Patricia Deibert
Acting National Sage-grouse Coordinator
Bureau of Land Management
440 W. 200 S., Suite 500
Salt Lake City, Utah 84101

February 8, 2022

Re: Notice of Intent to Amend Land Use Plans Regarding Greater Sage-Grouse Conservation and Prepare Associated Environmental Impact Statements

Dear Ms. Deibert:

On behalf of the undersigned organizations and our millions of members and supporters, we respectfully submit for your consideration the attached nomination for a Sagebrush Sea Reserve Areas of Critical Environmental Concern (ACEC) Network. We welcome the planning process to strengthen conservation measures for the Greater sage-grouse across its range through targeted resource management plan amendments that you announced via a scoping notice issued November 22, 2021. We believe that establishing the ACECs outlined in this proposal would play a critical role in protecting Greater sage-grouse.

A recent report by the U.S. Geological Survey found that Greater sage-grouse populations have declined significantly, with an 80% rangewide decline since 1965 and 40% decline since 2002. Threats to sage-grouse habitat – e.g., climate change, invasive species, and wildfires – are adding to the impacts of past and present activities that have already compromised the diversity and natural resilience of the sagebrush system. In this context, building on the 2015 land use plan amendments for Greater sage-grouse is imperative to curb the decline of the species.

This nomination exceeds the necessary criteria for establishing an ACEC. The areas in question are both relevant and important, identified by relevant agencies as sagebrush habitat that is necessary to sustain this imperiled species. The nomination is largely informed by the US Fish and Wildlife Service's Conservation Objectives Team Report (2013) and the BLM National Technical Team Report (2011) and recent best available science. As climate change continues to take a toll on greater sage-grouse habitat, it is more imperative than ever that we reduce human-induced stressors on the sage-grouse's habitat. This ACEC nomination is designed to adhere to this principle, which is articulated, along with other relevant principles, in the National Fish, Wildlife, and Plants Climate Adaptation Strategy (2012) authored by the Association of Fish and Wildlife Agencies, Council on Environmental Quality, Great Lakes Indian Fish and Wildlife Commission, National Oceanic and Atmospheric Administration, and U.S. Fish and Wildlife Service.

Thank you for considering this nomination. Please do not hesitate to reach out to the undersigned if you have questions.

Sincerely,

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Areas of Critical Environmental Concern (ACEC) Nomination

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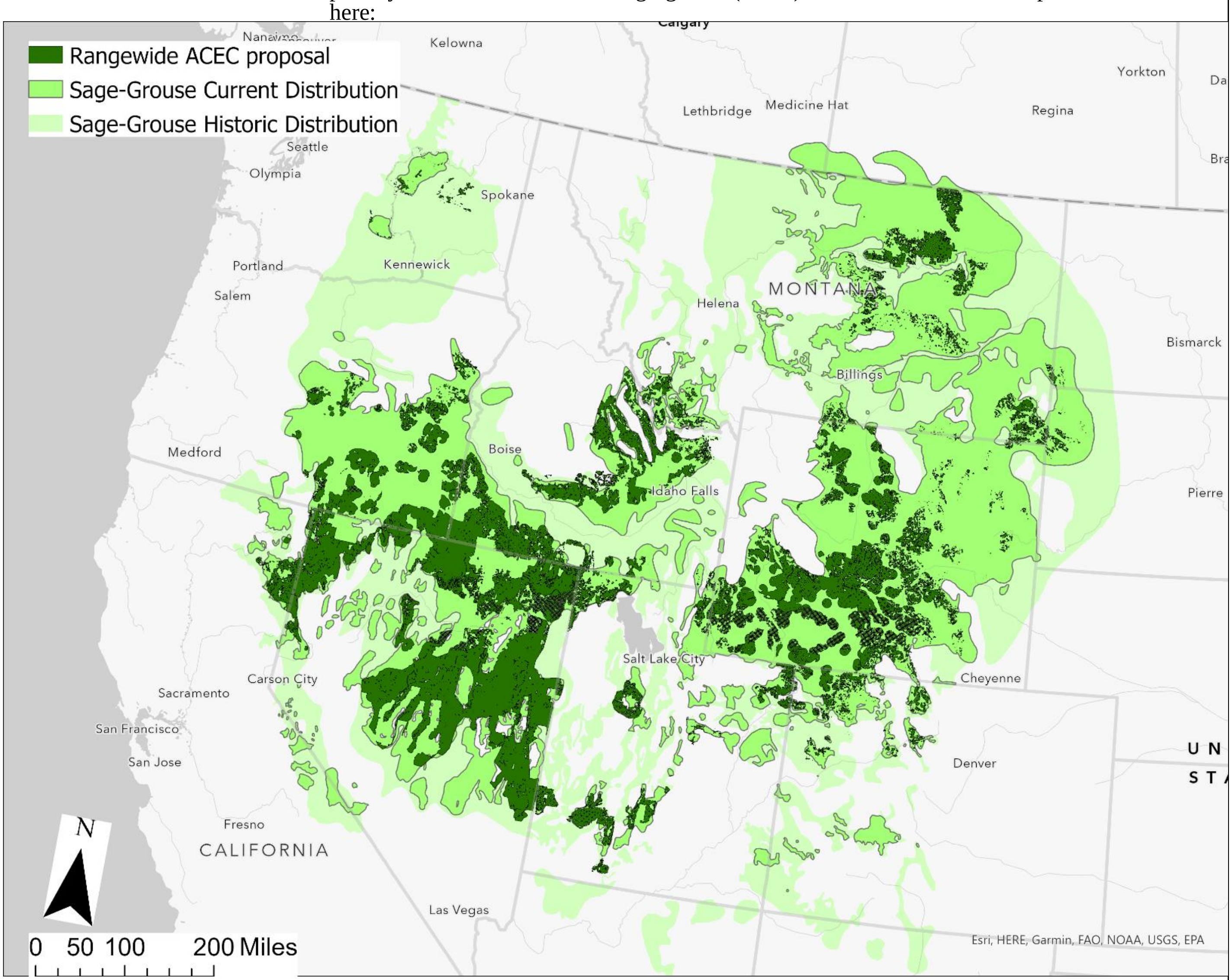
Before including your address, phone number, email address, or other personal identifying information in your comment, you should be aware that your entire comment—including your personal identifying information—may be made publicly available at any time. While you can ask us in your to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

Describe the Area to be Nominated

General location description: The Sagebrush Sea Reserve ACEC network includes much of the currently occupied priority habitats of the Greater sage-grouse (GrSG) in 10 western states. Map included here:



Acreage: 48,202,418 acres

Values considered: Biological; Ecological; Wildlife Habitat, especially for the Greater Sage-grouse (GrSG); Imperiled, Sensitive and Migratory Species Habitat; Resilient Sagebrush Habitat.

To be considered as a potential ACEC and analyzed in RMP alternatives, an area must meet at least one relevance criteria **and** at least one importance criteria as established in BLM Guidance 43 CFR 1610.7-2.

1) RELEVANCE CRITERIA		
Relevance Criteria: *There shall be present a "significant" historic, cultural, or scenic value; a fish or wildlife resource or other natural system or process; or natural hazard. This generally means that the value, resource, system, process, or hazard is characterized by one or more of the following:*		
Relevance Value	**Yes/No**	**Describe Rationale**
1)a. A significant historic, cultural, or scenic value (including but not limited to rare or sensitive archeological resources and religious or cultural resources important to Native Americans).	No	We did not analyze this relevance criteria.
1) b. A fish and wildlife resource (including but not limited to habitat for endangered, sensitive, or threatened species; or habitat essential for maintaining species diversity).	Yes	The nominated network of Sagebrush Sea Reserves ACECs (Figure 1 above) contains the most important habitat for GrSG across its range and other sensitive and threatened native species that rely on healthy sagebrush systems. We have captured the most important places for GrSG because our ACEC proposal is squarely based on the Sage-grouse Priority Areas for Conservation (PACs, USFWS 2013). The PACs were delineated in a joint effort of the US Fish and Wildlife Service (USFWS) and state fish and wildlife agencies, based on the 75% GrSG breeding density analysis performed by Doherty et al. (2010) which captured all the area (within a 4-mile radius) around 75% of the leks across the range. In addition, to ensure connectivity within and between the PACs, the PACs also reflect important winter and/or brood rearing habitat that were known at the time. Moreover, because the proposed network of Sagebrush Sea Reserve ACECs include, by design, a mixture of the most important breeding habitat and winter and/or brood rearing habitat, the network incorporates a diverse assemblage of different sagebrush species and associated herbaceous species, elevations, aspects and soil types.
1) c. A natural process or system (including but not limited to endangered, sensitive, or threatened plant species; rare, endemic, or relict plants or plant communities which are terrestrial, aquatic, or riparian; or rare geological features).	Yes	Currently high-functioning and properly conserved sagebrush communities with adequate resiliency, redundancy, and representation critical to support GrSG and other sagebrush dependent at-risk species are rare and declining (Remington et al. 2021). As discussed in the attached Nomination Report in the section on long-term resilience of sagebrush systems in the West (and also discussed in Remington et al. 2021), many models currently indicate that sagebrush cover is vulnerable to a drying and warming climate.
1) d. Natural hazards (including but not limited to areas of avalanche, dangerous flooding, landslides, unstable soils, seismic activity, or dangerous cliffs). A hazard caused by human action may meet the relevance criteria if it is determined through the resource management planning process that it has become part of a natural process.	No	We did not analyze this relevance criteria.

2) IMPORTANCE CRITERIA		
Importance Criteria: *The value, resource, system, process, or hazard described above must have substantial significance and values to satisfy the "importance" criteria. This generally requires qualities of more than local significance and special worth, consequence, meaning, distinctiveness or cause for concern. A natural hazard can be important if it is a significant threat to human life or property.*		
Importance Value	**Yes/No**	**Rationale for Determination**
2) a. Has more than locally significant qualities, which give it special worth, consequence, meaning, distinctiveness, or cause for concern, especially compared to any similar resource.	Yes	The nominated proposed network of Sagebrush Sea Reserves ACECs is based on the PACs. US Fish and Wildlife Service identified the PACs as a whole as the essential foundation for the conservation of the sage grouse and stated that "...loss of a PAC, or significant reduction in available habitat within a PAC, will reduce redundancy and representation across the sage-grouse range, thereby increasing the risk of local extirpation and loss of population connectivity…it is imperative that no PACs are lost as a result of further infrastructure development or other anthropogenic impacts" (USFWS 2013 at 36-37). These statements demonstrate that the nominated ACEC network that is based on the PACs is nationally significant and that it is necessary to protect the entire network and not just parts of it for the long-term conservation of the sage grouse. It should also be noted that the nominated ACEC network contains patches that link to others across state lines and patches that link to higher elevation habitats that the birds are likely to utilize more extensively into the future as temperature regimes continue to change and push big sagebrush-steppe plant communities and sage-grouse higher in elevation (Remington et al. 2021).
2) b. Has qualities or circumstances that make it fragile, sensitive, rare, irreplaceable, exemplary, unique, endangered, threatened, or vulnerable to adverse change.	Yes	The current proposed network of ACECs has already been identified by USFWS in coordination with state wildlife agencies to contain habitat that is valuable and necessary for all GrSG life stages, including lekking, brood-rearing, and winter range (USFWS 2013). Collectively, this network encompasses fragile ecosystems that are degrading in their functionality for GrSG and other sagebrush obligate species and, if current trends continue, may be profoundly impacted by increased habitat loss and degradation caused by land use activities (e.g., energy development) and stressors (e.g., drought, invasives, & climate change as summarized by Remington et al. 2021).
2) c. Has been recognized as warranting protection to satisfy national priority concerns or to carry out the mandates of FLPMA.	Yes	Establishing the proposed Sagebrush Sea Reserves ACECs for GrSG and other sagebrush obligates is in line with national priorities, such as: • Those outlined by President Biden's Executive Order 14008, "Tackling the Climate Crisis at Home and Abroad" (speaks to the need to conserve our lands and waters and the biodiversity they contain, and lays out steps that the United States should take to achieve the goal of conserving at least 30 percent of our lands and waters by 2030). • Secretary Zinke's 2018 Secretarial Order 3362: "Improving Habitat Quality in Western Big-Game Winter Range and Migration Corridors" (which emphasizes the importance of conserving & improving elk, mule deer, and pronghorn habitat) • Amending 98 Forest Service and BLM Land Use Plans for GrSG (based on the level of effort that went into the original 2015 RMP amendments, planning for the future persistence of this species is a national priority)

		• BLM's FLPMA mandate to manage our public lands in a manner "that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archeological values." Additionally, BLM is expected to preserve "certain lands in their natural condition; that will provide food and habitat for fish and wildlife."[5] The designation of our proposed ACEC network will advance these statutory mandates. • BLM's FLPMA's multiple use mandate, within which wildlife habitat is a "use"; the agency must balance resources to take into account "the long-term needs of future generations for renewable and nonrenewable resources, including… wildlife and fish" to achieve the "harmonious and coordinated management of the various resources without permanent impairment of the productivity of the land and the quality of the environment." The designation of our proposed network of critical GrSG habitat as ACECs will advance achieving this important mandate of FLPMA.
2) d. Has qualities that warrant highlighting to satisfy public or management concerns about safety and public welfare.	No	We did not analyze this importance criteria.
2) e. Poses a significant threat to human life and safety or to property.	No	We did not analyze this importance criteria.

Please attach a map depicting the BLM lands being recommended. Please attach additional pages as necessary. Alternatively, please download form online and complete electronically (www.blm.gov/ak/cyrmp).

A .jpg map of the proposed, and nominated, Sagebrush Sea Reserve ACEC network is inserted at the beginning of this form. In addition, we are submitting all the GIS data used to create the proposal, as well as all the overlays in the attached nomination report, to the BLM via a google drive link: https://drive.google.com/drive/folders/1dBL665SehRTVd8G3RrDGMr6Jr1vz9NJw?usp=sharing

We are attaching a full nomination report to this form, which goes into detail on the methods used to create this ACEC proposal, justification for the need to better protect these units of the proposed Sagebrush Sea Reserve for Greater sage-grouse and other sagebrush-dependent species, and the need for special management attention for these important places on BLM lands. Literature Cited above we include here:

Doherty, K.E., J.D. Tack, J.S. Evans, J.SN. and D.E. Naugle. 2010. Mapping breeding densities of greater sage-grouse: a tool for range-wide conservation planning. BLM completion report: Agreement # L10PG00911.

Remington, T.E., P.A. Deibert, S.E. Hanser, D.M Davis, L.A. Robb, L.A. and J.L. Welty. 2021. Sagebrush conservation strategy—Challenges to sagebrush conservation: U.S. Geological Survey Open-File Report 2020–1125, 327 p., https://doi.org/10.3133/ofr20201125.

U.S. Fish and Wildlife Service (USFWS). 2013. Greater Sage-grouse (*Centrocercus urophasianus*) Conservation Objectives: Final Report. U.S. Fish and Wildlife Service, Denver, CO. February 2013.

NOMINATION FOR A NETWORK OF SAGEBRUSH SEA RESERVE AREAS OF CRITICAL ENVIRONMENTAL CONCERN TO BENEFIT THE GREATER SAGE-GROUSE AND SAGEBRUSH HABITAT

I. INTRODUCTION

Over the past two centuries the extent and diversity of sagebrush systems have diminished substantially. The degradation, conversion, and fragmentation of the sagebrush landscape due to agricultural development, pervasive livestock grazing, fire, and energy development has led to increased isolation of the Greater sage-grouse (GrSG, *Centrocercus urophasianus*) across its range and steady population declines. In fact, a recent report by the U.S. Geological Survey (USGS) has found that Greater sage-grouse populations have declined significantly over the last six decades, with an 80% rangewide decline since 1965 and 40% decline since 2002 (Coates et al. 2021).

Even as state fish and wildlife agencies, and more recently the U.S Fish and Wildlife Service (USFWS), U.S. Forest Service (USFS) and the Bureau of Land Management (BLM) have attempted to address these problems and employ better land management practices to help the plight of the sage-grouse, rising threats to sage-grouse habitat are adding to the cumulative impacts of past and present activities that have already compromised the diversity and natural resilience of the sagebrush system on which GrSG rely. This situation is now being compounded by a rapidly changing climate and the proliferation of exotic and invasive vegetation (Remington et al. 2021) as well as ongoing habitat loss and degradation resulting from a range of land use activities. Numerous modeling studies indicate that the combined effect of climate change, increased exotic annuals, and the increase in fire that result from that interaction, will lead to further decreases in sagebrush cover across the range of GrSG (Remington et al. 2021). In response to the threat of climate change on imperiled wildlife, the National Fish, Wildlife and Plants Climate Adaptation Partnership (2012) stressed that reducing human-induced stressors is now more important than ever in a climate-changed world and makes the call to "[r]educe non-climate stressors to help fish, wildlife, plants, and ecosystems adapt to a changing climate."

In 2015 the Land Use Amendments for GrSG were implemented with the hope this would lead toward the stabilization and reversal of downward GrSG population trends and avoid listing the species as threatened or endangered. Yet, in its recent 5-year monitoring plan, BLM acknowledges that, across BLM holdings in sage-grouse habitat since 2015, sagebrush availability has decreased by ~3%. Invasive plants have increased from being present on a little over 50% of GrSG habitat in 2013, to nearly 70% of habitat in 2018; and the area of the Sagebrush Sea where invasive plants are abundant (>25% of vegetative cover) has also increased, from about 10% in 2013 to nearly 30% in 2018 (Herren et al. 2021). And, since 2015, in 16 cases habitat triggers established in the plan amendments were tripped, indicating that habitat losses have exceeded thresholds set in the respective land use plan (Herren et al. 2021). Even more concerning, the BLM found 42 cases where both hard and soft population triggers have been tripped since 2015 (Herren et al. 2021). This comports with similar findings in the recent comprehensive USGS report, which found a nearly 40% decline in populations of GrSG rangewide since 2002 (Coates et al. 2021).

It is abundantly clear that the 2015 land use plan amendments that established tens of millions of acres of Priority Habitat Management Areas with a range of management prescriptions are not effectively curbing the GrSG's current trend toward extinction across its range. The undersigned propose that the unique and valuable resources of a collective network of proposed units described herein merit protection through designation as Areas of Critical Environmental Concern (ACEC). While this collective network of units was delineated based on the habitat needs of GrSG (including the Columbia Basin population of GrSG but not the bi-state population),[1] the protection of these units will benefit many other imperiled or diminishing

[1] The bi-state population of GrSG has been identified as a Distinct Population Segment because it is genetically distinct and geographically isolated, and as such has been petitioned for federal listing since it is in danger of extirpation due to low population levels and downward population trends. Thus, we are not including this population's habitat in this ACEC proposal as this population is being treated separately from the rest of the species by the federal agencies like USFWS. While the Columbia Basin population is likely also genetically distinct and

sagebrush-dependent species as well. The nominated ACEC network meets multiple relevance and importance criteria and, as we demonstrate below, requires special management to protect and prevent irreparable damage to these relevant and important values and resources.

II. BLM REQUIREMENTS FOR ACEC DESIGNATION

The Federal Land Policy and Management Act (FLPMA) planning requirements[2] obligate the Bureau of Land Management to "give priority to the designation and protection of [ACECs]." ACEC inventory and evaluation criteria are set forth in regulation[3] and agency guidance (BLM Manual 1613). A potential ACEC must possess *relevance* (such that it has significant value(s) in historic, cultural or scenic values, fish and wildlife resource, other natural systems/processes, or natural hazards) and *importance* (such that it has special significance and distinctiveness by being more than locally significant or especially rare, fragile or vulnerable). BLM Manual 1613 states that for an area to be considered as an ACEC, it must meet at least one criterion for both relevance and importance.

In addition, the potential ACEC must require "special management attention"[4] to protect the relevant and important values where current management is not sufficient to protect these values or where the needed management action is considered unusual or unique. All ACECs meeting at least one relevance criterion and at least one importance criterion must be considered as potential ACECs under at least one alternative in the upcoming environmental impact statement (EIS) to further amend the resource management plans (RMPs) for GrSG.

The BLM Manual also sets out more specific requirements for how consideration of ACECs should be conducted during the land use planning process. The BLM Manual requires that each area recommended for consideration as an ACEC—including when externally nominated—be considered by BLM, through collection of data on relevance and importance and evaluation by an interdisciplinary team. If they are not to be designated, the analysis supporting the negative conclusion "must be incorporated into the plan and associated environmental document" (BLM Manual 1613.21).

III. METHODS USED TO DELINEATE UNIT BOUNDARIES OF ACEC PROPOSAL

We generated the ACEC proposal[5] by incorporating all Priority Areas for Conservation[6] (PACs, USFWS 2013) that overlapped with BLM Lands (clipped to surface management lands[7]) for all states in GrSG range, except for Wyoming[8] and Nevada where we modified this base layer as follows. For Wyoming, we

geographically isolated, it has not yet been designated as a Distinct Population Segment, so this population's habitat is included in this ACEC proposal.

[2] 16 USC § 1712(c)(3)

[3] 43 CFR § 1610.7-2

[4] 43 USC § 1702(b)

[5] All shapefile data used in this report, both in this section and for various overlays featured below, are referenced as they are first described. The final shape file of the ACEC proposal is here: https://drive.google.com/drive/folders/1dBL665SehRTVd8G3RrDGMr6Jr1vz9NJw?usp=sharing.

[6] https://databasin.org/datasets/120d1f61616a4770b2959b8bccb43aed/

[7] https://landscape.blm.gov/geoportal/catalog/search/resource/details.page?uuid=%7B2A8B8906-7711-4AF7-9510-C6C7FD991177%7D

[8] We created an ACEC proposal for Wyoming built on the Doherty 2010 breeding density coverage and the original PACs for Wyoming because state Core Area designations were modified to exclude places of interest for oil and gas development during the designation process, and the USFWS adopted the modified core area designations into their PAC designations rather than adhering to US Fish and Wildlife Service's assertion that all PACs were essential habitats necessary for the greater sage grouse's long-term survival (USFWS 2013).

added to the Wyoming PACs the Doherty et al. (2010)[9] breeding density (75%) layer, as well as the new Wyoming Core Area designations that occurred in 2015[10] by gubernatorial Executive Order (and were incorporated as expanded PHMAs in the 2020 ARMPAs). We excised out of the ACEC proposal areas in Wyoming that had a density of active oil and gas wells that exceed 5 wells per square mile based on the Wyoming-specific oil and gas active drilling layer (drilling and pumping)[11].

For Nevada, the boundary was drawn and cross-checked consulting relevant data sets including NDOW (2012)[12] and Coates (2016), and ground-truthed through extensive field visits to the areas proposed for protection. The goal was to increase coverage of important seasonal habitats for GrSG (NDOW described Summer Range, Winter Range and Nesting/early Brood Rearing habitat) and ensure connectivity between numerous patches of high-quality habitat that are separated by rocky mountain ranges, playas, and other expanses of marginal quality habitat, which is a unique topographic feature of Central Nevada GRSG habitat among other greater sage grouse populations. The ACEC proposal includes habitat in central Nevada south of I-80 and is made up of 57.2% of winter range, 73.3% of summer range and 43.7% of nesting habitat with a total of 79.2% of habitat being in at least one of these 3 essential seasonal habitats. The balance of these acres in Nevada's part of the ACEC proposal will ensure connectivity and gene flow between high quality habitat patches by limiting disturbance and fragmentation in those areas in order to reduce population isolation and maintain connectivity and gene flow (Bush et al 2011, Cross et al 2018).

Figure 1. depicts the nominated Sagebrush Sea Reserve network of ACECs. Our GIS mapping process did not allow for the refinement of the proposed ACEC boundaries to accommodate non-federal (state or undeveloped private) inholdings that are otherwise surrounded by BLM ownership.

We have not provided names for each proposed ACEC that form the network of the Sagebrush Sea Reserve. We recommend that, consistent with *BLM Manual* 1613.33A, that BLM name each ACEC in the following form: "[Place Name] Sagebrush Sea Reserve Area of Critical Environmental Concern." The place name should reflect "a particular physical feature of an area," as called for in the BLM Manual.

As explained below, this network of ACECs meets BLM's Relevance and Importance Criteria for ACEC designation. Below we also describe why this network of units requires special management attention and include overlays with both special values (such as known ranges of other rare and imperiled sagebrush species) and as looming threats to further justify the need for this network of units to be protected together as one holistic network of ACECs.

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[9] https://www.conservationgateway.org/ConservationByGeography/NorthAmerica/Pages/sagegrouse.aspx
[10] https://wgfd.wyo.gov/Habitat/Sage-Grouse-Management/Sage-Grouse-Data
[11] http://pipeline.wyo.gov/legacywogcce.cfm
[12] https://www.fws.gov/nevada/nv_species/documents/sage_grouse/392012-Maps/Printable_Greater_Sage-Grouse_Habitat_Categorization_Map.pdf

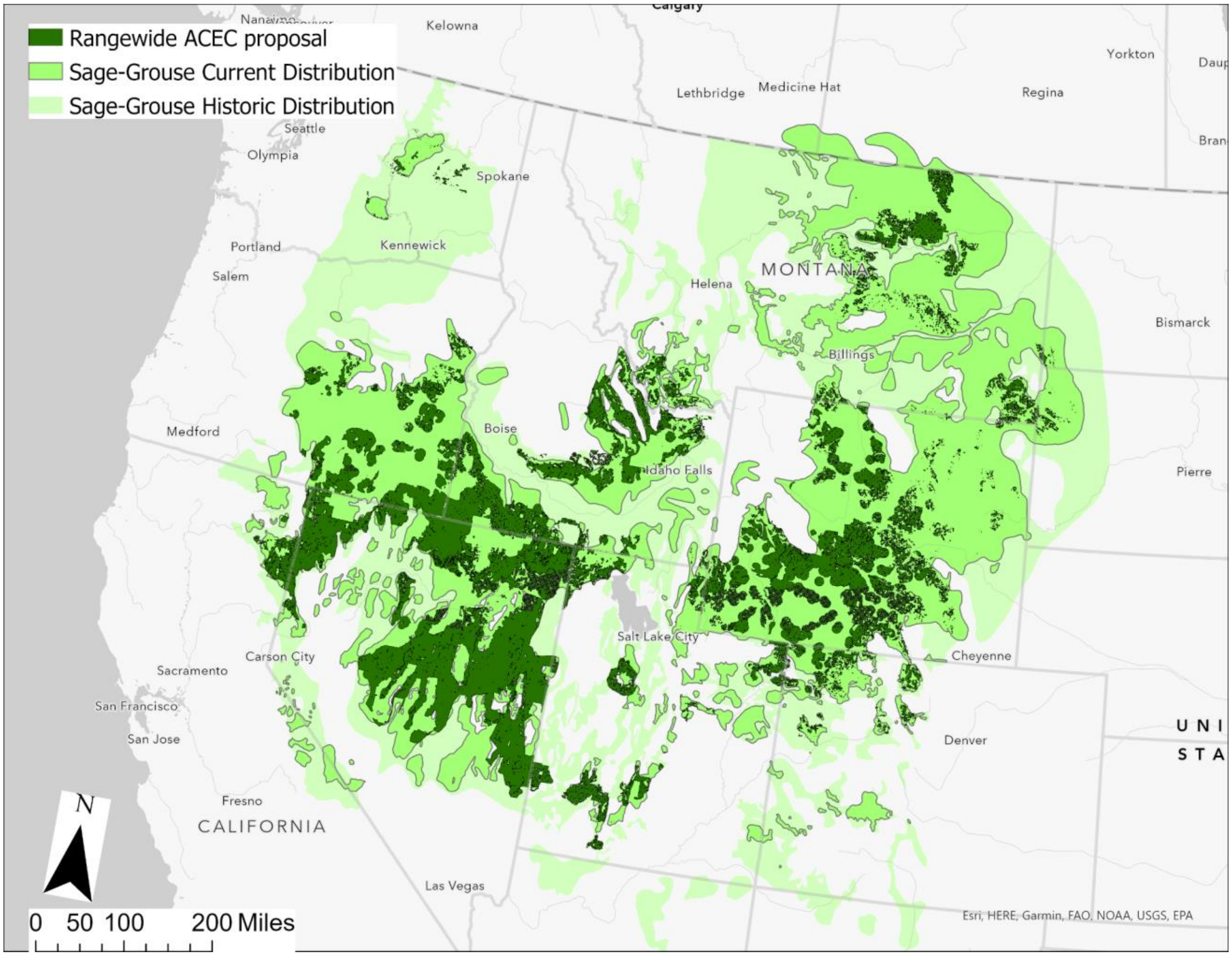

Figure 1. The proposed Sagebrush Sea Reserve network of ACECs.

IV. THE ACEC PROPOSAL MEETS BLM'S RELEVANCE AND IMPORTANCE CRITERIA

a) The proposed network of ACECs meets one or more of BLM's Relevance criteria

BLM Criterion: *Fish and wildlife resource (including but not limited to habitat for endangered, sensitive, or threatened species, or habitat essential for maintaining species diversity)*. The nominated network of Sagebrush Sea Reserves ACECs (Figure 1) contains the most important habitat for GrSG across its range and many other sensitive and threatened native species that rely on healthy sagebrush. Our ACEC proposal is squarely based on the Sage-grouse Priority Areas for Conservation (PACs, USFWS 2013) which were delineated in a joint effort of the USFWS and the state fish and wildlife agencies. PACs are based on the 75% GrSG breeding density analysis performed by Doherty et al. (2010) which captured all the area (within a 4-mile radius) around 75% of the leks across the range. In order to ensure connectivity within and between the PACs, the PACs also reflect critical winter and/or brood rearing habitat that were known at the time.[13] Moreover, because the proposed network of Sagebrush Sea Reserve ACECs include,

[13] The COT report (USFWS 2013) explains that the USFWS worked with the individual state fish and game agencies, with the "Doherty breeding density circles" (Doherhty et al. 2010) as the original basis to develop the PACS specific to each state. This included the best available spatial coverages for occupied sage-grouse habitat, including brood

by design, a mixture of most important breeding habitat and winter and/or brood rearing habitat, the network incorporates a diverse assemblage of different sagebrush species and associated herbaceous species, elevations, aspects and soil types.

BLM Criterion: *Natural process or system (including but not limited to endangered, sensitive, or threatened plant species; rare, endemic or relic plants or plant communities which are terrestrial, aquatic, or riparian; or rare geological features)*. Currently high-functioning and properly conserved sagebrush communities with adequate resiliency, redundancy, and representation critical to support GrSG and other sagebrush dependent at-risk species are rare and declining (Remington et al. 2021). Many models currently indicate that sagebrush cover is vulnerable to a drying and warming climate (Remington et al., and references therein).

b) The proposed ACEC network meets one or more of BLM's importance criteria.

BLM Manual 1613 requires that the value, resource, system, process, or hazard that meet(s) the "relevance" criteria must also have substantial significance and values in order to satisfy the "importance" criteria. Collectively, and individually, the units of our Greater sage-grouse ACEC nomination meet the following criteria:

BLM Criterion: *The proposed ACEC has more than locally significant qualities which give it special worth, consequence, meaning, distinctiveness, or cause for concern, especially compared to any similar resource.* The nominated proposed network of Sagebrush Sea Reserves ACECs is based on the PACs with refinements in Nevada and Wyoming as described in the methods section. USFWS identified the PACs as a whole as the essential foundation for the conservation of the sage grouse and stated that "...loss of a PAC, or significant reduction in available habitat within a PAC, will reduce redundancy and representation across the sage-grouse range, thereby increasing the risk of local extirpation and loss of population connectivity…***it is imperative that no PACs are lost as a result of further infrastructure development or other anthropogenic impacts***" (USFWS 2013 at 36-37) (emphasis added). Since USFWS has determined that every PAC is critical, the nominated ACEC network that is based on the PACs is nationally significant and that it is necessary to protect the entire network and not just parts of it for the long-term conservation of the sage grouse. It should also be noted that the nominated ACEC network contains patches that link to others across state lines and patches that link to higher elevation habitats that the birds are likely to use more extensively into the future as temperature regimes continue to change and push big sagebrush-steppe plant communities and sage-grouse higher in elevation (Remington et al. 2021).

BLM Criterion: *The proposed ACEC has qualities or circumstances that make it fragile, sensitive, rare, irreplaceable, exemplary, unique, endangered, threatened, or vulnerable to adverse change.* The current proposed network of ACECs has already been identified by the state wildlife agencies and the USFWS to contain habitat that is valuable and necessary for all GrSG life stages, including lekking, brood-rearing, and winter range (USFWS 2013). Collectively, this network encompasses fragile ecosystems that are degrading in their functionality for GrSG and other sagebrush obligate species and, if current trends continue, may be profoundly impacted by increased habitat loss and degradation caused by land use activities (e.g., energy development and transmission) and stressors (e.g., drought, invasives, climate change, as summarized by Remington et al. 2021).

BLM Criterion: *The proposed ACEC has been recognized as warranting protection in order to satisfy national priority concerns to carry out the mandates of FLPMA.*

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rearing and important winter habitat. The states used the best data they had at the time, but in 2012 the data was not comprehensive and inconsistent, especially that for important GrSG winter habitats.

Establishing the proposed Sagebrush Sea Reserves ACECs for GrSG and other sagebrush obligates is also in line with national priorities, such as those outlined by President Biden's Executive Order 14008, "Tackling the Climate Crisis at Home and Abroad." Specifically, Section 216 of EO 14008 speaks to the necessity of conserving our lands and waters and the biodiversity they contain, and lays out steps that the United States should take to achieve the goal of conserving at least 30 percent of our lands and waters by 2030. The establishment of a large network of Sagebrush Sea Reserve ACECs, along with a concurrent withdrawal from mining, mineral location, and leasable minerals for the primary purpose of bolstering conservation for GrSG, would significantly further these efforts.

In addition, establishing this network of connected, protected ACECs aligns with Secretary Zinke's 2018 Secretarial Order 3362 (Improving Habitat Quality in Western Big-Game Winter Range and Migration Corridors) which emphasizes the importance of conserving and improving elk, mule deer, and pronghorn habitat. In particular, S.O. 3362 directs that the BLM apply site-specific management activities that conserve or restore habitat necessary to sustain local and regional big-game populations. Because the Sagebrush Sea Reserve ACEC network is by design well-connected across the landscape, adequately conserving this network for the long-term will be highly beneficial for wide-ranging migratory species.

In addition, based on the level of effort that went into the original 2015 RMP amendments of 98 Forest Service (USFS) and BLM land and/or resource management plans for GrSG, planning conservatively and correctly for the future persistence of this species is a national priority. To this effect the BLM Washington Office issued two instructional memorandums, Instruction Memorandum 2012-043 and Instruction Memorandum 2012-044, to help guide the BLM through its land use planning processes for GrSG across each state and to identify these processes as a national priority.

Protecting the proposed network of sage-grouse ACECs will significantly further BLM's FLPMA mandate to manage our public lands in a manner "that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archeological values."[14] Additionally, BLM is expected to preserve "certain lands in their natural condition; that will provide food and habitat for fish and wildlife."[5] Because of these mandates, FLMPA encourages the development of ACECs.[15]

Under FLPMA's multiple use mandate, within which wildlife habitat is a "use," the agency must balance resources to take into account "the long-term needs of future generations for renewable and nonrenewable resources, including… wildlife and fish" to achieve the "harmonious and coordinated management of the various resources without permanent impairment of the productivity of the land and the quality of the environment."[16] The designation of our proposed network of critical GrSG habitat as ACECs will go a long way toward achieving this important mandate of FLPMA – "FLPMA balancing." The basic principle of FLPMA balancing is that the agency cannot plan for all the multiple uses at once on all the lands (Feller et al. 1996). Conserving a portion of western BLM lands as ACECs to ensure persistence of GrSG (and many other rare sagebrush-dependent species as we outline below) will help the BLM achieve FLMPA balancing across BLM lands.

In summary, designating this network of proposed units as ACECs would satisfy current national priorities and enable the BLM to better meet the mandates of FLPMA. This designation and the accorded special management attention would balance the resources in a way that benefits greater sage-grouse and many other species by protecting and preserving the quality of the habitat in a natural condition, while continuing to allow many other multiple uses outside the ACECs across the Resource Areas.

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[14] 43 U.S.C. § 1701(a)(8))
[15] 43 U.S.C. § 1701(a)(11)
[16] 43 U.S.C. § 1702(c)

V. THE HABITATS INCLUDED IN THE SAGEBRUSH SEA RESERVES ACEC PROPOSAL REQUIRE SPECIAL MANAGEMENT ATTENTION

"Special management attention" refers to management prescriptions developed during preparation of an RMP expressly to protect the important and relevant values of an area from the potential effects of actions permitted under the RMP. These are management actions that would not be necessary if the relevant and important values were not present.[17]

One of the chief reasons the network of ACECs proposed in the Sagebrush Sea Reserves require special management attention is that currently designated Priority Habitat Management Areas and attendant management prescriptions (PHMA) on BLM lands are not stabilizing or reversing GrSG declining population trends (Coates 2021, Remington 2021). USFWS identified Priority Areas for Conservation (USFWS 2013) which they deemed as the essential foundation for greater sage-grouse conservation. PHMAs are a subset of those essential PACs. Further, the 2015 plans' prescribed management for PHMAs is based on the approach of avoiding, minimizing and mitigating damage including allowing waivers, exceptions, and modifications. In light of the continued downward trend in sage-grouse populations, this ACEC nomination promotes a more certain and scientifically justified approach to habitat conservation.

BLM's recent Rangewide Monitoring Report for 2015-2020 reports that 1.9 million acres, or approximately 3% of the existing sagebrush cover in PHMA/IHMA within Biologically Significant Units was lost between 2012 and 2018 due to a combination of factors and 16 habitat triggers and 42 population triggers were tripped (Herren et al. 2021). Coates et al. (2021) concluded that "There is only a 50% chance that most leks will be productive in about 60 years from now *if current conditions persist*."[18] (Emphasis added). Critically, this rangewide report does *not* count as lost habitat areas that have been leased for oil, gas or coal or other leasable minerals, granted rights-of-way or grazing allotments that do not meet land health standards.

Below a series of GIS analyses and overlays illustrate why special management attention that departs from the current approach to PHMA[19] management is warranted.

a.) 929,705 acres have been leased for oil and gas extraction in PHMAs since 2015

Since 2015, 1,632,957 acres of oil and gas leases have been offered for sale and 929,705 acres leased in PHMA. Figure 2 depicts oil and gas leases both offered[20] and sold[21] since 2015 in PHMA. As described in-depth in Section VI. (a), oil and gas development within a few miles of a lek and within and nearby nesting habitat has been shown in numerous studies (cited below) to be highly detrimental to GrSG populations.

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[17] 43 CFR § 1601.0-5(a)

[18] See https://www.usgs.gov/news/national-news-release/new-research-highlights-decline-greater-sage-grouse-american-west.

[19] For the purposes of these PHMA overlays, we define PHMA as PHMA plus Idaho Habitat Management Areas (IHMA) plus Landscape Connectivity Habitat Management Areas (LCHMA). https://www.sciencebase.gov/catalog/item/5d8106dde4b0c4f70d057b55

[20] Center for Biological Diversity compiled quarterly lease sales statistics offered based on E-planning for the years 2015-2021 and converted the information to GIS data.

[21] Center for Biological Diversity compiled quarterly lease sale statistics and converted to GIS data for use in this report.

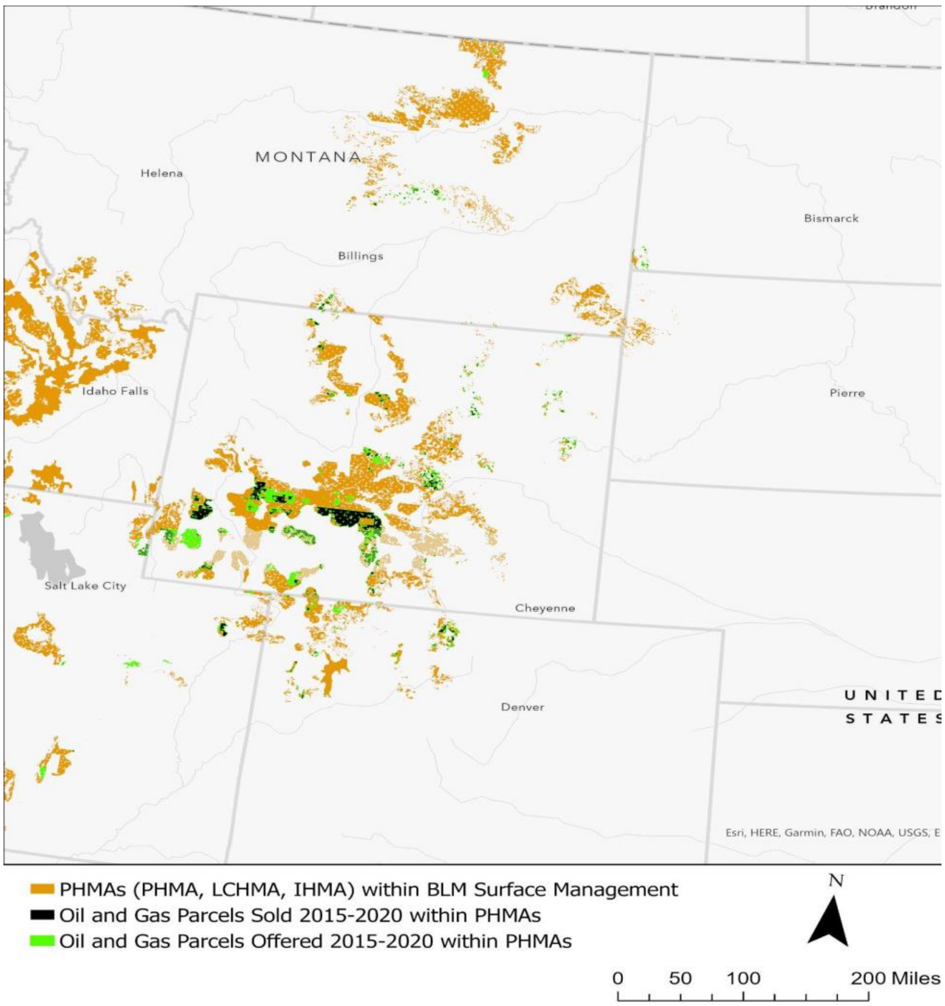

Figure 2. Oil and gas leases both offered and sold since 2015 in Priority Habitat Management Areas.

b.) 13,677 miles of new Rights of Way have been established in PHMAs since 2015

Per the 2015 RMPAs, the establishment of new rights of way (ROW) is to be avoided where possible in PHMA. Despite this plan direction, Figure 3 illustrates where 13,677 miles of new ROWs[22] have been established in PHMA since 2015. Granting ROWs for roads and transmission lines negatively affect greater sage-grouse and facilitates further habitat degradation and loss. Roads have multiple impacts on sage-grouse which are well studied (e.g., SGNTT 2011), including that sage-grouse may be affected by roads up to 6.9 km (4.2 miles) away (Connelly et al. 2004). We go into more details on the effects of roads and transmission lines on GrSG and other wildlife in the section justifying our proposed ACEC management stipulations below.

[22] https://data.doi.gov/dataset/blm-national-rights-of-way-public-display-polygons1

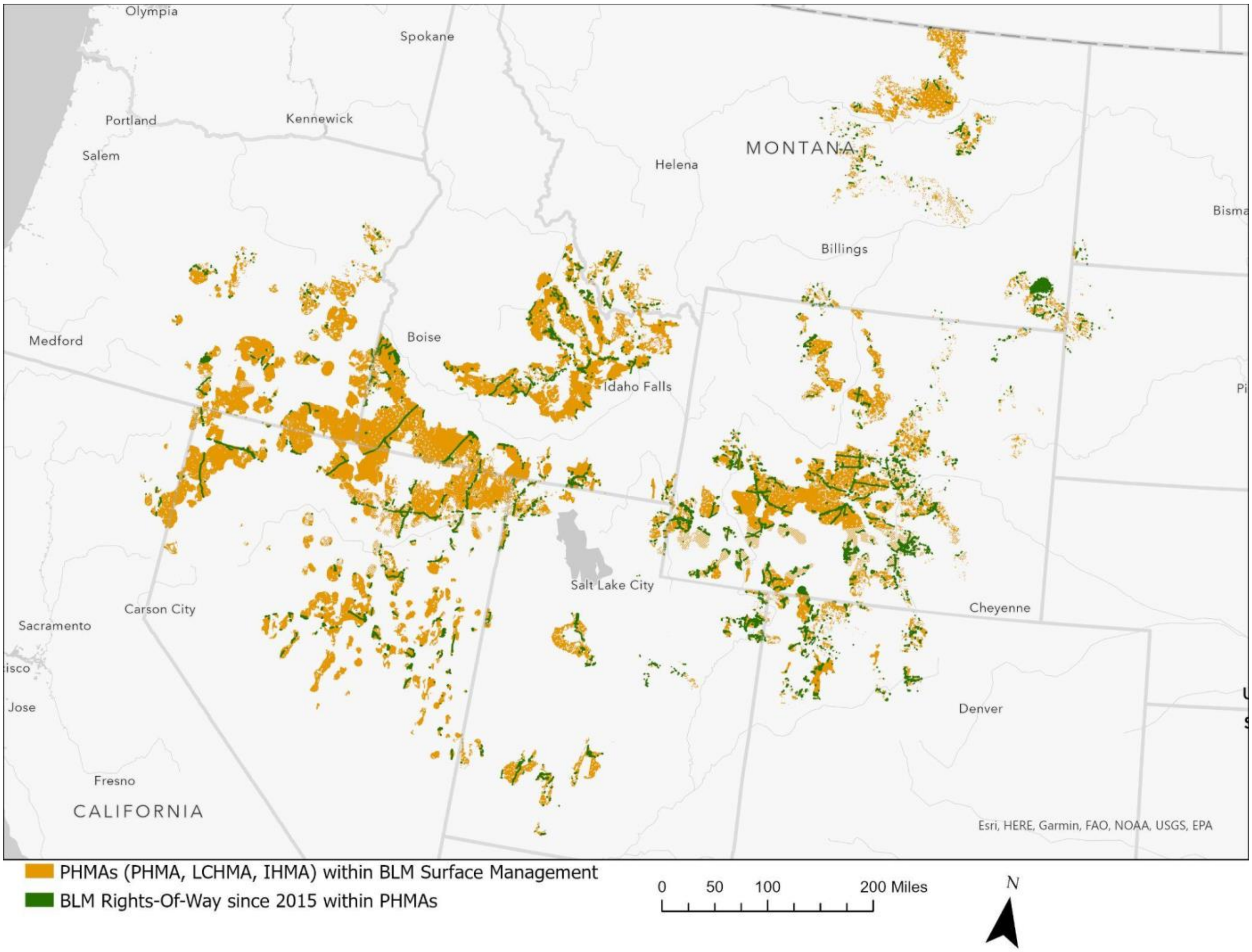

Figure 3. 13,677 miles of new ROWs have been established in Priority Habitat Management Areas since 2015.

Power and transmission lines are detrimental to sage-grouse because of increased predation risk (Steenhof et al. 1993; Lammers and Collopy 2007). Sage-grouse habitat use increased with distance (up to 600 meters) from power lines (Braun, unpublished data, reported in Strickland 2004). Deaths resulting from collisions with power lines are also a source of mortality for sage-grouse (Beck et al. 2006; 75 FR 13910). The NTT report concluded that overhead power lines cause sage-grouse to avoid habitat and increase the risk of mortality due to both predation and collisions (SGNTT 2011).

Since GrSG avoid surface disturbances, the actual acreage of habitat lost by these rights-of-way is many times larger than the ROW footprint alone. We are especially concerned about future rights-of-way in the form of several of the proposed transmission corridors that are being contemplated in GrSG habitat. See section VI.c. on renewable energy below.

c.) 16.5 million acres of grazing allotments within PHMA are failing the Rangeland Health Standards, and an additional 8.2 million acres have not been evaluated

The 2015 Sage-grouse RMPA amendments require the BLM to evaluate whether allotments are meeting the federal Rangeland Health (RLH) Standards with PHMA as a top priority for evaluation (e.g., BLM 2015a). The Plan amendments call on the BLM to focus monitoring and management activities on allotments found not to be achieving the Rangeland Health Standards where livestock grazing is identified as a causal factor and that have the best opportunities for conserving, enhancing or restoring habitat for GRSG. Figure 4 shows that 16.5 million acres within PHMAs are currently not meeting (but moving towards) RLH standards, and 8.2 million acres, have yet to be assessed. Of the 16.5 million acres in PHMA not meeting the Rangeland Health standards, the BLM reports that 12.2 million acres are not meeting standards due to livestock grazing. So far, the BLM has found that only 9.8 million acres are meeting the RLH standards within PHMA.[23]

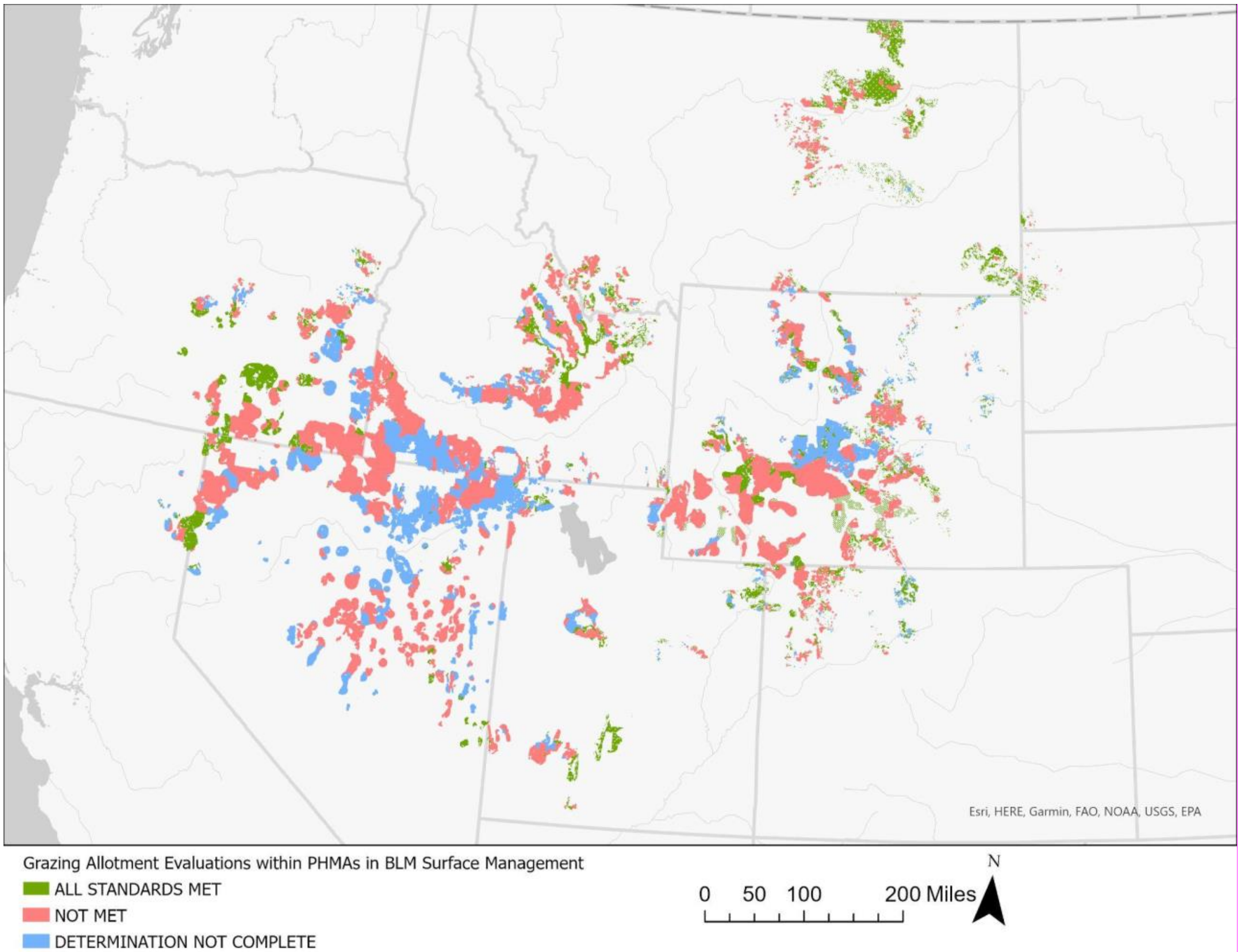

Figure 4. Areas (representing BLM grazing allotments or portions of allotments) that are currently meeting the federal Rangeland Health Standards, are not currently meeting Standards or have yet to be assessed for Rangeland Health.

d.) Since PHMAs were established in 2015, sage-grouse have continued their steady decline across its range

The USGS in 2021 published a report on greater sage-grouse populations and concluded that populations have declined 80% rangewide since 1965 and nearly 40% since 2002. Further, the authors found that there is only a 50% chance that most leks will be productive in about 60 years from now ***if current conditions***

[23] Data sources: BLM Rangeland Health Status (2020) - The Significance of Livestock Grazing on Public Lands
BLM's allotment Land Health Standards (LHS) assessment records (1997 - 2019)
BLM LAND HEALTH STATUS (2020) (https://mangomap.com/peer/data/blm_natl_grazing_allot_lhs2020.shp)

persist (Coates 2021).

This finding comports with the BLM Rangewide Monitoring Report for 2015-2020 that found that populations of GrSG in nearly all states where the species exist are continuing long-term population declines. BLM concluded that "This report, along with the USGS rangewide population monitoring report and the USGS sagebrush conservation strategy, emphasizes the urgent need to expand ongoing efforts to conserve currently functional habitat and restore currently degraded habitat" (Herren et al. 2021).

Below we restate population numbers and trends taken from the 5-year monitoring report[24] (Herren et al. 2021), including not only short-term trends from 2015 to today, but also concerning long-term trends.

<u>Idaho populations</u>. GrSG populations in Idaho have not done well since 2015. The BLM (Herren et al. 2021) reports that in Idaho since 2015, 2 soft and 6 hard population triggers have been tripped. Unfortunately, the BLM's Rangewide Monitoring Report for 2015-2020 only includes Idaho sage-grouse population data for 2015 through 2020, instead of back to 2000 or earlier, like the other states provide. The state-wide numbers for GrSG in Idaho were 5,539 in 2015 but have dropped to 3,249 in 2020.

<u>Nevada populations</u>. GrSG populations in Nevada have not done well since 2015. Since 2015, 15 soft and 5 hard population triggers have been tripped. This population decline comports with longer term trends seen in average male lek attendance since 2000. According to BLM, average male lek attendance went from an average of 19.7 males per lek in 2000 to 15.4 males per lek in 2019. A negative log regression line shown through the male attendance summary chart in appendix 11 of Herren et al. (2021) indicates that this trend is real and concerning.

<u>Oregon populations</u>. Populations of greater sage-grouse in Oregon have reached their lowest point ever recorded. Since the Oregon RMPA plan amendments were implemented, 24 soft population triggers and 13 hard population triggers have been tripped. This comports with longer term trends seen in both overall population numbers and average male lek attendance in the state since 1980. The BLM and Oregon Department of Fish and Wildlife report that overall population numbers were almost 45,000 in the late 1980's, but those numbers have dropped to less than 15,000 in 2020. Moreover, average male lek attendance reached an average of 32 or more males/lek three times between 1985 and 2005; but by 2020 this number had dropped to an average of only 13 males/lek (Herren et al. 2021, ODFW 2021). And male lek attendance in the 2020 population count, which represents the true nadir of the current "population trough" (it edged slightly up in 2021), was lower than the nadir of the previous trough in 2010/2011. The same trend can be seen in average male lek attendance; the 2020 low point was also less than the average lek attendance of the previous low point in 2010/2011 (Herren et al. 2021, ODFW 2021).

<u>Utah populations</u>. Since 2015, the BLM (Herren et al. 2021) reports 2 soft and 1 hard population triggers tripped. Since 2000, the Utah Division of Wildlife Resources reports that overall population numbers in the state were 2,497 in 2020, down from just over 3,000 in 2001. Moreover, average male lek attendance was 29 in 2001 (reflecting a steadily decline from a record high of 48 males/lek on average in 1961, UDWR 2020), but by 2020 this number had dropped to an average of only 11 males/lek (Herren et al. 2021, UDWR 2020). Importantly, and of further cause for concern, the population count in 2020, which represents the nadir of the current population trough was lower than the nadir of the previous trough in 2010/2011. The same trend can be seen in average male lek attendance. The 2019 low point (the number edged up just slightly in 2020) was also less than the

[24] The variations in reported monitoring data from the various states occur because not all states reported the same data or the same span of years to BLM for the 5-year monitoring report.

average lek attendance of the previous low point, in 2010/2011 (Herren et al. 2021, UDWR 2020).

Washington population. Washington contains a small percentage of individuals that make up the North American population of GrSG. The long-term trend of the Washington population is cause for concern. In 1970, 3,200 individuals were known to comprise the Washington population of GrSG. In 2015 when the plan amendments were implemented, this number had dropped to only 987 birds. In the most recent count in 2019, this number had dropped even further, to only 688 individuals (Herren et al. 2021). If this disturbing trend continues, this northwestern-most distribution of the species, isolated from other populations in Idaho and Oregon, could be extirpated in the not-too-distant future, an outcome even more likely with climate change.

Wyoming populations. The BLM (Herren et al. 2021) reports one soft population trigger tripped since 2015. Unfortunately, the BLM's (2020) Rangewide Monitoring Report for 2015-2020 only includes Wyoming sage-grouse population data for 2015 through 2020, instead of 2000 or earlier, like the other states provide. The state-wide numbers for GrSG in Wyoming were 36,542 in 2015, dropping steeply to 19,099 in 2020. Wyoming Game and Fish does provide data going back further on average male lek attendance over the last 20 years. Average males per lek in Wyoming reached a high in 2006 of 41.8 males/lek, but in 2021 this number fell to only 16.9 (WyoFile 2022). Wyoming Game and Fish biologists recently voiced concern over drops in GrSG populations, cautioning that the latest data on GrSG in Wyoming indicate an "alarming" likelihood of populations regressing to a 1996 nadir. The biologists cited preliminary data showing a 2021 ratio of 0.8 chicks per hen, which is below what's needed to stabilize the shrinking population (WyoFile 2022).

Colorado population. Numbers of this relatively small population (relative to the species' overall numbers) appear to be relatively stable according to population trend charts going back to both 2000, and 1976 (Herren et al. 2021).

Montana population. Numbers of this relatively small population (relative to the species' overall numbers) appear to be relatively stable according to population trend charts going back to 2000 (Herren et al. 2021).

As evidenced in the summaries of the eight states featured above, the adoption of the 2015 RMPA plan amendments is not reversing the largely downward trends of GrSG populations.

VI. JUSTIFICATION FOR INCREASED PROTECTION OF THESE UNITS

Our team mapped and summarized disturbances, threats, and vulnerabilities that currently or will threaten the proposed units of the Sagebrush Sea Reserves ACECs proposal. We also identified many other imperiled and rare native sagebrush-steppe obligate species that stand to gain from this new network of properly conserved ACECs. Current GrSG plans allow disturbance caps to reach 3-5%. Yet, on-going population declines are occurring with average disturbance rates of 0.71% range-wide, providing another strong indicator that increased protections are urgently needed for GrSG.

a.) Essential habitats for sage-grouse face continuing and increased threats from oil and gas development

Since 2015 2,978,133 acres of oil and gas leases have been offered for sale and 1,307,226 acres sold for lease within the boundaries of the ACEC proposal. Figure 5 depicts oil and gas leases both offered[25] and

[25] Center for Biological Diversity compiled quarterly lease sales statistics offered based on E-planning for the years 2015-2021 and converted relevant information to GIS.

sold[26] since 2015 within the ACEC proposal in the eastern portion of the GrSG range. According to Remington et al. (2021), oil and gas development has impacted 20% of the sagebrush habitat in the Rocky Mountain Region. Energy development directly destroys habitat, diminishes habitat quality surrounding the development and contributes to climate change, a growing threat to the sagebrush sea.

There is perhaps no aspect of sage-grouse and its habitat that has been studied more thoroughly than the impact of energy and mineral development. The individual synergistic and cumulative effects of expanded oil and gas development and related effects, such as surface disturbance, noise, and creation and use of access roads continue to fragment, degrade and eliminate sage-grouse habitat across its range (Connelly et al. 2011). The Sage Grouse National Technical Team's (SGNTT 2011) report and Salvo (2015) thoroughly review the effects of fluid mineral development on sage-grouse.

The NTT report underscores the profound impacts energy and mineral development has on GrSG habitat:

> "There is strong evidence from the literature to support that surface disturbing energy or mineral development within priority sage-grouse habitats is not consistent with a goal to maintain or increase populations or distribution. None of the published science reports a positive influence of development on sage-grouse populations or habitats. Breeding populations are severely reduced at well pad densities commonly permitted (Holloran 2005, Walker et al. 2007a). **Magnitude of losses varies from one field to another, but findings suggest that impacts are universally negative and typically severe"** (SGNTT 2011, emphasis added).

[26] Center for Biological Diversity compiled quarterly lease sale statistics and converted to GIS data for use in this report.

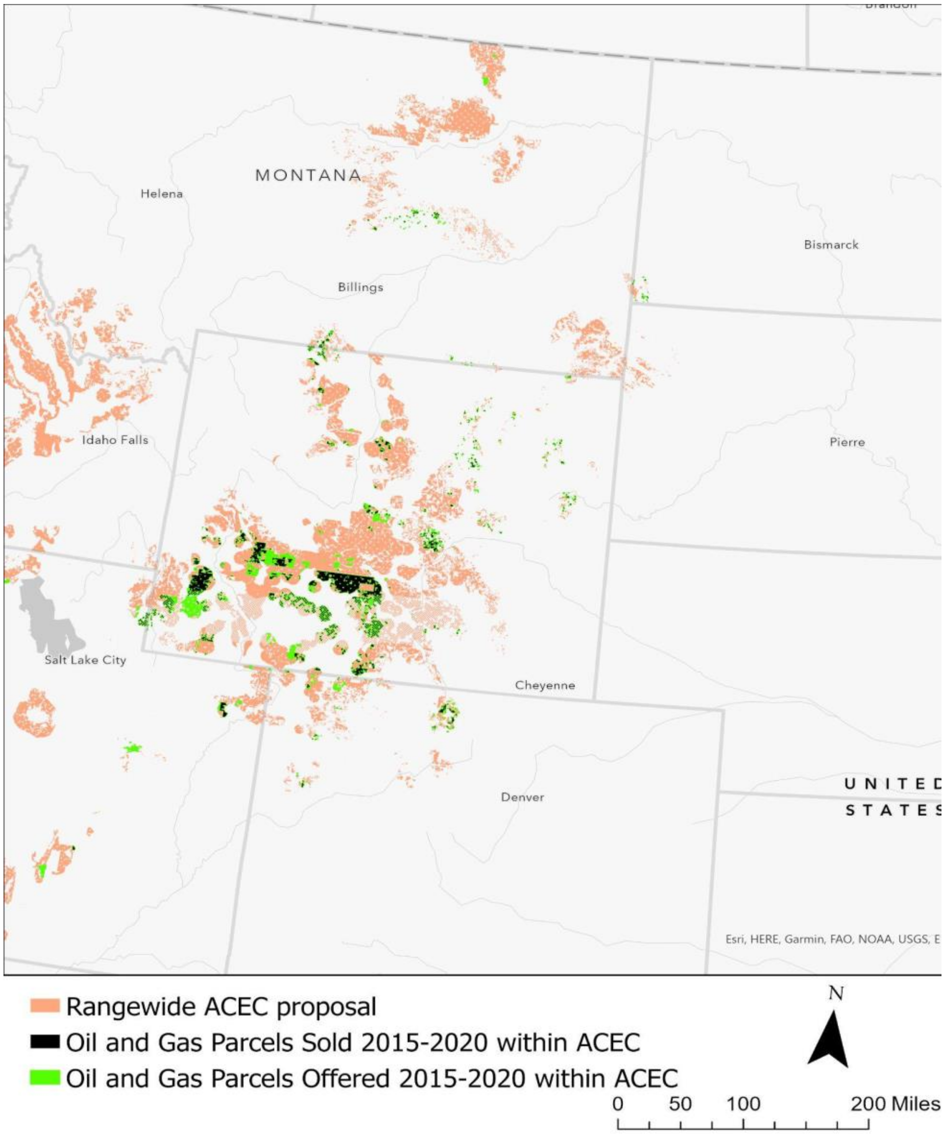

Figure 5. Oil and gas leases both offered and sold since 2015 in proposed ACEC units.

More recent studies confirm the NTT findings, especially regarding fluid mineral development. For example, Green et al. (2017) examined greater sage-grouse lek attendance, oil and gas well, and habitat and precipitation data from Wyoming over the period 1984 to 2008 and, consistent with numerous prior studies, found that lek attendance declines are closely associated with the density of oil and gas development, regardless of sagebrush cover and precipitation (Green et al. 2017 and references therein). Importantly, Green et al. (2017) confirmed that declines in sage-grouse populations continue even within Wyoming's core areas, which were initially considered adequate to recover sage-grouse populations. In addition, another recent study analyzing sage-grouse persistence in developed areas in Wyoming, Gamo and Beck (2017: 190), found that "energy development has been shown to specifically impact male sage-grouse lek attendance, lek persistence, recruitment of yearling male and female grouse to leks, nest initiation and site selection, nest survival, chick survival, brood survival, summer survival of adult females, early brood-rearing habitat selection, adult female summer habitat selection, and adult female winter habitat selection" (citing literature). And in yet another recent Wyoming study from 2008-2014, Kirol et al. (2020), measured the impacts to grouse from both fossil fuel energy and renewable energy and found that ongoing surface disturbance from energy development within 8 km (4.97 miles) of a greater sage-grouse nest decreased the likelihood of nest success. Sage-grouse broods within 1 km (0.62 miles) of ongoing surface disturbance from fossil fuel and renewable energy development were less likely to survive than broods exposed to less disturbance. As ongoing disturbance increased, GrSG nests had an increasing rate of failure. Furthermore, female sage-grouse avoided habitat with higher levels of disturbance in favor of habitat with lower levels of disturbance. The study indicates that BLM's current approach to lek buffers and disturbance caps (3-5%) is too high and will lead to further declines in population and habitat loss.

Oil, gas and other forms of energy development are known to impact other species of native wildlife as well, especially ungulates. For example, two 15-year studies of pronghorn response to energy development in the southern Greater Yellowstone Ecosystem and Upper Green River Basin (Sawyer et al. 2017, 2019) found that pronghorn response to increased oil and gas development results in both avoidance of infrastructure and partial abandonment of traditional winter ranges and that mule deer consistently avoided energy infrastructure and used habitats that were an average of 913m farther from well pads compared with pre-development patterns of habitat use (Sawyer et al. 2019). Using global positioning system data from 56 deer over 15 years in Wyoming, Sawyer (2020) found that declines in deer habitat use during migration were related to surface disturbance and were non-linear, where migratory use sharply declined when surface disturbance from energy development exceeded 3% of the area. And, in a series of studies of mule deer in Colorado's Piceance Basin from 2008-2010 the researchers found that deer will reduce use of areas within their critical winter range within 600-800m of a well pad disturbance site during the drilling phase and within 400m during the producing phase (Northrup et al. 2015). In two companion studies in the Piceance Basin, Petersen et al. (2017, 2018) found that mule deer fetal survival was lower in the higher energy development areas.

The data is clear that fossil fuel energy development causes sage-grouse and migratory species to abandon or avoid habitat leading to population declines. Over 1.3 million acres of new oil and gas leases have been sold since the 2015 plans were implemented. And as these new oil and gas leases get developed in GrSG habitat, population declines are certain to continue and possibly accelerate. To stem these declines, habitat needs to be protected from further surface disturbing development including oil and gas wells. Figure 5 illustrates the problem with new oil and gas leases in the areas proposed for ACECs within the Sagebrush Sea Reserve network.

b.) Many of these essential habitats face a certain threat of additional cheatgrass infestation and increased fire frequency unless management is changed.

Figure 6 depicts the future fire hazard[27] for the western portion of the proposed ACEC network. Wildfire poses a significant risk to greater sage-grouse habitat. BLM's recent five-year monitoring report estimated a cumulative loss of 1.9 million acres of sagebrush in priority habitat from 2012 to 2018 (Herren et al. 2021). The primary driver has been wildfire, which accounts for 72% of the total loss, including 87% of sagebrush loss in the Great Basin (Herren et al 2021). Moreover, along with the increased incidence of fire across the Sagebrush Sea in recent decades, exotic annuals, especially cheatgrass, have also expanded (Remington et al. 2021, and references therein). In fact, these two phenomena go hand in hand.

Comprehensive literature reviews by Welch and Criddle (2003) and Jones (2019), indicate that the historic fire return interval in sagebrush-grass communities and big sagebrush communities was likely between 50 to 125 years. In Wyoming big sagebrush, fire cycles historically were of longer duration with average fire rotation likely ranging from 100 to over 300 years, depending on climate, topography, plant composition, and ecological site characteristics (Jones 2019). However, in recent decades a combination of fire and the spread of highly flammable nonnative plants has drastically altered the natural fire regime throughout

[27] https://www.fs.usda.gov/rds/archive/catalog/RDS-2015-0047-3 and https://doi.org/10.2737/RDS-2015-0047-3

much of the sagebrush steppe (Jones 2019) especially in the western part of the GrSG's range. Wildfires now burn larger, hotter, and more frequently in affected lower elevation (i.e., Wyoming big sagebrush) habitats. Burned areas are often vulnerable to reinvasion by cheatgrass, which can completely occupy a burned site (Brooks et al. 2004, Chambers et al. 2017a). Remington et al. (2021) comprehensively reviewed the existing literature on the many documented negative effects of cheatgrass on GrSG. In addition, livestock grazing significantly exacerbates the spread of cheatgrass (e.g., Reisner et al 2013, 2015; Williamson 2019), which in turn further drives uncharacteristic wildfire. Stemming this trend will require aggressive conservation measures to eliminate and minimize surface disturbance in and stressors to intact habitats, including livestock grazing.

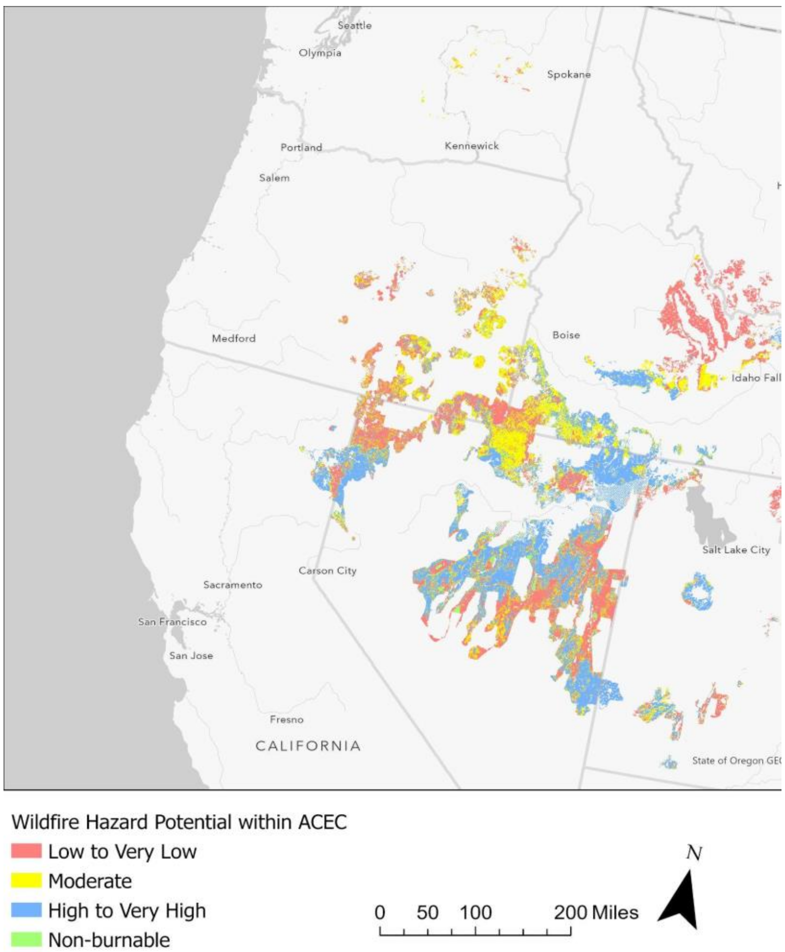

Figure 6. The potential fire hazard for the western portion of the proposed ACEC network. By and large the potential fire hazard is greater in the western part of GrSG range compared to the eastern portion.

The BLM has documented the increase of exotic annuals in GrSG habitat in its recent 5-year monitoring report; invasive plants have increased from being present on a little over 50% of GrSG habitat in 2013, to nearly 70% of habitat in 2018. The percentage of the Sagebrush Sea where invasive plants are abundant (>25% of vegetative cover) has also increased, from about 10% in 2013 to nearly 30% in 2018 (Herren et al. 2021). The impacts of both fire and exotic annual weed proliferation on GrSG are well studied (as summarized in Remington et al. 2021). Fires, prescribed and natural, have long-term negative effects (>10 yr. Sage-grouse may continue to avoid burned areas even after sagebrush has recovered (Nelle et al. 2000). Sagebrush may return to pre-burn occurrence within 15 to 20 years after fire if conditions are favorable (e.g., proximate seed sources, quick seedling establishment, conducive weather, etc.). If not, various sagebrush varieties may require between 30 to 50 years to re-occupy a burned site (Baker 2006; Knick et al. 2005). While small, infrequent fires can maintain a mosaic of successional habitats that benefit sage-grouse, ecological modeling indicates that frequent, large fires in sagebrush steppe can lead to lek abandonment and with too many, very large fires, may even lead to extirpation of the species in some areas (Aldridge et al. 2008).

The losses of GrSG habitat to both wildfire and cheatgrass infestation make it imperative that BLM place sufficient acreages of currently occupied and adjacent healthy and suitable GrSG habitat in the highest levels of protection, such as large and connected ACECs with strong provisions for eliminating surface disturbance. This can help protect these habitats from anthropogenic threats that can exacerbate the cheatgrass/fire cycle, and which are within the agency's control such as grazing, energy development, mining, recreation, and road management.

c.) Renewable energy infrastructure poses threats to sage-grouse

Our organizations support renewable energy development as a key tool to mitigate the climate crisis that threatens virtually all species, including sage-grouse. At the same time, we acknowledge that utility-scale wind, solar, and geothermal development and associated infrastructure such as transmission lines and roads can harm GrSG in the same ways as other large-scale anthropogenic developments through habitat loss and fragmentation, predation (and thus behavioral avoidance by sage-grouse) caused by tall structures, and disturbance from noise, motion, and human activity.

GrSG avoid areas with surface disturbance, resulting in lower reproduction rates and nesting success and declining populations. In a study of the effects of wind turbines on sage-grouse, researchers noted that "sage-grouse during the brood-rearing and summer period were responding to the infrastructure associated with a wind energy development similar to that found in a natural gas field" (LeBeau et al. 2017). In Idaho near Cotterel Mountain, a drastic decline in lek attendance across nine local leks was attributed to the placement of eight meteorological (met) towers erected to measure wind velocity for a commercial wind power feasibility study (Reynolds and Hinckley 2005). In the 2013 COT report, the USFWS noted that, while there was not yet a lot of renewable energy yet built in GrSG habitat, "impacts resulting from renewable energy development are expected to have negative effects to sage-grouse populations and habitats due to their similarity in supporting infrastructure" (citing Becker et al. 2009; Hagen 2010; LeBeau 2012; USFWS 2012).

Renewable energy development impacts other sensitive species of the Sagebrush Sea as well. These impacts, especially for wind power, are summarized in many comprehensive reviews, including for raptors (see Madders and Whitfield 2006, Molvar 2008, ONDA 2009, and Jones 2012); other birds, i.e., passerines (see Erickson et al. 2001, Stewart et al. 2004 and Strickland 2004); bats (see Arnett 2005, Arnett et al. 2008 and Johnson 2005); and wildlife in general, including ungulates (see Arnett et al. 2007 and Jones 2012).

Figure 7 identifies significant areas available for renewable energy that occur outside the nominated ACEC proposal. However, several proposed transmission lines will slice through GrSG habitat and should be reevaluated and rerouted. Based on this analysis, designating the nominated ACEC Sagebrush Sea Reserve network with restrictions on renewable energy development and associated transmission lines as recommended by BLM in the NTT Report (SGNTT 2011: 21) can help protect important sage-grouse habitat and at the same time not significantly impede renewable energy development in the western United States.

Pursuing development outside of these areas (and sage-grouse habitat more generally) would avoid negative impacts to sage-grouse and other species. As one example, we are concerned about Greenlink North (and the utility-scale renewable projects likely to be built along it) that would fragment GrSG habitat, isolating populations and leading to further decline.

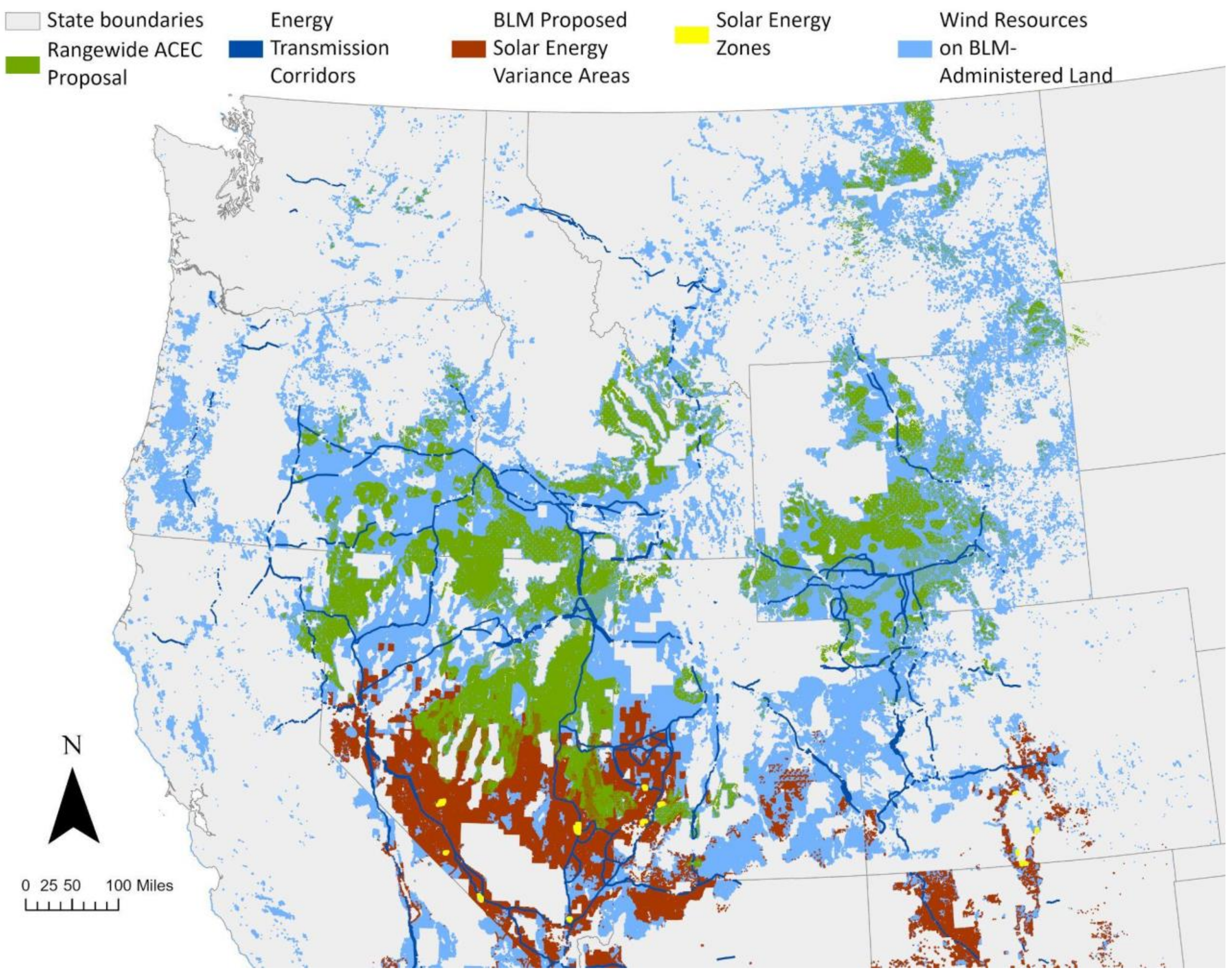

Figure 7. Energy transmission corridors, solar energy variances, solar energy zones, and wind resources vis-a-vis the proposed ACEC network. There is ample opportunity for renewable energy and transmission outside of the ACEC proposal.

d.) Protection of this network of ACECs will also help many other imperiled species

The Sagebrush Sea is home to a number of species that are considered at-risk (e.g., Dobkin and Sauder 2004, Pilliod et al. 2020, Remington et al. 2021), including up to 50 species that are listed, candidate or proposed under the Endangered Species Act (ESA). These include for instance the pygmy rabbit (*Brachylagus idahoensis, Figure* 8), piping plover (*Charadrius melodus,* Figure 8), monarch butterfly (*Danaus plexippus*), Colorado pikeminnow (*Ptychocheilus lucius*, Figure 9), Lahontan cutthroat trout *(Oncorhynchus clarkii henshawi*, Figure 9) and many plants.[28] Protecting the nominated ACEC network

[28] Ranges are derived from publicly available range data (ECOS provided by USFWS and USGS GAP data).

will have the added effect of protecting habitat for the listed and at-risk species that share habitat with GrSG.

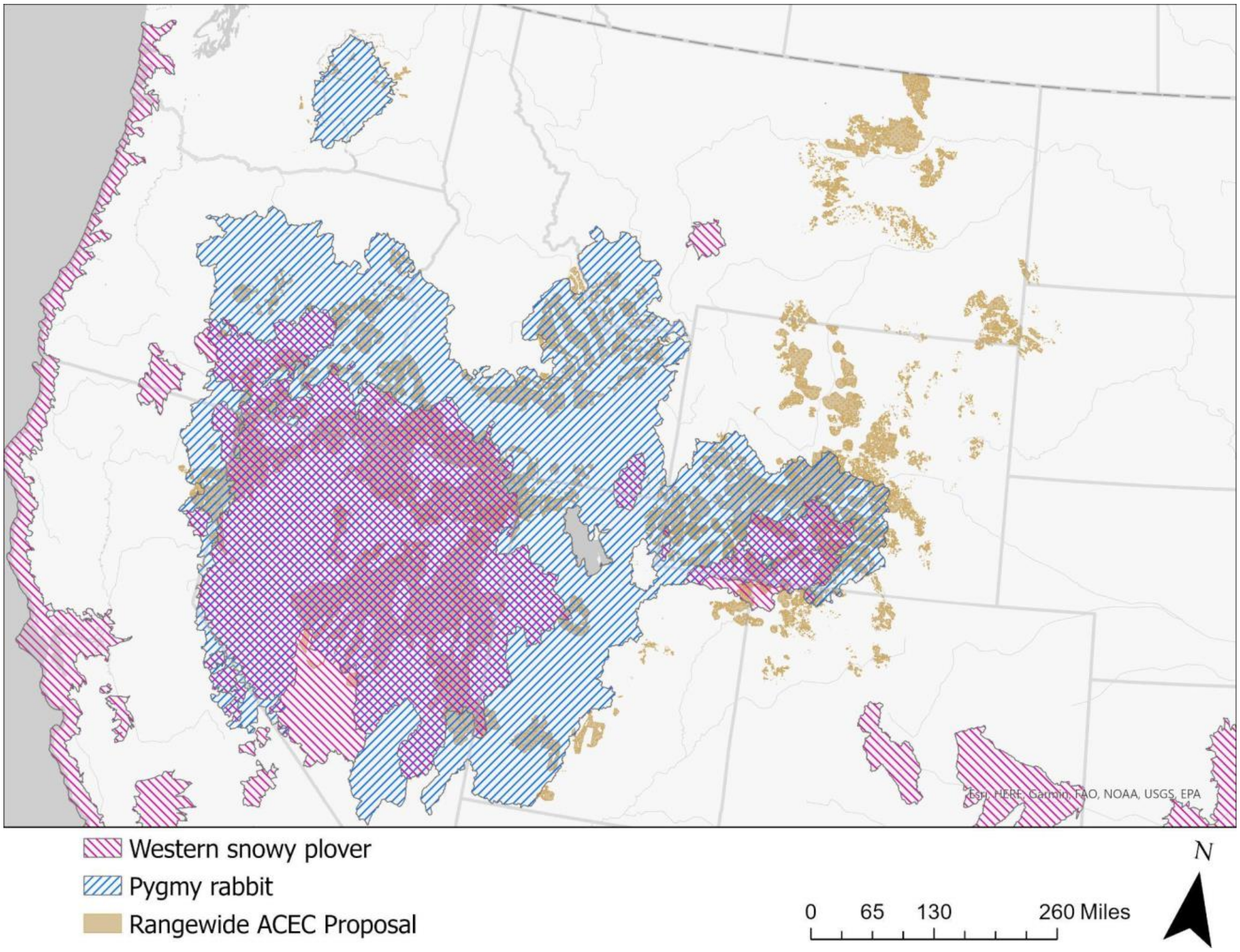

Figure 8. The ranges of an ESA-listed mammal and bird that substantially overlap the nominated ACEC network.

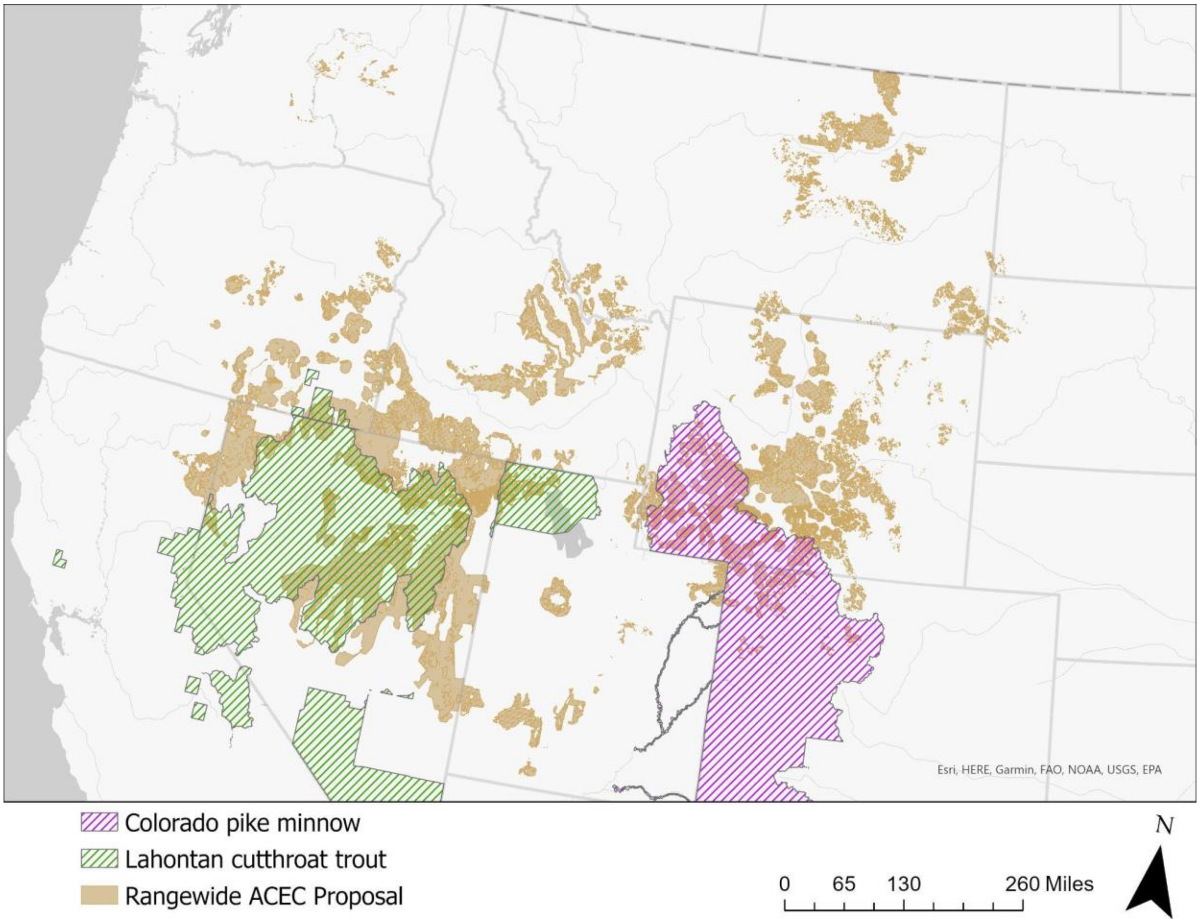

Figure 9. The ranges of two fish species listed under the ESA that substantially overlap the nominated ACEC network.

In addition, there is substantial overlap with the ACEC proposal and the ranges of many iconic western ungulates, including pronghorn antelope, elk, mule deer and bighorn sheep (Appendix A). Because the proposed Sagebrush Sea Reserve ACEC network is, by design, well connected, its protection will serve well wide-ranging migratory ungulates such as these. It will also go a long way toward meeting goals laid out in Secretarial Order 3362 (Improving Habitat Quality in Western Big-Game Winter Range and Migration Corridors) which emphasizes the importance of conserving and improving elk, mule deer, and pronghorn habitat necessary to sustain local and regional big-game populations.

e.) All sagebrush-steppe-dependent species, especially wide-ranging ones, benefit from large, protected and connected expenses of functioning habitat as proposed here.

In the last few decades, the need to conserve relatively wide-ranging species (such as sage-grouse) through a connected network of conservation reserves or networks, has become well established (e.g. Dobson et al. 1999, Soule and Terborgh 1999, Prugh et al. 2008, Hilty et al. 2020, Carroll and Noss 2021). Threats that have been degrading, dissecting and fragmenting GrSG habitat, over the last few decades are well documented (e.g., Herren et al. 2021, Remington et al. 2021 and references therein); these direct anthropogenic and anthropogenic-influenced stressors have contributed to the steady decline of GrSG across its range (Herren et al. 2021, Coates et al. 2021). This dynamic has left the various populations of GrSG more isolated from one another, and, in certain worrisome cases like the Columbia Basin population in Washington, perhaps nearing the point of getting too small to persist. Habitat fragmentation that isolates populations affects specialized needs of native wildlife, such as limiting dispersal, reducing reproduction, and other life cycle needs. Increases in distance between populations and thus reduced migration rates reduces the likelihood of local populations in many patches sustaining one another; and small populations have been shown to suffer deleterious population-level effects resulting from isolation—such as inbreeding, low genetic diversity, and extirpation (Ross 1983, Harris 1984, Newmark 1995, Prugh et al. 2008, Dobson et al. 1999).

Conservation scientists agree that the long-term solution to the above problems related to population isolation is to protect connected networks of large "core areas" of habitat; with this solution we can prevent local extinction through demographic rescue, allow for recolonization after local extinction, and allow for gene flow, seasonal migration, and other ecological processes to better function across the landscape, ranging from pollination to seed dispersal to predator-prey interactions (Dobson et al. 1999, Soule and Terborgh 1999, Prugh et al. 2008, Hilty et al. 2020, Carrol and Noss 2021). And, perhaps most importantly as we face a changing climate, a connected, protected network of core habitat can offer climate change refugia for many species, facilitating the persistence of sensitive species, and preventing the loss of genetic diversity to buy time for adaptation over longer timescales (Hilberg 2020, Carrol and Noss 2021). Conserved, connected core networks can also protect populations from extirpation following extreme events (e.g., severe drought or wildfires), allowing recolonization of the surrounding landscape (Hilberg 2020, Carrol and Noss 2021). This is important because predicted climate disruption changes include reduced habitat suitability and possible species range shifts towards northern latitudes and/or higher elevations (Beever et al. 2011, Padgett et al. 2018).

Regarding the connectivity issue's relevance with the Sagebrush Sea Reserve ACEC proposal, recent studies find extensive gene flow across sage-grouse's range, with central "keystone" nodes facilitating connectivity through a "hub and spoke" mechanism (Cross et al 2018). Identified keystone nodes have been included within our ACEC proposal. However, it's not enough to protect the keystone nodes alone. The matrix habitat between core population areas of sage-grouse is essential to maintaining gene flow between the hubs and the spokes and much of the matrix habitat between core population areas is winter or summer range. Protecting habitat which comprises the entirety of the sage-grouse's annual life cycle increases connectivity and resilience for the populations. We strove to achieve this by including all the PACs across the range of the GrSG in our ACEC proposal. Since USFWS Priority Areas for Conservation (which are by design already fairly well connected across the landscape) form the basis of the Sagebrush Sea Reserve ACECs proposal, the proposal effectively and collectively meets the long-term, large landscape conservation goals called for by the science cited above.

Lastly, conservation scientists tell us that to halt mass extinction and solve the climate crisis, we need to not only preserve existing habitats, but conserve at least 30% by 2030 (Dinerstein et al. 2017). This call to action has prompted the Biden administration to adopt the "30 by 30 goal" of conserving 30% of America's natural lands by 2030. Designating the lands identified in this proposal as ACECs with management prescriptions as recommended would go a long way towards meeting this important, national goal.

VII. BLM ANALYZED MANY OF THESE AREAS IN 2015 AND CONCLUDED ACECS WERE JUSTIFIED

Further illustrating the significant value provided by protecting the areas identified in this proposal, significant acreage across the greater sage-grouse range have already been found to meet the relevant and important criteria for ACEC designation.

a.) Idaho.

In Appendix H of the 2015 Idaho ARMPA EIS in (BLM 2015a) which analyzed potential ACECs for GrSG for inclusion as an alternative put forward for analysis in the EIS, the BLM found that 8,714,479 acres of nominated areas of sage-grouse habitat met Relevance and Importance Criteria (Figure 10). These proposed ACECs were included for consideration in Alternative F of the Idaho 2015 RMPA.

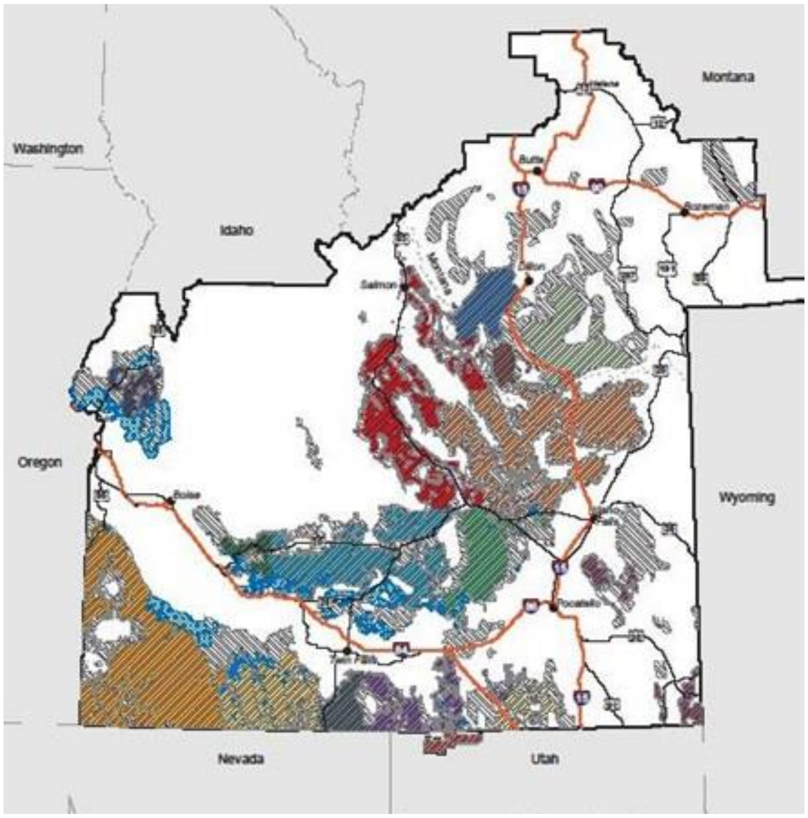

Figure 10. GrSG habitat in Idaho found by the BLM in 2015 to meet Relevance and Importance Criteria, and analyzed for designation as ACECs, under Alternative F of the ARMPA EIS (2015).

b.) Nevada.

In the Appendix of the 2015 Nevada ARMPA EIS (BLM 2015b) which analyzed potential ACECs for GrSG for inclusion in an alternative put forward for analysis in the EIS, the BLM found that 12,249,107 acres of nominated areas of sage-grouse habitat met Relevance and Importance Criteria (Figure 10). Specifically, BLM found that the set of units considered for ACEC designation in Alternative C of the Nevada 2015 RMPA met Importance Criteria #1 (The proposed ACEC has more than locally significant qualities which give it special worth, consequence, meaning, distinctiveness, or cause for concern, especially compared to any similar resource), and Criteria #2 (The proposed ACEC has qualities or circumstances that make it fragile, sensitive, rare, irreplaceable, exemplary, unique, endangered, threatened, or vulnerable to change).

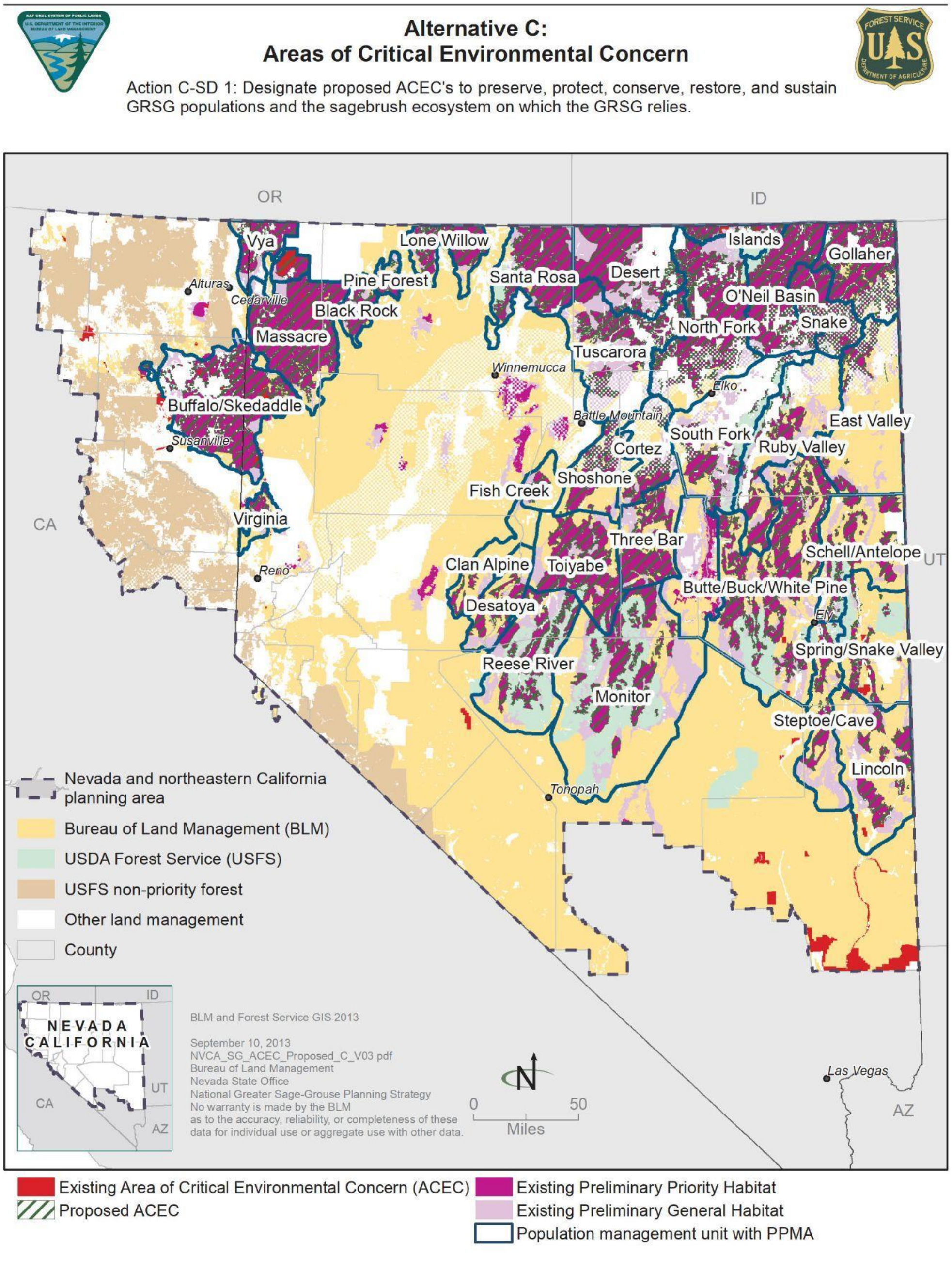

Figure 11. GrSG habitat in Nevada found by the BLM in 2015 to meet Relevance and Importance Criteria and analyzed for designation as ACECs under Alternative C of the ARMPA EIS (2015).

c.) Oregon.

During the 2015 GrSG Land Use Plan Amendment process the Oregon State BLM Office identified 17 potential ACECs for Oregon through an interdisciplinary process comprising 4,041,905 acres (BLM 2015c). The ACEC boundaries were created by merging all active GrSG leks and occupied habitat, sage-grouse brooding, transitional and winter habitat, and high-quality sagebrush habitat. Many potential ACECs included large blocks of sagebrush habitats in Preliminary Priority Habitat (PPH) and Preliminary General Habitat (PGH) at higher elevation (> 5,000 feet) with the intent that with vegetation changes because of climate change, many sagebrush habitats will be moving upslope through time and could serve as refugia for the birds in the future (i.e., future suitable habitat). Attention was paid to connectivity between the 17 ACECs and to existing ACECs and RNAs and isolated leks, with an attempt to provide for movement corridors. All ACECs were also designed to follow BLM ownership and livestock grazing allotment boundary or pasture fences, resulting in both PPH and PGH habitat being included. Because they met the Importance and Relevance criteria, 17 ACECs were identified on 4,041,905 acres within the four districts and analyzed in the OR RMPA EIS (BLM 2015c).

VII. NOMINATION OF ACECs

Pursuant to the Federal Land Policy and Management Act (FLPMA),[29] we nominate for ACEC designation all units depicted in Figure 1 above as Sagebrush Sea Reserve ACECs. We are making the shape file along with meta-data available at https://drive.google.com/drive/folders/1dBL665SehRTVd8G3RrDGMr6Jr1vz9NJw?usp=sharing. We respectfully submit this nomination in response to BLM's notice in the federal register soliciting scoping comments on sage-grouse planning and related ACEC nominations.[30] We identified this network of sage-grouse reserves as potential ACECs based on the criteria set out in applicable laws and regulations, and as outlined in BLM Manual 1613. Our nomination form for the Sagebrush Sea Reserve ACEC network is included as Appendix B.

VIII. RECOMMENDED MANAGEMENT PRESCRIPTIONS FOR THESE PROPOSED SAGEBRUSH SEA RESERVE ACEC UNITS

BLM Manual 1613 states that for an area to be designated as an ACEC, it must "require special management attention to protect the important and relevant values."[31] "Special management attention" refers to management prescriptions developed during preparation of an RMP expressly to protect the important and relevant values of an area from the potential effects of actions permitted by the RMP. These are management actions that would not be necessary if the relevant and important values were not present.

For designated ACECs, management prescriptions are established in the land use plan to ensure *protection* of these special values.[32] BLM's guidance on this issue includes size requirements and mineral withdrawal. Manual 1613, Section .22.B.2 states that an ACEC is to be as large as is necessary to protect the important and relevant values. Further, the manual explicitly recognizes mineral withdrawal as an appropriate management prescription for protecting ACEC values.[33]

Withdrawal

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[29] 43 U.S.C. § 1701, *et seq*

[30] 86 FR 66331 (Monday, November 22, 2021).

[31] See also, 43 CFR 1601.0-5(a).

[32] Manual 1613, Section .22.

[33] 1613, Section .33.C.

This ACEC nomination also includes a request that BLM submit an application to the Secretary of the Interior to withdraw, for the maximum period of time allowed by law,[34] all lands within the nominated Sagebrush Sea Reserve ACEC network from all forms of mineral location and development, for the conservation and restoration of greater sage-grouse and other native wildlife species. The withdrawal should be both:

1. *from* certain uses harmful to the conservation of GrSG (e.g. mineral development of any kind (location [hardrock], leasing [fluid, coal, and other minerals, including geothermal), or sale (common minerals such as sand and gravel); and
2. *for* the conservation of greater sage-grouse and other native wildlife and plants and the sagebrush-steppe and adjacent ecosystems on which they depend.

We urge that the withdrawal be initiated as soon as possible following the publication of the ROD(s). History has shown that while many BLM resource management plans establishing ACECs include a statement that BLM will seek a withdrawal, the withdrawal application to the Secretary languishes and is not carried out.

Management Prescriptions

In addition to the withdrawal proposed above, we recommend the following mandatory (no exceptions, waivers, or modifications) management prescriptions be required for the nominated ACECs. Rationales based on best available science are provided below.

- Disallow new mineral leasing or sales within the ACECs. Pursue initiatives for early relinquishment of existing fluid mineral leases. Ensure that all existing grandfathered leases comply fully with existing stipulations and are subject to the most protective conditions of approval permitted by law. Ensure careful scrutiny of any requests for suspension of grandfathered leases to avoid improper extension of primary lease term. Cancel leases issued unlawfully since 2015 within the nominated ACECs. Consider buying back undeveloped leases within the nominated ACECs.

- Surface disturbance should be limited to restorative activities such as removing current infrastructure or performing necessary vegetation treatments in degraded sage-grouse habitat (for example in post-fire scenarios, removing exotic species invasions).

- New roads shall not be constructed subject to valid existing rights or except where realignment/rerouting is needed to benefit sage-grouse habitat. Prioritize unnecessary roads for decommissioning and restoration to achieve the road density standard of 0.7 mile/square mile. Where road systems are not yet designated, complete travel plans within five years.

- Motorized use shall be limited to designated roads.

- Prohibit new rights-of-way unless they are within an established ROW developed footprint. Existing rights-of-way permits should only be renewed upon a finding that the need for the continued right-of-way is in the public interest and that no reasonable alternative exists. Make ACECs renewable energy exclusion zones.

- Prioritize the removal of infrastructure (including unneeded energy development equipment, roads, fencing and other range developments).

- Cap forage utilization annually at no more than 25% for livestock use and maintain grass height at not less than 7 inches (10.2 inches for areas within the Great Plains). Write these stipulations into Allotment Management Plans and monitor allotments annually to assure that the utilization and grass height

[34] 43 USC 1417

standards are being met.

- Grazing permits and associated allotment management plans shall receive prioritization for full environmental review and implementation, including an assessment of whether an allotment is meeting BLM rangeland health standards.
- When an allotment is found to not meet rangeland health standards immediately develop a strategy to achieve rangeland health standards within 10 years.
- Facilitate the voluntary relinquishment of grazing permits and leases.
- Establish large grazing exclosures or reference areas in representative habitats to use as baseline to measure sagebrush habitat health in the absence of grazing.
- Manage vegetation to retain resistance to invasion where invasive annual grasses dominate less than 5 percent of the area within 4.0 miles of such leks. This includes regular monitoring of pioneering invasions and rapid implementation of measures to remove the invading species and bolster native vegetative resistance. As technologically possible, reduce the area dominated by invasive annual grasses to 5 percent or less within 4.0 miles of all occupied leks.
- Use best practices for ecological restoration of degraded lands including using only genetically appropriate native seeds and plants. Monitor and continue restoration activities as needed until project objectives are met and at least for three years. Livestock grazing should be excluded from restored or rehabilitated areas until woody and herbaceous plants achieve sage-grouse habitat objectives. Develop revegetation plans so that native seed supplies are developed and available when needed.
- Manage recreational uses as necessary so that they do not conflict with the conservation of GrSG and its habitat.
- After assuring the protection of life and property from wildfire, prioritize fire suppression to conserve GrSG habitat in the ACECs. Develop fire response plans so that equipment and personnel can be readily mobilized and unnecessary surface disturbance is avoided.

Justification for the above management stipulations for ACECs

The literature is replete with studies that demonstrate that the above proposed management stipulations for the new Sagebrush Sea Reserve ACECs are integral to ensure that these key habitats will allow sage-grouse, and many other native sagebrush dependent species, to persist for the long-term, as well as being reasonable, actionable and science-based.

a.) *No new mineral leasing or sales will be permitted within the ACECs. Pursue initiatives for early relinquishment of existing fluid mineral leases. Ensure that all existing grandfathered leases comply fully with existing stipulations and are subject to the most protective conditions of approval permitted by law. Ensure careful scrutiny of any requests for suspension of grandfathered leases to avoid improper extension of primary lease term. Cancel leases issued unlawfully since 2015 within the nominated ACECs. Consider buying back undeveloped leases within the nominated ACECs*. We present the literature describing the impacts of fluid mineral development on GrSG above on pages 16 and 17. Similar to fluid mineral development, surface and subsurface mining has profound negative impacts on greater sage-grouse. New studies confirm the damaging effects of mining on sage-grouse and sagebrush habitat and underscore the need for conformance with the NTT Report recommendation to disallow and "[f]ind unsuitable all surface mining of coal under the criteria set forth in 43 CFR 3461.5 [and]…[g]rant no new mining leases unless all surface disturbances (appurtenant facilities) are placed outside of the priority sage-grouse habitat area…." (SGNTT 2011). A similar need to keep mining disturbance out of the most important GrSG habitat can be found in the COT Report: "Surface mining and appurtenant facilities within sage-grouse habitats result in the direct loss of habitat, habitat fragmentation, and indirect impacts from disturbance (e.g., noise, dust) …Surface facilities supporting underground mining activities can have similar impacts." (USFWS 2013). The COT Report went further, calling for management to "[a]void new mining activities and/or any associated facilities within occupied habitats, including seasonal habitats" (USFWS 2013).[35]

b.) *Surface disturbance should be limited to restorative activities such as removing current infrastructure or performing necessary vegetation treatments in degraded sage-grouse habitat (for example in post-fire scenarios, removing exotic species invasions)*. Surface disturbance directly and indirectly diminishes habitat. It can have significant negative impacts on GrSG. For example, the USGS recently recognized that infrastructure (for example, processing facilities and roads) have similar impacts to the sagebrush ecosystem and wildlife as described for mining (Remington et al. 2021). According to the USFWS' COT Report, "surface mining and appurtenant facilities within sage-grouse habitats result in the direct loss of habitat, habitat fragmentation, and indirect impacts from disturbance (e.g., noise, dust). Recent research confirms the COT report findings on negative impacts of surface disturbance to GrSG; Kirol et al. (2020), found that ongoing surface disturbance from energy development within 8 km (4.97 miles) of GrSG nests decreased the likelihood of nest success, and broods within 1 km (0.62 miles) of ongoing surface disturbance were less likely to survive than broods exposed to less disturbance. As ongoing disturbance increased, sage-grouse nests had an increasing rate of failure. Furthermore, female sage-grouse avoided habitat with higher levels of disturbance in favor of habitat with lower levels of disturbance (Kirol et al. 2020).

c.) *New roads shall not be constructed subject to valid existing rights or except where realignment/rerouting is needed to benefit sage-grouse habitat. Prioritize unnecessary roads for decommissioning and restoration to achieve the road density standard of 0.7 mile/square mile. Where road systems are not yet designated, complete travel plans within five years*. Roads have multiple impacts on sage-grouse, including mortality from vehicle collisions and behavioral disruption due to traffic, noise, and human presence (SGNTT 2011). Holloran (2005) found that road densities greater than 0.7 linear miles per square mile within 2 miles of leks resulted in significant negative impacts to sage-grouse populations (and see similar results for Gunnison sage-grouse by Aldridge et al. 2012). Roads also destroy and fragment sage-grouse habitat and alter habitat as a consequence of edge effect (changes to aridity, dust pollution, noise, increased activities, increased garbage and roadkill) and facilitate the spread of invasive, non-native plant species (SGNTT 2011). Connelly et al. (2004) found that GrSG may be affected by roads up to 6.9 km (4.2 miles) away. Restricting new roads in the Sagebrush Sea Reserve ACECs comports with the 2011 NTT recommendation that motorized travel be restricted to designated roads and routes in priority sage-grouse habitat.

Roads are known to impact many other species of wildlife that occur in the nominated ACEC network. The impacts of roads and road density on wildlife and its habitat in the West are well-studied. Roads and trails are the primary vectors by which human impacts are dispersed over the landscape. Without question, most human impacts harmful to ecosystems are contingent on access, even where these impacts occur away from the roadbed. Human activity and associated impacts on or near roads disturb and displace a wide range of wildlife species, especially those that are hunted or are on mating grounds or nesting (Bowles 1995). New power lines, pipelines, and even railroad tracks are often constructed alongside these roads, further reducing and fragmenting habitat (Weller 2002). Scientists have

[35] Indeed, as part of its decision not to list sage-grouse under the Endangered Species Act, FWS relied on the assumption that large expanses of essential sage-grouse habitat would be withdrawn from mineral development as part of federal strategies to conserve and recover the species. 80 Fed. Reg. 59,915, 59,916 (Oct. 2, 2015).

determined that in areas with limited cover, effective elk habitat is lost at a road density of only 0.5 miles of road per square mile (Weller 2002). An extensive literature review was conducted by Rowland et al. (2004) concerning elk avoidance of roads and found that the average negative "zone" of influence on elk extended 1000 – 2000 meters from roads.

More generally, Trombulak and Frissell (2000, and see The Wilderness Society 2014) found that roads are associated with negative effects on biotic integrity in both terrestrial and aquatic ecosystems, and that these effects include wildlife mortality from road construction, mortality from collision with vehicles, modification of animal behavior, alteration of the physical environment, alteration of the chemical environment, spread of exotic weeds, and increased use of areas by humans. Roads have abiotic effects as well (WildEarth Guardians 2020 and references therein) For example, roads almost always lead to accelerated erosion (Burroughs and King 1989). And there is a growing body of science that shows that fires can be more prevalent in areas with higher road density; wildland fire ignition is much more likely to occur in a roaded area than in a roadless area (USDA 2000, Morrison 2007; Hann 1997, TWS 2000). Roadbeds and associated construction disturb or remove native vegetation and act as vectors for non-native exotic plants. Furthermore, vehicles create seedbeds for weeds and promote their dispersal.

d.) *Motorized use shall be limited to designated roads.* Motorized vehicles that travel off road (ORVs) pose risks to sage-grouse and their habitat (SGNTT 2011, Knick et al. 2011). In addition to noise impacts, ORVs are known to disturb soil, destroy vegetation, and spread invasive plants within GrSG habitat.

The ecological effects of ORVs, including impacts to wildlife and wildlife habitat, are well studied. One of the most comprehensive literature reviews on the topic was conducted by the USGS (Ouren et al. 2017 and references therein). Ouren et al. describe the primary effects of ORV activity on soils and overall watershed function including altered soil structure (soil compaction in particular), destruction of soil crusts (biotic and abiotic) and desert pavement (fine gravel surfaces) that would otherwise stabilize soils, and soil erosion. Ouren et al. (2017) also review the literature on ORV impacts to vegetation, in which soil compaction from ORVs affects plant growth by reducing moisture availability and precluding adequate taproot penetration to deeper soil horizons. Above-ground portions of plants also may be reduced through breakage or crushing, potentially leading to reductions in photosynthetic capacity, poor reproduction, and diminished litter cover. Likewise, blankets of fugitive dust raised by ORV traffic can disrupt photosynthetic processes, thereby suppressing plant growth and vigor, especially along OHV routes. In turn, reduced vegetation cover may permit invasive and/or non-native plants—particularly shallow-rooted annual grasses and early successional species capable of rapid establishment and growth—to spread and dominate the plant community (Ouren et al. 2007 and references therein). Ouren et al. also review the literature on ORV impacts to native wildlife, including habitat fragmentation and reduced habitat connectivity as ORV roads and trails proliferate across the landscape. Reduced habitat connectivity may disrupt plant and animal movement and dispersal, resulting in altered population dynamics and reduced potential for recolonization if a species is extirpated from a given habitat fragment. Wildlife is also directly affected by excessive noise (decibel levels/noise durations well above those of typical background noise) and other perturbations associated with ORV activities. Disturbance effects range from physiological impacts—including stress and mortality due to breakage of nest-supporting vegetation, collapsed burrows, inner ear bleeding, and vehicle-animal collisions—to altered behaviors and population distribution/dispersal patterns, which can lead to declines in local population size, survivorship, and productivity (Ouren et al. and references therein).

Lastly, ORVs create new routes and trails when they leave established roads. As BLM recognized in past NEPA analysis, "[e]ach year new trails are being created by a wide range of OHV users including, but not limited to, recreational users. Once a new trail becomes established it is considered by the public to be an existing route." (BLM 2015d at 3-340).

e.) *Prohibit new rights-of-way unless they are within an established ROW developed footprint. Existing* *rights-of-way permits should only be renewed upon a finding that the need for the continued right-of-way is in the public interest and that no reasonable alternative exists. Make ACECs renewable energy exclusion zones.* See Section VI. c, above regarding impacts of renewable energy on GrSg. ROWs lead to infrastructure development (e.g., power and transmission lines, roads). Roads have multiple impacts on sage-grouse which are well studied (e.g., see SGNTT 2011; see discussion above), and sage-grouse may be affected by roads up to 6.9 km (4.2 miles) away (Connelly et al. 2004). Power Lines are detrimental to sage-grouse because of increased predation risk (Steenhof et al. 1993; Lammers and Collopy 2007) due to perching of raptors and corvids. Deaths resulting from collisions with power lines are also a source of mortality for sage-grouse (Beck et al. 2006; 75 FR 13910). Power lines negatively affect lek trends up to 2.8 km, and nest and brood success were negatively affected by transmission lines up to distances of 2.6 and 1.1 km, respectively (Kohl et al. 2019). Negative effects of power lines, depending on the behavior or demographic rate, extended 2.5–12.5 km, which exceeds current recommendations for the placement of structures in areas around sage-grouse leks (Gibson 2018). The NTT report concluded that overhead power lines cause sage-grouse to avoid habitat and increase the risk of mortality due to both predation and collisions (SGNTT 2011). The BLM should follow the guidance of the NTT report, making priority habitat exclusion areas for new rights-of-way and renewable energy, as well ensuring that obsolete power lines be removed, and existing power lines be buried or modified (SGNTT 2011).

f.) *Prioritize the removal of infrastructure (e.g., unneeded energy development equipment, roads, fencing and other range developments*). In the ACECs, BLM should follow NTT Report guidance to remove obsolete power lines (as well as other obsolete infrastructure such as wells and fences) and bury or modify existing power lines. In particular, it is important to prioritize removal of unnecessary tall structures of any sort because predators such as raptors can perch and hunt from these structures (Utah Department of Natural Resources 2010). In terms of opportunities for road removal, as discussed above, a maximum road density of 0.7 linear miles per square mile should be applied if possible in the new ACECs, as Holloran (2005) found that road densities greater than 0.7 linear miles per square mile within 2 miles of leks resulted in significant negative impacts to sage grouse populations. In areas that already exceed this threshold, existing roads should be decommissioned as opportunities arise and revegetated with native plants to meet this standard on a per-square-mile-section basis.

g.) *Cap forage utilization annually at no more than 25% for livestock use and maintain grass height at not less than 7 inches (10.2 inches for areas within the Great Plains). Write these stipulations into Allotment Management Plans and monitor allotments annually to assure that the utilization and grass height standards are being met.* There are many studies and agency sources that demonstrate that best practices for maintaining functioning sage-grouse habitats include utilization levels that do not exceed 25 percent annually on occupied sage-grouse habitats, including uplands, meadows, flood plains and riparian habitat (BLM & USFS 1994, Galt et al. 2000, Braun 2006, Holecheck et al. 2010). A lower utilization rate is more likely to support sage-grouse habitat objectives for vegetation height, cover and diversity in sage-grouse seasonal habitats. Range scientists have determined that stocking rate (rather than grazing system) is the primary factor affecting rangeland production (Van Poolen and Lacey 1979; Holechek et al. 1998; Briske et al. 2008). Reducing livestock utilization is recommended to support rangeland restoration objectives (Van Poolen and Lacey 1979, defining light utilization as 20–40 percent utilization of annual forage production by weight; Holecheck et al. 1999, defining light-moderate utilization as 30–35 percent utilization). Holechek et al. (2010), citing Gregg et al. (1994) and Sveum et al. (1998), noted that grazing must be kept at conservative levels (25 to 35 percent use) "for high nesting success by sage-grouse." Braun (2006, unpublished) similarly recommended limiting grazing use to 25–30 percent utilization in occupied sage-grouse habitat.

While definitions of light grazing use vary, numerous references have settled on a general 25 percent harvest coefficient for allocating forage for livestock (Troxel and White 1989; Lacey et al. 1994; NRCS 1997; White and McGinty 1997; Galt et al. 2000; Holechek et al. 2010). Although this rate is more conservative than others prescribed for light grazing, it allows both forage species and livestock to maximize their productivity, allows for error in forage production estimates, accounts for the potential effects of drought, and supports multiple use values (Holechek et al. 2010). Holechek et al. (2010) also noted that, because most ranchers have difficulty monitoring and measuring annual grazing utilization (and the BLM often does not regularly monitor and collect utilization information), use of grazing coefficients higher than 25 percent "invariably leads to land degradation . . . when drought occurs because of rancher reluctance [to reduce livestock numbers]." Limiting livestock grazing to 25 percent utilization would also support other sage-grouse habitat objectives, such as maintaining a minimum stubble height (see Holechek et al. 2010; Manier et al. 2013). A case study of the Antelope Springs Allotment in southern Idaho demonstrates that ranching operations can be successful and improve sage-grouse habitat using a 20 percent utilization standard (Stuebner, Times-News, 12/29/13).

The best available science, and indeed, the preponderance of evidence, has established that at least 7 inches (18 cm) of residual stubble height needs to be provided in nesting and brood-rearing habitats throughout their season of use. According to Gregg et al. (1994), "Land management practices that decrease tall grass and medium height shrub cover at potential nest sites may be detrimental to sage grouse populations because of increased nest predation.... Grazing of tall grasses to <18 cm would decrease their value for nest concealment.... Management activities should allow for maintenance of tall, residual grasses or, where necessary, restoration of grass cover within these stands." Hagen et al. (2007) analyzed all scientific datasets up to that time and concluded that the 7-inch threshold was the threshold below which significant impacts to sage grouse occurred (see also Herman-Brunson et al. 2009 who reiterated those findings). Prather (2010) found for Gunnison sage grouse that occupied habitats averaged more than 7 inches of grass stubble height in Utah, while unoccupied habitats averaged less than the 7-inch threshold. According to Taylor et al. (2010), "The effects of grazing management on sage-grouse have been little studied, but correlation between grass height and nest success suggest that grazing may be one of the few tools available to managers to enhance sage-grouse populations. Our analyses predict that already healthy populations may benefit from moderate changes in grazing practices. For instance, a 2 in. increase in grass height could result in a 10% increase in nest success, which translates to an 8% increase in population growth rate."

The exception to this 7-inch rule is found in the mixed-grass prairies of the Dakotas, where sparser cover from sagebrush and greater potential for tall grass have led to a recognition that a 26-cm stubble height standard is warranted (Kaczor 2008, Kaczor et al. 2011). Foster et al. (2014) found that livestock grazing could be compatible with maintaining sage grouse populations, but stubble heights they observed averaged more than 18 cm during all three years of their study and averaged more than 10.2 inches in two of the three years of the study.

Importantly, currently accepted rangewide guidance for managing sage grouse populations and their habitats, Connelly et al. (2000) and Stiver et al. (2015) reviewed the science of that time and recommended an 18-cm residual stubble height standard. Connelly et al. prescribed >18 cm grass height in breeding habitats in both arid and mesic sites. Stiver et al. (2015) recommended 18 cm grass height for all breeding and nesting habitats, and explicitly stated that this and other established measures should not be altered unless scientific evidence definitively indicates that the 7-inch threshold is inappropriate. Because of these widely accepted, range-wide guidance on grass heights in occupied sage-grouse habitat, the 2015 Land Use Plan amendments for Forest Plans also included this component of range management in the amended Plans (e.g., the Forest Plan Amendment for Utah, cited below as BLM 2015a).

h.) *Grazing permits and associated allotment management plans shall receive prioritization for full environmental review and implementation, including an assessment of whether an allotment is meeting BLM rangeland health standards*. Per the 2015 Sage-grouse RMPA amendments, the BLM is obligated within GrSG habitat, with PHMA as a top priority, to evaluate the federal Rangeland Health (RLH) Standards. The Plan amendments call on the BLM to focus monitoring and management activities on allotments found not to be achieving the Rangeland Health Standards where livestock grazing is identified as a causal factor and that have the best opportunities for conserving, enhancing or restoring habitat for GRSG. An analysis of grazing allotments (see discussion above and Figure 4) found that 837 grazing allotments within PHMAs are currently not meeting RLH standards, and 362 grazing allotments, have yet to be assessed; 415 allotments are meeting the RLH standards within PHMA.

i.) *When an allotment is found to not meet rangeland health standards immediately develop a strategy to achieve rangeland health standards within 10 years*. The COT report states that, "Livestock… numbers must be managed at levels that allow native sagebrush vegetative communities to minimally achieve Proper Functioning Conditions (PFC; for riparian areas) or Rangeland Health Standards" (USFWS 2013). As detailed above, within PHMA (and thus this ACEC proposal) 12.2 million acres are not meeting federal rangeland health standards due to livestock grazing.

Because livestock grazing is practically ubiquitous in GrSG habitat, occurs on large scales (on the order of allotments that can be thousands of acres), and can potentially indirectly affect so many aspects of GrSG habitat[36] that can in turn affect GrSG vital rates and population trends, it is a difficult system in which to design non-confounded, replicated studies that can conclusively point to effects of livestock grazing on GrSG. For example, Dettenmaier et al. (2017) conducted a meta-analysis of studies that examined effects of livestock grazing on all species of grouse, world-wide. Since to be eligible for meta-analysis, the data need to be collected in such a way (such as with an experimental and control group) to enable the calculation of variances to be used to measure effect sizes, Dettenmaier et al. were only able to include 4 eligible studies in their pool of grazing effects on grouse. While the results of the meta-analysis revealed an overall negative effect of livestock grazing on grouse populations, the lack of studies eligible for meta-analysis underscore that better designed (replicated, treatment and control) studies of the effects of livestock grazing on GrSG populations and vital rates are sorely needed.

There have been a few attempts to use modeling to get at the effects of livestock grazing on GrSG. One of the stronger models built by Monroe et al. (2017) used public land records to characterize livestock grazing across Wyoming, and with annual counts of male GrSG from 743 leks during 2004–2014, modeled population trends in response to grazing level (represented by a relative grazing index) and timing across a gradient in vegetation productivity as measured by the Normalized Vegetation Difference Index (NDVI). Monroe et al. found that GrSG populations responded positively to higher grazing levels after peak vegetation productivity, but populations declined when similar grazing levels occurred earlier, likely reflecting the sensitivity of cool-season grasses to grazing during peak growth periods.

Livestock grazing exacerbates cheatgrass invasion which in turn has been shown to be detrimental to GrSG. Changes in vegetation composition and structure associated with invasive annual grasses may indirectly affect local GrSG populations by outcompeting native perennial plants after wildfires, reducing this important part of sage-grouse habitat. Pre-laying and nesting females selectively feed on herbaceous forage (e.g., Barnett and Crawford 1994), and broods initially feed almost entirely on a variety of native forbs and associated insects (Klebenow and Gray 1968; Drut et al. 1994; Gregg and Crawford 2009, Dumroese et al. 2015). Remington et al. (2021) comprehensively reviewed the existing literature documenting the negative correlation between increased incidence or abundance of cheatgrass and GrSG microsite habitat selection (citing Lockyer et al. 2015); nest-site selection (citing Kirol et al., 2012), recruitment and annual survival (citing Blomberg et al. 2012); male sage-grouse lek attendance (citing Johnson et al.2011 and Blomberg et al. 2012); survival of adult males (citing Blomberg et al. 2012); and general habitat occupation (Arkle et al. 2014). In some of the above studies cited by Remington et al. that documented negative impacts of cheatgrass on GrSG, cheatgrass cover in the area studied was as low as 5% (Remington et al. 2021, and references therein).

[36] i.e., indirect influences of ranching on sage-grouse habitat include fencing, watering facilities, treatments to increase livestock forage, and targeted grazing to reduce fine fuels (Boyd et al. 2014).

The role of livestock grazing in leading to and/or exacerbating cheatgrass invasion has also been well studied. For example, Reisner et al. (2013, 2015) found that, even after controlling for other factors that may contribute to the spread of cheatgrass, there is a strong correlation between grazing effects and cheatgrass incursion. Cattle grazing increases cheatgrass dominance in sagebrush steppe by decreasing bunchgrass abundance, altering and limiting bunchgrass composition, increasing gaps between perennial plants, and trampling biological soil crusts (Knick et al. 2003; Reisner et al. 2013; Pyke et al. 2015; Chambers et al. 2017; Chambers et al. 2019). Bock et al. (2007) similarly found that livestock grazing facilitated the invasion of exotic grasses into native grasslands, such that the proportion of total grass cover consisting of exotics was 2.5-fold greater on grazed than on ungrazed areas, in a 22-year study. Their results demonstrated what many other researchers have found: that livestock grazing serves as an exogenous disturbance on the landscape that can favor exotics (Milchunas et al. 1988; Milchunas 2006; Bock et al. 2007). The latest research by Williamson et al. (2019: 12) further supports these findings; it suggests a strong positive relationship between the presence and prevalence of cheatgrass and livestock grazing.

j.) *BLM shall take all measures allowed by law to facilitate the voluntary relinquishment of grazing permits and leases*. Voluntary grazing permit buy-outs in the ACECs are a market-based approach to easing grazing pressures on sage-grouse. They are a mechanism to establish and maintain sufficiently large areas free of livestock as reference areas to aid in describing ecological site potential and as a measure of the comparative effects of livestock grazing—and relief from livestock grazing—on sage-grouse populations. In addition, grazing permit retirement within the new Sage-grouse ACECs could be an important tool of compensatory mitigation plans, for offsetting development in non-priority GRGS habitats. And permit retirement/allotment closure would also contribute to terrestrial carbon sequestration goals. Both the Forest Service and BLM addressed the concept in the 2015 sage-grouse planning process, demonstrating that these agencies can and will authorize themselves to close allotments in planning. The examples include:

- U.S. Forest Service, Humboldt-Toiyabe National Forest. 2016. Greater Sage-grouse Bi-state Distinct Population Segment Forest Plan Amendment Record of Decision (page 16, Table ROD-1; p. 45, Table 4): "*RP-G-01. In bi-state DPS habitat, **consider closure of grazing allotments**, pastures, or portions of pastures or managing the allotment as a forage reserve consistent with maintaining sage-grouse habitat based on desired conditions as opportunities arise under applicable regulations, where removal of livestock grazing would enhance the ability to achieve desired habitat conditions (reference to table of desired conditions).*"

- Bureau of Land Management, Lander Field Office. 2014. Record of Decision and Approved Resource Management Plan for the Lander Field Office Planning Area (page 98, associated with management objectives 10.3, 10.5, 10.6): "*Record 6062: **When livestock grazing permits and/or grazing preference are voluntarily relinquished** in portions of or all of an allotment, **analyze suitable livestock grazing management, including closure to livestock grazing** where appropriate, based on benefits to resources and other uses*."

- Bureau of Land Management, Billings Field Office. 2015. Record of Decision and Approved Resource Management Plan Amendments for the Rocky Mountain Region, Billings Field Office Approved Resource Management Plan (pages 2-28, 3-61): "*MD LG-17: At the time a permittee or lessee voluntarily relinquishes a permit or lease, the BLM **will consider whether the public lands where that permitted use was authorized should remain available for livestock grazing or be used for other resource management objectives**, such as reserve common allotments or fire breaks. This does not apply to or impact grazing preference transfers, which are addressed in 43 CFR, Part 4110.2-3.*" We also note this separate, associated provision (pages 2-27, 3-60):

"MD LG-11: ***All allotments wholly located in Greater Sage-Grouse PHMA will be considered for retirement****, where the base property owner relinquishes their preference."*

- Bureau of Land Management, Oregon/Washington State Office. 2015. Record of Decision and Approved Resource Management Plan Amendments for the Great Basin Region, Oregon Greater Sage-Grouse Approved Resource Management Plan Amendment (page 2-21): "*MD LG 15: At the time a permittee or lessee voluntarily relinquishes a permit or lease,* ***the BLM will consider whether the public lands where that permitted use was authorized should remain available for livestock grazing*** *or be used for other resource management objectives, such as reserve common allotments. This does not apply to or impact grazing preference transfers, which are addressed in 43 CFR, Part 4110.2-3.*"

k.) *Establish large grazing exclosures or reference areas in representative habitats to use as baseline to measure GrSG habitat improvement in the absence of grazin*g. One of the key pieces of monitoring and research that is now largely absent on BLM lands is a suite of large, ungrazed ecological reference areas to use as benchmarks for assessing progress towards meeting GrSG habitat objectives and Rangeland Health Standards. For example, rangeland health assessments rely on comparison of current conditions with the potential expected for the same area. More importantly, without large ungrazed reference areas to compare to, the BLM is unable to assess the true effects of habitat restoration or vegetation treatments that are not confounded by livestock grazing returning too soon to the treatment site. In short, if BLM does not examine through exclosures the consequences of resuming livestock grazing on the treatment sites, it will have little knowledge of the long-term consequences of the treatments themselves.

BLM should establish a suite of these large ungrazed reference sites across the Sagebrush Sea Reserve ACEC network that collectively represent the major habitat types, including 1 km stretches of riparian areas (Stacey et al. 2008); ideally the network of large exclosures will represent all the major NRCS Range Site Types present in the ACEC network. Moreover, establishing this network of representative ecological reference areas would be in line with calls from conservation biologists to establish a network of large-scale grazing exclosures throughout western North America (Bock et al. 1993).

It is important that the ungrazed ecological reference areas are large, at least 50 ha (Sarr 2002). Small exclosures often provide the last remaining source of lush forage, and are usually easily accessible to rodents, rabbit, and deer. Therefore, heavy use of small exclosures by native herbivores is common (Catlin et al. 2003).

l.) *Manage vegetation to retain resistance to invasion where invasive annual grasses dominate more than 5 percent of the area within 4.0 miles of such leks. This includes regular monitoring of pioneering invasions and rapid implementation of measures to remove the invading species and bolster native vegetative resistance. As technologically possible, reduce the area dominated by invasive annual grasses to 5 percent or less within 4.0 miles of all occupied leks.* This is similar to one of the objectives (Objective VEG 3) in the Oregon Greater Sage-Grouse Approved Resource Management Plan, p. 2-10. It would follow that if this objective can be achieved in Oregon, it should be able to be achieved in other parts of the range of GrSG. The ramifications of cheatgrass invasion to GrSG and the sagebrush biome is a well-studied topic, as we summarize above.

m.) *Use best practices for ecological restoration of degraded lands including using only genetically appropriate native seeds and plants. Monitor and continue restoration activities as needed until project objectives are met and at least for three years. Livestock grazing should be excluded from restored or rehabilitated areas until woody and herbaceous plants achieve sage-grouse habitat objectives. Develop revegetation plans so that native seed supplies are developed and available when needed*. In the new ACECs, the BLM should utilize restoration methods reviewed in Remington et al. (2021), as well as follow the NTT Report recommendations for post-fire emergency stabilization and rehabilitation (ES&R) (SGNTT 2011). These include:

- Designing post-ES&R management to ensure long term persistence of seeded or pre-burn native plants, which may require temporary or long-term changes in livestock grazing, free-roaming horse and burro, and travel management, etc., to achieve and maintain the desired condition of ES&R projects to benefit sage-grouse (Eiswerth and Shonkwiler 2006); and
- Considering potential changes in climate (Miller at al. 2011) when proposing post-fire seedings using native plants, which includes considering seed collections from the warmer component within a species' current range for selection of native seed (Kramer and Havens 2009, SGNTT 2011).

It is vital that BLM use genetically appropriate native seeds and plants in its rehabilitation and restoration activities (Society for Ecological Restoration 2020; National Academy of Sciences 2020) and avoid using non-native plants or cultivars. Per Manual 1740 and Handbook H1740-2, field offices should use locally adapted native plant materials unless they can demonstrate a compelling ecological need for using non-native plant materials. Field offices are encouraged to proactively consider native plant material needs and initiate strategies to meet them. Yet, BLM field managers often continue to use non-native plant materials or cultivars[37] in their restoration and vegetation treatments even though doing so can undermine the long-term genetic integrity of native vegetation and ecosystems.

Unlike a few decades ago, BLM is now more able to acquire and develop genetically appropriate native seed for its restoration projects. BLM is committed to a private/public partnership effort called the National Seed Strategy[38] designed to ensure the use of the 'right plant in the right place at the right time." And, in the recent federal Infrastructure bill BLM just received targeted funding to implement the National Seed Strategy and vegetation planning. To assure adequate native plant materials for sage-grouse habitat restoration work, BLM must engage in proactive seed and plant material planning as part of its sage grouse work. Through proactive planning and financial contributions to native plant material development, BLM can acquire the native plant materials it needs when it needs it for restoration and rehabilitation in the ACECs (and more broadly GrSG, habitat).

n.) *Manage recreational uses as necessary so that they do not conflict with the conservation of GrSG and its habitat.* Outdoor recreation provides wonderful benefits to those who engage in it. However, like other human activities, some forms of recreation can adversely impact greater sage grouse habitat (Joslin and Youmans 1999). Hence, it is vital to manage outdoor recreation, through the placement of facilities and infrastructure and the allowance of certain types of activities, to ensure that it does not unduly impact GrSG.[39] Consistent with recommendations in COT (USFWS 2013: 50), recreational facilities should not be constructed within 4 miles of a lek and should only be constructed if they help reduce impacts on sage grouse.

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[37] BLM presented to the National Academy of Sciences in 2021 as part of the Academy's development of an assessment of native seed supplies and capacity. See National Academy of Sciences 2020. In that presentation, BLM shared that a significant fraction of the seed that it uses is non-native or cultivars.

[38] https://www.blm.gov/programs/natural-resources/native-plant-communities/national-seed-strategy

[39] The Society of Outdoor Recreation Professionals developed planning principles https://www.recpro.org/planning-principles.) Principles 16 and 18 are particularly helpful for directing management in GrSG habitat:
16. Resource Sustainability: Whereas natural and cultural resources define an outdoor recreation setting, it is fundamental that recreation resource planning and plans address how to integrate recreation use to harmonize with, protect, enhance, and sustain these important resources.
18. Recreation Stewardship: Recreation planning should consider how to best design, manage, and interpret settings to foster public appreciation, understanding, respect, behaviors, and partnerships that contribute to the stewardship of an area's natural and cultural resources, and special values.

o.) *Following assuring the protection of life and property from wildfire, prioritize fire suppression to conserve GrSG habitat in the ACECs. Develop fire response plans so that equipment and personnel can be readily mobilized, and unnecessary surface disturbance is avoided*.

As outlined (and summarized through literature review) above, wildfire poses a significant risk to GrSG and sagebrush-steppe habitat. BLM's recent five-year monitoring report estimated a cumulative loss of 1.9 million acres of sagebrush in priority habitat from 2012 to 2018 (Herren et al. 2021). The primary driver has been wildfire, which accounts for 72% of the total loss, including 87% of sagebrush loss in the Great Basin (Herren et al 2021). Along with the increased incidence of fire across the Sagebrush Sea in recent decades, there has also been greatly expanding occurrence of exotic annuals, especially cheatgrass (Remington et al. 2021, and references therein), and as also outlined above, these two phenomena go hand in hand.

The impacts of fire on GrSG are well studied. Fires, prescribed and natural, have long-term effects (>10 yr.) and sage-grouse may continue to avoid burned areas even after sagebrush has recovered (Nelle et al. 2000). While small, infrequent fires can maintain a mosaic of successional habitats that benefit sage-grouse, ecological modeling indicates that frequent, large fires in sagebrush steppe can lead to lek abandonment and with too many, very large fires, may even lead to extirpation of the species in some areas (Aldridge et al. 2008).

In recent decades a combination of fire and the spread of highly flammable nonnative plants has drastically altered the natural fire regime throughout much of the sagebrush steppe (Jones 2019, and references therein) especially in the western part of the range. Wildfires now burn larger, hotter, and more frequently in affected lower elevation (i.e., Wyoming big sagebrush) habitats. Burned areas are often vulnerable to reinvasion by cheatgrass, which can completely occupy a burned site (Brooks et al. 2004, Chambers et al. 2017). Moreover, future habitat loss and fragmentation from a daunting interaction of fire, climate change and ever-increasing exotic annuals is likely to accelerate (Remington et al. 2021). Stemming this trend will require effective fire suppression measures in the new Sagebrush Sea Reserve ACEC network.

X. CONCLUSION

The proposed network of Sagebrush Sea Reserve Areas of Critical Environmental Concern proposed herein are worthy of ACEC designation both individually and as a network of sagebrush sea reserves. These proposed ACECs meet multiple relevance and importance criteria. The strength of this proposed system of ACECs is its collective whole, since it is based on the PACs which in turn are based on the Doherty 75% breeding density polygons. Conserving the entire network of ACECs is a necessary step to assure that the Greater sage-grouse will persist and not eventually go extinct.

The evidence presented in this proposal demonstrates the national (i.e., more than local) significance and exemplary nature of these values as compared to other places in the west and within BLM's jurisdiction. The proposed ACECs constitute a significant fish and wildlife resource in its provision of habitat for the Greater sage-grouse, and other species that share the sage-grouse's habitat.

The establishment of a network of ACECs using the above proposed management prescriptions along with a withdrawal from mineral location, leasing, or sale and for greater sage-grouse could significantly contribute to:

- "adequate regulatory mechanisms" that could help obviate the need to list greater sage-grouse (and possibly other sagebrush-steppe obligates) under the Endangered Species Act;
- reducing carbon emissions from fossil fuel development and increasing carbon storage and sequestration in native ecosystems;

- reducing the stress on native species of human-caused ecological impacts, thereby making them more resistant to and resilient to changing climates; and
- the Biden administration's goal of conserving 30% of America's natural lands by 2030.

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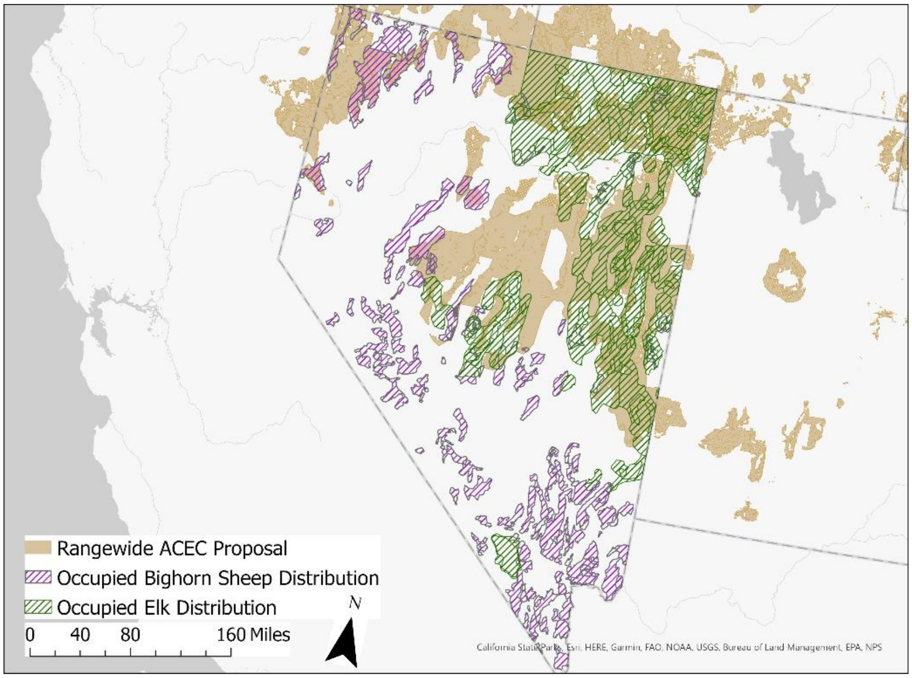
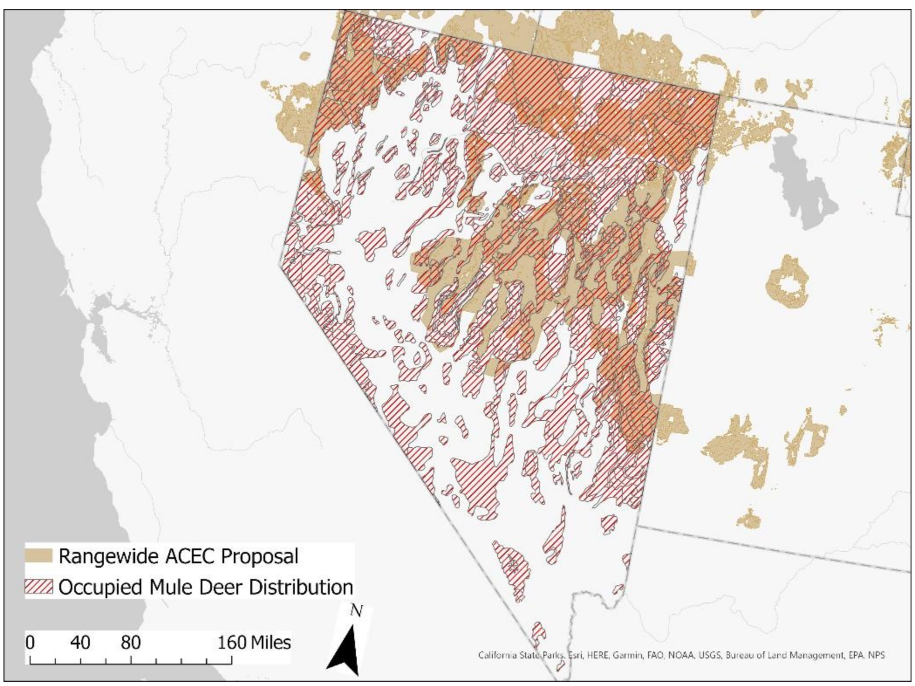
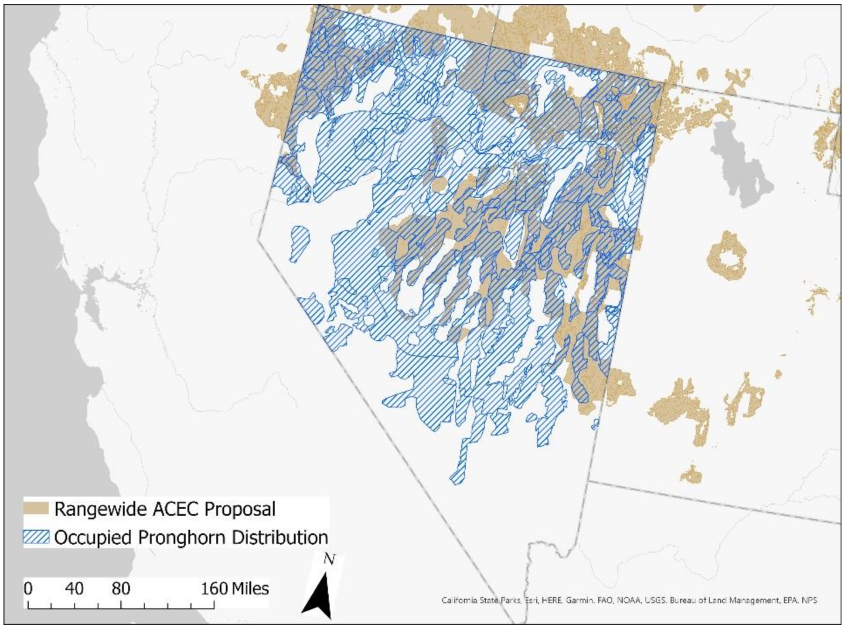
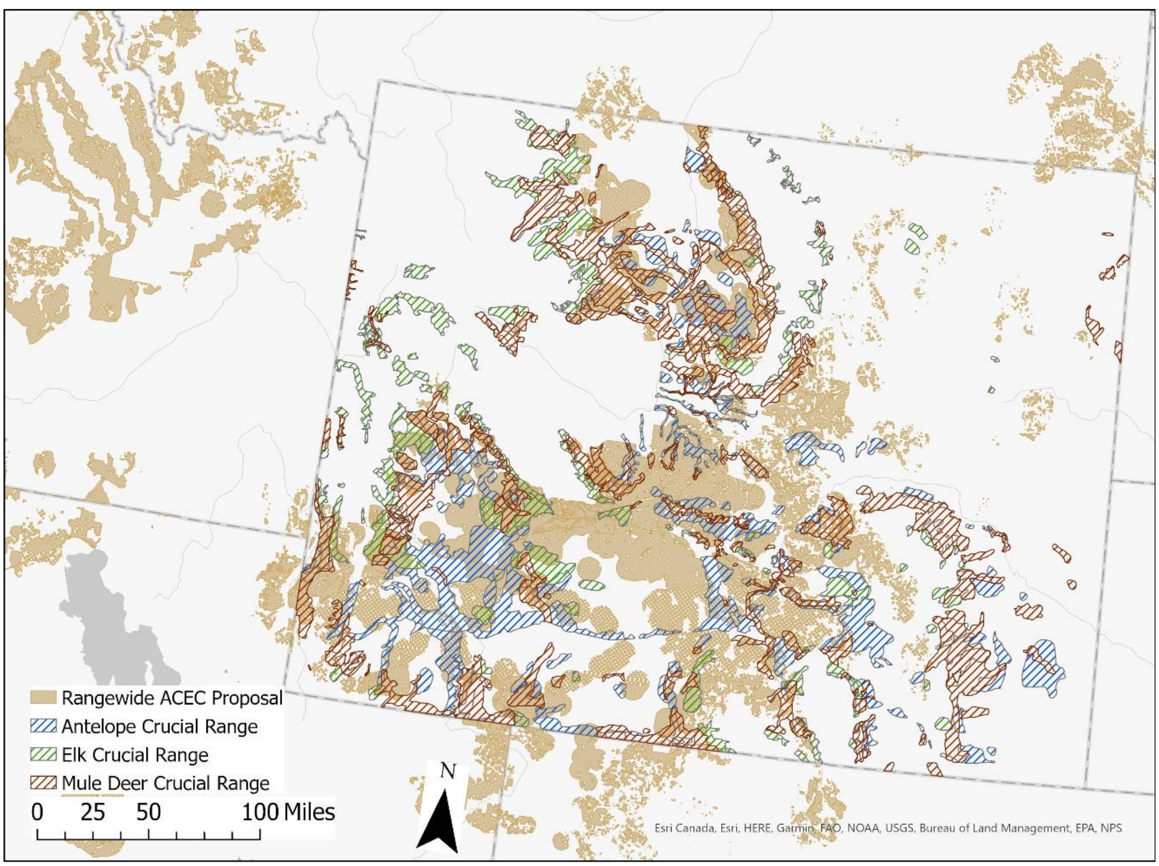
Appendix A. Maps showing the relationship of ungulate habitat and proposed Sagebrush Sea Reserve ACEC in Nevada and Wyoming.






Rangewide ACEC Proposal
Occupied Pronghorn Distribution
N
0 40 80 160 Miles
California State Parks, Esri, HERE, Garmin, FAO, NOAA, USGS, Bureau of Land Management, EPA, NPS


Rangewide ACEC Proposal
Antelope Crucial Range
Elk Crucial Range
Mule Deer Crucial Range
0 25 50 100 Miles
N
Esri Canada, Esri, HERE, Garmin, FAO, NOAA, USGS, Bureau of Land Management, EPA, NPS