

Appendix 2. Summary of the U.S. Fish and Wildlife Service 2010 “Warranted but Precluded” Determination

This appendix contains a summary of the U.S. Fish and Wildlife Service (USFWS) 12-month findings for petitions to list the greater sage-grouse as threatened or endangered in 2010¹ that identified the sage-grouse as a candidate for the endangered species list. The contents of this section reflect the basis for the determination and are intended to provide an overview of the determination documented in the Federal Register. Where appropriate, information germane to Oregon has been identified.

The Endangered Species Act § 424.11(c) requires that any listing or reclassification of a species as threatened or endangered be made on the basis of the best scientific and commercial data available. The five listing factors that must be considered pursuant to Section 4 of the ESA are as follows:

Factor A: The Present or Threatened Destruction, Modification, or Curtailment of Habitat or Range

Factor B: Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

Factor C: Disease and Predation

Factor D: Inadequacy of Existing Regulatory Mechanisms

Factor E: Other Natural or Manmade Factors Affecting the Species' Continued Existence

The USFWS is responsible for evaluating each of these factors and making findings on the status of the species with regard to each. The 2010 finding by USFWS that the sage-grouse is “warranted but precluded” from listing under the ESA identified two of the five listing factors (A and D) as significant threats for the *rangewide* persistence of the species. The following paragraphs summarize the 2010 determination with respect to each of the five listing factors.

Factor A: *The Present or Threatened Destruction, Modification, or Curtailment of Habitat or Range*

The 2010 “warranted but precluded” determination found the following with regard to Factor A:

Several factors are contributing to the destruction, modification, or curtailment of the greater sage-grouse's habitat or range. Several recent studies have demonstrated that sagebrush area is one of the best landscape predictors of greater sage-grouse

¹ 75 Fed. Reg. 13910–14014 (March 23, 2010)

persistence (Aldridge et al. 2008, p. 987; Doherty et al. 2008, p. 191; Wisdom et al. in press, p. 17). Sagebrush habitats are becoming increasingly degraded and fragmented due to the impacts of multiple threats, including direct conversion, urbanization, infrastructure such as roads and power lines built in support of several activities, wildfire and the change in wildfire frequency, incursion of invasive plants, grazing, and nonrenewable and renewable energy development. Many of these threat factors are exacerbated by the effects of climate change, which may influence long-term habitat trends.²

The determination also went on to discuss in greater detail loss of habitat due to conversion for agriculture, urbanization, and habitat fragmentation by infrastructure (roads, energy development, transmission lines, communications towers, rail lines).³

The USFWS also found that “fire has been identified as a primary factor associated with sage-grouse population declines”:

Fire is one of the primary factors linked to population declines of greater sage-grouse because of long-term loss of sagebrush and conversion to monocultures of exotic grasses (Connelly and Braun 1997, p. 7; Johnson et al. in press, p. 12; Knick and Hanser in press, pp. 29-30). Loss of sagebrush habitat to wildfire has been increasing in western areas of the greater sage-grouse range for the past three decades. The change in fire frequency has been strongly influenced by the presence of exotic annual grasses and significantly deviates from extrapolated historical regimes. Restoration of these communities is challenging, requires many years, and may, in fact, never be achieved in the presence of invasive grass species.⁴

Barring alterations to the current fire pattern, as well as the difficulties associated with restoration, the concerns presented by this threat will continue and likely will strongly influence the persistence of the greater sage-grouse, especially in the western half of its range, within the foreseeable future.⁵

The USFWS also found invasive plants, including non-native grasses and native conifers such as western juniper, to be a primary threat to sage-grouse and sagebrush habitat.

Invasive plants negatively impact sage-grouse primarily by reducing or eliminating native vegetation that sage-grouse require for food and cover, resulting in habitat loss and fragmentation. A variety of nonnative annuals and perennials (e.g., *Bromus tectorum*, *Euphorbia esula*) and native conifers (e.g., pinyon pine, juniper species) are invasive to

² Id. at 13924

³ Id. at 13924-13931

⁴ Id. at 13931

⁵ Id. at 13935-13936

sagebrush ecosystems. Nonnative invasives, including annual grasses and other noxious weeds, continue to expand their range, facilitated by ground disturbances such as wildfire, grazing, and infrastructure. Pinyon and juniper and some other native conifers are expanding and infilling their current range mainly due to decreased fire return intervals, livestock grazing, and increases in global carbon dioxide concentrations associated with climate change, among other factors.

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Bromus tectorum is widespread at lower elevations and pinyon-juniper woodlands tend to expand into higher elevation sagebrush habitats, creating an elevational squeeze from both low and high elevations. Climate change will likely alter the range of individual invasive species, increasing fragmentation and habitat loss of sagebrush communities. Despite the potential shifting of individual species, invasive plants will persist and continue to spread rangewide in the foreseeable future.⁶

Grazing was identified as the predominant land use in sagebrush steppe habitat. The USFWS found that the best scientific evidence indicated both negative and positive effects of livestock grazing, noting that impacts may depend more on specific grazing practices than on stocking levels.

Livestock management and domestic grazing can seriously degrade sage-grouse habitat. Grazing can adversely impact nesting and brood-rearing habitat by decreasing vegetation concealment from predators. Grazing also has been shown to compact soils, decrease herbaceous abundance, increase erosion, and increase the probability of invasion of exotic plant species. Once plant communities have an invasive annual grass understory dominance, successful restoration or rehabilitation techniques are largely unproven and experimental (Pyke in press, p. 25). Massive systems of fencing constructed to manage domestic livestock cause direct mortality to sage-grouse in addition to degrading and fragmenting habitats. Livestock management also can involve water developments that can degrade important brood-rearing habitat and or facilitate the spread of WNV. Additionally, some research suggests there may be direct competition between sage-grouse and livestock for plant resources. However, although there are obvious negative impacts, some research suggests that under very specific conditions grazing can benefit sage-grouse.⁷

Further, the USFWS included wild/feral horse impacts as among the negative potential impacts associated with grazing.

⁶ Id. at 13939

⁷ Id. at 13939-13942

Similar to domestic grazing, wild horses and burros have the potential to negatively affect sage-grouse habitats in areas where they occur by decreasing grass cover, fragmenting shrub canopies, altering soil characteristics, decreasing plant diversity, and increasing the abundance of invasive *Bromus tectorum*.⁸

Another important threat to sage-grouse habitat, according to the USFWS 2010 determination, was energy development, both nonrenewable and renewable.

Energy development is a significant risk to the greater sage-grouse in the eastern portion of its range (Montana, Wyoming, Colorado, and northeastern Utah – MZs I, II, VII and the northeastern part of MZ III), with the primary concern being the direct effects of energy development on the long-term viability of greater sage-grouse by eliminating habitat, leks, and whole populations and fragmenting some of the last remaining large expanses of habitat necessary for the species' persistence.

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Renewable energy resources are likely to be developed in areas previously untouched by traditional energy development. Wind energy resources are being investigated in south-central and southeastern Oregon where large areas of relatively unfragmented sage-dominated landscapes are important for maintaining long-term connectivity within the sage-grouse populations (Knick and Hanser in press, pp. 1-2.).⁹

Another habitat-related threat identified in 2010 by the USFWS was climate change.¹⁰

In summing up its conclusions regarding habitat, the USFWS stated:

Fragmentation of sagebrush habitats is a key cause, if not the primary cause, of the decline of sage-grouse populations. Fragmentation can make otherwise suitable habitat either too small or isolated to be of use to greater sage-grouse (i.e., functional habitat destruction), or the abundance of sage-grouse that can be supported in an area is diminished. Fire, invasive plants, energy development, various types of infrastructure, and agricultural conversion have resulted in habitat fragmentation and additional fragmentation is expected to continue for the foreseeable future in some areas.

In our evaluation of Factor A, we found that although many of the habitat impacts we analyzed (e.g., fire, urbanization, invasive species) are present throughout the range, they are not at a level that is causing a threat to greater sage-grouse everywhere within

⁸ Id. at 13942

⁹ Id. at 13954

¹⁰ Id. at 13954-13957

its range. Some threats are of high intensity in some areas but are low or nonexistent in other areas. Fire and invasive plants, and the interaction between them, is more pervasive in the western part of the range than in the eastern. Oil and gas development is having a high impact on habitat in many areas in the eastern part of the range, but a low impact further to the west. The impact of pinyon-juniper encroachment generally is greater in western areas of the range, but is of less concern in more eastern areas such as Wyoming and Montana. Agricultural development is high in the Columbia Basin, Snake River Plain, and eastern Montana, but low elsewhere. Infrastructure of various types is present throughout the most of range of the greater sage-grouse, as is livestock grazing, but the degree of impact varies depending on grazing management practices and local ecological conditions. The degree of urbanization and exurban development varies across the range, with some areas having relatively low impact to habitat.

While sage-grouse habitat has been lost or altered in many portions of the species' range, habitat still remains to support the species in many areas of its range (Connelly et al. in press c, p. 23), such as higher elevation sagebrush, and areas with a low human footprint (activities sustaining human development) such as the Northern and Southern Great Basin (Leu and Hanser in press, p. 14), indicating that the threat of destruction, modification or curtailment of the greater sage-grouse is moderate in these areas. In addition, two strongholds of contiguous sagebrush habitat (the southwest Wyoming Basin and the Great Basin area straddling the States of Oregon, Nevada, and Idaho) contain the highest densities of males in the range of the species (Wisdom et al. in press, pp. 24-25; Knick and Hanser in press, p. 17). We believe that the ability of these strongholds to maintain high densities to date in the presence of several threats indicates that there are sufficient habitats currently to support the greater sage-grouse in these areas, but not throughout its entire range unless these threats are ameliorated.

As stated above, the impacts to habitat are not uniform across the range; some areas have experienced less habitat loss than others, and some areas are at relatively lower risk than others for future habitat destruction or modification. Nevertheless, the impacts are substantial in many areas and will continue or even increase in the future across much of the range of the species. With continued habitat destruction and modification, resulting in fragmentation and diminished connectivity, greater sage-grouse populations will likely decline in size and become more isolated, making them more vulnerable to further reduction over time and increasing the risk of extinction.

We have evaluated the best scientific and commercial information available regarding the present or threatened destruction, modification, or curtailment of the greater sage-grouse's habitat or range. Based on the current and ongoing habitat issues identified here, their synergistic effects, and their likely continuation in the future, we conclude

that this threat is significant such that it provides a basis for determining that the species warrants listing under the Act as a threatened or endangered species.¹¹

Factor B: Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

The USFWS did not find Factor B to be a significant threat to sage-grouse. Recreational hunting is allowed in 10 of the 11 states with sage-grouse.¹² The USFWS did indicate some concern with the level of take allowed and scientific uncertainty associated with the impacts of recreational hunting, particularly with regard to female mortality.¹³ “Although harvest as a singular factor does not appear to threaten the species throughout its range, negative impacts on local populations have been demonstrated and there remains a large amount of uncertainty regarding harvest impacts because of a lack of experimental evidence and conflicting studies.”¹⁴

Factor C: Disease and Predation

With the exception of West Nile virus (WNV), the USFWS found no evidence that disease is a basis for listing sage-grouse under the ESA. WNV is a significant mortality factor for sage-grouse when an outbreak occurs; however, to date, the annual patchy distribution of the disease has resulted in minimal and isolated impacts.¹⁵

Predation is the most commonly identified cause of direct mortality for sage-grouse during all life stages. Much of this has to do with the fact that sage-grouse, like other grouse, are a prey species. Where habitat is not limited and is of good quality, predation is not a threat to the persistence of the species. However, predation facilitated by anthropogenic influences on sagebrush habitats (e.g., fences, power lines, and roads) can present a localized threat. Nevertheless, the impact of predation on sage-grouse populations is considered relatively low and localized compared to other threats. While predation will continue to affect the species, the USFWS concluded that predation is not a significant threat to the species’ continued viability and persistence.¹⁶

Factor D: Inadequacy of Existing Regulatory Mechanisms

The 2010 USFWS finding states:

Under this factor, we examine whether threats to the greater sage-grouse are adequately addressed by existing regulatory mechanisms. Existing regulatory mechanisms that could provide some protection for greater sage-grouse include: (1)

¹¹ Id. at 13962

¹² Id. at 13963

¹³ Id. at 13964

¹⁴ Id. at 13966

¹⁵ Id. at 13970

¹⁶ Id. at 13973

local land use laws, processes, and ordinances; (2) State laws and regulations; and (3) Federal laws and regulations.¹⁷

The USFWS identified only one local land use regulation that specifically addresses sage-grouse.¹⁸ At the state level, the only regulatory mechanism that USFWS recognized as having some protective effect was the executive order issued by the Governor of Wyoming.¹⁹ At the Federal level, the USFWS reviewed the Resource Management Plans (RMPs) of the Bureau of Land Management, which manages 51 percent of sage-grouse habitat, and found that:

Of the existing 92 RMPs that include sage-grouse habitat, 82 contain specific measures or direction pertinent to management of sage-grouse or their habitats (BLM 2008g, p. 1). However, the nature of these measures and direction vary widely, with some measures directed at a particular land use category (e.g., grazing management), and others relevant to specific habitat use categories (e.g., breeding habitat) (BLM 2008h).²⁰

The Service concluded, with regard to BLM-administered lands:

In many areas existing mechanisms (or their implementation) on BLM lands and BLM-permitted actions do not adequately address the conservation needs of greater sage grouse, and are exacerbating the effects of threats to the species described under Factor A.²¹

Factor E: Other Natural or Manmade Factors Affecting the Species' Continued Existence

Under this factor, the USFWS identified pesticides, non-consumptive recreational activities, environmental contamination, and drought as considerations. Although localized concerns exist, the USFWS determined that Factor E “does not singularly pose a significant threat to the species now or in the foreseeable future.”²²

In sum, the USFWS “warranted but precluded” finding in March 2010 reflected a rangewide rather than an Oregon-specific review of the status of the greater sage grouse. The occurrence, extent, intensity, and severity of the threats to sage grouse under each of the above ESA listing factors vary across the species’ range. However, the “warranted but precluded” finding centered on the threats posed by two primary factors relevant to Oregon and elsewhere: the present or threatened destruction, modification, or curtailment of habitat or range (Factor A), and the inadequacy of existing regulatory mechanisms to conserve sage-grouse and their habitats (Factor D).

¹⁷ Id.

¹⁸ Id.

¹⁹ Id. at 13974

²⁰ Id. at 13976

²¹ Id. at 13979

²² Id. at 13986