

# In the Red: How Proposed Conservation Plans Fail to Protect Greater Sage-Grouse

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*An Evaluation of Draft Plans Released under the National Greater Sage-Grouse Planning Strategy*



By Mark Salvo





Defenders of Wildlife is a national, nonprofit membership organization dedicated to the protection of all native wild animals and plants in their natural communities.

Jamie Rappaport Clark, President and CEO

Author: Mark Salvo

Contributors: KC Stover, Noah Matson, Kate Davies, Cameron Zotter

Cover Image: Tatiana Gettleman

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1130 17th Street, N.W.  
Washington, D.C. 20036-4604  
202.682.9400

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## Executive Summary

Greater sage-grouse may have historically ranged across 297 million acres in North America and numbered as many as 16 million birds. Today, their distribution has been reduced by 44 percent and populations have experienced long-term declines. Conservationists petitioned the U.S. Fish and Wildlife Service (“FWS”) to list the sage-grouse under the Endangered Species Act (“ESA”) in 2003. The FWS determined that greater sage-grouse warranted ESA protection in 2010, but that listing was precluded by other, higher priorities. However, as part of a separate legal settlement, the agency subsequently committed to either propose greater sage-grouse for listing or find the species not warranted for protection by September 2015.

The date certain for a listing decision has prompted federal and state agencies to initiate a multitude of planning processes to implement new conservation measures for sage-grouse in the hope of avoiding the need to list the species. The most important of these is the National Greater Sage-Grouse Planning Strategy (“Planning Strategy”) led by the federal Bureau of Land Management (“BLM”), which administers approximately half of remaining sage-grouse habitat in the West. The BLM (and the U.S. Forest Service, as a cooperating agency) partitioned the Planning Strategy into 15 planning areas covering ten western states. The planning effort includes nine resource management plan (“RMP”) revisions and the preparation of six larger-scale sub-regional environmental impact statements (“EIS”) that will amend underlying RMPs and Forest Service land use plans (all together, “draft plans”).

This report evaluates the potential of all 15 draft plans released as part of the Planning Strategy to conserve and restore sage-grouse populations by comparing the prescriptions in the preferred management alternatives with key conservation measures for sage-grouse recommended by the BLM, FWS and other authorities. Our evaluation found that management prescriptions in the draft plans are biologically or legally inadequate and must be improved in final RMPs and EISs in order to provide for the long-term conservation of sage-grouse.



## Key Findings

- Federal planners typically analyzed key conservation measures for sage-grouse in at least one management alternative in each draft plan, but usually adopted weaker standards in the preferred alternatives. The proposed conservation measures are biologically inadequate or legally uncertain to conserve sage-grouse.
- Proposed conservation schemes in the draft plans are inconsistent range-wide, regionally and even between adjacent planning areas, limiting their effectiveness to conserve the species over large areas.
- None of the draft plans would protect essential sage-grouse habitat as sagebrush reserves to conserve and restore sage-grouse populations.
- Only a few of the draft plans identify areas for habitat restoration, and none of them fully account for the effects of climate change on sage-grouse in proposed conservation measures for the species.

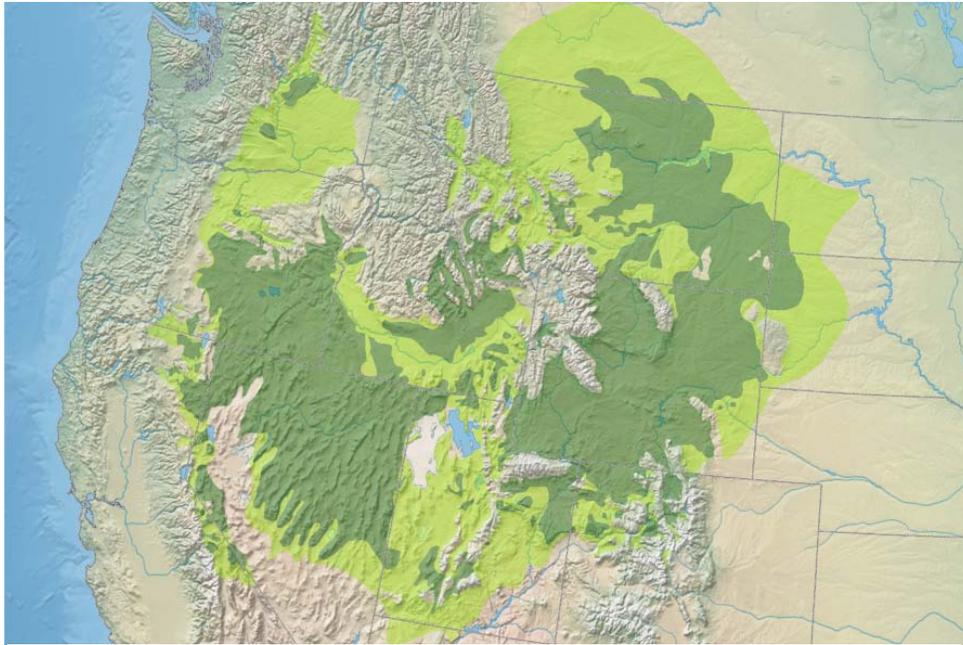
## Recommendations

- Federal agencies should finalize the 15 draft plans together in a centralized process that can more effectively address their many deficiencies and resolve discrepancies between their selected management alternatives so that the final plans implement consistent, adequate, regulatory conservation measures to conserve and restore sage-grouse and their habitat.
- The final plans should designate all identified priority habitat in sage-grouse range to support sage-grouse conservation and restoration, and permanently protect the most important habitat as sagebrush reserves to serve as strongholds for sage-grouse and other sagebrush-dependent species.
- Management must maintain and enhance habitats that are important to sage-grouse persistence, including large, interconnected areas of sagebrush steppe with a mosaic of native vegetative communities in various successional stages and functioning hydrologic systems.
- Final plans should designate areas to focus habitat restoration where science-based passive and active management have a good probability of improving habitat quality and connectivity, creating new priority habitat, and reclaiming sage-grouse historic range for re-occupancy by the species.
- Conservation measures should account for the effects of climate change on sagebrush steppe by anticipating future habitat and species shifts and supporting habitat resilience to climate change.

## Introduction

### Conservation of Greater Sage-Grouse

Greater sage-grouse (*Centrocercus urophasianus*) are a sagebrush obligate species whose range has been significantly reduced with the loss of sagebrush steppe (see Map 1). Greater sage-grouse distribution has decreased by 44 percent (Schroeder et al. 2004) and populations have experienced long-term declines (Connelly and Braun 1997; Connelly et al. 2004; Anonymous 2008).



**Map 1. Current and historic range of the greater sage-grouse.**  
(Historic distribution is depicted in light green.)

Sage-grouse are a landscape species that use a variety of seasonal habitats throughout the year (Connelly et al. 2004; Connelly et al. 2011b). Sage-grouse breeding sites (leks) and associated nesting and brood-rearing habitat are especially important to the species' life

cycle. The grouse have high fidelity to leks and most hens will nest within four miles of the lek where they mated (SGNTT 2011: 21, Table 1). Anthropogenic disturbance and disruptive activities, noise, and habitat degradation in breeding, nesting and brood-rearing habitats can influence sage-grouse productivity (Connelly et al. 2011a; Holloran 2005; Patricelli et al. 2013; Lyon and Anderson 2003). Nesting success, which is key to population growth, is higher in relatively unaltered habitat compared to altered habitat (Connelly et al. 2011a).

Vast areas of sagebrush steppe have been eliminated, fragmented or degraded by human activities and related effects (Knick et al. 2003). Historic patterns of land use, conflicting management goals and demand for resources have left relatively little of this landscape in pristine condition (West 1999). Less than three percent of sage-grouse current range is federally designated wilderness, national parks, national wildlife refuges or other protected areas (Salvo 2008, unpublished).

Federal agencies manage more than 70 percent of remaining sagebrush steppe. Although cooperation among federal and state agencies, private land owners and others will be important to conserve sage-grouse and sagebrush habitat (Stiver et al. 2006), the federal government and federal public lands are key to achieving these goals. Federal agencies must prioritize sagebrush conservation if sage-grouse are to persist (Connelly et al. 2011b).

Implementing conservation strategies at regional or landscape scales would have the greatest benefit for sage-grouse and their habitat (*see* Doherty et al. 2011). Protecting large expanses of sagebrush steppe and remaining sage-grouse populations must be the highest priority (Connelly et al. 2011b; Wisdom et al. 2005b). Given the importance of public lands to sage-grouse conservation; the sensitivity of sagebrush steppe to disturbance; its variable response to restoration; and its susceptibility to invasion by exotic plants (Knick 2011), land uses that negatively affect publicly owned sagebrush steppe should be excluded or avoided in areas important to sage-grouse conservation. Establishing a system of sagebrush reserves would also help conserve essential habitat and ecological processes important to the grouse.

Sage-grouse are a useful umbrella species<sup>1</sup> for sagebrush steppe. More than 350 species that use sagebrush habitat are of conservation concern (Wisdom et al. 2005a: 21 and App. 2), including a suite of sagebrush-dependent avifauna that would benefit from increased protection of their habitat (Knick et al. 2003). Rich et al. (2005: 602) contended that “conservation of Greater and Gunnison Sage-grouse populations in reasonable numbers well distributed across their historical ranges also will provide for the conservation of many, or even most, other bird species that co-occur with these grouse.” Conserving sage-grouse would likely benefit many other species as well (Rowland et al. 2006), including mammals, reptiles, amphibians, plants and fish.

### **Greater Sage-grouse Listing and the National Greater Sage-Grouse Planning Strategy**

The U.S. Fish and Wildlife Service (“FWS”) determined that greater sage-grouse warranted listing under the Endangered Species Act (“ESA”) in 2010, although listing was precluded by other, higher priorities (75 Fed. Reg. 13910). Greater sage-grouse are now a candidate species under the ESA (77 Fed. Reg. 70015), but will be considered for listing again soon. The FWS has committed as part of a legal settlement to either propose to list sage-grouse under the ESA or determine the species is “not warranted” for protection by September 2015 (In Re Endangered Species Act Section 4 Deadline Litigation, Misc. Action No. 10-377 (EGS), MDL Docket No. 2165 (D.D.C. 2011)).

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<sup>1</sup> An “umbrella species” is defined as one “whose conservation confers a protective umbrella to numerous co-occurring species” (Fleishman et al. 2001: 1489). Functionally, an umbrella species should have the following characteristics: “they represent other species, their biology is well known, they are easily observed or sampled, they have large home ranges, are migratory, and are persistent” (Rich and Altman 2001: 10).

The FWS described a lack of adequate regulatory mechanisms to conserve sage-grouse as a primary factor supporting listing for the species, particularly on public lands administered by the Bureau of Land Management (“BLM”). The FWS identified BLM resource management plans (“RMP”) as the principle mechanism by which the BLM can regulate land management to conserve sage-grouse (75 Fed. Reg. 13975), but determined that the BLM’s current RMPs were inadequate and/or inconsistently applied to conserve the species.

For example, in reviewing standard permit conditions for natural gas, oil and other fluid minerals development<sup>2</sup> on public lands, a primary threat to sage-grouse (Manier et al. 2013), the FWS determined that the “BLM stipulations most commonly attached to leases and permits are inadequate for the protection of sage-grouse, and for the long-term maintenance of their populations in those areas affected by oil and gas development activities” (75 Fed. Reg. 13978). The agency further observed that “approximately 73 percent of leased lands in known sage-grouse breeding habitat have no stipulations at all” to conserve sage-grouse (75 Fed. Reg. 13978).

The FWS was similarly concerned about the uncertain or inconsistent application of management prescriptions in sage-grouse range. For example, the FWS found that, although BLM grazing standards are supposed to restore, maintain, and enhance habitat for BLM special status species, the BLM had failed to compile “information necessary to assess how this regulatory mechanism affects sage-grouse conservation” (75 Fed. Reg. 13976) and that it is unclear “whether or not these regulatory mechanisms are being implemented in a manner that conserves sage-grouse...” (75 Fed. Reg. 13977).

The FWS thoroughly analyzed BLM management of sage-grouse habitat and concluded that “[i]n many areas existing mechanisms (or their implementation) on BLM lands and BLM-permitted actions do not adequately address the conservation needs of greater sage-grouse, and are exacerbating the effects of threats to the species” (75 Fed. Reg. 13979). The BLM had failed to use its planning authority to conserve sage-grouse while managing other multiple uses on public lands.

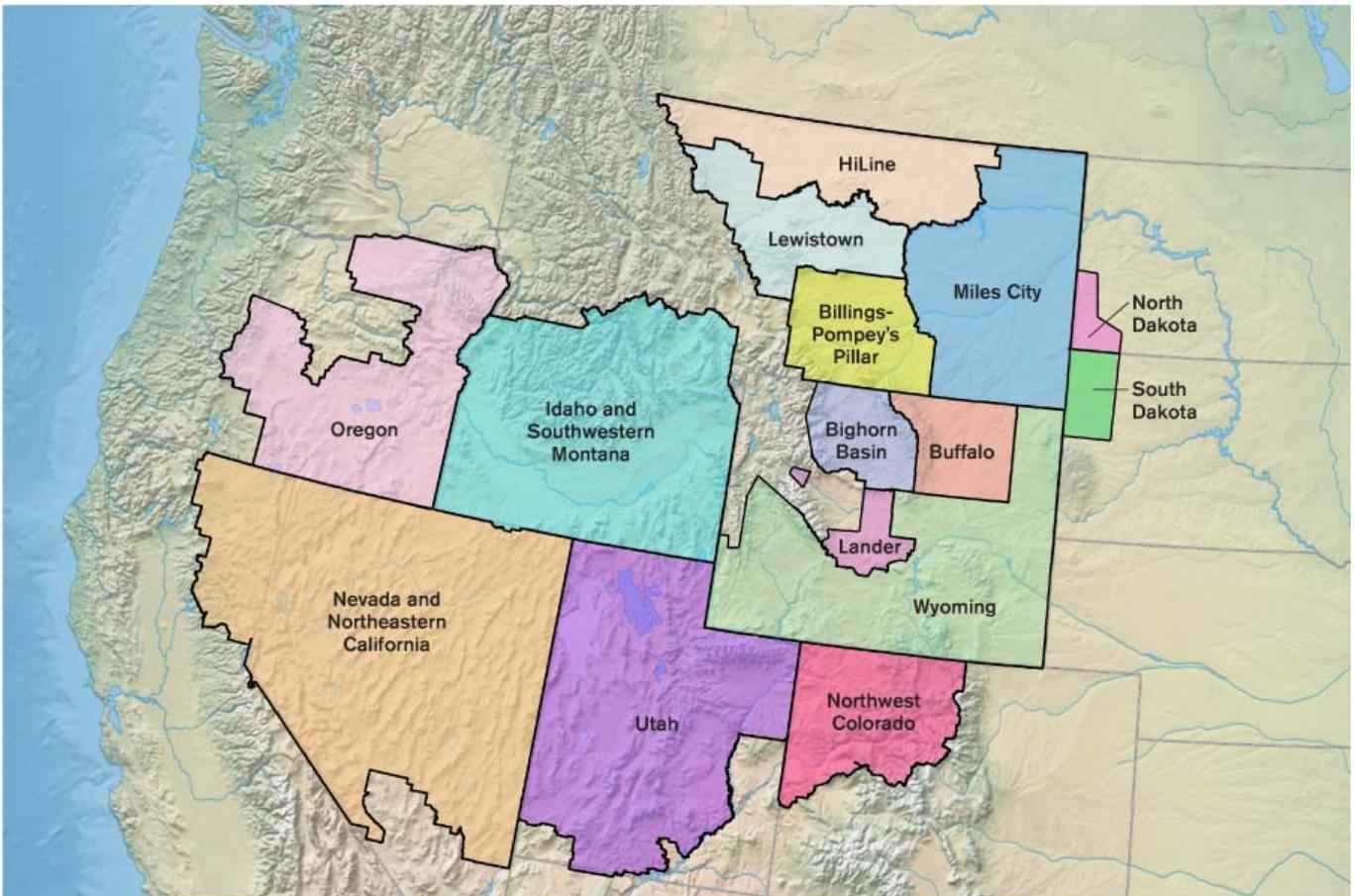
In response to these concerns, the BLM (and the U.S. Forest Service, as a cooperating agency) initiated the National Greater Sage-Grouse Planning Strategy (“Planning Strategy”)<sup>3</sup> in 2011 to “incorporate consistent objectives and conservation measures for the protection of greater sage-grouse and its habitat” into relevant federal land management plans (76 Fed. Reg. 77009).

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<sup>2</sup> Fluid minerals development usually refers to natural gas and oil extraction in sage-grouse habitat, but may also refer to development of geothermal resources, depending on the planning area.

<sup>3</sup> See [www.blm.gov/sagegrouse](http://www.blm.gov/sagegrouse).

The Planning Strategy will amend nearly 100 RMPs and Forest Service land use plans in ten western states with new conservation measures for sage-grouse that could potentially alleviate the need to list the species under the ESA.<sup>4</sup> Rather than employ a unified range-wide approach, the BLM chose instead to partition the strategy into 15 subparts, including nine RMP revisions and six larger-scale sub-regional plan amendments/environmental impact statements (“EIS”) that will amend the underlying RMPs and land use plans (see Map 2). This report evaluates the adequacy of the preferred alternatives in each of the fifteen RMP revisions and EISs (all together, “draft plans”) to conserve sage-grouse and their habitat.



Map 2. National Greater Sage-Grouse Planning Strategy planning areas.

<sup>4</sup> Although the Forest Service is a cooperating agency in the Planning Strategy, this report focuses on the BLM’s role in the process. The BLM is the lead agency for the Planning Strategy and manages more sage-grouse habitat than any other federal or state agency.

## Methods

### Evaluation of Draft Plans

We based our evaluation of the draft plans on the best available science on greater sage-grouse conservation and the enforceability of proposed conservation measures. Federal agencies are required under the National Environmental Policy Act (“NEPA”) to use “high quality” information in planning (40 C.F.R. § 1500.1(b)) and the BLM’s own sensitive species policy requires the agency to “obtain and use the best available information deemed necessary to evaluate the status of special status species in areas affected by land use plans” (BLM Manual 6840.22A).<sup>5</sup> The Forest Service is also committed to using best available science in its transitional 2000 planning rule (36 CFR § 219.35) and its new 2012 planning rule (77 Fed. Reg. 21162).

Sage-grouse are closely studied and decades of data and published research are available on the grouse and its habitat. Several comprehensive governmental and scientific reports have also been prepared on sage-grouse ecology and conservation. We distilled key conservation measures from the following publications and other independent peer-reviewed research for evaluating the draft plans.

- “A Report on National Greater Sage-grouse Conservation Measures,” Sage-grouse National Technical Team (2011) (NTT report).
- “Greater Sage-grouse (*Centrocercus urophasianus*) Conservation Objectives: Final Report,” U.S. Fish and Wildlife Service (2013).
- GREATER SAGE-GROUSE: ECOLOGY AND CONSERVATION OF A LANDSCAPE SPECIES AND ITS HABITATS, Cooper Ornithological Society (2011).
- “Conservation Assessment of Greater Sage-grouse and Sagebrush Habitats,” Western Association of Fish and Wildlife Agencies (2004).
- "Greater Sage-Grouse Comprehensive Conservation Strategy," Western Association of Fish and Wildlife Agencies (2006).
- “Summary of Science, Activities, Programs, and Policies that Influence the Rangeland Conservation of Greater Sage-grouse (*Centrocercus urophasianus*),” U.S. Geological Survey (2013).
- Connelly, et al. (2000) Guidelines to manage sage-grouse populations and their habitats. Wildlife Society Bulletin 28(4): 967-985.

In our review, we found that the NTT report contained the most specific, and thus useful, conservation measures that could be implemented in the Planning Strategy. The NTT report, produced by a team of 23 federal and state agency biologists and land managers (including 14 BLM

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<sup>5</sup> See also BLM NEPA Handbook H-1790-1, 6.8.1.2 (January 2008) (“Use the best available science to support NEPA analyses...”).

officials), recommends management prescriptions based on the latest information on sage-grouse and sagebrush steppe. Many of the key conservation measures we used to evaluate the draft plans were derived from the NTT report.

### Key Conservation Measures

The 15 plans developed as part of the Planning Strategy will direct management of millions of acres of federal surface and subsurface estate where sage-grouse occur. Land use, development and related effects threaten sage-grouse throughout their range, including on federal public lands (Manier et al. 2013; Knick et al. 2011). Some threats are more significant than others. An expert panel convened by the FWS ranked the most important threats to the species. They are, in order: invasive species, infrastructure related to development, wildfire, agriculture, livestock, energy development, urbanization, strip/coal mining, weather, and pinyon-juniper encroachment (70 Fed. Reg. 2267). Some threats are regionally more important than others. The panel noted that energy development and infrastructure related to energy development are of greater concern in the eastern portion of sage-grouse range (where it is more common on the landscape), while wildfire (fueled by invasive plants) is more important in the western part of the range.

We selected key conservation measures to evaluate the effectiveness of the preferred alternatives in the draft plans to conserve sage-grouse and their habitat. The key conservation measures take a precautionary approach to sage-grouse conservation, recognizing the challenges of managing sagebrush steppe. Selected measures would designate and conserve sage-grouse priority habitat, identify habitat restoration areas, specially protect sagebrush reserves, ensure that land uses do not fragment and degrade sage-grouse habitat, and require that management

#### *A NOTE ABOUT KEY CONSERVATION MEASURES*

*The first listed key conservation measure calls for designating sage-grouse priority habitat in each planning area. Where priority habitat is designated, the best available science recommends additional measures to direct management away from these areas. They include prohibiting new anthropogenic surface disturbance in priority habitat, or, where disturbance cannot be avoided (e.g., due to valid existing rights), minimizing the impacts of development activities on sage-grouse.*

*While all of the draft plans designate sage-grouse priority habitat, none them would entirely prohibit new surface disturbance in these areas. The preferred alternatives would each allow some types of development in priority habitat, ranging from hard rock mining to new transmission lines to gravel pits. Two land uses in particular, natural gas and oil extraction and wind energy development, are common (or are projected to be) in sage-grouse range and can be especially harmful to the species. We included a subset of key conservation measures in our list to specifically evaluate prescriptions for gas, oil and other fluid minerals extraction and wind energy development in priority habitat in the preferred alternatives.*

plans account for the effects of climate change on sagebrush steppe. These science-based measures are further described in Appendix A.<sup>6</sup> While they are not a complete set of prescriptions needed to conserve sage-grouse,<sup>7</sup> implementing these measures would provide a strong foundation for protecting and restoring the species and its habitat. The key conservation measures are listed below.

#### *Sage-Grouse Priority Habitat*

- Designate and manage large areas of priority habitat to conserve sage-grouse.
- Restrict new disturbance in priority habitat.

The first priority in these areas should be to avoid new disturbances altogether. Where new disturbance cannot be avoided (e.g., due to valid existing rights), impacts should be minimized by (A) limiting preexisting and permitted disturbance to one site per section of priority habitat regardless of land ownership, (B) with less than three percent disturbance per section, regardless of ownership and including existing disturbance. Discrete anthropogenic disturbances include but are not limited to highways, roads, transmission lines, substations, wind turbines, natural gas and oil wells, heavily grazed areas, range developments, pipelines, landfills, and mines. (C) Where possible, surface disturbance and occupancy should be prohibited within four miles of sage-grouse leks.

- Identify and protect sage-grouse wintering areas in priority habitat.
- Manage or restore priority habitat so that at least 70 percent of the land cover in priority habitat is sagebrush steppe sufficient to support sage-grouse.

#### *Sage-grouse Restoration Habitat*

- Designate restoration habitat to focus restoration efforts to expand sage-grouse range and mitigate for future loss of priority habitat.

#### *Sagebrush Reserves*

- Protect a subset of priority habitat as sagebrush reserves with the primary purpose of conserving and restoring sagebrush habitat and sage-grouse populations.

#### *Fluid Minerals Development (Sage-Grouse Priority Habitat)*

Prohibit new leasing for natural gas, oil and geothermal development in priority habitat. Where fluid minerals development is permitted,

- Prohibit surface occupancy associated with natural gas, oil and other fluid minerals development (or at least within four miles of sage-grouse leks).
- Limit density of disturbances to one well site or energy production facility per 640 acres.
- Limit cumulative surface disturbance to 3 percent per 640 acres.
- Prohibit surface occupancy in or adjacent to sage-grouse wintering areas.

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<sup>6</sup> Appendix A is available on Defenders of Wildlife's website at [www.defenders.org/sage-grouse/defenders-action](http://www.defenders.org/sage-grouse/defenders-action).

<sup>7</sup> A complete set of science-based prescriptions is included the Sage-Grouse Recovery Alternative that conservation organizations submitted to the BLM for consideration in the Planning Strategy (*see* [www.sagebrushsea.org/land\\_recovery\\_alternative.htm](http://www.sagebrushsea.org/land_recovery_alternative.htm)).

### *Wind Energy Development (Sage-Grouse Priority Habitat)*

Prohibit wind energy development in priority habitat. If wind energy development is permitted,

- Site wind energy development at least four miles from sage-grouse leks.
- Do not site wind energy development in or adjacent to sage-grouse wintering areas.

### *Livestock Grazing*

Livestock grazing in sage-grouse habitat should maintain and restore habitat characteristics important for conserving sage-grouse. Grazing management should:

- Require that grazing strategies maintain at least 18 cm average grass height in nesting and brood-rearing habitat.
- Control grazing to avoid contributing to the spread of cheatgrass in sage-grouse habitat.
- Facilitate voluntary grazing permit retirement in priority habitat.

### *Climate Change*

- Account for the effects of climate change on sagebrush steppe in conservation measures for sage-grouse.

A key listing criterion under the ESA is the “inadequacy of existing regulatory mechanisms” to conserve threatened or endangered species ((16 U.S.C. § 1533(a)(1)(D)). The act does not define what constitutes an “existing regulatory mechanism,” but federal courts have determined that they do not include unenforceable measures or plans for future action. The Ninth Circuit has unmistakably stated that “[a]s a matter of law, unenforceable, voluntary promises do not constitute ‘regulatory mechanisms’” under the ESA (*Greater Yellowstone Coal., Inc. v. Servheen*, 665 F.3d 1015, 1036 (9th Cir. 2011)). The U.S. District Court in Oregon has similarly found that “for the same reason that the Secretary may not rely on future actions, he should not be able to rely on unenforceable efforts. Absent some method of enforcing compliance, protection of a species can never be assured. Voluntary actions, like those planned in the future, are necessarily speculative” (*Or. Natural Resources Council v. Daley*, 6 F.Supp.2d 1139, 1154 (D.Or.1998)).

As noted above, the FWS previously determined that existing BLM RMPs contain too many conservation prescriptions that are inadequate to conserve sage-grouse or are unenforceable as defined by federal regulations and caselaw. The key conservation measures in this report offer a science-based method of evaluating the adequacy of correlated prescriptions in the BLM’s new draft plans to conserve sage-grouse. We then assessed whether the application of those measures would be mandatory, or provide too much discretionary flexibility to likely be counted as a regulatory mechanism by FWS.

We reviewed all 15 draft plans released as part of the Planning Strategy (see Map 2), including:

1. Bighorn Basin Draft Resource Management Plan and Draft Environmental Impact Statement (and Supplement) (Bighorn Basin)<sup>8</sup>
2. Billings and Pompey's Pillar National Monument Draft Resource Management Plan and Environmental Impact Statement (Billings-Pompey's Pillar)
3. Buffalo *Field Office Draft Resource Management Plan and Environmental Impact Statement (Buffalo)*
4. *HiLine* Draft Resource Management Plan and Environmental Impact Statement (HiLine)
5. Idaho and Southwestern Montana Greater Sage-Grouse Draft Land Use Plan Amendment and Environmental Impact Statement (Idaho/SE Mont.)<sup>9</sup>
6. Lander BLM Proposed Resource Management Plan and Final Environmental Impact Statement (Lander)<sup>10</sup>
7. Lewistown Field Office Greater Sage-Grouse Draft Resource Management Plan Amendment and Environmental Impact Statement (Lewistown)
8. Miles City Field Office Draft Resource Management Plan and Environmental Impact Statement (Miles City)
9. Nevada and Northeastern California Greater Sage-Grouse Draft Land Use Plan Amendment and Environmental Impact Statement (Nevada/NE Calif.)
10. North Dakota Greater Sage-Grouse Draft Resource Management Plan Amendment and Environmental Impact Statement (North Dakota)
11. Northwest Colorado Greater Sage-Grouse Draft Land Use Plan Amendment and Environmental Impact Statement (NW Colorado)
12. Oregon Sub-Region Greater Sage-Grouse Draft Resource Management Plan Amendment and Environmental Impact Statement (Oregon)
13. South Dakota Field Office Draft Resource Management Plan and Environmental Impact Statement (South Dakota)
14. Utah Greater Sage-Grouse Draft Resource Management Plan Amendment and Draft Environmental Impact Statement (Utah)
15. The Wyoming Greater Sage-Grouse Draft Land Use Plan Amendment and Draft Environmental Impact Statement (Wyoming)

For each draft plan, we developed a matrix comparing the key conservation measures for sage-grouse (described above) with correlated prescriptions in the preferred alternative. We then rated each

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<sup>8</sup> Except for Bighorn Basin and Lander (see note 10), all of the plans assessed in this report are draft RMP revisions/amendments and draft EISs. The draft Bighorn Basin plan was completed before the BLM initiated the Planning Strategy. Rather than rewrite the plan, the agency prepared a supplement to the existing draft with additional management alternatives and analyses of sage-grouse conservation measures. The supplement did not change the preferred alternative in the draft plan.

<sup>9</sup> The Idaho plan proposed two preferred alternatives, Alternative D, developed by the BLM and Forest Service, and Alternative E, which is based on the State of Idaho's sage-grouse conservation strategy. For consistency, we evaluated Alternative D in our analysis, since the preferred alternatives in the 14 other draft plans were also developed by the federal agencies.

<sup>10</sup> The Lander plan is the furthest along in the planning process and has advanced to a proposed RMP and final EIS.

proposed prescription as one of three categories: adopted the key conservation measure (color coded green); adopted the key conservation measure, but did not adopt the full measure, did not make it mandatory, deferred application to future, project-level planning, or allowed for discretionary exceptions, waivers and modifications of the measure (yellow); or did not adopt the key conservation measure (red). Detailed matrices for each of the 15 draft plans are available on the Defenders of Wildlife website.<sup>11</sup> A summary of our assessments of all plans is shown in Figure 1.

**Figure 1. Adoption of Key Conservation Measures in Draft Greater Sage-Grouse Plans.**

		DRAFT PLANS/PLANNING AREAS														
		Bighorn Basin	Billings-Pompey's Pillar	Buffalo	HiLine	Idaho and South-western Montana	Lander	Lewistown	Miles City	Nevada and North-eastern California	North Dakota	Northwest Colorado	Oregon	South Dakota	Utah	Wyoming
PRIORITY HABITAT	Designate sage-grouse priority habitat	Yellow	Green	Yellow	Yellow	Yellow	Green	Green	Yellow	Yellow	Green	Green	Green	Yellow	Yellow	Yellow
	Prohibit new surface disturbance // apply protective measures	Red	Yellow	Red	Yellow	Yellow	Red	Red	Red	Yellow	Red	Yellow	Yellow	Yellow	Yellow	Red
	Identify/protect sage-grouse winter habitat	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Yellow	Red	Red	Red
	Maintain/restore 70 percent of sage-grouse habitat as sagebrush steppe	Red	Red	Red	Red	Yellow	Red	Red	Green	Red	Red	Yellow	Red	N/A	Red	Red
	Designate sage-grouse restoration habitat	Red	Yellow	Red	Yellow	Red	Red	Red	Yellow	Yellow	Red	Red	Green	Red	Yellow	Yellow
	Designate new sagebrush reserves	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red
NEW OIL, GAS AND GEOTHERMAL LEASES	Prohibit surface occupancy // within 4 miles of sage-grouse leks in priority habitat	Red	Yellow	Red	Yellow	Yellow	Red	N/A	Yellow	Green	Yellow	Yellow	Yellow	Yellow	Yellow	Red
	Limit density of disturbances to 1 well/facility per 640 acres in priority habitat	Green	Yellow	Yellow	Yellow	Green	Yellow	N/A	Yellow	N/A	Grey	Red	Red	Yellow	Red	Yellow
	Limit cumulative surface disturbance to 3 percent per 640 acres in priority habitat	Red	Yellow	Red	Yellow	Green	Red	N/A	Yellow	N/A	Grey	Red	Grey	Yellow	Red	Red
	Prohibit surface occupancy in or adjacent to winter habitat in priority habitat	Red	Red	Red	Yellow	Yellow	Red	N/A	Yellow	N/A	Grey	Red	Red	Yellow	Yellow	Red
LIVESTOCK GRAZING	Prohibit wind energy development in priority habitat	Yellow	Yellow	Green	Green	Green	Yellow	Yellow	Yellow	Green	Green	Yellow	Yellow	Green	Green	Yellow
	Maintain ≥ 18 cm average grass height in sage-grouse nesting and brood-rearing habitat	Red	Red	Red	Red	Yellow	Yellow	Red	Red	Red	Yellow	Red	Red	Red	Yellow	Red
	Control grazing to avoid contributing to the spread of cheatgrass	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red
	Facilitate voluntary grazing permit retirement in priority habitat	Red	Green	Red	Yellow	Yellow	Red	Red	Green	Yellow	Red	Red	Yellow	Green	Red	Yellow
LIVESTOCK GRAZING	Account for climate change effects in sage-grouse conservation measures	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Yellow	Red

<sup>11</sup> Appendix A is available on Defenders of Wildlife’s website at [www.defenders.org/sage-grouse/defenders-action](http://www.defenders.org/sage-grouse/defenders-action).

## Results

The preferred alternatives in the draft plans would fail to conserve and restore sage-grouse and their habitat, according to the BLM's own recommendations and best available science. The proposed conservation measures are inadequate to protect sage-grouse from harmful land uses and related effects, and are markedly inconsistent from plan to plan. Many of the prescriptions are discretionary, which could reduce their effectiveness and render them legally unreliable. Most of the preferred alternatives would designate less sage-grouse priority habitat than identified in their respective planning areas, and only a few would designate sage-grouse restoration habitat. None of the plans propose to protect sagebrush reserves as strongholds for sage-grouse and other sagebrush-dependent species. Taken together, the preferred alternatives in the draft plans would limit sage-grouse conservation to a subset of essential habitat where development and land use would continue to occur and at levels known to be harmful to the species.

The BLM usually analyzed key conservation measures for sage-grouse in at least one management alternative in each draft plan, but still adopted weaker standards in their preferred alternatives, or deferred application of prescriptions to future, project-level planning. One example are measures related to natural gas and oil development in sage-grouse priority habitat. Many of the plans propose protective restrictions on development activities, but would also allow for exception, modification and waiver of these stipulations, or defer final decision-making to future planning. In its “warranted, but precluded” finding in 2010, the FWS specifically addressed exceptions, modifications and waivers of lease stipulations, finding that they contributed to regulatory uncertainty surrounding conservation of sage-grouse that supported listing the species under the ESA.

Planners declined to adopt key conservation measures for sage-grouse in the preferred alternatives, even when doing so would have only minor impacts on future land use and development. For example, the preferred alternative in the Lander plan—an area with dense populations of sage-grouse that are important to the species persistence in Wyoming—would not restrict natural gas and oil development in priority habitat, even though there is little interest or potential for developing natural gas or oil across large swaths of priority habitat in the planning area.

In some cases, the draft plans rejected science-based recommendations for managing sage-grouse in favor of alternative management schemes. For example, the preferred alternatives in many of the draft plans declined to adopt key conservation measures for managing livestock grazing in sage-grouse habitat, including recommendations by experts in peer-reviewed management guidelines. These plans opted instead for flexible, adaptable grazing management schemes that are poorly defined and might fail to maintain habitat characteristics important to sage-grouse.

Finally, the preferred alternatives in the draft plans are inconsistent range-wide, and even between adjacent planning areas. For example, the preferred alternative in the Billings-Pompey's Pillar plan in Montana would designate all identified priority habitat in the planning area, plus restoration habitat areas; generally restrict new natural gas and oil development within four miles of sage-grouse leks and limit surface disturbance to 3 percent per section; and facilitate voluntary grazing permit retirement in priority habitat. In comparison, the preferred alternative in the Bighorn Basin plan, which will update resource management plans for the BLM Worland and Cody field offices just across the state border in Wyoming, would designate only a portion of available priority habitat in the planning area, and would not designate any sage-grouse restoration habitat; it would only buffer leks against encroaching natural gas and oil development by 0.6 miles and allow cumulative surface disturbance up to 5 percent in priority habitat; and it would not facilitate voluntary grazing permit retirement anywhere in the planning area. While there is local and regional variation in sagebrush steppe and sage-grouse ecology, populations respond similarly to the same land uses and management decisions across the species' range. The inconsistent conservation measures proposed in the draft plans would produce inconsistent results when applied, limiting their effectiveness to conserve sage-grouse across larger areas.<sup>12</sup>

Surprisingly, the BLM has acknowledged that the preferred alternatives in at least some of the draft plans are unlikely to conserve sage-grouse populations. The HiLine plan concluded that “[g]iven the intent of the protection priority area to maintain or improve current conditions, which largely means preventing detrimental land uses and minimizing undesirable ecological processes ... the potential impacts to greater sage-grouse [under the preferred alternative] prevent the accomplishment of that goal” (HiLine 928). The Miles City plan also admitted that sage-grouse populations may continue to decline under the preferred alternative or may persist at a “reduced level” (Miles City 4-176). Other draft plans might have arrived at similar conclusions had they more thoroughly analyzed the effects of their preferred alternatives.

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<sup>12</sup> Interestingly, the BLM recognizes the importance of adopting conservation measures that are consistent with other conservation strategies *within* planning areas, if not between them. Planning criteria for the draft plans state that “BLM will strive to ensure that conservation measures are as consistent as possible with other planning jurisdictions within the planning area boundaries” (Lander 1-15).

## Case Study: Indeterminate and Deferred Decision-making | HiLine

All of the preferred alternatives in the draft plans defer at least some key decisionmaking affecting sage-grouse conservation to future project-level planning. They often reference various and overlapping compilations of conservation prescriptions to guide project development. For example, the HiLine plan includes as many as five different strategies, best management practices or guidelines for land use and development in sage-grouse range. Depending on the project, one or more of these compilations could apply:

- The preferred alternative would require BLM to use its national sage-grouse strategy as management standards in the planning area (HiLine 731).
- The preferred alternative would also require the agency to use the Montana greater sage-grouse conservation strategy to guide resource management in the planning area (HiLine 731).
- In addition to the national and state strategies, regional standards would be developed “cooperatively...from recent habitat inventories and population parameters in the planning area” to manage sage-grouse (HiLine 731).
- The HiLine plan also includes certain best management practices (BMPs) for natural gas and oil development (HiLine Appendix E), and references BMPs for other management issues on BLM lands (HiLine Appendix C).
- Finally, the plan also incorporates Mitigation Measures and Conservation Actions for Greater Sage-Grouse (MMCA) (HiLine Appendix M), a compilation of sage-grouse conservation measures of mixed origin.

These multiple, overlapping compilations are both confusing and, as ancillary strategies and buried appendices, probably ineffective to conserve sage-grouse. (1) The national BLM sage-grouse conservation strategy is general in scope and applicability and would likely have little effect on project-level planning in the HiLine District. (2) If the Montana greater sage-grouse strategy is to be used in management planning, then it should be included in the HiLine plan and analyzed for its potential effects on sage-grouse. (3) The HiLine plan’s reliance on regional habitat management standards that have yet to be developed leaves a significant gap in the draft plan; it is also unnecessary, as there are several, widely accepted descriptions of sage-grouse habitat requirements already available to BLM (e.g., Connelly et al. 2000; Braun et al. 2005; Hagen et al. 2007). (4) BMPs presented in Appendix C in the plan are helpful, but should be required stipulations rather than optional guidelines in project planning. (5) The MMCA appear to be a combination of guidelines and prescriptions from the Montana greater sage-grouse strategy and the NTT report. They include important conservation measures for managing sage-grouse habitat, although it is unclear from the draft plan how and when the MMCA would be applied (“The EIS for the RMP does not decide or dictate...inclusion of these guidelines” HiLine 1119). The MMCA would be selectively applied in project-level plans, rather than incorporated in the RMP as minimum standards for conserving sage-grouse and their habitat (HiLine 1119).

### *Sage-Grouse Priority Habitat*

#### Designate and manage large areas of priority habitat to conserve sage-grouse.

All of the draft plans would designate priority habitat (or “core areas” or “protection priority areas” or “key habitat areas”) to support sage-grouse conservation. However, only five plans would designate the full extent of priority habitat identified in their respective planning areas. The preferred alternatives in the other 10 plans would designate smaller priority habitat areas than otherwise identified in those plans or by other processes, such as state conservation planning. Priority habitat

in the Buffalo plan would exclude more than half of the sage-grouse leks in the Buffalo Field Office, and the plan admits that the proposed areas may be insufficient to conserve the species (Buffalo 30). The preferred alternative in the South Dakota plan would not only designate smaller priority habitat areas than identified in the plan, it would also dispose of public lands parcels within priority habitat. Both the preferred and conservation alternatives in the Bighorn Basin plan would allow managers to adjust the boundaries of priority habitat areas (including reducing their size) in the future. The preferred alternative in the Idaho/SW Montana plan would reappportion a subset of priority habitat as lesser “medial habitat,” where fewer and less restrictive conservation measures would apply.

There are few large areas of intact, unaltered sagebrush steppe remaining in the West. In fact, Manier et al. (2013) documented high levels of existing disturbance and fragmentation in sage-grouse priority habitat from development and related effects. The cumulative impacts from current energy development, mining, roads, transmission lines and other infrastructure, cheatgrass incursion and conifer encroachment have substantial direct and indirect impacts on sage-grouse. The draft plans should designate all identified priority habitat within their planning areas to mitigate for existing and future habitat loss and degradation in sage-grouse range.

#### **Restrict new surface disturbance in priority habitat.**

None of the preferred alternatives in the draft plans would entirely prohibit new surface disturbance in sage-grouse priority habitat. All of them would allow various degrees of land use and development. Depending on the plan, these may include natural gas and oil development, mining, new rights-of-way, new roads and other infrastructure. Moreover, much of the development that would be permitted would not be required to comply with protective development density and disturbance caps and lek buffers, exacerbating impacts on sage-grouse. Two land uses in particular, natural gas and oil extraction and wind energy development, are common (or are projected to be) in sage-grouse range and can be especially harmful to the species. We specifically analyzed management prescriptions for these land uses in priority habitat below.

#### **Box 1. Habitat Disturbance**

Even the slightest degree of habitat disturbance affects sage-grouse. The NIT report recommends managing sage-grouse priority habitat so that discrete anthropogenic disturbances cover less than 3 percent of total sage-grouse habitat regardless of ownership (SGNIT 2011: 7), but even this prescription may be inadequate to conserve the species. Analysis by Knick et al. (2013) suggests that sage-grouse leks are largely abandoned as development reaches 3 percent of disturbance within 5 km of leks (*see also* Baruch-Mordo et al. 2013: 237, Figure B). In fact, data in Knick et al. (2013: 9, Figure C) suggest that the majority of leks were in landscapes with less than or equal to 0.5 percent anthropogenic disturbance. Given the importance of priority habitat to sage-grouse, and to account for existing disturbance in these areas, conservation plans should restrict all new surface disturbance in priority habitat to avoid contributing further to the species’ decline.

### Identify and protect sage-grouse wintering areas in priority habitat.

Winter habitat is important to sage-grouse ecology and should be protected from disturbance (Braun et al. 2005, *citing* Connelly et al. 2000 and others; Moynahan et al. 2007; Carpenter et al. 2010). Seven of the draft plans identify winter habitat, and an eighth (Billings-Pompey's Pillar) indicates that winter habitat is known, but, inexplicably, the data is only mentioned in the conservation alternative—it is not carried into the preferred alternative. Many plans, like Oregon, suggest that winter habitat is (mostly) within designated priority habitat, but fail to map wintering areas, which, for Oregon, is inexplicable since the Oregon Department of Fish and Wildlife has mapped sage-grouse wintering areas in the state (Hagen 2011: 96).

None of the plans would adequately protect sage-grouse winter habitat. Most of them would only seasonally restrict surface disturbing and disruptive activities (such as natural gas and oil development) in wintering areas. These seasonal limitations may be ineffective to conserve sage-grouse. As the Buffalo plan acknowledged, sage-grouse avoid otherwise suitable winter habitat disturbed by energy development, regardless of what time of year the development occurs (Buffalo 367).

### Manage or restore priority habitat so that at least 70 percent of the land cover in priority habitat is sagebrush steppe sufficient to support sage-grouse.

Sage-grouse populations decline as the percentage of sagebrush cover decreases (Wisdom et al. 2011). Research from across sage-grouse range supports maintaining and restoring at least 70 percent of land cover in sage-grouse priority habitat as sagebrush steppe sufficient to support the species (SGNTT 2011; Karl and Sadowski 2005; Knick et al. 2013; Connelly et al. 2000). However, only the Miles City plan included this prescription in its preferred alternative. The Northwest Colorado and Idaho/SW Montana plans would, respectively, attempt to retain and restore a minimum of 70 and 80 percent of sage-grouse habitat in sagebrush steppe, but the types and extent of allowable disturbances in the remaining habitat could reduce the effectiveness of these measures. The remaining draft plans include general prescriptions for

#### Box 2. Vegetation Cover | Oregon

The Oregon plan does not specifically commit to the recommended 70 percent vegetation standard, although general vegetation management prescriptions in the preferred alternative might still achieve the goal. In comparison, the State of Oregon, via a state administrative rule, has adopted a policy goal of maintaining a minimum of 70 percent of sage-grouse habitat in mid- and late-seral sagebrush steppe (Oregon 2-26). Habitat objectives written into the rule include maintaining existing sagebrush areas at or above 70 percent sagebrush steppe in five BLM planning areas (Oregon 2-26). Sagebrush cover is already meeting or exceeding the standard in all but one district (Oregon 3-15). This is an example of a science-based state conservation measure that should be adopted in the correlated federal land use plan.

maintaining vegetation cover and ecosystem function, but not the specific 70 percent standard recommended by the best available science.

### *Sage-Grouse Restoration Habitat*

**Designate restoration habitat to focus restoration efforts to expand sage-grouse range and mitigate for future loss of priority habitat.**

The BLM Montana State Office instructed Montana, South Dakota and North Dakota field offices in 2009 to identify and designate “restoration priority areas” in plan revisions where current and future resource development would be managed to allow residual sage-grouse populations to persist in the impacted areas (BLM Memo MT-2010-017). Focusing restoration on these areas could also reduce the time needed to reclaim habitat and restore sage-grouse populations following development. Conservationists recommended that BLM apply this direction to all draft plans developed under the Planning Strategy, while also suggesting additional purposes for restoration habitat, including expanding sage-grouse range and mitigating for future loss of priority habitat.

Three of the four draft plans in Montana (Billings-Pompey’s Pillar, HiLine, Miles City) designated sage-grouse restoration habitat in their preferred alternatives. (The Lewistown, North Dakota and South Dakota plans failed to identify restoration habitat, even though they were directed to do so by the state office instruction memorandum.) Unfortunately, the restoration habitat designated in the Miles City plan was carved out of priority habitat (compare Miles City Map 7 and Map 4), and existing and potential natural gas development in these areas is expected to cause continued sage-grouse population declines and extirpation (Miles City 4-176). Proposed development in restoration habitat in the HiLine and Billings-Pompey’s Pillar plans would also likely contribute to sage-grouse population declines, which defeats the purpose of the designation.

The preferred alternative in the Oregon plan takes a more promising approach to restoration habitat. It would establish sizable “Restoration Opportunity Areas” in eastern Oregon to focus habitat restoration and mitigation for sage-grouse (Oregon 2-58). These focal areas would total more than 2.5 million acres and include both priority and general habitat, and even areas outside sage-grouse current range (Oregon 2-19). The BLM would prioritize Restoration Opportunity Areas for habitat restoration, off-site mitigation, conservation partnering, fire suppression, post-fire rehabilitation, and sage-grouse habitat and population monitoring and assessment (Oregon 8-15 – 8-16). Proper active and passive management in Restoration Opportunity Areas could improve habitat quality and connectivity, create new priority habitat from general habitat areas (Oregon 2-21; 2-42), and reclaim sage-grouse historic range for re-occupancy by the species.

## *Sagebrush Reserves*

Protect a subset of priority habitat areas as sagebrush reserves with the primary purpose of conserving and restoring sagebrush habitat and sage-grouse populations.

Conservation biology recommends protecting habitat reserves to conserve sensitive species (Rodrigues and Gaston 2001). A system of reserves should be large enough to achieve the goals of biological representation, and ecological redundancy and resiliency within an ecosystem (Svancara et al. 2005). The size of individual areas and the reserve system should be determined by the biological requirements of the species of concern (*e.g.*, Haight et al. 2002). The Planning Strategy is a prime opportunity to identify and designate a system of sagebrush reserves to conserve sage-grouse and other sagebrush-dependent species on public lands. The new reserves should be proactively managed *for* sage-grouse and sagebrush conservation, rather than by conservation schemes that are merely intended to lessen and mitigate the impacts of continued land use and development on sensitive species and habitats.

All of the draft plans considered the option of administratively designating sagebrush reserves within their respective planning areas. They primarily analyzed potential new Areas of Critical Environmental Concern (“ACEC”), but considered other administrative designations as well (see Figure 2). The BLM is authorized under the Federal Land Policy and Management Act to designate ACECs “where special management attention is required...to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources or other natural systems or processes...” (43 U.S.C. § 1702(a); 43 CFR § 1601.0-5(a)). A potential ACEC may only be designated if it meets “relevance” and “importance” criteria outlined in BLM regulations (see Appendix A).

Almost all of the draft plans determined that potential new sage-grouse ACECs met relevance and importance criteria for designation. The Oregon plan, typical of the others, analyzed more than 4 million acres for protection as ACECs, finding that they contained *relevant* resources, including sage-grouse leks, seasonal habitats, and high quality sagebrush steppe, which are *important* because sage-grouse are a candidate species for listing and a high priority to the agency (Oregon J-4). The Northwest Colorado plan analyzed 926,800 acres for potential designation as ACECs and included a series of maps that show the overlap between the potential ACECs and other important wildlife habitats in the state, including elk and mule deer winter concentration areas, streams with threatened or endangered fish, and suitable habitat for ESA-listed plants (NW Colorado B-25 - B-28).

**Figure 2. Proposed Sagebrush Reserves in Draft Sage-Grouse Plans.**

	Draft Plan	Sage-Grouse Reserves Analyzed (acres)	Sage-Grouse Reserves Proposed/Established (acres)
<b>Montana</b>	Billings-Pompey's Pillar	154,140	0
	HiLine	1,391,485 <sup>13</sup>	0 <sup>14</sup>
	Lewistown	96,246	0
	Miles City	1,067,000-1,300,000	0
	Bighorn Basin	138,172	16,925 <sup>15</sup>
<b>Wyoming</b>	Bighorn Basin (Supplement)	1,116,124-1,231,383 (surface) 1,857,485 (total)	0
	Buffalo	467,897 (surface) 2,248,685 (subsurface)	0
	Lander	1,246,791 <sup>16</sup>	35,102 <sup>17</sup>
	Wyoming	5,000,402 - 6,398,221	0 <sup>18</sup>
	Idaho/SW Montana	3,603,100 - 7,791,693 <sup>19</sup>	0 <sup>20</sup>
	Nevada/NE California	1,473,000-12,249,700	0
	North Dakota	32,900	0
	Northwest Colorado	926,800 <sup>21</sup>	0 <sup>22</sup>
	Oregon	4,040,201 - 4,348,340	0 <sup>23</sup>
	South Dakota	93,266 <sup>24</sup> (surface) 289,563 (subsurface)	0
	Utah	2,233,800	0

<sup>13</sup> The HiLine Draft RMP/EIS analyzed, but did not propose to designate, a Greater Sage-Grouse Protection Priority Area ACEC (930,265 surface acres) and a Grassland Bird/Greater Sage-Grouse Priority Areas ACEC (461,220 surface acres consisting of four areas).

<sup>14</sup> The existing Bitter Creek (60,701 acres) and Mountain Plover (24,762 acres) ACECs, and the proposed Frenchman ACEC (42,020 acres) may include some sage-grouse habitat.

<sup>15</sup> Some existing ACECs conserve sage-grouse habitat (Carter Mountain ACEC, Little Mountain ACEC). The preferred alternative would designate the Clarks Fork Canyon ACEC (2,724 acres) and Sheep Mountain ACEC (14,201 acres), although smaller areas than proposed in the conservation alternative (12,259 and 25,153 acres, respectively). Some sage-grouse habitat proposed for ACEC designation in the conservation alternative may be partially conserved in other ACECs or management designations in the preferred alternative (e.g., Chapman Bench Management Area).

<sup>16</sup> The Lander Field Office also declined to even analyze some proposed ACECs to protect sage-grouse (e.g., Blackjack Lek).

<sup>17</sup> A total of 306,360 acres in the Hudson to Atlantic City area would also be specially managed to protect resources and would include some mineral withdrawal and restrictions on development (Lander RMP/DEIS 970-971).

<sup>18</sup> A number of existing ACECs, "management areas" and "areas of significant resource concern" in the planning area contain sage-grouse leks and important sagebrush habitat (*see generally* section 3.13).

<sup>19</sup> The larger total would establish ACECs and Zoological Areas, including 3,460 acres in restoration habitat. Both conservation areas would also establish additional wilderness study areas (vol 2, 2-27, Table 2-2).

<sup>20</sup> Existing wilderness study areas, ACECs and other administratively designated areas include nearly one million acres of occupied sage-grouse habitat in Idaho and southwest Montana (vol 2, 2-27, Table 2-2). BLM, Forest Service and Park Service wilderness areas may also protect some sage-grouse habitat in the planning area (vol 2, 3-130, 3-132, Tables 3-46, 3-47, 3-48).

<sup>21</sup> The Federal Register notice announcing the availability of the Northwest Colorado Draft LUP/EIS stated that the ACEC analyzed in the EIS was approximately 910,000 acres. 78 Fed. Reg. 50089.

<sup>22</sup> Existing ACECs, Wilderness Study Areas, Special Interest Areas, and Inventoried Roadless Areas in the planning area include 133,400 acres of sage-grouse habitat.

<sup>23</sup> There are 76 ACECs and RNAs (83 percent) in eastern Oregon with some acres of priority (200,400 acres, or 28 percent) or general sage-grouse habitat (251,200 acres, or 35 percent) (3-124 - 3-126). Sage-grouse were identified as a relevant and important value on seven of these ACECs and RNAs (3-126). The preferred alternative would also elevate conservation of sage-grouse on existing "priority" ACECs that are at least 50 percent in general habitat, at least 30 percent in priority habitat, and/or have active leks/sagebrush habitat (I-2), which would amount to 59 existing ACECs (with 42 RNAs) on 474,657 acres, containing 197,680 acres of priority habitat (4.5 percent) and 225,731 acres of general habitat (4.0 percent) (including the seven ACECs/RNAs where sage-grouse are already a relevant/important value) (I-2 - I-4, Table I-1).

<sup>24</sup> The draft RMP and associated materials also indicate that 93,379 acres of surface estate were considered for a sage-grouse ACEC (e.g., 62, Table 2-1; 247, Table 2-3).

Unfortunately, and although the BLM presents a persuasive case for protecting sagebrush reserves, the draft plans collectively would only designate a few small areas as new ACECs to conserve sage-grouse (Figure 2). The BLM appears to believe that, while new reserves could benefit the species, the proposed management schemes in the preferred alternatives should be sufficient to “protect the relevant and important values... independent of an ACEC designation” (Oregon 4-222).

The process used to analyze ACECs might have prevented planners from recommending additional areas for protection. Most of the draft plans limited their analyses to simply designating all priority habitat within their planning areas as sagebrush reserves (covering more than 44 million acres in the West). The plans did not consider alternative proposals to protect a biologically defined subset of priority habitat as reserves.<sup>25</sup> The BLM’s all or nothing approach produced a predictable result: planners determined in every case that designating such vast areas of priority habitat as sagebrush reserves was unwarranted and would prevent the BLM from managing for other multiple uses on the affected lands.

The BLM and Forest Service should revisit their analyses and consider designating a subset of priority habitat as sagebrush reserves. A thorough analysis would support designating new ACECs, Zoological Areas, research natural areas, and similar administrative designations on public lands to conserve sage-grouse and other sagebrush-dependent species. Sagebrush reserves could also include existing ACECs that have value to sage-grouse (e.g., Oregon). This process would also help identify key areas that warrant greater protection as new or additions to existing national wildlife refuges, national conservation areas and national monuments.

### *Fluid Minerals Development (Sage-Grouse Priority Habitat)*

Fluid minerals development, predominantly natural gas and oil extraction, is a primary threat to sage-grouse (Connelly et al. 2011c), particularly in the eastern portion of their range (Manier et al. 2013). Millions of acres have been drilled for natural gas and oil, and millions of more acres have been leased to energy companies for future development (Manier et al. 2013). Most fluid minerals in sage-grouse range are federal “whole estate”: federally owned subsurface minerals accessible from federal lands. However, there are also large tracts of split estate in sage-grouse habitat where the federal government owns either the subsurface minerals, or the surface estate, but not both. Draft plans should account for all possible development scenarios, including leased and unleased minerals, and where the surface estate and subsurface minerals are of mixed ownership. Conservation measures proposed for each development scenario must be adequate to conserve sage-grouse and their habitat.

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<sup>25</sup> The Sage-Grouse Recovery Alternative recommended designating a subset of priority habitat as sagebrush reserves, and included criteria for designating reserves, p. 50 ([www.sagebrushsea.org/land\\_recovery\\_alternative.htm](http://www.sagebrushsea.org/land_recovery_alternative.htm)).

We evaluated prescriptions in the draft plans for developing federally owned *unleased* fluid minerals on federal lands in sage-grouse priority habitat. We found that *none* of the plans would entirely close priority habitat to new leasing, as recommended by the NTT report (see below), and that leasing is expected to continue across large areas of sage-grouse range. We subsequently focused our analysis on whether the draft plans would at least impose conditions on natural gas, oil and geothermal development to avoid harming sage-grouse. These include development density and disturbance caps, lek buffers, and protections for winter habitat.

Unfortunately, we found that most of the stipulations for *unleased* fluid minerals development in the preferred alternatives are either inadequate to conserve sage-grouse, or are discretionary, with the possibility for exception, modification or waiver. The continued use of exceptions, modifications and waivers in managing fluid minerals development could harm sage-grouse and, as the FWS has previously determined, contribute to the regulatory uncertainty of measures intended to conserve the species (see Box 3).

We also found that only a few draft plans (e.g., Oregon, Wyoming) would apply even these inadequate and discretionary stipulations to *leased* parcels in priority habitat. The BLM can require developers to comply with additional sage-grouse conservation measures on existing leases as part of conditions of approval to drill (SGNTT 2011: 23). However, most of the preferred alternatives would instead allow development to proceed under current rules and proposed (and non-regulatory) best management practices. As the BLM has acknowledged, existing stipulations for natural gas and oil extraction have proven to be deleterious to sage-grouse (Bighorn Basin Supplemental 4-228; Miles City 3-81; HiLine 722), which is concerning given the enormous tracts of sage-grouse habitat that have already been leased for development.

Finally, most of the draft plans would treat natural gas, oil and other fluid minerals development on split estate differently than on federal whole estate. The preferred alternatives generally do not require any new

### **Box 3. Exceptions, Modifications and Waivers | Wyoming**

The BLM continues to grant requests from energy developers for exceptions, modifications and waivers of stipulations intended to limit impacts on sage-grouse from natural gas and oil development. The BLM Pinedale and Rawlins field offices have granted hundreds of waivers since 2003, and denied only a fraction of requests. Developers have received waivers to seasonal closures to conduct operations in winter habitat, and exceptions to both timing restrictions and lek buffers in nesting and brood-rearing habitat. These exceptions are not merely to explore for minerals or conduct other innocuous activities. Companies have been permitted to drill wells, expand well pads, blade roads, crush and haul gravel, lay pipe, and install equipment in these important habitats while sage-grouse were present. The BLM should eliminate exceptions, modifications and waivers to natural gas and oil and other fluid minerals development in sage-grouse plans or expect that the FWS will again determine that the discretionary nature of the stipulations render them insufficient to conserve sage-grouse.

stipulations for development on split estate, regardless of whether the federal government owns the land surface or subsurface minerals.

### **Prohibit surface occupancy associated with natural gas, oil and other fluid minerals development in priority habitat (or within four miles of sage-grouse leks).**

The NTT report recommends closing priority habitat to new leasing for fluid minerals to avoid further habitat loss and fragmentation from development (SGNTT 2011: 22). Unfortunately, only the Idaho/SW Montana plan would close priority habitat to future leasing, and even it would still allow some development in areas of moderate and high potential for natural gas, oil and other resources. Other plans, while allowing for continued leasing, would prohibit surface occupancy associated with development in priority habitat, forcing energy companies to develop resources from outside priority habitat areas.<sup>26</sup> The Nevada/NE California plan would prohibit surface occupancy with no possibility of exception, modification or waiver to the restriction (Nevada/NE California ch. 2, 252). The North Dakota, NW Colorado, and South Dakota plans, and three draft plans in Montana would also prohibit surface occupancy associated with unleased fluid minerals development, but would allow for waiver, exception and modification of the stipulation. In cases where exceptions, modifications and waivers were granted, some of these plans might still require 4-mile no surface occupancy lek buffers in priority habitat, depending on application of best management practices.

The draft plans in Wyoming take a different approach to natural gas and oil development based on the State of Wyoming's Greater Sage Grouse Core Area Protection Strategy. The Bighorn Basin, Buffalo, Lander and Wyoming plans would not prohibit surface disturbance associated with new leasing in priority habitat and would only require a 0.6-mile lek buffer to protect important sage-grouse seasonal habitats from natural gas and oil extraction. This small lek buffer is scientifically unsound and entirely inadequate to avoid development impacts on sage-grouse, nesting and brood-rearing habitats, and nesting success (Holloran 2005; Holloran et al. 2005; Walker et al. 2007). In fact, modelling predicts that the Wyoming core area strategy will only slow, not stop, sage-grouse population declines in the state (Copeland et al. 2013), an estimation that may be confirmed by the latest population data in Wyoming (USRBSGCP 2014, draft).

### **Limit density of disturbances to one well site or energy production facility per 640 acres in priority habitat.**

Sage-grouse breeding populations are severely reduced at development densities commonly permitted for fluid minerals development in sagebrush steppe (Holloran 2005; Walker et al. 2007). The NTT

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<sup>26</sup> As noted in several draft plans, requiring developers to access fluid minerals from outside priority habitat could have the effect of concentrating immediately outside these areas and/or in other areas important to sage-grouse, which could be negative for the species. This is why closing priority habitat (rather than restricting surface occupancy) would be more protective of sage-grouse.

report and other research recommend limiting development to one well pad or energy production facility per section (640 acres) in sage-grouse priority habitat (SGNTT 2011: 21, 24). Of the plans that would allow new leasing in priority habitat, only the Bighorn Basin and Idaho/SW Montana plans would restrict disturbance density to one well site or energy production facility per section. Others, including the Lander, Buffalo, and Wyoming plans, would limit development to an *average* of one site per section within a larger management area. That prescription may be helpful to sage-grouse, but it might also permit high density clusters of development that may be deleterious to grouse, depending on the location of development. Some plans, like Billings-Pompey's Pillar, HiLine, and Miles City also recommend density caps in their preferred alternatives, but would allow for exception, waiver and modification of the cap at the project level. These variances may reduce the effectiveness of the prescription as applied on the ground.

### **Limit cumulative surface disturbance to 3 percent per 640 acres in priority habitat.**

The NTT report and other research recommend limiting discrete anthropogenic surface disturbance in sage-grouse priority habitat to (less than) 3 percent per 640 acres (SGNTT 2011: 7-8; Knick et al. 2013) (see Box 1). The preferred alternative in the Idaho/SW Montana plan would implement this recommendation. The Billings-Pompey's Pillar, HiLine and Miles City plans would also adopt the prescription, but allow for exception, modification and waiver. All four draft plans in Wyoming would allow up to 5 percent surface disturbance per section, in accordance with the State of Wyoming's Greater Sage Grouse Core Area Protection Strategy. Unfortunately, modelling has projected that the Wyoming core area strategy will only slow, not stop, sage-grouse population declines in the state (Copeland et al. 2013).

### **Prohibit surface occupancy in or adjacent to sage-grouse wintering areas in priority habitat.**

None of the preferred alternatives in the draft plans would specifically exclude unleased natural gas, oil and other fluid minerals development in sage-grouse winter habitat. Some plans include measures that might coincidentally protect winter habitat, depending on which BMPs were applied and whether the BLM waives, modifies or grants exceptions to them. Others would only seasonally restrict surface disturbance and disrupting activities in winter habitat, which is inadequate to conserve sage-grouse. As the Buffalo plan acknowledged, sage-grouse avoid otherwise suitable winter habitat once they have been developed for energy resources, regardless of what time of year the development occurs (Buffalo 367, *citing* Doherty et al. (2008)).

#### **Box 4. Fluid Minerals Development | Miles City**

The draft plans analyze a range of prescriptions for developing unleased fluid minerals in sage-grouse priority habitat. Some plans would implement the right science-based measures to conserve sage-grouse, but they present them as recommendations, rather than requisites for development. The Miles City plan is an example of this problem. The preferred alternative proposes that developers apply a 4-mile protective buffer around sage-grouse leks, limit development density to one well and no more than three percent surface disturbance per section, and protect winter habitat—but their application would depend on whether and which BMPs were used in future project-level planning. Federal courts have concluded that “existing regulatory mechanisms,” as contemplated in the ESA, do not include plans for future action or unenforceable measures (*e.g. Or. Natural Resources Council v. Daley*, 6 F.Supp.2d 1139 (D.Or.1998)). If the Miles City plan is to effectively contribute to conservation of sage-grouse so as to help avoid the need to list the species under the ESA, then the final plan should require, rather than recommend, that developers apply stipulations to all fluid minerals development in priority habitat.

#### *Wind Energy Development (Sage-Grouse Priority Habitat)*

##### **Prohibit wind energy development in priority habitat.**

All of the draft plans recognize the threat of wind energy development to sage-grouse and preferred alternatives would generally restrict development in priority habitat. However, while some plans would “exclude” wind energy development, others would only “avoid” development in these areas. Avoidance management could eventually allow for development in priority habitat, and in cases where development was permitted, the general lek buffers and development density and disturbance caps in most of these plans would be inadequate to shield sage-grouse from the negative effects of a commercial wind farm. Notably, of the four draft plans in Montana, the preferred alternative in the HiLine plan would exclude wind energy development in priority habitat, while the Billings-Pompey’s Pillar, Lewistown and Miles City plans would only avoid it. Similarly, the Nevada plan would prohibit wind energy development, while the Oregon plan across the state line would only avoid it.

The preferred alternatives in the four Wyoming plans all treat wind energy development differently. The Buffalo plan would exclude new “commercial” wind energy development in sage-grouse priority habitat, while the Bighorn Basin plan would only avoid it. The Lander plan would close priority habitat to wind energy development “[u]ntil such time as research on impacts to greater sage-grouse is completed and adequate mitigation can be developed,” while the Wyoming plan would prohibit development “unless it can be sufficiently demonstrated that the development activity would not result in declines of sage-grouse core habitat populations.”

#### *Grazing Management*

Livestock grazing is the most widespread use of sagebrush steppe and almost all sagebrush habitat is managed for grazing (Connelly et al. 2004; Knick et al. 2003; Knick et al. 2011). Grazing may affect sage-

grouse differently in the eastern portion of their range, where sagebrush steppe evolved with some herbivory by large hooved ungulates (Knick et al. 2011), than the western half, where the habitat is more prone to grazing damage (Mack and Thompson 1982; Reisner et al. 2013). Regardless of potential regional ecological differences, livestock grazing should be required to sustain and restore habitat characteristics in sagebrush steppe needed to conserve sage-grouse. Lighter grazing use and other strategies that reduce grazing impacts may help achieve habitat objectives.

### **Require that grazing strategies maintain at least 18 cm average grass height in nesting and brooding-rearing habitat.**

Degradation of nesting and brood-rearing habitats, which contributes to reduced nesting success and increased chick mortality, appears to be a primary cause of declining sage-grouse populations (*see* Aldridge and Boyce 2007; Holloran et al. 2005). Tall, dense, vegetative cover, particularly native grasses, may provide scent, visual and physical barriers to predation on sage-grouse nests, chicks and hens, and appears to enhance nest success (Gregg et al. 1994; Herman-Brunson et al. 2009; Reibold 2007; Hagen et al. 2007). Sage-grouse management guidelines recommend that grazing maintain at least 18 cm (~7 inches) average grass height in nesting and brooding-rearing habitat (Connelly et al. (2000); *see also* Braun et al. 2005).

Surprisingly, none of the draft plans specifically require that livestock grazing maintain the recommended minimum average grass height in sage-grouse nesting and brood-rearing habitat, although prescriptions in the Idaho/SW Montana, Nevada/NE California and Utah plans might support the objective, depending on how they are applied. The preferred alternatives in a number of plans would defer to locally derived habitat objectives that might accommodate shorter grass heights (*e.g.*, HiLine, Lewistown, NW Colorado). Some contend that the range-wide 18 cm standard is not applicable to all sagebrush habitat types, particularly more xeric (drier) sagebrush sites where grass species are shorter or grow more slowly. But this ignores the fact that the range-wide recommendation was based, in part, on field research in relatively dry sagebrush steppe and is a conservative standard that accommodates variability in sagebrush habitats. Most sagebrush steppe used by sage-grouse for nesting and brood-rearing is capable of producing grass at least 18 cm high (*see* Connelly et al. 2000, Table 1; M. Reisner, pers. comm.). In areas where ecological site conditions may preclude achievement of this standard, grazing plans should specifically document the reasons for those conditions and incorporate conservation practices designed to support sage-grouse conservation objectives.

### **Control grazing to avoid contributing to the spread of cheatgrass in sage-grouse habitat.**

Invasion by exotic annual grasses is consistently cited as among the most important challenges to maintenance of healthy sagebrush communities (Miller et al. 2011; Wisdom et al. 2005b; Suring et al. 2005). Cheatgrass (*Bromus tectorum*), an invasive annual grass, is now the dominant species on 100 million acres (158,000 square miles) in the Intermountain West (Rosentreter 1994: 170, *citing* Mack 1981). The

conversion of sagebrush steppe to exotic annual grassland has been described as “massive” (Allen 2003) and is expected to continue (Miller et al. 2011; Hemstrom et al. 2002).

Invasive species were identified as a threat to sage-grouse by three expert panels and in recent scientific reviews (Connelly et al. 2011c (Table 1)). One panel listed cheatgrass as the most important threat to sage-grouse in the western portion of its range (70 Fed. Reg. 2267), where it has invaded much of the lower elevation, xeric sagebrush habitat (Miller et al. 2011).

Cattle grazing increases cheatgrass dominance in sagebrush steppe by decreasing bunchgrass abundance, altering and limiting bunchgrass composition, increasing gaps between perennial plants, and trampling biological soil crusts (Reisner et al. 2013; Knick et al. 2003). Grazing was also not found to reduce cheatgrass cover, even at the highest grazing intensities (Reisner et al 2013; Hempy-Mayer and Pyke 2008). Recent science recommends reducing cumulative grazing to avoid contributing to the spread of cheatgrass (Reisner et al. 2013).

All of the draft plans recognize that invasive plants, including cheatgrass, are an important management issue in sagebrush steppe. Most of them specifically identify cheatgrass as a threat to wildlife, including sage-grouse and other sagebrush-dependent species such as pronghorn (Bighorn Basin 3-96) and sage thrasher (Bighorn Basin 3-109). Many of the draft plans also acknowledge that livestock grazing and “excessive grazing” can spread invasive plants (*e.g.*, Buffalo 306; Bighorn Basin 4-146; Billings-Pompey’s Pillar 3-88; Miles City 3-77; South Dakota 361; Oregon 4-89). The Nevada/NE California plan observed that “[l]ivestock grazing is one of the vectors to introduce and or increase the spread of invasive weeds” and that [m]ultiple factors can influence an area’s susceptibility to cheatgrass invasion, including livestock grazing, perennial grass cover and biological soil crusts”(Nevada ch. 4, 54, *citing* Reisner et al. 2013).

Given the extreme threat of cheatgrass to sagebrush steppe and recommendations to curb its spread, it is surprising that none of the plans would control grazing in areas invaded by cheatgrass, in accordance with the latest science. In fact, many plans recommend, usually without reference to supporting research, using livestock to suppress cheatgrass, including the Oregon, Nevada/NE California and Utah plans in the western portion of sage-grouse range, where cheatgrass is a top threat to the species. Such efforts would be futile, as noted above and as described in the Idaho/SW Montana plan:

“Intensive livestock grazing is often suggested for controlling cheatgrass competition. Although targeted grazing may have some applications for fuels management, it is not effective in reducing cheatgrass competition (Hempy-Mayer and Pyke 2008). During the short time when cheatgrass is highly palatable in the spring, a sufficient number of livestock cannot be concentrated on a small enough area to reduce the cheatgrass seed significantly or reduce cheatgrass seed lying on the soil surface. In addition, this type

of grazing can be detrimental to remaining perennial grasses, opening the site up for further cheatgrass expansion in the future” (Idaho/SW Montana 3-64 – 3-65).

### **Facilitate voluntary grazing permit retirement in priority habitat.**

All of the draft plans underscore that livestock grazing is a permitted use on public lands. While some acknowledge the negative effects of grazing on sagebrush steppe, many plans blame degraded rangeland condition on historic grazing practices or “overgrazing” (Bighorn Basin 4-121; Buffalo 360; Colorado 248; Lewistown 4-13). Some plans attempt to validate continued grazing as a tool to manage sage-grouse habitat. The Bighorn Basin plan claims that “proper grazing in grassland and shrubland communities does not adversely impact rangeland health, and may improve it.” The Buffalo plan goes a step further, asserting that “[o]verall, the management actions for livestock grazing in [the preferred alternative] will have major beneficial effects on special status wildlife species in the planning area.” The Oregon plan contends that just the right amount of grazing can suppress cheatgrass, promote healthy native grasses and increase the survivability of native vegetation to fire, while still preserving sufficient vegetative cover in sage-grouse nesting habitat.

Despite these assurances, and perhaps in recognition of the challenges of managing grazing in sagebrush steppe, the preferred alternatives in eight draft plans would at least consider closing grazing allotments where grazing permittees voluntarily relinquish their grazing preference to the managing agency. Some of the plans would require extra and unnecessary analysis before retiring the allotments, and others might retain the allotments in reserve status for use by other permittees. Nevertheless, as the Supplemental EIS for the Bighorn Basin plan acknowledged, even where sagebrush steppe evolved with some herbivory, removing livestock from the landscape would be a net benefit for sage-grouse (Bighorn Basin Supplemental ES-9, 4-76).

### ***Climate Change***

#### **Account for the effects of climate change on sagebrush steppe in conservation measures for sage-grouse.**

All of the draft plans acknowledge that climate change presents challenges to resource management, and many list climate change as a planning issue to be addressed in management alternatives. Several plans specifically identify sage-grouse as a species that may be harmed by climate change, including the HiLine plan. “[S]ensitive species in the planning area, such as greater sage-grouse, which are already stressed by declining habitat, increased development, and other factors, could experience additional pressures due to climate change” (HiLine 260; 434).

Unfortunately, and despite Departmental direction to Interior agencies to address the effects of climate change in management planning (Secretarial Order 3289), none of the draft plans would implement a

comprehensive program for ameliorating and increasing habitat resiliency against climate change impacts in sagebrush steppe, with the possible exception of the Oregon plan. The preferred alternative in the Oregon plan proposes to designate a network of “Climate Change Consideration Areas” totaling 2.2 million acres of occupied and potential sage-grouse habitat in eastern Oregon. These areas, which are generally higher elevation with limited habitat disturbance, were deemed most likely to provide the best available habitat to sage-grouse over the long-term. The Oregon plan would prioritize Climate Change Consideration Areas for habitat restoration, off-site mitigation, conservation partnering, fire suppression, post-fire rehabilitation, and sage-grouse habitat and population monitoring and assessment.

In marked contrast to the Oregon plan, the Lewiston, Northwest Colorado, Nevada/NE California and Wyoming plans contend that “there is no BLM resource planning program for addressing this threat to [sage-grouse] and its habitat” (Nevada/NE Calif. ch. 2, 11, Table 2.1). The lack of BLM guidance for addressing climate change does not mean the agency can ignore its very real effects in the Planning Strategy. The agency is required under existing law and policy to use the best available science in management planning (which would include analysis of climate change effects), and is specifically required to address climate change in planning under Secretarial Order 3289, and more recently by Executive Order 13653.

Properly addressing climate change through the Planning Strategy would require the agencies to analyze the effectiveness of their proposed conservation actions in light of climate change and make appropriate modifications to ensure they are effective over the long term. Proper analysis of climate change would also require agencies to examine the environmental consequences of their proposed actions in a changed climate as their baseline for analysis. For example, the impacts of habitat disturbance may be more pronounced when combined with the effects of climate change, which could lead agencies to different management decisions about whether, where, how much, and how development activities should occur.

## Recommendations

Our analysis of the draft plans developed under the Planning Strategy demonstrates that the preferred alternatives fail to adopt key conservation measures to conserve and restore greater sage-grouse and do not provide certainty that conservation measures would be applied in future, project-level planning. While the draft plans represent an improvement over the status quo in most cases, they do not appear to meet the BLM’s goal of “incorporat[ing] consistent objectives and conservation measures for the protection of greater sage-grouse and its habitat into relevant RMPs...in order to avoid a potential listing under the Endangered Species Act” (76 Fed. Reg. 77009). As Secretary of the Interior Sally Jewell recently acknowledged, federal agencies “are not yet where we need to be and it is time for...the federal government to redouble [its] efforts so that [it] can have effective conservation efforts in place before a listing determination must be made” (BLM news release, 12-12-13).

We recommend that BLM use a single environmental impact statement to cure deficiencies and resolve inconsistencies within and among the draft plans, producing a single record of decision and unified strategy to conserve sage-grouse and their habitat. To meet planning requirements under NEPA, the single EIS might include 15 subparts that finalize each draft plan, but still produce one record of decision for all 15 planning areas. A single, comprehensive strategy could ensure that adequate regulatory mechanisms are consistently applied throughout sage-grouse range to conserve the species. A comprehensive plan, with its range-wide perspective, could also better account for and direct conservation of the most important areas for sage-grouse across the West, identifying areas for special protection based on range-wide data, trends and projections.

Alternatively, the Secretaries of Interior and Agriculture could assemble a team of planners to review all of the draft plans together in order to incorporate uniform, enforceable conservation measures into the preferred alternatives for each final plan and EIS. In this case the agencies may produce 15 separate records of decision, but they should all implement the same adequate regulatory mechanisms to conserve sage-grouse.

Regardless of which approach the BLM and Forest Service choose to finalize the draft plans, the following recommendations provide a path forward to producing a unified and comprehensive approach that conserves greater sage-grouse, while also establishing a new management paradigm for the BLM to avoid future conflicts between resource use and conservation.

- Designate all identified priority habitat in sage-grouse range to support sage-grouse conservation and restoration.
- Protect priority habitat deemed most important for sage-grouse conservation as sagebrush reserves to serve as strongholds for sage-grouse and other sagebrush-dependent species, to enhance populations, and support species persistence in the face of climate change, invasive species and unnatural fire.
- Implement consistent, adequate, science-based, non-discretionary conservation measures to restrict or minimize disturbance in sage-grouse priority habitat.
- Maintain and enhance habitats that are important to sage-grouse persistence, including large, interconnected areas of sagebrush steppe with a mosaic of native vegetation in various successional stages and functioning hydrologic systems.
- Designate areas to focus habitat restoration where science-based passive and active management have a good probability of improving habitat quality and connectivity, creating new priority habitat, and reclaiming sage-grouse historic range for re-occupancy by the species.
- Account for the effects of climate change on sagebrush steppe in conservation plans by anticipating future habitat and species shifts and supporting habitat resilience to climate change.

Despite its size, sagebrush steppe is one of the most endangered ecosystems in North America (Wisdom et al. 2005b; Noss et al. 1995). It is also among the least protected landscapes in the country. In addition to administratively designating reserves to support sage-grouse conservation, the Departments of the Interior and Agriculture should use the extensive analyses produced by the Planning Strategy to identify and permanently protect the most important sage-grouse habitats as new or additions to existing national wildlife refuges, national conservation areas and national monuments.

Although our analysis found that the preferred alternatives in the draft plans are inadequate to conserve and restore sage-grouse and their habitat, we also noted that the plans at least analyzed the key conservation measures highlighted in this report in other management alternatives. This provides the agencies with a path forward. They do not need to scrap their work and further delay planning and, ultimately, conservation of sage-grouse. The final plans can pull together the best conservation elements in the draft plans, and build on them based on the recommendations in this report to implement a range-wide conservation strategy that will conserve and restore sage-grouse and transform how our public lands are managed.

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