



# Sage-grouse Habitat Conservation Policy and the Wildfire Threat in Idaho

*by*

Jay O’Laughlin,

Philip S. Cook,

Zachary Johnson,

*and*

Eva Strand

The College of Natural Resources Policy Analysis Group (PAG) was established by the Idaho Legislature in 1989 to provide objective analysis of public policy issues related to natural resource and land use questions, as suggested by an Advisory Committee (see Idaho Code § 38-714). The PAG is administered by Kurt Pregitzer, Dean, College of Natural Resources.

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Jay O'Laughlin,<sup>1</sup>

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and

Eva Strand<sup>4</sup>

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<sup>1</sup> Jay O'Laughlin, Ph.D., is Director, College of Natural Resources Policy Analysis Group, and Professor of Forestry & Policy Sciences, University of Idaho, Moscow.

<sup>2</sup> Philip S. Cook is Policy Research Scientist, College of Natural Resources Policy Analysis Group, University of Idaho, Moscow.

<sup>3</sup> Zachary Johnson was Research Assistant, College of Natural Resources Policy Analysis Group, University of Idaho, Moscow.

<sup>4</sup> Eva Strand, Ph.D., is Assistant Professor, Department of Forest, Rangeland, and Fire Sciences, University of Idaho, Moscow.

## About the Policy Analysis Group (PAG)

**Role and Mission.** The Idaho Legislature created the Policy Analysis Group (or “PAG”) in 1989 as a way for the University of Idaho to provide timely, scientific and objective data and analysis, and analytical and information services, on resource and land use questions of general interest to the people of Idaho. The PAG is a unit of the College of Natural Resources Experiment Station, administered by Kurt Pregitzer, Director, and Dean, College of Natural Resources.

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**Additional Information.** If you would like additional information, please contact Jay O’Laughlin, PAG Director, at any of the following addresses:

Policy Analysis Group  
College of Natural Resources  
875 Perimeter Drive MS 1134  
University of Idaho  
Moscow, ID 83844-1134

voice: 208-885-5776

FAX: 208-885-6226

E-mail: [pag@uidaho.edu](mailto:pag@uidaho.edu)

World Wide Web: <http://www.uidaho.edu/cnr/pag>

### ACKNOWLEDGMENTS — TECHNICAL ADVISORY COMMITTEE

These individuals provided technical advice during the design and preparation stages of this report:

Karen Launchbaugh, Ph.D. Professor, Rangeland Ecology and Management Director, The Rangeland Center University of Idaho, Moscow	Kerry Reese, Ph.D. Professor Emeritus, Wildlife Management Dept. of Fish & Wildlife Sciences University of Idaho, Moscow
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John W. Connelly, Ph.D. Principal Wildlife Research Biologist Idaho Department of Fish and Game Pocatello, Idaho	Ara Andrea, Ph.D. Technical Services Bureau Chief Idaho Department of Lands Coeur d'Alene, Idaho
Pat Seymour Threatened & Endangered Species Program Manager Idaho Department of Lands Coeur d'Alene, Idaho	Diane French Grazing, Agriculture & Conservation Program Manager Idaho Department of Lands Boise, Idaho
Jim Priest Wildlife Biologist Bureau of Land Management Boise, Idaho	Amanda Bentley Brymer Ph.D. Candidate & NSF-IGERT Fellow Environmental Science Program University of Idaho
John Robison Public Lands Director Idaho Conservation League Boise, Idaho	

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These individuals provided comments on earlier review drafts of this report.

Kerry Reese, Ph.D. Professor, Wildlife Management Head, Dept. of Fish & Wildlife Sciences University of Idaho, Moscow	J. Michael Scott, Ph.D. Distinguished Emeritus Professor Department of Fish & Wildlife Sciences University of Idaho, Moscow
John W. Connelly, Ph.D. Principal Wildlife Research Biologist Idaho Department of Fish and Game Pocatello, Idaho	Sharon Kiefer Deputy Director Idaho Department of Fish and Game Boise, Idaho
Gene Gray Idaho Sage-grouse Task Force Weiser, Idaho	Ted Hoffman, DVM Knight Veterinary Clinic Mountain Home, Idaho
Neil Rimbey, Ph.D. Extension Professor Range Economist University of Idaho Caldwell, Idaho	Steve Bunting, Ph.D. Professor Rangeland Ecology & Management University of Idaho Moscow, Idaho

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Glen Burkhardt  
Fuels Management Specialist  
Bureau of Land Management  
Boise, Idaho

E. Thomas Rinkes  
Wildlife Biologist  
Bureau of Land Management  
Boise, Idaho

Neil Crescenti  
Grazing, Farming & Conservation Program Manager  
Idaho Department of Lands  
Boise, Idaho

Steve Banks  
Aviation Management Specialist  
Bureau of Land Management  
Boise, Idaho

Joe Turnham  
Chief Executive Officer  
FireWatch America  
Auburn, Alabama

Pat Seymour  
Threatened & Endangered Species Program Manager  
Idaho Department of Lands  
Coeur d'Alene, Idaho

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The senior author was privileged to be asked in May 2012 to draft the *Idaho Governor’s Sage-Grouse Task Force Recommendations* report, and was assisted by many of the Task Force members in that endeavor. This document, published in June 2012, can be found at the Idaho Sage-grouse Task Force website maintained by the Idaho Department of Fish and Game\*; it provided the framework for *Governor C.L. “Butch” Otter’s Federal Alternative for Greater Sage-grouse Management in Idaho*, published in September 2012, and also available at the Task Force website.\*Excerpts from the *Governor Otter’s Alternative* that pertain to wildfire and invasive species are included herein as **Appendix A**, with subsequent wildfire updates in **Appendix B**.

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\*Idaho Sage-grouse Task Force website: <http://fishandgame.idaho.gov/public/wildlife/?getPage=310>

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## Short Summary

The combined impacts of wildfires and invasive plant species are primary threats to greater sage-grouse populations in Idaho because they destroy and fragment habitat. The U.S. Fish and Wildlife Service (USFWS) has proposed adding sage-grouse to the list of species protected by the federal Endangered Species Act (ESA) because of habitat loss and fragmentation, and also because in 2010 regulatory mechanisms did not adequately ensure protection of sage-grouse habitat and populations. The State of Idaho's goal is to prevent the ESA listing by identifying conservation activities intended to ensure the long-term viability of sage-grouse in the state. For that to happen, conservation activities must be embedded in regulatory mechanisms adequate to ensure sage-grouse conservation. Idaho Governor C.L. "Butch" Otter has proposed an alternative for federal agencies to include in land use plan amendments (LUPAs) for 7 million of the 10 million acres of sage-grouse "priority" habitat administered by federal agencies. Whether these LUPAs are adequate regulatory mechanisms is for the USFWS and, ultimately, federal courts to determine. For the other 3 million acres of priority habitat managed by state and private entities, regulatory mechanisms could be binding conservation management agreements (CMAs) similar to those the USFWS has used in other situations. To satisfy an agreement for settling litigation over listing, the USFWS will decide by September 2015 whether to list sage-grouse under the ESA. To prevent an ESA listing, threats from wildfire and invasives must be reduced. An effective strategy would include actions for: (1) protecting existing habitat by managing fuels, establishing fuel breaks, and restricting travel; (2) responding quickly to wildfires, using early detection methods and having the right resources in the right places at the right times; and (3) preventing invasive species from gaining footholds, which is best done by protecting existing habitat from wildfires and responding quickly to wildfires. An ESA listing will not be prevented unless such actions are adequately ensured by regulatory mechanisms. This report identifies what might suffice as adequate regulatory mechanisms.



## Executive Summary

Wildfires burning in sagebrush ecosystems destroy sage-grouse habitat and in many areas allow invasive plants, especially cheatgrass (*Bromus tectorum*), to gain a foothold. This makes it difficult for sagebrush reestablishment. The combined impacts of wildfires and invasives are two of the three leading threats to greater sage-grouse populations in Idaho. The third, infrastructure, is beyond the scope of this report, as are the other 11 threats to sage-grouse in Idaho.<sup>1</sup> Unless wildfires and invasive plants are adequately addressed and incorporated into regulatory mechanisms for protecting sage-grouse habitat, it seems inevitable that the U.S. Fish and Wildlife Service (USFWS) will add sage-grouse to the list of species protected by the federal Endangered Species Act (ESA) in Idaho. Many Idahoans hope that a listing can be prevented, and many have been working towards that end. Their efforts are documented herein.

Sage-grouse inhabit 15 million acres of land in southern Idaho; two-thirds of that is considered “priority” habitat because these wide-ranging birds spend most of their time there. Because the scale of wildfire and unwanted invasion of cheatgrass and other plants in Idaho is very large, efforts to reduce threats to sagebrush ecosystems upon which sage-grouse depend must also be large-scale. Viewed in the light of wildfire realities, a conservation strategy for sage-grouse conservation can be stated simply with a few principles:

- Protect existing habitat by managing fuels before wildfires (balancing benefits of vegetation removal against loss of sagebrush and potential for invasives), establishing fuel breaks and/or green-stripping,<sup>2</sup> and restricting travel during the fire season.
- Respond quickly to wildfires by using early detection methods and having the right resources in the right places at the right times.
- Prevent invasive species from gaining footholds, which is best done by protecting existing habitat and responding quickly to wildfires.

**Objectives.** This report has two objectives:

- Describe the risks to sage-grouse, focusing particular attention on the risks wildfire and invasives pose to sage-grouse habitats across all landownerships in Idaho. Wildfire poses a risk to sagebrush not only because it destroys sagebrush, but also because it increases the likelihood of invasion by exotic annual grasses, especially cheatgrass. We call this the wildfire/invasives threat.
- Identify and analyze policies, management plans and actions, and institutional arrangements that may reduce the wildfire/invasives threat and potential risks to sage-grouse habitat.

The second objective is rather important, given the goal of preventing listing of sage-grouse under the ESA. As per the law, one of the five factors that poses threats to a species and can lead to its inclusion on the ESA list of protected species is “inadequacy of existing regulatory mechanisms.” We emphasize efforts that could improve sage-grouse habitat by reducing risks of habitat loss and

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<sup>1</sup> Henceforth when we refer to sage-grouse, we mean only greater sage-grouse (*Centrocercus urophasianus*), a species inhabiting portions of 11 western states. Gunnison sage-grouse (*Centrocercus minimus*) is a different species inhabiting parts of Colorado and Utah.

<sup>2</sup> See section **3.1.5. Fuel Breaks**; green-stripping is the practice of establishing or using patterns of fire resilient vegetation and/or material to reduce wildfire occurrence and size (see St. John & Olen 2009).

fragmentation from the wildfire/invasives threat, and whether these efforts could be considered adequate regulatory mechanisms by the USFWS and federal courts.

**Problem Statement.** If sage-grouse is listed under the ESA, the birds and their habitats are subject to special protections that apply to land use activities and management practices. The economic impacts to states with, and communities near, sage-grouse habitat is a concern shared by many people. The State of Idaho has set a goal to prevent a sage-grouse listing by identifying conservation activities intended to ensure the long-term viability of sage-grouse in the state. The general approach of this report is to identify management policies that can provide protection to habitat for sage-grouse by reducing risks of habitat loss from wildfires. This can be accomplished by addressing the factors that influence wildfire behavior in a manner that demonstrates commitment to the cause of sage-grouse conservation by landowners and land managers.

**Policies.** The three main functions of the ESA are to identify, protect, and recover populations of species that face the threat of extinction. Identify refers to the process of adding a species to the list of threatened or endangered species. The USFWS has identified two factors as reasons to list sage-grouse: habitat loss and fragmentation is one, the other is inadequacy of regulatory mechanisms. Unless adequate regulatory mechanisms are in place to reduce habitat loss and fragmentation, sage-grouse will be added to list of species protected by the ESA.

**Managing Wildfire Threat to Habitat.** Elements of wildfire that can be influenced by management actions include fuels management, human-caused ignitions, and fire suppression response. Effective conservation measures for sage-grouse need to address each of these three elements. Although post-fire treatment to reestablish vegetation is also important, the scope of this report is more sharply focused on modifying wildfire behavior and responding to wildfires than how to rehabilitate burned areas.

- **Fuels management treatments.** In order to affect wildfire behavior, fuel treatments alter the amount, type, or distribution of vegetation on the land. Treatment methods include the use of machinery (mechanical treatments), herbicides, prescribed fire, or livestock grazing. Fuel treatments in sagebrush ecosystems must be carefully planned to avoid unintended consequences. Prescribed fire alone is unlikely to restore sagebrush sites to conditions that promote sage-grouse conservation.

Livestock grazing is a fuels treatment because livestock consume vegetation that otherwise could be fuel for wildfires. There is a lack of information regarding the direct effect of livestock grazing expressed through habitat changes to population-level responses of sage-grouse. If improperly managed, livestock grazing can have negative impacts to sagebrush ecosystems and consequently to sage-grouse at local scales, but if properly managed under specific conditions, grazing can have positive impacts on sagebrush ecosystems. Rest-rotation grazing in southeastern Montana is one such example recommended by wildlife biologists. Another example from a large private ranch in northern Nevada also uses timing of grazing, rather than destocking as on neighboring and intermingled BLM lands, to reduce fuels to help protect sage-grouse habitat, along with green-stripping to help reduce fire frequency.

- **Human-caused ignitions.** Wildfires are started either by lightning or humans and their activities. Between 1980 and 2003, approximately 50% of wildfires on federal lands in Idaho in sage-grouse habitat

were the result of humans or their activities, creating significant problems in sage-grouse habitat. Idaho's 2006 sage-grouse conservation plan proposed increased public outreach and education and increased enforcement of restrictions and closures as conservation measures to address human-caused ignition. In 2012, a big fire year during which Idaho led the nation with 1.7 million acres burned, almost 70% of the ignitions on BLM lands were human-caused. In 2013 an interagency fire restrictions plan was developed to reduce human-caused ignitions in Idaho. Such plans need to be implemented and evaluated before success can be claimed.

- **Fire detection & suppression response.** A tenet of fire operations is to get to the fire as early as possible and suppress it in order to keep the area burned as small as possible. A basic principle, then, is to have the right resources in the right places at the right times. Early detection of fire ignitions is crucial for ensuring rapid suppression response. Fire detection historically has relied on human observation, but remote and automated fire detection technologies are developing rapidly and could perhaps reduce initial fire suppression activities to a matter of an hour or two instead of a day or two. Fire suppression in priority sage-grouse habitat should be a high priority, immediately following human safety and property protection. Suppression responses should be guided by published best management practices.

Rapid wildfire suppression responses are facilitated by having personnel and equipment readily available. Prior to 2012, ranchers and other private citizens were not legally allowed to fight fire on federal rangelands and their efforts to try to control wildfires presented safety concerns for fire managers. In 2012, the Mountain Home Rangeland Fire Protection Association (RFPA) was created through a memorandum of understanding between a group of ranchers and the Idaho Department of Lands (IDL) with cooperation of the BLM. The BLM provides firefighter training, while the IDL documents and tracks firefighter training records and facilitates equipment acquisition. Ranchers provide initial attack using their own equipment along with equipment acquired through the Federal Excess Personal Property program. In 2013 the Idaho Legislature formalized the creation of RFPAs and appropriated \$400,000 to help them get established. Currently about 170 ranchers have put together four different RFPAs that in total cover more than 3.6 million acres. Other ranchers are talking about starting new associations in six more areas. New RFPAs near the most important sage-grouse habitats may help reduce response times.

- **Post-fire treatment.** The treatment of burned areas after wildfires has many objectives, including preventing reestablishment or invasion of cheatgrass and other unwanted annual grasses. This would help reduce the adverse effects of future wildfires and promote reestablishment of sagebrush that is essential for sage-grouse habitat. Protecting areas from recurring wildfire is crucial to maintaining a reestablished sagebrush component.

**Creating Policies to Address the Wildfire/Invasives Threat to Habitat.** In order to prevent an ESA listing of sage-grouse, not only must habitat loss be ameliorated, but adequate regulatory mechanisms to ensure habitat protection must be in place. Recent policy-related actions by federal and state agencies may or may not be adequate regulatory mechanisms, and will be judged by the USFWS and, ultimately, federal courts. Federal agencies have 75% of the sage-grouse "priority" habitat in Idaho, the state manages 6% of it, private landowners almost 16%, and other landowners, including Indian Tribes, about 3%. All landowners need to consider sage-grouse needs. Federal land use plans could be an adequate

regulatory mechanism, and on state and private lands, conservation management agreements (CMAs) could be considered appropriate, as has been the case with other species.

The threats to sage-grouse habitat and populations, especially wildfires, are fraught with uncertainty. Adaptive management is an approach for dealing with uncertainty. It relies on monitoring conditions and changing plans if and when unintended results occur. Adaptive management is a strategy that could be successful for sage-grouse conservation efforts, especially if it is part of a risk management approach.

All management actions involve risk, and we suggest that sage-grouse conservation measures must not only assess the full range of threats and risks to sage-grouse but also compare risks, including the risk of doing nothing. A risk-based analytical approach is consistent with National Environmental Policy Act (NEPA) requirements that federal agencies must comply with, including environmental impact assessment and public involvement in the process of selecting a management alternative.

- **Conservation measures.** Many policy-related efforts and measures for sage-grouse conservation related to the wildfire/invasives threat have been undertaken since the USFWS decided in March 2010 that sage-grouse warranted listing under the ESA because of habitat loss and fragmentation, plus inadequate regulatory mechanisms to prevent habitat loss and fragmentation. We review some of these measures, summarized as follows.

*Federal land management agencies (BLM and USFS).* In December 2011, the BLM and USFS announced their intent to revise land use plans within the entire range of sage-grouse. In October 2013, the agencies released a draft EIS (environmental impact statement) that will cover the revision of about 30 federal land use plan amendments (LUPAs) in the region. All five action alternatives in the draft EIS strive to achieve two goals: (1) protect sage-grouse habitats from disturbances that will reduce their distribution or abundance, and (2) conserve, enhance, and restore the sage-grouse ecosystems upon which sage-grouse depend in an effort to maintain and/or increase their abundance and distribution, in cooperation with other partners. With respect to fire and fuels management, all alternatives in the draft EIS follow the BLM's written directions for fire operations and fuels management, and will employ implementation monitoring, effectiveness monitoring, and other elements that promote adaptive management.

*NRCS Sage Grouse Initiative.* In 2010 the Natural Resources Conservation Service (NRCS) launched the Sage Grouse Initiative. This U.S. Dept. of Agriculture agency provides funding through farm bill appropriations to remove encroaching juniper from priority sage-grouse habitat, primarily on private lands. The USFWS worked with NRCS to develop a list of conservation practice standards, including prescribed grazing, habitat restoration, brush management, and fire breaks, that if implemented will result in ameliorating, minimizing, or eliminating potential adverse effects to sage-grouse and its habitat.

*Regulatory agency guidance (USFWS).* In 2012, the USFWS asked states within the range of sage-grouse to collaboratively develop range-wide conservation objectives for the species, both to inform the upcoming 2015 reevaluation of the ESA listing decision and to inform the collective conservation efforts of the many partners working on sage-grouse conservation. The USFWS convened a Conservation Objectives Team of federal and state representatives, and in 2013 its final report was released.

*State of Idaho initiatives.* In its 2010 listing decision the USFWS expressed doubts about the scale of state conservation efforts and the certainty of their implementation. Clearly new initiatives were

needed to avoid an ESA listing. In March 2012, in response to the offer extended by the Secretary of the Interior to all western states, the Governor's Sage-Grouse Task Force was formed. Its efforts underpin Governor Otter's alternative for sage-grouse on federal lands that the BLM and USFS are currently considering as they prepare LUPAs. Governor Otter's federal alternative has management objectives to implement regulatory mechanisms and stabilize habitats and populations. It includes adaptive triggers that would provide a regulatory backstop to prevent further loss and stabilize sage-grouse habitats and populations where a demonstrated significant loss occurred over time or unexpectedly. Governor Otter's alternative also includes an emergency wildfire clause that directs immediate response following a significant loss of sage-grouse habitat from wildfires, and it proposes regulatory language for lands under BLM and USFS control, including management actions to address the wildfire/invasives threat to sage-grouse habitat.

- **Conservation management agreements (CMAs).** Although the BLM is responsible for 63.5% of the 10 million acres of priority sage-grouse habitat in Idaho, and the USFS another 6.7%, lands managed by other government agencies and privately-owned lands provide 30% of it. To prevent an ESA listing, it is likely that conservation measures for sage-grouse may be necessary across all landownerships, not just the BLM and USFS. Conservation management agreements (CMAs) provide opportunities for landowners to formally commit to managing their lands for the benefit of sage-grouse. A CMA is a general class of management agreements that can be used to prevent the ESA listing of a species. An effective CMA for sage-grouse needs to address ignition, fuels management, and suppression response and develop regulatory mechanisms to ensure appropriate activities take place that will reduce the wildfire/invasives threat to sage-grouse habitat. All of the various owners of sage-grouse habitat will need to come to an agreement as to how these suppression efforts will be undertaken.

- **Regulatory mechanism adequacy.** A key question is whether or not policies being proposed for sage-grouse conservation will be viewed as regulatory mechanisms by the USFWS and federal courts. Can federal land use plans, CMAs, and state conservation plans be considered as ESA regulatory mechanisms? From a legal standpoint the issue is unsettled, as federal district courts have produced contradictory decisions. Nevertheless, when the USFWS is making ESA listing decisions, it has a process for evaluating conservation efforts that have not yet been implemented or have not yet demonstrated their effectiveness. In determining whether a formalized conservation effort contributes to forming a basis for not listing a species, two factors are paramount in the evaluation: (1) for those efforts yet to be implemented, the certainty that the conservation effort will be implemented; and (2) for those efforts that have not yet demonstrated effectiveness, the certainty that the conservation effort will be effective. Because the certainty of implementation and effectiveness of formalized conservation efforts may vary, the USFWS evaluates each effort individually using a specified set of criteria to direct such analysis.

**Conclusion.** We suggest that the numerous policies and plans for sage-grouse conservation in Idaho are remarkably congruent in their approaches to addressing the wildfire/invasives threat to sage-grouse habitat. Adequate regulatory mechanisms are needed to prevent an ESA listing. Demonstrable assurances that implementation will occur are necessary, including commitment to best management practices, sufficient funding to do them, and some form of contractual agreement for management of state and private lands.

## 1. Introduction

This report is written for Idaho citizens, landowners, and land managers concerned about conservation of greater sage-grouse (*Centrocercus urophasianus*) in the state.<sup>3</sup> The report has two objectives. First, we describe the risks to sage-grouse habitat posed by wildfire, which affects all categories of landowners. Sage-grouse, as the name implies, depend on sagebrush as an essential habitat component, along with native perennial grasses and forbs. Wildfire poses risks to sagebrush ecosystems not only because it affects existing site conditions by killing sagebrush, but also because after wildfire has burned through an area it creates an opportunity for invasion by unwanted plants. During the grass-fire cycle, exotic cheatgrass (*Bromus tectorum*) often replaces the more desirable native grasses by outcompeting them (Balch et al. 2013, D’Antonio & Vitousek 1992, Mack 1981). After cheatgrass gets a foothold, it is very difficult for sagebrush to become reestablished, and sage-grouse habitat is lost. There are other threats to sage-grouse besides the one-two punch of the wildfire/invasives threat, but it is beyond the scope of this report to address them.<sup>4</sup>

This report’s second objective is to focus on policies, management plans and actions, and institutional arrangements that may reduce the wildfire/invasives threat to sage-grouse habitat loss and fragmentation (see section **2. Policies**). Under the federal Endangered Species Act (ESA; 16 USC § 1531 et seq.), “inadequacy of existing regulatory mechanisms” is a factor that can imperil a species and lead to its inclusion on the list of threatened and endangered species subject to federal protection under the ESA. Whether or not recent developments in policies, plans, and institutions that focus on sage-grouse conservation are adequate regulatory mechanisms, or regulatory mechanisms at all, is a question for the U.S. Fish and Wildlife Service (USFWS)—the agency responsible for ESA implementation—and federal courts. Our objective is to identify efforts being made, or that could be made, to reduce the wildfire/invasives threat to sage-grouse habitat.

In section **3. Managing Wildfire Threat to Habitat** we provide land management agencies, as well as private landowners, with actions that could be incorporated into each entity’s land management and program objectives of reducing habitat loss and fragmentation from the wildfire/invasives threat. The intent is to provide stakeholders with guidance that may move towards meeting the USFWS’s requirement of adequate regulatory mechanisms that conserve sage-grouse and perhaps help prevent the listing of the species under the ESA. In section **4. Creating Policies to Address the Wildfire/Invasives Threat to Habitat** we identify policies and programs that could help towards that end, including things that are being done, and things that might need to be done, to create adequate regulatory mechanisms.

In response to petitions to include sage-grouse on the list of threatened and endangered species

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<sup>3</sup> Henceforth we refer to the species simply as sage-grouse. It is not to be confused with the Gunnison sage-grouse (*Centrocercus minimus*), a different species inhabiting portions of Colorado and Utah south of the Colorado River. The USFWS proposed listing Gunnison sage-grouse as endangered in January 2013 and has since extended the public comment period for the proposed rule three times.

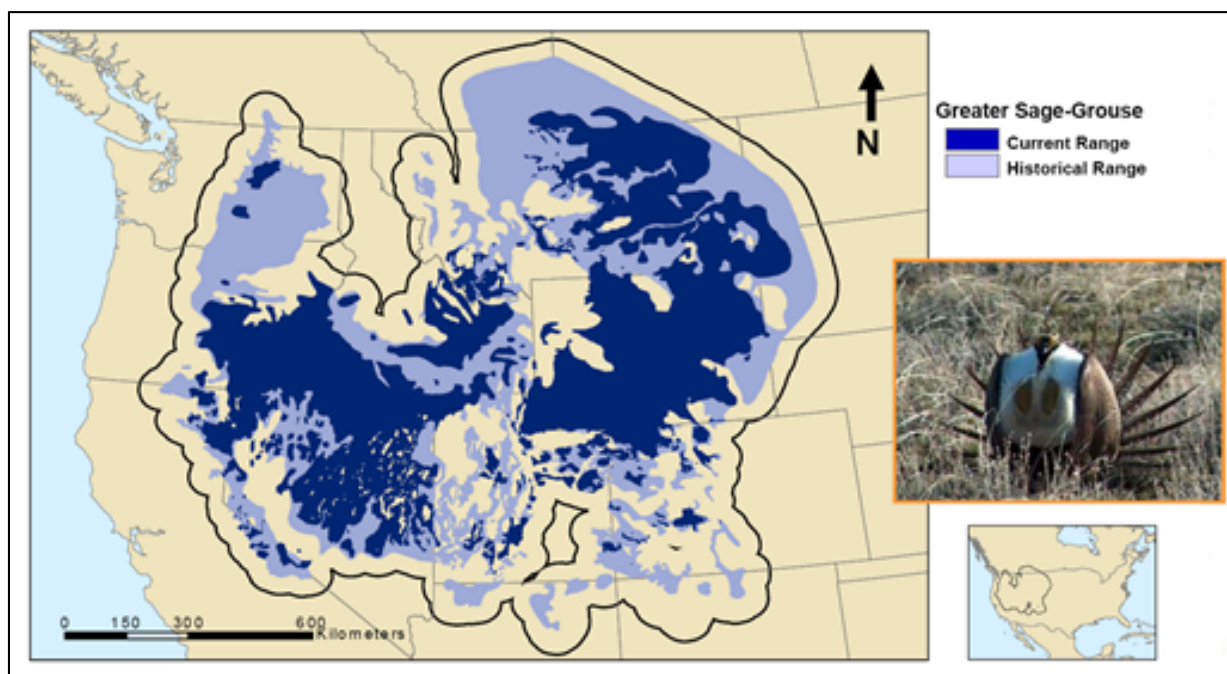
<sup>4</sup> In addition to wildfire and invasive exotic grasses, threats include infrastructure, agriculture, grazing, oil & gas, urbanization, mining, conifer invasion, predation, disease (especially West Nile virus), water development, hunting, and climate change (BLM & USFS 2013, citing USFWS 2010a).

and court rulings about earlier decisions not to do so, in March 2010 the USFWS decided that listing was biologically warranted, but precluded by higher priorities for other species. In 2011 as part of a settlement agreement between the USFWS and several conservation groups that sued it for failing to list sage-grouse, the USFWS agreed that by the end of September 2015 the agency would either propose listing for the greater sage-grouse or find that listing was not warranted. Until then greater sage-grouse is a candidate species for listing that is in the “warranted-but-precluded” category and thus not currently subject to the ESA’s special protections; i.e., it is warranted based on USFWS findings regarding threats to the species, but precluded because other species have a higher listing priority status.

This introductory section, following, provides a brief **Problem Statement**, identifies the **Idaho Goal**, and describes our **Policy Analysis Approach**. It also briefly describes the report’s organization.

### 1.1. Problem Statement

Sage-grouse are found in sagebrush-dominated habitats throughout the interior western United States (**Figure 1**). Sage-grouse habitat intersects lands that are desirable for many human uses including recreation, livestock grazing, agriculture, and energy development. If sage-grouse is listed under the ESA, economic impacts in the western states and communities near sage-grouse habitat are of concern to many people.



**Figure 1.** Historical and current range of sage-grouse.

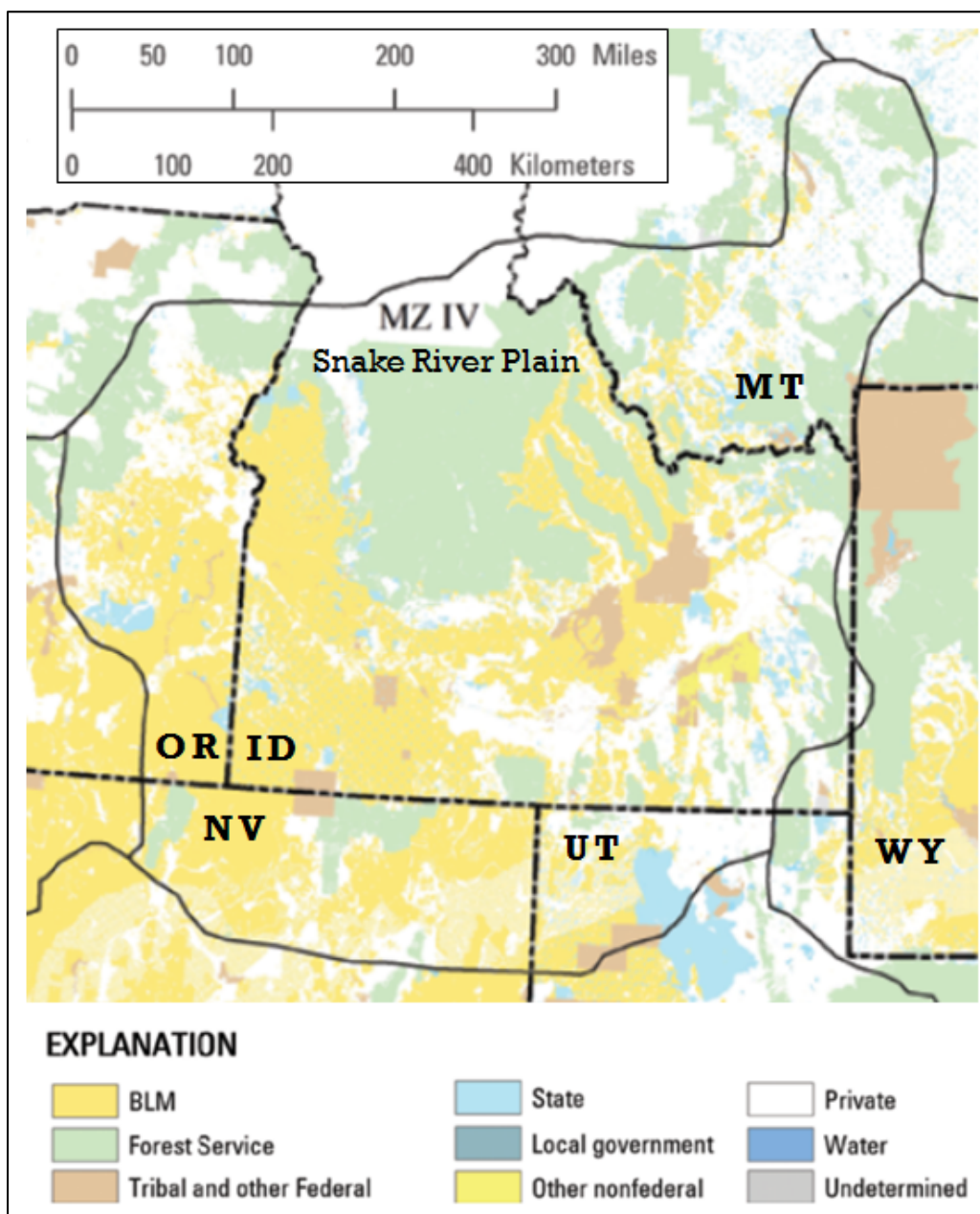
Source: Knick & Connelly 2009, as adapted from Schroeder et al. 2004.

Details on the reasons for listing and causal factors leading to endangerment are provided in section **2. Policies**. Although the human footprint is likely to continue to influence the sagebrush-dominated landscapes required by sage-grouse, long-term conservation of sage-grouse populations should be possible (Connelly et al. 2011). Effective sage-grouse conservation will depend in large part on



the policies that individuals and agencies responsible for managing lands adopt to protect sage-grouse habitat from not only the wildfire/invasives threat, but also other threats.

**Figure 2** identifies the ownership or management jurisdiction of lands within the range of sage-grouse. The Western Association of Fish and Wildlife Agencies (WAFWA) has defined seven sage-grouse management zones (MZs) for assessing population and habitat trends independent of administrative or jurisdictional boundaries (Stiver et al. 2006). Almost all of Idaho is in MZ IV, the Snake River Plain, with a small area of southeastern Idaho in MZ II, the Wyoming Basin.



**Figure 2.** Land ownership or management jurisdiction in sage-grouse Management Zone IV (MZ IV), the Snake River Plain.

Source: adapted from a map in Manier et al. 2013, based on Stiver et al. 2006.

**Table 1** identifies owner/manager categories in Idaho for 10.7 million acres of “priority” sage-grouse habitat and 4.5 million acres of “general” sage-grouse habitat, as identified by the BLM. Preliminary Priority Habitat (PPH) areas have the highest conservation value for maintaining sustainable sage-grouse populations, including breeding, late brood-rearing, and winter concentration areas. Preliminary General Habitat (PGH) areas provide seasonal or year-round habitat outside of priority habitat (BLM & USFS 2013). PPH roughly corresponds to what the State of Idaho has identified in Governor Otter’s (2012) sage-grouse alternative for federal land use plans as “Core Habitat Zone” (CHZ, 5.7 million acres) plus “Important Habitat Zone” (IHZ, 4.1 million acres), which together total 9.8 million acres (Otter 2012), as compared to 10.7 million acres of PPH identified by the BLM (Table 1). The State of Idaho also has identified “General Habitat Zone” (GHZ) totaling 4.5 million acres (Otter 2012), as compared to 4.5 million acres of PGH identified by the BLM (Table 1). One may expect that before a Final EIS for amending federal land use plans in Idaho is issued by the BLM & USFS in 2014 that the BLM’s preliminary acreage totals will be reconciled with the State of Idaho’s CHZ, IHZ, and GHZ areas.

**Table 1.** Sage-grouse preliminary “priority” and general habitat in Idaho by ownership.

Owner/Manager	Preliminary Priority Habitat (PPH) <sup>1</sup>		Preliminary General Habitat (PGH) <sup>2</sup>	
	Acres	%	Acres	%
U.S. Bureau of Land Management (BLM)	6,789,794	63.5	1,758,132	38.6
Private Landowners	1,655,919	15.5	1,243,058	27.3
U.S. Dept. of Agriculture – Forest Service (USFS)	715,276	6.7	655,635	14.4
Idaho Department of Lands	616,088	5.8	338,264	7.4
U.S. Department of Energy	377,828	3.5	182,455	4.0
Indian Tribes’ Reservations	143,949	1.3	10,672	0.2
U.S. Dept. of the Interior (Bankhead- Jones)	56,507	0.5	6,916	0.2
U.S. Dept. of Agriculture (Bankhead- Jones)	38,025	0.4	7,862	0.2
U.S. National Park Service	27,313	0.3	222,669	4.9
Idaho Department of Fish and Game	23,954	0.2	24,765	0.5
U.S. Department of Defense	11,142	0.1	37,714	0.8
Idaho Department of Parks and Recreation	2,178	0.0	5,149	0.1
U.S. Bureau of Reclamation	1,326	0.0	21,972	0.5
U.S. National Wildlife Refuge	204	0.0	3,149	0.1
U.S. Army Corps of Engineers	0	0.0	2,939	0.1
Idaho State Other	0	0.0	3	0.0
<u>Miscellaneous and Other</u>	<u>230,496</u>	<u>2.2</u>	<u>31,871</u>	<u>0.7</u>
<b>TOTAL</b>	<b>10,690,000</b>	<b>100.0</b>	<b>4,553,224</b>	<b>100.0</b>

Source: data in Makela & Major 2012.

<sup>1</sup> Preliminary Priority Habitat (PPH) identified by the BLM likely includes the “Core Habitat Zone” (CHZ, 5.7 million acres) and “Important Habitat Zone” (IHZ, 4.1 million acres) areas identified in Governor Otter’s (2012) alternative for sage-grouse on federal lands.

<sup>2</sup> Preliminary General Habitat (PGH) identified by the BLM is similar to the “General Habitat Zone” (GHZ, 4.5 million acres) identified in Governor Otter’s (2012) alternative for sage-grouse on federal lands.

## 1.2. Idaho Goal

In March 2012, Governor C.L. “Butch” Otter established a 15-member Governor’s Sage-Grouse Task Force with Executive Order 2012-02. The Task Force met 8 times within three months, and concluded its business in June 2012. The Task Force website maintained by the Idaho Department of Fish and Game (IDFG) drew from the Executive Order to describe the Task Force goal as follows:

The purpose of the Task Force [was] to provide Governor Otter with recommendations by June 2012, to ***ensure the species’ long-term viability in Idaho and to prevent the need for federal protection under the ESA***. The Task Force recommendations [were] aimed at facilitating short- and long-term solutions to the primary and secondary threats to the species and its habitat, all in an effort to avoid the serious and economically damaging impacts an ESA listing would create as Idaho continues to emerge from the national recession. The promulgation of this executive order [was] an effort to elevate the issue, ensuring swift response to the problem by tasking a wide variety of impacted and interested stakeholders (emphasis added).

In September 2012 this effort resulted in the *Federal Alternative of Governor C.L. “Butch” Otter for Sage-grouse Management in Idaho*. That report (Otter 2012), the Executive Order quoted above, a list of Task Force members, and records of Task Force meetings are available online at the Task Force website (<http://fishandgame.idaho.gov/public/wildlife/?getPage=310>).

## 1.3. Policy Analysis Approach

A great deal is known about the major threats and challenges to sage-grouse conservation and was recently assembled into a useful ecologically-oriented compendium from which many references herein are cited (see Knick & Connelly 2011). Wildfire and invasive plant species are spatially pervasive and pose significant challenges to maintaining sagebrush steppe ecosystems and, therefore, sage-grouse habitat. The general approach of this report is to identify management policies that can provide protection to habitat for sage-grouse by reducing risks of habitat loss and fragmentation from wildfires. This is accomplished by addressing the factors that influence wildfire behavior (see section **3. Managing Wildfire Threat to Habitat**) in a manner that demonstrates commitment to the cause of sage-grouse conservation by landowners and land managers (see section **4. Creating Policies to Address the Wildfire/Invasives Threat to Habitat**).

The senior author of this report was invited to participate in the meetings of the Governor’s Sage-Grouse Task Force described above, and especially the Fire & Invasives Subcommittee of the Task Force, because of the University of Idaho report *Fuel Treatments on Rangelands* (PAG Report No. 32, Cook & O’Laughlin 2011) that synthesizes scientific literature on the topic. During Task Force meetings members recognized early on that unless the combined effects of the risks posed to sagebrush ecosystems by wildfire and invasive plant species were addressed adequately, there likely would not be any possibility of preventing the ESA listing of sage-grouse. As one Task Force member put it, fire is the issue that could sink this ship. We hope the information in this report will be useful for developing strategies to reduce loss of sagebrush ecosystems to wildfire and potential establishment of invasive grass species, or what we call the wildfire/invasives threat.

Section **3. Managing Wildfire Threat to Habitat** discusses management practices for reducing fuel loads and wildfire extent. The focus of the discussion is on those elements of wildfire that can be influenced by management actions, such as controlling the spread of invasive plant species, human-caused ignitions, and fire suppression response. Identifying and implementing appropriate actions specific to the sagebrush steppe ecosystem will reduce fire risk and positively influence fire behavior.

Sage-grouse conservation is a landscape scale issue that affects multiple landownerships, and is influenced by multiple land management agencies. The management actions identified in section **3. Managing Wildfire Threat to Habitat** provide land management agencies, as well as private landowners, with actions that could be incorporated into each entity's land management and program objectives to reduce the wildfire/invasives threat to sage-grouse habitat. The intent is to provide stakeholders with guidance that may move towards meeting the USFWS's requirement of adequate regulatory mechanisms that conserve sage-grouse and ultimately could help prevent an ESA listing.

In order to prevent an ESA listing of sage-grouse, not only must habitat loss and fragmentation be ameliorated, but the inadequacies of regulatory mechanisms for ensuring habitat protection must be addressed. Section **4. Creating Policies to Address the Wildfire/Invasives Threat to Habitat** focuses on recent policy-related developments that federal and state agencies are designing and implementing. Private landowners also need to consider sage-grouse habitat needs, and conservation management agreements (CMAs) could be an effective mechanism to assure that end. This section also discusses how the USFWS determines what regulatory mechanisms are and whether they are adequate.

Section **5. Conclusion** suggests that the numerous policies and plans for sage-grouse conservation in Idaho are remarkably congruent in their approaches to addressing the wildfire/invasives threat. What is needed now is implementation, followed by evaluation in an operational framework built on the adaptive management concept.



## 2. Policies

The goal of the State of Idaho is to prevent the need for an ESA listing of sage-grouse (Otter 2012). If the species is listed it becomes subject to ESA protections. To prevent the ESA listing, the factors that cause endangerment must be ameliorated. Wildfire is a primary threat to loss and fragmentation of sage-grouse habitat in Idaho, and so is encroachment of cheatgrass and other invasive species (BLM & USFS 2013, citing USFWS 2010a). Actions to reduce the wildfire/invasives threat to habitat loss and fragmentation will not be entirely sufficient, however. There must be adequate regulatory mechanisms in place to protect habitat loss from the wildfire/invasives threat.

This section reviews the history of the sage-grouse listing under ESA and the threats to sage-grouse habitat and populations. Other laws and policies related to sage-grouse management also are reviewed. Those that might suffice as adequate regulatory mechanisms are revisited in section 4.3. **What are ESA regulatory mechanisms, and how is their adequacy determined?**

### 2.1. Endangered Species Act of 1973 (ESA)

The ESA is simple to understand but difficult to implement. The three major functions of the act are to identify, protect, and recover populations of species that face the threat of extinction (PAG Report No. 25, McClure et al. 2005):

- **Identify** – The ESA authorizes the USFWS to determine whether a species is threatened or endangered with extinction. The USFWS has identified sage-grouse as a candidate species to be added to the list of threatened and endangered species.
- **Protect** – On federal lands ESA protections strictly prohibit actions that may cause "jeopardy" to threatened or endangered species. The USFWS implementing regulations define "jeopardy" to include adverse modification of habitat. On all lands, management actions must not cause a "take" of individual members of the protected species. The ESA defines "take" to include, among other things, adverse modification of habitat. Whether any proposed action by a federal agency may cause "jeopardy" is determined through an interagency consultation process whereby the USFWS evaluates the proposed action. If sage-grouse were listed under ESA, in essence, the conservation of sage-grouse becomes the principal management objective on federal lands, and the USFWS determines what actions are and are not allowed.
- **Recover** – The USFWS is required to develop a recovery plan for a listed species, indicating a quantitative goal describing a recovered population, what actions are necessary to accomplish recovery, the cost of such actions, and a timeline for meeting the recovery goal.

**2.1.1. ESA Listing Process and Sage-grouse.** The process of adding a species to the list of threatened or endangered species involves careful analysis by the USFWS of data related to five categories of factors that pose threats to the continued existence of the species (see PAG Report No. 25, McClure et al. 2005). The five factors are:

- A. the present or threatened destruction, modification, or curtailment of the species' habitat or range;
- B. overutilization for commercial, recreational, scientific, or educational purposes;
- C. disease or predation;

- D. the inadequacy of existing regulatory mechanisms; and
- E. other natural or manmade factors affecting its continued existence (ESA § 4; 16 USC § 1533).

Each of the threat factors as it relates to sage-grouse is addressed in more detail in the following sections.

In 2005, the USFWS determined that an ESA listing of sage-grouse was not biologically warranted based on the scientific information available at that time. Western Watersheds Project sued the USFWS regarding the merits of the 2005 finding. In a stipulated agreement with the plaintiffs, the USFWS submitted a new finding that listing was warranted; it was published in the *Federal Register* on March 5, 2010.

On March 23, 2010, after evaluating all the available scientific and commercial information regarding sage-grouse, including an analysis of the threats to the species and its sagebrush habitat, the USFWS determined that ESA listing and subsequent federal protection was biologically warranted. However, listing sage-grouse at that time was precluded by the need to address other species that the agency determined were higher priority for listing (USFWS 2010a). The ESA status of the greater sage-grouse thus became a “warranted-but-precluded” candidate species across the bird’s 11-state range. When a species listing is warranted-but-precluded, the USFWS assigns a Listing Priority Number (LPN) to prioritize its work on the list of candidate species. The scale of listing priorities runs from 1 to 12, with 1 being the highest priority and 12 being the lowest priority (USFWS 1983). The USFWS assigned listing priority 8 to the greater sage-grouse (USFWS 2010a).

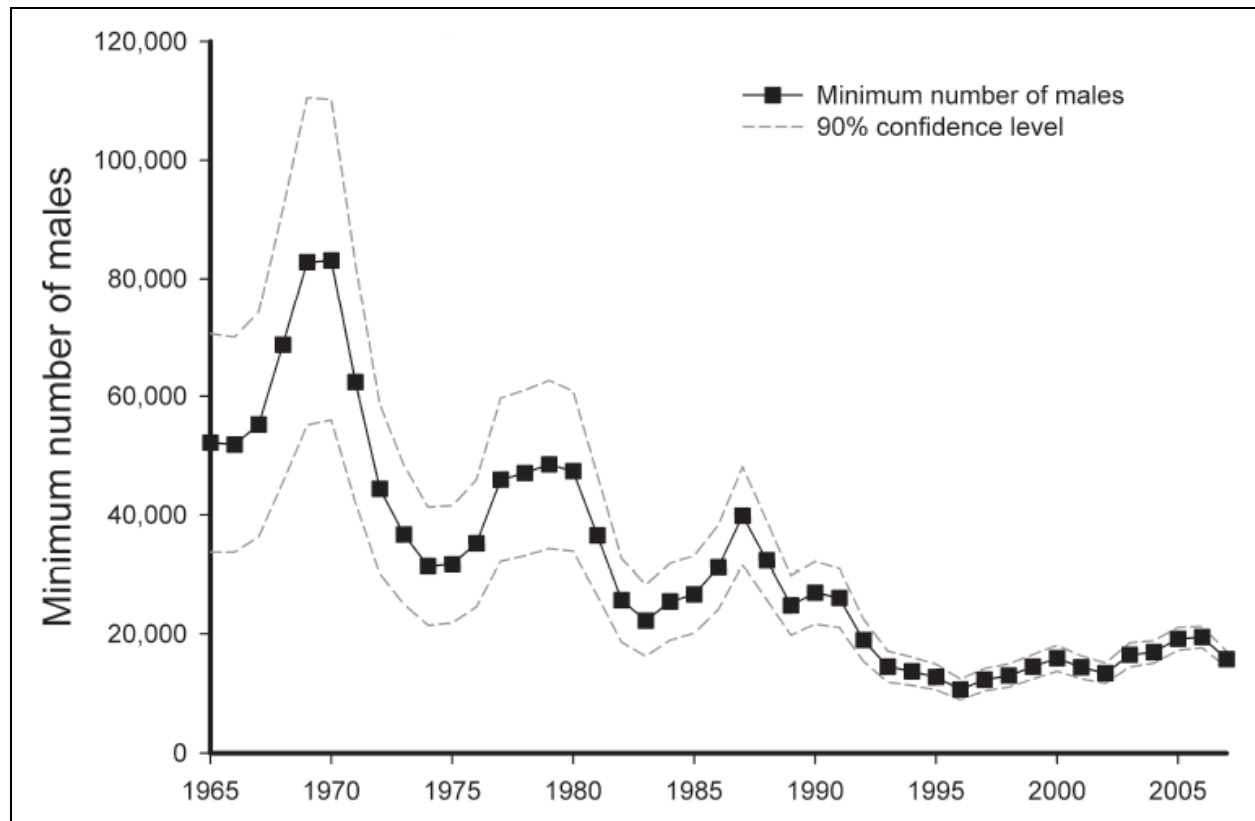
Shortly after the USFWS determined that the ESA status of sage-grouse was warranted-but-precluded, citizen conservation groups sued the USFWS seeking immediate listing of the species. In September 2011, as part of a settlement agreement addressing the status of dozens of species, the plaintiffs and the USFWS agreed that the USFWS must submit either a proposed rule for listing or a not-warranted finding by the end of federal fiscal year 2015, i.e., September 30, 2015. The majority of sage-grouse habitat is on federal lands (see, e.g., **Table 1** above), and the delay until 2015 was intended to give federal land management agencies sufficient time to revise or amend their land use management plans pursuant to other federal laws so that the plans can incorporate actions adequate to avoid the need for listing sage-grouse under ESA.

**2.1.2. Habitat Loss and Fragmentation.** One of the five ESA endangerment factors that the USFWS uses in listing determinations is adverse habitat modification. In its 2010 warranted-but-precluded finding, the USFWS found that fragmentation and destruction of sage-grouse habitat was a threat to the persistence of sage-grouse (USFWS 2010a).

Sage-grouse is known as a “landscape-scale bird” because it needs large expanses of land to provide habitat components for the stages of its lifecycle (Knick & Connelly 2011). Sagebrush steppe is key habitat for the species, and is found throughout the interior western U.S. in 11 states. Habitat for sage-grouse in southern Idaho is part of the Snake River Plain Management Zone (SRPMZ), or Management Zone IV, an area encompassing almost all of southern Idaho and parts of Oregon, Nevada, Utah, and Montana (see **Figure 2** on page 3).

Across the 11 western states, greater sage-grouse now occupy 56% of their historic range (Schroeder et al. 2004, see **Figure 1** on page 2). Between 1965 and 2003, populations declined at an

average rate of 2 percent per year (Connelly et al. 2011). Sage-grouse populations in the SRPMZ have declined from more than 80,000 males in 1970 to less than 20,000 in 1992 and remaining near that number through 2007 (**Figure 3**).



**Figure 3.** Sage-grouse population trend estimate, Snake River Plain Management Zone, 1965-2007. Source: Garton et al. 2011.

In its 2010 warranted-but-precluded finding the USFWS (2010a) identified 14 factors that pose threats to sage-grouse and their habitats. Loss and fragmentation of sagebrush habitats are a primary cause of decline of sage-grouse populations (USFWS 2010a). The negative effects of habitat fragmentation on sage-grouse are diverse and include reduced lek (courtship site) persistence, lek attendance, winter habitat use, recruitment, yearling annual survival, and female nest site choice.

The primary causes of habitat loss and fragmentation vary across the range of sage-grouse (USFWS 2005, USFWS 2010a). In Idaho, the best available information indicates that wildfire, invasive species, and infrastructure are the primary threats to sage-grouse (Otter 2012). This finding was confirmed by the draft EIS for federal land use plan amendments (LUPAs) (BLM & USFS 2013). Other secondary threats that may need to be mitigated to prevent an ESA listing in Idaho are recreation, improper livestock grazing, and West Nile virus (Otter 2012). There are other lesser threats to sage-grouse in Idaho, including agriculture, oil & gas development, urbanization, mining, conifer invasion, predation, water development, hunting, and climate change (BLM & USFS 2013, citing USFWS 2010a).

In its 2010 warranted-but-precluded finding, the USFWS noted that livestock grazing can seriously damage sage-grouse habitat. In spite of finding little evidence linking livestock grazing practices to

population levels of sage-grouse, the USFWS found that the potential for negative impacts could not be ignored (USFWS 2010a). Livestock grazing is especially controversial, and because some people feel livestock grazing can be an effective fuels management tool, we address this issue in section **3.1.4**.

#### **Livestock Grazing.**

This report focuses on the threat posed by wildfire and the complementary threat of invasive plant species following wildfire, or what we sometimes call the combined wildfire/invasives threat. In recent years hundreds of thousands of acres of sagebrush steppe have been burned by wildfire and followed by large-scale invasion of exotic annual grasses, further increasing the likelihood of future fire (Balch et al. 2013, Miller et al. 2011) and decreasing the likelihood for recovery or restoration (Pyke 2011).

Wildfire dynamics historically included infrequent, large, high-severity fires and long interludes with smaller, patchier fires. This allowed sagebrush domination for long periods. The concerns with fire and invasives (i.e., the wildfire/invasives threat) are summarized as follows:

- **Fire**—Fire is a primary cause of recent large-scale losses of sage-grouse habitat. Fire frequencies have increased as a result of the incursion of invasive plant species. As a result, this **stressor**<sup>1</sup> is anticipated to increase (USFWS 2010a).
- **Invasives**—Once established, invasive plants reduce and eliminate vegetation essential for sage-grouse to use as food and cover, and facilitate a shorter fire cycle. Techniques to control invasive plants on a landscape scale necessary to support sage-grouse are limited and have generally been ineffective to date (USFWS 2010a).

The loss of habitat caused by fire and the functional barrier burned habitat can pose to movement and dispersal compounds the influence this **stressor** can have on **populations** and population dynamics.<sup>5</sup> Barring alterations to the current fire pattern, as well as the difficulties associated with restoration, the concerns presented by this threat will continue and likely strongly influence persistence of sage-grouse, especially in the western half of its range within the foreseeable future (USFWS 2010a).

**2.1.3. Inadequacy of Regulatory Mechanisms.** In its March 2010 warranted-but-precluded finding, the other ESA endangerment factor that the USFWS identified as a major threat to sage-grouse persistence was inadequacy of existing regulatory mechanisms (USFWS 2010a). The USFWS could find not any current local government land use or development planning regulations that provided adequate protection to sage-grouse from development or other harmful land uses. At the state level, the USFWS identified both Wyoming and Colorado as having energy development regulations that potentially could provide significant protection for sage-grouse. However, the USFWS expressed doubts about Wyoming's regulations because they apply only to existing leases and only in primary habitat areas. At the time, Colorado's regulations were too new for the USFWS to assess their effectiveness.

In Idaho, the majority of sage-grouse habitat is managed by two federal agencies (see **Table 1** on page 4): the Bureau of Land Management (BLM) in the Department of the Interior and the United States

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<sup>5</sup> The words **stressor** and **populations** are emphasized in this section because risk analysis is proposed as a tool for addressing the management of wildfire threats to sage-grouse habitat later in this report (see section **4.4. Risk Analysis Framework**). Risk analysis requires the identification of a stressor and a risk assessment endpoint, or value to be protected. Fire is the stressor, the endpoint is sage-grouse habitat, or the sagebrush ecosystems sage-grouse populations are dependent upon.



Forest Service (USFS) in the Department of Agriculture. Both the BLM and USFS have the legal authority to regulate land uses and land use activities on their respective lands. In its 2010 warranted-but-precluded ESA finding for sage-grouse, the USFWS (2010a) evaluated the adequacy of both agencies' regulations with respect to other endangerment threats.

Overall, the USFWS found that the ability of the BLM and USFS to adequately address the issues of wildfire and invasive species across the landscape was limited. However, the USFWS suggested that new mechanisms could be adopted to target the protection of sage-grouse habitats during wildfire suppression activities or fuels management projects, which could help reduce this threat in some situations. The USFWS stated that there was limited opportunity to implement and apply new regulatory mechanisms that would provide adequate protections or amelioration for the threat of invasive species. The USFWS also found that energy development regulations for BLM and USFS did not adequately ameliorate impacts to sage-grouse (USFWS 2010a).

For the BLM and USFS, Resource Management Plans (RMPs) and Land and Resource Management Plans (LRMPs), respectively, are mechanisms through which conservation measures for greater sage-grouse could be implemented (see following sections).<sup>6</sup> However, the USFWS found that the extent to which appropriate measures to conserve sage-grouse had been incorporated into those planning documents, or were being implemented, varied across the range of the species (USFWS 2010a).

## 2.2. Other Federal Laws and Policies

In addition to ESA there are several federal laws that define the decision context of the sage-grouse conservation issue. The majority of sage-grouse habitat in Idaho is on federal lands administered by the BLM which is responsible for the administration of 12 million acres of land in Idaho. Although the USFS administers 20.4 million acres in the State, it is responsible for less than 10 percent of sage-grouse primary habitat (see **Table 1** on page 4).

**2.2.1. BLM Resource Management Plans (RMPs).** The Federal Land Policy and Management Act of 1976 (FLPMA; 43 USC § 1701-1782) outlines the functions of the BLM, provides for administration of BLM public lands, provides for management of BLM public lands on a multiple-use and sustained-yield basis, and requires land use planning, including public involvement, and a continuing inventory of resources. The BLM public lands are to be managed in a manner that will protect the quality of numerous environmental values and provide food and habitat for fish and wildlife and domestic animals.

Under FLPMA, the BLM is required to develop comprehensive Resource Management Plans (RMPs) for providing multiple goods and services from its lands. Creation and revision of an RMP is guided by the BLM 6840 Manual for Management of Special Status Species, which among other things states that actions affecting BLM lands should not contribute to the need for federal candidate species to become listed (BLM 2008). An RMP is considered a major federal action and thus is subject to the provisions of

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<sup>6</sup> The question of whether federal land use plans and amendments (LUPAs, including the BLM Resource Management Plans (RMPs) and the USFS Land and Resource Management Plans (LRMPs)) can suffice as ESA regulatory mechanisms is addressed later in the report (see section **4.3. What are ESA regulatory mechanisms, and how is their adequacy determined?**).

the National Environmental Policy Act (NEPA), which requires environmental analysis and public involvement in the preparation of the RMP.

**2.2.2. USFS Land and Resource Management Plans (LRMPs).** The USFS is guided by a planning statute called the National Forest Management Act of 1976 (NFMA; 16 USC 1600 et seq.). Similar to FLPMA, NFMA requires that the USFS develop Land and Resource Management Plans (LRMPs) for lands the agency is responsible for, and that the plans provide for multiple uses and sustained yields of products and services from those lands. Development of a LRMP is a major federal action subject to NEPA and public involvement requirements.

In regard to species management, NFMA goes beyond FLPMA by adding requirements that the agency provide a diversity of native plant and animal species. USFS regulations for implementing NFMA interpret this to mean adequate habitat to support viable populations of species (see discussion in the context of bighorn sheep conservation in PAG Report No. 30, O’Laughlin & Cook 2010).

**2.2.3. BLM & USFS Land Use Plan Amendments (LUPAs) for Sage-grouse Conservation.** In response to the USFWS (2010a) warranted-but-precluded finding for sage-grouse, the BLM and USFS announced in December 2011 their intent to revise RMPs and LRMPs, respectively, for their lands within the range of sage-grouse (BLM 2011c). Specifically, plans would be amended to address the inadequacy of regulatory mechanisms identified by the USFWS by including conservation measures for sage-grouse in the respective land use plans.

In October 2013, the BLM and USFS released the *Idaho and Southwestern Montana Sage-Grouse Draft Land Use Plan Amendment and Environmental Impact Statement* (BLM & USFS 2013), which will cover the revision of about 30 land use plans in the region. Elements of the draft amendment are reviewed in more detail in section 4. **Creating Policies to Address the Wildfire/Invasives Threat to Habitat.**

**2.2.4. BLM Policy/Action.** The decision by BLM to amend RMPs in the range of sage-grouse was part of a broader effort to address sage-grouse conservation in light of the warranted-but-precluded ESA listing decision of the USFWS (2010a). In August 2011, the BLM chartered the development of the Greater Sage-Grouse National Planning Strategy, a multi-agency effort to develop new or revised regulatory mechanisms, through RMPs, to conserve and restore sage-grouse and its habitat on BLM-administered lands on a range-wide basis over the long-term (BLM 2011a). In December 2011, the National Technical Team of the national strategy planning team produced *A Report on National Greater Sage-Grouse Conservation Measures*, which summarizes up-to-date and relevant science-based information (BLM 2011b). Recommendations from that report are cited throughout this report and relevant excerpts are provided in **Appendix C** and **Appendix D**.

In December 2011, the BLM also implemented Instructional Memorandum 2012-043 (IM 2012-43), *Greater Sage-Grouse Interim Management Policies and Procedures*, which is a temporary directive for providing interim conservation policies and procedures across multiple programs while the BLM considers amendments or revisions to its RMPs (BLM 2011a). The memorandum provides policies and procedures for the management of numerous resources including: vegetation, wildfire, fuels, rights-of-way, minerals, livestock grazing, and water development. At the same time the BLM also implemented

Instructional Memorandum 2012-044 (IM 2012-44), *BLM National Greater Sage-grouse Land Use Planning Strategy* (2011b).

**2.2.5. BLM Rangeland Health Standards.** FLPMA requires that the BLM set rangeland health standards for all its lands. Under FLPMA, standards and guidelines for managing rangelands must be consistent with the following fundamentals of rangeland health, as described in BLM regulations: Habitats are, or are making significant progress toward being, restored or maintained for federal threatened and endangered species, federal proposed or candidate threatened and endangered species, and other special status species (43 CFR 4180.1). The BLM's current Idaho Standards for Rangeland Health and Guidelines for Livestock Grazing Management (BLM 1997) do not mention sage-grouse or sagebrush specifically, nor any other species or habitat types specifically; and scarcely mention invasive species, wildfire, or fuels. Standard 8 states that "Habitats are [to be] suitable to maintain viable populations of threatened and endangered, sensitive, and other special status species" (BLM 1997). In order to meet Standard 8, or make significant progress, requires that Standards 4, 5, and 6 (Native, Seeding, and Exotic Plant Communities) as well as Standards 2, 3, and 7 (Riparian/Wetlands, Stream Channel/Floodplain, and Water Quality) generally must be providing for proper nutrient cycling, hydrologic cycling, and energy flow and proper functioning condition (J. Priest, review comments).

### 2.3. Policies Affecting State and Private Lands

Idaho does not have a state statute similar to ESA specifically focusing on identifying, protecting, and recovering imperiled species. In general, wildlife in the state are property of the state and are to be "preserved, protected, perpetuated, and managed" through statutes and regulations administered by the Idaho Fish and Game Commission via the Idaho Department of Fish and Game (IDFG; Idaho Code § 36-103 et seq.). As long as it remains unlisted under ESA, IDFG is responsible for the management of sage-grouse. Sage-grouse is currently classified as a game bird by IDFG (IDAPA 13.01.06) and subject to state hunting regulations (IDAPA 13.01.09).

If sage-grouse were to be listed as either threatened or endangered under the ESA, state and private lands would be subject to ESA's "take" prohibition.<sup>7</sup> ESA requires that all persons, including private individuals, corporations, and public agencies, avoid committing "take" of a listed species. "Take" means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct" (ESA section 9; 15 USC § 1532). Through regulation the USFWS has defined "harm" to mean "an act that actually kills or injures fish or wildlife," including an act that may result in "significant

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<sup>7</sup> If sage-grouse were listed as threatened, the USFWS could create special regulations under ESA Section 4(d) that reduce or expand the normal protections for threatened species. A "4(d) rule" could allow landowners the flexibility for "incidental take" of sage-grouse if it furthered species conservation. A relevant example is the proposed listing of the bi-state distinct population segment of greater sage-grouse (along the California-Nevada border) and a proposed 4(d) special rule providing that any take incidental to agricultural activities that are included within a conservation plan developed by the Natural Resource Conservation Service (NRCS) for private agricultural lands and consistent with NRCS's Sage Grouse Initiative (SGI), as specified in the proposed rule, is not a prohibited action under the ESA (USFWS 2013a).

habitat modification or degradation which actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including breeding, spawning, rearing, migrating, feeding or sheltering” (50 CFR § 222.102). The full implications of an ESA listing for sage-grouse on state and private lands in Idaho are beyond the scope of this report, but a general review of the “take” prohibition is available in PAG Report No. 13 (O’Laughlin et al. 1995).

Other federal laws that affect the management of state and private lands in relation to sage-grouse conservation include the federal Clean Air Act and Clean Water Act. Idaho’s implementation of the Clean Air Act governs when prescribed fire can be used (see PAG Reports No. 24 and No. 32; Cook & O’Laughlin 2004 and 2011, respectively). The Clean Water Act can affect livestock grazing management (see PAG Report No. 15, Moseley et al. 1997). Idaho does not have a state policy similar to NEPA that requires analysis of the environmental effects of state actions, although neighboring states Montana and Washington do.

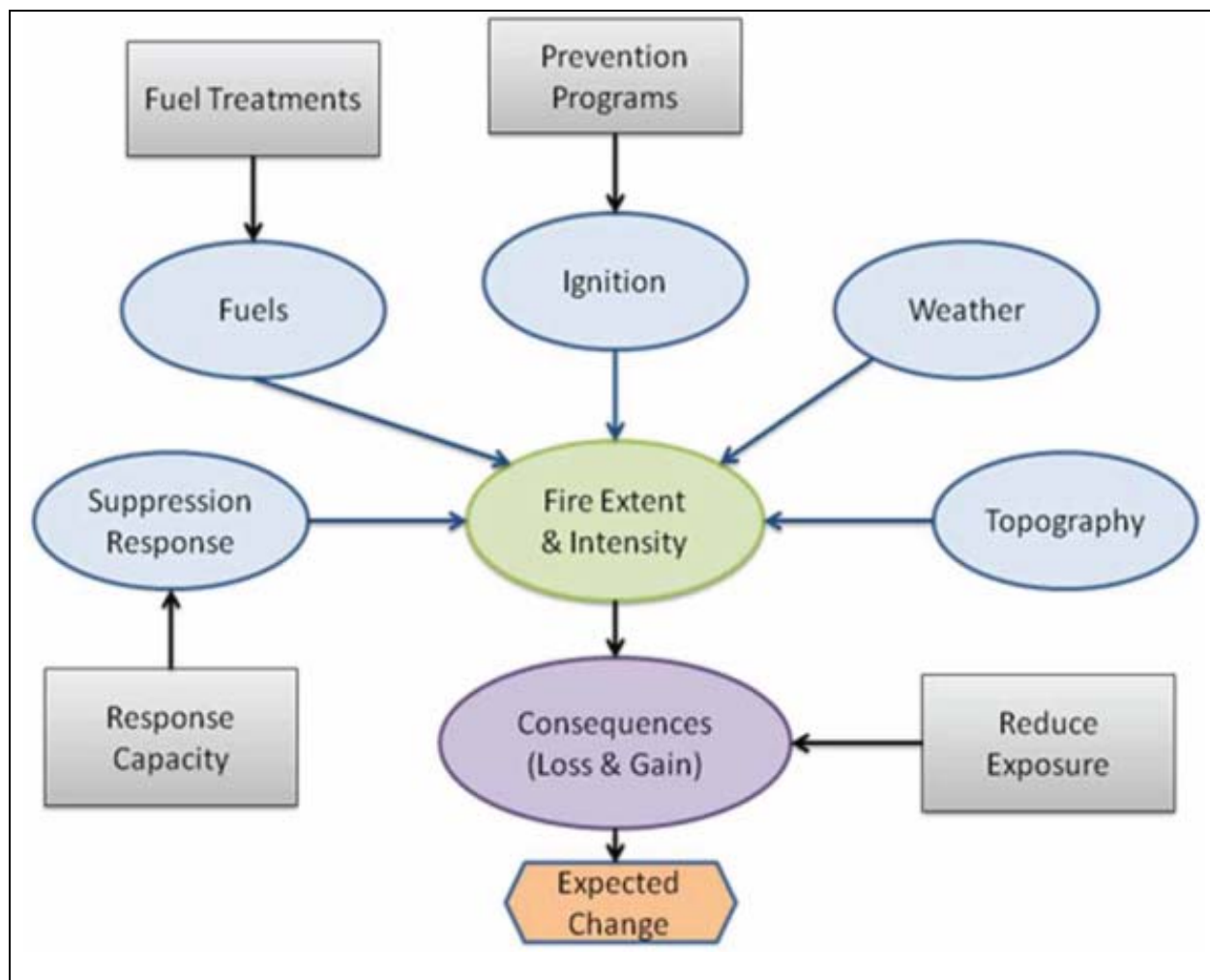
## **2.4. Summary**

The goal of the State of Idaho is to ensure the long-term viability of sage-grouse populations and thereby prevent the need to list the species under the ESA. The ESA is simple to understand but difficult to implement. The three major functions of the act are to identify, protect, and recover populations of species that face the threat of extinction. Identify refers to the process of adding a species to the list of threatened or endangered species. Listing decisions involve careful analysis by the USFWS of data related to five categories of factors that pose threats to the continued existence of the species. The USFWS has identified two factors as reasons to list sage-grouse: habitat loss and fragmentation is one, the other is inadequacy of regulatory mechanisms. Effective sage-grouse conservation will depend in large part on the policies adopted by landowners to protect sage-grouse habitat from not only wildfire threat, but all other threats as well. Unless there are adequate regulatory mechanisms in place, sage-grouse will be added to the ESA protected species list.

The sagebrush ecosystems that sage-grouse depend on are not fire-adapted, so wildfires destroy sage-grouse habitat and the subsequent encroachment of invasive species makes it difficult for sagebrush reestablishment. Without adequate regulatory mechanisms in place to deal with wildfire and invasives, sage-grouse will be listed under the ESA. On the federal lands that provide 70 percent of the 10 million acres of sage-grouse priority habitat in Idaho, land use plans—called Resource Management Plans (RMPs) for BLM lands and Land and Resource Management Plans (LRMPs) for U.S. Forest Service lands—could perhaps be considered adequate regulatory mechanisms, and the agencies are currently at work to amend those plans to better protect sage-grouse habitat. On state and private lands, there is no comparable requirement for land use plans to protect wildlife habitat, for sage-grouse or any other species.

### 3. Managing Wildfire Threat to Habitat

Depending on the condition or ecological state of an ecosystem, wildfire can be either a restorative or destructive force (Taylor et al. 2013). Protecting extant sagebrush ecosystems from fire is a management goal because of the decline of sage-grouse (Baker 2011, citing Connelly and Braun 1997, Connelly et al. 2004). For the purposes of this report, wildfire is any unwanted wildland fire, whether ignited by lightning or human activity. Wildfire is affected by many factors; those that can be influenced by management activity are fuels, human-caused ignitions, and suppression response (**Figure 4**). Effective conservation measures for sage-grouse needs to address each of these three factors. Subsections for each factor follow. In addition, the consequences after a fire has burned through an area need careful consideration, and a subsection on post-fire treatment follows.



**Figure 4.** A simple conceptual model of wildfire, its contributing factors, consequences, and management options. In addition are natural elements or intrinsic components managers must work with. Source: USDI & USDA (2011), *A National Cohesive Wildland Fire Management Strategy*, p. 15, online at [http://www.forestsandrangelands.gov/strategy/documents/reports/1\\_CohesiveStrategy03172011.pdf](http://www.forestsandrangelands.gov/strategy/documents/reports/1_CohesiveStrategy03172011.pdf)

### 3.1. Fuels Management

Fuels are one factor affecting wildfire behavior that humans can manage. In general, fuel treatments alter the amount, type, or distribution of vegetation on the land in order to affect wildfire behavior (PAG Report No. 32, Cook & O’Laughlin 2011). Fuel treatments can be implemented as landscape treatments across a relatively large area, or they can be implemented intensively in a linear fashion, often along ridge tops or roadways, to create fuel breaks.

The goal or objective of a fuel treatment determines in part its appropriateness and effectiveness (Cook & O’Laughlin 2011). For the purposes of this review of fuel treatments, the goal of landscape fuel treatments is to reduce the adverse effects of wildfire across sagebrush ecosystems on which sage-grouse depend. Landscape fuel treatment goals also may include restoration of sagebrush ecosystems to conditions that are optimal for sage-grouse. The goal of fuel break treatments is to slow or stop wildfire spread and aid in wildfire suppression efforts. However, in sage-grouse habitats, herbaceous cover could be reduced and negatively affect nesting success and/or brood survival, thus posing a constraint on fuels management activities. Fuel treatment techniques are reviewed in light of these goals.

Researchers continue to debate the historic frequency and extent of fire in sagebrush ecosystems (e.g., Baker 2011, Miller et al. 2011), but fire has always played a role as a disturbance factor (Murphy et al. 2013). In general, historically, lower elevation sagebrush ecosystems experienced much less frequent fire than upper elevation ecosystems. Today, lack of periodic fire has allowed conifer encroachment into higher elevation, wetter sites, exemplified by mountain big sagebrush (*Artemisia tridentata* spp. *vaseyana*), while too frequent fire has promoted invasion of exotic grasses into lower elevation sagebrush ecosystems, exemplified by Wyoming big sagebrush (*Artemisia tridentata* spp. *wyomingensis*) (Davies et al. 2011). Although invasives do not always follow wildfire everywhere, exotic annual grass (e.g., cheatgrass) invasion and conifer encroachment both pose threats to sagebrush ecosystems. Grass invasion is a larger limitation to conservation efforts with respect to sagebrush and sage-grouse than is conifer encroachment (Davies et al. 2011).

Across sagebrush ecosystems, the primary wildfire factor in need of control is the type of vegetation on the land, specifically the control of cheatgrass (BLM & USFS 2013, Miller et al. 2011). The presence of cheatgrass is a factor that contributes to the adverse effects of wildfire, and its invasion onto or dominance of a site after a wildfire is one of the adverse effects. A modeling study of the economic efficiency of fuels treatment for sagebrush ecosystems in the Great Basin (Taylor et al. 2013), which includes most of the sage-grouse habitat in Idaho, concluded that fuels treatment is economically efficient when sagebrush ecosystems are in their healthiest ecological states, and not efficient when the system is dominated by invasive plants. The objectives of fuels treatment in this study was reducing wildfire risk and restoring ecosystem health, with benefits being wildfire suppression costs avoided. These results provide quantitative support for the commonly held opinion that the most efficient use of scarce land management resources in systems under threat from invasives is to maintain ecological health and resiliency on healthy rangeland rather than to rehabilitate invaded rangeland (Taylor et al. 2013).

Fuel treatments in sagebrush ecosystems must be carefully planned to avoid unintended consequences. Most sagebrush species are not well adapted to fire or other disturbances, and it may take decades for a site to recover from disturbance, if it recovers at all (Baker 2011, Miller et al. 2011,

Murphy et al. 2011, Pyke 2011). Managers must understand plant composition and fuel characteristics on a site to effectively match treatments to conditions.

The BLM Sage-grouse National Technical Team report (Morales et al. 2011) provides a list of management considerations as well as best management practices for fuels management in sage-grouse habitat (see **Appendix C**).

**3.1.1. Mechanical Treatments.** Mechanical fuel treatments involve the use of machinery to cut, uproot, or chop existing vegetation, and can include chaining, tilling, mowing, mastication, and harvesting of woody biomass (Cook & O’Laughlin 2011). For landscape treatments in sagebrush ecosystems, mechanical treatments may be appropriate for removal of woody material where conifer encroachment is a problem. However, the potential for mechanical treatments to adversely affect site soil conditions as well as residual, desirable vegetation is increased (Pyke 2011).

**3.1.2. Herbicide Treatments.** Herbicide treatments use chemicals that kill or injure plants (Cook & O’Laughlin 2011). The use of selective herbicides that kill only a specific type of plant is necessary for landscape treatments so that desirable plants remain unharmed. Herbicide treatments have been used successfully in sagebrush ecosystems where restoration is a goal, including control of western juniper (*Juniperus occidentalis*) and thinning dense sagebrush to open the community for herbaceous plants to respond (Pyke 2011). However, if dead material remains on site, fire danger is not reduced. The BLM and USFS (2013) suggest that fuels treatments using herbicides are likely to be the most effective in reducing fine fuels and fire intensity and severity.

**3.1.3. Prescribed Fire.** Prescribed fire involves the intentional application of fire to fuels under specified conditions of fuels, weather, and other variables (BLM 2007). The intent is for the fire to stay within a predetermined area to achieve site-specific management objectives (Cook & O’Laughlin 2011).

As a landscape treatment, particularly in drier, lower elevation sagebrush ecosystems, prescribed fire is not recommended as a fuels treatment technique where improvement of sage-grouse habitat is the goal (Baker 2011, Beck et al. 2009, Rhodes et al. 2010). Sagebrush ecosystems have experienced too much fire compared to conditions optimal for sage-grouse, and researchers suggest that the application of prescribed fire should be limited or avoided altogether (Baker 2011, Connelly et al. 2011, Pyke 2011), as prescribed fire alone is unlikely to restore sagebrush sites to conditions that promote sage-grouse conservation (Baker 2011, Davies et al. 2011).

**3.1.4. Livestock Grazing.** Livestock grazing is a fuels treatment because livestock consume vegetation that otherwise could be fuel for wildfires (Cook & O’Laughlin 2011). Livestock grazing impacts fuel loads in two ways: removal of vegetation, and hoof incorporation of fine fuels into soil (Nader et al. 2007).

In relation to sage-grouse conservation, the direct effect of livestock grazing expressed through habitat changes to population-level responses of sage-grouse cannot be addressed using existing information (Connelly et al. 2011). This is primarily because livestock grazing has been such a long-term and ubiquitous use of sagebrush ecosystems throughout the western U.S. that few areas unaffected by livestock grazing exist for reference (Knick et al. 2011). Historic livestock grazing practices in the late 19<sup>th</sup> and early 20<sup>th</sup> centuries led to widespread changes in sagebrush ecosystems, including changes in plant communities and soils that persist today.

Livestock grazing, if managed improperly, can have negative impacts to sagebrush ecosystems and consequently to sage-grouse at local scales (Connelly et al. 2011, USFWS 2010a). Grazing can adversely impact nesting and brood-rearing habitat by decreasing vegetation concealment from predators. Grazing also can compact soils, decrease herbaceous abundance, increase erosion, and increase the probability of invasion of exotic plant species. Infrastructure associated with livestock grazing (e.g., fences, roads, water development) also can have indirect negative impacts on sage-grouse.

If properly managed<sup>8</sup> under specific conditions, livestock grazing can have positive impacts on sagebrush ecosystems and sage-grouse. Complete grazing exclusion can promote exotic annual grass invasion in some situations. Although the evidence is inconclusive, in some situations properly managed livestock grazing can decrease risk, size, and severity of wildfires and thereby decrease the risk of post-fire exotic annual grass invasion (Davies et al. 2009, 2011; Diamond et al. 2009). For example, moderate levels of livestock grazing can make the perennial herbaceous component of sagebrush plant communities more tolerant of fire, perhaps due to a reduction in crown litter which can decrease fire severity in the vicinity of growing points on perennial bunchgrasses (Davies et al. 2011). Sheep and goats have been used to control invasive weeds and woody plant encroachment in sage-grouse habitat (USFWS 2010a).

“Prescribed grazing” and “targeted grazing” are terms used to describe livestock grazing at a determined season, duration, and intensity to accomplish defined vegetation or landscape goals (BLM 2010, Boyd et al. 2014, Launchbaugh 2006). Prescribed grazing may be an appropriate fuels management treatment for some sage-grouse habitat. However, information based on rigorous and credible studies is needed to determine the effectiveness of targeted grazing as a fuels management tool, and it is missing. According to the Western Association of Fish and Wildlife Agencies “gap” report on the wildfire/invasives threat, such studies are one of the “Top 5” challenges throughout the range of sage-grouse (Mayer et al. 2013).

Although large-scale studies are lacking, small-scale studies support livestock grazing as an effective fuels management tool. Two examples follow.

In southeastern Montana, where approximately half of the rangelands are privately owned, wildlife biologists in southeastern Montana recommend use of rest-rotational grazing systems. This approach allows preferred forage vegetation species a period to recover and reproduce successfully, while also enhancing hiding cover for sage-grouse (Foster et al. 2013).

Another example is from a large private ranch in northern Nevada. There a change in grazing management allowed for periods of rest and recovery for the herbaceous community after grazing. The success of the grazing plan relies on flexibility, allowing the ranch to adjust to extreme year-to-year differences in forage production resulting from the Great Basin climate and fire conditions. The grazing plan centers on having enough pastures to manage for rest from grazing within and between years.

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<sup>8</sup> Properly managed livestock grazing has been defined as the degree and time of use of current year’s growth which, if continued, will either maintain or improve the range condition consistent with conservation of other natural resources; an alternative definition is grazing at an intensity which will maintain adequate cover for soil protection and conservation of other resources and maintain or improve the quantity and quality of desirable vegetation (Anderson 1969).



Over the last decade, the ranch has used timing of grazing, rather than destocking, to improve the rangelands and riparian areas. Ranch managers have kept fires to a minimum by using livestock to reduce fuels and by doing land improvement projects, such as flanking existing roads with green-strip seedings, managing brush, seeding rangeland, and improving riparian habitat to function as green strips. This preventive and integrated private ranch management program is reducing fire frequency and facilitating recovery of sage grouse habitat (Freese et al. 2013).

No studies exist that directly relate livestock grazing systems or stocking rates to sage-grouse abundance or productivity (Otter 2012). Numerous studies have been published providing detailed information on characteristics of sage-grouse seasonal habitats (Knick and Connelly 2011). These studies provide insight on heights and cover of sagebrush and herbaceous plants needed for productive habitats (Connelly et al. 2000). Based on this information, opportunities exist for livestock permittees, federal and state agencies and university researchers to collaborate in an effort to fine-tune knowledge of current conditions and needed management actions in sage-grouse habitats throughout southern Idaho. This work would provide needed insight into current conditions within sage-grouse habitat and guide specific management actions necessary for ensuring healthy and stable sage-grouse populations (Otter 2012). The University of Idaho, in cooperation with the Idaho Department of Fish and Game and other partners, has taken the lead in initiating a long-term study of the effects of livestock grazing on sage-grouse habitat and population characteristics (see UI & IDFG 2012).

**3.1.5. Fuel Breaks.** Fuel breaks are linear fuel modifications, often situated along a road or ridge and ranging from 30 to 400 feet wide. Fuel breaks are designed to slow the spread of fire and provide areas to facilitate fire suppression (Cook & O’Laughlin 2011).

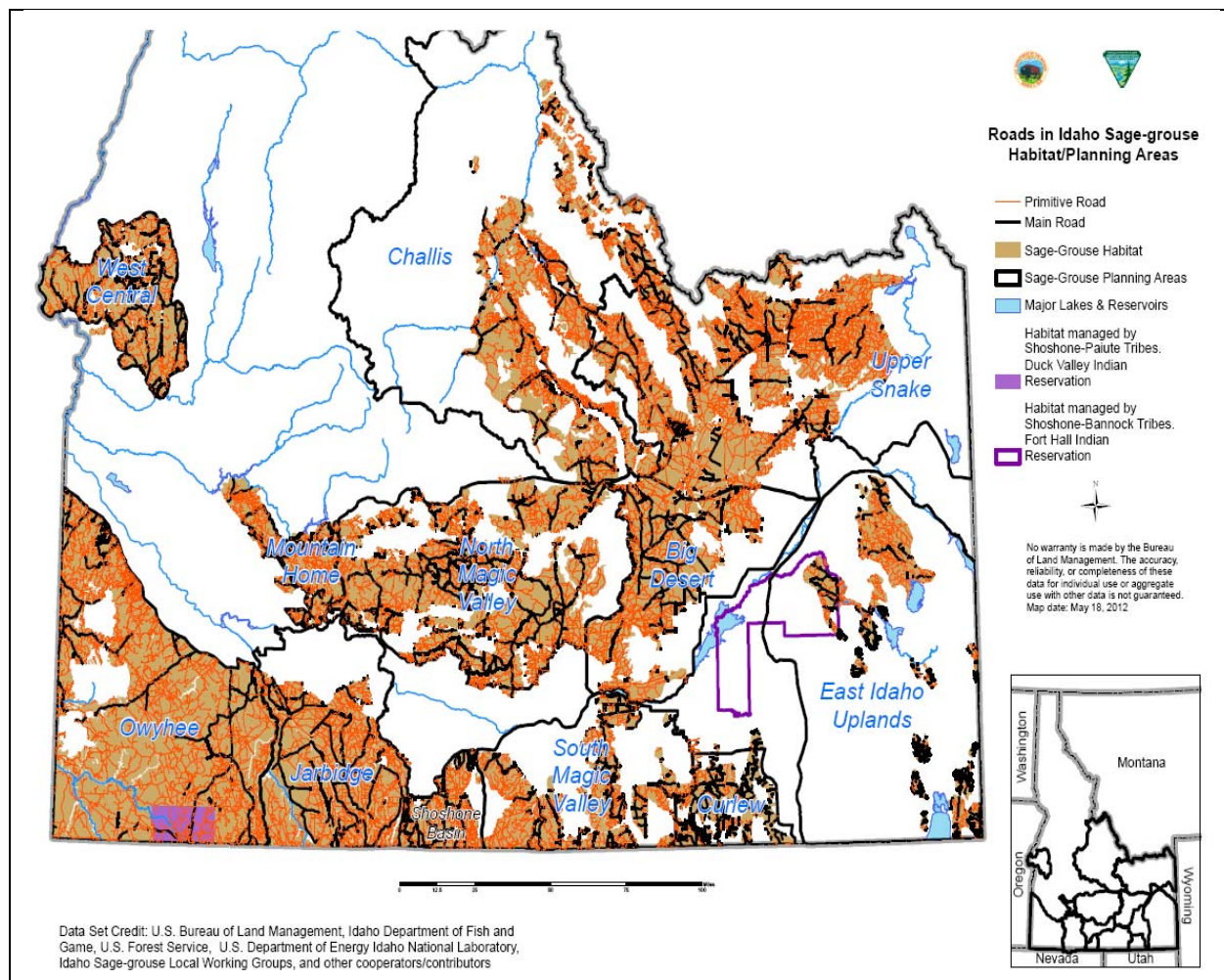
Fuel breaks contain little vegetation, thus flammability is reduced. It is the indirect effects of fuel breaks—slowing the spread of wildfire and providing suppression opportunities—that provide benefits to sagebrush and sage-grouse. Several different techniques can be used to create fuel breaks, including mechanical treatments (e.g., bulldozing), livestock grazing, and/or prescribed fire. Existing infrastructure such as roads and their right-of-ways can be managed as fuel breaks.

Southern Idaho has an extensive road network (**Figure 5**). Strategically locating fuel breaks adjacent to roads in key places would help reduce ignitions, as roads are a vector for human-caused fire starts. Roads can limit fire spread due to the lack of fuel.

Care is needed in the design and construction of fuel breaks. In addition to directly removing sagebrush, the site disturbance and sparse vegetation in fuel breaks can increase the risk of cheatgrass or other plant invasion along fuel breaks. Risk analysis could be used to support decisions as to whether fuel breaks are an appropriate management tool (see further discussion in section **4.4. Risk Analysis Framework**).

### **3.2. Human-caused Ignitions**

Wildfires are started either by lightning or humans and their activities. Between 1980 and 2003, approximately 50% of wildfires on federal lands in Idaho in sage-grouse habitat were the result of humans or their activities (IDFG 2006). Since 2000, 49% of wildfires recorded by the Eastern Idaho Interagency Fire Center have been human-caused (EIIFC 2013). 2012 was a big fire year across the nation, with 9.3 million acres burned.



**Figure 5.** Map of roads in Idaho sage-grouse habitat.

Source: created by BLM Idaho State Office for this report.

In 2012, Idaho had the dubious distinction of leading the nation with 1.7 million acres burned (PAG Fact Sheet No. 10, O’Laughlin 2013). Of the 429 wildfires on or threatening BLM lands in 2012, 295 (69%) were human-caused (BLM 2012). Human-caused ignitions of wildfire are an increasingly significant problem in sage-grouse habitat in Idaho.

In 2013, an interagency fire restrictions plan was developed and signed by the BLM, USFS, and IDL, as well as several agencies of the Bureau of Indian Affairs. The purpose of the planned fire restrictions is to reduce the risk of human-caused fires during unusually high fire danger periods and/or burning conditions (BLM et al. 2013).

There appears to be little research directed at reducing human-caused ignition of wildfires in sagebrush ecosystems and sage-grouse habitat. Idaho’s 2006 sage-grouse conservation plan proposed increased public outreach and education and increased enforcement of restrictions and closures as conservation measures to address human-caused ignitions (IDFG 2006; see **Appendix C**), but implementation and evaluation of these proposed measures is lacking. Further conceptual, empirical,

and applications-oriented research on prevention of human-caused ignitions of wildfire is needed (Prestemon et al. 2013).

### **3.3. Fire Detection, Suppression Response, and Fire Operations**

Southern Idaho is a large area, containing 15 million acres of sage-grouse habitat. Detection of fires as soon as possible after they start is important. After a fire is ignited, the tenet of fire operations is to get to it as early as possible and suppress it in order to keep the area burned as small as possible. A basic principle, then, is to have the right resources in the right places at the right time. In priority sage-grouse habitat areas, suppression of fires should be a high priority (Morales et al. 2011). However, in prioritizing use of fire-fighting resources, protecting human safety and personal property rank higher than either rangeland or wildfire habitat protection. During widespread fire events, there may insufficient fire-fighting resources to adequately address wildfire in sage-grouse habitat.

**3.3.1. Fire Detection.** One key to managing the wildfire threat to sage-grouse habitat is early detection of fire ignitions so that appropriate suppression resources can be deployed in a timely manner. Historically, fire detection has relied on human observation; however, remote and automated technologies for fire detection are developing rapidly (e.g., Andreou et al. 2012, Brady et al. 2012, Habiboglu et al. 2011, Ko et al. 2012, Koltunov et al. 2012).

One such technology is from a company called FireWatch America ([www.firewatchamerica.com](http://www.firewatchamerica.com)). The FireWatch system uses special optical sensors and processors that can be mounted on communications towers or other natural and artificial vertical stands to spot smoke within minutes of ignition, day or night. The system analyzes video-based information and then alerts a control center, where an operator can look for themselves and send out first-responders to assess the situation and call in back-up if necessary. The system's mapping capabilities can pinpoint a fire's location, and real time modeling to assess a fire's spread is available. Mobile device applications also can assist first responders. Assuming that the right fire operations resources are in the right place at the right time, FireWatch technology could perhaps reduce initial fire suppression activities to a matter of an hour or two instead of a day or two.

The cost-effectiveness over 10.5 million acres of sage-grouse habitat for such a system may be problematic, but strategic placement could improve that situation. FireWatch America claims their system can be deployed on average for about 20-30 cents per acre per year, depending on topography. Approximately 150 FireWatch sensors could cover the area in danger and could be monitored from one central location. If this was the case, the ten million acres of sage-grouse primary habitat could be monitored for \$2-3 million per year, which is less than the suppression costs of several large fires and subsequent degradation and mitigation to sage-grouse habitat.

**3.3.2. Suppression Response and Fire Operations.** The BLM Sage-grouse National Technical Team report (Morales et al. 2011) succinctly sums up suggested fire management responses in sage-grouse habitat:

- In priority sage-grouse habitat areas, prioritize suppression, immediately after life and property, to conserve the habitat.
- In general sage-grouse habitat, prioritize suppression where wildfires threaten priority sage-grouse habitat.

- Follow Best Management Practices (see **Appendix E**).

The BLM also provides guidance for local unit's suppression response and post-incident activities (see **Appendix F**).

**3.3.3. Rangeland Fire Protection Associations.** One key to faster wildfire suppression is having personnel and equipment readily available. Prior to 2012, ranchers and other private citizens were not legally allowed to fight fire, and their efforts to try to control wildfires presented safety concerns for fire managers.

In 2012, the Mountain Home Rangeland Fire Protection Association (RFPA) was created through a memorandum of understanding between a group of ranchers and the Idaho Department of Lands (IDL) with cooperation of the BLM. In its 2013 session, the Idaho Legislature passed House Bill 93 which formalized the creation of RFPAs (Idaho Code § 38-104B). The 2013 Legislature also appropriated \$400,000 for Fiscal Year 2014 to oversee the formation and operation of RFPAs and provide training and equipment.

House Bill 93 (Idaho Code § 38-104B) formally recognized the ability of groups of ranchers to enter into cooperative agreements with the state of Idaho for the detection, prevention, or suppression of fires on rangelands. RFPAs are formed by groups of rangeland owners petitioning the IDL Director. RFPAs are required to have a board of directors, form a nonprofit organization, and obtain liability insurance. Members of RFPAs must complete firefighting training. The IDL provides RFPAs with firefighting gear, communications equipment, and other firefighting resources (IDL 2014).

According to the Idaho Department of Lands (IDL 2014), RFPAs provide the following benefits:

- Take advantage of the quick initial attack ranchers can provide;
- Satisfy ranchers' interest to be active participants in protecting forage needed for their livelihoods;
- Satisfy fire managers' safety concerns by ensuring all firefighters are trained and have necessary equipment and communications;
- Support IDL's efforts to provide a complete and coordinated approach to fire suppression in Idaho;
- Enhance efforts to protect sage grouse habitat to the benefit of all parties (IDL 2014).

The BLM provides firefighter training, while the IDL documents and tracks firefighter training records and facilitates equipment acquisition. Ranchers provide initial attack using their own equipment along with equipment acquired through the Federal Excess Personal Property program (IDL 2014).

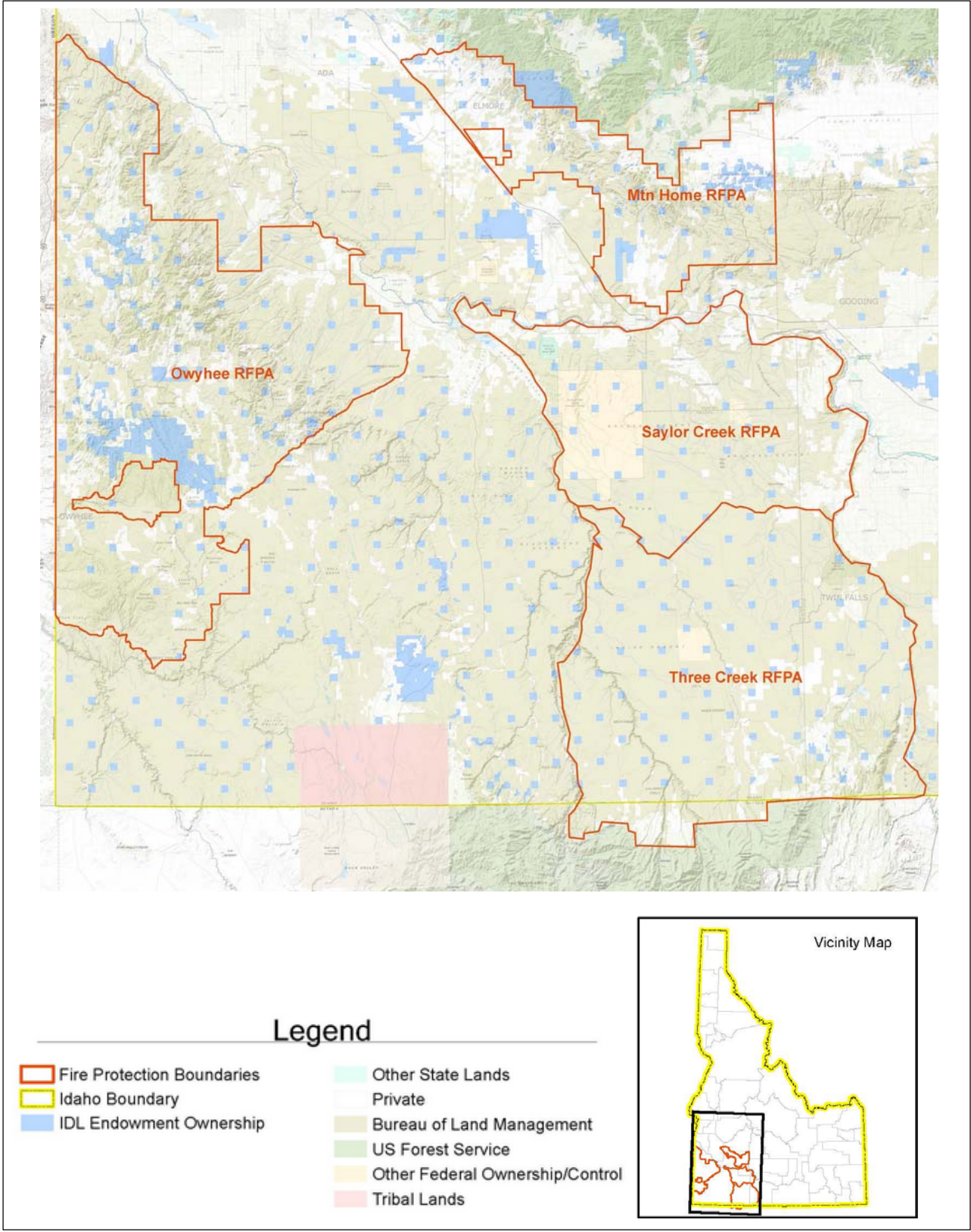
Currently, approximately 170 ranchers in southern Idaho are members of four different RFPAs, in total covering more than 3.6 million acres (**Figure 6**):

- Mountain Home RFPA—454,000 acres protected, 21 members;
- Owyhee RFPA—1,342,000 acres protected, 55 members;
- Saylor Creek RFPA—696,000 acres protected, 59 members; and
- Three Creek RFPA—1,130,000 acres protected, 33 members.

Ranchers have begun conversations about starting new associations in six additional areas (IDL 2014).

Creating RFPAs is one of the "Top 5" challenges identified by the Western Association of Fish and Wildlife Agencies in its "gap" report for addressing the wildfire/invasives threat across the range of sage-grouse (Mayer et al. 2013). Idaho has taken the lead in filling this gap. Establishing new RFPAs close to sage-grouse "core" and "important" habitat zones may help reduce suppression response times. However, these areas are generally quite remote, making RFPA establishment especially challenging.





**Figure 6.** Map of Rangeland Fire Protection Associations (RFPAs) in Idaho, 2013.  
Source: IDL 2014.

### 3.4. Post-fire Treatment

The treatment of burned areas after wildfires is an important consideration for improving sage-grouse habitat and preventing conditions that promote future wildfires. Again, preventing reestablishment or invasion of cheatgrass and other unwanted annual grasses is a primary goal both to reduce the adverse effects of future wildfires and provide adequate sage-grouse habitat.

The BLM's program for burned area treatment immediately after a wildfire is called Burned Area Emergency Stabilization and Rehabilitation (ES&R). The USFS has a similar program called Burned Area Emergency Response (BAER). The two agencies have a coordinated system of policies and procedures for planning and implementing treatments on burned areas (USDI & USFS 2006).

There is some tension between the short-term goal of emergency stabilization of burned areas and the longer-term goal of rehabilitation or promotion of sagebrush habitat. For example, although native plants are preferable for sage-grouse habitat, limited availability of seed, high cost, and low chance of success may make non-native bunchgrasses a more practical choice for site rehabilitation (Davies et al. 2011). In addition, some non-native grasses may remain greener longer than native grasses further reducing the chances of wildfire. ES&R and BAER policies also may confound rehabilitation with native plants because funds are only to be used for short-term site stabilization (USDI & USFS 2006). Reevaluation of ES&R and BAER procedures and policies could yield opportunities to improve flexibility for local BLM and USFS staffs to develop more targeted and effective rehabilitation plans (Murphy et al. 2013).

Rehabilitating sagebrush habitat with native plants is biologically challenging. Rehabilitation and restoration techniques for quality sage-grouse habitat in areas where invasive annual grasses predominate are largely unproven and experimental (Davies et al. 2011, Pyke 2011). Part of the problem is lack of knowledge about the ecology of sagebrush ecosystems, including how native plants establish and spread (Davies et al. 2011). The chance of unsuccessful restoration is compounded by unpredictable weather and lack of necessary precipitation for plant establishment (Connelly et al. 2011). Despite the challenges, the BLM Sage-grouse National Technical Team report (Morales et al. 2011) provides the following management considerations for ES&R:

- Prioritize native seed allocation for use in sage-grouse habitat in years when preferred native seed is in short supply. This may require reallocation of native seed from ES&R projects outside of priority sage-grouse habitat to those inside it. Use of native plant seeds for ES&R seedings is required based on availability, adaptation (site potential), and probability of success. Where probability of success or native seed availability is low, non-native seeds may be used as long as they meet sage-grouse habitat conservation objectives. Reestablishment of appropriate sagebrush species/subspecies and important understory plants, relative to site potential, shall be the highest priority for rehabilitation efforts.
- Design post ES&R management to ensure long term persistence of seeded or pre-burn native plants. This may require temporary or long-term changes in livestock grazing, wild horse and burro, and travel management, etc., to achieve and maintain the desired condition of ES&R projects to benefit sage-grouse.

- Consider potential changes in climate when proposing post-fire seedings using native plants. Consider seed collections from the warmer component within a species' current range for selection of native seed.

The ability to protect areas from recurring wildfire is crucial for maintaining a reestablished sagebrush component (Davies et al. 2011). Successful fire rehabilitation seeding can contribute to this goal by changing the fuels from highly flammable annual grasses with high fuel continuity, into less-fire-prone perennial bunch grasses that stay greener longer and provide less fuel continuity (Davies et al. 2011). A recent study notes the difficulty of restoring sagebrush following fire, and study results argue for maintaining and protecting existing expanses of intact, high quality habitat, and only secondarily trying to fix what is broken (Arkle et al. 2014).

### 3.5. Summary

Elements of wildfire that can be influenced by management actions include fuels management, human-caused ignitions, and fire suppression response. Effective conservation measures for sage-grouse need to address each of these three elements. Although post-fire treatment to reestablish vegetation is also important, the scope of this report is more about modifying wildfire behavior and responding to it than how to rehabilitate burned areas.

- **Fuels management treatments.** In order to affect wildfire behavior, fuel treatments alter the amount, type, or distribution of vegetation on the land. Fuel treatments methods include the use of machinery (mechanical treatments), herbicides, prescribed fire, or livestock grazing. Fuel treatments in sagebrush ecosystems must be carefully planned to avoid unintended consequences. Prescribed fire alone is unlikely to restore sagebrush sites to conditions that promote sage-grouse conservation. Livestock grazing is a fuels treatment because livestock consume vegetation that otherwise could be fuel for wildfires. There is a lack of information on the effectiveness of grazing as a fuels treatment and on the direct effect of livestock grazing expressed through habitat changes to population-level responses of sage-grouse. If not appropriately managed, livestock grazing can have negative impacts to sagebrush ecosystems and consequently to sage-grouse at local scales. If properly managed under specific conditions grazing can have positive impacts on sagebrush ecosystems, but these situations have not been well documented. Treatments can be designed at a landscape scale across a relatively large area with a goal of either reducing the adverse effects of wildfire across sagebrush ecosystems on which sage-grouse depend or restoring sagebrush ecosystems to conditions more favorable for sage-grouse. A contributing factor to wildfire behavior is the type of vegetation on the land, especially cheatgrass because it contributes to the adverse effects of wildfire by invasion onto or dominance of a site after a wildfire. Fuel treatments can also be implemented intensively in a linear fashion to create fuel breaks, often along ridge tops or roadways to slow or stop wildfire spread and aid in wildfire suppression efforts.

- **Human-caused ignitions.** Wildfires are started either by lightning or humans and their activities. Between 1980 and 2003, approximately 50% of wildfires on federal lands in Idaho in sage-grouse habitat were the result of humans or their activities, creating significant problems in sage-grouse habitat. Idaho's 2006 sage-grouse conservation plan proposed increased public outreach and education and

increased enforcement of restrictions and closures as conservation measures to address human-caused ignition, but evaluation of these proposed measures is lacking.

- **Fire detection & suppression response.** A tenet of fire operations is to get to the fire as early as possible and suppress it as soon as possible in order to keep the area burned as small as possible. A basic principle, then, is to have the right resources in the right places at the right times.

Early detection of fire ignitions is crucial for ensuring rapid suppression response. Fire detection historically has relied on human observation, but remote and automated fire detection technologies are developing rapidly and could perhaps reduce initial fire suppression activities to a matter of an hour or two instead of a day or two. Fire suppression in priority sage-grouse habitat should be a high priority, immediately following life and property protection. Suppression responses should be guided by published best management practices.

Rapid wildfire suppression response is facilitated by having personnel and equipment readily available. Until recently, ranchers and other private citizens were not allowed to fight fire and their efforts to try to control wildfires presented safety concerns for fire managers. In 2012, the Mountain Home Rangeland Fire Protection Association (RFPA) was created through a memorandum of understanding between a group of ranchers and the Idaho Department of Lands (IDL) with cooperation of the BLM. The BLM provides firefighter training, while the IDL documents and tracks firefighter training records and facilitates equipment acquisition. Ranchers provide initial attack using their own equipment along with equipment acquired through the Federal Excess Personal Property program. In 2013 the Idaho Legislature formalized the creation of RFPAs and appropriated \$400,000 to help them get established. Currently about 170 ranchers have put together four different RFPAs that in total cover more than 3.6 million acres. Other ranchers are talking about starting new associations in six more areas.

- **Post-fire treatment.** The treatment of burned areas after wildfires has many objectives, one of which is preventing reestablishment or invasion of cheatgrass and other unwanted annual grasses. This would help reduce the adverse effects of future wildfires and promote reestablishment of sagebrush that provides sage-grouse habitat. Protecting areas from recurring wildfire is crucial to maintaining a reestablished sagebrush component.





#### 4. Creating Policies to Address the Wildfire/Invasives Threat to Habitat

The decision by the USFWS (2010a) to add sage-grouse to the ESA candidate list assumes that unless the threat factors—habitat loss and fragmentation (factor A in the ESA) and inadequacy of regulatory mechanisms (factor D)—are mitigated, sage-grouse will eventually be listed as the processes to list other higher-priority species are completed. Since that March 2010 decision, federal, state, and local governments and private parties have stepped up conservation efforts to, at the very least, avoid moving sage-grouse from a Listing Priority Number 8 into a higher priority listing category or, as many hope, improve the status of the species so that listing is no longer warranted and the sage-grouse can be removed from the “warranted-but-precluded” candidate list.

In this section, we describe in section **4.1. Conservation Measures** undertaken since March 2010 for addressing the wildfire/invasives threat and its effects on sage-grouse habitat loss and fragmentation. We then discuss in section **4.2. Conservation Management Agreements (CMAs)**, tools that the USFWS has used to further conservation for other species. We ask in section **4.3. What are ESA regulatory mechanisms, and how is their adequacy determined?** This is the meat of our policy analysis.

The ESA is designed to ensure that the threats posing risk of extinction are addressed with “adequate concern and conservation.” Implicit in this stated purpose is analysis of such risks. All management decisions involve risk, including the decision to do nothing. This suggests that sage-grouse conservation efforts must assess all risks, including passive management. Section **4.4. Risk Analysis Framework** approaches sage-grouse habitat conservation first by considering what could go wrong (risk assessment) and then what to do about it (risk management). Because risk by definition is a probability of a future event and its adverse effects, such estimates are highly uncertain. In section **4.5. Adaptive Management** we review what resource management science has developed for dealing with uncertainty, and how this might be applied in sage-grouse habitat conservation for addressing the wildfire/invasives threat. In the end, it is up to the USFWS and federal courts, not university policy analysts, to determine whether sage-grouse conservation would be accomplished better by having the USFWS take a dominant role, as an ESA listing would dictate, or have the USFWS continue to work cooperatively with the many partners who are trying to demonstrate that sage-grouse can be conserved without the severe economic disruptions foreseen by many people should sage-grouse conservation be governed under the strict prohibitions of the ESA.

##### 4.1. Conservation Measures

Since March 2010, when the USFWS found that habitat loss and fragmentation and inadequate regulatory mechanisms were factors that caused sage-grouse to be added to the list of candidate species for ESA protections, government agencies and private groups have been working towards ameliorating those deficiencies by creating new policies and plans, or what we can call conservation measures. The following list of conservation measures is not intended to be a complete catalog of such efforts, but exemplifies the actions that have been undertaken by federal and state agencies.

**4.1.1. Federal Land Management Agency Actions (BLM and USFS).** Actions of federal land management agencies were reviewed earlier in this report (section **2.2. Other Federal Laws and Policies**). In August 2011, the BLM chartered the Greater Sage-Grouse National Planning Strategy (BLM 2011a). In December

2011, the National Technical Team of the national strategy planning team produced *A Report on National Greater Sage-Grouse Conservation Measures* (Morales et al. 2011), whose recommendations have been presented throughout this report. Also in December 2011, the BLM instructed its field offices to use the National Technical Team's recommendations both in their current management actions (IM 2012-043; see BLM 2011a; see **Appendix G**) and in planning (IM 2012-44; BLM 2011b). The BLM also has worked to improve identification of priority habitat areas within Idaho (Makela & Major 2012b).

Also in December 2011, the BLM and USFS announced their intent to revise RMPs and LRMPs, respectively, for their lands within the range of sage-grouse (BLM 2011c). In October 2013, the agencies released the *Idaho and Southwestern Montana Sage-Grouse Draft Land Use Plan Amendment and Environmental Impact Statement* (draft EIS) that will cover the revision of about 30 land use plans in the region (see BLM & USFS 2013).

Although each action alternative in the draft EIS emphasizes a slightly different mix of resources and resource uses, all five action alternatives strive to achieve the following goals:

- Conserve, enhance, and restore the sagebrush ecosystem upon which sage-grouse populations depend in an effort to maintain and/or increase their abundance and distribution, in cooperation with other conservation partners.
- Protect sage-grouse habitats from disturbances that will reduce distributions or abundance of sage-grouse (BLM & USFS 2013).

Under all alternatives the BLM and USFS will continue to implement a vegetation management program that meets the overarching direction: "through an interdisciplinary collaborative process, to plan and implement a set of actions that improve biological diversity and ecosystem function and promote and maintain native plant communities that are resilient to disturbance and invasive species" (BLM & USFS 2013). The agencies will focus on restoring sites that will most benefit from treatments, select the appropriate treatments to improve the likelihood of restoration success, monitor treatments to better understand what treatments are successful or unsuccessful, and convey information about treatment activities to agency staffs and the public (BLM & USFS 2013).

When developing mitigation and prevention plans for activities, the BLM and USFS will continue to address conditions that enhance invasive species abundance, including excessive disturbance associated with road maintenance, poor grazing management, and high levels of recreational use. The BLM will also continue to participate in the National Early Warning and Rapid Response System for Invasive Species, which has a goal of minimizing establishment and spread of new invasive species through a coordinated framework of public and private processes (BLM & USFS 2013).

With respect to fire and fuels management, all alternatives in the draft EIS follow the written directions contained in the BLM's Instruction Memorandum 2013-128, *Sage-Grouse Conservation in Fire Operations and Fuels Management* (BLM & USFS 2013; see **Appendices C, E, and F** herein). Also under all alternatives, the two agencies will continue to consider and employ both implementation monitoring and effectiveness monitoring of vegetation treatments. Each alternative also includes a monitoring strategy as well as elements that promote adaptive management (BLM & USFS 2013).

**4.1.2. Natural Resources Conservation Service (NRCS) Sage Grouse Initiative.** The Natural Resources Conservation Service (NRCS) in the U.S. Department of Agriculture assists private rural landowners,

including ranchers, with programs that conserve soil, water, air, wildlife, and other natural resources. Participation in all NRCS programs is voluntary.

Immediately prior to the March 2010 decision by the USFWS to add sage-grouse to the list of candidate species for ESA protections, the NRCS entered into a partnership agreement with the USFWS to address sage-grouse conservation (USFWS 2010b). The objectives of the agreement included: ensuring that NRCS programs and conservation practices helped ameliorate the threats and provided significant benefits to sage-grouse and its habitat; providing certainty that cooperators who voluntarily implemented NRCS-sponsored conservation practices that favor sage-grouse would be in compliance with the ESA if sage-grouse were listed; exploring innovative approaches to conservation, restoration, and enhancement at multiple scales; promoting voluntary, proactive, and incentive-based approaches to systematically focus resources; and expediting on-the-ground conservation outcomes (USFWS 2010b).

At the same time in 2010, the NRCS launched the Sage Grouse Initiative (SGI; see NRCS 2014). The SGI uses a targeted, science-based landscape approach to delivering conservation practices that produce positive impacts on sage-grouse populations. The SGI is funded via dedicated conservation program funds in the Federal Agriculture Reform and Risk Management Act of 2013, more commonly known as the farm bill that comes up for reauthorization every five years or so. The SGI prioritizes large and intact priority habitat areas. SGI funds have been used in Idaho to remove encroaching juniper for priority sage-grouse habitat on private lands.

The NRCS also sought to formally confer with the USFWS, as required by the ESA (Section 7) to make sure that the agency's actions avoided "jeopardy" to the continued existence of sage-grouse. The result was a range-wide conference report in August 2010 (USFWS 2010b). The USFWS and NRCS worked in collaboration to develop a list of 40 specific conservation practice standards that if implemented will result in ameliorating, minimizing, or eliminating potential adverse effects to sage-grouse and its habitat. The standards address such practices as prescribed grazing, habitat restoration, brush management, fire breaks, weed control, and planting. Examples of the conservation practice standards related to wildfire, fuels, and invasive grasses are listed in **Appendix H**.

**4.1.3. Regulatory Agency Guidance (USFWS).** In 2012, the USFWS asked states within the range of sage-grouse to collaboratively develop range-wide conservation objectives for the species both to inform the upcoming 2015 listing decision under ESA and to inform the collective conservation efforts of the many partners working to conserve the species. The USFWS convened a Conservation Objectives Team made up of federal and state representatives, and in 2013 it produced the *Greater Sage-grouse (Centrocercus urophasianus) Conservation Objectives: Final Report* (USFWS 2013b). The general conservation objectives outlined in the plan were:

1. Stop population decline and habitat loss.
2. Implement targeted habitat management and restoration.
3. Develop and implement state and federal sage-grouse conservation strategies and associated incentive-based conservation actions and regulatory mechanisms.
4. Develop and implement proactive, voluntary conservation actions.
5. Develop and implement monitoring plans to track the success of state and federal conservation strategies and voluntary conservation actions.
6. Prioritize, fund, and implement research to address existing uncertainties.

Specific conservation objectives, measures, and options related to wildfire and invasive species from the report are outlined in **Appendix H**.

In a cover letter to the report, the USFWS Director noted that the highest level objective identified in the report was to minimize habitat threats to the species so as to meet the population objective of the 2006 Western Association of Fish and Wildlife Agencies' (WAFWA) *Greater Sage-grouse Comprehensive Conservation Strategy* (Stiver et al. 2006). He then stated: "The Service interprets this recommendation to mean that actions and measures should be put in place now that will eventually arrest what has been a continuing declining trend." His comment suggests that current or immediately foreseeable implementation of conservation actions will be an important part of the determination by the USFWS whether adequate regulatory mechanisms for sage-grouse conservation exist in 2015.

In the same letter, the USFWS Director also stated: "For some threats, the team identified examples of actions that could be used to help attain the conservation objectives, and they are termed 'conservation options.' The Service interprets these 'options' as suggestions and examples only, not prescriptive or mandatory actions" (USFWS 2013b). Whether the federal land management agencies, states, and private parties that have worked to develop sage-grouse conservation plans have developed an appropriate mix of regulatory and non-regulatory mechanisms to protect sage-grouse and its habitats to satisfy USFWS remains to be seen.

**4.1.4. State Actions.** Idaho has been working on sage-grouse conservation mechanisms since the early 1980s (see Autenrieth 1981, pp. 105-123). More recently, the Idaho Department of Fish and Game (IDFG) completed a sage-grouse management plan (IDFG 1997) which led to the creation of local working groups (LWGs) to address sage-grouse conservation. In 2003, Idaho formed a statewide Sage-grouse Advisory Committee (IDFG 2013). Twelve LWGs and the Sage-grouse Advisory Committee continue to work on sage-grouse conservation measures in the state (IDFG 2013).

The 1997 management plan was replaced by the 2006 *Conservation Plan for the Greater Sage-grouse in Idaho* (IDFG 2006, revised in October 2009 with implementation milestones). The conservation measures addressing wildfire and annual grassland threats in the 2006 plan are outlined in **Appendix D**. In its 2010 listing decision the USFWS expressed doubts about the scale of state conservation efforts and the certainty of their implementation (USFWS 2010a).

In December 2011, the U.S. Secretary of the Interior invited officials in the 11 states where sage-grouse occur to develop state-specific regulatory mechanisms for sage-grouse conservation. In March 2012, in response to the Secretary's offer, Idaho's governor formed the Governor's Sage-Grouse Task Force (see section **1.2 Idaho Goal**). The task force produced the *Federal Alternative of Governor C.L. "Butch" Otter for Greater Sage-Grouse Management in Idaho* (Otter 2012). The plan focuses on how the state believes the federal agencies (BLM and USFS) should address sage-grouse conservation in their land management plans. Governor Otter's alternative has been incorporated into the BLM and USFS draft plan for updating land use plans as Alternative E (BLM & USFS 2013).

The management objectives of the governor's alternative are to (1) implement regulatory mechanisms and (2) stabilize habitats and populations (Otter 2012). Adaptive regulatory triggers are included that would provide a regulatory backstop to prevent further loss and stabilize sage-grouse habitats and populations where a demonstrated significant loss occurred over time or unexpectedly. Governor Otter's alternative also includes an emergency wildfire clause that directs immediate response

following a significant loss of sage-grouse habitat due to catastrophic wildfire. It proposes regulatory language for BLM- and USFS-administered lands, including management actions to address the wildfire and invasive annual grass threats to sage-grouse habitat (see **Appendix A**).

Idaho, of course, is not the only state working to design and implement sage-grouse conservation measures. The Western Governors' Association has been cataloging such efforts in its member states for several years (see WGA 2014). Idaho efforts identified by the WGA are provided in **Appendix I**.

#### **4.2. Conservation Management Agreements (CMAs)**

Although most sage-grouse habitat in Idaho is on lands managed by BLM, lands managed by other agencies and privately-owned lands also provide significant habitat (see **Table 1** on page 4). Conservation measures for the protection of sage-grouse will need to encompass management actions by many types of landowners. Conservation management agreements (CMAs) provide opportunities for landowners and managers of all types to formally commit to managing their lands for the benefit of sage-grouse.

**4.2.1. What is a Conservation Management Agreement (CMA)?** A CMA is a general class of management agreements that can be used to prevent a species from listing, as well as used to facilitate delisting and to promote conservation actions. According to Bocetti et al. (2012), a CMA has at least four general elements:

1. The agreement must have a conservation partnership that is capable of carrying out the necessary management actions for the foreseeable future. The partners could be from a federal, state, tribal, or local government agency, a non-governmental conservation organization, or an entity created specifically to provide the conservation management activities required by a species. The partners must have legal authority to implement the management plan. Many potential conservation partners have a broader range of authority than the federal agencies charged with implementing the ESA. Federal land-managing agencies such as the USFS, BLM, and the U.S. Department of Defense, for example, have the authority to control land uses to protect landscapes and species. State and local governments have the power to zone land uses and to protect plant and animal species located on private property. Conservation landowners have the powers that society gives all landowners to use their land and to exclude others.
2. The agreement must include a conservation management plan based upon management actions that have biologically recovered or will recover the species' population. For example, tying a CMA to a recovery plan will insure continuation of management actions that have demonstrated conservation benefits. A conservation plan must be designed to operate at the appropriate conservation scale. The plan must also include monitoring and research components and provide for periodic reviews of the effectiveness of management actions.
3. Sufficient financial resources must be available to maintain required conservation actions. One potential model is the Habitat Conservation Planning (HCP) management process. For example, the San Bruno Mountain Habitat Conservation Plan, the first HCP, created a permanent institutional structure to manage the habitat within the HCP area and established an endowment to ensure funding.
4. An agreement must be legally enforceable. A CMA must either be an enforceable contract or an

interest in the lands (such as a conservation easement) that are the habitat of the conservation-reliant species. Given the laws on contracting with the federal government, this element may present the thorniest legal problems, but they are surmountable through patient crafting of appropriate memoranda of agreement (Bocetti et al. 2012).

Bocetti et al. (2012) note that the complexity of conservation management mechanisms is likely to vary depending on the species and the management organizations involved. A simple CMA may involve species endemic to the property of a single land manager. Species that occur over a matrix of public and private lands and multiple political jurisdictions, such as sage-grouse in Idaho, will present greater challenges. The size of the management area and the degree of conservation reliance the species has will also affect the complexity of the CMA. Because the sage-grouse is a conservation-reliant species, the scale of its habitat is vast, and there are many landowners, a sage-grouse CMA would necessarily have a high degree of complexity.

Bocetti et al. (2012) also note that an important component of CMAs is public education because it can minimize public opposition to recovery strategies such as habitat management. Public education is a very important aspect of effective management because it increases understanding of why the policies exist and what benefits will result. Public outreach must be an active component of management and not just a one-time affair. Keeping the public informed of the results of management and changes to strategies is important if a CMA is going to have long-term public support.

**4.2.2. Can a CMA be used instead of an ESA listing?** Use of CMAs to prevent ESA listing or to continue to manage threatened species after delisting is relatively new, and there are not that many examples with track records, but we will briefly discuss two examples of how CMAs have been used for species recovery: Robbin's cinquefoil (*Potentilla robbinsiana*) and Kirtland's warbler (*Setophaga kirtlandii*). Both of these species were under CMAs after being delisted under ESA in order to prevent relisting, as is the case with most CMAs. However, as noted above, CMAs can be used to prevent an initial listing, as would be the case with a sage-grouse CMA.

Robbin's cinquefoil, a dwarf member of the rose family found along the Appalachian Trail, is a relatively simple example of the use of CMAs to recover a species. It occurs only on USFS land and thus did not require a substantial institutional mechanism (Goble 2009). The main threat to the species was trampling and habitat destruction caused by Appalachian Trail users. The threat was identified and strategies to reduce or eliminate the threat were available, so a CMA could be established. To manage the threat, the USFWS, USFS, and a conservation organization (the Appalachian Mountain Club) became parties to a CMA in order to monitor and manage the threats to the species (Bocetti et al. 2012). As a result of the CMA, the management strategy consisted of rerouting the trail, constructing a rock wall to keep humans from trampling certain areas, and naturalists from USFS and the trail club monitoring threatened sites and educating trail users about conservation efforts in order to gain compliance (Bocetti et al. 2012). These efforts were underpinned by the legal authority of the USFS to manage the species' habitat.

Management of Kirtland's warbler has been more complex than of Robin's cinquefoil due to the number of and sources of threats, and the number of landowners affected by any potential management. Kirtland's warbler is a ground-nesting migratory bird that winters in the Bahamas, but returns to large, dense stands of jack pine (*Pinus banksiana*) in Michigan (Byelich et al. 1985). The

breeding habitat in Michigan was historically developed by natural disturbance, i.e., wildfires, that occurred approximately every 40 years (Zimmerman 1956, Cleland et al. 2004). Anthropogenic alterations to the landscape, including fire suppression and fragmentation due to development, have reduced the availability of this specialized habitat (Byelich et al. 1985, Cleland et al. 2004). Human alterations also invited an invasion of the warbler's habitat by a nest parasite, the brown-headed cowbird (*Molothrus ater*), to which the ground-nesting warbler is vulnerable (Byelich et al. 1985).

Management of the warbler's habitat is the responsibility of several state and federal agencies. These agencies engaged in a CMA that featured the replanting of jack pine to increase stand density and left patchy openings containing shrubby understory species, restoring the area to be more like the preferred warbler habitat (Bocetti et al. 2012). A yearly census of singing male warblers is an essential monitoring tool, as well as visual inspection of the habitat and monitoring cowbird populations. These spatial and temporal observations provide consistent and reliable longitudinal information on how well management is leading to recovery (Probst et al. 2005). This information has been used to adjust management strategies (i.e., adaptive management; see section **4.5. Adaptive Management**) and has improved overall efficacy of management as more understanding of how the birds use the habitat has led to better management policies (Wunderle et al. 2010).

**4.2.3. Designing a CMA for Sage-grouse in Idaho.** The USFWS has developed two types of CMAs for species that are candidates for ESA listing: a Candidate Conservation Agreement (CCA) and a Candidate Conservation Agreement with Assurances (CCAA). Both CCAs and CCAAs are formal, voluntary agreements between the USFWS and one or more parties to address the conservation needs of one or more candidate species. Participants voluntarily commit to implement specific actions designed to remove or reduce threats to the candidate species, so that listing may not be necessary. The difference between a CCA and CCAA is that a CCAA provides participating *non-federal* landowners with a permit containing assurances that if they engage in certain conservation actions for the species included in the agreement, they will not be required to implement additional conservation measures beyond those in the CCAA. A CCAA also assures landowners that additional land, water, or resource use limitations will not be imposed on them if the species becomes listed in the future. A CCA contains no such permits or assurances (USFWS 2011).

If a CMA were to be created for sage-grouse in Idaho, it would make sense for it to be designed as a CCAA, so that non-federal landowners, who manage significant amounts of sage-grouse habitat (see **Table 1**), receive some assurances that additional actions on their parts will be unnecessary, if sage-grouse is listed under ESA. The USFWS recommends the following components of CCAs and CCAAs:

- A description of the scope and goals/objectives of the agreement, and its duration;
- A description of the lands covered;
- Appropriate biological information about the species;
- A description of known and anticipated threats to the species;
- A description of the specific conservation measures and efforts to be implemented under the agreement to address the identified threats, who will implement them, and an implementation schedule;
- A description of anticipated effects, both adverse and beneficial, on the covered species;

- A monitoring plan describing procedures that will be used to monitor and report progress in the implementation and the effectiveness of the specific conservation efforts called for in the agreement;
- An explanation of how adaptive management will be used to adjust activities based on new information, unanticipated changes in conditions, or the results of monitoring; and
- Any other information needed to ensure that the aspects of the plan applicable to non-federal lands will qualify as a CCAA (USFWS 2008).

Idaho has an example of a CMA that involves sage-grouse habitat. A CCAA for a portion of the range of sage-grouse in Idaho—the West Central Planning Area—was entered into by the IDFG, NRCS, and USFWS in February 2010, shortly before the warranted-but-precluded range-wide listing decision by the USFWS for sage-grouse (Northwest Natural Resource Group 2010). The agreement was put together in coordination with the West Central Sage-grouse LWG and covers portions of Adams, Gem, Payette, and Washington counties. In relation to wildfire and invasive species, the CCAA proposes conservation measures outlined in **Appendix K**. We do not know to what extent private landowners signed onto this voluntary agreement. We do know that for two years the West Central Sage-Grouse LWG listed the CCAA in its 2011 and 2012 annual report as an ongoing plan, but without any discussion. There is no mention of the CCAA in the 2013 annual report.

If a CMA for sage-grouse throughout its range in Idaho were created, it likely would be the most complicated CMA to date. The vast amount of land that would be designated as priority habitat exceeds ten million acres and the landholders include many public and private entities (**Table 1** on page 4). The USFWS would likely also be involved, as it will determine if management plans will successfully mitigate threats and improve sage-grouse habitat and populations.

State agencies likely to be involved in management decisions and implementation are the IDFG, IDL, Idaho Governor's Office of Species Conservation, and the Idaho Department of Agriculture. County and municipal governments would also be part of the management process. Additionally, other government and state agencies may want be involved, such as NRCS, and various private land trusts, who would conceivably work with ranchers and other private landowners on implementing management actions. Non-governmental organizations (NGOs), whether representing conservation or industry interests, will also need a place at the table, as will members of the public. Furthermore, LWGs are already in place. They are made up of local officials and citizens throughout the state who have been identifying threats and ways to reduce them relevant to their geographical area. Getting all stakeholders to develop partnerships and adhere to a CMA would be a time-consuming aspect of the project, as is any natural resources management collaboration effort. Having all landholders buy into management efforts and subsequent enforcement of agreements will be crucial to an effective sage-grouse CMA.

The main goal of a sage-grouse CMA should be to prevent habitat loss resulting from these threats by developing adequate regulatory mechanisms. Two of the top threats to sage-grouse in Idaho are complementary: fire and invasive species. As noted in section **3.1. Fuels Management**, most sagebrush species are not well-adapted to fire or other disturbances, and it may take decades for a site to recover from disturbance, if it recovers at all (Baker 2011, Miller et al. 2011, Murphy et al. 2011, Pyke 2011). Before sagebrush can grow back, land often is taken over by invasive species such as cheatgrass, making it difficult for sagebrush to become reestablished. Because the grass-fire cycle varies by area, managers



must understand plant composition and fuel characteristics on a site to effectively match treatments to conditions, and must plan carefully to avoid unintended consequences.

Landscape-scale fuel treatments and strategically placed fuel breaks along selected roads are designed to modify wildfire behavior and its subsequent effects. Suppression response is the key to limiting the size of wildfires. An effective CMA for sage-grouse needs to address ignition, fuels and suppression response and develop regulatory mechanisms to ensure that appropriate activities take place that will reduce the threat of wildfire to sage-grouse habitat. The various owners of sage-grouse habitat will need to come to an agreement as to how these suppression efforts will be undertaken. For example, roads, although they fragment habitat, can act as firebreaks if the area around roads is properly maintained so fire cannot easily jump from one side of the road to the other. However, roads are also sources of human-caused fire (Connelly et al. 2004). Redundant and unauthorized roads should be eliminated, and traffic should be restricted during times of high fire risk and when sage-grouse are breeding, rearing and migrating. The recently developed Idaho Fire Restrictions Plan includes road closures as a tactic to reduce wildfire risks (BLM et al. 2013).

These recommendations for fire suppression, fuel treatments, and road closures must be agreed on by all parties involved. How suppression will work and who will respond need to be determined in the CMA. Property owners could potentially become certified in rangeland firefighting, essentially becoming “first responders” to fire on their land (see section **3.3.3. Rangeland Fire Protection Associations**).

Adequate funding must be considered when setting up a CMA. Potential funding sources are governmental organizations, industry, private landholders and non-governmental organizations such as land trusts. Finding sources of funding needs to be a top priority for a sage-grouse CMA. This funding also should not be dependent on following arbitrary rules and allow managers the flexibility to use the best available science, as called for in the ESA.

Finally, any sage-grouse CMAs must be enforceable. The conservation plan will have to set out the roles and responsibilities of each partner. All partners in a CMA would sign binding Memoranda of Agreement to implement the management plan, and there would be oversight and enforcement of policies and procedures laid out in a CMA. Without adequate enforcement of policies in a CMA, there can be no assurance that partners will follow through with their agreement to act in accordance with the management plan.

#### **4.3. What are ESA Regulatory Mechanisms, and How is Their Adequacy Determined?**

As mentioned in previous sections, federal land management agencies, the State of Idaho, and private landowners have all been working on plans, programs, and other policies that address the conservation of sage-grouse and its habitat. An overarching question remains: Will these efforts be seen as sufficient by the USFWS, and ultimately the courts, to find that the “inadequacy of existing regulatory mechanisms” is no longer a threat to sage-grouse?

The first issue to address is whether or not RMPs, LRMPs, CMAs, and state conservation plans are “regulatory mechanisms” in the eyes of the law. The issue appears to be somewhat unsettled in the courts. In 2004, in *Norton v. Southern Utah Wilderness Alliance* (542 U.S. 55), the U.S. Supreme Court concluded that proposed agency actions in BLM’s RMPs are not enforceable (“this, that, or the other action is not a binding commitment”). This suggests that at least some conservation measures in RMPs

are not regulatory mechanisms. However, subsequently in 2011, in *Greater Yellowstone Coalition v. Servheen* (665 F.3d 1015), the Ninth Circuit Court of Appeals ruled that habitat standards for grizzly bear delisting that were incorporated into USFS LRMPs were legally enforceable. This suggests that some conservation measures incorporated into LRMPs are regulatory mechanisms. The enforceability of measures in land use plans may come down to whether the plans require the agency to take discrete and specific actions (Erickson 2012, Morales et al. 2011).

The *Servheen* decision is also relevant and interesting because it directly addresses ESA listing factors. The court had the opportunity to address whether or not a federal interagency conservation strategy for grizzly bear in its entirety and its associated state conservation plans themselves could be considered regulatory mechanisms. Instead, the court dodged the question, ruling that there were sufficient components within the strategy and plans that were regulatory to meet the adequate regulatory mechanisms requirement.

The issue of whether or not CMAs or other agreements that are voluntary in nature can be considered regulatory mechanisms also is unsettled, as is the issue of how long agreements or plans need to be in effect in order to be considered by the USFWS as it analyzes existing regulatory mechanisms. Federal district courts around the country have produced contradictory decisions (see Erickson 2012).

The USFWS has a policy for evaluating conservation efforts that have not yet been implemented or have not yet demonstrated effectiveness when making listing decisions under ESA (USFWS 2003). In determining whether a formalized conservation effort contributes to forming a basis for not listing a species, two factors are key in the evaluation: (1) for those efforts yet to be implemented, the certainty that the conservation effort will be implemented and (2) for those efforts that have not yet demonstrated effectiveness, the certainty that the conservation effort will be effective. Because the certainty of implementation and effectiveness of formalized conservation efforts may vary, the USFWS evaluates each effort individually using the following criteria to direct its analysis:

- A. The certainty that the conservation effort will be implemented:
  1. The conservation effort, the party(ies) to the agreement or plan that will implement the effort, and the staffing, funding level, funding source, and other resources necessary to implement the effort are identified.
  2. The legal authority of the party(ies) to the agreement or plan to implement the formalized conservation effort, and the commitment to proceed with the conservation effort are described.
  3. The legal procedural requirements (e.g. environmental review) necessary to implement the effort are described, and information is provided indicating that fulfillment of these requirements does not preclude commitment to the effort.
  4. Authorizations (e.g., permits, landowner permission) necessary to implement the conservation effort are identified, and a high level of certainty is provided that the party(ies) to the agreement or plan that will implement the effort will obtain these authorizations.
  5. The type and level of voluntary participation (e.g., number of landowners allowing entry to their land, or number of participants agreeing to change timber management practices and acreage involved) necessary to implement the conservation effort is identified, and a high

- level of certainty is provided that the party(ies) to the agreement or plan that will implement the conservation effort will obtain that level of voluntary participation (e.g., an explanation of how incentives to be provided will result in the necessary level of voluntary participation).
6. Regulatory mechanisms (e.g., laws, regulations, ordinances) necessary to implement the conservation effort are in place.
  7. A high level of certainty is provided that the party(ies) to the agreement or plan that will implement the conservation effort will obtain the necessary funding.
  8. An implementation schedule (including incremental completion dates) for the conservation effort is provided.
  9. The conservation agreement or plan that includes the conservation effort is approved by all parties to the agreement or plan.

B. The certainty that the conservation effort will be effective:

1. The nature and extent of threats being addressed by the conservation effort are described, and how the conservation effort reduces the threats is described.
2. Explicit incremental objectives for the conservation effort and dates for achieving them are stated.
3. The steps necessary to implement the conservation effort are identified in detail.
4. Quantifiable, scientifically valid parameters that will demonstrate achievement of objectives, and standards for these parameters by which progress will be measured, are identified.
5. Provisions for monitoring and reporting progress on implementation (based on compliance with the implementation schedule) and effectiveness (based on evaluation of quantifiable parameters) of the conservation effort are provided.
6. Principles of adaptive management are incorporated (USFWS 2003).

The above criteria are not comprehensive to the evaluation. To consider that a formalized conservation effort(s) contributes to forming a basis for not listing a species, the USFWS must find that the conservation effort is **sufficiently certain** to be implemented and effective so as to have contributed to the elimination or adequate reduction of one or more threats to the species identified through the ESA section 4 analysis (i.e., the listing process; USFWS 2003). Sage-grouse conservation is fraught with uncertainties posed by the wildfire/invasives threat. To avoid an ESA listing, these risks must not only be managed, but also incorporated into regulatory mechanisms that will ensure management actions that ensure conservation are in place. Risk analysis and adaptive management are necessary.

#### 4.4. Risk Analysis Framework

Land and resource management decisions always involve risk, including decisions not to take action. Risk gives meaning to the things, forces, or circumstances that pose danger to people or what they value (NRC 1996). Risk is a combined statement of the probability that something of value will be damaged and some measure of the damage's adverse effect. Wildfires burning in the uncharacteristic fuel conditions now typical throughout the western U.S. can damage ecosystems and adversely affect environmental conditions.

Risk analysis is usually considered to be the process of assessing, characterizing, communicating, and managing risk (e.g., Haines 2004, NRC 1996). Effective risk analysis is integrated into decision-making

processes, not treated as a gratuitous add-on task (Haimes 2004). Risk assessment asks: What can go wrong, and what are the consequences? Risk management asks what can be done, and what are the impacts on future options? Risks cannot be managed until they have been assessed, and some form of model is necessary for that (Haimes 2004). The U.S. Environmental Protection Agency's framework for ecological risk assessment (EPA 1998) provides a model for federal land and resource management (Fairbrother & Turnley 2005). That this model was developed by a federal regulatory agency could be viewed as both a strength and a weakness (O'Laughlin 2010).

If not properly defined, risk terminology can be a barrier to effective communications among agencies and stakeholders (O'Laughlin 2010). For the purposes of this report, we consider wildfire and its effects as an environmental *stressor*, and the risk assessment *endpoint*, or the value to be protected from the stressor, is sagebrush ecosystems. A hazard or threat is something that poses danger or can cause an adverse effect. "Stressor" is an EPA term that seems to be synonymous with hazard or threat and is any physical, chemical, or biological entity that can induce an adverse response in an ecological risk assessment endpoint. The "endpoint" is an explicit expression of the environmental value that is to be protected, operationally defined by an ecological entity and its attributes (EPA 1998).

Wildfire behavior can be modified by pre-fire fuel treatments, including fuel breaks, thereby reducing risks to firefighters, structures, and ecosystems, but such projects pose their own environmental risks. To support fuels treatment decisions, environmental analysis of alternatives is generally required, including taking no action. How can managers determine whether risks of actively treating fuels are greater than risks posed by no action? The risk-reduction benefits of fuel treatment are often overlooked in decision processes for comparing wildfire effects with and without fuel treatment (O'Laughlin 2010).

The ultimate utility of risk analysis is not necessarily articulating the best policy option, but avoiding extreme events (Haimes 2004). These include species extinction and large-scale, uncharacteristically severe wildfires. Risk analysis is fundamental for supporting endangered species conservation; this includes risks from land use changes as well as risks to species facing a potentially imperiled future (NRC 1995). Despite what seems like overwhelming value-based judgments about adversity and the general lack of data that would be useful to describe stressor-endpoint relationships quantitatively across large landscapes, a risk-based approach to managing habitats for wildlife species is consistent with the population viability analyses (PVAs) used to make judgments about the continued existence of species populations (for a PVA primer see Gerber & González-Suárez 2010).

The assessment of risk is appropriate under numerous federal policies. For example, federal wildfire policy recognizes that sound risk management is a foundation for all fire management activities (USDI & USDA 2011). NEPA, the cornerstone of environmental laws in the U.S., requires that federal agencies analyze the short- and long-term environmental consequences of a range of proposed management alternatives, including no action. The result of the NEPA process is some type of an environmental impact assessment document. According to an EPA scientist, risk assessment integrated into the NEPA process could result in more meaningful environmental impact analyses, thereby providing a more technically sound and robust means for assessing and comparing potential adverse outcomes of proposed management alternatives (Fairbrother & Turnley 2005). Ecological risk assessment in the NEPA process could result in more transparent analysis with regard to large-scale projects and cumulative effects (Klopf et al. 2007).

The USFWS recognizes the need for risk assessment in implementing ESA. For example, in its conference report for the Natural Resources Conservation Service (see section **4.1.2. Natural Resources Conservation Service (NRCS) Sage Grouse Initiative**), the USFWS provides a qualitative assessment of the adverse or potential risks to sage-grouse and its habitat needs from implementation of the conservation practice standards. The USFWS uses a qualitative assessment because there is substantial uncertainty in generating specific numerical metrics because of the complex interaction of many factors, including: inability to accurately measure factors, inability to differentiate sources of risk, sources of risk from lands outside those covered by the Sage Grouse Initiative, and adverse effects that may not be directly attributable to a particular conservation practice. An additional complication is that adverse effects manifest themselves at different scales (USFWS 2010b).

**Appendix L** lists some ideas risk assessors and risk managers should consider when adapting the EPA (1998) *Guidelines for Ecological Risk Assessment* for wildland fire risk management. This approach was developed for fire/fish risk management situations (see O’Laughlin 2005) and can be adapted to fit others. The ideas include a conceptual model diagram that can enhance communications between risk managers, risk assessors, and stakeholders by graphically demonstrating whether the reduction in environmental risk following a wildfire, represented by a change in the vegetation complex, would exceed the implementation risk of pre-emptive fuel treatment. Fuel management programs require repeated treatments, and the conceptual model can be modified to include a series of fuel treatments to maintain desired conditions over the long term. Quantitative models appropriate for a given risk management situation should be used along with whatever data may be available. Deferring decisions until quantitative models and data are available, however, may create additional risk from inaction, thus qualitative approaches may be necessary in the interim.

#### **4.5. Adaptive Management**

The term adaptive management can be defined and applied in a number of ways. In essence, as species begin to respond to management activities, management strategies and short-term goals can be adjusted to changing situations. Some people think of adaptive management as trial and error method; or, as Parma (1998) describes it, adaptive management is managing according to a plan by which decisions are made and subsequently modified as new information about the system is identified and the effects of previous management actions are assessed. Although this description is quite general, beyond generalities there is no consensus on the requirements of an adaptive management process (Doremus 2001). By definition, however, adaptive management requires monitoring (Helms 1998).

Each adaptive management situation depends on developing a plan unique to that situation. Adaptive management can be seen as a flexible strategy to meet a variety of short- and long-term goals. It allows for managers to experiment with different actions and change courses if the desired results are not being achieved. It also allows managers to make effective use of evolving scientific knowledge (Doremus 2001).

The longest-running example of adaptive management is Columbia River fisheries management. Adaptive strategies have been used since the 1980s, following enactment of the Northwest Power Act. The act mandates management of the Columbia River hydropower system not just for energy production, but also for the protection of fish and wildlife. Improving habitat and mobility for salmon

and other fish was the goal of the adaptive management strategies, and those in charge decided to structure their salmon recovery work as scientific experiments. However, it soon became apparent that experimenting with hatcheries and water flows created problems for hydropower production and shipping traffic (Doremus 2001). Adaptive management of the Columbia River system remains an ongoing experiment.

Adaptive management for sage-grouse conservation, like the Columbia River situation, involves vast amounts of habitat and a wide variety of stakeholders. When long-term data is needed and the effects to other resource management opportunities are so great, adaptive management may not be the best strategy. However, if policies are put in place that allow for flexibility, but also have certain constraints that fit within overarching societal goals and limits, then an effective adaptive management approach may be feasible.

Adaptive management of sage-grouse will still be a complex issue, even if a management strategy is conceived. Their primary habitat range is extensive and the landowners are various governmental and non-governmental entities. Getting these entities to work together crafting and implementing a management strategy is crucial for effective sage-grouse conservation, with or without an ESA listing.

According to the BLM & USFS (2013) draft EIS, adaptive management will help ensure that the conservation measures presented in the draft EIS report contain the level of certainty for effectiveness. However, the Western Association of Fish and Wildlife Agencies “gap” report (Mayer et al. 2013) identified several challenges for dealing with the wildfire/invasives threat that are specific to implementing adaptive management:

- There is often conflicting and/or differing policy direction among and between State and Federal agencies that hinder initiating a cohesive and consistent approach to addressing the wildfire/invasive issue. Specific policies within federal agencies often conflict with one another (i.e., from the Washington DC level to the field) and thus hinder effective management. Policies may seem reasonable at a regional or national scale, but are sometimes in conflict to the realities of the field. These conflicts do occur within and between programs. An approach needs to be established that provides for “adaptive” policy development and implementation.
- We face institutional barriers to be able to re-think on-going management and thus be nimble enough to be successful at adaptive management.
- We lack adequate funding and commitment for long-term implementation and effectiveness monitoring of fire rehabilitation, fuels management, invasive species prevention, and restoration treatments.
- Currently, we lack a spatially explicit wildfire/invasive species risk assessment at management scales across the GB relative to sage-grouse habitat to aid in targeting pre-suppression and suppression efforts (Mayer et al. 2013).

#### **4.6. Summary**

In order to prevent an ESA listing of sage-grouse, not only must habitat loss be ameliorated, but adequate regulatory mechanisms to ensure habitat protection must be in place. Recent policy-related actions by federal and state agencies may or may not be sufficient, and will be judged by the USFWS and ultimately the courts. Private landowners are responsible for more than 15% of sage-grouse priority

habitat and they also need to consider sage-grouse needs. Conservation management agreements (CMAs) could be an effective mechanism to assure that end.

Since the USFWS decision in March 2010 to consider sage-grouse as a candidate for the ESA list of protected species, government agencies, non-governmental organizations, and private parties have stepped up conservation efforts to improve sage-grouse habitat and populations so that ESA listing is no longer warranted and the upcoming 2015 decision will remove sage-grouse from the candidate list. Unless the threat factors—habitat loss and fragmentation, and inadequacy of regulatory mechanisms—are ameliorated, sage-grouse will eventually be listed as procedures for other higher-priority species are completed. Threats to habitat and populations, especially wildfires, are fraught with uncertainty. Adaptive management is a way to deal with uncertainty. It relies on monitoring and changing plans if and when unintended results occur. It is a strategy that could be successful for sage-grouse conservation efforts.

All management actions involve risk, and we suggest that sage-grouse conservation measures must not only assess the full range of threats and risks to sage-grouse but also compare risks, including the risk of doing nothing. A risk-based analytical approach is consistent with NEPA requirements that federal agencies must comply with, including environmental impact assessment and public involvement in the process of selecting a management alternative.

**Conservation measures.** Many policy-related efforts and measures for sage-grouse conservation related to wildfire and its effects on habitat fragmentation and encroachment of invasive plants have been undertaken since March 2010. Some of these measures are reviewed herein and summarized as follows.

- **Federal land management agencies (BLM and USFS).** In December 2011, the BLM and USFS announced their intent to revise RMPs and LRMPs, respectively, for their lands within the range of sage-grouse. In October 2013, the agencies released the *Idaho and Southwestern Montana Sage-Grouse Draft Land Use Plan Amendment and Environmental Impact Statement* (draft EIS) that will cover about 30 federal land use plan amendments (LUPAs) in the region (see BLM & USFS 2013). Although each action alternative in the draft EIS emphasizes a slightly different mix of resources and resource uses, all five action alternatives strive to implement a management program that will focus on restoring sites that will most benefit from treatments, select the appropriate treatments to improve the likelihood of restoration success, monitor treatments to better understand what treatments are successful or unsuccessful, and convey information about treatment activities to agency staffs and the public. With respect to fire and fuels management, all alternatives in the draft EIS follow the BLM's written directions for fire operations and fuels management, and will employ implementation monitoring and effectiveness monitoring and other elements that promote adaptive management.

- **NRCS Sage Grouse Initiative.** In 2010 the Natural Resources Conservation Service (NRCS) launched the Sage Grouse Initiative. This U.S. Dept. of Agriculture agency provides funding through farm bill appropriations to remove encroaching juniper from priority sage-grouse habitat, primarily on private lands. The USFWS worked with NRCS to develop a list of conservation practice standards, including prescribed grazing, habitat restoration, brush management, and fire breaks, that if implemented will result in ameliorating, minimizing, or eliminating potential adverse effects to sage-grouse and its habitat.

- **Regulatory agency guidance (USFWS).** In 2012, the USFWS asked states within the range of sage-grouse to collaboratively develop range-wide conservation objectives for the species, both to inform the upcoming 2015 listing decision under ESA and to inform the collective conservation efforts of the many partners working on sage-grouse conservation. The USFWS convened a Conservation Objectives Team of federal and state representatives, and in 2013 it released the *Greater Sage-grouse (Centrocercus urophasianus) Conservation Objectives: Final Report*.

- **State of Idaho initiatives.** Although the state has been working on sage-grouse conservation since the 1990s, creating a plan and spearheading the development of local working groups throughout the range of sage-grouse in the state, in its 2010 listing decision the USFWS expressed doubts about the scale of state conservation efforts and the certainty of their implementation. Clearly new initiatives were needed to avoid an ESA listing. In March 2012, in response to the offer extended by the Secretary of the Interior to all western states, the Governor's Sage-Grouse Task Force was formed. Its efforts underpin the plan called the *Federal Alternative of Governor C.L. "Butch" Otter for Greater Sage-Grouse Management in Idaho* (Otter 2012). Governor Otter's alternative focuses on how the state believes the federal agencies (BLM and USFS) should address sage-grouse conservation in their LUPAs. Governor Otter's alternative was included as an alternative in the BLM and USFS draft LUPA/EIS (see BLM & USFS 2013, Vol. 3, Appendix D; parts of which are provided in **Appendix B** herein). The management objectives in Governor Otter's alternative are to implement regulatory mechanisms and stabilize habitats and populations. Adaptive regulatory triggers are included to provide a regulatory backstop that would prevent further loss and stabilize sage-grouse habitats and populations where a demonstrated significant loss occurred over time or unexpectedly. Governor Otter's alternative also includes an emergency wildfire clause that directs immediate response following a significant loss of sage-grouse habitat from wildfires. It proposes regulatory language for BLM- and USFS-administered lands, including management actions to address the wildfire and invasive annual grass threats to sage-grouse habitat.

**Conservation management agreements (CMAs).** Although the BLM is responsible for 63.5% of the 10 million acres of priority sage-grouse habitat in Idaho, and the USFS another 6.7%, lands managed by other government agencies and privately-owned lands provide 30% of it. To prevent an ESA listing, it is likely that conservation measures for sage-grouse may be necessary across all landownerships, not just the BLM and USFS. Conservation management agreements (CMAs) provide opportunities for landowners to formally commit to managing their lands for the benefit of sage-grouse. A CMA is a general class of management agreements that can be used to prevent a species from listing and has at least four general elements: (1) a conservation partnership capable of carrying out the necessary management actions in the foreseeable future, (2) a conservation management plan based on management actions to improve species' populations, (3) sufficient financial resources, and (4) an enforceable contract or interest in the lands, such as a conservation easement.

- **Idaho CMA.** In February 2010 the IDFG, NRCS, and USFWS crafted a candidate conservation agreement with assurance (CCAA) that includes a portion of the sage-grouse habitat in the West Central Planning Area. If a CMA for sage-grouse throughout its range in Idaho were created, it likely would be the most complicated CMA to date, as sage-grouse priority habitat exceeds 10 million acres and the landowners include many public and private entities. The USFWS would likely also be involved, as it will



determine if management plans will successfully mitigate threats and improve sage-grouse habitat and populations. The main goal of a sage-grouse CMA should be to prevent habitat loss resulting from these threats by developing adequate regulatory mechanisms.

Management activities can partially mitigate the combined effects of wildfire and invasive plant species by landscape-scale fuel treatments and strategic placement of fuel breaks along selected roads. This can modify wildfire behavior and its subsequent effects. Early detection of wildfires and rapid suppression response are keys to limiting the extent and adverse effects of wildfires. An effective CMA for sage-grouse needs to address ignition, fuels management, and suppression response and develop regulatory mechanisms to ensure that appropriate activities take place that will reduce the combined threats of wildfire and invasive species to sage-grouse habitat. The various owners of sage-grouse habitat will need to come to an agreement as to how these suppression efforts will be undertaken. For example, although roads may fragment habitat, they can act as firebreaks if roadside areas are maintained via vegetation management so that fire cannot easily jump from one side of the road to the other during normal weather conditions. These recommendations for fire suppression, fuel treatments, and road closures must be agreed on by all parties involved. How suppression will work and who will respond need to be determined in the CMA. By creating additional Rangeland Fire Protection Associations, private property owners could potentially become certified in rangeland firefighting, essentially becoming “first responders” to fire on their land.

**Regulatory mechanism adequacy.** A key question is whether or not policies being proposed for sage-grouse conservation will be viewed as regulatory mechanisms by the USFWS and the courts; i.e., can federal land use plans, CMAs, and state conservation plans be considered as ESA “regulatory mechanisms”? From a legal standpoint the issue is unsettled, as federal district courts have produced contradictory decisions. Nevertheless, the USFWS has a policy for evaluating conservation efforts that have not yet been implemented or have not yet demonstrated effectiveness when making listing decisions under ESA. In determining whether a formalized conservation effort contributes to forming a basis for not listing a species, two factors are paramount in the evaluation: (1) for those efforts yet to be implemented, the certainty that the conservation effort will be implemented and (2) for those efforts that have not yet demonstrated effectiveness, the certainty that the conservation effort will be effective. Because the certainty of implementation and effectiveness of formalized conservation efforts may vary, the USFWS evaluates each effort individually using a specified set of criteria to direct such analysis.



## 5. Conclusion

Wildfire and its associated causes and effects related to invasive annual grasses are two of the three leading threats to greater sage-grouse populations in Idaho. The third, infrastructure, is beyond the scope of this report, as are the other 11 threats to sage-grouse in Idaho. Without designing and implementing adequate regulatory mechanisms to assure adequate conservation efforts to reduce wildfires and subsequent grass invasions, the greater sage-grouse will be listed under the ESA and become subject to its restrictive protections. Sage-grouse inhabit 15 million acres of land in Idaho, and because the scale of wildfire and unwanted grass invasion in Idaho is very large, thus so must efforts to reduce the threats to sagebrush steppe ecosystems upon which sage-grouse and other species depend. Viewed in the light of wildfire realities, a conservation strategy for sage-grouse conservation can be stated simply with a few principles:

- Protect existing habitat by managing fuels before wildfires (balancing benefits of vegetation removal against loss of sagebrush and potential for invasives), establishing fuel breaks and/or green-stripping, and restricting travel during the fire season.
- Respond quickly to wildfires by using early detection methods and having the right resources in the right places at the right times.
- Prevent invasive species from gaining footholds, which is best done by protecting existing habitat and responding quickly to wildfires.

Wildfires pose risks to sage-grouse habitat, but so do fuels management projects that would reduce the extent and intensity of future wildfires. These two types of risks need to be assessed and compared before management actions to reduce risks to sage-grouse are implemented. This includes risks from doing nothing and accepting whatever vegetation changes and wildfires may occur. The potential for future large-scale problem fires implies that risk analysis—consisting of risk assessment (what can go wrong?) and risk management (what can be done about it?)—should become an integral part of land managers' thought processes as well as their efforts to plan and implement resource management projects on the ground. In essence, resource managers need to manage risks to resources. A risk-based approach promises to benefit sage-grouse and other rangeland resources that are adversely affected by problem fires.

Since the USFWS decided in March 2010 that the status of greater sage-grouse throughout its range was that an ESA listing was warranted-but-precluded by higher priority species, various federal and state agencies, as well as private organizations and institutions, have worked to develop conservation strategies that address the threats to sage-grouse, in the hope of preventing an ESA listing. In Idaho, there is a remarkable degree of similarity between the strategies, recommendations, and actions in various plans (see various **Appendices**). Efforts to iron out the differences that do exist and the acquisition of more information to address uncertainties would be helpful, but that is always the case with managing ecosystems and why incorporation of adaptive management into conservation plans is important. What seems to be needed now is the political and societal will to implement the actions proposed in the plans and the necessary human and financial resources to do so. Implementation of conservation plans is key to the State of Idaho's common interest goal of keeping sage-grouse from being listed under the ESA.

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**Appendix A. Excerpts from the *Federal Alternative of Governor C.L. “Butch” Otter for Greater Sage-Grouse Management in Idaho***

from the September 5, 2012 report (see Otter 2012)

The following excerpts focus on management actions related to wildfire, invasive species, and habitat restoration in the governor’s plan. In the plan, Idaho proposes three types of management areas within the defined Sage-grouse Management Area (SGMA): Core Habitat Zone (CHZ), Important Habitat Zone (IHZ), and General Habitat Zone (GHZ).

[A.] CHZ. Management by Federal and State agencies should focus on the maintenance and enhancement of habitats, populations and connectivity in areas within this management zone.

1. Wildfire

- i. Incorporate the BLM IM2011-138 to reduce the number and size of wildfires in sage-grouse habitat.
- ii. Only human safety and structure protection shall take precedence over the protection of sage-grouse habitat.
- iii. Evaluate and decrease wildfire response time by twenty-five percent (25%). In order to achieve this objective:
  - a. Prioritize, maintain and improve a high initial attack success rate in suppression response and staging decisions;
  - b. Utilize available maps [of the SGMA] and spatial data depicting sage-grouse habitats within this zone;
  - c. Redeploy firefighting resources not being fully utilized outside the SGMA to the extent such redeployment will not cause harm to human safety and structure protection; and
  - d. Request the necessary federal appropriations to achieve this objective.
- iv. Evaluate the current fire suppression baseline, and in conjunction with the measures below, develop a consistent plan that improves on this baseline by twenty-five percent (25%).
  - a. Federal firefighters shall ensure close coordination with State firefighters, local fire departments and local expertise to create the best possible network of strategic fuel breaks and road access to minimize and reduce the size of a wildfire following ignition;
  - b. To the extent practicable, the close coordination described in (a) should result in consistent fire response plans and mutual aid agreements necessary to achieve the management objective in (iv);
  - c. Request and place additional firefighting resources and establish new Incident Attack Centers, with particular emphasis in the West Owyhee Conservation Area;
  - d. Create and maintain effective fuel breaks in strategic locations that will modify fire behavior and increase fire suppression effectiveness according to the following criteria:
    - Target establishment of fuel breaks along existing roads or other disturbances.
    - Identify and target higher-risk roads for fuel break construction and maintenance based on fire history maps.
    - Implement a strategic approach to using these roads for rapid fire response.

- Analyze the benefits of the fuel break against the additional loss of sagebrush cover and risk on invasive weeds.
- Fire breaks must be properly maintained.

e. Request the necessary federal appropriations to achieve this objective.

## 2. Invasive Species

- i. Actively manage exotic undesirable species to limit presence.
- ii. Monitor and control invasive vegetation post-wildfire treatment for at least three years.
- iii. Emphasize the use of native seeds for fuels management treatment based on availability, adaptation (site potential), and probability of success.
  - a. Reallocate native plant seeds for Emergency Stabilization and Rehabilitation (ES&R) from outside the SGMA and the GHZ to this management zone if necessary.
  - b. Where the probability of obtaining sufficient native seed is low, non-native seeds may be used provided sage-grouse habitat objectives are met.

## 3. Habitat Restoration

- i. Prioritize the removal of conifers through methods appropriate for the terrain and most likely to facilitate expeditious sage-grouse population and habitat recovery. To the extent possible, utilize removal methods creating the least amount of disturbance.
  - a. Efforts should focus on areas with highest restoration potential typically evidenced by low canopy cover, existing sagebrush understory, and adjacent current populations.
  - b. Refrain from using prescribed fire and conducting removal projects in juniper stands older than one hundred years.
  - c. Maximize the use of Natural Resource Conservation Service funding through permittee grants under the Environmental Quality Incentives Program (EQUIP) and Wildlife Habitat Improvement (WHIP) programs.
- ii. In perennial grasslands, actively restore sagebrush canopy cover and the ecological functions of the site. To the extent practicable, utilize native understory.
  - a. Prioritize areas for restoration with lower risks of wildfire and exotic species invasion.

[B.] IHZ. Management by Federal and State agencies should focus on areas within this zone that have the best opportunities for conserving, enhancing or restoring habitat for sage-grouse. Management by Federal agencies should also provide the necessary flexibility to permit high-value infrastructure projects.

### 1. Wildfire

- i. Incorporate the BLM IM 2011-138 to reduce the number and size of wildfires in sage-grouse habitat.
- ii. Only human safety and structure protection shall take precedence over the protection of sage-grouse habitat.
- iii. Evaluate and decrease wildfire response time by twenty percent (20%) in the West Owyhee Conservation Area. Decrease wildfire response time in all other conservation areas by fifteen percent (15%). In order to achieve this objective:
  - a. Prioritize, maintain and improve a high initial attack success rate in suppression response and staging decisions;

- b. Utilize available maps [of the SGMA] and spatial data depicting sage-grouse habitats within this zone;
    - c. Redeploy firefighting resources not being fully utilized outside the SGMA to the extent such redeployment will not cause harm to human safety and structure protection; and
    - d. Request the necessary federal appropriations to achieve this objective.
  - iv. Evaluate the current fire suppression baseline, and in conjunction with the measures below, develop a management plan that improves on this baseline by fifteen percent (15%).
    - a. Federal firefighters shall ensure close coordination with State firefighters, local fire departments and local expertise (i.e., livestock grazing permittees and road maintenance personnel) to create the best possible network of strategic fuel breaks and road access to minimize and reduce the size of a wildfire following ignition;
    - b. To the extent practicable, the close coordination described in (a) shall result in consistent fire response plans and mutual aid agreements necessary to achieve the objective in (1)(v); and
    - c. Request the necessary federal appropriations to achieve this objective.
  - v. Create and maintain effective fuel breaks in strategic locations that will modify fire behavior and increase fire suppression effectiveness.
    - a. Target establishment of fuel breaks along existing roads or other disturbances.
    - b. Identify and target higher-risk roads for fuel break construction and maintenance based on fire history maps.
    - c. Implement a strategic approach to using these roads for rapid fire response.
    - d. Closely evaluate the benefits of the fuel break against the additional loss of sagebrush cover and risk of invasive weeds.
    - e. Fire breaks must be properly maintained.
  - vi. Prescribe or target livestock grazing where demonstrated to be appropriate as a tool for reducing fuel loads, reducing invasive species populations and maintaining functional fire breaks.
    - a. Test the effectiveness and monitor the results on a site-specific basis through stewardship contracting.
  - vii. Reduce human-caused ignitions by coordinating with Federal, State and local jurisdiction on fire and litter prevention programs.
2. Invasive Species
- i. Actively manage exotic undesirable species to limit presence in the CHZ.
  - ii. Monitor and control invasive vegetation post-wildfire treatment for at least three years.
  - iii. Emphasize the use of native seeds for fuels management treatment based on availability, adaptation (site potential), and probability of success.
    - a. Reallocate native plant seeds for Emergency Stabilization and Rehabilitation (ES&R) from outside the SGMA and the GHZ to this management zone.
    - b. Where the probability of success or native seed availability is low, non-native seeds may be used provided sage-grouse habitat objectives are met.
  - iv. Require best management practices for construction projects to prevent invasion.

- v. Actively pursue eradication or control of noxious weeds and/or invasive species posing a risk to sage-grouse habitats using a variety of chemical, mechanical and other appropriate means in coordination with the local Cooperative Weed Management Area (CWMA).
- vi. Establish an effective monitoring program to evaluate the success of weed control efforts in conjunction with the CWMAs.

### 3. Habitat Restoration

- i. Prioritize the removal of conifers through methods appropriate for the terrain and most likely to facilitate expeditious sage-grouse habitat recovery. Especially prioritize and target removal treatments adjacent to the CHZ. To the extent possible, utilize methods creating the least amount of disturbance.
  - a. Areas with highest restoration potential will typically have low canopy cover, existing sagebrush understory, and adjacent current populations.
  - b. Refrain from using prescribed fire and conducting removal projects in juniper stands older than one-hundred years.
  - c. Maximize the use of Natural Resource Conservation Service funding through permittee grants under the Environmental Quality Incentives Program (EQUIP) and Wildlife Habitat Improvement (WHIP) programs.
- ii. In perennial grasslands, actively restore sagebrush canopy cover and the ecological functions of the site. To the extent practicable, utilize native understory.
  - a. Prioritize areas for restoration with lower risks of wildfire and exotic species invasion, especially in areas adjacent to the CHZ.

[C.] GHZ. Management by Federal agencies should focus on multiple-use management consistent with local resource management plans.

#### 1. Wildfire

- i. Incorporate the BLM IM 2011-138 to reduce the number and size of wildfires in sage-grouse habitat.
- ii. Fire suppression efforts should be emphasized, recognizing that other local, regional, and national fire suppression priorities may take precedent.
- iii. Aggressively create and maintain effective fuel breaks in strategic locations that will modify fire behavior and increase fire suppression effectiveness. The fire breaks should target areas necessary to provide a buffer between the GHZ and the other management zones.
  - a. Target establishment of fuel breaks along existing roads or other disturbances.
  - b. Identify and target higher-risk roads for fuel break construction and maintenance based on fire history maps.
  - c. Implement a strategic approach for using these roads to enable rapid fire response.
  - d. Fuel breaks must be properly maintained and sited with consideration of active leks and risk of invasive weeds.
- iv. Actively employ prescribed or targeted grazing as a primary tool for reducing fuel loads, reducing invasive species populations and maintaining functional fire breaks to the extent such activities do not adversely affect breeding habitats (i.e. occupied leks, nesting and early brood-rearing).

#### 2. Invasive Species

- i. Aggressively manage exotic undesirable species sufficient to prevent invasion into other management zones.
- ii. Aggressively pursue eradication or control of noxious weeds and/or invasive species posing a risk to sage-grouse habitats using a variety of chemical, mechanical and other appropriate means in coordination with the local Cooperative Weed Management Area (CWMA).
- iii. Establish an effective monitoring program to evaluate the success of weed control efforts in conjunction with the CWMA.



**Appendix B. Excerpts from the Idaho and Southwestern Montana Greater Sage-grouse Draft Land Use Plan Amendment (LUPA) and Environmental Impact Statement (EIS) (BLM & USFS 2013, Vol. 3, Appendix D) for updating wildfire portions of Governor Otter’s (2012) Alternative**

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C.L. "BUTCH" OTTER  
GOVERNOR

March 14, 2013

Brian Kelly  
State Director  
U.S. Fish and Wildlife Service  
Idaho State Office  
1387 South Vinnell Way  
Boise, ID 83709-1657

Dear Brian,

This letter continues our discussion and collaboration on Idaho's contribution to Greater Sage-Grouse (GSG) management and conservation in order to avoid its listing under the Endangered Species Act (ESA). I greatly appreciate the personal attention and leadership you dedicated to this issue.

On December 18, 2012, Interior Secretary Ken Salazar responded to a series of questions posed by several western members of Congress about the Department of Interior's National Greater Sage-Grouse Land Use Planning Strategy (GSG Strategy). I was pleased that Secretary Salazar reiterated his commitment that "the BLM has every intention of taking actions to conserve the Greater Sage-Grouse in a manner that is *consistent with its multiple use mission* and with due regard for site specific on-the-ground considerations." (emphasis added).

I also noted with great interest that Secretary Salazar outlined the process for a Bureau of Land Management (BLM) state office to be exempted from Instruction Memorandum (IM) No. 2012-043 dated December 22, 2011. I believe IM No. 2012-043 coupled with the National Technical Team Report (NTT Report) represents a one-size-fits-all management scheme that fails to account for the site-specific information contained in my management plan. Secretary Salazar's response indicates that such an exemption can occur where "a state or local conservation mechanism has been developed with concurrence of the Fish and Wildlife Service." In short, I write to pursue the "concurrence" option for Idaho as a necessary precondition for state exemption from the national IM.

Moreover, I believe that a state-based solution for public land management – similar to Idaho's effort on roadless areas – will be a win-win for the species and the Idahoans who economically depend on access to lands managed by the federal government.

Concurrence by the Service on the Idaho approach is particularly important as your agency will carefully weigh all conservation commitments by my State and others in determining whether listing of the species is warranted

To briefly summarize where we are in the process, I sent you a letter in July 2012 requesting preliminary feedback on Idaho's draft Sage-Grouse Alternative. Specifically, I posed two questions fundamental to the overall structure of the plan:

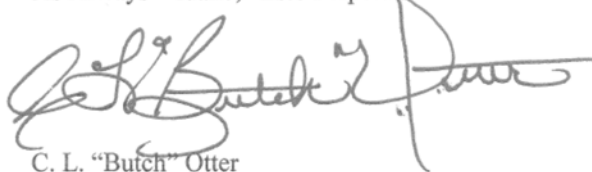
- (1) Whether the management framework – based on a thematic habitat continuum and population metrics – outlined in my Draft Alternative represents sound policy that should move forward; and
- (2) Whether the habitat zones, especially the Core Habitat Zone and Important Habitat Zone, are consistent with the U.S. Fish and Wildlife Service's understanding of the most important sage-grouse habitats in the state.

Your written response was especially encouraging and signaled that the State of Idaho was moving in the right direction in developing a sound GSG strategy. Based on this early feedback, the State took public comment, refined the draft Alternative and submitted it to the BLM for incorporation into its Strategy. *See* Governor C.L. "Butch" Otter's Greater Sage-Grouse Management Alternative, Sept. 5, 2012. ("Idaho Alternative").

Following submission to the BLM, you reaffirmed that the Service still had confidence with the aforementioned components in particular, but needed additional clarification and targeted revisions for the remainder of the Idaho management plan. Your point was taken in the spirit of collaboration, and I believe that in addition to the September 2012 Idaho Alternative, the attachment below resolves these outstanding issues, and thus provides the path for Service concurrence consistent with Secretary Salazar's policy directive. For the sake of completeness, the Idaho Alternative is adopted herein by reference, and only where specifically noted below should the Idaho Alternative be construed as revised or modified.

I have sincerely appreciated your leadership in helping the State of Idaho develop a collaborative, science-based management plan that meets the needs of the species and Idaho citizens. Of course, the Service's concurrence is a necessary and foundational part of this process, but the State of Idaho is mindful that further clarification may be beneficial as part of the Department's ongoing GSG Strategy consistent with the National Environmental Policy Act and the ESA in coordination with the State. Please let me know if you have any questions during your review. I look forward to the Service's concurrence and our continued discussions on this critically important issue.

As Always – Idaho, "Esto Perpetua"



C. L. "Butch" Otter  
Governor of Idaho

#### 4. Wildfire/Invasive Species

This section has been refined since the September 5th version. As mentioned above, the Idaho Alternative utilizes conservation areas, management zones and adaptive triggers to maintain and enhance sage-grouse populations in the CHZ to mitigate the impacts of wildfire. This approach provides stability in the short-term to enable the more proactive measures (i.e., fuel breaks, habitat restoration) the time necessary to demonstrate positive change on the landscape.

Additionally, the Idaho Alternative organizes its regulatory measures into three categories: Prevention, Suppression, and Restoration. This change reflects the state's intent to provide BLM with a method to prioritize wildfire management and resources, while providing flexibility to make adjustments when necessary.

During the 2013 Idaho Legislative session, Governor Otter made it a priority to provide ranchers and landowners in rural areas with the necessary tools and training to allow them to play an active role in fire prevention and suppression, especially in sage-grouse habitat. Idaho Code § 38-104B amends existing law to provide for the creation of non-profit Rangeland Fire Protection Associations (Appendix III).

In conjunction with this change in Idaho Code, the Idaho Legislature also provided the Idaho Department of Lands with additional funding to assist in the creation of four protection associations in southwest Idaho, modeled from the Mountain Home Rural Fire Protection

Association. Appendix IV provides a preliminary map depicting areas in sage-grouse habitat that are considered "no man's lands" where these associations can help in early fire detection, suppression and prevention efforts.

## OFFICE OF SPECIES CONSERVATION

**C.L. "BUTCH" OTTER**  
Governor



P.O. Box 83720  
Boise, Idaho 83720-0195

**DUSTIN T. MILLER**  
Administrator

304 North Eighth Street, Suite 149  
Boise, Idaho 83702

July 1, 2013

Steve Ellis  
State Director  
Bureau of Land Management  
Idaho State Office  
1387 South Vinnell Way  
Boise, ID 83709

Dear Steve,

This letter is in response to your May 6, 2013 request for further clarification of certain components of the September 2012 draft of the Governor Otter's Sage-Grouse Conservation Alternative (Governor's Alternative) for purposes of the Bureau of Land Management's (BLM) and US Forest Service's (USFS) analysis under the National Sage-Grouse Planning Effort. As you are aware, over the past two months the State of Idaho has worked diligently to clarify and refine components of the Governor's Alternative to better assist the BLM and USFS in their analysis under the National Environmental Policy Act (NEPA).

As you know, in December 2011 Secretary of the Interior Ken Salazar invited western governors to create state-specific sage-grouse conservation plans that could be implemented as interim management, provided that "concurrence" is granted from the Service, and incorporated as alternatives in the federal land-use planning effort. In response, Governor Otter created a Sage-grouse Task Force through Executive Order 2012-02. This Task Force began meeting in March 2012 and developed recommendations on actions needed to preclude a listing of greater sage-grouse in Idaho while maintain predictable levels of land-use activity. From those recommendations, the Governor's Alternative was drafted and submitted to the BLM and USFS for consideration in the Idaho and Southwest Montana Sub-regional EIS. In accordance with Secretary Salazar's December 2011 request, the Governor began seeking concurrence from the Fish and Wildlife Service. In March 2013, the Governor submitted a concurrence request to Brian Kelly, Idaho State Director for the Service. In April, 2013, Brian Kelly responded very positively to the Governor's Alternative and was willing to "concur" with the Governor's

Conservation Areas, the three zone habitat structure, the conservation objectives, the adaptive trigger strategy, and the grazing strategy. He stated the Governor's approach would provide needed benefits for sage-grouse and sage-grouse habitat.

In our continuing commitment to multi-agency collaboration, we have attached thorough explanations to the questions you asked us in May 2013. Some measures that may have appeared vague or incomplete have been refined and clarified along with additional actions needed to proactively deal with wildfire within sage-grouse habitat.

For the purposes of the NEPA analysis, the State requests BLM to consider the Governor's Alternative dated September 5, 2012, the Governor's March 13, 2013 request for concurrence, the concurrence letter from the Service to Governor Otter dated April 8, 2013 and the following attachments. The September 2012 Alternative is adopted herein by reference, and only where specifically noted in the March 2013 Concurrence request and in this letter should the Governor's Alternative be construed as revised or modified. Additionally, please refer to Idaho's Mitigation Framework, attached, for further explanation of the Governor's Compensatory Mitigation Strategy.

Sincerely,



Dustin T. Miller



### Wildfire

Under the wildfire section within the Governor's Alternative for the CHZ, IHZ and GHZ, the State of Idaho desires to replace reference to the incorporation of BLM WO IM 2011-138 with BLM's updated Instruction Memorandum referenced as BLM WO IM 2013-128.

The original intent of the State of Idaho through the Governor's Alternative was to decrease the wildfire response time from the current baseline of response time by 25%. This measure was an effort to arrive at an adequate regulatory mechanism necessary for precluding a listing.

However, recognizing the difficulty in measuring this, and based on further conversations with the Service, BLM and Forest Service, the State wishes to remove that objective and replace it with the below refinement.

Wildfire is a difficult threat to prevent and control. However, the adaptive construct of Governor's Alternative provides a mechanism to prevent sage-grouse from any likelihood of becoming endangered in the foreseeable future. The short-term use of triggers and zones will provide the time to develop more proactive measures that demonstrate long-term success on the landscape.

Attached to this letter is a spreadsheet that will aid in developing a consistent wildfire suppression plan that improves upon the current baseline. Close coordination with federal, state, and private firefighting personnel, local fire departments and local expertise including Rangeland Fire Protection Associations (RFPAs) is crucial to continually improving strategies for initial attack and developing comprehensive fuel break strategies to minimize and reduce the size of wildfires threatening the CHZ and IHZ following ignition.

The employment of specific, more aggressive wildlife and invasive species management practices to prevent further encroachment into the CHZ and IHZ should be driven by local planning efforts at the field office and ranger district level. As referenced above, the creation of RFPAs throughout the Sage-Grouse Management Area (SGMA) is a regulatory mechanism that

will ensure better and faster initial attack on wildfires threatening the CHZ and IHZ through the employment of additional trained firefighters and resources in rural parts of the SGMA. From a regulatory mechanism standpoint, Idaho Code Chapter 1, Title 38 was recently amended to allow for the creation of Rural Fire Protections Associations (RFPAs). Additionally, this spring the Idaho Legislature authorized funding to help cover start-up costs for 4 RFPAs in southwest Idaho.

The emphasis for fuel break prioritization should be in areas within the Wildland-Urban Interface (WUI) where human life and safety are at risk. For instance, the Boise District BLM is currently in the planning phase of a fuel-break project within the Interstate-84 corridor between Boise and Mountain Home, Idaho referred to as the “Paradigm Project”. The idea behind the project is to strategically place and improve upon fuel breaks within this corridor, therefore keeping wildfires to more manageable sizes thus requiring fewer firefighting resources. The State of Idaho supports this project, as well as other similar fuel-break projects designed to secure the WUI and free up firefighting resources to be focused on providing initial attack on wildfires in areas that have the potential to impact greater sage-grouse habitat within the CHZ and IHZ. After securing the WUI, prioritization of fuels breaks should go to areas of high human ignition based upon ignition data and maps produced by BLM districts and field offices. The attached spreadsheet provides conservation measures to be incorporated into the Governor’s Alternative regarding prevention, suppression, and restoration activities. One crucial component of this is the utilization of grazing as an effective management tool in reducing fuel loading on BLM and Forest Service lands. The State of Idaho encourages the BLM and the Forest Service to employ this effective fuels management tool, particularly within areas of high fuel loading that are at high risk of wildfire threatening the CHZ and IHZ.

## **Appendix C. Fuels Management Considerations and Best Management Practices from the BLM Sage-grouse National Technical Team Report (NTTR)**

(Morales et al. 2011, citations to references omitted)

### **Management Considerations—Fuels Management in Priority Sage-grouse Habitat Areas**

- Design and implement fuels treatments with an emphasis on protecting existing sagebrush ecosystems (citations omitted):
  - Do not reduce sagebrush canopy cover to less than 15% unless a fuels management objective requires additional reduction in sagebrush cover to meet strategic protection of priority sage-grouse habitat and conserve habitat quality for the species. Closely evaluate the benefits of the fuel break against the additional loss of sagebrush cover in the EA process.
  - Apply appropriate seasonal restrictions for implementing fuels management treatments according to the type of seasonal habitats present in a priority area.
  - Allow no treatments in known winter range unless the treatments are designed to strategically reduce wildfire risk around or in the winter range and will maintain winter range habitat quality.
  - Do not use fire to treat sagebrush in less than 12-inch precipitation zones (e.g., Wyoming big sagebrush or other xeric sagebrush species). However, if as a last resort and after all other treatment opportunities have been explored and site specific variables allow, the use of prescribed fire for fuel breaks that would disrupt the fuel continuity across the landscape could be considered, in stands where cheatgrass is a very minor component in the understory.
  - Monitor and control invasive vegetation post-treatment.
  - Rest treated areas from livestock grazing for two full growing seasons unless vegetation recovery dictates otherwise.
  - Require use of native seeds for fuels management treatment based on availability, adaptation (site potential), and probability of success. Where probability of success or native seed availability is low, non-native seeds may be used as long as they meet sage-grouse habitat objectives.
  - Design post fuels management projects to ensure long term persistence of seeded or pretreatment native plants. This may require temporary or long- term changes in livestock grazing management, wild horse and burro management, travel management, or other activities to achieve and maintain the desired condition of the fuels management project.
- Design fuels management projects in priority sage-grouse habitat to strategically and effectively reduce wildfire threats in the greatest area. This may require fuels treatments implemented in a more linear versus block design.
- During fuels management project design, consider the utility of using livestock to strategically reduce fine fuels, and implement grazing management that will accomplish this objective. Consult with ecologists to minimize impacts to native perennial grasses.



### Fuels Management BMPs

(Morales et al. 2011; originally from BLM Instruction Memorandum No. 2011-138 [WO IM 2011-138])

Best Management Practices (BMPs) are a suite of techniques that guide or may be applied to management actions to aide in achieving desired outcomes. BMPs are often developed in conjunction with land use plans, but they are not considered a planning decision unless the plans specify that they are mandatory.

1. Where applicable, design fuels treatment objectives to protect existing sagebrush ecosystems, modify fire behavior, restore native plants, and create landscape patterns which most benefit sage-grouse habitat.
2. Provide training to fuels treatment personnel on sage-grouse biology, habitat requirements, and identification of areas utilized locally.
3. Use fire prescriptions that minimize undesirable effects on vegetation or soils (e.g., minimize mortality of desirable perennial plant species and reduce risk of hydrophobicity).
4. Ensure that proposed sagebrush treatments are planned with interdisciplinary input from BLM and/or state wildlife agency biologist and that treatment acreage is conservative in the context of surrounding sage-grouse seasonal habitats and landscape.
5. Where appropriate, ensure that treatments are configured in a manner (e.g., strips) that promotes use by sage-grouse.
6. Where applicable, incorporate roads and natural fuel breaks into fuel break design.
7. Power-wash all vehicles and equipment involved in fuels management activities prior to entering the area to minimize the introduction of undesirable and/or invasive plant species.
8. Design vegetation treatment in areas of high fire frequency to facilitate firefighting safety, reduce the risk of extreme fire behavior; and to reduce the risk and rate of fire spread to key and restoration habitats.
9. Give priority for implementing specific sage-grouse habitat restoration projects in annual grasslands first to sites which are adjacent to or surrounded by sage-grouse key habitats. Annual grasslands are second priority for restoration when the sites not adjacent to key habitat, but within 2 miles of key habitat. The third priority for annual grasslands habitat restoration projects are sites beyond 2 miles of key habitat. The intent is to focus restoration outward from existing, intact habitat.
10. As funding and logistics permit, restore annual grasslands to a species composition characterized by perennial grasses, forbs, and shrubs.
11. Emphasize the use of native plant species, recognizing that non-native species may be necessary depending on the availability of native seed and prevailing site conditions.
12. Remove standing and encroaching trees within at least 330 feet of occupied sage-grouse leks and other habitats (e.g., nesting, wintering, and brood rearing) to reduce the availability of perch sites for avian predators, as appropriate, and resources permit.
13. Protect wildland areas from wildfire originating on private lands, infrastructure corridors, and recreational areas.

14. Reduce the risk of vehicle or human-caused wildfires and the spread of invasive species by planting perennial vegetation (e.g., green-strips) paralleling road rights-of-way.
15. Strategically place and maintain pre-treated strips/areas (e.g., mowing, herbicide application, and strictly managed grazed strips) to aid in controlling wildfire should wildfire occur near key habitats or important restoration areas (such as where investments in restoration have already been made).



**Appendix D. Wildfire and Annual Grassland Conservation Measures from the  
Conservation Plan for the Greater Sage-grouse in Idaho**

(IDFG 2006)

**Wildfire Conservation Measures**

<b>Issue Addressed</b>	<b>Rationale</b>	<b>Conservation Measure(s)</b>
Altered fuels and fire regimes	Areas dominated by cheatgrass or medusahead have higher frequency of wildfire and minimal habitat value.	<ol style="list-style-type: none"> <li>1. See conservation measures for Annual Grasslands section.</li> <li>2. Identify and prioritize annual grasslands most conducive for restoration to perennial species. Coordinate closely with USGS Snake River Field Station, GBRI, Universities, local partners, and IDFG, as appropriate.</li> <li>3. Since it is impossible to restore large annual grasslands all at once due to cost and logistics, consider an incremental or “buffer” approach, to protect existing intact habitat. That is, where large annual grasslands border key or other important areas such as recent restoration projects, create “buffers” by progressively converting broad bands of the adjacent annual grasslands to perennial species. As perennial grasses, forbs, and sagebrush become established, expand the buffers outward. This practice, over time, can reduce fire risk by conversion of high fire hazard annuals to lower hazard perennial fuels. Where funding and logistical factors permit, larger-scale conversions, rather than the buffer approach, may be more appropriate.</li> </ol>
Reduction or modification of habitat	Wildfires can reduce or fragment already limited habitat, including recent restoration project areas, and can facilitate the proliferation of invasive plants.	<p>Wildfire suppression tactics:</p> <ol style="list-style-type: none"> <li>1. In the event that multiple ignitions occur in a local suppression unit area, suppression priorities are to protect human life and property. In situations where human safety or property will not be compromised or threatened, employ fire suppression tactics that protect sagebrush ecosystems by minimizing the average size of unplanned fires, maintaining productive sage-grouse habitat, and maintaining sagebrush cover. In the event of multiple fire starts in sagebrush ecosystems, suppression priority will be as outlined by specific Fire Management Unit (FMU) based on the following general guidelines: <ul style="list-style-type: none"> <li>Priority 1- Stronghold habitats (subset of key habitat on the Idaho Sage Grouse Habitat Planning Map). <ol style="list-style-type: none"> <li>a. Wyoming big sagebrush sites (in general, lower elevations).</li> <li>b. Mountain big sagebrush sites (in general, higher elevations).</li> <li>c. Other habitats (e.g. early sagebrush, low sagebrush sites).</li> </ol> </li> <li>Priority 2 - Key habitat. <ol style="list-style-type: none"> <li>a. Wyoming big sagebrush sites (in general, lower elevations).</li> <li>b. Mountain big sagebrush sites (in general, higher elevations).</li> <li>c. Other habitats.</li> </ol> </li> <li>Priority 3 - Restoration habitat. <ol style="list-style-type: none"> <li>a. Areas with established or recovering sagebrush.</li> </ol> </li> </ul> </li> </ol>

b. Areas with minimal or no sagebrush cover.

Priority 4 - Juniper or annual grasslands where delaying initial attack does not threaten priorities 1-3 above.

2. BLM and USFS line officers will ensure that a knowledgeable field level Resource Advisor is available for any “extended attack” fire (>300 acres in size) within or threatening sage-grouse habitats, including stronghold, key, and potential/existing restoration areas.

Availability by phone or “on-call” is appropriate in some circumstances, such as during times of low fire danger.

During times of high or extreme fire danger, red flag, or other similar conditions, resource advisors should be field-ready on short notice.

3. In all sage-grouse habitats (key, stronghold, potential restoration areas), suppress fires and hotspots in unburned areas including interior islands, patches, or strips of sagebrush if doing so will not compromise fire crew safety, poses little risk of escape, and to the extent that resources allow (limited water supplies, etc.). Do not square-up or burn-out islands or interior patches of sagebrush. Such areas may provide important remnant habitats post-fire, are useful in assessing pre-burn vegetation conditions, and serve as a source of on-site sagebrush seed, facilitating the post-fire reestablishment of sagebrush.

4. When fires threaten or occur within sage-grouse stronghold habitats, deploy the appropriate pre-identified appropriate management response as soon as possible to minimize loss of habitat to fire and to reduce the scale of subsequent ESR efforts. Depending on the nature of the fire, appropriate tools may include heavy or medium engines, dozers, hand crews, single engine aerial tankers, large tankers, or others. In general, the intent of this conservation measure is to encourage fire management officers, dispatch shift supervisors, and incident commanders to be proactive, to the extent feasible, in deploying suppression resources in order to minimize habitat loss. Fire crew safety will be the first priority.

5. Burn-out/backfiring operations should be conducted in a manner that minimizes the loss of sagebrush, while still providing for public and fire crew safety.

6. Use post-fire After Action Reviews and/or evaluations on fires that are large enough and/or intense enough to have adversely affected sage-grouse habitat. The intent of the review is to facilitate making improvements or adjustments in priorities, tactics or resource availability in preparation for potential fires. During multiple or sequential large-scale fire events this measure may need to be deferred. The urgency of the review depends on when the fire occurred in the fire season, how typical or significant it was, and if there are

clearly opportunities to learn important lessons.

Strategic wildfire suppression planning:

1. Ensure Fire Management Plans (FMPs), updated annually, re-assess priorities and incorporate the conservation measures outlined in this plan, particularly identifying the appropriate management response in Fire Management Units (FMUs) where stronghold and key habitat exist.

2. In FMPs, annually update the Idaho Sage-grouse Habitat Planning Map (see Chapter 5). Update Fire Management Plans and Fire Management Unit databases as needed to incorporate new sage-grouse habitat related information and wildfire suppression priorities in sage-grouse or restoration habitats.

3. In areas of limited water availability and/or remote locations, coordinate with LWGs and appropriate agency personnel to explore creative options for the establishment of fill hydrants along existing pipelines, new emergency water storage tanks or other similar facilities, or upgrading/modification of existing wells or pipelines. Locate such water access facilities near suitable access roads. Mark locations of such sites on maps for fire crews, resource advisors, and dispatchers.

Wildlife water guzzlers can also be designed in concert with such projects in sage-grouse habitats where water is limited.

4. Where feasible, consider staging initial attack resources in high fire incident areas to ensure quicker initial attack response times in remote areas.

5. At the wildland-urban interface bordering rangelands, employ pre-suppression tactics, public education and vegetation treatments to minimize or reduce the risk of the escape of human-caused fire into sage-grouse key or restoration habitat.

6. Strategically place pre-treated strips/areas (e.g., mowing, herbicide application, strictly managed grazed strips, etc.) to aid in controlling wildfire should wildfire occur near critical habitats.

Firefighter training:

1. Provide annual training for rangeland fire personnel (including appropriate Rural Fire Department (RFD) personnel), public affairs staff, resource advisors, and others, as appropriate, to include awareness of issues and potential impacts of suppression activities in sage-grouse habitats and other resource issues of management concern.

Public outreach and education:

1. Increase public awareness of fire danger by installing and maintaining additional fire danger signs along main access roads.

2. Increase public outreach, information, and education

Human-caused ignitions

Over half of wildfires in Idaho are human-caused.

Restoration and burned area rehabilitation	<p>Analyze burned area to assess possibilities of natural regeneration. Deliberate seeding of some areas is essential to ensure that needed habitat components are restored.</p>	<p>related to sagebrush ecosystems, fire risk mitigation, fire ecology and related issues. Examples include. Media interviews and articles, presentations to schools and civic organizations, brochures or similar efforts.</p> <p>3. Via media opportunities increase public awareness and understanding of fire-related risk during times of high to extreme fire danger and red flag conditions.</p> <p>4. Work closely with railroad companies to minimize wildfire ignitions, improve suppression response, where needed, and to manage fuels/invasives within railroad rights-of-way. Enforcement of restrictions or closures and related measures:</p> <p>1. Increase local enforcement of existing fire restrictions or closures in accordance with the High Fire Danger Closure and Restriction Plan.</p> <p>2. Promote practices that discourage or limit firelines (e.g., dozer lines or other trails created by equipment) from being converted to 2-track roads or OHV/ATV trails.</p> <p>1. Assess pre-burn vegetation via mapping, fuels/vegetation surveys or allotment monitoring records to determine plant species composition and diversity. Consider/evaluate fire severity. Acquire satellite or aerial imagery of the burn, where available and feasible, to help estimate the extent of burned and unburned areas, including islands.</p> <p>2. In the absence of information for areas directly affected by the burn, evaluate unburned islands and the areas adjacent to the burn to help predict plant species composition and diversity within the burned area.</p> <p>3. Estimate from the findings of 1 and 2 and a site potential analysis if rehabilitation is necessary to achieve the habitat goals for the area.</p> <p>4. Ensure that sage-grouse habitat considerations are incorporated into restoration and burned area rehabilitation plans, particularly in or near stronghold, key and isolated habitats.</p> <p>5. Emphasize the use of native plant materials to the greatest extent possible, and as appropriate for site conditions. Seeds should be certified weed free.</p> <p>6. Use proper site-preparation techniques (e.g., seedbed preparation, control of invasives, weed-control), seeding techniques, and seed mixes in designing restoration and burned area rehabilitation plans. For example, the restoration of annual grasslands may require preparatory chemical treatments and/or an exotic/native seed mix. Perennial grasslands (existing seedings or native) may require seeding or planting of sagebrush.</p> <p>7. When planting or reseeding sagebrush, favor the sagebrush</p>

species, subspecies, that are appropriate for the ecological site. Source identified seed is preferable.

To maximize the likelihood of establishment, consider multiple approaches, such as aerial seeding, ground broadcast seeding with harrow or roller, and planting of seedlings in strategic patches or strips. Avoid seeding sagebrush or other shrubs near road margins if the road and road margin might otherwise serve as a fuel break in the event of future fires.

8. When using exotic perennial grasses and forbs in restoration use species whose growth form, species, and phenology, most closely mimic native species.

9. Provide for noxious weed control in burned area rehabilitation projects.

#### **Annual Grasslands Conservation Measure(s)**

Spatial extent of annual grasslands on the landscape AND degraded habitat quality including rangeland health	Annual grasslands do not provide suitable habitat to meet the seasonal habitat needs of sage-grouse	<ol style="list-style-type: none"> <li>1. LWGs, land management agencies, IDFG and other partners should work closely together to identify and prioritize annual grassland areas for restoration. Work cooperatively to identify options, schedules and funding opportunities for specific projects.</li> <li>2. In general, the priority for implementation of specific sage-grouse habitat restoration projects in annual grasslands should be given first to (1) sites adjacent to or surrounded by sage-grouse stronghold habitats, then (2) sites outside stronghold habitats but adjacent to or within approximately two miles of key habitat, and last (3) sites beyond two miles of key habitat. The intent here is to focus restoration outward from existing, intact habitat.</li> <li>3. As funding and logistics permit, restore annual grasslands to a species composition characterized by perennial grasses, forbs and shrubs. Emphasize the use of native plant species recognizing that non-native species may be necessary depending on the availability of native seed and prevailing site conditions. Multiple treatments may be required. See Monsen et al. (2004), Dalzell (2004), and the seeded Perennial Grassland Section 4.3.8, for helpful suggestions on restoration techniques. Lambert (2005) also provides descriptions, recommended seeding rates, and other useful information for nearly 250 species of native and nonnative grasses, forbs and shrubs.</li> <li>4. The eradication or control of noxious weeds posing a risk to sage-grouse habitats should also be aggressively pursued using a variety of chemical, mechanical, biological, or other means as appropriate. All seeding project designs should include measures for noxious weed control and monitoring for at least 3 years following implementation.</li> <li>5. Seed utilized in sage-grouse habitat restoration seedings, burned area rehabilitation projects, and hazardous fuels/wildland urban interface projects will be tested and</li> </ol>
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certified as weed-free, based on prevailing agency policy and protocol. Private landowners are encouraged to utilize only certified seed as well.

6. To discourage the spread of invasive annuals and noxious weeds, require the use of certified weed-free forage by Permitted users (outfitters, guides, livestock operators) and by casual users (e.g., recreation trail riders, hunters) utilizing horses, goats, or llamas on public or state lands.

7. On private lands, consider enrolling in incentive or other programs to improve or enhance sage-grouse/ sagebrush habitats. Current NRCS programs that may provide some opportunities for economic offset of certain conservation measures include the Conservation Security Program (CSP), the Wildlife Habitat Incentive Program (WHIP), and the Environmental Quality Incentive Program (EQIP). Funding may also be available for certain private lands projects through BLM's hazardous fuels program or through IDFG and OSC. Landowners are encouraged to discuss the various opportunities available with their local NRCS, IDFG, or BLM office. Support for Idaho projects may also be available through the North American Grouse Partnership's (NAGP) Grouse Habitat Restoration Fund.

Interested parties should contact Mr. Kent Christopher at (208) 356-0079 or grouse@fretel.com.

8. In designing rehabilitation and restoration projects, utilize the best available science relative to seeding technology and plant materials. Use of NRCS's "VegSpec" website may be helpful. VegSpec is a web-based decision support system that assists land managers in the planning and design of vegetation establishment practices. VegSpec utilizes soil, plant, and climate data to select plant species that are site-specifically adapted, suitable for the selected practice, and appropriate for the purposes and objectives for which the planting is intended. (See <http://plants.usda.gov>)

Altered fuels and fire regimes

Annual grasses increase the risk of fire ignition and rate of spread.

1. Design vegetation treatments in areas of high fire frequency to facilitate firefighter safety; reduce the risk of extreme fire behavior; reduce the risk and rate of fire spread to stronghold, key, and restoration habitats; reduce fire frequencies; and shorten the fire season.

Actions may include: fire-resistant or "green-strip" seedings, mowing vegetation along roadsides, grazing strategies, or other related measures.

2. Where rangelands are dominated by annuals (such as cheatgrass), or border farmlands or railroad rights-of-way, convert cheatgrass areas to perennials, or establish buffers of perennial species to reduce the risk of fire spread from railroad or agriculture-related activities (e.g. sparks from trains, field burns, burn barrels), where appropriate and

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feasible. However, to retain their effectiveness green-strips must be monitored as well as maintained, such as through grazing, so fuel loads do not build up over time (Younkin-Kury 2004). 3. To discourage the spread of invasive annuals and noxious weed seed, require the washing of fire vehicles (including undercarriage) prior to deployments and prior to demobilization from wildfire incidents. 4. Ensure annual grass restoration priority areas are incorporated into FMPs, updated annually, as priority fuels treatment and ESR project areas.

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## Appendix E. Fire Management Best Management Practices (BMPs) from Sage-grouse National Technical Team Report (NTTR)

(Morales et al. 2011, citations to references omitted; originally from BLM Instruction Memorandum No. 2011-138 [WO IM 2011-138])

1. Develop state-specific sage-grouse toolboxes containing maps, a list of resource advisors, contact information, local guidance, and other relevant information.
2. Provide localized maps to dispatch offices and extended attack incident commanders for use in prioritizing wildfire suppression resources and designing suppression tactics.
3. Assign a sage-grouse resource advisor to all extended attack fires in or near key sage-grouse habitat areas. Prior to the fire season, provide training to sage-grouse resource advisors on wildfire suppression organization, objectives, tactics, and procedures to develop a cadre of qualified individuals.
4. On critical fire weather days, pre-position additional fire suppression resources to optimize a quick and efficient response in sage-grouse habitat areas.
5. During periods of multiple fires, ensure line officers are involved in setting priorities.
6. To the extent possible, locate wildfire suppression facilities (i.e., base camps, spike camps, drop points, staging areas, heli-bases) in areas where physical disturbance to sage-grouse habitat can be minimized. These include disturbed areas, grasslands, near roads/trails or in other areas where there is existing disturbance or minimal sagebrush cover.
7. Power-wash all firefighting vehicles, to the extent possible, including engines, water tenders, personnel vehicles, and ATVs prior to deploying in or near sage-grouse habitat areas to minimize noxious weed spread.
8. Minimize unnecessary cross-country vehicle travel during fire operations in sage-grouse habitat.
9. Minimize burnout operations in key sage-grouse habitat areas by constructing direct fireline whenever safe and practical to do so.
10. Utilize retardant and mechanized equipment to minimize burned acreage during initial attack.
11. As safety allows, conduct mop-up where the black adjoins unburned islands, dog legs, or other habitat features to minimize sagebrush loss.



## Appendix F: Local Unit Fire Program Conservation Efforts Related to Sage-Grouse

(from BLM Instruction Memorandum No. 2011-138 [WO IM 2011-138])

Many local units with sage-grouse habitats have established protocols that address sage-grouse and fire suppression activities. Examples of these protocols are:

### ***Preseason:***

- Ensuring that resource management plans and fire management plans are current and include guidance for managing sage-grouse and sage-grouse habitat.
- Conducting informational meetings and workshops with federal, state, and local cooperators to share sage-grouse information such as the location of key habitat, standard operating procedures (SOPs) for suppression activities in habitat areas, rehabilitation guidelines in habitat areas, etc.
- Ensuring that suppression priorities include critical resources (i.e., sage-grouse, cultural resources), and use these priorities during periods of fire activity to prioritize incidents and assign resources.

### ***Initial Attack:***

- Ensuring that interagency fire managers update pre-planned responses within the dispatch zone to align the initial attack response with protection priorities and resource values.
- Encouraging dispatch center to utilize geographic information system (GIS) maps in Wildland Fire Computer Aided Dispatch (WildCAD) to determine if new starts are within sage-grouse habitat or in close proximity to other identified values or assets, and relay that information to responders.
- Briefing all local initial attack crews on the importance of identifying sage-grouse habitat during response and suppression, and the need to follow the sage-grouse suppression SOPs (include a form of text instruction and key habitat maps).
- Ensuring out-of-area resources (severity crews, overhead, etc.) receive a full briefing, which includes, among other things, the importance of identifying sage-grouse habitat during response and suppression, and the need to follow the sage-grouse suppression SOPs.

### ***Extended Attack:***

- Ensuring resource advisors (READ) are assigned to fires in the zone whenever fire suppression activities may affect resource values, including sage-grouse habitat.
- Ensuring READs are assigned to incidents as early as possible.
- Ensuring READs participate in annual READ workshops which address, among other things, sage-grouse concerns and SOPs.
- Ensuring READs have access to pre-built kits which include hard copy and electronic resource information, GIS sage-grouse habitat data, fire suppression SOPs for sage-grouse, and rehabilitation guidelines.
- Ensuring sage-grouse issues are addressed throughout the Wildland Fire Decision Support System (WFDSS) process (particularly in decision documents) and specified in delegations of authority to incident management teams (IMT) and incident commanders.

- Ensuring READs are assigned to large incidents managed by an IMT for the duration of the incident. Ensure that per delegations of authority, READs are included in planning meetings, firefighter briefings, and provide input to the incident action plan.

***Post-Incident:***

- Ensuring READs complete a READ report upon demobilization of an incident. This report should summarize suppression actions, suppression damage, and damage caused by the fire itself. The READ report should provide preliminary recommendations for stabilization, rehabilitation, and restoration. This preliminary assessment and subsequent emergency stabilization and burned area rehabilitation plans should include impacts to sage-grouse habitat and recommendations for mitigation.



**Appendix G. BLM Interim Conservation Policies and Procedures for "Preliminary Priority Habitat"**  
(BLM 2011a, BLM Washington Office Instruction Memorandum No. 2012-043 [WO IM 2012-43])

**Wildfire Suppression and Fuels Management**

***Ongoing Authorizations/Activities***

- Threatened, endangered, and sensitive species (including sage-grouse) and associated habitats will continue to be a high natural resource priority for National and Geographic Multi-Agency Coordination Groups, whose purpose is to manage and prioritize wildland fire operations on a national and geographic area scope when fire management resource shortages are probable.
- Sage-grouse protection and habitat enhancement is a high priority for the fire management program. A full range of fire management activities and options will be utilized to sustain healthy ecosystems (including sage-grouse habitats) within acceptable risk levels. Local agency administrators and resource advisors will convey protection priorities to incident commanders.
- Comply with the policies established in WO-IM-2011-138 (Sage-Grouse Conservation Related to Wildland Fire and Fuels Management) or successor guidance, regarding suppression operations and fuels management activities.
- Identify opportunities for prescribed fire; including where prescribed fire has been identified as the most appropriate tool to meet fuels management objectives and Sage-grouse conservation objectives, and the potential expansion or dominance of invasive species has been determined to be minimal through an invasive species risk determination for the treatment project (see BLM Manual Section 9015). Before using prescribed fire, field offices must analyze the potential expansion or dominance of invasive species as a result of this treatment. (BLM 2011a).



## Appendix H. Partial List of Conservation Practice Standards from USFWS Conference Report for NRCS

(USFWS 2010b)

The following list of conservation practice standards are examples of those related to wildfire, fuels, and invasive grasses. The report contains 40 conservation practice standards in total, addressing all threats to sage-grouse and their habitat.

<b>Conservation Practice Standard</b>	<b>Definition</b>
Upland Wildlife Habitat Management	Provide and manage upland habitats and connectivity with the landscape for wildlife, including sage-grouse.
Prescribed Grazing	Managing the harvest of vegetation with grazing and/or browsing animals.
Brush Management (Conifer Tree Removal)	Conifer removal (individual tree removal)—Targeted conifers are removed by manual or mechanical means, such as, chainsaws, feller bunchers, hydraulic shears, or masticators. Cut trees can be left in place, lopped-and-scattered, piled-and-burned, chipped or hauled off-site. Conifer removal (chaining)—Conifer stands are removed by dragging an anchor chain across the site. Practice is typically done in stands in later successional stages of encroachment where sagebrush and other shrubs, grasses, and forbs are greatly reduced or absent.
Fire Break	A permanent or temporary strip of bare or vegetated land established to retard fire. Existing vegetation is removed or manipulated by mechanical means, such as mowers or disks, to reduce fuel loads and promote fire-resistant plants or bare ground. Practice may require seeding with fire-resistant plants.
Herbaceous Weed Control	The chemical, biological, or mechanical removal or control of herbaceous weeds, including invasive, noxious and prohibited plants.
Rangeland Planting	Establishment of adapted perennial or self-sustaining vegetation such as grasses, forbs, legumes, shrubs and trees.
Prescribed Burning	Controlled fire applied to a predetermined area.



**Appendix I. Excerpts from *Greater Sage-Grouse (Centrocercus urophasianus)*  
*Conservation Objectives Final Report***

(USFWS 2013b, citations to references omitted)

**Fire**

**Conservation Objective:** Retain and restore healthy native sagebrush plant communities within the range of sage-grouse.

Fire (both lightning-caused and human-caused fire) in sagebrush ecosystems is one of the primary risks to the greater sage-grouse, especially as part of the positive feedback loop between exotic invasive annual grasses and fire frequency. As the replacement of native perennial bunchgrass communities by invasive annuals is a primary contributing factor to increasing fire frequencies in the sagebrush ecosystem, every effort must be made to retain and restore this native plant community, both within and outside of PACs [i.e., Priority Areas for Conservation of sage-grouse].

**Conservation Measures:**

1. Restrict or contain fire within the normal range of fire activity (assuming a healthy native perennial sagebrush community), including size and frequency, as defined by the best available science.
2. Eliminate intentional fires in sagebrush habitats, including prescribed burning of breeding and winter habitats.
3. Design and implement restoration of burned sagebrush habitats to allow for natural succession to healthy native sagebrush plant communities. This will necessitate an intensive and well-funded monitoring system for this long-term endeavor. To be considered successful, restoration must also result in returning or increasing sage-grouse populations within burned areas.
4. Implement monitoring programs for restoration activities. To ensure success, monitoring must continue until restoration is complete (establishment of mature, healthy native sagebrush plant communities), with sufficient commitments to make adequate corrections to management efforts if needed.
5. Immediately suppress fire in all sagebrush habitats. Where resources are limited, these actions should first focus on PACs and any identified connectivity corridors between PACs.

Threat reduction for fire is difficult and costly. Given the intensity and wide distribution of this threat it may never be fully addressed. However implementing the suite of conservation measures listed above is likely to significantly reduce the impact of fire on the long-term viability of the sage-grouse.

Addressing fire, and subsequent successful restoration activities, in sagebrush ecosystems will require consideration of local ecological conditions, which cannot be prescribed on a range-wide level. Where state sage-grouse management plans already provide an effective strategy for fire, the COT defers to those efforts. In all other situations, the following options should be considered in developing a fire

management strategy. Specific strategies for reducing the threat of fire should be drafted by July 2013 for the Bi-State population and by September 2014 for sage-grouse rangewide, and should consider the criteria outlined in the PECE policy (USFWS 2003).

***Conservation Options:***

1. Prevention of fires in sage-grouse habitats

- a. Manage for the maintenance and, where necessary, restoration of healthy perennial grass and sagebrush vegetative communities.
- b. Manage land uses (e.g., improper livestock grazing, OHV and recreational use, roads) to minimize the spread of invasive species and or facilitate fire ignition.
- c. Address degraded sagebrush systems before fire occurs (e.g., improve grazing systems).
- d. Close rangelands that are highly susceptible to fire to OHV use during the fire season.

2. Quickly suppress fires that do occur

- a. Implement policy changes that allow access to more fire suppression resources, such as Air National Guard Mobile Airborne Firefighting Units.
- b. Re-allocate fire response resources (crews, equipment, etc.) to important sage-grouse habitats.

Identify where resources are lacking and provide those resources to decrease response time to fires in sage-grouse habitats.

- c. Establish defensible fire lines in areas where: (i) effectiveness is high, (ii) fire risk is likely, and (iii) negative impacts from these efforts (e.g. fragmentation) are minimized. Avoid use of any vegetative stripping in healthy, unfragmented habitats, unless fire conditions and local ecological conditions so warrant.
- d. Carefully consider the use of backfires within PACs to minimize the potential for escape and further damage to sage-grouse and sagebrush habitats.
- e. Provide education of fire personnel on the need and value of protecting sagebrush landscapes.
- f. Remove pinyon-juniper stands which are highly flammable (stands where trees are the dominant vegetation and the primary plant influencing ecological processes) in low elevation sagebrush habitats.
- g. Reduce risk of human-caused fires by limiting activities that may result in fire (e.g., fire bans for campers, limit OHV use to roads) during high risk fire seasons.
- h. Provide incentives for suppressing fires in sagebrush habitats.
- i. Federal land management agencies should consider placing additional firefighting resources and establish new Incident Attack Centers in or adjacent to PACs.



j. Firefighters should ensure close coordination with firefighters from other management agencies and local fire departments. Additionally they should seek local expertise to create the best possible strategies for responding to and suppressing wildfire.

### 3. Improve restoration support

a. Consider re-allocation of funding from other habitat work to restoration of sage-grouse habitats affected by fire.

b. Address shortage of locally-adapted seed and storage capabilities.

c. Apply available seed where it is most likely to be effective and to areas of highest need.

d. Ensure sage-grouse habitat needs are considered in restoration efforts including managing for the range of variation, as appropriate for the local area.

e. In the case of limited resources, prioritize PACs over habitats outside of PACs for restoration efforts.

4. Renew and implement BLM Instructional Memorandum (IM) 2011-138 (Sage-grouse Conservation Related to Wildland Fire and Fuels Management) until a decision is made on whether to incorporate the measures identified in the IM into Resource Management Plans.

### **Non-native, Invasive Plant Species**

The increase in mean fire frequency has been facilitated by the incursion of nonnative annual grasses, primarily *Bromus tectorum* and *Taeniatherum asperum*, into sagebrush ecosystems. Exotic annual grasses and other invasive plants also alter habitat suitability for sage-grouse by reducing or eliminating native forbs and grasses essential for food and cover. Annual grasses and noxious perennials continue to expand their range, facilitated by ground disturbances, including wildfire, improper grazing, agriculture, and infrastructure associated with energy development.

Management of this threat is two-pronged: (1) control, or stopping the spread of invasive annual grasses, and (2) reduction or elimination of established invasive annual grasses. These activities should be prioritized in all sagebrush habitats, both within and outside of PACs because once established, invasive annual grasses are extremely difficult to control.

**Conservation Objective:** Maintain and restore healthy, native sagebrush plant communities.

### **Conservation Measures:**

1. Retain all remaining large intact sagebrush patches, particularly at low elevations.

2. Reduce or eliminate disturbances that promote the spread of these invasive species, such as reducing fires to a “normal range” of fire activity for the local ecosystem, employing grazing management that maintains the perennial native grass and shrub community appropriate to the local site, reducing impacts from any source that allows for the invasion by these species into undisturbed sagebrush habitats, and precluding the use of treatments intended to remove sagebrush.

3. Monitor and control invasive vegetation post-wildfire for at least three years.
4. Require best management practices for construction projects in and adjacent to sagebrush habitats to prevent invasion.
5. Restore altered ecosystems such that non-native invasive plants are reduced to levels that do not put the area at risk of conversion if a catastrophic event were to occur. This is especially important within Wyoming big sagebrush communities as these cover types are the most at risk to displacement by cheatgrass. While complete elimination of non-native invasive plants would be ideal, we acknowledge that this is unlikely given our current understanding of underlying ecological processes, shifts in climate, and lack of resources.



## Appendix J. Idaho Statewide Initiatives for Sage-grouse Conservation

(WGA 2014)

Inventory of the State of Idaho's Conservation Initiatives for Sage-grouse (from WGA 2014, pages 7-9).		
Type of Measure	Name	Synopsis
Executive Order	Executive Order No. 2012:02 establishing the Governor's Sage-grouse Task Force	A 15 member citizen task force was formed to provide the Governor with recommendations on policies and actions as a backdrop for developing a state-wide regulatory mechanism to preclude the need to list greater sage-grouse.
Resolution		Idaho's Legislature endorsed and encouraged Governor Otter in his efforts with the Sage-grouse Task Force including the Governor's coordinated involvement of state agencies.
Resolution	Idaho Republican Party Resolution 2013-35, passed by the Idaho Republican Party at their annual party meeting	The Idaho State Republican party will work at all levels of local, state and federal governments to assure that the collaborative scientific approach utilized by the State of Idaho thus far in the conservation efforts on behalf of the bird be recognized for its productive approach and be continued to develop solutions to minimize threats to the bird.
Task Force	Governor's Sage-grouse Task Force	Idaho Sage-grouse Task Force developed and submitted recommendations to Idaho's Governor for regulatory mechanism conserving greater sage-grouse.
State Alternative	Governor's Office	Governor's office developed and submitted a state plan of regulatory mechanism as an alternative in BLM's Environmental Impact Statement analyzing alternatives for revising land use plans (LUPs) for lands that include sage-grouse habitat to incorporate consistent objectives and conservation measures by September 2014 in an effort to preclude the need to list the greater sage-grouse under the ESA.
State Alternative	BLM Draft Land Use Plan Amendment	The State's Alternative is a co-preferred alternative in the BLM Idaho and Southwestern Montana Draft Land Use Plan Amendment and Environmental Impact Statement.
Initiative	Farm Bill biologists for sage-grouse conservation	Idaho Department of Fish and Game, Pheasants Forever, Intermountain West Joint Venture, and Natural Resources Conservation Service fund three fulltime Farm Bill biologists in strategic area for sage-grouse conservation in Idaho. The biologists provide technical and financial assistance to private and public landowners interested in implementing sage-grouse conservation measures.

Initiative	Mule Deer Initiative habitat program	Idaho Department of Fish and Game's Mule Deer Initiative habitat program focuses on several large scale projects, including juniper removal and planting thousands of sagebrush plants in mule deer range, some of which will improve sage-grouse habitat.
Program	Rural Land Fire Protection Association	Three rural fire protection associations created, allowing private landowners and agency (local, state, and federal) fire management coordination to improve initial attack on wildfires.
Initiative	Fence markers collaborative program	Idaho Department of Fish and Game, Idaho Rangeland Resource Commission, and U.S. Fish and Wildlife Service partnership fund Future Farmers of America (FFA) local chapters to manufacture fence markers. Members of FFA chapters and sage-grouse local working groups will install the fence markers on fences near sage-grouse leks to reduce sage-grouse collisions with fences.
Strategic Plan	Idaho Invasive Species Strategic Plan 2012-2016	This Invasive Species Strategic Plan includes all taxa (plants and animals). The plan includes multiple objectives that strengthen Idaho's resolve to combat noxious and undesirable weeds that impact sage-grouse habitat by assessing invasive species pathways, developing education and outreach tools, calling for effective monitoring and surveillance, habitat rehabilitation, and adequate regulatory tools.
Conservation Plan & Local Working Groups	Conservation Plan for the Greater Sage-grouse in Idaho	Conservation plan has 149 conservation measures for sage-grouse habitat and populations in Idaho. This is an ongoing plan with state, federal partners and 11 working groups and 9 of those have completed plans. Long list of conservation measures addressing threats to greater sage-grouse in local planning areas. Each local working group plan has various conservation measures addressing local threats.
Legislative intent	2013 legislative intent	2013 Legislative Intent directs Idaho Department of Fish and Game to spend up to \$100,000 controlling ravens and studying the impact on sage-grouse.
Regulation	Annual recommendations for sage-grouse hunting	Annually Idaho Fish and Game Commission proclaim rules governing sage-grouse hunting seasons, and bag and possession limits in Idaho.

**Appendix K. Excerpts from Idaho West Central Planning Area  
Candidate Conservation Agreement with Assurances (CCAA)**

(adapted from Northwest Resource Group 2010)

In February 2010, the IDFG, NRCS, and USFWS signed a Candidate Conservation Agreement with Assurances (CCAA) for sage grouse in the West Central Planning area of Idaho (Northwest Resource Group 2010). **Table K-1** summarizes the proposed conservation measures related to ameliorating the threat of wildfire and annual grasses (cheatgrass).

**Table K-1.** Summary of wildfire and invasive annual grasses threats and conservation measures for sage-grouse from West Central Planning Area (WCPA) CCAA.

<b>Threat</b>	<b>Evidence within WCPA</b>	<b>Potential conservation measure</b>	<b>Expected conservation benefit</b>
<b>Wildfire</b>			
Altered fuels and fire regimes	Extensive areas lacking sagebrush cover and dominated by cheatgrass, medusa, or bulbous bluegrass understories.	Following wildfire participate in restoration/rehabilitation of annual/biennial grassland habitat to healthy sagebrush steppe, rangeland where feasible, practicable, and adequate funding is available.	Increase the amount of suitable sage-grouse habitat.
Reduction or modification of habitat.	Known ignition threats such as proximity to roads or areas of high public use.	With proper training and the concurrence of fire officials, actively assist with the suppression of wildfire in existing or potential sage-grouse habitats. On at least an annual basis, instruct family members, employees, and guests on the importance of fire prevention and fire prevention practices. Where needed and appropriate, as determined by the Parties, install firebreaks or greenstrips to "buffer" existing intact or occupied habitat.	Reduce the frequency of fire to maintain existing sagebrush habitats and allow early seral habitat to become mid seral habitat, which is limiting in the WCPA.  Maintain key sagebrush sites as breeding, brood-rearing and winter habitat.

(continued)

Table K-1. continued.

Threat	Evidence within WCPA	Potential conservation measure	Expected conservation benefit
<b>Wildfire (continued)</b>			
Restoration and burned area rehabilitation.	Extensive wildfires where natural revegetation of desirable native species is unlikely.	Following wildfires of at least 100 acres consult with the agencies and others on the need for rehabilitation to healthy sagebrush habitat. When rehabilitation is advisable and feasible and when adequate funding is available, native shrubs, grasses and forbs will be considered first and incorporated into seed mixes where feasible, practicable, and adequate funding is available. Provide for at least one growing season of rest from grazing following fire and at least two growing seasons of rest following seeding unless the parties agree to another approach.	Facilitate rapid recovery of vegetative types that provide suitable sage-grouse habitat. Help assure the success of post-fire recovery.
<b>Annual grasslands</b>			
Annual grasses that contribute fire hazards and which threaten sagebrush cover.	Relatively large areas of existing annual grass or areas which are spreading and threaten to displace native range.	See Wildfire Section above. All actions regarding fire prevention, suppression, and rehabilitation of burned areas are applicable.	Maintenance and restoration of native shrub types as suitable breeding, brood-rearing, and/or wintering habitat. Increase the extent of shrub communities through rehabilitation and restoration of annual grass areas.

## **Appendix L. A Risk Assessment Approach for Comparing Wildland Fire Effects on Sagebrush Ecosystems With and Without Fuel Treatment**

(adapted from O’Laughlin 2005, 2010).

1. Keep it simple. Resource managers need project-level decision support models. Start with the essentials and add complexity only as necessary to fit the management situation.
2. Determine desired rangeland conditions. The management objective is attaining a specific rangeland condition that will reduce wildfire risks, expressed clearly in terms the manager can be held accountable for. Many areas in the western United States have accumulated levels of fuels that represent uncharacteristically hazardous conditions that can be categorized by fire regime condition classes (FRCC, Barrett et al. 2010).
3. Select risk assessment endpoints consistent with management objectives. An appropriate endpoint for assessing wildfire effects is viable populations that depend on vegetation that is affected by wildfire. The EPA’s (1998) guidelines caution against using vague concepts like “sustainability” and “integrity.”
4. Develop a stressor-response profile. One effect of either wildfire or fuels management as a stressor on sage-grouse population viability is vegetation change. The response is an effect on sage-grouse, manifested by the relation of populations to vegetation modification in response to either wildfire or fuels management. A working hypothesis is that fuels management will modify subsequent wildfire behavior and provide a more favorable outcome for sage-grouse than wildfire would, but until the effects of fuel treatment are considered one cannot assume that the hypothesis is correct.
5. Use an appropriately long time horizon to compare post-wildfire vegetation with and without fuel treatment. If the wildfire risk management situation involves imperiled species, anything less than 100 years is inappropriate (NRC 1995).
6. Wildfire is certain to occur. This can be assured in risk analysis by selecting an appropriate long-term time horizon, such as the fire return interval of natural (historical) or characteristic fire regimes. This deterministic approach avoids the difficulty of assessing and communicating a probability distribution of fire risk potential, but probabilistic refinements such as the relationship of fire and vegetation response could be used to add stochastic elements if appropriate data are available. Recent research indicates that this is problematic (see Baker 2011).
7. Compare the magnitude of adverse environmental effects on the quality of sage-grouse habitat wildfire with and without fuel treatment.
8. Include the benefits of fuel treatment in the analysis. Fire Regime Condition Class (FRCC) categorizations are useful for this (see Barrett et al. 2010). The effects of wildfire with fuel treatment (e.g., restoring to FRCC 1 or historical fuel load levels) should reflect the reduction of adverse post-fire environmental effects that can be attributed to fuel treatment. The effect of wildfire without fuel treatment is the no-action alternative represented by current FRCCs 2 or 3, representing departures from historic conditions that pose moderate and high risk to ecological conditions, respectively. The

benefit is obtained by management actions that change rangeland ecosystems from a higher to a lower FRCC.

9. Focus on the benefits of preemptive or pre-fire management instead of trying to determine safe or acceptable levels of risk. The problem of determining the level of risk society is willing to accept is avoided altogether, and analysis focuses on comparing two options, one against the other, rather than against a nonexistent or elusive, value-laden, socially determined standard of acceptable risk.

10. Avoid the difficulties involved in discounting future ecological effects to the present time by not discounting. If economic or social considerations are added, discounting may be appropriate. To reduce bias against future generations, use a very low discount rate.

11. Use quantitative data when they exist. Qualitative assessments and comparisons of ecological risks can provide useful insights for environmental decision-making, even if the scientific understanding of them is poor, as Baker (2011) points out is the case with historic fire regimes in sagebrush ecosystems.

12. Display relationships in a conceptual model decision diagram that compares adverse and beneficial effects over time.

