



Wildfire and Invasive Species in the West: Challenges That Hinder Current and Future Management and Protection of the Sagebrush-steppe Ecosystem

A Gap Report

Western Association of Fish and Wildlife Agencies

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This report summarizes the policy, fiscal and science challenges that land managers encounter related to the control and reduction of the invasive plant/fire complex, especially as it relates to the threaten or endangered species listing status of the Greater sage-grouse.

“As Director, I will review the “Gaps” identified in this report to determine if there are things my agency can affect directly and move forward with a solution. If we collectively take on these challenges, we can make positive steps towards addressing the number one threat to the conservation of sage-grouse!”

Dan Ashe, Director U.S. Fish and Wildlife Service, September 24, 2013 Western Governors Association, Sage-Grouse Task Force Meeting, Denver, CO



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Wildfire and Invasive Species in the West: Challenges That Hinder Current and Future Management and Protection of the Sagebrush-steppe Ecosystem – A Gap Report

The Western Association of Fish and Wildlife Agencies (WAFWA) to satisfy the 45-day report requirement identified in Cooperative Agreement (F13AC00353) between WAFWA and the U. S. Fish and Wildlife Service (FWS) submit this “Gap Report”. This report summarizes the policy, fiscal and science challenges that land managers encounter related to the control and reduction of the invasive plant/fire complex, especially as it relates to the threaten or endangered species listing status of the Greater sage-grouse (*Centrocercus urophasianus*).

While this Gap Report identifies 22 technical, policy, planning and funding gaps, it should be considered a “work in-progress”. To address this effort a Wildfire/Invasive Initiative Work Group (WG) was formed. The WG consist of nationally recognized experts in fire ecology, Sage-grouse ecology and management, range management and plant ecology. The WG developed this Gap Report and will be developing the final report for this Cooperative Agreement. Thus, as the WG evaluates the wildfire/invasive issue and makes recommendation to address scientific and management shortcomings, additional gaps will be identified and included in the final report. Within this report, the WG has suggested the top 5 gaps. However, the actual priority of what should be addressed first will depend on the significance and sequence of the limiting factor, available funding, current work, roles and responsibilities of the specific agencies, etc.

The WG will continue to meet on a regular basis to further develop and expand this list of gaps. Additionally, the WG will offer specific

options to address the identified gaps. However, the WG recommends that the FWS, possibly through the State/Federal (Western Governors Association) Sage Grouse Task Force or the National Sage-grouse Executive Oversight Committee, establish a Subcommittee to specifically review this Gap Report and develop a multi-agency approach on how to address each gap. The WG will continue to endeavor to establish a priority list and identify the “low hanging fruit” that can be addressed in the short-term to affect the listing



Sagebrush Habitats

decision. Additionally, the WG will propose a longer-term strategy. However, to successfully establish such a strategy it will take buy-in and commitment at the highest levels in federal and state governments.

In an effort to provide managers an opportunity to address the most important issues this coming fiscal year, we offer the following top 5 gaps. Beyond these top 5, the WG has identified 17 additional gaps that should be evaluated by both federal and state agencies as a means to help better manage the wildfire/invasive threat in the west.



Top 5 Gaps

1. Land management agencies need a long-term pre- and post-fire restoration funding initiative to secure dedicated funding to ensure that appropriate fuels/vegetation management is accomplished and sagebrush ecosystems can be restored following wildfire. Due to the variability in annual precipitation in arid sagebrush ecosystems, multiple interventions, over several years, are often required to successfully restore or rehabilitate the site. Current policies limit the use of federal fire rehabilitation funding following wildfire to three years and the policy includes limitations on funding habitat restoration. Beyond three years, restoration can be funded through resource programs (vegetation, wildlife,

becoming larger and more frequent. Land managers need policies that are less rigid and more ecologically responsive to loss of sagebrush habitat after wildfires. One way to accomplish this objective is to establish a dedicated funding source that provides adequate funding for fuels management and post-fire restoration of sagebrush habitat without drawing from existing fire, fire rehabilitation, and resource programs.

2. Agencies lack comprehensive, range-wide maps of ecological conditions, measures of site resilience/resistance, high resolution vegetation data, and soil surveys to assist managers to: 1) prioritize sagebrush



Sagebrush habitat resilience and resistance

watershed, etc.) However, these funds are not increased to accommodate the additional restoration needs following wildfire.

The result is lost opportunities to restore Sage-grouse habitat following wildfires that are

conservation and restoration opportunities at a broad-scale, 2) plan and implement effective management practices (livestock and recreation use, energy exploration and development etc.), pre and post-fire planning, fuels treatments, and restoration activities at



the local or project scale. These maps and surveys are the basis for the resistance and resilience decision support tools required to implement a sound sagebrush steppe conservation and restoration strategy.

3. In general, seeding methods, seed mixes, and equipment used for post-fire rehabilitation or habitat restoration has not been adequately updated to improve native plant (especially sagebrush) reestablishment. Some equipment and seed availability issues have been addressed, but management has not widely implemented their use for post-fire rehabilitation or habitat restoration. New technologies, such as seed coating to improve the success of native seedings, or developing soil pathogens to counter cheatgrass, have been developed but need further testing. These are just a couple of examples of innovative approaches (more are needed) that could be accelerated with additional resources.

4. Rancher, private landowner, and agency



Cheatgrass increases flash points and intensity of fires

(local, state and federal) fire management coordination (e.g., Fire Protection Associations) is being implemented in selected areas across the west to improve initial attack on wildfires. Similarly, coordination between

public and private landowners to manage invasive plants across landownerships is occurring by creating Cooperative Weed Management Areas. These efforts are important components in habitat conservation, and should be implemented across the range of Sage-grouse as training and safety requirements allow.

5. We lack the necessary information, policy, and administrative support to: 1) determine the appropriate time-frame for removal or reduction of livestock grazing to promote ecosystem recovery after wildfire and rehabilitation/restoration treatments, 2) determine the utility of using livestock grazing to reduce fuels in wildfire prone habitat, and 3) ensure that existing livestock grazing is managed to promote resiliency within the understory vegetative community before a fire occurs. This issue is compounded by:

- The lack of rigorous/credible studies on the effects of grazing by livestock, wild horses and burros on post-fire rehabilitation and Sage-grouse habitat, under various grazing systems (season of use, distribution, intensity of use, kind of use, etc.).

- Institutional barriers and funding limitations that block or hinder the implementation of necessary management changes / strategies on the ground. These barriers need to be removed.

- The lack of rigorous/credible studies on the effectiveness of targeted livestock grazing to reduce fine fuels where invasive annual grasses such as cheatgrass are dominant, especially in low elevation big sagebrush communities, but also in other more mesic sagebrush communities where natives dominate.



Studies and pilot projects are needed to evaluate livestock as a fuels management tool at larger scales and

to determine the feasibility costs, both short and long-term, of environmental impacts relating to this potential tool.

Additional 17 Gaps

Programs, Funding, and Policy Gaps

1. Since the inception of National Fire Plan following the 2000 fire season, fire management agencies have participated in numerous initiatives, which include reducing the threat of wildland fire in and around communities, typically termed the Wildland Urban Interface (WUI). Activities have included, but are not limited to: fuels reduction projects, expanded wildfire prevention and education activities, development of fire resistant construction products and methodologies, and improved wildfire suppression technology and capacity. Significant federal, state, and local funding, community involvement, volunteer labor and private sector contributions have, and continue to be utilized very successfully within the WUI. While reducing the threat of wildfire in the WUI will remain a high priority, taking a similar level of “focus” to western rangelands to protect priority Sage-grouse habitats across the west from wildland fire is currently a “Gap” and a necessary next step

Consistent with the interagency National Cohesive Wildland Fire Management Strategy, designed to seek “all-lands” solutions to wildland fire management issues (e.g., the loss of critical habitat for sage grouse), programs and planning efforts successfully applied in the WUI should be used on western rangelands

- to assist in the restoration and maintenance of resilient sage brush ecosystems.
2. Historically, sagebrush was considered an undesirable plant given its lack of palatability to livestock resulting in limited conservation (funding, management, policy etc.) at all levels (federal, state and local) over the years. We need to continue to increase internal and external educational efforts about the importance of sagebrush steppe habitat.
3. Between 95-97% of the fire starts in the GB are successfully suppressed during initial attack. The remaining 3 – 5% exceed initial attack efforts, often during environmental conditions that overwhelm suppression efforts, thereby becoming large fires with many negative implications to Sage-grouse. Significant funding resources are available for fire suppression but often come from other program accounts that can affect Sage-grouse conservation. Resources are needed to better plan and implement programs that focus on pre-suppression and post-fire work to aid suppression activities and lessen adverse wildfire effects on sagebrush and Sage-grouse.
4. Federal and state agencies do not have a coordinated reporting system that summarizes the fire season or the spread of invasives and their true effects on Sage-grouse habitats.



5. Historically, we lack mid-level management direction (because of funding and political realities) regarding where and what should be done to address the wildfire and invasive species problem. This lack of coordinated direction has resulted in inconsistent actions on the ground and thus has in many cases exacerbated the fire and invasive species problem.
7. We lack a range-wide strategy to manage wildfire, invasives and Sage-grouse that all disciplines can relate to.



Intense fires eliminate many natives.

6. 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
- To date, the reports and plans that have been developed by specific disciplines (i.e., sage-grouse experts), which often leads to misunderstanding and a lack of buy-in at all levels.
8. We face institutional barriers to be able to re-think on-going management and thus be nimble enough to be successful at adaptive management.



9. We lack adequate funding and commitment for long-term implementation and effectiveness monitoring of fire rehabilitation, fuels management, invasive species prevention, and restoration treatments.
 10. We do not have a program in place (e.g., a restoration account) that can reliably provide sufficient native seed for appropriate ecotypes at any given time. Current post-fire rehabilitation policies and procedures create an artificial “boom or bust” seed availability situation tied to acreages burned by wildfires each season. This “boom and bust” cycle is a disincentive to the private sector to develop existing businesses or start new seed companies that can consistently produce the full range of species at the desired quantity in any given year. All of these factors contribute to an inadequate seed supply in big wildfire years. Additionally, current policy dictates that post fire restoration be limited to one opportunity following the fire, ignoring or accommodating the vagaries of annual precipitation and the need for a longer term approach to restoration of native plant communities.
 11. 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.
- negative impacts to Sage-grouse habitat. Alternatively, we do not understand trade-off in short-term habitat losses resulting from fuels reduction treatments compared to long-term and large scale habitat retention or the short- and long-term impacts to Sage-grouse population dynamics.
2. We do not have an objective landscape tool to predict where green-strips should be established or what BMP's are needed to accomplish fire suppression, desired vegetation or Sage-grouse objectives.
 3. We do not have an analytical process that looks at the cost/success trade-off of applying seed versus transplanting live seedlings (mainly for shrubs and forbs).
 4. We do not understand the complex set of variables that controls seeding success nor do we have accurate predictive meteorological data/models to identify years when the potential for seeding success is higher or lower.
 5. We do not have an understanding of the ratio of plants killed by fire and density of surviving plants that should trigger re-seeding. This depends on site potential (Ecological Site), vegetation community/condition and precipitation. Protocols need to be established to provide this information to land managers.
 6. Studies have demonstrated that fire can have long-term effects (>10 years) on sagebrush-steppe communities and does not appear to enhance Sage-grouse habitat especially in lower elevations. Thus, we need studies that inform us of the short and long-term impacts of fire on Sage-grouse

Implementation, Science, and Monitoring Gaps

1. We do not have a clear understanding of trade-offs between establishing proactive fuels management practices (e.g., fuel breaks or green-strips) to aid suppression efforts versus potential



demography and habitat use across large landscapes.

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Wildlife of the Sage-steppe. Greater short-horned lizard, sage sparrow, Greater short-horned lizard, horned lark, badger, mule deer and Greater sage-grouse. Photo credit William Allard

