The Nevada Sagebrush Landscape Bill

An Analysis of Sage Grouse Conservation Potential

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A Report from

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Summary

This analysis examines the potential of the recently proposed Nevada Sagebrush Landscape Conservation and Economic Development Act to protect sage grouse. Overall, approximately 14% of sage grouse Priority Habitats and Occupied Habitats would be eligible for designation as wilderness under the bill. Total acreage eligible for wilderness designation includes 2,814,737 acres of Priority Habitats and 1,760,536 acres of occupied sage grouse habitats outside Priority Habitats. In addition, the bill would establish impact fees for developments inside sage grouse habitats, that may act as a disincentive for industrial use on these lands and also yield a modest amount of funding for certain conservation projects, which vary in their degree of potential effectiveness. Many threats to sage grouse are not addressed by the bill, or addressed to a negligible degree. In order to successfully institute sage grouse protections sufficient to protect and recover the bird and thus avoid Endangered Species listing, strong and science-based protections for Priority and General Habitats must also be adopted through federal land-use plan amendments that are currently being developed, or through legislation. Overall, the bill is potentially helpful in the effort to protect and restore sage grouse populations across Nevada, and paired with strong habitat protections in federal land management plans currently being amended, could be part of a long-term conservation solution for the problem of sage grouse population declines.

Tatiana Gettelman photo

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Introduction

The greater sage grouse is classified as a Candidate Species under the Endangered Species Act, with its listing determined to be "warranted, but precluded" by higher priorities in a 2010 listing determination by the U.S. Fish and Wildlife Service. As a result of a legal settlement over the federal government's delays in expeditiously addressing protections for plants and wildlife on the Candidate Species list, the federal government must make a final determination for whether the greater sage grouse will be given protection as a Threatened Species or Endangered Species (and designate critical habitat) by September 2015.

Habitat degradation is considered the overriding threat to sage grouse persistence rangewide, and primary threats to sage grouse persistence in Nevada include fire, livestock grazing, energy development, invasive weeds, infrastructure, and piñon-juniper encroachment (Manier et al. 2013).

In response to the impending listing decision, the U.S. Bureau of Land Management and Forest Service are amending all land-use plans across the range of the greater sage grouse to increase protections and address the lack of adequate regulatory mechanisms identified for these lands in the 2010 "warranted, but precluded" determination.

In late 2013, Senators Harry Reid (D-NV) and Dean Heller (R-NV) jointly announced a bi-partisan discussion draft of their Nevada Sagebrush Landscape Conservation and Economic Development Act. The Act would designate as wilderness an unspecified number of Bureau of Land Management Wilderness Study Areas and Forest Service Roadless Areas occurring within sage grouse habitats, and require mitigation fees for developments occurring in sage grouse Priority and General Habitats, some 15% of which would be granted to the State of Nevada for unspecified sagebrush mitigation and the remainder of which could be used for a targeted list of activities. Balanced against these conservation-oriented provisions, the bill requires the designation of three sites for geothermal energy development "that have a comparatively low value for other resources," relinquishes all federal water rights that would otherwise be established for the wilderness areas, and facilitates the sale or transfer of as-yet unspecified federal lands to local governments for development purposes.

Methods

WildEarth Guardians used GIS mapping to overlay Bureau of Land Management Wilderness Study Areas and Forest Service Inventoried Roadless Areas in Nevada, which would be Congressionally designated as wilderness areas, over sage grouse Priority Habitats in the state. For the purposes of this analysis, all Wilderness Study Area and Inventoried Roadless Area lands falling within sage grouse Priority Habitats were calculated for acreage, as well as all Wilderness Study Areas and Inventoried Roadless Areas in occupied habitats outside the Priority areas, to set a maximum level of protection that key habitats would get from wilderness designations. While it is unclear whether the draft legislation addresses Mono Basin potential wilderness, this analysis considers both the Bi-State (Mono Basin) Distinct Population segment as well as all other Priority Habitats for sage grouse in the State of Nevada.

Because the joint Bureau of Land Management/Forest Service plan amendment effort is still underway and final Priority Habitats have yet to be designated, we used the Priority Areas for Conservation as mapped in the U.S.

Fish and Wildlife Service's Conservation Objectives Team report to identify Priority Habitats for sage grouse.

We then evaluated the efficacy of the various measures included in the discussion draft of the Nevada Sagebrush Landscape Conservation bill in addressing the primary threats to sage grouse persistence in Nevada. The efficacy of these measures was evaluated for certainty of implementation and also effectiveness based on scientific findings, the two primary factors in determining whether sage grouse conservation efforts adequate regulatory mechanisms under the Endangered Species Act.

Wilderness Protections for Priority Sage Grouse Habitats

It remains to be determined how many of the Wilderness Study Areas and Inventoried Roadless Areas overlapping with sage grouse habitats will be formally designated as wilderness under the proposed legislation.

According to our GIS mapping analysis, 1,321,976 acres of BLM Wilderness Study Areas fall within Priority Areas for Conservation, while 1,492,761 acres of Inventoried Roadless Areas managed by the Forest Service fall within sage grouse Priority Habitats (*See* Map, Figure 1). Thus, if the Act is fully implemented, a little more than 2.8 million acres, representing 13.76% of the 20,461,800 acres of sage grouse Priority Habitats in Nevada, would be protected as Congressionally designated wilderness areas.

For General Habitats, the GIS analysis reveals that 847,625 acres of Wilderness Study Areas and 912,911 acres of Inventoried Roadless Areas managed by the Forest Service fall within sage grouse occupied habitats but outside Priority habitat areas. This represents 14.44% of the 12,193,011 acres of occupied sage grouse habitats in Nevada that are outside Priority Habitat boundaries.

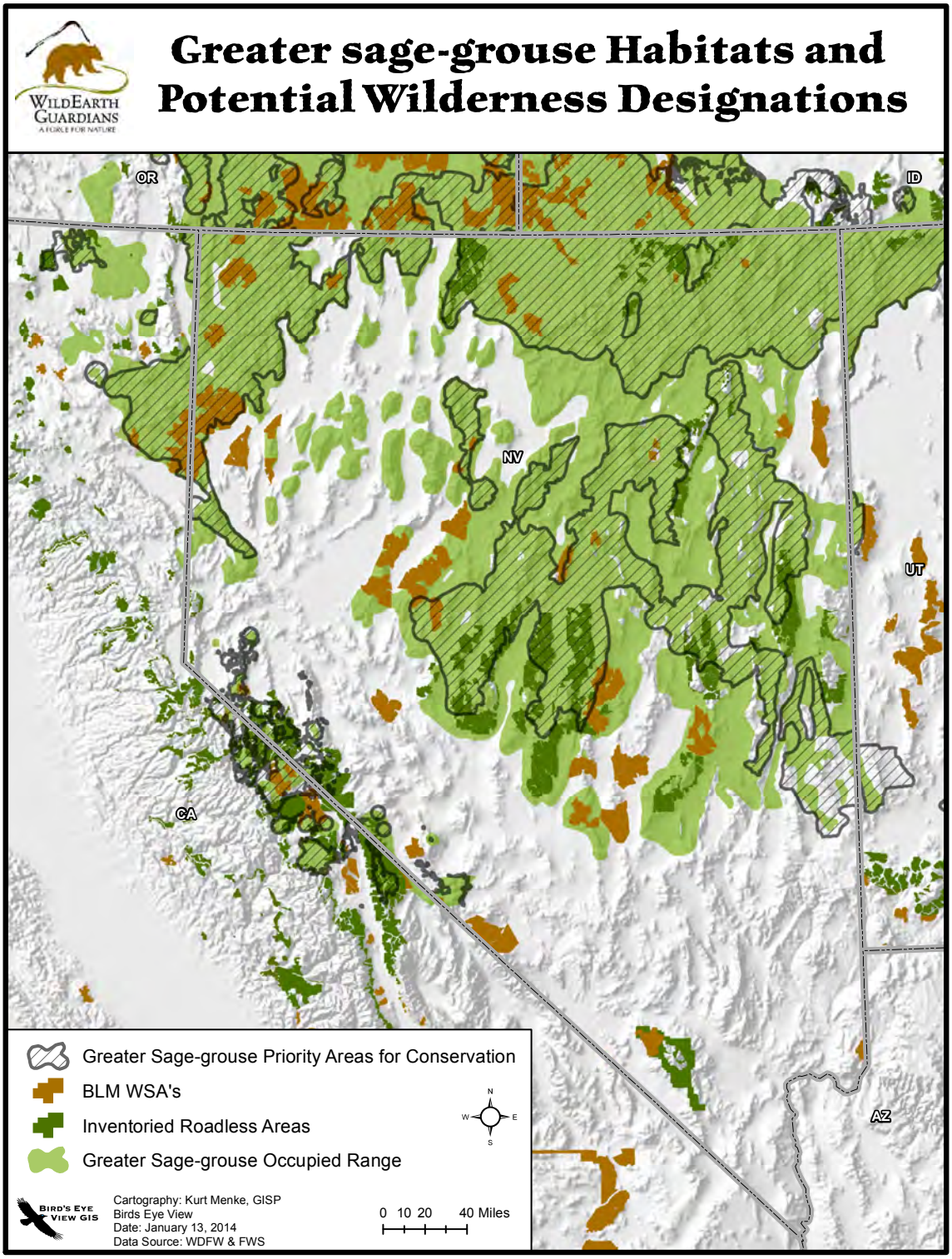
Wilderness protection is the land designation that by itself provides the greatest level of protection for sage grouse habitats against industrial intrusions and infrastructure impacts. Wilderness protection prevents the construction of roads, transmission lines, mines, oil and gas fields, and other industrial facilities that disturb the naturalness of the protected lands. Thus, wilderness protection addresses the identified threats of energy development and infrastructure for Nevada (Manier et al. 2013).

But is also important to recognize that these particular threats are already effectively prevented by existing Wilderness Study Area and Inventoried Roadless Area restrictions. Thus, the bill provides permanent protection from threats that were already unlikely due to administrative land-use designations, by taking indefinite habitat protections and making them permanent.

Wilderness protection also typically grandfathers in livestock grazing, which presently poses perhaps the greatest threat to sage grouse persistence through spreading cheatgrass infestations that lead to unnaturally frequent fires. Wilderness designation confers no change in the ability to suppress fires that would occur in sage grouse habitats.

Habitat Mitigation Fees Generated

The bill would require a mitigation fee of $750 per acre of Priority Habitat disturbed, or $550 per acre of General Habitat disturbed. To the extent that the bill imposes additional costs on development within designated sage grouse habitats, it would serve as at least a small financial incentive to locate development projects elsewhere. How


Greater sage-grouse Habitats and Potential Wilderness Designations
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much mitigation funding would be generated by the bill depends on (1) how the acres disturbed would be calculated and (2) how many acres of Priority and General Habitats would see surface disturbance.

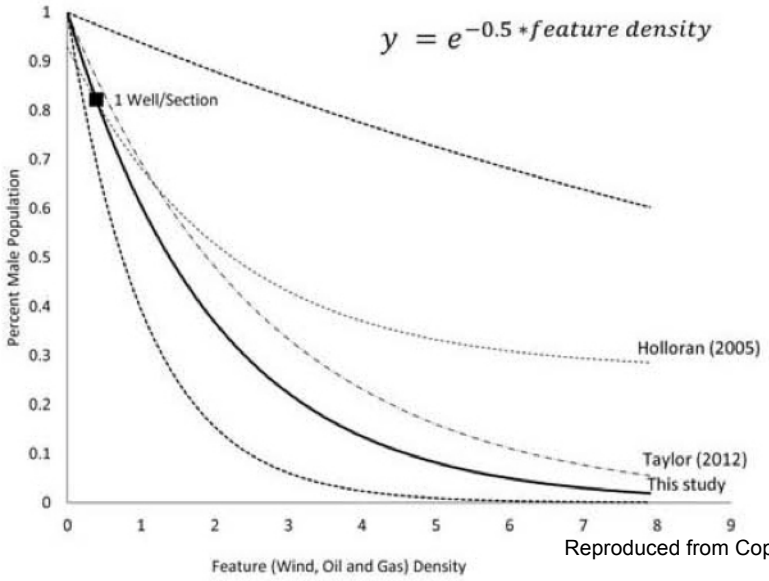
For instance, a typical oil and gas well requires the bulldozing 6 acres (the "direct disturbance"). However, once high-disturbance drilling activities have ceased, that well will have a negative impact on sage grouse that extends 1.9 miles from its perimeter (Holloran 2005), the "indirect disturbance." These impacts last throughout its producing lifespan, typically 30 to 50 years. When accounting for surrounding sage grouse habitats that lose some or all of their habitat function as a result of proximity to the wellsite, each well would have a significant negative impact on more than 7,640 acres of sage grouse habitat. Thus, paying the mitigation fee based on the acreage of habitat affected by the well would yield more than a thousand times as much habitat funding as simply paying the fee on the acreage bulldozed.

Similarly, an improved gravel road that receives moderate use was also found to have significant negative effects on sage grouse up to 1.9 miles from the road's edge (Holloran 2005). A straight mile of gravel road with a 30-foot-wide footprint including road crown and ditches, running through otherwise pristine habitat, requires bulldozing 3.6 acres. But considering the adjacent habitats that would suffer from significant reductions in sage grouse for 1.9 miles on either side, the total loss of habitat function would be 1,796 acres for each mile of road. In this example, paying the fee on the habitat that is abandoned by sage grouse would yield almost 500 times the mitigation fees as paying for the acres bulldozed only.

The fees generated by developments in designated sage grouse habitats could be used for four purposes: restoration of sage grouse habitats (including attempts to eliminate invasive weeds and piñon-juniper expansions), fire suppression in sage grouse habitats, "currently accepted proper grazing practices and livestock management," and "science-based" predator control.

Restoration of sage grouse habitats would confer some distinct benefits on sage grouse. There is considerable disagreement in the scientific literature regarding whether woodland expansions currently seen may be the result of livestock grazing decreasing competition for soil nutrients and water, and/or the result of fire suppression. Studies on fire in sagebrush systems indicate that natural fires were rare events in these systems (Baker 2007, Bukowski and Baker 2013), so it is unlikely that piñon-juniper expansion is the result of fewer fires. Regardless, removal of piñon-juniper woodlands that have expanded into sagebrush habitats would create the greatest benefit to sage grouse on a per-dollar basis, if the sagebrush understory can be protected during the course of tree removal. Sage grouse avoid tall structures (including trees), so the elimination of woodlands would result in a direct expansion of potential habitat for the birds.

Control of invasive weeds is a more problematic prospect, because elimination or even reduction of cheatgrass, the primary weed threat to sage grouse, has never been successfully undertaken on a large scale. Some herbicide treatments (such as Plateau) have shown promise when applied on a small scale, but large-scale programs have never been attempted due to expense and the intensive nature of this type of herbicide application. It is therefore unlikely that the development fees imposed under the bill will ever



Reproduced from Copeland et al. (2013)

Figure 4. Sage-grouse population response to feature density regression relationship (solid line) with 95% CI (dotted lines). The feature density at one well per section is shown for reference, as well as the regression relationships for two similar studies.
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enable the treatment of more than a small acreage of cheatgrass infestations.

Fire suppression in sage grouse habitat offers the prospect of a much more cost-effective method to slow the expansion of cheatgrass. But expenditures on fire suppression will never create a net improvement in grouse habitat to offset the development of designated Priority or General Habitats.

It is doubtful that sage grouse would ever derive any measurable benefit from predator control programs, despite the "science-based" description. Scientific findings are unanimous in reporting that while predation is an important cause of sage grouse death and reduced nesting success, it only poses a threat in habitats where human-caused disturbance and habitat fragmentation have upset the natural balance (Bui et al. 2010, Dzialek et al. 2011). By introducing fences and tall structures into key sage grouse habitats, human development creates unnatural perches and nesting sites for ravens and birds of prey, leading to unnatural levels of predation on resident grouse (Prather 2010). By fragmenting habitats with roads, pipelines rights-of-way, and other linear disturbances, and adding unnatural food sources in the form of dumps, development in sage grouse habitats increases the vulnerability of grouse (Kristan and Boarman 2007, Nonne et al. 2012). Blomberg et al. (2012) evaluated the demographics of sage grouse in central Nevada, and indicated that populations were controlled strongly by habitat factors, rather than predation. Predation has not been documented to limit sage grouse populations, and therefore there is little scientific support for predator control programs (Hagen 2011). Thus, the only "science-based" predator control program that would be effective would be to eliminate human disturbances in sage grouse habitats, by closing dumps that attract ravens, dismantling fences and powerlines that provide perches for predators, and restoring roadways that fragment sagebrush habitats.

Predator killing programs that focus on larger predators like coyotes often result in an increase in smaller predators that

are released from suppression, and these predators (such as foxes and skunks) may pose a far greater problem for sage grouse populations than coyotes, which are poor grouse predators (Mezquida et al. 2006). And even when killing programs focus on the most important sage grouse predators, they can result in an increase in predator populations when social structures break down and all predators – not just the dominant animals – start breeding. Finally, predator populations quickly rebound to their original levels once there is a break in predator "control" efforts. Thus, predator killing programs will never be a long-term solution that helps restore sage grouse populations.

It is unknown at this time how many acres would be developed in Priority and General Habitats at this time. For federal lands, acreage figures for projected surface disturbance are not presented in the Nevada and Northeast California Greater Sage-Grouse Draft Land Use Plan Amendment EIS (BLM 2013). Forecasting the acreage of future impacts to sage grouse habitats on state and private lands would be even more difficult and speculative. Thus it is not possible at this time to forecast whether a significant amount of funding will be generated for the purposes outlined in the bill.

Livestock Grazing – A Threat Not Addressed by the Bill

The most important threat to sage grouse persistence in Nevada is overgrazing by domestic livestock (principally cattle and sheep), and the spread of the invasive weed cheatgrass that follows heavy livestock grazing. Livestock grazing removes native perennial grasses and breaks up biological soil crusts, the most important natural defenses against cheatgrass invasion, and create bare soil ideal for the invasion of this non-native, invasive weed (Reisner et al. 2013). With the livestock-caused spread of cheatgrass, fire frequency increases (D'Antonio and Vitousek 1992). By itself, livestock grazing doubles to triples the spread of cheatgrass, and fire alone increases by two to six times the spread of cheatgrass; but for any fire that occurs in an area that is grazed by domestic livestock the spread of cheatgrass is multiplied, to 10 to 20 times the rate in an ungrazed natural system in the absence of fire (Chambers et al. 2007). Once established, cheatgrass accelerates fire in sagebrush habitats to unnaturally frequent levels (Balch et al. 2012), wiping out the sagebrush that sage grouse depend on for their survival, and laying the groundwork for a cheatgrass monoculture where wildlife habitat values are completely destroyed.

The proposed legislation as currently drafted does nothing to address the threat posed by inappropriate levels of livestock grazing, which have been identified as a principle threat to sage grouse persistence in Nevada (USFWS 2013). Wilderness designation generally has no bearing on whether federal lands remain open to commercial livestock grazing, and the Nevada Sagebrush Landscape Conservation bill contains a specific section guaranteeing that livestock grazing in wilderness areas designated by the bill will be allowed to continue. Thus, even in areas designated as wilderness under the Nevada Sagebrush Landscape Conservation bill, the primary threat to sage grouse habitat values – livestock grazing – could continue to degrade sage grouse habitats.

The bill restricts the construction of water development projects, with an intriguing loophole provided for water developments that "will, as determined by the Secretary, enhance wilderness values by promoting healthy, viable, and

more naturally distributed wildlife populations." These types of water developments could be used to benefit livestock permittees, through the rationale that redistributing patterns of livestock grazing would aid in enhancing wildlife habitats, a justification that is frequently cited in federal land management decisions. They will do little for grouse, which get all the water they need from vegetation.

The bill does allow funds to be used for "currently accepted proper grazing practices and livestock management." The question remains, "currently accepted" by whom? Widespread overgrazing that leads to the degradation of sage grouse habitats is "currently accepted" by many ranchers and livestock associations, and arguably is currently accepted by many federal land managers, who allow it to continue today. Further subsidies for this type of livestock grazing would be harmful to sage grouse, heaping additional impacts from grazing on top of the original impacts of development permitted in Priority or General Habitats. On the other hand, livestock grazing practices "currently accepted" by sage grouse scientists would limit livestock grazing to taking only 25% of the available grass forage (Braun 2006), and would require that livestock be taken off of rangelands when seven inches of grass is left behind to provide hiding cover in nesting and brood-rearing habitats (Connelly et al. 2000, Hagen et al. 2007). Funding expended to change livestock grazing patterns to achieve these sage grouse habitat objectives would be of benefit to sage grouse. Clearly, this section of the Nevada Sagebrush Landscape Conservation bill requires clarification in its language before it can be determined whether the livestock funding provisions would help or hinder sage grouse conservation.

Improving the bill's ability to protect sage grouse

The Nevada Sagebrush Landscape Conservation bill also misses a golden opportunity to provide for federal livestock allotment retirement and buy-out when a rancher wishes to voluntarily relinquish his or her grazing privileges. Having grazing allotments retired in key sage grouse habitats would uniformly benefit sage grouse. As discussed above, removing livestock grazing slows the spread of cheatgrass, and when fires occur, native perennial grasses have the opportunity to outcompete cheatgrass within the burned areas, radically slowing cheatgrass spread versus burned areas where livestock grazing occurs. Livestock also have a tendency to concentrate in streamside areas, wet meadows, springs and seeps, which also are the most important habitats where sage grouse raise their chicks. Thus, permit retirement would improve the habitat condition of these key areas. And the reason that permit retirement and buy-out is relatively non-controversial (and often supported by ranchers) is that it is completely voluntary on the part of the grazing permittee, and offers the safety net of being able to sell off grazing privileges for substantial sums of money in cases where drought or depressed commodities prices make ranching a money-losing proposition. The Nevada Sagebrush Landscape Conservation bill should contain statewide provisions that explicitly allow the voluntary buy-out and retirement of grazing allotments, and allow funding from development in sage grouse to be used to accomplish this in designated sage grouse habitat areas.

The Nevada Sagebrush Landscape Conservation bill specifically calls for land conveyances, and based on conversations with Senator Reid's staff, some of these are expected to involve federal lands adjacent to active gold

mines. In exchange for allowing mining companies to acquire federal lands, the Nevada Sagebrush Landscape Conservation bill should include specific provisions withdrawing all sage grouse Priority Habitats from locatable mineral entry, which will prevent future mining impacts from occurring in sage grouse habitats. Any federal lands conveyed to private interests or local governments should be sold at fair-marked value with professional appraisals, and the resulting proceeds should go to the sage grouse conservation fund established by the bill.

Other Important Sage Grouse Conservation Efforts

The sage grouse conservation effort that has the single greatest potential to satisfy the current lack of adequate regulatory mechanisms cited by U.S. Fish and Wildlife Service is the joint Bureau of Land Management – Forest Service plan amendment process. Some 85% of all Priority and General Habitat in the Nevada – Northeastern California planning area is managed either by the Forest Service or Bureau of Land Management. The Bureau of Land Management has convened a committee of sage grouse experts from state and federal agencies named the National Technical Team, and if their recommendations (NTT 2011) are adopted in the federal plan amendment, the resulting protections for sage grouse are likely to be sufficiently strong to successfully address most threats to the sage grouse and avert the need for Endangered Species Act listing for the grouse. The plan amendment also has the potential to fully address livestock grazing. Whether or not the federal land-use plans will include strong enough protections to avert listing will be influenced in part by political pressures from industries and elected officials, many of whom are presently pressuring the agencies to minimize protections for sage grouse.

In addition, there is a hodgepodge of state and local government initiatives focusing on sage grouse conservation. Few of these impose the type of watertight regulations that satisfy the legal requirements to avoid Endangered Species listing, but often can be helpful in improving habitat conditions for sage grouse on a local scale.

Legislative solutions to sage grouse conservation challenges in Nevada

The Nevada Sagebrush Landscape Conservation bill, in its discussion draft form, makes no pretense of being a substitute for federal land-use plan amendments or Endangered Species protections.

No bill drawn up to directly address the threats currently facing sage grouse populations in Nevada could meet the thresholds demanded by the Endangered Species Act of science-based effectiveness and certainty of implementation, and make make the case that Endangered Species Act listing is unnecessary, without at the very least including the following measures. The legislation would need to establish Priority Habitats and General Habitats important to sage grouse conservation (implementing already-identified Priority Areas for Conservation), and require new conservation measures for these areas. For these areas it would be necessary to implement the recommendations of the federal National Technical Team and other published studies.

The Priority Habitats will need to be withdrawn from to future energy development and mining projects, by not offering future mineral leases and withdrawing designated habitats from availability for mining claims. For

existing fluid mineral leases, added protections are needed, limiting wellsites to one pad per square-mile section, the maximum allowable threshold at which significant population impacts start to occur (Holloran 2005, Walker et al. 2007, Doherty 2008, Tack 2009). Noise would need to be restricted near leks per the recommendations of Blickley et al. (2012). Sage grouse avoid tall structures of all kinds, and power lines afford opportunities for raptor and raven nesting and perching. To address this threat the bill would need to require tall structures including powerlines, wind turbines, and communication towers to be sited outside designated sage grouse habitats. The same restrictions will need to be applied to solar and geothermal energy facilities. Overall surface disturbance, including roads, industrial facilities, an other human impacts will need to be limited to 3% per square mile in Priority Habitats (after Knick et al. 2013).

Livestock grazing and cheatgrass invasion are two major threats identified by the U.S. Fish and Wildlife Service (2013) that are intertwined. Overgrazing eliminates native grasses and breaks up biological soil crusts, accelerating cheatgrass invasion (Reisner et al. 2013). Cheatgrass burns frequently, eliminating sagebrush and setting the stage for a complete cheatgrass takeover, and if livestock grazing is present this radically accelerates the post-fire cheatgrass spread (Chambers et al. 2007). To deal with this threat, the bill will need to prescribe measurable thresholds to maintain rangeland health, such as maintaining at least 7 inches of grass height in nesting and brood-rearing habitats to provide cover for grouse, and limiting grazing to consuming 25% of the available forage. Provisions to rest burned areas from grazing for at least 3 years post-fire, and to impose mandatory reductions in stocking rates when drought is forecast, would also need to be included.

Livestock-related infrastructure also impacts sage grouse habitat. Fences kill large numbers of grouse through collisions (Stevens et al. 2013), so the bill would need to prohibit new fence construction in designated habitats, and dismantle existing fences wherever possible. The bill would need to guarantee that streamside habitats and wet meadows, key for raising sage grouse chicks, be maintained in Properly Functioning Condition and be managed toward their natural reference conditions. Finally, livestock watering sites, salt stations, and other ‘range improvements’ should be allowed only where they maintain or improve sage grouse habitats.

Roads and vehicle traffic can have significant impacts on sage grouse, displacing them from key habitats and depressing their populations (Holloran 2005). To address this threat, the bill would need to close designated habitats to off-road travel and designate a system of open roads there. New road construction would need to be kept at least 2 miles from active leks, or breeding and strutting sites. Seasonal closures to motorized use would need to apply during breeding, nesting, and wintering seasons habitats identified as critical for these purposes.

Solutions to exurban development on private lands and juniper encroachment into sagebrush habitats are perhaps best solved through providing funding, which the current bill does to a limited extent, and would benefit through further funding such as dedicating monies received through land disposals being directed to these purposes.

Conclusion

No bill would be sufficient to prevent Endangered Species listing without addressing all the principal threats facing sage grouse across their most important remaining habitats in Nevada. Implementation of the Nevada Sagebrush Landscape Conservation bill by itself and in its current form would be insufficient to provide the strong and certain protection necessary to satisfy legal requirements for adequate regulatory mechanisms and avoid Endangered Species Act listing. However, passage of the bill together with a strong package of sage grouse protections on federal lands through the BLM – Forest Service plan amendment process could possibly satisfy the need to avert threats to sage grouse persistence in Nevada and avert an Endangered or Threatened Species listing.

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