grassland and steppe; and saline and foothill grasslands; table 1). Our classification considered the naming conventions established by the National Vegetation Classification (Nelson and others, 2015) and used the same terminology when applicable. However, to support requests from managers and planners, we developed a classification falling between Group and Association levels of the National Vegetation Classification hierarchy similar to types considered in habitat conservation and management. Only shortgrass, mixed-grass, and sand prairies are widely distributed throughout the four ecoregions in the project area; the remaining seven grassland types primarily occur along the periphery of the ecoregions and in the buffer region. Although the less common grassland types were not a focus of our classification, they were included for completeness and context relative to adjacent areas.

To classify each ecological site, we used the three dominant species, as indicated by aboveground annual productivity (table 1). We followed species naming conventions established by the U.S. Department of Agriculture (Natural Resources Conservation Service, 2015c). Field estimates of species productivity from ESI vegetation plots within ecological sites without ESDs were averaged by species and normalized by calculating the percent of total annual yield in each ecological site. Ecological sites with mesic soils or wetland plants were classified as aquatic communities and sites dominated by woody species were classified as shrubland, woodland, and forest. LANDFIRE BpS

(Landscape Fire and Resource Management Planning Tools, 2012) was used to classify areas with insufficient NRCS data and areas within the Southern Great Plains buffer region (fig. 1*B*), accounting for approximately 4 percent of the project area.

Table 1. Dominant indicator species used to classify ecological sites into grassland communities.

Community type	Dominant indicator species
Shortgrass prairie	Blue grama, buffalograss, western wheatgrass
Mixed-grass prairie	Big bluestem, blue grama, little bluestem, sideoats grama
Sand prairie	Prairie sandreed, sand bluestem, sand dropseed, sand sagebrush, shinnery oak
Tall-grass prairie	Big bluestem, Indiangrass, little bluestem, switchgrass
Mid-grass prairie	Arizona cottontop, cane bluestem, sideoats grama, silver beardgrass, vine mesquite
Northwest mixed-grass prairie	Bluebunch wheatgrass, green needlegrass, Idaho fescue, streambank wheatgrass
Cool season bunchgrass prairie	Blue grama, needle and thread, threadleaf sedge, western wheatgrass
Semi-desert grassland and steppe	Black grama, gypsum grama, tobosagrass
Saline grassland	Alkali cordgrass, alkali sacaton, inland saltgrass
Foothill grassland	Arizona fescue, mountain brome, mountain muhly

Initial mapping of grassland communities using SSURGO and the associated ESIS revealed gaps and inconsistencies resulting from missing data and inaccurate classification boundaries along county and state lines. Map units lacking associated ESDs or ESI data were classified using vegetation described for nearby ecological sites with similar soil properties. Map units with classification inconsistencies along political boundaries (county or state lines) were assigned to the same community class as an adjacent ecological site with similar soil properties. In a small portion of the project area, nearby sites with similar soil properties were lacking; in these cases, we used LANDFIRE BpS to address the data gap (fig. 1*B*). The source of information used to classify map units is documented in the "Dataset source" attribute (table 2).

The estimated historical distribution map delineates 10 grassland communities (fig. 2). To provide a complete coverage of other communities in the project area, we also used NRCS and LANDFIRE BpS to map the estimated historical distribution of shrublands, woodlands, and forests; riparian areas and wetlands; open water; and sparsely vegetated land-cover classes. Because our purpose was to classify and map the historical distribution of grasslands, the woody and aquatic communities were grouped into general community types. To identify potential wetland and riparian areas, NRCS data were used to identify the presence of mesic soils and hydrophilic plant species; identification of potential shrublands, savanna, and open woodlands used the presence of indicator grasses and shrubs, and tree species (oak, juniper, or pine) with 10 to 25 percent cover. In areas where LANDFIRE BpS was used as the data source for classifying woody vegetation, we combined all vegetation types using the BpS names corresponding to shrublands, woodlands, and forests (table 3). We reclassified several BpS types corresponding to desert scrub types as saline grasslands because those scrub types are uncommon within the project area and generally occurred in proximity to areas classified as saline grasslands using NRCS data (table 3), supporting the reclassification.

The attribute names in the dataset are listed and defined in table 2 (Callan and others, 2016). The attributes include those derived by the U.S. Geological Survey (USGS) and attributes from the SSURGO data that were used in determining land-cover classification. The associated metadata includes expanded attribute definitions summarized in table 2 (Callan and others, 2016).

Table 2. Attributes (names and abbreviations), definitions, and originator of the attribute field for the estimated historical distribution of grassland communities dataset. Attribute abbreviations are used in the dataset attribute table and defined in the metadata (Callan and others, 2016).

[NRCS, Natural Resources Conservation Service]

Attribute originator	Attribute name	Attribute abbreviation	Definition
U.S. Geological Survey	Object Identifier	OID	Unique identifier for each row in the attribute table
	Feature Value	Value	Grid cells linked by a feature will have identical values
	Count	Count	Count of grid cells for the Feature Value
	Vegetation Class	Class	Assigned vegetation community class
	Vegetation Class Code	ClassCode	Numerical representation of the Vegetation Class
	Dataset source	DataSource	Source of the data used to identify and classify the Vegetation Class
	Type of information	Info_Type	Type of information used to classify the Vegetation Class
	Additional details on data used	DataDetail	Additional details on the data used to classify the Vegetation Class
	Lookup Key	LookupKey	Ecological Site Description ID, map unit key, or NRCS classification used to identify the Vegetation Class; this is the spatial unit to which a Vegetation Class is assigned
Natural Resources Conservation Service[1]	Map Unit Key	Mukey	Map Unit Key is the unique identifier from the NRCS soil component table
	Component Key	Cokey	Component Key is a string of characters used to uniquely identify a record from the NRCS component table
	Component Percentage	Comppct_r	Percentage of the soil component of the map unit from the NRCS component table
	Component Name	Compname	Name assigned to a NRCS soil component based on the soil properties
	Geomorphic Description	Geomdesc	A narrative description of the geomorphic setting of the soil component
	Taxonomic Class Name	Taxclname	The taxonomic class from the NRCS component table; the name is a concatenation of the soil taxonomy subgroup and family for a given soil
	Ecological Classification Identifier	Ecoclassid	Identifier of a particular ecological community from the NRCS coecoclass table
	Ecological Classification Name	Ecoclassna	Descriptive name of a particular ecological community from the NRCS coecoclass table

[1]Soil Survey Geographic Database (SSURGO).

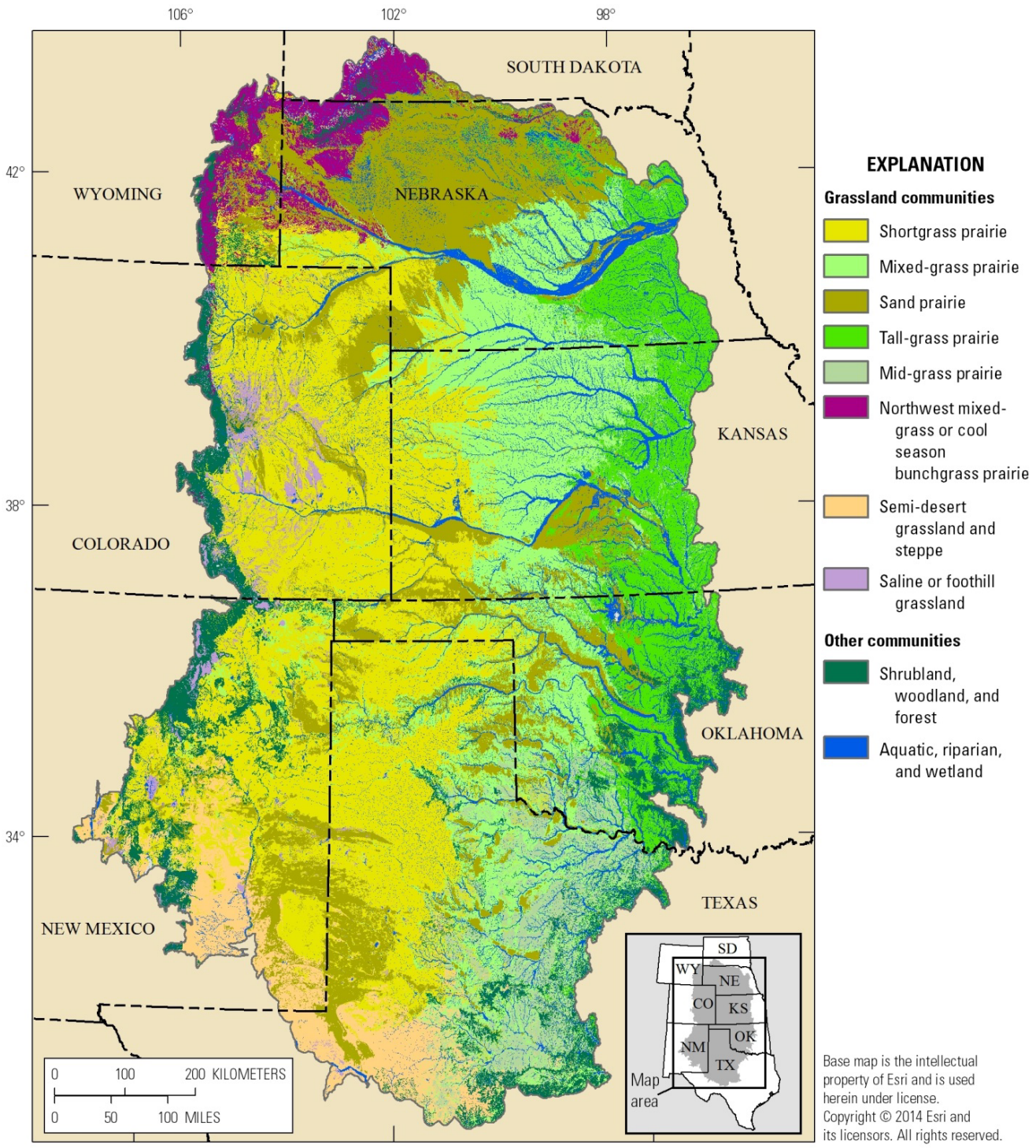

Figure 2. Map showing the estimated historical distribution of grassland and adjacent communities in the Southern Great Plains Rapid Ecoregional Assessment project area, which includes the Great Plains Landscape Conservation Cooperative area. For illustration, several minor grassland communities are combined and sparsely vegetated areas are not displayed due to their small size, but are retained in the dataset.

Table 3. Community types for the estimated historical distribution of grasslands dataset and corresponding LANDFIRE Biophysical Settings names.

[LANDFIRE, Landscape Fire and Resource Management Planning Tools]

Community type	Biophysical Settings name	LANDFIRE Code
Cool season bunchgrass prairie[1]	Not applicable	
Foothill grassland	Northern Rocky Mountain Lower Montane–Foothill–Valley Grassland	11390
	Northern Rocky Mountain Subalpine–Upper Montane Grassland	11400
	Rocky Mountain Subalpine–Montane Mesic Meadow	11450
	Southern Rocky Mountain Montane–Subalpine Grassland	11460
	Western Great Plains Foothill and Piedmont Grassland	11470
Mixed-grass prairie	Central Mixedgrass Prairie	11320
Northwest mixed-grass prairie	Northwestern Great Plains Mixedgrass Prairie	11410
Saline grassland[2]	Chihuahuan Mixed Salt Desert Scrub	10750
	Inter-Mountain Basins Mixed Salt Desert Scrub	10810
	Inter-Mountain Basins Mixed Salt Desert Scrub—South	10811
	Inter-Mountain Basins Mixed Salt Desert Scrub—North	10812
Sand prairie	Chihuahuan Stabilized Coppice Dune and Sand Flat Scrub	10760
	Western Great Plains Sandhill Steppe	10940
	Western Great Plains Sand Prairie	11480
	Chihuahuan Sandy Plains Semi-Desert Grassland	11330
Semi-desert grassland and steppe	Chihuahuan Grama Grass–Creosote Steppe	11003
	Apacherian-Chihuahuan Semi-Desert Grassland and Steppe	11210
	Chihuahuan Gypsophilous Grassland and Steppe	11220
	Inter-Mountain Basins Semi-Desert Grassland	11350
	Chihuahuan Loamy Plains Desert Grassland	15030
Shortgrass Prairie	Western Great Plains Shortgrass Prairie	11490
Tall-grass Prairie	Western Great Plains Tallgrass Prairie	11500
	Central Tallgrass Prairie	14210
	Southern Blackland Tallgrass Prairie	14220
	Southeastern Great Plains Tallgrass Prairie	14230
Shrubland, woodland, and forest	Rocky Mountain Aspen Forest and Woodland	10110
	Western Great Plains Dry Bur Oak Forest and Woodland	10130
	Colorado Plateau Pinyon-Juniper Woodland	10160
	Madrean Encinal	10230
	Madrean Lower Montane Pine-Oak Forest and Woodland	10240
	Madrean Pinyon-Juniper Woodland	10250
	Northwestern Great Plains Highland White Spruce Woodland	10480
	Rocky Mountain Foothill Limber Pine-Juniper Woodland	10490
	Rocky Mountain Lodgepole Pine Forest	10500

Table 3. Community types for the estimated historical distribution of grasslands dataset and corresponding LANDFIRE Biophysical Settings names.—Continued

[LANDFIRE, Landscape Fire and Resource Management Planning Tools]

Community type	Biophysical Settings name	LANDFIRE Code
Shrubland, woodland, and forest—Continued	Southern Rocky Mountain Dry-Mesic Montane Mixed Conifer Forest and Woodland	10510
	Southern Rocky Mountain Mesic Montane Mixed Conifer Forest and Woodland	10520
	Southern Rocky Mountain Ponderosa Pine Woodland	10540
	Southern Rocky Mountain Ponderosa Pine Woodland—South	10541
	Southern Rocky Mountain Ponderosa Pine Woodland—North	10542
	Rocky Mountain Subalpine Dry-Mesic Spruce-Fir Forest and Woodland	10550
	Rocky Mountain Subalpine Mesic-Wet Spruce-Fir Forest and Woodland	10560
	Rocky Mountain Subalpine-Montane Limber-Bristlecone Pine Woodland	10570
	Southern Rocky Mountain Pinyon-Juniper Woodland	10590
	Inter-Mountain Basins Aspen-Mixed Conifer Forest and Woodland	10610
	Inter-Mountain Basins Aspen-Mixed Conifer Forest and Woodland—Low Elevation	10611
	Inter-Mountain Basins Curl-leaf Mountain Mahogany Woodland and Shrubland	10620
	Colorado Plateau Mixed Low Sagebrush Shrubland	10640
	Inter-Mountain Basins Mat Saltbush Shrubland	10660
	Rocky Mountain Alpine Dwarf-Shrubland	10700
	Wyoming Basins Dwarf Sagebrush Shrubland and Steppe	10720
	Chihuahuan Creosotebush Desert Scrub	10740
	Chihuahuan Succulent Desert Scrub	10770
	Inter-Mountain Basins Big Sagebrush Shrubland	10800
	Inter-Mountain Basins Big Sagebrush Shrubland—Basin Big Sagebrush	10801
	Inter-Mountain Basins Big Sagebrush Shrubland—Wyoming Big Sagebrush	10802
	Mojave Mid-Elevation Mixed Desert Scrub	10820
	Northwestern Great Plains Shrubland	10850
	Rocky Mountain Lower Montane-Foothill Shrubland	10860
	Rocky Mountain Lower Montane-Foothill Shrubland—No True Mountain Mahogany	10861
	Rocky Mountain Lower Montane-Foothill Shrubland—True Mountain Mahogany	10862
	Southern Colorado Plateau Sand Shrubland	10930
	Apacherian-Chihuahuan Mesquite Upland Scrub	10950
	Chihuahuan Mixed Desert and Thorn Scrub	11000
	Chihuahuan Mixed Desert Shrubland	11002
	Madrean Oriental Chaparral	11010
	Colorado Plateau Pinyon-Juniper Shrubland	11020
	Mogollon Chaparral	11040

Table 3. Community types for the estimated historical distribution of grasslands dataset and corresponding LANDFIRE Biophysical Settings names.—Continued

[LANDFIRE, Landscape Fire and Resource Management Planning Tools]

Community type	Biophysical Settings name	LANDFIRE Code
Shrubland, woodland, and forest—Continued	Rocky Mountain Gambel Oak-Mixed Montane Shrubland	11070
	Sonora-Mojave Semi-Desert Chaparral	11080
	Western Great Plains Mesquite Woodland and Shrubland	11110
	Inter-Mountain Basins Juniper Savanna	11150
	Madrean Juniper Savanna	11160
	Southern Rocky Mountain Ponderosa Pine Savanna	11170
	Southern Rocky Mountain Ponderosa Pine Savanna—South	11171
	Southern Rocky Mountain Ponderosa Pine Savanna—North	11172
	Southern Rocky Mountain Juniper Woodland and Savanna	11190
	Inter-Mountain Basins Big Sagebrush Steppe	11250
	Inter-Mountain Basins Montane Sagebrush Steppe	11260
	Inter-Mountain Basins Semi-Desert Shrub-Steppe	11270
	Inter-Mountain Basins Greasewood Flat	11530
	Middle Rocky Mountain Montane Douglas-fir Forest and Woodland	11660
	Northwestern Great Plains-Black Hills Ponderosa Pine Woodland and Savanna	11790
	Northwestern Great Plains-Black Hills Ponderosa Pine Woodland and Savanna—Low Elevation Woodland	11791
	Northwestern Great Plains-Black Hills Ponderosa Pine Woodland and Savanna—Savanna	11792
	Crosstimbers Oak Forest and Woodland	13080
	North-Central Interior Dry-Mesic Oak Forest and Woodland	13100
	North-Central Interior Maple-Basswood Forest	13140
	Edwards Plateau Limestone Savanna and Woodland	13830
	Tamaulipan Calcareous Thornscrub	13920
	Edwards Plateau Limestone Shrubland	13930
	Edwards Plateau Dry-Mesic Slope Forest and Woodland	15230
Aquatic	Open Water	11
Riparian and wetlands	Rocky Mountain Bigtooth Maple Ravine Woodland	10120
	North American Warm Desert Riparian Systems	11550
	Rocky Mountain Montane Riparian Systems	11590
	Rocky Mountain Subalpine/Upper Montane Riparian Systems	11600
	Western Great Plains Floodplain Systems	11620
	Northwestern Great Plains Canyon	13410
	Western Great Plains Wooded Draw and Ravine	13850
	Eastern Great Plains Floodplain Systems	14690

Table 3. Community types for the estimated historical distribution of grasslands dataset and corresponding LANDFIRE Biophysical Settings names.—Continued

[LANDFIRE, Landscape Fire and Resource Management Planning Tools]

Community type	Biophysical Settings name	LANDFIRE Code
Riparian and wetlands—Continued	Central Interior and Appalachian Floodplain Systems	14710
	Central Interior and Appalachian Riparian Systems	14720
	Eastern Great Plains Wet Meadow–Prairie-Marsh	14880
	Western Great Plains Depressional Wetland Systems	14950
	Western Great Plains Depressional Wetland Systems—Playa	14951
	Western Great Plains Depressional Wetland Systems—Saline	14952
	Chihuahuan-Sonoran Desert Bottomland and Swale Grassland	15040
	Chihuahuan-Sonoran Desert Bottomland and Swale Grassland—Tobosa Grassland	15041
	Chihuahuan-Sonoran Desert Bottomland and Swale Grassland—Alkali Sacaton	15042
	Edwards Plateau Riparian	15250
Sparsely vegetated	Perennial Ice/Snow	12
	Barren-Rock/Sand/Clay	31
	Inter-Mountain Basins Sparsely Vegetated Systems	10010
	North American Warm Desert Sparsely Vegetated Systems	10040
	Rocky Mountain Alpine/Montane Sparsely Vegetated Systems	10060
	Western Great Plains Sparsely Vegetated Systems	10070
	Rocky Mountain Alpine Fell-Field	11430
	Rocky Mountain Alpine Turf	11440

[1]Cool season bunchgrass prairie was not classified as a result of the use of LANDFIRE data.

[2]Several desert scrub types were reclassified as saline grasslands using data from the National Resources Conservation Service.

Products

Datasets associated with this report include a raster dataset in Tag Image File Format (.tif) representing the estimated historical distribution of grassland communities of the Southern Great Plains, the associated Federal Geographic Data Committee metadata in XML format, and a layer file (.lyr) used for cartographic display of the raster data (Callan and others, 2016).

Disclaimers

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Summary

This project mapped the estimated historical distribution of grassland communities of the Southern Great Plains Rapid Ecoregional Assessment (REA) project area prior to Euro-American settlement. We mapped the distribution of 10 grassland communities within the project area including shortgrass, mixed-grass, and sand prairies which are the dominant grassland communities evaluated for the REA. Community types were primarily classified using the plant species with the largest annual productivity as identified by the Natural Resources Conservation Service (NRCS). We also used Landscape Fire and Resource Management Planning Tools (LANDFIRE) classifications where NRCS data were unavailable and in peripheral watersheds intersecting an ecoregion boundary. Some ecological sites were classified from only a few vegetation plots; consequently, the estimated historical distribution of grasslands is best suited to regional- and landscape-level applications as a result of these and other data limitations inherent in estimating the historical distribution of grasslands. The 30 x 30-meter raster dataset of the estimated historical distribution of grassland communities (Callan and others, 2016) can be used to address management questions for the Southern Great Plains REA, Great Plains Landscape Conservation Cooperative, and other broad-scale management issues.

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