

Nomination Proposal

Montana Important Bird Areas for Greater Sage-Grouse

June 26, 2008 (edited October 31, 2008)

Introduction

Sagebrush shrub-steppe habitats across the West have undergone long-term degradation, fragmentation and loss, placing entire communities of native species at risk. The Greater Sage-Grouse (*Centrocercus urophasianus*) has undergone population declines and range contractions across the West and in Montana, and the species continues to be threatened by land conversion, sagebrush eradication, habitat fragmentation, and residential and energy development. An Audubon Watchlist species of continental concern, the Greater Sage-Grouse is also the subject of a status review by the U.S. Fish and Wildlife Service to determine if the species warrants listing under the Endangered Species Act.

The sage-grouse is considered an umbrella species for sagebrush communities, due to its need for large sagebrush landscapes to meet breeding, brood-rearing, and wintering requisites throughout the seasons, and the broad range of habitats the grouse uses within the sagebrush ecosystem. Where habitat for Greater Sage-Grouse can be conserved, we can help sustain sage-grouse populations and also protect healthy communities of other sagebrush obligate species.

Substantial areas of sagebrush shrub-steppe and grouse populations persist in Montana. With the cooperation of key experts, Montana Audubon identified five sagebrush shrub-steppe landscapes around the state as potential Important Bird Areas for Greater Sage-Grouse. These are:

- Bridger Sage-steppe IBA (near Red Lodge, initially named Carbon Triangle);
- Mussellshell Sage-steppe IBA (near Lewistown, initially named Central Montana);
- Glaciated Prairie Sage-steppe IBA (west of Glasgow, initially named Glaciated Plains)
- Beaverhead Sage-steppe IBA Complex (in the Dillon area, initially named Southwest Montana Complex);
- Powder/Carter Sage-steppe IBA (in southeast Montana, initially named Tristate).

Collectively, these five potential IBAs encompass at least 47% of surveyed lek sites and approximately 62% of the known displaying male sage-grouse in Montana. Together, they cover approximately 10,000 square miles (>6 million acres) of sagebrush shrub-steppe and grassland habitat.

Methods

On April 28, 2008, Montana Audubon convened a meeting of sage-grouse experts to help us identify areas for IBA designation. Our objective was to outline the most important large landscapes for sage-grouse in Montana, widely distributed around the state. The group included Rick Northrup and Adam Messer (Montana Fish, Wildlife and Parks), Gayle Sitter (BLM), Ben Deeble (National Wildlife Federation), Jim Roscoe (American Wildlands), Kevin Doherty

(Audubon Wyoming), Christine Paige (Ravenworks Ecology) and Steve Hoffman (Montana Audubon).

Using recent sage-grouse lek survey data, Kevin Doherty (Wyoming Audubon) developed a GIS model to identify core sage-grouse population areas in several western states. We used a modification of this model based on lek data compiled by Montana Fish, Wildlife and Parks to identify areas across the state for potential IBAs.

We should note that this IBA delineation closely dovetails with BLM and FWP sage-grouse GIS analyses for their management planning. But while the agencies are identifying and targeting core areas for management at a fine scale, the Greater Sage-Grouse IBAs encompass much larger regions to emphasize the importance of large, variable shrub-steppe landscapes for long-term sage-grouse population viability.

Core Area GIS Model:

Doherty's core area model delineates areas that, when combined across the state, contain an estimated 25%, 50%, 75% and 99% of the breeding sage-grouse in Montana, based on number of leks and abundance of males at leks. In other words, to capture a given proportion of the population (e.g., 25%) within the smallest possible cumulative area, the model highlights those areas with the greatest lek density and highest male counts.

Doherty's core area model for Greater Sage-Grouse is sensitive to abundance of males at leks and lek density. For each lek, the highest peak male count collected within a three-year period from 2005-2007 is used. However, the lek survey effort across Montana is variable and not all leks are surveyed in every year. If a lek was not sampled in 2005-2007, but was active the last time it was surveyed within the past 7 years, it was included in the data by using the maximum count in the year it was last surveyed. If a lek had a peak male count during 2005 or 2006 but was subsequently found inactive (no displaying males), it was removed from the model data.

To quantify the density of sage-grouse populations, Doherty created a 1-km² grid for the entire state. He then used the peak male lek count recorded between 2005-2007 to assign sage-grouse density to each 1-km² grid cell. Doherty prioritized lek grid cells based on sage-grouse density, and then buffered all leks within population groupings by 6.44 km (4 miles) for his core area analysis.

The 6.44-km (4-mile) radius buffer was used in order to capture the majority of nesting habitat within the core areas. This radius is based on a summary of 10 studies that indicated that 79% of nests are found within 6.44-km of capture leks (Colorado Greater Sage-grouse Steering Committee 2008). In Doherty's core area analysis, the proximity of individual leks to the next nearest lek was 4.9-km on average. Therefore, where leks are not isolated, a 6.44-km buffer should actually contain more than 79% of nests due to overlapping buffers from surrounding leks.

Identifying Population Hotspots:

To identify large landscape-level IBAs for sage-grouse, we first used the core areas captured by the model's 25% population level to identify population "hotspots" around Montana. We then selected five regions with clustered hotspots as the five most important landscapes with the densest sage-grouse populations in the state.

For each of these five regions, we included all areas identified up to the 75% core area population level to encompass a larger, biologically meaningful landscape. We then extended the landscapes by using an 8.5-km (5-mile) radius buffer from the lek centers to determine the outer IBA boundaries but eliminated any areas that fell outside known sage-grouse range or that overlapped with established IBAs.

The 8.5-km radius buffer is based on findings of a Wyoming study of sage-grouse nest distribution in relatively uniform sagebrush steppe habitat (Holloran and Anderson 2005). The study determined that: 1) although nest density decreases with distance from the lek, nest success increases both with distance from other nests and with distance from a lek; 2) there is strong evidence of fidelity to nest site areas; and 3) females tend to move nest locations farther after an unsuccessful year. The authors concluded that a substantial number of females nesting beyond 5 km from leks could be particularly important for the viability of the population because of differences in nest success and habitat quality, and suggested that 8.5 km would encompass the majority of nesting habitat.

With this in mind, the committee determined that using the wider 8.5 km buffer would better support a viable population of Greater Sage-Grouse within each IBA, particularly in more variable sagebrush habitats.

To finalize the biological boundaries determined by the core area model, we examined the IBAs relative to GAP land cover. We chose to smooth the boundaries where land cover showed suitable shrub or grassland habitat, and include any "holes" that were artifacts of the modeling process if the land cover mosaic remained consistent with the rest of the IBA. In the Glaciated Prairie Sage-steppe IBA, we also included area that was recently documented as wintering habitat for a sub-population of sage-grouse that migrated from Saskatchewan, where the species is listed as endangered (Tack and Naugle, pers. comm.) Lastly, we eliminated any overlap with other established IBAs.

Our assumption is that the resulting boundaries will be biologically significant and capture most of the year-round habitat and life-history requirements for the sage-grouse population within each IBA.

Refining Pragmatic Boundaries

To create more practical boundaries that can be identified and used by land managers and landowners on the ground, we refined the IBA boundaries using major geographic features. Referring to the GAP land cover and the core area model "biological boundaries" as guides, we delineated "pragmatic boundaries" based on a general hierarchy of: 1) county lines; 2) major roads (highways and Interstates); 3) rivers and streams; 4) secondary roads; 5) section lines.

Montana Greater Sage-Grouse IBAs

We identified five large landscape areas to nominate as Globally Important Bird Areas for Greater Sage-Grouse (see Table 1).

- Bridger Sage-steppe IBA near Red Lodge;
- Mussellshell Sage-steppe IBA near Lewistown;
- Glaciated Prairie Sage-steppe IBA west of Glasgow;
- Southwest Montana IBA Complex in the Dillon area.
- Powder/Carter Sage-steppe IBA in southeast Montana;

The potential IBAs are geographically distributed across the sagebrush shrub-steppe habitat in the state, and occur within each of the three Bird Conservation Regions (BCRs) in Montana: Badlands and Prairies, Prairie Potholes, and Northern Rockies. **Collectively, these five IBAs encompass 62% of the known displaying male sage-grouse in the state, and approximately 10,000 square miles (>2.5 million hectares, or >6 million acres).** Although the IBA delineations are based on lek data (the only consistent and widespread population data available for Greater Sage-Grouse), we assume that the resulting IBA boundaries encompass landscapes that will support the better part of the year-round habitat and life-history requirements for the sage-grouse population within each IBA.

The core area model and subsequent GIS mapping effort produced two ways of defining the boundaries of these potential IBAs. The “biological boundaries” are based on the model with refinement to include holes and smooth outer boundary lines. The “pragmatic boundaries” anchor the IBAs along geographical lines that can be more readily used by managers, landowners and conservationists to determine what falls within or outside of the IBA.

These two sets of boundaries show only slight differences in the number of leks and abundance of grouse captured within each IBA (Table 1). Both the biological and pragmatic boundaries capture approximately 62% of the displaying male sage-grouse surveyed. The pragmatic boundaries encompass 49% of surveyed leks vs. 47% within the biological boundaries.

However, there are individual differences for each potential IBA, probably due to the particular leks included or excluded by each boundary method. The pragmatic boundaries can be further refined if important local lek sites were excluded by this method:

- Bridger Sage-steppe includes the same number of leks within each boundary method, but 9 fewer males within the pragmatic boundary;
- Mussellshell Sage-steppe captures 17 more leks and 286 more males within the pragmatic boundary vs. the biological boundary;
- Glaciated Prairie Sage-steppe lek captures 5 fewer leks and 298 fewer males within the pragmatic boundary vs. the biological boundary. However these figures will be updated after a last minute change to the mapped boundaries, and are expected to be much closer;
- Powder/Carter Sage-steppe includes 9 more leks and 104 more males within the pragmatic boundary vs. the biological boundary;
- Beaverhead Sage-steppe captures two more leks but seven fewer males in the pragmatic boundary than the biological boundary.

Table 1. Number of Greater Sage-grouse males, number of leks and estimated area captured by potential Greater Sage-Grouse Important Bird Areas (IBA). Figures are given for each boundary mapping method: biological model boundaries and pragmatic boundaries.

Montana Survey Totals						
	# leks		# males¹			
Montana Zone I	869		20,556			
All SW Montana	56		1,149			
Total Montana	925		21,705			
Biological Model IBA Boundaries						
	# leks	% of leks IBA/state	# males¹	% of males IBA/state	Area² Hectares	Area³ Sq. miles
Bridger Sage-steppe	21	2.3%	641	3.0%	13,5323	520
Mussellshell Sage-steppe	185	20.0%	5,908	27.2%	106,4527	4094
Glaciated Prairie Sage-steppe⁴	94	10.2%	3,923	18.1%	701,259	2697
Southwest Montana	27	2.9%	737	3.4%	471,421	1813
Powder/Carter Sage-steppe	108	11.7%	2,284	10.5%	192,672	741
Total	435	47.0%	13,493	62.2%	2,565,202	9,865
Pragmatic IBA Boundaries						
	# leks	% of leks in state	# males¹	% of males in state	Area² Hectares	Area³ Sq. miles
Bridger Sage-steppe	21	2.3%	632	2.9%	145,005	557
Mussellshell Sage-steppe	202	21.8%	6,194	28.5%	1,238,680	4764
Glaciated Prairie Sage-steppe⁴	89	9.6%	3,625	16.7%	645,889	2484
Southwest Montana	29	3.1%	730	3.4%	552,567	2125
Powder/Carter Sage-steppe	117	12.6%	2,388	11.0%	226,802	872
Total	458	49.5%	13,569	62.5%	2,808,943	10,802

¹ Total number of males based on the highest count on lek surveys collected over three years from 2005 to 2007. Lek and abundance data compiled by Montana FWP and analyzed by Kevin Doherty, Audubon Wyoming.

² Area calculated by GIS and rounded to nearest hectare.

³ Area calculated from hectares and rounded to nearest square mile.

⁴ Due to a last minute mapping change, the figures for Glaciated Prairie Sage-steppe need to be updated and are expected to increase slightly.

Audubon IBA Criteria

The Greater Sage-Grouse is listed as Near-Threatened on the 2007 IUCN Red List. It is listed on the National Audubon Society list of Globally Threatened species for IBA consideration, and on the 2007 Audubon Watchlist as a species of Continental Concern. It is also a Montana State Sensitive Species. Audubon cites an estimated global population of 150,000. The Montana survey data on which population estimates were made for the potential IBAs are from 2005 through 2007 lek survey and meet the expectation that data upon which an IBA nomination is based be no more than 10 years old. Table 2 summarizes the criteria and thresholds for an area to meet IBA standards for Greater Sage-Grouse.

Table 2. Greater Sage-Grouse Criteria and Thresholds for an area to qualify as a Global IBA for the species (source: National Audubon Society 2006 IBA Species and Thresholds database).

Greater Sage-grouse <i>Centrocercus urophasianus</i>	
A1 Threat Code: N = near-threatened	
Dispersion pattern: Breeding / Migration (spring or fall) / Winter : A/D/D (D=dispersed; A=aggregated)	
A1 Species of Global Concern Thresholds:	
Breeding (Pairs/Individuals):	40/120
Migration:	60
Nonbreeding:	60
Global population estimate:	150,000
Global population trend:	1d (large decline; source=PIF)
A4ii Congregatory Species Thresholds:	
A4ii Terrestrial spp, percent of global population:	
>1% simultaneous:	1500
>5% over season:	7500
A4iv Aerial migratory bottleneck:	
>5% passes during migration:	7500

Each of the five nominated IBAs meets A1 thresholds, and support populations well beyond the minimum number of 40 pairs or 120 breeding individuals. The Mussellshell Sage-steppe, Glaciated Prairie Sage-steppe and Powder/Carter Sage-steppe IBAs may also qualify as Global IBAs based on Congregatory Species Thresholds, each supporting far more than 1% of the global population at display leks. Mussellshell Sage-steppe and Glaciated Prairie Sage-steppe support > 7500 Greater Sage-Grouse throughout the breeding season.

In summary, we believe that each of the five areas delineated by the lek-based modeling effort deserve recognition as Globally Important Bird Areas for Greater Sage-Grouse, and represent the largest and densest intact sage-grouse populations in Montana. Wildlife and land management agencies and partner conservation groups have expressed keen interest in the designation of IBAs for sage-grouse in the state. IBA recognition of these areas will be a significant step toward sustaining viable sage-grouse populations and sagebrush shrub-steppe communities in Montana into the future.

Acknowledgements

We would like to express our gratitude to the many people who contributed to this project. The project was supported by funding from the National Audubon Society through a Sargent Endowment Grant. Kevin Doherty (Audubon Wyoming) provided the essential sage-grouse core area GIS analysis and summaries of sage-grouse survey data that laid the foundation of the project. Key sage-grouse experts convened to help us outline potential IBA areas, including Mr. Doherty, Ben Deeble (National Wildlife Federation), Rick Northrup and Adam Messer (Montana Fish, Wildlife and Parks), Jim Roscoe (American Wildlands) and Gayle Sitter (Bureau of Land Management). Sarah Olib (American Wildlands) provided indispensable GIS help to map IBA boundary alternatives and summarize landscape attributes. Jim Roscoe, BLM biologist John Carlson, and FWP biologists Scott Hemmer, Sean Stewart and Jay Newell provided on-the-ground insight and details for each potential IBA. Christine Paige (Ravenworks Ecology) coordinated the project.

Citations

Colorado Greater Sage-grouse Steering Committee. 2008. Colorado greater sage-grouse conservation plan. Colorado Division of Wildlife, Denver, Colorado, USA.

Holloran, M.J. and S. H. Anderson. 2005. Spatial distribution of Greater Sage-grouse nests in relatively contiguous sagebrush habitats. *Condor* 107(4):742-752.

Tack, Jason and David Naugle. Personal communication. University of Montana, Missoula, MT.

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Attachments:

1. Bridger Sage-steppe Nomination Site Report
2. Mussellshell Sage-steppe Nomination Site Report
3. Glaciated Prairie Sage-steppe Nomination Site Report
4. Southwest Montana Nomination Site Report
5. Powder/Carter Sage-steppe Nomination Site Report
6. PDF maps of nominated IBAs

Site Name: Bridger Sage-steppe		IBA Code: MTUS38
Status: Potential		State: Montana
Criteria Proposed:		Country: US
Criteria Confirmed:		County: Carbon
Latitude: 45.2	Area (ha): 145005.0	Elevation (m):
Longitude: -108.9		Min 0.0 Max 0.0 Avg 1300.0
Bird Conservation Region: Northern Rockies		Endemic Bird Area:

Site Description:

The Bridger Sage-steppe encompasses a broad intermountain valley between the Beartooth and Prior Mountains. It sits in the rain shadow off the Beartooth Mountains and is one of the driest areas of the state. It is dominated by sagebrush shrubs-steppe, with native grasslands on upper hillsides. Where stands of sagebrush remain intact, there are healthy numbers of Greater Sage-Grouse.

Ornithological Significance:

The Bridger Sage-steppe area encompasses significant habitat for Greater Sage-Grouse. It supports the largest concentration of sage-grouse in the south-central portion of the state and roughly 3% of the male grouse surveyed in the state. The IBA encompasses 21 lek sites (2.3% of the known leks in Montana), and at least 632 male sage-grouse, based on lek surveys. Although somewhat isolated to the east and west by the Prior and Beartooth mountain ranges, the area's sage-grouse population is contiguous with, and part of, the grouse population in northern Wyoming.

Species Data and Criteria (abbreviated):

(for the full table, [click here...](#))

Common Name	Date	Seasonal/Daily	Season	# Observed	Density (#/km ²)	Units	Proposed Criteria	Confirmed Criteria
Greater Sage-Grouse	2007	S	breeding	632	0.44	Males only		
	Source Text:	Annual sage-grouse lek surveys completed by area biologists and compiled by Montana Fish, Wildlife and Parks. Number of males based on high counts of displaying males at leks during the three-year period from 2005 through 2007.						

Ownership

Land ownership is primarily private agricultural lands, secondarily Bureau of Land Management lands, mixed with state lands.

% of IBA	Ownership
37.0	Federal / Bureau of Land Management BLM
58.0	Individual
5.0	State

Habitat

The IBA is dominated by sagebrush shrubsteppe and grassland, mixed with small amounts of agriculture, upland forests, riparian shrubs, and riparian woodland.

% of IBA	Habitat
5.0	Herbaceous Planted/Cultivated
9.0	Barren / Bare Rock/Sand/Clay
0.0	Forested Upland / Deciduous forest
1.0	Forested Upland / Evergreen Forest
28.0	Herbacious Upland / Grassland/Herbacious
56.0	Shrubland / Shrubland
0.0	Water / Open Water

Land Use

% of Total Use of IBA	Land Use
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Threats

The primary threat to this area is the invasion of noxious weeds, particularly cheatgrass, that replace the native grass and forbs understory and alter fire regimes. Overgrazing is also a significant stress on the sagebrush habitat. Where sagebrush remains intact in healthy stands, there are relatively abundant numbers of sage-grouse. There is an active oil field on the Montana/Wyoming border and active exploration in the area, with discussions of potential coal-bed methane development. There is potential for further energy development in the future.

Level	Threat
9	Agricultural intensification/expansion / Grazing
5	Industrialization/Urbanization / Energy development
10	Invasive species / Non-native plants

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Steward(s):

Monitoring Location Affiliated with this Site:

Location	Lat/Long	County	Zip	Habitats
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Citation: National Audubon Society 2008. Important Bird Areas in the U.S.
Available at <http://www.audubon.org/bird/iba> 06/2008

Site Name: Mussellshell Sage-steppe		IBA Code: MTUS39
Status: Potential		State: Montana
Criteria Proposed:		Country: US
Criteria Confirmed:		Counties: Fergus, Golden Valley, Musselshell, Petroleum, Rosebud, Treasure
Latitude: 47.1	Area (ha): 1238680.0	Elevation (m):
Longitude: -108.5		Min 0.0 Max 0.0 Avg 1000.0
Bird Conservation Region: Badlands and Prairies		Endemic Bird Area:

Site Description:

This large IBA covers an extensive expanse of sagebrush shrub-steppe and native prairie habitat on the western edge of the Great Plains. It supports a significant population of Greater Sage-Grouse in central Montana. The IBA contains an array of sagebrush habitat conditions, with large areas of intact sagebrush grassland.

Ornithological Significance:

Species Data and Criteria (abbreviated):

(for the full table, [click here...](#))

Common Name	Date	Seasonal/ Daily	Season	# Observed	Density (/km ²)	Units	Proposed Criteria	Confirmed Criteria
Greater Sage-Grouse	2007	S	breeding	6194	0.5	Males only		
	Source Text:	Annual sage-grouse lek surveys completed by area biologists and compiled by Montana fish, Wildlife and Parks. Number of males based on high counts of displaying males at leks during the three-year period from 2005 through 2007.						

Ownership

Landownership is primarily private agricultural lands and federal Bureau of Land Management lands mixed with some state ownership.

% of IBA	Ownership
37.0	Federal / Bureau of Land Management BLM
58.0	Individual
5.0	State

Habitat

The area is dominated by prairie grassland and sagebrush shrub-steppe, mixed with small amounts of shrub and woodland riparian habitats, agricultural lands and upland forests.

% of IBA	Habitat
5.0	Herbaceous Planted/Cultivated
0.0	Barren
2.0	Forested Upland / Evergreen Forest
0.0	Forested Upland / Mixed Forest
42.0	Herbacious Upland / Grassland/Herbacious
37.0	Shrubland
10.0	Wetlands / Woody Wetlands / Riparian Corridor

Land Use

% of Total Use of IBA	Land Use
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Threats

The primary threat in the region is the loss of sagebrush habitat to conversion to agriculture. As grain prices rise, tens of thousands of acres are being placed under cultivation. There is an escalating cycle of intensifying agriculture: grain fields are being placed into CRP and adjacent prairie lands broken and placed into small grain cultivation. The net result is a decline in native shrub-steppe habitats. Energy development in the area has been static, although there is currently some oil production. There are new leases for exploration, and energy development could intensify in the future.

Level	Threat
10	Agricultural intensification/expansion / Conversion to agriculture
10	Agricultural intensification/expansion / Crop species or cultivation change
5	Industrialization/Urbanization / Energy development

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Steward(s):

Monitoring Location Affiliated with this Site:

Location	Lat/Long	County	Zip	Habitats
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Citation: National Audubon Society 2008. Important Bird Areas in the U.S.
Available at <http://www.audubon.org/bird/iba> 06/2008

Site Name: Glaciated Prairie Sage-steppe		IBA Code: MTUS40
Status: Potential		State: Montana
Criteria Proposed:		Country: US
Criteria Confirmed:		Counties: Phillips, Valley
Latitude: 48.0	Area (ha): 645889.0	Elevation (m): Min 0.0 Max 0.0 Avg 750.0
Longitude: -107.7		
Bird Conservation Region: Prairie Potholes		Endemic Bird Area:

Site Description:

The IBA encompasses an extensive expanse of largely unbroken sagebrush shrub-steppe and prairie grassland in north central Montana, bounded by the Charles M. Russell National Wildlife Refuge and the Milk River. It supports a significant breeding population of sage-grouse, and wintering habitat for sage-grouse that breed in Saskatchewan.

Ornithological Significance:

The IBA encompasses an extensive region of largely unbroken sagebrush shrub-steppe and prairie grassland in north central Montana. The area supports the most significant population of Greater Sage-Grouse in the region, with more than 3,600 displaying males surveyed (16.7% of the males surveyed in the state), and includes at least 89 known lek sites (9.6% of the known lek sites in the state). It also includes wintering habitat for a remnant population segment of sage-grouse that breed in Saskatchewan, where the species is listed as endangered.

Species Data and Criteria (abbreviated):

(for the full table, [click here...](#))

Common Name	Date	Seasonal/Daily	Season	# Observed	Density (#/km2)	Units	Proposed Criteria	Confirmed Criteria
Greater Sage-Grouse	2007	S	breeding	3625	0.56	Males only		
	Source Text:	Annual sage-grouse lek surveys completed by area biologists and compiled by Montana Fish, Wildlife and Parks. Number of males based on high counts of displaying males at leks during the three year period from 2005 through 2007.						

Ownership

Landownership is primarily Bureau of Land Management and private agricultural lands, mixed with small amounts of state, other federal, and Nature Conservancy ownerships.

% of IBA	Ownership
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0.0	Federal / Bureau of Indian Affairs
61.0	Federal / Bureau of Land Management BLM
1.0	Federal / Bureau of Reclamation
0.0	Federal / FWS - National Wildlife Refuge
31.0	Individual
1.0	Non-profit / Land Trust - The Nature Conservancy
5.0	State

Habitat

The area is dominated by unbroken prairie grasslands and sagebrush shrub-steppe, mixed with upper Missouri River badlands, small areas of riparian habitats, and dryland agriculture.

% of IBA	Habitat
3.0	Herbaceous Planted/Cultivated
5.0	Barren / Bare Rock/Sand/Clay
10.0	Forested Upland / Evergreen Forest
30.0	Herbacious Upland / Grassland/Herbacious
50.0	Shrubland / Shrubland
2.0	Wetlands / Woody Wetlands / Riparian Corridor

Land Use

% of Total Use of IBA	Land Use
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Threats

Much of the IBA is on federal lands managed for rangeland grazing. Grazing is not a major impact, as most areas are well-managed under rest-rotation systems and management, sustaining the sage-grouse populations. the primary threat in the area is agricultural conversion to dryland wheat, and tilling of pristine prairie lands that have never been cultivated. Ironically, the interest in organic crop production is placing greater pressure on converting native prairie to agriculture as these lands have never had chemical spray applications. The second most serious threat in the area is invasion of noxious weeds and subsequent alteration of the vegetation community and fire regimes. Potential for oil and gas development in the area is relatively low, but exploration and production could increase in the future.

Level	Threat
10	Agricultural intensification/expansion / Conversion to agriculture

8	Industrialization/Urbanization / Energy development
9	Invasive species / Non-native plants

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Steward(s):

Monitoring Location Affiliated with this Site:

Location	Lat/Long	County	Zip	Habitats
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Citation: National Audubon Society 2008. Important Bird Areas in the U.S.
 Available at <http://www.audubon.org/bird/iba> 06/2008

Site Name: Beaverhead Sage-steppe		IBA Code: USMT37
Status: Potential		State: Montana
Criteria Proposed:		Country: US
Criteria Confirmed:		County: Beaverhead
Latitude: 45.2	Area (ha): 226800.0	Elevation (m):
Longitude: -113.0		Min 0.0 Max 0.0 Avg 2000.0
Bird Conservation Region: Northern Rockies		Endemic Bird Area:

Site Description:

The Beaverhead Sage-steppe encompasses extensive high elevation basins and intermountain valleys dominated by native sagebrush shrub-steppe. The complex includes the Sage Creek basin, the western part of the Centennial Valley, and most of the Horse Prairie watershed. Topographically, the area is covered by mid-elevation rolling foothills. The IBA represents the largest intact sagebrush habitats that remain in southwestern Montana, both in extent and continuity. The IBA ranges from the lowest and driest sagebrush sites in the region to the highest and wettest sagebrush sites in southwestern Montana.

Ornithological Significance:

The IBA represents the largest intact sagebrush habitats that remain in southwestern Montana, in extent and continuity and supports significant numbers of Greater Sage-Grouse--at least 3% of the state population. The IBA encompasses at least 29 known lek sites (3% of the leks in the state), and supports at least 730 male grouse in the breeding season (>3% of the state population of surveyed male grouse). The IBA ranges from the lowest and driest sagebrush sites in the region to the highest and wettest sagebrush sites in southwestern Montana. This variation is reflected in the mobility of local grouse populations: grouse in Horse Prairie remain resident through the year, where grouse in the Centennial Valley range 10 to 20 miles through the seasons.

Species Data and Criteria (abbreviated):

(for the full table, [click here...](#))

Common Name	Date	Seasonal/ Daily	Season	# Observed	Density (#/km2)	Units	Proposed Criteria	Confirmed Criteria
Greater Sage-Grouse	2007	S	breeding	730	0.13	Males only		
	Source Text:	Annual sage-grouse lek surveys completed by area biologists and volunteers, and compiled by National Wildlife Federation and Montana Fish, Wildlife and Parks. Number of males based on high counts of displaying males at leks during the three-year period from 2005 through 2007.						

Ownership

Landownership is primarily Bureau of Land Management and private ranch lands, mixed with small amount of other federal and state lands.

% of IBA	Ownership
47.0	Federal / Bureau of Land Management BLM
0.0	Federal / Bureau of Reclamation
0.0	Federal / FWS - National Wildlife Refuge
2.0	Federal / USDA Forest Service - National Forest
35.0	Individual
15.0	State

Habitat

Landownership is primarily Bureau of Land Management and private ranch lands, mixed with small amount of other federal and state lands.

% of IBA	Habitat
2.0	Herbaceous Planted/Cultivated
1.0	Barren / Bare Rock/Sand/Clay
2.0	Forested Upland / Evergreen Forest
1.0	Forested Upland / Mixed Forest
22.0	Herbacious Upland / Grassland/Herbacious
68.0	Shrubland
0.0	Water / Open Water
3.0	Wetlands / Woody Wetlands / Riparian Corridor

Land Use

% of Total Use of IBA	Land Use
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Threats

In the Horse Prairie area, past rangeland management in the 1960s and 70s broadly altered sagebrush extent through burning, spraying and grazing, however current rangeland management is complimentary with maintaining and restoring the sagebrush shrub-steppe habitats. Most areas are recovered with second-growth sagebrush. In the Centennial Valley and Sage Creek, grazing management is largely consistent with maintaining the native shrub-steppe. Current threats in the region are primarily from potential changes in land ownership, and the potential for

private lands development for subdivisions and residences. Drought and climate change also place stresses on the vegetation community, particularly the understory grasses and forbs, and noxious weed invasion is an ongoing management problem. There is limited conifer encroachment in some areas. There is low potential for energy development in the near future, and none of the areas have been in recent energy lease applications..

Level	Threat
1	Industrialization/Urbanization / Energy development
4	Industrialization/Urbanization / Habitat fragmentation
7	Industrialization/Urbanization / Residential development
5	Natural events / Drought

Nominator(s):

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 Affiliation:
 Address: ' United States
 Email:
 Phone:

Steward(s):

Monitoring Location Affiliated with this Site:

Location	Lat/Long	County	Zip	Habitats
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Citation: National Audubon Society 2008. Important Bird Areas in the U.S.
 Available at <http://www.audubon.org/bird/iba> 06/2008

Site Name: Powder/Carter Sage-steppe		IBA Code: USMT36
Status: Potential		State: Montana
Criteria Proposed: A1, A4ii		Country: US
Criteria Confirmed:		County: Carter
Latitude: 45.4	Area (ha): 471400.0	Elevation (m):
Longitude: -104.5		Min 0.0 Max 0.0 Avg 1100.0

Bird Conservation Region: Badlands and Prairies
 Endemic Bird Area:

Site Description:

The Powder/Carter Sage-steppe area of southeastern Montana covers high-quality sagebrush shrub-steppe and prairie grasslands that support a significant population of Greater Sage-Grouse. The area is typified by rolling sagebrush prairies, interspersed with flat-topped grassy buttes, alkali flats, and stream corridors. Sparsely populated and with a declining human population, the region is primarily cattle and sheep ranching country, with a small amount of dryland agriculture and bentonite mining.

Ornithological Significance:

This area contains the densest population of Greater Sage-Grouse in southeastern Montana. It contains significant native shrubsteppe and prairie grassland habitat, largely in healthy condition. The IBA area covers at least 100 lek sites (11% of the surveyed leks in the state) and more than 2,200 male sage-grouse surveyed at lek sites (10.5% of the male sage grouse population in the state).

Species Data and Criteria (abbreviated):

(for the full table, [click here...](#))

Common Name	Date	Seasonal/Daily	Season	# Observed	Density (#/km2)	Units	Proposed Criteria	Confirmed Criteria
Greater Sage-Grouse	2007	S	breeding	2388	0.5	Males only	A1 - Global Species of Conservation Concern A4ii - >1% global pop. seabirds/terrestrial sp. simultaneously; 5% over season	
	Source Text:	Annual sage-grouse lek surveys completed by area biologists and compiled by Montana Fish, Wildlife and Parks. Number of males based on high counts of displaying males at leks during the three-year period from 2005 through 2007.						

Ownership

The land ownership is primarily private agricultural lands and Bureau of Land Management rangelands, mixed with a small amount of state and tribal land.

% of IBA	Ownership
0.0	Communal / Native American Tribe
34.0	Federal / Bureau of Land Management BLM
58.0	Individual
8.0	State

Habitat

The area is dominated by sagebrush shrub-steppe and prairie grasslands, mixed with badlands and salt flats. There is a small amount of cropland agriculture, upland forests and riparian habitat.

% of IBA	Habitat
3.0	Herbaceous Planted/Cultivated
14.0	Barren / Bare Rock/Sand/Clay
6.0	Forested Upland / Evergreen Forest
0.0	Forested Upland / Mixed Forest
32.0	Herbacious Upland / Grassland/Herbacious
30.0	Shrubland / Shrubland
6.0	Shrubland / Shrubland / Desert Playa and Salt Scrub
7.0	Wetlands / Woody Wetlands / Riparian Corridor

Land Use

% of Total Use of IBA	Land Use
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Threats

The primary threats to native shrub-steppe habitat in the IBA is the fragmentation and loss of sagebrush to farming and rangeland management, including plowing, and sagebrush eradication through burning and spraying. There is some existing bentonite mining in the region on the edge of the sagebrush areas. Secondary threats include the future potential for energy development and current leases for energy exploration, including coal-bed methane and uranium. West Nile virus is also a concern for population viability of sage-grouse in the area.

Level	Threat
5	Agricultural intensification/expansion / Conversion to agriculture

4	Agricultural intensification/expansion / Excessive use of chemicals
4	Burning of vegetation / Clearing of vegetation
1	Extraction Industry / Mining (other)
3	Industrialization/Urbanization / Energy development
4	Invasive species / Other

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Email: chrispaige@gmail.com

Phone: (W) 406-777-0725

Steward(s):

Monitoring Location Affiliated with this Site:

Location	Lat/Long	County	Zip	Habitats
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Citation: National Audubon Society 2008. Important Bird Areas in the U.S.

Available at <http://www.audubon.org/bird/iba> 06/2008