

Assessment and Revisions of North American Grassland Priority Conservation Areas

Rocky Mountain Bird Observatory

Commission for Environmental Cooperation



This background paper was written by Duane Pool and Arvind Panjabi from the Rocky Mountain Bird Observatory for the Secretariat of the Commission for Environmental Cooperation. The information contained herein does not necessarily reflect the views of the CEC, or the governments of Canada, Mexico or the United States of America.

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Thirty arc second color shaded relief image of North America with original and revised grassland Priority Conservation Areas polygons imposed. Image by Duane Pool.

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Executive Summary

This report accompanies a geospatial database of Grassland Priority Conservation Areas (GPCAs) within the Central Grassland ecosystem of North America that is based upon the application of newly available data to the original process used to identify and delineate GPCAs. The original process began in 2002 and culminated in a report and map for the North American Atlas in 2005. That report (www.cec.org/Storage/57/4975_GPCA_Technical_Report_en.pdf) developed a process through which grassland landscapes were evaluated by local, regional and national experts for their importance to key grassland species. The proposed areas identified in the process were scored and ranked based on services to a diversity of species and projections of the rate at which those habitats were being lost. Risk to the long term sustainability of grassland habitats and the services provided by them were instrumental to designation as conservation priority. Where possible the process was data driven, however at the time of the evaluation, several areas did not have data, or the same quality of data, available to inform the process. In several areas the process was driven by expert opinion. Since the original report was completed there have been significant advances in data sharing and new data generation in some of the previously under-represented areas.

This review included the evaluation of both public and proprietary data collected in the Central Grasslands Ecosystem. Key data used in this review include: United States Geological Survey (USGS) national and international land cover and elevation data layers; state, university and Non-Governmental Organizations (NGO) habitat, species, priority areas and land cover data; USGS Breeding Bird Surveys (BBS) and Christmas Bird Count (CBC) raw data and derived products; Rocky Mountain Bird Observatory (RMBO) bird and vegetation survey data; Canadian Wildlife Service (CWS) bird survey data (via USGS data portal) and data from individual researchers. The original scoring and ranking process was replicated where possible and in areas where data availability was relatively unchanged since the original process, recommendations for GPCA boundaries remained relatively unchanged. In areas where there was an original paucity of data there were significant alterations of proposed boundaries as well as additional GPCAs recommended for inclusion.

The original GPCAs and changes to GPCAs were distributed widely for comment, recommendations and access to additional information. The final data presented with this report processed those rankings, scores and comments from experts and the stakeholder community. Please refer to the original Commission for Environmental Cooperation and The Nature Conservancy report referenced above for an additional explanation of original the process.

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Background

The CEC's 2009 Operational Plan (www.cec.org) highlighted the importance and contributions of desert grassland habitats to continental biodiversity. This report provides guidance and supports the implementation of the CEC project to "Conserve North American Grasslands", specifically the CEC project "Building Capacity for Grasslands Biodiversity Conservation in Northern Mexico". This report contributes to the overall objectives of this major CEC project by:

- Supporting the establishment of a Northern Mexico Regional Grassland Conservation Alliance (the Regional Alliance);
- Supporting comprehensive grassland bird monitoring and inventory programs; and
- Contributing to ensuring the long-term protection and management of key grassland tracts across North America.

The CEC project, Building Capacity for Grasslands Biodiversity Conservation in Northern Mexico, is supported by the trilateral commission working group which includes participants from relevant government and non-government agencies in Mexico, the United States, and Canada. The project draws on past experience in grassland conservation under the auspices of the CEC, as well as the expertise of relevant organizations contributing to this conservation effort across North America. This report will enable the specific targeting of resources for these conservation efforts.

In 2002, the CEC and The Nature Conservancy initiated a process of data analysis and review of expert opinion to identify priority areas for conservation in the North American grasslands. In 2005 this first-ever process to delineate the highest priority areas for grassland conservation in North America (English:

http://www.cec.org/Page.asp?PageID=1225&SiteNodeID=245&BL_ExpandID=104) (Spanish: http://www.cec.org/Page.asp?PageID=1225&SiteNodeID=245&BL_ExpandID=150) generated a list of priority conservation areas (PCAs) along with a map identifying the location of these areas: <http://www.cec.org/naatlas/maps/index.cfm?catId=7&mapId=11&varlan=english>. This collaborative process identified viable habitats, species abundance, various risks and a number of additional criteria to prioritize and delineate the GPCA. The original CEC process identified sites across all three countries and used the best available knowledge bases and data available at the time of the assessment (http://www.cec.org/Storage/65/5902_GPCA_Technical_Report_en.pdf).

Over the past eight years, biodiversity data collection efforts have expanded markedly in the North American grasslands. In addition, significant technical advances have been made which facilitate sharing and integrating of the results of these efforts in new knowledge products. Therefore, the CEC initiated this review of the GPCAs – particularly to determine whether new data availability provides a basis to revise the current boundaries and distribution of the current list of PCAs.

Justification

Accurate baseline data of the location and distribution of priority conservation areas is an important prerequisite for targeted decision making. Targeting also allows for more coherent policy formulation in support of conservation decisions. The ability to spatially confine and

target policy and program also generates efficiency in resource allocation and provides tangible capacity expectations for decision making authorities. Targeted program and policy development assure that resources will be efficiently allocated to have the greatest beneficial impacts on ecosystem management and resilience.

Project Description

The project compared current delineations of GPCAs identified in Mexico, the US, and Canada with existing grassland bird and vegetation monitoring data in each country. During this process we redefined boundaries of individual GPCAs as necessary and provided a brief rationale for boundary adjustments. Scoring and ranking factors are included in the spatial data layers attribute database. We proposed the inclusion of four new GPCAs in Mexico which were endorsed by the experts and stakeholder community. A brief rationale is provided for these additions. We revised several GPCA boundaries to better reflect public and protected lands in proximity to the GPCA.

Methods and Results

A review of differences in data availability revealed that the original GPCAs were developed with little data in some areas, particularly in Mexico, and the resulting boundaries in these areas did not always correspond well with existing grasslands and priority species distributions. As a result Mexico was under-represented in the North American GPCA network, and the existing GPCAs in Mexico, especially in the southern reaches of the Chihuahuan Desert, may have been inadequate to sustain the many millions of migratory grassland birds that concentrate in this region in winter. Recent wintering grassland bird monitoring has identified additional sites of importance in Mexico that were considered in the current review. The Canadian prairies were well represented in southern Saskatchewan; only minor boundary adjustments are proposed. However, the Poverty Plains and other central grassland areas with large areas of public lands may still require additional attention if there is sufficient justification of biological and habitat threat.

The RMBO review of the suite of GPCAs was performed in five major steps: 1) evaluate the boundaries of GPCAs in Mexico, given the development of additional grassland and species related data in Mexico, 2) evaluate the need to delineate additional Mexican GPCAs, or remove them, based on new data, 3) evaluate the GPCAs in the US and Canada using any available new information to make suggested edits to the current number and boundaries of GPCAs in these countries, 4) disseminate the results of these evaluations to a large array of scientists, policy makers, and land management staff throughout the three countries for review, comment and suggested changes, 5) Evaluate and integrate feedback from reviewers into a single set of suggested changes to the North American GPCAs.

The most significant changes in Mexico resulted from four primary influences: 1) RMBO surveys indicate that nearly all large block desert grasslands with relatively gentle slopes provide habitat for high-priority wintering grassland bird species. 2) The rate of human induced land use change appears to be increasing, and all arable grasslands are at increasing risk of loss. 3) The total area of grassland is already limited in the Mexican Chihuahuan Desert, making up

considerably less than the roughly 15% suggested by the current GIS, and migratory grassland birds from across western North America concentrate heavily in these grasslands during the non-breeding period. Especially uncommon on the landscape are low-slope, un-encroached (woody), and undisturbed (farming) grasslands, which appear to be most important in supporting both high grassland bird diversity and abundance. 4) Shrub-encroached grasslands currently provide habitat for a number of grassland-dependent birds, some of which are also of conservation concern, and restoration of these grasslands may be a viable strategy for increasing habitat for open-grassland obligate species. Restoration will likely be cheaper and more successful in shrub-encroached areas with intact grass cover compared to abandoned farmland; thus some areas of shrub-encroached grasslands are included in the proposed or revised GPCAs.

The changes in US GPCA boundaries correspond to boundary adjustments that appear to better capture the original intent of the GPCA. In several cases more recent land cover data published by USGS and State GIS Data Hubs provided the rationale for minor boundary adjustments. These adjustments were frequently made to incorporate habitat consistency or ownership consistent with protection status of the underlying habitat. The changes in North Dakota were based on Federal ownership, wetland density and USGS and USFWS derived species management maps. The Pawnee Grasslands GPCA in northern Colorado was changed in response to RMBO data that identified significant populations of key conservation targets outside of the current boundaries. Changes identified for the Canadian prairies were to eliminate an arbitrary gap in boundaries between Suffield and Bow Island. These changes were suggested from Federal, Provincial, and regional and international NGO sources. Additional suggestions were made to evaluate the boundary of the Poverty Plain and the areas dominated by Government-owned pastures but without specific recommendations for those changes. The areas dominated by Government-owned public pastures are vital resources. Given the relative protected status of these pastures, without additional information specifically defining the areas and justifying the ranking/scoring of these sites, it was not possible to make changes consistent with the standards of the original delineations of GPCAs. The Poverty Plains polygon could be improved but no reviewers provided guidance on specific boundary changes and justification for any extension or retraction of boundaries.

Several reviewers provided specific comments on risks, changes in risks, species use, quality of habitats, and delineation of the GPCAs. We received comments both in support of and against the proposed changes. Comments provided with supporting detailed explanations and physical data were given greater weight than those without additional support.

Appendix A: GPCA Maps

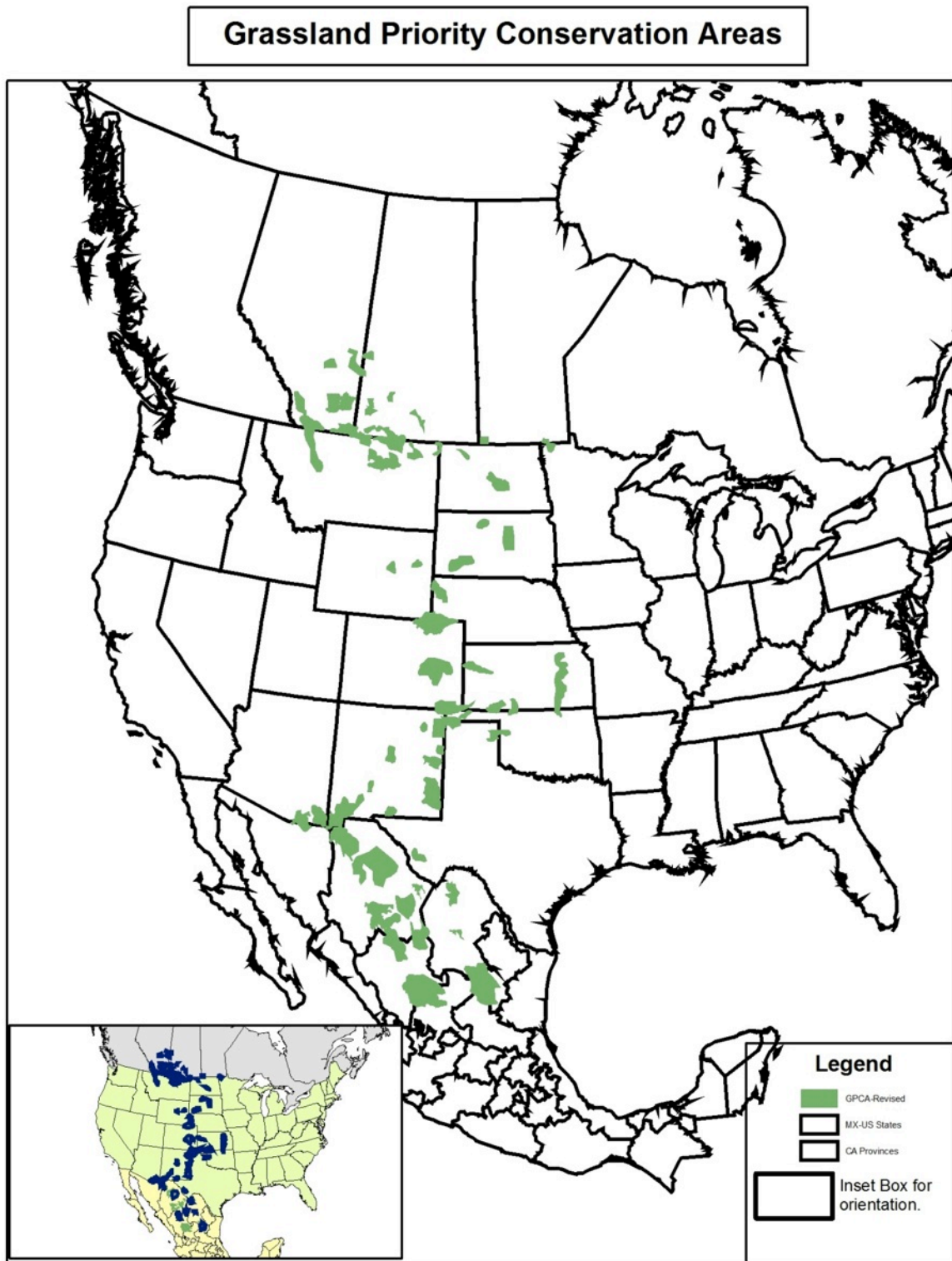
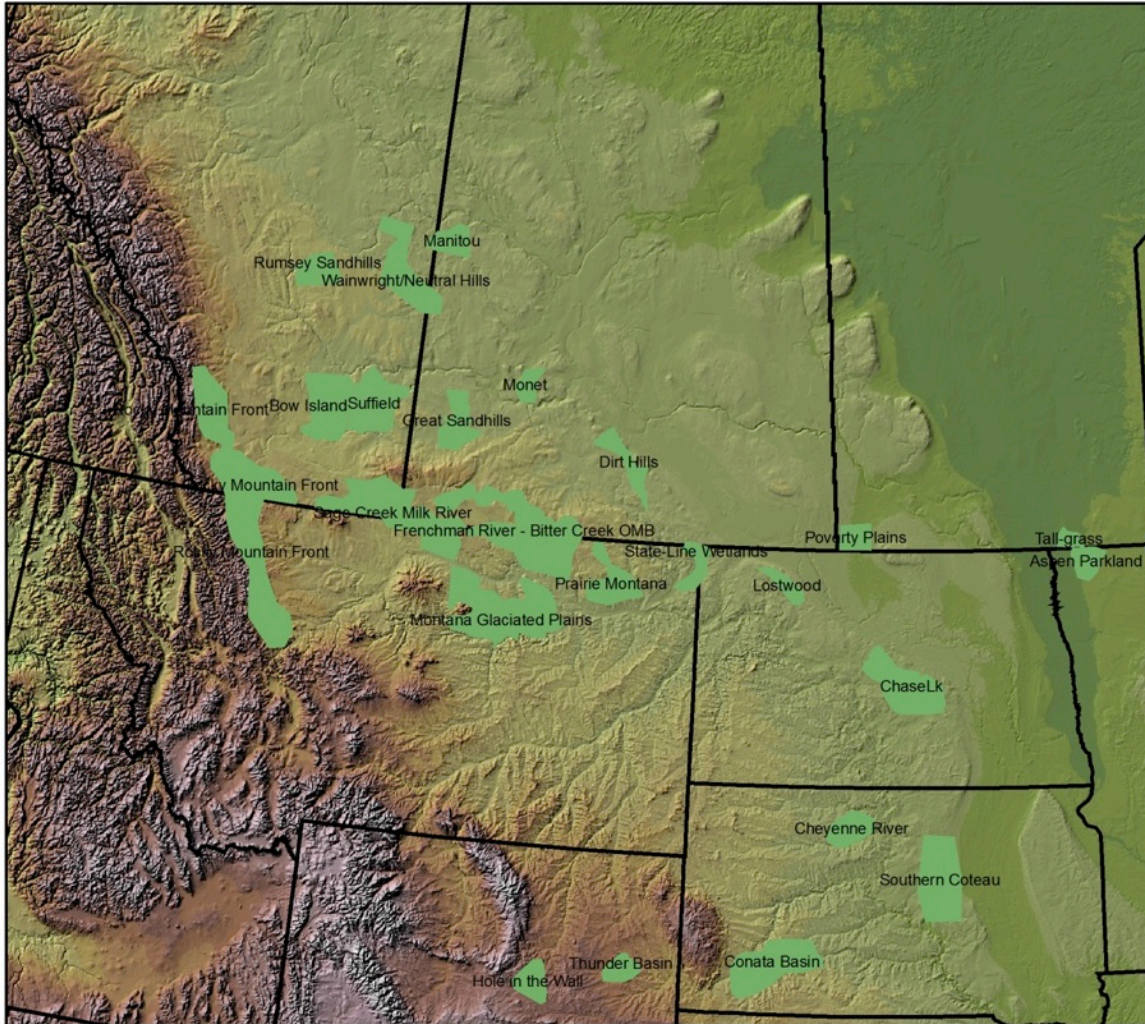


Figure 1: North American Revised GPCAs (Green) and Inset Showing Original GPCAs (Blue).

2010 Grassland Priority Conservation Areas Northern Areas



Grassland Priority Conservation Areas Locator
See boxed area for reference.

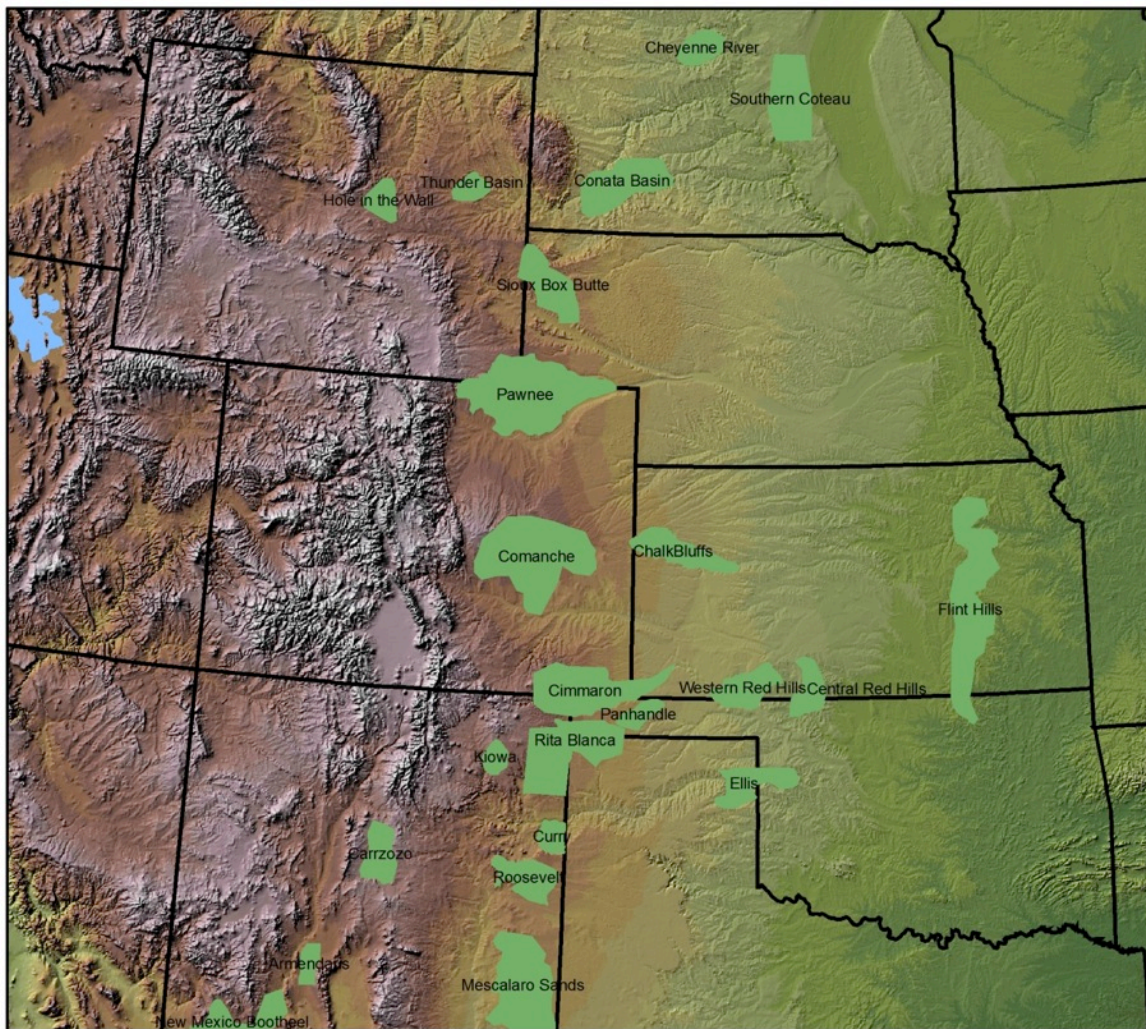


Legend

- GPCA2010
- MX States
- CA Provinces
- US States

Figure 2: Northern GPCAs

2010 Grassland Priority Conservation Areas Central Areas



Grassland Priority Conservation Areas Locator
See boxed area for reference.

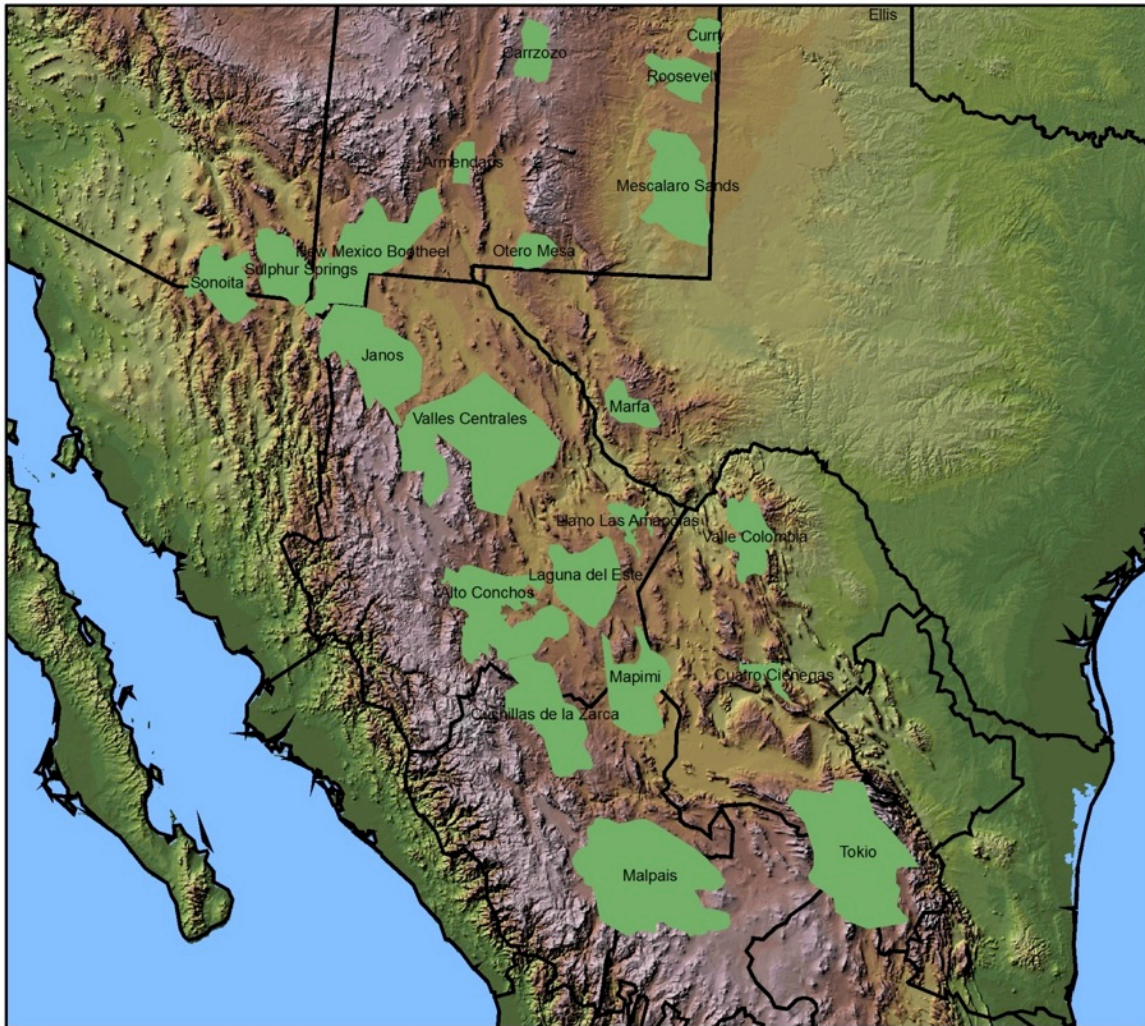


Legend

- GPCA2010
- MX States
- CA Provinces
- US States

Figure 3: Central GPCAs

2010 Grassland Priority Conservation Areas Southern Areas



Grassland Priority Conservation Areas Locator
See boxed area for reference.

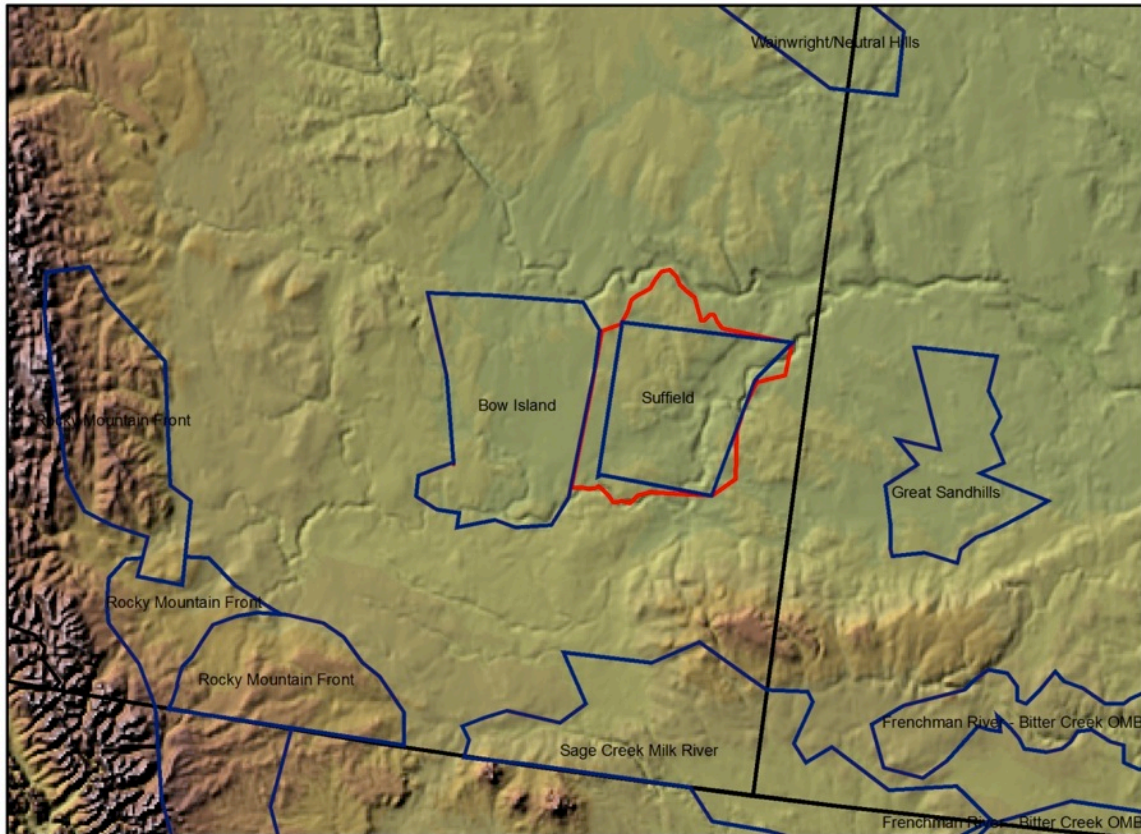


Legend

- GPCA2010
- MX States
- CA Provinces
- US States

Figure 4: Southern GPCAs

2010 Grassland Priority Conservation Areas Suffield



The Suffield GPCA is a grassland landscape dominated by grazing agriculture and public lands. There is significant pressure to convert to cropping agriculture and mineral extraction. The area services an array of breeding grassland species and is important habitat for Sprague's Pipit, Baird's Sparrow, Ferruginous Hawk, McCown's and Chestnut-collared Longspur. The boundary changes were made to better reflect the extent of the habitat servicing these species. This GPCA joins Bow Island and the boundary gap between the two GPCA's was contrary to the biological services provided by the grasslands between the two areas.

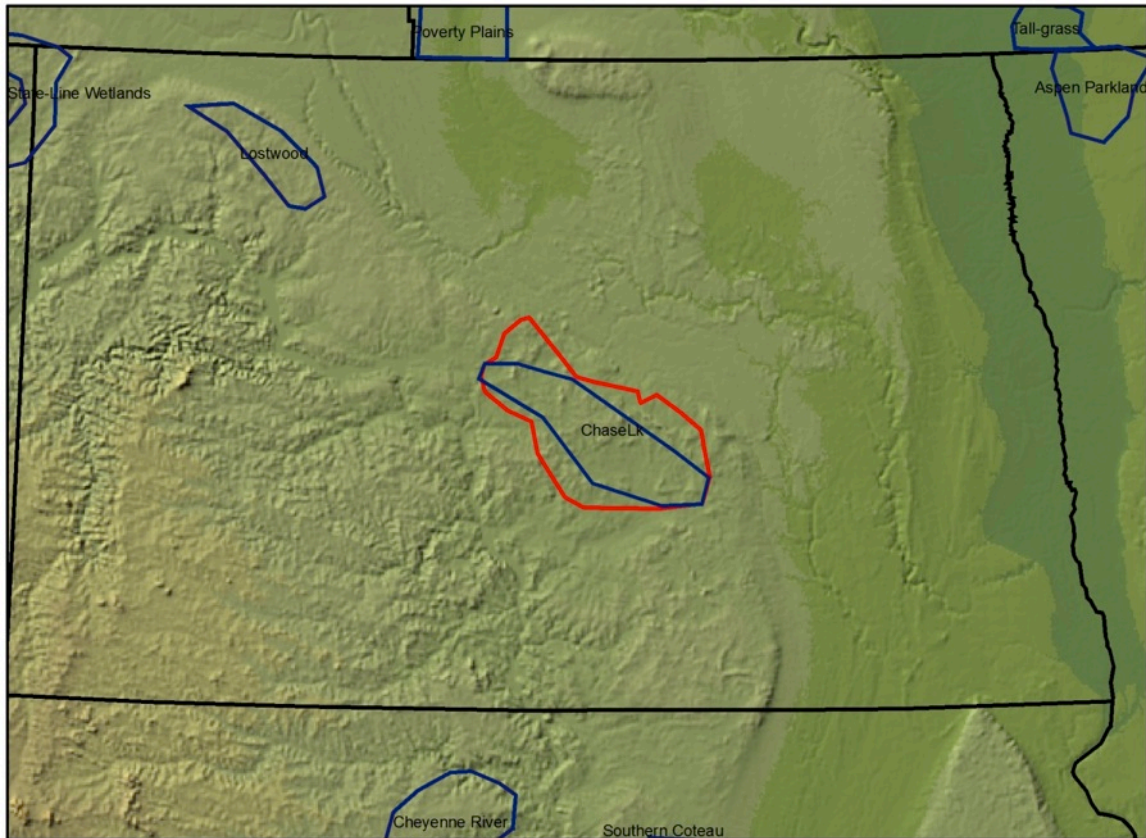


Legend

- GPCA-CEC
- GPCA2010

Figure 5: GPCA Changes in Red

2010 Grassland Priority Conservation Areas Chase Lake



The Chase Lake GPCA is a grassland landscape dominated by grazing agriculture and public lands. There is significant pressure from conversion to cropping agriculture, fragmentation, habitat disturbance and alteration. The area services an array of breeding grassland species and is important habitat for Sprague's Pipit, Baird's Sparrow, and Piping Plover. The boundary changes were made to better reflect the dominant geological feature of the glaciated morain and the inclusion of grasslands along the edge of this GPCA which are thought to influence the biological productivity of the interior grasslands servicing these species.

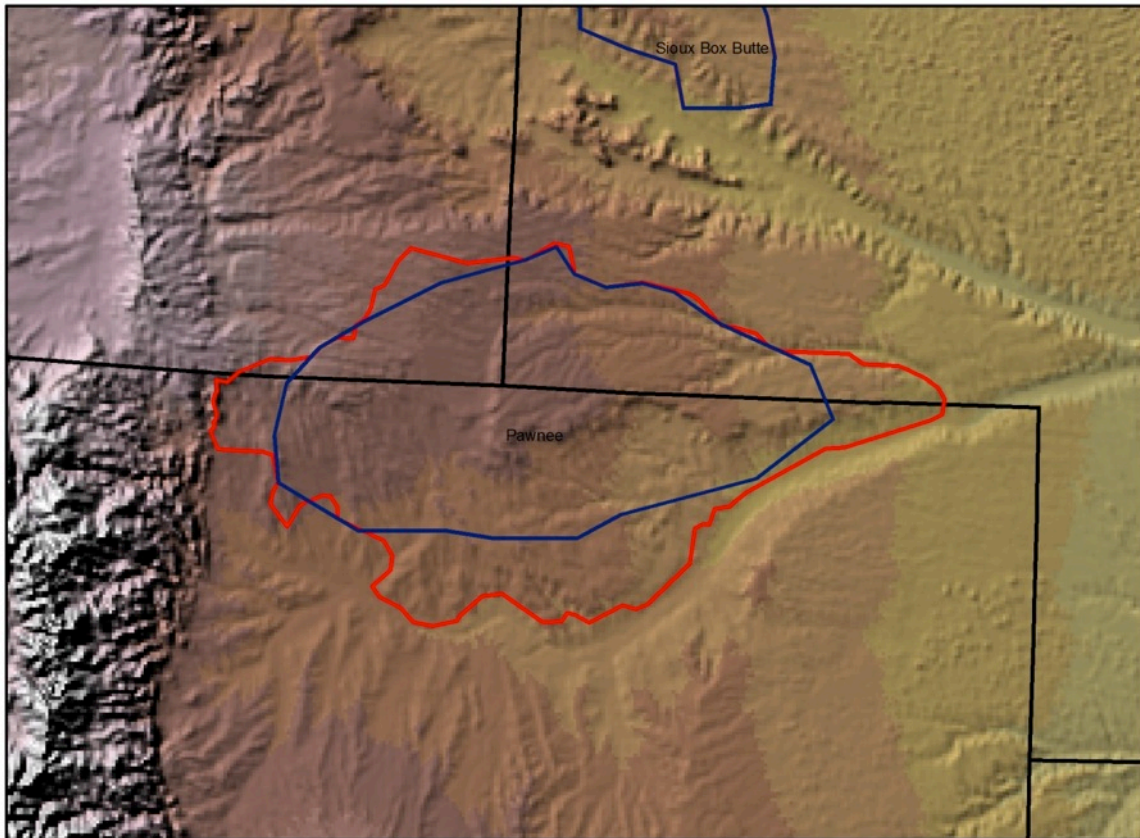


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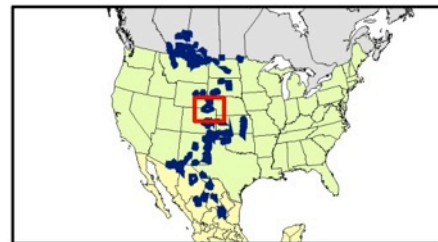
- GPCA-CEC
- GPCA2010

Figure 6: GPCA Changes in Red

2010 Grassland Priority Conservation Areas Pawnee Grasslands



The Pawnee Grasslands GPCA is a grassland landscape dominated by grazing agriculture and public lands. There is significant pressure from conversion to center pivot agriculture, fragmentation, habitat disturbance and alteration. The area services grassland species and is important habitat for Mountain Plover, Lark Bunting, and McCown's Longspur. The boundary changes were made to incorporate additional populations of these target species as determined by recent surveys in the western portions and the southern and eastern boundary changes incorporate additional habitat adjacent to the previous GPCA. The expansion is supported by abundance estimates from multiple years of monitoring data and the threats to the expansion area are even more eminent.

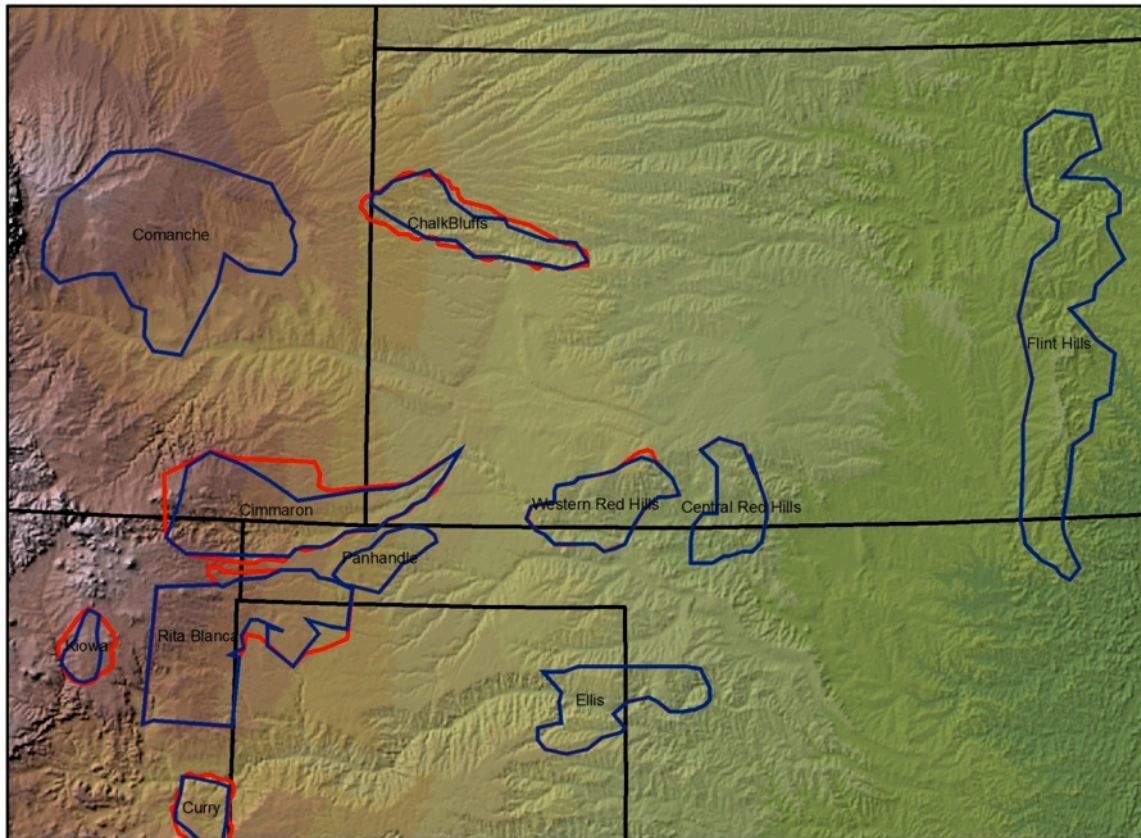


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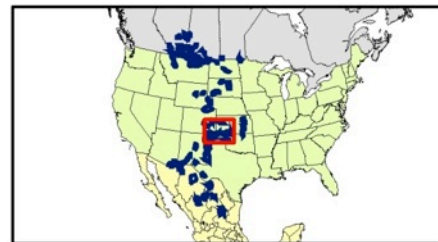
- ▭ GPCA-CEC
- ▭ GPCA2010

Figure 7: GPCA Changes in Red

2010 Grassland Priority Conservation Areas Chalk Bluffs and Western Red Hills



The Chalk Bluffs and Western Red Hills GPCAs are a mixed-grass landscape the dominant land use is both cropping and grazing agriculture. Each area has a matrix of public lands imbedded in the GPCA. There is pressure from conversion to agriculture, fragmentation, habitat disturbance, grazing pressure and alteration. The Chalk Bluffs area is important habitat for Burrowing Owl, Lark Bunting and Black tailed Prairie dog. The Western Red Hills is vital habitat for Lesser Prairie-Chicken. The boundary changes were made to reflect recent grassland layers and the matrix of public lands.

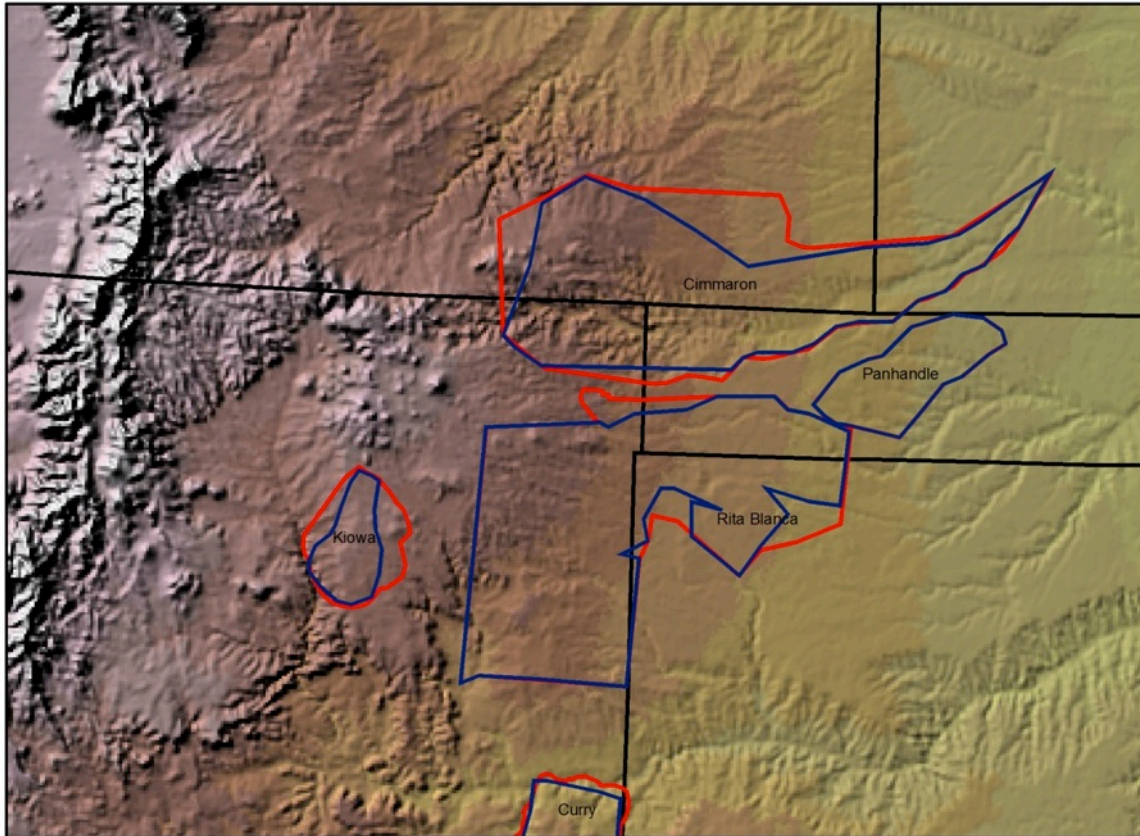


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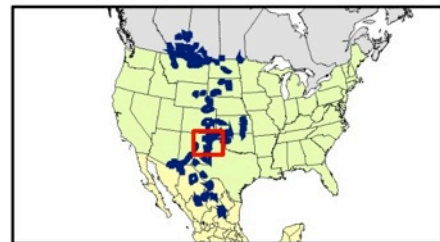
- ▬ GPCA-CEC
- ▬ GPCA2010

Figure 8: GPCA Changes in Red

2010 Grassland Priority Conservation Areas Cimmaron, Kiowa and Rita Blancas



The grassland landscapes of Cimmaron, Kiowa and Rita Blanca GPCAs are dominated by both cropping and grazing agriculture practices. Each area has a matrix of public lands imbedded in the GPCA. There is pressure from conversion to cropping, woody encroachment, fragmentation, habitat disturbance, grazing pressure, oil and gas development and alteration. The Cimmaron area is important habitat for Long-billed Curlew, Lesser Prairie-Chicken, Burrowing Owl, and Cassin's Sparrow. The Rita Blanca supports many species but is high importance to Chestnut-collared Longspur. Kiowa Grasslands are also of high importance to Cassin's Sparrow. The boundary changes to these areas were made to reflect recent grassland layers and the matrix of public lands.

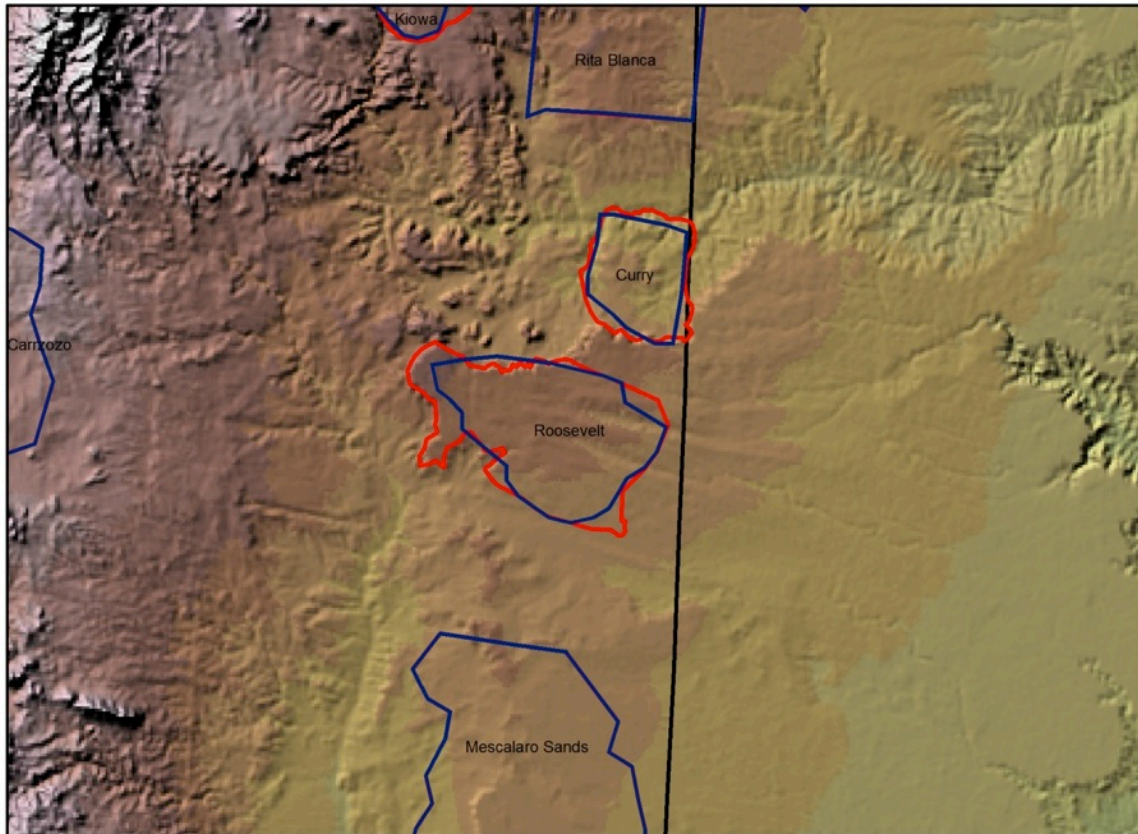


Legend

- GPCA-CEC
- GPCA2010

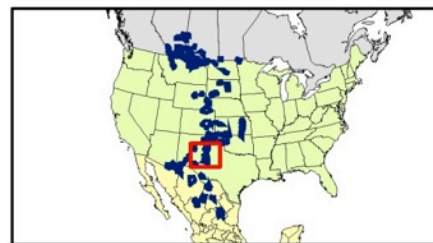
Figure 9: GPCA Changes in Red

2010 Grassland Priority Conservation Areas Curry and Roosevelt



The Curry and Roosevelt GPCAs are a grassland/shrubland landscape. The dominant land uses are both cropping and grazing agriculture. There is pressure from conversion to cropping, woody encroachment, fragmentation, habitat disturbance, grazing pressure, energy development and alteration.

The Curry area is important habitat for Ferruginous Hawk, Lesser Prairie-Chicken, Burrowing Owl, Black-tailed Prairie dog and Cassin's Sparrow. The Roosevelt area supports many species but is of high importance to Ferruginous Hawk and Lesser Prairie-Chicken. The boundary changes to these areas were made to reflect recent grassland layers.

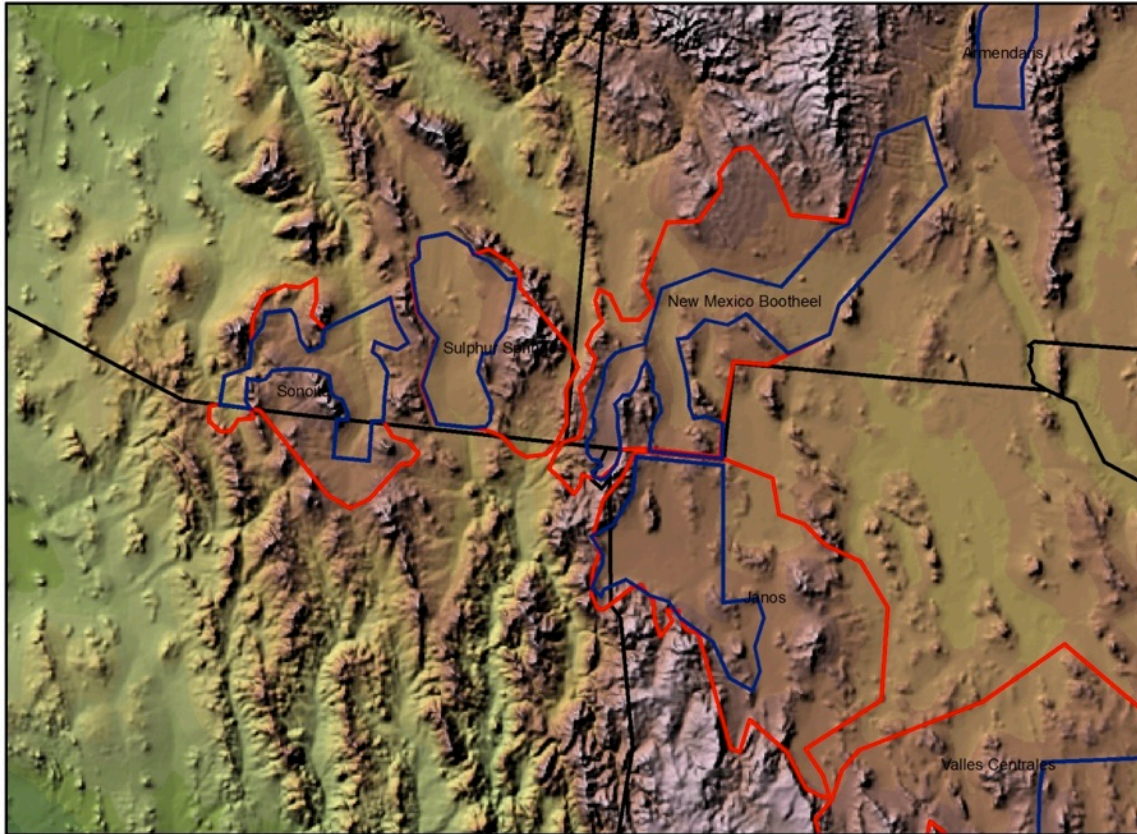


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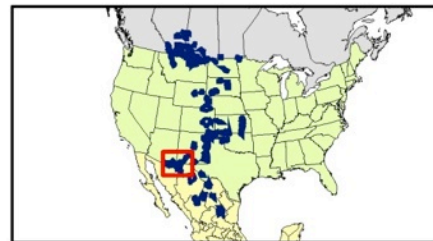
- GPCA-CEC
- GPCA2010

Figure 10: GPCA Changes in Red

2010 Grassland Priority Conservation Areas Sonoita, Sulphur Springs and the New Mexico Bootheel



The Sonoita, Sulphur Springs and New Mexico Bootheel GPCAs are a desert grasslands landscape. The dominant land uses are both grazing and cropping agriculture. There is pressure from conversion to cropping, woody encroachment, urban development and grazing pressure. These three areas are important habitat for Scaled Quail, Loggerhead Shrike, Lark Bunting, Cassin's Sparrow and Chestnut-collared Longspur. The boundary changes to these areas were made to reflect recent vegetative and species surveys by TNC and their partner agencies. The polygons include some ridges between grasslands however the grassland slopes, level areas and valley grasslands are the focus of these GPCAs.

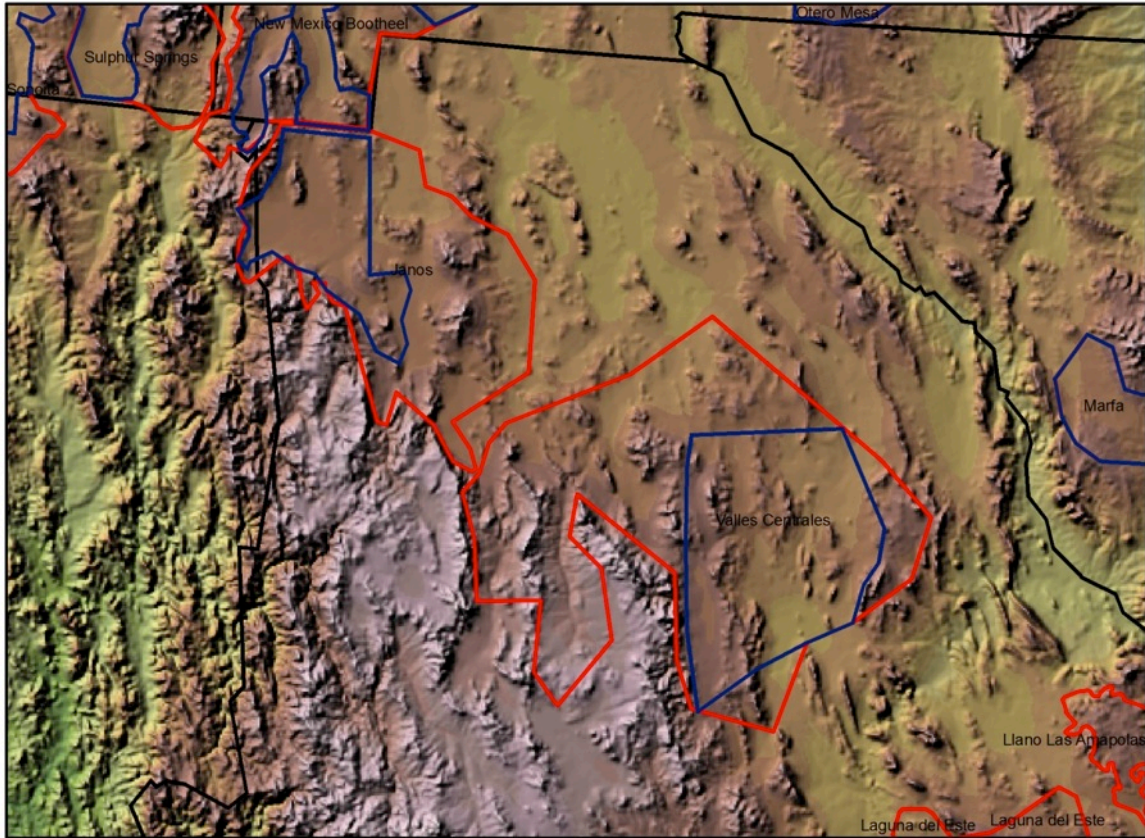


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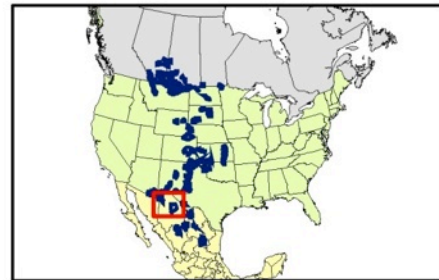
- GPCA-CEC
- GPCA2010

Figure 11: GPCA Changes in Red

2010 Grassland Priority Conservation Areas Janos and Valles Centrales



The Janos and Valles Centrales GPCAs are a desert grasslands landscape. The dominant land uses are both grazing and cropping agriculture. There is pressure from conversion to cropland, woody encroachment, fragmentation, alteration and grazing pressure. These areas rank very high and high for a variety of grassland obligate species. They are important habitat for Loggerhead Shrike, Lark Bunting, Cassin's Sparrow, Long-billed Curlew, Ferruginous Hawk, Burrowing Owl, Sprague's Pipit, Black-tailed prairie dog, Mexican Pronghorn and Chestnut-collared Longspur. The boundary changes to these areas were made to reflect recent vegetative analysis and species abundance estimates from RMBO and their partner agencies. The low shrub grassland slopes, gently sloping grasslands and valley grasslands are the focus of these GPCAs.

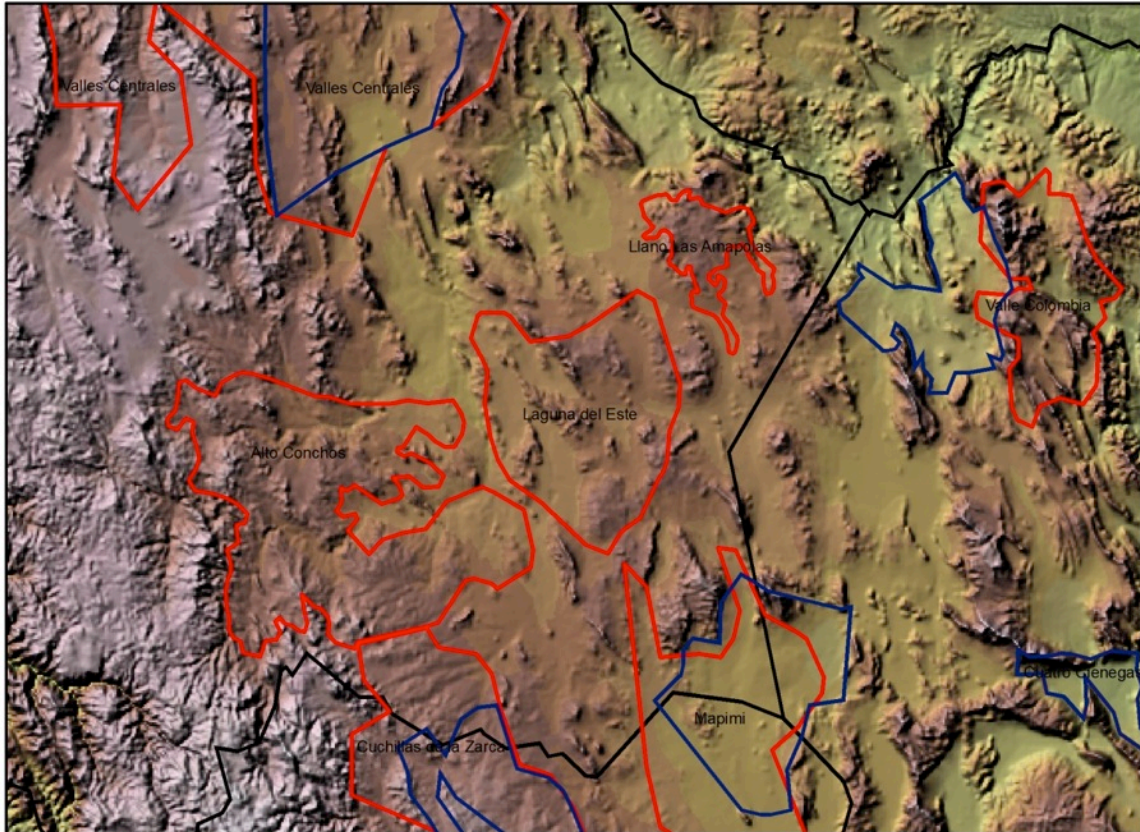


Legend

- GPCA-CEC
- GPCA2010

Figure 12: GPCA Changes in Red

2010 Grassland Priority Conservation Areas Lagunas del Este, Llano Las Amapolas, Alto Conchos and Valle Colombia



The Lagunas del Este, Llano Las Amapolas, Alto Conchos and Valle Colombia GPCAs are desert grasslands landscapes. The dominate land uses are both grazing and cropping agriculture. There is pressure from conversion to agriculture, woody encroachment, fragmentation, alteration and grazing pressure. Recent surveys indicate the habitats of these areas are very important for a variety of grassland obligate species. They are important habitat for Loggerhead Shrike, Lark Bunting, Cassin's Sparrow, Long-billed Curlew, Ferruginous Hawk, Burrowing Owl, Sprague's Pipit, Black tailed prairie dog, Mexican Pronghorn and Chestnut-collared Longspur. Valle Colombia is a complete boundary change due to an error in the original GPCA database. The other areas are new GPCAs that were added to incorporate areas supporting significant grasslands and populations of key bird conservation targets as determined through recent surveys by RMBO and partner organizations. The low shrub grassland slopes, gently sloping grasslands and valley grasslands are the focus of these GPCAs.

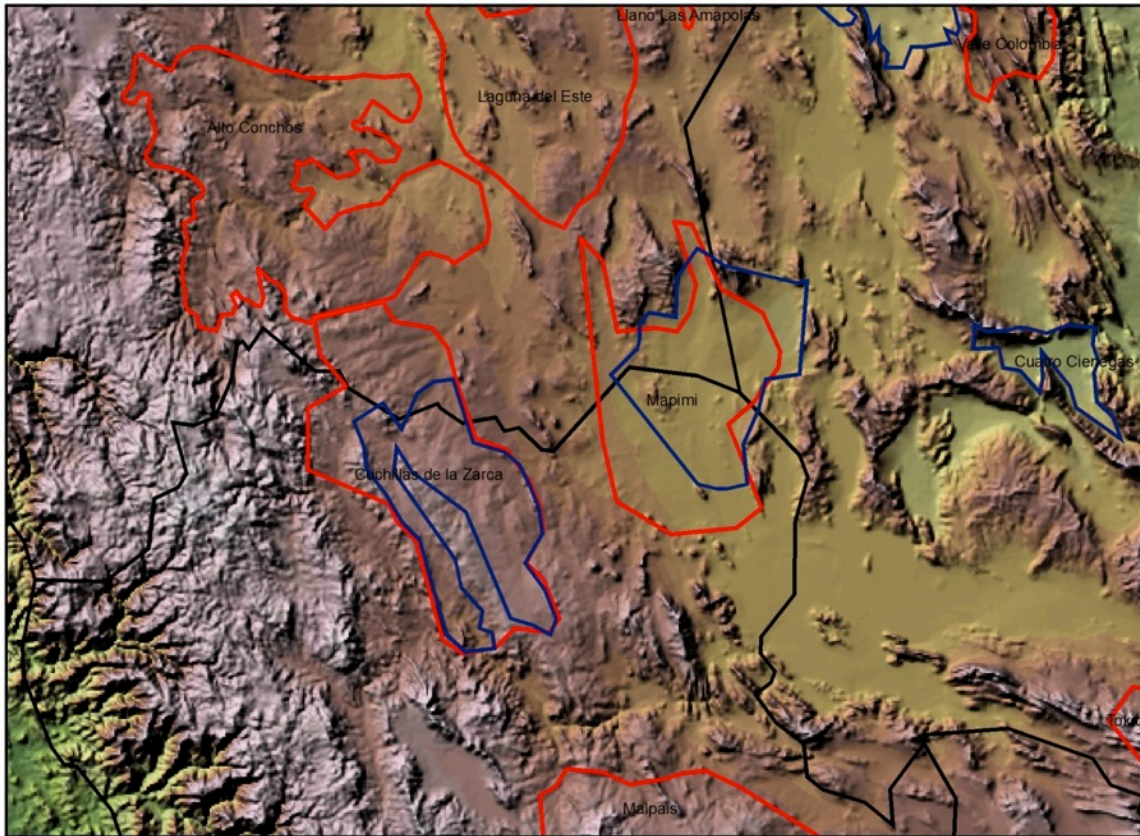


Legend

- GPCA-CEC
- GPCA2010

Figure 13: GPCA Changes in Red

2010 Grassland Priority Conservation Areas Mapimí and Cuchillas de la Zarca



The Mapimí and Cuchillas de la Zarca GPCAs are desert grassland landscapes. The dominate land uses are both grazing and cropping agriculture. There is pressure from conversion to cropland, woody encroachment, fragmentation, alteration and grazing pressure. Recent surveys indicate the habitats of these areas are very important for a variety of grassland obligate species. They are important habitat for Loggerhead Shrike, Lark Bunting, Cassin's Sparrow, Long-billed Curlew, Ferruginous Hawk, Burrowing Owl, Sprague's Pipit, and Chestnut-collared Longspur. Recent species and habitat surveys along with local and regional researchers' observations suggest the need to expand the GPCA area. The low shrub grassland slopes, gently sloping grasslands and valley grasslands are the focus of these GPCAs.

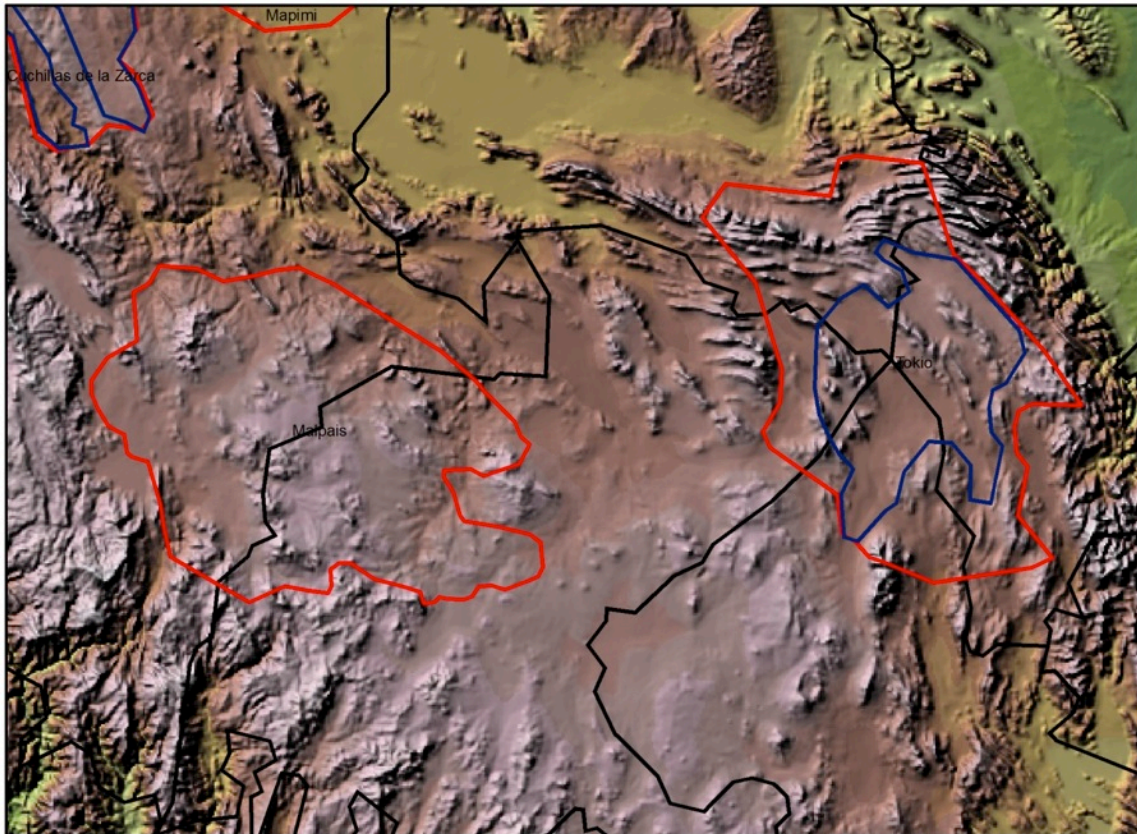


Legend

- GPCA-CEC
- GPCA2010

Figure 14: GPCA Changes in Red

2010 Grassland Priority Conservation Areas Malpaís and El Tokio



The Malpaís and El Tokio GPCAs are desert grassland landscapes. The dominant land uses are both grazing and cropping agriculture. There is pressure from conversion to cropland, fragmentation, alteration and grazing pressure. Recent analyses from surveys indicate the habitats of these areas are very important for a variety of grassland obligate species and are under severe threat from an increasing rate of conversion to cropland. Between these two areas they are important habitat for Mountain Plover, Loggerhead Shrike, Cassin's Sparrow, Long-billed Curlew, Ferruginous Hawk, Burrowing Owl, and Worthen's Sparrow. Recent analysis from species and habitat surveys along with local and regional researchers' observations indicate the need for the additional areas. The low shrub grassland slopes, gently sloping grasslands and valley grasslands are the focus of these GPCAs.



Legend

- GPCA-CEC
- GPCA2010

Figure 15: GPCA Changes in Red

Appendix B: Database Tables

GPCAPOLY_I	Name	ESR_GROUP	PCA_GROUP
1	Manitou	Northern	Northern A
2	Wainwright/Neutral Hills	Northern	Northern A
3	Rumsey Sandhills	Northern	Northern A
4	Monet	Northern	Northern A
5	Suffield	Northern	Northern A
6	Bow Island	Northern	Northern A
7	Great Sandhills	Northern	Northern A
8	Rocky Mountain Front	Northern	Northern B
9	Dirt Hills	Northern	Northern A
10	Frenchman River - Bitter Creek OMB	Northern	Northern A
11	Rocky Mountain Front	Northern	Northern B
12	Sage Creek Milk River	Northern	Northern A
13	Rocky Mountain Front	Northern	Northern B
14	Poverty Plains	Northern	Northern A
15	Tall-grass	Northern	Northern A
16	State-Line Wetlands	Northern	Northern B
17	Aspen Parkland	Northern	Northern B
18	Prairie Montana	Northern	Northern B
19	Lostwood	Northern	Northern B
20	Montana Glaciated Plains	Northern	Northern B
21	ChaseLk	Northern	Northern B
22	Cheyenne River	Northern	Northern B
23	Southern Coteau	Northern	Northern B
24	Conata Basin	Northern	Northern B
25	Thunder Basin	Northern	Northern B
26	Hole in the Wall	Northern	Northern B
27	Sioux Box Butte	Central	Central
28	Pawnee	Central	Central
29	Flint Hills	Central	Central
30	Comanche	Central	Central

GPCAPOLY_I	Name	ESR_GROUP	PCA_GROUP
31	ChalkBluffs	Central	Central
32	Central Red Hills	Central	Central
33	Western Red Hills	Central	Central
34	Cimmaron	Central	Central
35	Panhandle	Central	Central
36	Rita Blanca	Central	Central
37	Kiowa	Central	Central
38	Ellis	Central	Central
39	Curry	Central	Central
40	Carrzozo	Central	Central
41	Roosevelt	Central	Central
42	Mescalero Sands	Central	Central
43	Armendaris	Southern	Southern
44	New Mexico Bootheel	Southern	Southern
45	Otero Mesa	Southern	Southern
46	Sulphur Springs	Southern	Southern
47	Sonoita	Southern	Southern
48	Janos	Southern	Southern
49	Marfa	Southern	Southern
50	Valles Centrales	Southern	Southern
51	Valle Colombia	Southern	Southern
52	Llano Las Amapolas	Southern	Southern
53	Lagunas del Este	Southern	Southern
54	Alto Conchos	Southern	Southern
55	Mapimí	Southern	Southern
56	Cuatro Cienegas	Southern	Southern
57	Cuchillas de la Zarca	Southern	Southern
58	Tokio	Southern	Southern
59	Malpaís	Southern	Southern

Name	ESR_NUMBER	ESR_AREA	ESR_EXPERT
Manitou	Northern Fescue	31000.000000	High
Wainwright/Neutral Hills	Northern Fescue	31000.000000	High
Rumsey Sandhills	Northern Fescue	31000.000000	High
Monet	Missouri Couteau	63000.000000	Very High
Suffield	Medicine Line Mixed Grass	108000.000000	Very High
Bow Island	Medicine Line Mixed Grass	108000.000000	Very High
Great Sandhills	Medicine Line Mixed Grass	108000.000000	Very High
Rocky Mountain Front	Rocky Mountain Front	18000.000000	Very High
Dirt Hills	Missouri Couteau	63000.000000	Very High
Frenchman River - Bitter Creek OMB	Medicine Line Mixed Grass	108000.000000	Very High
Rocky Mountain Front	Rocky Mountain Front	18000.000000	Very High
Sage Creek Milk River	Medicine Line Mixed Grass	108000.000000	Very High
Rocky Mountain Front	Rocky Mountain Front	18000.000000	Very High
Poverty Plains	Manitoba Mixed Grass-Towne	7400.000000	Moderate
Tall-grass	Agassiz Tallgrass	10700.000000	Very High
State-Line Wetlands	Missouri Couteau	63000.000000	Very High
Aspen Parkland	Agassiz Tallgrass	10700.000000	Very High
Prairie Montana	Medicine Line Mixed Grass	108000.000000	Very High
Lostwood	Missouri Couteau	63000.000000	Very High
Montana Glaciated Plains	Medicine Line Mixed Grass	108000.000000	Very High
ChaseLk	Missouri Couteau	63000.000000	Very High
Cheyenne River	Cheyenne Prairie	41700.000000	High
Southern Coteau	Missouri Couteau	63000.000000	Very High
Conata Basin	Thunder Basin-Conata	37000.000000	Very High
Thunder Basin	Thunder Basin-Conata	37000.000000	Very High
Hole in the Wall	Thunder Basin-Conata	37000.000000	Very High
Sioux Box Butte	Thunder Basin	0.000000	Very High
Pawnee	Pawnee Grasslands	17397.000000	High
Flint Hills	Flint Hills	32860.000000	Very High
Comanche	Southern Prairies	229494.000000	Very High

Name	ESR_NUMBER	ESR_AREA	ESR_EXPERT
ChalkBluffs	Smokey Hills	38298.00	Moderate
Central Red Hills	Southern Prairies	229494.00	Very High
Western Red Hills	Southern Prairies	229494.00	Very High
Cimmaron	Southern Prairies	229494.00	Very High
Panhandle	Southern Prairies	229494.00	Very High
Rita Blanca	Southern Prairies	229494.00	Very High
Kiowa	Southern Prairies	229494.00	Very High
Ellis	Southern Prairies	229494.00	Very High
Curry	Southern Prairies	229494.00	Very High
Carrzozo	Southern Prairies	229494.00	Very High
Roosevelt	Southern Prairies	229494.00	Very High
Mescalero Sands	Southern Prairies	229494.00	Very High
Armendaris	Sierra Madre Occidental Foothills	218501.00	Very High
New Mexico Bootheel	Sierra Madre Occidental Foothills	218501.00	Very High
Otero Mesa	Sierra Madre Occidental Foothills	218501.00	Very High
Sulphur Springs	Sierra Madre Occidental Foothills	218501.00	Very High
Sonoita	Sierra Madre Occidental Foothills	218501.00	Very High
Janos	Sierra Madre Occidental Foothills	218501.00	Very High
Marfa	C. Marfa - Big Bend - Made	81977.00	Very High
Valles Centrales	Sierra Madre Occidental Foothills	218501.00	Very High
Valle Colombia	C. Marfa - Big Bend - Made	81977.00	Very High
Llano Las Amapolas	C. Marfa - Big Bend - Made	81977.00	Very High
Lagunas del Este	Sierra Madre Occidental Foothills	218501.00	Very High
Alto Conchos	Sierra Madre Occidental Foothills	218501.00	Very High
Mapimí	C. Tokio - Mapimí	93563.00	Very High
Cuatro Cienegas	C. Tokio - Mapimí	93563.00	Very High
Cuchillas de la Zarca	Sierra Madre Occidental Foothills	218501.00	Very High
Tokio	C. Tokio - Mapimí	93563.00	Very High
Malpaís	Sierra Madre Occidental Foothills	218501.00	Very High

Name	ESR_QUANTI	PCA_QUANTI	PCA_RATING	THREAT_1
Manitou	4.00	4.00	45.00	HD
Wainwright/Neutral Hills	4.00	4.00	45.00	HD
Rumsey Sandhills	4.00	4.00	45.00	HD
Monet	7.00	7.00	25.00	HD
Suffield	12.00	0.00	0.00	
Bow Island	12.00	9.00	20.00	HD
Great Sandhills	12.00	3.00	48.00	HF
Rocky Mountain Front	2.00	2.00	52.00	HD
Dirt Hills	7.00	7.00	25.00	HD
Frenchman River - Bitter Creek OMB	12.00	11.00	10.00	HD
Rocky Mountain Front	2.00	2.00	52.00	HD
Sage Creek Milk River	12.00	9.00	18.00	HD
Rocky Mountain Front	2.00	2.00	52.00	HD
Poverty Plains	3.00	4.00	44.00	HD
Tall-grass	2.00	2.00	49.00	HD
State-Line Wetlands	7.00	5.00	41.00	EPD
Aspen Parkland	2.00	2.00	49.00	HD
Prairie Montana	12.00	7.00	24.00	EH
Lostwood	7.00	6.00	34.00	ACS
Montana Glaciated Plains	12.00	11.00	12.00	HF
ChaseLk	7.00	6.00	33.00	ACS
Cheyenne River	7.00	7.00	31.00	HD
Southern Coteau	7.00	2.00	49.00	HD
Conata Basin	9.00	6.00	37.00	0
Thunder Basin	9.00	8.00	23.00	HD
Hole in the Wall	9.00	5.00	40.00	HD
Sioux Box Butte	4.00	4.00	43.00	HF
Pawnee	6.00	6.00	32.00	HF
Flint Hills	4.00	4.00	42.00	HD
Comanche	11.00	10.00	14.00	HD

Name	ESR_QUANTI	PCA_QUANTI	PCA_RATING	THREAT_1
ChalkBluffs	5.00	6.00	38.00	HF
Central Red Hills	11.00	11.00	4.00	HD
Western Red Hills	11.00	11.00	4.00	HF
Cimmaron	11.00	11.00	4.00	HF
Panhandle	11.00	11.00	13.00	HF
Rita Blanca	11.00	11.00	4.00	HF
Kiowa	11.00	6.00	36.00	AFR
Ellis	11.00	11.00	4.00	HD
Curry	11.00	10.00	14.00	HF
Carrzozo	11.00	6.00	35.00	HD
Roosevelt	11.00	10.00	17.00	HF
Mescalero Sands	11.00	11.00	4.00	HD
Armendaris	12.00	7.00	29.00	ADR
New Mexico Bootheel	12.00	8.00	21.00	EH
Otero Mesa	12.00	8.00	21.00	HD
Sulphur Springs	12.00	7.00	28.00	HD
Sonoita	12.00	7.00	29.00	HD
Janos	12.00	11.00	11.00	HD
Marfa	7.00	6.00	39.00	EH
Valles Centrales	12.00	12.00	1.00	EH
Valle Colombia	7.00	7.00	27.00	HF
Llano Las Amapolas	0.00	0.00	0.00	EH
Lagunas del Este	12.00	0.00	0.00	EH
Alto Conchos	0.00	0.00	0.00	ACS
Mapimí	13.00	12.00	3.00	EH
Cuatro Cienegas	13.00	9.00	19.00	MWL
Cuchillas de la Zarca	12.00	10.00	16.00	EH
Tokio	13.00	12.00	2.00	HD
Malpaís	12.00	0.00	0.00	HD

Name	T1_RATING	T1_URGENCY	T1_TREND	THREAT_2	T2_RATING
Manitou	Moderate	Very High	Stable	HF	Moderate
Wainwright/Neutral Hills	Moderate	High	Increasing	HF	Moderate
Rumsey Sandhills	High	High	Increasing	HF	High
Monet	Low	Very High	Decreasing	HF	Low
Suffield					
Bow Island	High	Very High	Increasing		
Great Sandhills	Very High	Very High	Increasing	ACS	Moderate
Rocky Mountain Front	High	High	Stable	HF	High
Dirt Hills	Low	Very High	Decreasing	HF	Low
Frenchman River - Bitter Creek OMB	Moderate	High	Increasing	ACS	Moderate
Rocky Mountain Front	High	High	Stable	HF	High
Sage Creek Milk River	High	Very High	Increasing	ACS	Moderate
Rocky Mountain Front	High	High	Stable	HF	High
Poverty Plains	Very High	Very High	Increasing	HF	Very High
Tall-grass	Low	Low	Stable	HF	Low
State-Line Wetlands	High	Very High	Stable	HD	Moderate
Aspen Parkland	Moderate	Moderate	Stable	HF	Moderate
Prairie Montana	Moderate	Moderate	Stable	ACS	High
Lostwood	Moderate	Moderate	Stable	HF	Moderate
Montana Glaciated Plains	Very High	Very High	Stable	HD	High
ChaseLk	High	Very High	Increasing	HF	Moderate
Cheyenne River	Low	Low	Stable	HF	Low
Southern Coteau	Very High	Very High	Increasing	HF	Very High
Conata Basin				HD	High
Thunder Basin	High	Very High	Increasing	HF	High
Hole in the Wall	Moderate	Moderate	Unknown	HF	Low
Sioux Box Butte	High	Very High	Stable	AFR	High
Pawnee	High	High	Increasing	HD	Very High
Flint Hills	High	Very High	Increasing	HF	Very High
Comanche	Very High	Very High	Increasing	HF	Very High

Name	T1_RATING	T1_URGENCY	T1_TREND	THREAT_2	T2_RATING
ChalkBluffs	Moderate	Very High	Stable	GD	Moderate
Central Red Hills	High	Very High	Increasing	HF	High
Western Red Hills	High	Very High	Increasing	HD	High
Cimmaron	High	Very High	Increasing	HD	High
Panhandle	High	Very High	Increasing	HD	High
Rita Blanca	High	Very High	Increasing	HD	High
Kiowa	Moderate	Very High	Increasing	HD	Moderate
Ellis	High	Very High	Increasing	HF	High
Curry	High	Very High	Increasing	HD	High
Carrzozo	Very High	Very High	Increasing	HF	Very High
Roosevelt	High	Very High	Increasing	HD	High
Mescalero Sands	Very High	Very High	Increasing	HF	Very High
Armendaris	Low	Low	Stable		
New Mexico Bootheel	Moderate	Very High	Increasing	AFR	Moderate
Otero Mesa	High	High	Increasing	HF	High
Sulphur Springs	Very High	Very High	Increasing	HF	Very High
Sonoita	Very High	Very High	Increasing	EH	Moderate
Janos	High	Very High	Increasing	HF	High
Marfa	Low	Low	Stable		
Valles Centrales	Very High	Very High	Stable	MWL	High
Valle Colombia	High	Very High	Increasing		
Llano Las Amapolas	High	High	Unknown		
Lagunas del Este	High	High	Increasing		
Alto Conchos	Very High	Moderate	Stable		
Mapimí	Very High	Very High	Increasing	HD	High
Cuatro Cienegas	Very High	Very High	Increasing	GD	Very High
Cuchillas de la Zarca	High	Very High	Increasing	HF	Very High
Tokio	Very High	Very High	Increasing	HF	Very High
Malpaís	Very High	Very High	Unknown		

Name	T2_URGENCY	T2_TREND	THREAT_3	T3_RATING	T3_URGENCY
Manitou	Very High	Stable	AFR	Moderate	Very High
Wainwright/Neutral Hills	High	Increasing	ACS	Moderate	High
Rumsey Sandhills	High	Increasing	ACS	High	High
Monet	Very High	Decreasing	ACS	High	Very High
Suffield					
Bow Island					
Great Sandhills	Very High	Increasing			
Rocky Mountain Front	High	Stable			
Dirt Hills	Very High	Decreasing	ACS	High	Very High
Frenchman River - Bitter Creek OMB	High	Increasing			
Rocky Mountain Front	High	Stable			
Sage Creek Milk River	Very High	Increasing			
Rocky Mountain Front	High	Stable			
Poverty Plains	Very High	Increasing	ACS	High	Very High
Tall-grass	Low	Stable	AFR	Very High	Very High
State-Line Wetlands	Moderate	Stable	HF	Moderate	Moderate
Aspen Parkland	Moderate	Stable	ACS	Moderate	Moderate
Prairie Montana	High	Increasing	HF	High	Very High
Lostwood	Moderate	Stable	HD	Moderate	Very High
Montana Glaciated Plains	High	Increasing	EH	Moderate	Moderate
ChaseLk	Very High	Increasing	HD	High	Very High
Cheyenne River	Low	Stable	ACS	Low	Moderate
Southern Coteau	Very High	Increasing	ACS	Moderate	Moderate
Conata Basin	Very High	Increasing	HF	High	Very High
Thunder Basin	Very High	Increasing	EPD	High	Very High
Hole in the Wall	Moderate	Unknown			
Sioux Box Butte	Very High	Stable	HD	High	Very High
Pawnee	Very High	Increasing	AFR	High	Very High
Flint Hills	High	Unknown	ACS	High	Very High
Comanche	Very High	Increasing	AFR	Moderate	Very High

Name	T2_URGENCY	T2_TREND	THREAT_3	T3_RATING	T3_URGENCY
ChalkBluffs	Very High	Stable	EH	Moderate	Very High
Central Red Hills	Very High	Increasing	EH	Moderate	Very High
Western Red Hills	Very High	Increasing	EPD	High	Very High
Cimmaron	Very High	Increasing	EH	Moderate	Very High
Panhandle	Very High	Increasing	EPD	High	Very High
Rita Blanca	Very High	Increasing	EPD	High	Very High
Kiowa	Very High	Stable			
Ellis	Very High	Increasing	EH	Moderate	Very High
Curry	Very High	Increasing	EPD	High	Very High
Carrzozo	Very High	Increasing			
Roosevelt	Very High	Increasing	EPD	High	Very High
Mescalero Sands	Very High	Increasing	EH	Very High	Very High
Armendaris					
New Mexico Bootheel	High	Increasing	HD	Low	Low
Otero Mesa	High	Increasing	ADR	High	High
Sulphur Springs	Very High	Increasing	GD	Very High	Very High
Sonoita	High	Stable	HF	Very High	Very High
Janos	Very High	Increasing	ACS	Moderate	Very High
Marfa					
Valles Centrales	Moderate	Stable	GD	High	Low
Valle Colombia					
Llano Las Amapolas					
Lagunas del Este					
Alto Conchos					
Mapimí	High	Stable	HF	Moderate	Low
Cuatro Cienegas	Very High	Increasing	HD	High	Low
Cuchillas de la Zarca	Very High	Stable	HD	Moderate	Moderate
Tokio	Very High	Increasing	EH	High	Low
Malpaís					

Name	T3_TREN D	THREAT_ 4	T4_RATIN G	T4_URGENC Y	T4_TREN D
Manitou	Stable				
Wainwright/Neutral Hills	Increasing	AFR	Low	Very High	Stable
Rumsey Sandhills	Increasing	AFR	Moderate	Very High	Stable
Monet	Increasing				
Suffield					
Bow Island					
Great Sandhills					
Rocky Mountain Front					
Dirt Hills	Increasing				
Frenchman River - Bitter Creek OMB					
Rocky Mountain Front					
Sage Creek Milk River					
Rocky Mountain Front					
Poverty Plains	Increasing	AFR	Moderate	Very High	Stable
Tall-grass	Increasing				
State-Line Wetlands	Stable				
Aspen Parkland	Stable	AFR	High	Very High	Stable
Prairie Montana	Increasing				
Lostwood	Increasing				
Montana Glaciated Plains	Stable	EPD	Very High	Very High	Stable
ChaseLk	Increasing	EPD	High	Very High	Stable
Cheyenne River	Stable				
Southern Coteau	Stable				
Conata Basin	Increasing				
Thunder Basin	Stable				
Hole in the Wall					
Sioux Box Butte	Stable	EPD	Low	Very High	Stable
Pawnee	Increasing	EPD	Moderate	Very High	Stable
Flint Hills	Stable	AFR	Very High	Very High	Stable
Comanche	Stable	EPD	Moderate	Very High	Stable

Name	T3_TREND	THREAT_4	T4_RATING	T4_URGENCY	T4_TREND
ChalkBluffs	Stable	AFR	Moderate	Very High	Stable
Central Red Hills	Stable	AFR	Moderate	Very High	Stable
Western Red Hills	Stable				
Cimmaron	Stable	AFR	Moderate	Very High	Stable
Panhandle	Stable				
Rita Blanca	Stable				
Kiowa					
Ellis	Stable	AFR	Moderate	Very High	Stable
Curry	Stable				
Carrzozo					
Roosevelt	Stable				
Mescalero Sands	Stable				
Armendaris					
New Mexico Bootheel	Increasing				
Otero Mesa	Increasing	ST	Moderate	High	Increasing
Sulphur Springs	Increasing				
Sonoita	Increasing				
Janos	Increasing	EH	Very High	Very High	Stable
Marfa					
Valles Centrales	Stable	AFR	Low	Low	Decreasing
Valle Colombia					
Llano Las Amapolas					
Lagunas del Este					
Alto Conchos					
Mapimí	Unknown				
Cuatro Cienegas	Stable	EH	Moderate	Low	Stable
Cuchillas de la Zarca	Unknown				
Tokio	Stable	GD	High	Low	Increasing
Malpaís					

Name	THREAT_5	T5_RATING	T5_URGENCY	T5_TREND
Manitou				
Wainwright/Neutral Hills				
Rumsey Sandhills				
Monet				
Suffield				
Bow Island				
Great Sandhills				
Rocky Mountain Front				
Dirt Hills				
Frenchman River - Bitter Creek OMB				
Rocky Mountain Front				
Sage Creek Milk River				
Rocky Mountain Front				
Poverty Plains				
Tall-grass				
State-Line Wetlands				
Aspen Parkland				
Prairie Montana				
Lostwood				
Montana Glaciated Plains				
ChaseLk				
Cheyenne River				
Southern Coteau				
Conata Basin				
Thunder Basin				
Hole in the Wall				
Sioux Box Butte				
Pawnee				
Flint Hills	EH	High	Very High	Stable
Comanche				

Name	THREAT_5	T5_RATING	T5_URGENCY	T5_TREND
ChalkBluffs				
Central Red Hills				
Western Red Hills				
Cimmaron				
Panhandle				
Rita Blanca				
Kiowa				
Ellis				
Curry				
Carrzozo				
Roosevelt				
Mescalero Sands				
Armendaris				
New Mexico Bootheel				
Otero Mesa				
Sulphur Springs				
Sonoita				
Janos	ELE	Very High	Very High	Stable
Marfa				
Valles Centrales	ACS	Very High	Moderate	Increasing
Valle Colombia				
Llano Las Amapolas				
Lagunas del Este				
Alto Conchos				
Mapimí				
Cuatro Cienegas	ST	Moderate	Low	Increasing
Cuchillas de la Zarca				
Tokio	ST	Moderate	Low	Stable
Malpaís				

Name	Area	Perimeter	Acres	Hectares
Manitou	819	193311	524343	212195
Wainwright/Neutral Hills	2249	427836	1439092	582382
Rumsey Sandhills	991	198860	634056	256594
Monet	541	159859	345994	140019
Suffield	2068	320364	1323470	535592
Bow Island	2195	328627	1405031	568598
Great Sandhills	1225	323084	783887	317229
Rocky Mountain Front	1839	334842	1177113	476363
Dirt Hills	967	330293	618868	250448
Frenchman River - Bitter Creek OMB	4911	807394	3142914	1271897
Rocky Mountain Front	4329	778137	2770396	1121144
Sage Creek Milk River	3904	626679	2498667	1011179
Rocky Mountain Front	1379	252659	882257	357038
Poverty Plains	666	167251	426357	172541
Tall-grass	322	123056	206161	83431
State-Line Wetlands	741	235403	474094	191860
Aspen Parkland	688	166392	440023	178072
Prairie Montana	1410	322913	902325	365160
Lostwood	557	190558	356555	144293
Montana Glaciated Plains	4348	662392	2782644	1126100
ChaseLk	2465	355146	1577485	638388
Cheyenne River	984	191109	629991	254950
Southern Coteau	2694	346661	1724116	697728
Conata Basin	2683	366123	1716874	694797
Thunder Basin	636	157635	407170	164776
Hole in the Wall	841	183567	538419	217891
Sioux Box Butte	2019	332984	1292161	522921
Pawnee	6002	623910	3841579	1554638
Flint Hills	5408	833017	3460861	1400566
Comanche	5722	560742	3662386	1482121

Name	Area	Perimeter	Acres	Hectares
ChalkBluffs	1849	373233	1183643	479005
Central Red Hills	1141	281036	730508	295627
Western Red Hills	1524	280952	975506	394775
Cimmaron	3688	521386	2360348	955203
Panhandle	639	179604	409138	165573
Rita Blanca	3923	508821	2510449	1015947
Kiowa	555	143938	355355	143807
Ellis	1626	359413	1040469	421065
Curry	658	168060	421330	170507
Carrzozo	1330	251015	851475	344581
Roosevelt	1577	337770	1009110	408374
Mescalero Sands	4477	494162	2865327	1159561
Armendaris	579	168619	370643	149994
New Mexico Bootheel	5581	734773	3571771	1445450
Otero Mesa	963	191650	616318	249416
Sulphur Springs	2368	327220	1515627	613355
Sonoita	2484	433475	1589846	643390
Janos	5406	604161	3459527	1400027
Marfa	1206	244371	771790	312333
Valles Centrales	10403	892847	6657798	2694326
Valle Colombia	2101	405853	1344658	544166
Llano Las Amapolas	746	363410	477135	193090
Lagunas del Este	3462	394636	2215803	896707
Alto Conchos	5695	903409	3644569	1474910
Mapimí	3462	539819	2215492	896582
Cuatro Cienegas	591	265903	378312	153098
Cuchillas de la Zarca	4474	520622	2863554	1158844
Tokio	8918	705743	5707836	2309889
Malpaís	10113	757519	6472038	2619151

Appendix C: Species ranks for new GPCAs

Importance of each GPCA to these species. V = very high, H = high, M = moderate, L = low, P = present/not significant.

Species	Alto Conchos	Las Amapolas	Malpaís	Lagunas del Este
Mountain Plover	Not present	Not present	Not present	Not present
Piping plover	Not present	Not present	Not present	Not present
Long-billed Curlew	L	L	L	L
Ferruginous Hawk	L	L	M	L
Scaled Quail	M	M	M	M
Lesser Prairie-Chicken	Not present	Not present	Not present	Not present
Greater Prairie-Chicken	Not present	Not present	Not present	Not present
Sharp-tailed Grouse	Not present	Not present	Not present	Not present
Sage Grouse	Not present	Not present	Not present	Not present
Burrowing Owl	L	L	P	M
Loggerhead Shrike	M	H	M	H
Sprague's Pipit	M	L	M	L
Lark Bunting	M	H	L	V
McCown's Longspur	Not Present	L	Not Present	L
Baird's Sparrow	H	M	H	M
Cassin's Sparrow	M	L	H	L
Chestnut-collared Longspur	M	H	L	V
Worthen's Sparrow	Not present	Not present	Not present	Not present
Black tailed Prairie dog	Not present	Not present	Not present	Not present
Mexican Pronghorn	Not present	H	Not present	V
Bison	Not present	Not present	Not present	Not present
Northern Bobwhite Quail	Not present	Not present	Not present	Not present
Mexican Prairie Dog	Not present	Not present	Not present	Not present
Gypsophillic vegetation	Not present	Not present	Not present	Not present

Appendix D: Metadata

Identification_Information:

Citation:

Citation_Information:

Originator: Commission for Environmental Cooperation

Originator: The Nature Conservancy amended by Rocky Mountain Bird

Observatory

Publication_Date: 2007 amended 2010

Title: Priority Conservation Areas: Grasslands, 2010

Geospatial_Data_Presentation_Form: Vector digital data

Publication_Information:

Publication_Place: Montréal, Québec, Canada

Publisher: Commission for Environmental Cooperation

Online_Linkage: <http://www.cec.org/naatlas/>

Description:

Abstract:

This data set shows the grasslands priority conservation areas (GPCAs) within North America's Central Grasslands, an ecosystem considered

among

the most threatened in the continent and the world. GPCAs are defined

as

areas of tri-national importance due to their ecological significance

and

threatened nature, which are in need of international cooperation for their successful conservation. The 59 GPCAs were identified by biodiversity experts through research and a workshop co-organized by

the

Commission for Environmental Cooperation (CEC) and the Nature

Conservancy in

2004 and Rocky Mountain Bird Observatory in 2010.

Purpose:

The North American Atlas data are intended for geographic display and analysis at the national and continental level. These data should be displayed and analyzed at scales appropriate for 1:10,000,000-scale data. No responsibility is assumed by the Commission for Environmental Cooperation in the use of these data.

Supplemental_Information:

Detailed information about the GPCA selection process can be found in [North American Grassland Priority Conservation Areas: Technical Report and Documentation](#).

The CEC publication [Grasslands: Toward a North American Conservation Strategy](#) provides a tri-national overview of information about the central North American

grasslands and the conservation issues faced in the region.

Identifying priority

conservation areas is one of several grasslands-related initiatives

sponsored by

the CEC as part of the Strategic Plan for North American Cooperation in

the

Conservation of Biodiversity, embraced by Canada, Mexico, and the United States.

The Commission for Environmental Cooperation is an international organization created by Canada, Mexico, and the United States of America under the North American Agreement on Environmental Cooperation (NAAEC). The CEC was established to address regional environmental concerns, help prevent potential trade and environmental conflicts, and to promote the effective enforcement of environmental law. The Agreement complements the environmental provisions of the North American Free Trade Agreement (NAFTA). Further information on the CEC is available from <http://www.cec.org/> or from

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- >

Rocky Mountain Bird Observatory is a non-profit bird and habitat conservation organization. RMBO conducts monitoring and science on birds and bird habitats, conducts educational and outreach based on science, conducts stewardship directly and in consultation with private and public land owners, and works to expand bird conservation capacity for international migratory birds through their international programs division. For more information on RMBO, our mission and where we work go to www.rmbo.org.

The Nature Conservancy (TNC) is a non-profit conservation organization working in more than 30 countries around the world to protect ecologically important lands and waters for nature and people. TNC uses a science-based approach to identify and protect high-priority plants, animals, and natural communities through land acquisition, promotion of conservation-friendly public policies, partnership with governmental and non-governmental agencies, and other conservation strategies. Further information on TNC is available from <http://www.nature.org/>.

Time_Period_of_Content:
Time_Period_Information:
Single_Date/Time:
Calendar_Date: 2010
Currentness_Reference: Ground condition
Status:
Progress: Complete
Maintenance_and_Update_Frequency: Irregular
Spatial_Domain:

Bounding_Coordinates:
 West_Bounding_Coordinate: -117
 East_Bounding_Coordinate: -93
 North_Bounding_Coordinate: 56
 South_Bounding_Coordinate: 20

Keywords:
 Theme:
 Theme_Keyword_Thesaurus: ISO 19115 Topic Category
 Theme_Keyword: biota
 Theme_Keyword: environment

Theme:
 Theme_Keyword_Thesaurus: GCMD science keywords
 Theme_Keyword: Human Dimensions > Environmental Impacts > Conservation
 Theme_Keyword:
 Human Dimensions > Environmental Impacts > Environmental Assessments
 Theme_Keyword: Biosphere > Terrestrial Ecosystems > Grasslands

Theme:
 Theme_Keyword_Thesaurus: None
 Theme_Keyword: Conservation
 Theme_Keyword: Grasslands
 Theme_Keyword: Ecosystems
 Theme_Keyword: Regional ecology
 Theme_Keyword: Ecosystem geography
 Theme_Keyword: Biodiversity

Place:
 Place_Keyword_Thesaurus: None
 Place_Keyword: Mid-latitude
 Place_Keyword: Western Hemisphere
 Place_Keyword: Northern Hemisphere
 Place_Keyword: North America
 Place_Keyword: NAFTA
 Place_Keyword: North America Free Trade Agreement
 Place_Keyword: Canada
 Place_Keyword: Mexico
 Place_Keyword: United States

Access_Constraints: None

Use_Constraints:
 None. Acknowledgement of the Commission for Environmental Cooperation
 and (or) the Rocky Mountain Bird Observatory and (or) the Nature
 Conservancy would be appreciated in products derived from these data.

Point_of_Contact:
 Contact_Information:
 Contact_Organization_Primary:
 Contact_Organization: Commission for Environmental Cooperation
 Contact_Address:
 Address_Type: Mailing and physical address
 Address: 393, rue St-Jacques Ouest, Bureau 200
 City: Montreal
 State_or_Province: Quebec
 Postal_Code: H2Y 1N9
 Country: Canada
 Contact_Voice_Telephone: 1 514 350 4300
 Contact_Facsimile_Telephone: 1 514 350 4314
 Contact_Electronic_Mail_Address: info@cec.org

Data_Quality_Information:

Attribute_Accuracy:

Attribute_Accuracy_Report:

No tests for attribute accuracy were performed on this data set.

Logical_Consistency_Report:

No tests for logical consistency were performed on this data set.

Completeness_Report:

This data set includes all identified Grasslands Priority Conservation Areas in the

central grasslands of North America. The areas were identified and delimited at an

experts' workshop held in 2004 and amended in 2010 and reviewed by experts in 2010, and represent the best consensus of the participating individuals.

Lineage:

Process_Step:

Process_Description:

This report accompanies a geospatial database of Grassland Priority Conservation Areas (GPCAs) within the Central Grassland ecosystem of North America that is based upon the application of newly available data to the original process used to identify and delineate GPCA's. The original process began in 2002 and culminated in a report and map for the North American Atlas in 2005. That report

(www.cec.org/Storage/57/4975_GPCA_Technical_Report_en.pdf) developed a process through which grassland landscapes were evaluated by local, regional and national experts for their importance to key grassland species. The proposed areas identified in the process were scored and ranked based on services to a diversity of species and projections of the rate at which those habitats were being lost. Risk to the long term sustainability of grassland habitats and the services provided by them were instrumental to designation as needing conservation. Where possible the process was data driven, however at the time of the evaluation, several areas did not have data, or the same quality of data, available to inform the process. In several areas the process was driven by expert opinion. Since the original report was completed there have been significant advances in data sharing and new data generation in some of the previously under-represented areas.

This 2010 version included the evaluation of both public and proprietary data collected in the Central Grasslands Ecosystem. Key data used in this review include: United States Geological Survey (USGS) national and international land cover and elevation data layers; state, university and Non-Governmental Organizations (NGO) habitat, species, priority areas and land cover data; USGS Breeding Bird Surveys (BBS) and Christmas Bird Count (CBC) raw data and derived products; Rocky Mountain Bird Observatory (RMBO) bird and vegetation survey data and derived products; Canadian Wildlife Service (CWS) bird survey data (via USGS data portal) and data from individual researchers. The original scoring and ranking process was replicated where possible and in areas where data was relatively available during the original process recommendations for GPCA boundaries remained relatively unchanged. In areas where there was an original paucity of data there were significant

alterations of proposed boundaries as well as additional GPCA's recommended for inclusion.

The original GPCA's and changes to GPCA's were distributed widely for comment, recommendations and access to additional information. The final data presented with this report processed those rankings, scores and comments from experts and the stakeholder community. Please refer to the original Karl and Hoth report referenced above for an additional explanation of original the process which in November 2004, 36 experts from diverse disciplines, representing Canada, Mexico, and the United States of America, met to identify and map grasslands priority conservation areas (GPCAs) within North America's central grasslands. Prior to the workshop, a geographic information system was assembled containing more than 120 physical, biological, and social data sets for the region. In addition, a gap analysis was conducted to identify regions where protected areas are unreasonably lacking. The data and gap analysis were presented at the November 2004 workshop and were combined with expert analysis to identify and describe the 55 GPCAs.

Further detailed information on the methodology used to identify these grasslands priority conservation areas and descriptions of each area can be found in *North American Central grasslands priority conservation areas: technical report and documentation*; Eds. J.W. Karl and J. Hoth; Commission for Environmental Cooperation and The Nature Conservancy; Montreal, Quebec, Canada; March 2005. Available online at http://www.cec.org/files/PDF/BIODIVERSITY/GPCA_Technical_Report_en.pdf

Process_Date: 2010

Spatial_Data_Organization_Information:

Direct_Spatial_Reference_Method: Vector

Point_and_Vector_Object_Information:

SDTS_Terms_Description:

SDTS_Point_and_Vector_Object_Type: G-polygon

Point_and_Vector_Object_Count: 59

Spatial_Reference_Information:

Horizontal_Coordinate_System_Definition:

Planar:

Map_Projection:

Map_Projection_Name: Lambert Azimuthal Equal Area

Lambert_Azimuthal_Equal_Area:

Longitude_of_Projection_Center: -100.000000

Latitude_of_Projection_Center: 45.000000

False_Easting: 0.000000

False_Northing: 0.000000

Planar_Coordinate_Information:

Planar_Coordinate_Encoding_Method: Coordinate pair

Coordinate_Representation:

Abscissa_Resolution: 0.016384

Ordinate_Resolution: 0.016384

Planar_Distance_Units: Meters

Geodetic_Model:

Horizontal_Datum_Name: D_Sphere_ARC_INFO

Ellipsoid_Name: Sphere_ARC_INFO

Semi-major_Axis: 6370997.000000

Denominator_of_Flattening_Ratio: 1.0

Entity_and_Attribute_Information:

Detailed_Description:

Entity_Type:

Entity_Type_Label: Grasslands priority conservation area

Entity_Type_Definition:

A grassland area with rich biodiversity, ecological uniqueness, and continental significance, which is under natural and (or) human threats, and which is therefore a priority for conservation activities and is critical for long-term conservation success.

Entity_Type_Definition_Source: Commission for Environmental Cooperation

Attribute:

Attribute_Label: Shape

Attribute_Definition: The representation of the entity in the data.

Attribute_Definition_Source: Commission for Environmental Cooperation

Attribute_Domain_Values:

Enumerated_Domain:

Enumerated_Domain_Value: Polygon

Enumerated_Domain_Value_Definition: A 2-dimensional element

Enumerated_Domain_Value_Definition_Source: ESRI GIS software

Attribute:

Attribute_Label: GPCAPOLY_I

Attribute_Definition:

The sequential number assigned to each GPCA in the data.

Attribute_Definition_Source: Commission for Environmental Cooperation

Attribute_Domain_Values:

Range_Domain:

Range_Domain_Minimum: 1

Range_Domain_Maximum: 59

Attribute:

Attribute_Label: Name

Attribute_Definition:

The working name of the grasslands priority conservation area. The name may not match the final name used for the GPCA.

Attribute_Definition_Source: Commission for Environmental Cooperation

Attribute_Domain_Values:

Codeset_Domain:

Codeset_Name:

North American Central Grasslands Priority Conservation Areas:

Technical Report and Documentation,

http://www.cec.org/files/PDF/BIODIVERSITY/GPCA_Technical_Report_en.pdf

Codeset_Source:

Commission for Environmental Cooperation and The Nature Conservancy

Attribute:

Attribute_Label: Esr_group

Attribute_Definition:

The grasslands region in which the grasslands priority conservation area falls.

Attribute_Definition_Source: Commission for Environmental Cooperation

Attribute_Domain_Values:

Codeset_Domain:
Codeset_Name:
North American Central Grasslands Priority Conservation Areas:
Technical Report and Documentation,
http://www.cec.org/files/PDF/BIODIVERSITY/GPCA_Technical_Report_en.pdf
Codeset_Source:
Commission for Environmental Cooperation and The Nature
Conservancy
Attribute:
Attribute_Label: Pca_group
Attribute_Definition:
The name of the geographically-based working group which identified
the GPCA.
Attribute_Definition_Source: Commission for Environmental Cooperation
Attribute_Domain_Values:
Codeset_Domain:
Codeset_Name:
North American Central Grasslands Priority Conservation Areas:
Technical Report and Documentation,
http://www.cec.org/files/PDF/BIODIVERSITY/GPCA_Technical_Report_en.pdf
Codeset_Source:
Commission for Environmental Cooperation and The Nature
Conservancy
Attribute:
Attribute_Label: Esr_number
Attribute_Definition:
The name of the ecologically significant region (ESR) in which the
grasslands
priority conservation area falls. Some ESRs identified by the
working group do
not contain GPCAs and therefore do not appear in the data.
Attribute_Definition_Source: Commission for Environmental Cooperation
Attribute_Domain_Values:
Codeset_Domain:
Codeset_Name:
North American Central Grasslands Priority Conservation Areas:
Technical Report and Documentation,
http://www.cec.org/files/PDF/BIODIVERSITY/GPCA_Technical_Report_en.pdf
Codeset_Source:
Commission for Environmental Cooperation and The Nature
Conservancy
Attribute:
Attribute_Label: Esr_area
Attribute_Definition:
The area of the ecologically significant region, in square
kilometers.
Attribute_Definition_Source: Commission for Environmental Cooperation
Attribute_Domain_Values:
Range_Domain:
Range_Domain_Minimum: 0
Range_Domain_Maximum: 229494

Attribute:
Attribute_Label: Esr_expert
Attribute_Definition:
The expert rating for the ESR, based on the importance of the area
for the
focal elements and species used in the analysis.
Attribute_Definition_Source: Commission for Environmental Cooperation
Attribute_Domain_Values:
Enumerated_Domain:
Enumerated_Domain_Value: High
Enumerated_Domain_Value_Definition:
The area has high ecological significance.
Enumerated_Domain_Value_Definition_Source:
Commission for Environmental Cooperation
Attribute_Domain_Values:
Enumerated_Domain:
Enumerated_Domain_Value: Moderate
Enumerated_Domain_Value_Definition:
The area has moderate ecological significance.
Enumerated_Domain_Value_Definition_Source:
Commission for Environmental Cooperation
Attribute_Domain_Values:
Enumerated_Domain:
Enumerated_Domain_Value: Very High
Enumerated_Domain_Value_Definition:
The area has very high ecological significance.
Enumerated_Domain_Value_Definition_Source:
Commission for Environmental Cooperation
Attribute:
Attribute_Label: Esr_quant
Attribute_Definition:
The quantitative rating for the ESR, based on the importance of the
area to the
focal elements and species. Quantitative ratings are rounded to the
nearest
whole number.
Attribute_Definition_Source: Commission for Environmental Cooperation
Attribute_Domain_Values:
Range_Domain:
Range_Domain_Minimum: 2
Range_Domain_Maximum: 13
Attribute:
Attribute_Label: Pca_quant
Attribute_Definition:
The quantitative rating for the GPCA, based on the importance of the
area to
the focal elements and species. Quantitative ratings are rounded to
the
nearest whole number.
Attribute_Definition_Source: Commission for Environmental Cooperation
Attribute_Domain_Values:
Range_Domain:
Range_Domain_Minimum: 0
Range_Domain_Maximum: 12
Attribute:
Attribute_Label: Pca_rating

Attribute_Definition: The rank of the GPCA, based on the quantitative rating.

Attribute_Definition_Source: Commission for Environmental Cooperation

Attribute_Domain_Values:

Range_Domain:

Range_Domain_Minimum: 0

Range_Domain_Maximum: 52

Attribute:

Attribute_Label: Threat_1

Attribute_Definition: The first identified threat affecting the GPCA.

Attribute_Definition_Source: Commission for Environmental Cooperation

Attribute_Domain_Values:

Enumerated_Domain:

Enumerated_Domain_Value: 0

Enumerated_Domain_Value_Definition:

The threat type is unknown.

Enumerated_Domain_Value_Definition_Source:

Commission for Environmental Cooperation

Attribute_Domain_Values:

Enumerated_Domain:

Enumerated_Domain_Value: ACS

Enumerated_Domain_Value_Definition:

Altered composition/structure.

Enumerated_Domain_Value_Definition_Source:

Commission for Environmental Cooperation

Attribute_Domain_Values:

Enumerated_Domain:

Enumerated_Domain_Value: ADR

Enumerated_Domain_Value_Definition:

Altered disturbance regimes.

Enumerated_Domain_Value_Definition_Source:

Commission for Environmental Cooperation

Attribute_Domain_Values:

Enumerated_Domain:

Enumerated_Domain_Value: AFR

Enumerated_Domain_Value_Definition:

Alteration of fire regimes.

Enumerated_Domain_Value_Definition_Source:

Commission for Environmental Cooperation

Attribute_Domain_Values:

Enumerated_Domain:

Enumerated_Domain_Value: EH

Enumerated_Domain_Value_Definition:

Excessive herbivory.

Enumerated_Domain_Value_Definition_Source:

Commission for Environmental Cooperation

Attribute_Domain_Values:

Enumerated_Domain:

Enumerated_Domain_Value: EPD

Enumerated_Domain_Value_Definition:

Extraordinary predation

Enumerated_Domain_Value_Definition_Source:

Commission for Environmental Cooperation

Attribute_Domain_Values:

Enumerated_Domain:

Enumerated_Domain_Value: HD

Enumerated_Domain_Value_Definition:

Habitat disturbance/destruction.
Enumerated_Domain_Value_Definition_Source:
Commission for Environmental Cooperation
Attribute_Domain_Values:
Enumerated_Domain:
Enumerated_Domain_Value: HF
Enumerated_Domain_Value_Definition:
Habitat fragmentation.
Enumerated_Domain_Value_Definition_Source:
Commission for Environmental Cooperation
Attribute_Domain_Values:
Enumerated_Domain:
Enumerated_Domain_Value: MWL
Enumerated_Domain_Value_Definition:
Modification of water levels, changes in natural flow patterns.
Enumerated_Domain_Value_Definition_Source:
Commission for Environmental Cooperation
Attribute_Domain_Values:
Enumerated_Domain:
Enumerated_Domain_Value: <blank>
Enumerated_Domain_Value_Definition:
No threats have been identified for the GPCA.
Enumerated_Domain_Value_Definition_Source:
Commission for Environmental Cooperation
Attribute:
Attribute_Label: T1_rating
Attribute_Definition: A general rating of the risks from the first
threat.
Attribute_Definition_Source: Commission for Environmental Cooperation
Attribute_Domain_Values:
Enumerated_Domain:
Enumerated_Domain_Value: High
Enumerated_Domain_Value_Definition:
The risks from the first threat are high.
Enumerated_Domain_Value_Definition_Source:
Commission for Environmental Cooperation
Attribute_Domain_Values:
Enumerated_Domain:
Enumerated_Domain_Value: Low
Enumerated_Domain_Value_Definition:
The risks from the first threat are low.
Enumerated_Domain_Value_Definition_Source:
Commission for Environmental Cooperation
Attribute_Domain_Values:
Enumerated_Domain:
Enumerated_Domain_Value: Moderate
Enumerated_Domain_Value_Definition:
The risks from the first threat are moderate.
Enumerated_Domain_Value_Definition_Source:
Commission for Environmental Cooperation
Attribute_Domain_Values:
Enumerated_Domain:
Enumerated_Domain_Value: Very High
Enumerated_Domain_Value_Definition:
The risks from the first threat are very high.
Enumerated_Domain_Value_Definition_Source:
Commission for Environmental Cooperation

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Attribute_Domain_Values:
  Enumerated_Domain:
    Enumerated_Domain_Value: <blank>
    Enumerated_Domain_Value_Definition:
      No threats have been identified for the GPCA.
    Enumerated_Domain_Value_Definition_Source:
      Commission for Environmental Cooperation
Attribute:
  Attribute_Label: T1_urgency
  Attribute_Definition: The urgency of addressing the first threat.
  Attribute_Definition_Source: Commission for Environmental Cooperation
Attribute_Domain_Values:
  Enumerated_Domain:
    Enumerated_Domain_Value: High
    Enumerated_Domain_Value_Definition:
      The urgency of addressing the first threat is high because the
threat is
      currently happening.
    Enumerated_Domain_Value_Definition_Source:
      Commission for Environmental Cooperation
Attribute_Domain_Values:
  Enumerated_Domain:
    Enumerated_Domain_Value: Low
    Enumerated_Domain_Value_Definition:
      The urgency of addressing the first threat is low because the
threat is
      possible within 10 to 20 years.
    Enumerated_Domain_Value_Definition_Source:
      Commission for Environmental Cooperation
Attribute_Domain_Values:
  Enumerated_Domain:
    Enumerated_Domain_Value: Moderate
    Enumerated_Domain_Value_Definition:
      The urgency of addressing the first threat is moderate because
the threat
      is likely to occur within 5 to 10 years.
    Enumerated_Domain_Value_Definition_Source:
      Commission for Environmental Cooperation
Attribute_Domain_Values:
  Enumerated_Domain:
    Enumerated_Domain_Value: Very High
    Enumerated_Domain_Value_Definition:
      The urgency of addressing the first threat is very high because
the threat
      is currently happening.
    Enumerated_Domain_Value_Definition_Source:
      Commission for Environmental Cooperation
Attribute_Domain_Values:
  Enumerated_Domain:
    Enumerated_Domain_Value: <blank>
    Enumerated_Domain_Value_Definition:
      No threats have been identified for the GPCA.
    Enumerated_Domain_Value_Definition_Source:
      Commission for Environmental Cooperation
Attribute:
  Attribute_Label: T1_trend
  Attribute_Definition:

```

Whether the first threat is increasing in magnitude, decreasing in magnitude,
or stable.

Attribute_Definition_Source: Commission for Environmental Cooperation

Attribute_Domain_Values:

Enumerated_Domain:

Enumerated_Domain_Value: Decreasing

Enumerated_Domain_Value_Definition:

The first threat is decreasing in magnitude.

Enumerated_Domain_Value_Definition_Source:

Commission for Environmental Cooperation

Attribute_Domain_Values:

Enumerated_Domain:

Enumerated_Domain_Value: Increasing

Enumerated_Domain_Value_Definition:

The first threat is increasing in magnitude.

Enumerated_Domain_Value_Definition_Source:

Commission for Environmental Cooperation

Attribute_Domain_Values:

Enumerated_Domain:

Enumerated_Domain_Value: Stable

Enumerated_Domain_Value_Definition:

The first threat is stable in magnitude.

Enumerated_Domain_Value_Definition_Source:

Commission for Environmental Cooperation

Attribute_Domain_Values:

Enumerated_Domain:

Enumerated_Domain_Value: Unknown

Enumerated_Domain_Value_Definition:

The trend of the first threat is unknown.

Enumerated_Domain_Value_Definition_Source:

Commission for Environmental Cooperation

Attribute_Domain_Values:

Enumerated_Domain:

Enumerated_Domain_Value: <blank>

Enumerated_Domain_Value_Definition:

No threats have been identified for the GPCA.

Enumerated_Domain_Value_Definition_Source:

Commission for Environmental Cooperation

Attribute:

Attribute_Label: Threat_2

Attribute_Definition: The second identified threat affecting the GPCA.

Attribute_Definition_Source: Commission for Environmental Cooperation

Attribute_Domain_Values:

Enumerated_Domain:

Enumerated_Domain_Value: ACS

Enumerated_Domain_Value_Definition:

Altered composition/structure.

Enumerated_Domain_Value_Definition_Source:

Commission for Environmental Cooperation

Attribute_Domain_Values:

Enumerated_Domain:

Enumerated_Domain_Value: AFR

Enumerated_Domain_Value_Definition:

Alteration of fire regimes.

Enumerated_Domain_Value_Definition_Source:

Commission for Environmental Cooperation

```

Attribute_Domain_Values:
  Enumerated_Domain:
    Enumerated_Domain_Value: EH
    Enumerated_Domain_Value_Definition:
      Excessive herbivory.
    Enumerated_Domain_Value_Definition_Source:
      Commission for Environmental Cooperation
Attribute_Domain_Values:
  Enumerated_Domain:
    Enumerated_Domain_Value: GD
    Enumerated_Domain_Value_Definition:
      Groundwater depletion.
    Enumerated_Domain_Value_Definition_Source:
      Commission for Environmental Cooperation
Attribute_Domain_Values:
  Enumerated_Domain:
    Enumerated_Domain_Value: HD
    Enumerated_Domain_Value_Definition:
      Habitat disturbance/destruction.
    Enumerated_Domain_Value_Definition_Source:
      Commission for Environmental Cooperation
Attribute_Domain_Values:
  Enumerated_Domain:
    Enumerated_Domain_Value: HF
    Enumerated_Domain_Value_Definition:
      Habitat fragmentation.
    Enumerated_Domain_Value_Definition_Source:
      Commission for Environmental Cooperation
Attribute_Domain_Values:
  Enumerated_Domain:
    Enumerated_Domain_Value: MWL
    Enumerated_Domain_Value_Definition:
      Modification of water levels, changes in natural flow patterns.
    Enumerated_Domain_Value_Definition_Source:
      Commission for Environmental Cooperation
Attribute_Domain_Values:
  Enumerated_Domain:
    Enumerated_Domain_Value: <blank>
    Enumerated_Domain_Value_Definition:
      No second threat has been identified for the GPCA.
    Enumerated_Domain_Value_Definition_Source:
      Commission for Environmental Cooperation
Attribute:
  Attribute_Label: T2_rating
  Attribute_Definition: A general rating of the risks from the second
threat.
  Attribute_Definition_Source: Commission for Environmental Cooperation
Attribute_Domain_Values:
  Enumerated_Domain:
    Enumerated_Domain_Value: High
    Enumerated_Domain_Value_Definition:
      The risks from the second threat are high.
    Enumerated_Domain_Value_Definition_Source:
      Commission for Environmental Cooperation
Attribute_Domain_Values:
  Enumerated_Domain:
    Enumerated_Domain_Value: Low

```

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    Enumerated_Domain_Value_Definition:
        The risks from the second threat are low.
    Enumerated_Domain_Value_Definition_Source:
        Commission for Environmental Cooperation
Attribute_Domain_Values:
    Enumerated_Domain:
        Enumerated_Domain_Value: Moderate
        Enumerated_Domain_Value_Definition:
            The risks from the second threat are moderate.
        Enumerated_Domain_Value_Definition_Source:
            Commission for Environmental Cooperation
Attribute_Domain_Values:
    Enumerated_Domain:
        Enumerated_Domain_Value: Very High
        Enumerated_Domain_Value_Definition:
            The risks from the second threat are very high.
        Enumerated_Domain_Value_Definition_Source:
            Commission for Environmental Cooperation
Attribute_Domain_Values:
    Enumerated_Domain:
        Enumerated_Domain_Value: <blank>
        Enumerated_Domain_Value_Definition:
            No second threat has been identified for the GPCA.
        Enumerated_Domain_Value_Definition_Source:
            Commission for Environmental Cooperation
Attribute:
    Attribute_Label: T2_urgency
    Attribute_Definition: The urgency of addressing the second threat.
    Attribute_Definition_Source: Commission for Environmental Cooperation
Attribute_Domain_Values:
    Enumerated_Domain:
        Enumerated_Domain_Value: High
        Enumerated_Domain_Value_Definition:
            The urgency of addressing the second threat is high because the
threat is
            currently happening.
        Enumerated_Domain_Value_Definition_Source:
            Commission for Environmental Cooperation
Attribute_Domain_Values:
    Enumerated_Domain:
        Enumerated_Domain_Value: Low
        Enumerated_Domain_Value_Definition:
            The urgency of addressing the second threat is low because the
threat is
            possible within 10 to 20 years.
        Enumerated_Domain_Value_Definition_Source:
            Commission for Environmental Cooperation
Attribute_Domain_Values:
    Enumerated_Domain:
        Enumerated_Domain_Value: Moderate
        Enumerated_Domain_Value_Definition:
            The urgency of addressing the second threat is moderate because
the threat
            is likely to occur within 5 to 10 years.
        Enumerated_Domain_Value_Definition_Source:
            Commission for Environmental Cooperation
Attribute_Domain_Values:

```

```

Enumerated_Domain:
  Enumerated_Domain_Value: Very High
  Enumerated_Domain_Value_Definition:
    The urgency of addressing the second threat is very high because
the threat
    is currently happening.
  Enumerated_Domain_Value_Definition_Source:
    Commission for Environmental Cooperation
Attribute_Domain_Values:
  Enumerated_Domain:
    Enumerated_Domain_Value: <blank>
    Enumerated_Domain_Value_Definition:
      No second threat has been identified for the GPCA.
    Enumerated_Domain_Value_Definition_Source:
      Commission for Environmental Cooperation
Attribute:
  Attribute_Label: T2_trend
  Attribute_Definition:
    Whether the second threat is increasing in magnitude, decreasing in
magnitude,
    or stable.

Attribute_Definition_Source: Commission for Environmental Cooperation
Attribute_Domain_Values:
  Enumerated_Domain:
    Enumerated_Domain_Value: Decreasing
    Enumerated_Domain_Value_Definition:
      The second threat is decreasing in magnitude.
    Enumerated_Domain_Value_Definition_Source:
      Commission for Environmental Cooperation
Attribute_Domain_Values:
  Enumerated_Domain:
    Enumerated_Domain_Value: Increasing
    Enumerated_Domain_Value_Definition:
      The second threat is increasing in magnitude.
    Enumerated_Domain_Value_Definition_Source:
      Commission for Environmental Cooperation
Attribute_Domain_Values:
  Enumerated_Domain:
    Enumerated_Domain_Value: Stable
    Enumerated_Domain_Value_Definition:
      The second threat is stable in magnitude.
    Enumerated_Domain_Value_Definition_Source:
      Commission for Environmental Cooperation
Attribute_Domain_Values:
  Enumerated_Domain:
    Enumerated_Domain_Value: Unknown
    Enumerated_Domain_Value_Definition:
      The trend of the second threat is unknown.
    Enumerated_Domain_Value_Definition_Source:
      Commission for Environmental Cooperation
Attribute_Domain_Values:
  Enumerated_Domain:
    Enumerated_Domain_Value: <blank>
    Enumerated_Domain_Value_Definition:
      No second threat has been identified for the GPCA.
    Enumerated_Domain_Value_Definition_Source:

```

Commission for Environmental Cooperation

Attribute:

Attribute_Label: Threat_3

Attribute_Definition: The third identified threat affecting the GPCA.

Attribute_Definition_Source: Commission for Environmental Cooperation

Attribute_Domain_Values:

Enumerated_Domain:

Enumerated_Domain_Value: ACS

Enumerated_Domain_Value_Definition:

Altered composition/structure.

Enumerated_Domain_Value_Definition_Source:

Commission for Environmental Cooperation

Attribute_Domain_Values:

Enumerated_Domain:

Enumerated_Domain_Value: ADR

Enumerated_Domain_Value_Definition:

Altered disturbance regimes.

Enumerated_Domain_Value_Definition_Source:

Commission for Environmental Cooperation

Attribute_Domain_Values:

Enumerated_Domain:

Enumerated_Domain_Value: AFR

Enumerated_Domain_Value_Definition:

Alteration of fire regimes.

Enumerated_Domain_Value_Definition_Source:

Commission for Environmental Cooperation

Attribute_Domain_Values:

Enumerated_Domain:

Enumerated_Domain_Value: EH

Enumerated_Domain_Value_Definition:

Excessive herbivory.

Enumerated_Domain_Value_Definition_Source:

Commission for Environmental Cooperation

Attribute_Domain_Values:

Enumerated_Domain:

Enumerated_Domain_Value: EPD

Enumerated_Domain_Value_Definition:

Extraordinary predation

Enumerated_Domain_Value_Definition_Source:

Commission for Environmental Cooperation

Attribute_Domain_Values:

Enumerated_Domain:

Enumerated_Domain_Value: GD

Enumerated_Domain_Value_Definition:

Groundwater depletion.

Enumerated_Domain_Value_Definition_Source:

Commission for Environmental Cooperation

Attribute_Domain_Values:

Enumerated_Domain:

Enumerated_Domain_Value: HD

Enumerated_Domain_Value_Definition:

Habitat disturbance/destruction.

Enumerated_Domain_Value_Definition_Source:

Commission for Environmental Cooperation

Attribute_Domain_Values:

Enumerated_Domain:

Enumerated_Domain_Value: HF


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    Enumerated_Domain_Value_Definition:
        Habitat fragmentation.
    Enumerated_Domain_Value_Definition_Source:
        Commission for Environmental Cooperation
Attribute_Domain_Values:
    Enumerated_Domain:
        Enumerated_Domain_Value: <blank>
        Enumerated_Domain_Value_Definition:
            No third threat has been identified for the GPCA.
        Enumerated_Domain_Value_Definition_Source:
            Commission for Environmental Cooperation
Attribute:
    Attribute_Label: T3_rating
    Attribute_Definition: A general rating of the risks from the third
threat.
Attribute_Definition_Source: Commission for Environmental Cooperation
Attribute_Domain_Values:
    Enumerated_Domain:
        Enumerated_Domain_Value: High
        Enumerated_Domain_Value_Definition:
            The risks from the third threat are high.
        Enumerated_Domain_Value_Definition_Source:
            Commission for Environmental Cooperation
Attribute_Domain_Values:
    Enumerated_Domain:
        Enumerated_Domain_Value: Low
        Enumerated_Domain_Value_Definition:
            The risks from the third threat are low.
        Enumerated_Domain_Value_Definition_Source:
            Commission for Environmental Cooperation
Attribute_Domain_Values:
    Enumerated_Domain:
        Enumerated_Domain_Value: Moderate
        Enumerated_Domain_Value_Definition:
            The risks from the third threat are moderate.
        Enumerated_Domain_Value_Definition_Source:
            Commission for Environmental Cooperation
Attribute_Domain_Values:
    Enumerated_Domain:
        Enumerated_Domain_Value: Very High
        Enumerated_Domain_Value_Definition:
            The risks from the third threat are very high.
        Enumerated_Domain_Value_Definition_Source:
            Commission for Environmental Cooperation
Attribute_Domain_Values:
    Enumerated_Domain:
        Enumerated_Domain_Value: <blank>
        Enumerated_Domain_Value_Definition:
            No third threat has been identified for the GPCA.
        Enumerated_Domain_Value_Definition_Source:
            Commission for Environmental Cooperation
Attribute:
    Attribute_Label: T3_urgency
    Attribute_Definition: The urgency of addressing the third threat.
    Attribute_Definition_Source: Commission for Environmental Cooperation
Attribute_Domain_Values:
    Enumerated_Domain:

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    Enumerated_Domain_Value: High
    Enumerated_Domain_Value_Definition:
        The urgency of addressing the third threat is high because the
threat is
        currently happening.
    Enumerated_Domain_Value_Definition_Source:
        Commission for Environmental Cooperation
Attribute_Domain_Values:
    Enumerated_Domain:
        Enumerated_Domain_Value: Low
        Enumerated_Domain_Value_Definition:
            The urgency of addressing the third threat is low because the
threat is
            possible within 10 to 20 years.
    Enumerated_Domain_Value_Definition_Source:
        Commission for Environmental Cooperation
Attribute_Domain_Values:
    Enumerated_Domain:
        Enumerated_Domain_Value: Moderate
        Enumerated_Domain_Value_Definition:
            The urgency of addressing the third threat is moderate because
the threat
            is likely to occur within 5 to 10 years.
    Enumerated_Domain_Value_Definition_Source:
        Commission for Environmental Cooperation
Attribute_Domain_Values:
    Enumerated_Domain:
        Enumerated_Domain_Value: Very High
        Enumerated_Domain_Value_Definition:
            The urgency of addressing the third threat is very high because
the threat
            is currently happening.
    Enumerated_Domain_Value_Definition_Source:
        Commission for Environmental Cooperation
Attribute_Domain_Values:
    Enumerated_Domain:
        Enumerated_Domain_Value: <blank>
        Enumerated_Domain_Value_Definition:
            No third threat has been identified for the GPCA.
    Enumerated_Domain_Value_Definition_Source:
        Commission for Environmental Cooperation
Attribute:
    Attribute_Label: T3_trend
    Attribute_Definition:
        Whether the third threat is increasing in magnitude, decreasing in
magnitude,
        or stable.
    Attribute_Definition_Source: Commission for Environmental Cooperation
Attribute_Domain_Values:
    Enumerated_Domain:
        Enumerated_Domain_Value: Increasing
        Enumerated_Domain_Value_Definition:
            The third threat is increasing in magnitude.
        Enumerated_Domain_Value_Definition_Source:
            Commission for Environmental Cooperation
Attribute_Domain_Values:
    Enumerated_Domain:

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    Enumerated_Domain_Value: Stable
    Enumerated_Domain_Value_Definition:
        The third threat is stable in magnitude.
    Enumerated_Domain_Value_Definition_Source:
        Commission for Environmental Cooperation
Attribute_Domain_Values:
    Enumerated_Domain:
        Enumerated_Domain_Value: Unknown
        Enumerated_Domain_Value_Definition:
            The trend of the third threat is unknown.
        Enumerated_Domain_Value_Definition_Source:
            Commission for Environmental Cooperation
Attribute_Domain_Values:
    Enumerated_Domain:
        Enumerated_Domain_Value: <blank>
        Enumerated_Domain_Value_Definition:
            No third threat has been identified for the GPCA.
        Enumerated_Domain_Value_Definition_Source:
            Commission for Environmental Cooperation
Attribute:
    Attribute_Label: Threat_4
    Attribute_Definition: The fourth identified threat affecting the GPCA.
    Attribute_Definition_Source: Commission for Environmental Cooperation
Attribute_Domain_Values:
    Enumerated_Domain:
        Enumerated_Domain_Value: AFR
        Enumerated_Domain_Value_Definition:
            Alteration of fire regimes.
        Enumerated_Domain_Value_Definition_Source:
            Commission for Environmental Cooperation
Attribute_Domain_Values:
    Enumerated_Domain:
        Enumerated_Domain_Value: EH
        Enumerated_Domain_Value_Definition:
            Excessive herbivory.
        Enumerated_Domain_Value_Definition_Source:
            Commission for Environmental Cooperation
Attribute_Domain_Values:
    Enumerated_Domain:
        Enumerated_Domain_Value: EPD
        Enumerated_Domain_Value_Definition:
            Extraordinary predation
        Enumerated_Domain_Value_Definition_Source:
            Commission for Environmental Cooperation
Attribute_Domain_Values:
    Enumerated_Domain:
        Enumerated_Domain_Value: GD
        Enumerated_Domain_Value_Definition:
            Groundwater depletion.
        Enumerated_Domain_Value_Definition_Source:
            Commission for Environmental Cooperation
Attribute_Domain_Values:
    Enumerated_Domain:
        Enumerated_Domain_Value: ST
        Enumerated_Domain_Value_Definition:
            Sedimentation, toxics/contaminants.
        Enumerated_Domain_Value_Definition_Source:

```

Commission for Environmental Cooperation

Attribute_Domain_Values:

Enumerated_Domain:

Enumerated_Domain_Value: <blank>

Enumerated_Domain_Value_Definition:

No fourth threat has been identified for the GPCA.

Enumerated_Domain_Value_Definition_Source:

Commission for Environmental Cooperation

Attribute:

Attribute_Label: T4_rating

Attribute_Definition: A general rating of the risks from the fourth threat.

Attribute_Definition_Source: Commission for Environmental Cooperation

Attribute_Domain_Values:

Enumerated_Domain:

Enumerated_Domain_Value: High

Enumerated_Domain_Value_Definition:

The risks from the fourth threat are high.

Enumerated_Domain_Value_Definition_Source:

Commission for Environmental Cooperation

Attribute_Domain_Values:

Enumerated_Domain:

Enumerated_Domain_Value: Low

Enumerated_Domain_Value_Definition:

The risks from the fourth threat are low.

Enumerated_Domain_Value_Definition_Source:

Commission for Environmental Cooperation

Attribute_Domain_Values:

Enumerated_Domain:

Enumerated_Domain_Value: Moderate

Enumerated_Domain_Value_Definition:

The risks from the fourth threat are moderate.

Enumerated_Domain_Value_Definition_Source:

Commission for Environmental Cooperation

Attribute_Domain_Values:

Enumerated_Domain:

Enumerated_Domain_Value: Very High

Enumerated_Domain_Value_Definition:

The risks from the fourth threat are very high.

Enumerated_Domain_Value_Definition_Source:

Commission for Environmental Cooperation

Attribute_Domain_Values:

Enumerated_Domain:

Enumerated_Domain_Value: <blank>

Enumerated_Domain_Value_Definition:

No fourth threat has been identified for the GPCA.

Enumerated_Domain_Value_Definition_Source:

Commission for Environmental Cooperation

Attribute:

Attribute_Label: T4_urgency

Attribute_Definition: The urgency of addressing the fourth threat.

Attribute_Definition_Source: Commission for Environmental Cooperation

Attribute_Domain_Values:

Enumerated_Domain:

Enumerated_Domain_Value: High

Enumerated_Domain_Value_Definition:

The urgency of addressing the fourth threat is high because the
 threat is
 currently happening.
 Enumerated_Domain_Value_Definition_Source:
 Commission for Environmental Cooperation
 Attribute_Domain_Values:
 Enumerated_Domain:
 Enumerated_Domain_Value: Low
 Enumerated_Domain_Value_Definition:
 The urgency of addressing the fourth threat is low because the
 threat is
 possible within 10 to 20 years.
 Enumerated_Domain_Value_Definition_Source:
 Commission for Environmental Cooperation
 Attribute_Domain_Values:
 Enumerated_Domain:
 Enumerated_Domain_Value: Very High
 Enumerated_Domain_Value_Definition:
 The urgency of addressing the fourth threat is very high because
 the threat
 is currently happening.
 Enumerated_Domain_Value_Definition_Source:
 Commission for Environmental Cooperation
 Attribute_Domain_Values:
 Enumerated_Domain:
 Enumerated_Domain_Value: <blank>
 Enumerated_Domain_Value_Definition:
 No fourth threat has been identified for the GPCA.
 Enumerated_Domain_Value_Definition_Source:
 Commission for Environmental Cooperation
 Attribute:
 Attribute_Label: T4_trend
 Attribute_Definition:
 Whether the fourth threat is increasing in magnitude, decreasing in
 magnitude,
 or stable.
 Attribute_Definition_Source: Commission for Environmental Cooperation
 Attribute_Domain_Values:
 Enumerated_Domain:
 Enumerated_Domain_Value: Decreasing
 Enumerated_Domain_Value_Definition:
 The fourth threat is decreasing in magnitude.
 Enumerated_Domain_Value_Definition_Source:
 Commission for Environmental Cooperation
 Attribute_Domain_Values:
 Enumerated_Domain:
 Enumerated_Domain_Value: Increasing
 Enumerated_Domain_Value_Definition:
 The fourth threat is increasing in magnitude.
 Enumerated_Domain_Value_Definition_Source:
 Commission for Environmental Cooperation
 Attribute_Domain_Values:
 Enumerated_Domain:
 Enumerated_Domain_Value: Stable
 Enumerated_Domain_Value_Definition:
 The fourth threat is stable in magnitude.
 Enumerated_Domain_Value_Definition_Source:

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        Commission for Environmental Cooperation
Attribute_Domain_Values:
    Enumerated_Domain:
        Enumerated_Domain_Value: <blank>
        Enumerated_Domain_Value_Definition:
            No fourth threat has been identified for the GPCA.
        Enumerated_Domain_Value_Definition_Source:
            Commission for Environmental Cooperation
Attribute:
    Attribute_Label: Threat_5
    Attribute_Definition: The fifth identified threat affecting the GPCA.
    Attribute_Definition_Source: Commission for Environmental Cooperation
Attribute_Domain_Values:
    Enumerated_Domain:
        Enumerated_Domain_Value: ACS
        Enumerated_Domain_Value_Definition:
            Altered composition/structure.
        Enumerated_Domain_Value_Definition_Source:
            Commission for Environmental Cooperation
Attribute_Domain_Values:
    Enumerated_Domain:
        Enumerated_Domain_Value: EH
        Enumerated_Domain_Value_Definition:
            Excessive herbivory.
        Enumerated_Domain_Value_Definition_Source:
            Commission for Environmental Cooperation
Attribute_Domain_Values:
    Enumerated_Domain:
        Enumerated_Domain_Value: ELE
        Enumerated_Domain_Value_Definition:
            Electrocution.
        Enumerated_Domain_Value_Definition_Source:
            Commission for Environmental Cooperation
Attribute_Domain_Values:
    Enumerated_Domain:
        Enumerated_Domain_Value: ST
        Enumerated_Domain_Value_Definition:
            Sedimentation, toxics/contaminants.
        Enumerated_Domain_Value_Definition_Source:
            Commission for Environmental Cooperation
Attribute_Domain_Values:
    Enumerated_Domain:
        Enumerated_Domain_Value: <blank>
        Enumerated_Domain_Value_Definition:
            No fifth threat has been identified for the GPCA.
        Enumerated_Domain_Value_Definition_Source:
            Commission for Environmental Cooperation
Attribute:
    Attribute_Label: T5_rating
    Attribute_Definition: A general rating of the risks from the fifth
threat.
    Attribute_Definition_Source: Commission for Environmental Cooperation
Attribute_Domain_Values:
    Enumerated_Domain:
        Enumerated_Domain_Value: High
        Enumerated_Domain_Value_Definition:
            The risks from the fifth threat are high.

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        Enumerated_Domain_Value_Definition_Source:
            Commission for Environmental Cooperation
Attribute_Domain_Values:
    Enumerated_Domain:
        Enumerated_Domain_Value: Moderate
        Enumerated_Domain_Value_Definition:
            The risks from the fifth threat are moderate.
        Enumerated_Domain_Value_Definition_Source:
            Commission for Environmental Cooperation
Attribute_Domain_Values:
    Enumerated_Domain:
        Enumerated_Domain_Value: Very High
        Enumerated_Domain_Value_Definition:
            The risks from the fifth threat are very high.
        Enumerated_Domain_Value_Definition_Source:
            Commission for Environmental Cooperation
Attribute_Domain_Values:
    Enumerated_Domain:
        Enumerated_Domain_Value: <blank>
        Enumerated_Domain_Value_Definition:
            No fifth threat has been identified for the GPCA.
        Enumerated_Domain_Value_Definition_Source:
            Commission for Environmental Cooperation
Attribute:
    Attribute_Label: T5_urgency
    Attribute_Definition: The urgency of addressing the fifth threat.
    Attribute_Definition_Source: Commission for Environmental Cooperation
Attribute_Domain_Values:
    Enumerated_Domain:
        Enumerated_Domain_Value: Low
        Enumerated_Domain_Value_Definition:
            The urgency of addressing the fifth threat is low because the
threat is
            possible within 10 to 20 years.
        Enumerated_Domain_Value_Definition_Source:
            Commission for Environmental Cooperation
Attribute_Domain_Values:
    Enumerated_Domain:
        Enumerated_Domain_Value: Moderate
        Enumerated_Domain_Value_Definition:
            The urgency of addressing the fifth threat is moderate because
the threat
            is likely to occur within 5 to 10 years.
        Enumerated_Domain_Value_Definition_Source:
            Commission for Environmental Cooperation
Attribute_Domain_Values:
    Enumerated_Domain:
        Enumerated_Domain_Value: Very High
        Enumerated_Domain_Value_Definition:
            The urgency of addressing the fifth threat is very high because
the threat
            is currently happening.
        Enumerated_Domain_Value_Definition_Source:
            Commission for Environmental Cooperation
Attribute_Domain_Values:
    Enumerated_Domain:
        Enumerated_Domain_Value: <blank>

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    Enumerated_Domain_Value_Definition:
        No fifth threat has been identified for the GPCA.
    Enumerated_Domain_Value_Definition_Source:
        Commission for Environmental Cooperation
Attribute:
    Attribute_Label: T5_trend
    Attribute_Definition:
        Whether the fifth threat is increasing in magnitude, decreasing in
magnitude,
        or stable.
    Attribute_Definition_Source: Commission for Environmental Cooperation
Attribute_Domain_Values:
    Enumerated_Domain:
        Enumerated_Domain_Value: Increasing
        Enumerated_Domain_Value_Definition:
            The fifth threat is increasing in magnitude.
        Enumerated_Domain_Value_Definition_Source:
            Commission for Environmental Cooperation
Attribute_Domain_Values:
    Enumerated_Domain:
        Enumerated_Domain_Value: Stable
        Enumerated_Domain_Value_Definition:
            The fifth threat is stable in magnitude.
        Enumerated_Domain_Value_Definition_Source:
            Commission for Environmental Cooperation
Attribute_Domain_Values:
    Enumerated_Domain:
        Enumerated_Domain_Value: <blank>
        Enumerated_Domain_Value_Definition:
            No fifth threat has been identified.
        Enumerated_Domain_Value_Definition_Source:
            Commission for Environmental Cooperation
Attribute:
    Attribute_Label: Area
    Attribute_Definition:
        The size of the priority conservation area in square miles.
    Attribute_Definition_Source: Commission for Environmental Cooperation
Attribute_Domain_Values:
    Range_Domain:
        Range_Domain_Minimum: 322.127122
        Range_Domain_Maximum: 10402.809616
Attribute:
    Attribute_Label: Perimeter
    Attribute_Definition:
        The length of the priority conservation area perimeter. Units are
meters.
    Attribute_Definition_Source: Commission for Environmental Cooperation
Attribute_Domain_Values:
    Range_Domain:
        Range_Domain_Minimum: 123055.760653
        Range_Domain_Maximum: 903408.712801
Attribute:
    Attribute_Label: Acres
    Attribute_Definition:
        The size of the priority conservation area in acres.
    Attribute_Definition_Source: Commission for Environmental Cooperation
Attribute_Domain_Values:

```

Range_Domain:
 Range_Domain_Minimum: 206161.358034
 Range_Domain_Maximum: 6657798.154407
 Attribute:
 Attribute_Label: Hectares
 Attribute_Definition:
 The size of the priority conservation area in hectares.
 Attribute_Definition_Source: Commission for Environmental Cooperation
 Attribute_Domain_Values:
 Range_Domain:
 Range_Domain_Minimum: 83430.875304
 Range_Domain_Maximum: 2694326.099314

Distribution_Information:
 Distributor:
 Contact_Information:
 Contact_Organization_Primary:
 Contact_Organization: Commission for Environmental Cooperation
 Contact_Address:
 Address_Type: Mailing and physical address
 Address: 393, rue St-Jacques Ouest, Bureau 200
 City: Montreal
 State_or_Province: Quebec
 Postal_Code: H2Y 1N9
 Country: Canada
 Contact_Voice_Telephone: 1 514 350 4300
 Contact_Facsimile_Telephone: 1 514 350 4314
 Contact_Electronic_Mail_Address: info@cec.org
 Distribution_Liability:
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Standard_Order_Process:
 Digital_Form:
 Digital_Transfer_Information:
 Format_Name: ESRI Shapefile
 Digital_Transfer_Option:
 Online_Option:
 Computer_Contact_Information:
 Network_Address:
 Network_Resource_Name: <http://www.cec.org/naatlas>
 Fees: Gratuit-Free

Metadata_Reference_Information:
 Metadata_Date: 20090526
 Metadata_Contact:
 Contact_Information:
 Contact_Organization_Primary:
 Contact_Organization: Commission for Environmental Cooperation
 Contact_Address:
 Address_Type: Mailing and physical address
 Address: 393, rue St-Jacques Ouest, Bureau 200
 City: Montreal

State_or_Province: Quebec
Postal_Code: H2Y 1N9
Country: Canada
Contact_Voice_Telephone: 1 514 350 4300
Contact_Facsimile_Telephone: 1 514 350 4314
Contact_Electronic_Mail_Address: info@cec.org
Metadata_Standard_Name:
 FGDC Content Standards for Digital Geospatial Metadata
Metadata_Standard_Version: FGDC-STD-001-1998
Metadata_Access_Constraints: None
Metadata_Use_Constraints: None