

Hunting and Sage-Grouse:

A Technical Review of Harvest Management On a Species of Concern in Wyoming



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Executive Summary

Some individuals and organizations in Wyoming continue to express concerns about the potential impacts of hunting on greater sage-grouse, a species of management concern and the subject of petitions for listing under the Endangered Species Act. These concerns continue in spite of: 1) increasingly conservative sage-grouse hunting seasons implemented over the last 15 years; 2) the U.S. Fish and Wildlife Service (USFWS) listing process that ranked hunting 17th of 19 potential threats to the species; 3) hunting seasons that are well within the peer-reviewed guidelines for the management of greater sage-grouse and the recommendations of the Wyoming state and local sage-grouse conservation plans; and 4) generally increasing sage-grouse populations across large landscapes in Wyoming where anthropogenic impacts are limited.

Changes made to hunting seasons in 1995 significantly reduced hunter participation and sage-grouse harvest rates in Wyoming. *This fact is not well understood by many in Wyoming.* The public-at-large and others were not concerned because greater sage-grouse had not been petitioned for listing under the Endangered Species Act. The fact that the changes were made pro-actively prior to the widespread concern for sage-grouse has led to a perception that WGFD has not responded to the concerns by closing hunting seasons or otherwise minimizing harvest effects. In addition to the changes made in 1995, more recent examples of increasingly restrictive hunting seasons include: 1) hunting season closures established in 2000 for NW and SE Wyoming, 2) shortened seasons with reduced bag limits in 2002, 3) emergency closure of three counties in 2003 due to a West Nile virus outbreak, 4) expansion of the SE Wyoming closure in 2007, and 5) additional restrictions recommended for 2008.

The USFWS examined the effects of hunting on greater sage-grouse in their status review of the species. In its January 2005 finding on whether or not to list the species as threatened or endangered under the Endangered Species Act, the USFWS determined that hunting as currently regulated by state wildlife agencies was not a significant threat to the conservation of sage-grouse. The expert panel used by the USFWS to make this determination ranked hunting 17th out of 19 potential threats. In the attached letter dated January 30, 2008, the USFWS states, "We are not aware of any new information that would change the results of that analysis," and, "it would not be necessary or appropriate to apply the PECE (Policy for Evaluation of Conservation Efforts When Making Listing Decisions) framework to conservation actions related to hunting that have already been demonstrated to be effective and do not threaten the species."

Harvest of greater sage-grouse currently occurs in 10 of the 11 states in which they reside. Additionally, Wyoming boasts the largest and most widespread populations of grouse of any of the states. Sage-grouse hunting has generally become more conservative in recent decades in response to generally declining sage-grouse populations over the last half-century.

Harvest of greater sage-grouse provides population data not easily obtained except through costly radio-telemetry studies of specific populations. Wings from hunter-harvested birds are used to determine the ratio of hens to chicks, which provides an index to annual chick

production. In conjunction with population trend counts, these data contribute to understanding the dynamics of sage-grouse populations.

Hunting creates a constituency of sage-grouse advocates who are interested in seeing the needs of grouse populations are met and license fees provide revenue for management. Wyomingites are generally supportive of a multiple-use management philosophy on public lands. Regulated hunting, as recommended by state and local conservation plans, is a sustainable multiple-use activity similar to well-managed grazing and energy development. Eliminating hunting would also eliminate an ally in the effort to prevent the need for listing under the Endangered Species Act.

No studies have demonstrated that hunting is a primary cause of reduced numbers of greater sage-grouse. However, sage-grouse are a relatively long-lived species where survival outweighs reproductive output. This strategy is contrary to most upland and small game species where long life and survival are sacrificed for high reproductive output. Sage-grouse demonstrate high over-winter survival, which limits the applicability of the concept of compensatory mortality with regard to hunter harvest. Therefore, the biology of sage-grouse suggests conservative harvest management practices should be implemented compared to harvest strategies for species such as pheasants or partridges.

Sage-grouse populations have declined in Wyoming and across the West over the last half-century. Over the last decade however, the average number of males at leks has increased in Wyoming reflecting a generally increasing population. The same is true for the most recent three-year period. Sub-populations more heavily influenced by anthropogenic impacts (subdivisions, intensive energy development, large-scale conversion of habitat from sagebrush to grassland or agriculture, Interstate highways, etc.) have experienced declining populations or extirpation.

Recommendations for 2008 include: 1) close an additional 5.9 million acres in northeast Wyoming that do not meet the population thresholds identified in Wyoming conservation plans and management guidelines, 2) reduce season length in northeast Wyoming open for hunting, 3) approve a hunting season of September 20-30 with a daily/possession limit of 2/4 in areas not identified in items 1-3 above, and 4) close falconry season on January 31 rather than March 1.

These sage-grouse hunting recommendations take into account biology, formal public involvement via state and local planning efforts, and informal public perceptions. Consequences of varying greatly from these recommendations, e.g. closing large areas not supported by existing plans, could undermine local sage-grouse conservation efforts in Wyoming. Severely restricting or closing hunting seasons could create a public perception that sage-grouse populations in Wyoming may indeed require protection under the Endangered Species Act. Conversely, not recognizing real, but biologically unfounded, concerns about hunting impacts could threaten voluntary industry-led conservation initiatives and/or generate resistance to comply with federal land use stipulations/regulations. Efforts to inform all stakeholders of the issues associated with sage-grouse hunting should be increased in addition to continuing generally conservative sage-grouse hunting seasons.

Purpose

Concerns continue to be expressed by some individuals and organizations in Wyoming about the potential impacts of hunting to greater sage-grouse (*Centrocercus urophasianus*), a species of management concern and the subject of petitions for listing under the Endangered Species Act. This continues in spite of: 1) increasingly conservative sage-grouse hunting seasons implemented over the last 15 years; 2) the U.S. Fish and Wildlife Service (USFWS) listing process that ranked hunting 17th of 19 potential threats to the species; 3) hunting seasons that are well within the peer-reviewed Guidelines for the management of greater sage-grouse and the recommendations of the Wyoming state and local sage-grouse working group (LWG) conservation plans; 4) generally increasing sage-grouse populations over the last decade across large landscapes in Wyoming where anthropogenic impacts are limited.

Background

Greater sage-grouse have been hunted throughout human history in the western United States and populations were heavily exploited by commercial and sport hunting in the late 1800s and early 1900s (Patterson 1952, Autenrieth 1981). Because of concerns about sage-grouse populations (Hornaday 1916, Girard 1937), many states prohibited harvest in the 1930s (Patterson 1952, Autenrieth 1981). By the 1950s, populations had recovered in many areas and hunting seasons were again instituted in most portions of the species' range (Patterson 1952, Autenrieth 1981). In response to generally declining sage-grouse populations over the last half-century, sage-grouse hunting has generally become more conservative in recent decades. Harvest of greater sage-grouse currently occurs in 10 of the 11 western states in which they reside. The state of Washington prohibits harvest as do the Canadian provinces of Alberta and Saskatchewan; areas characterized by small populations in fragmented, marginal habitats.

Benefits of Sage-Grouse Hunting

Sage-grouse hunting provides recreational, cultural and economic values (Wyoming Sage-Grouse Working Group 2003 and LWG plans). Harvest of greater sage-grouse provides population data not easily obtained except through costly radio-telemetry studies of specific populations (Connelly et al. 2004). Wings from hunter-harvested birds are used to determine the ratio of hens to chicks, which provides an index to annual chick production (Connelly et al. 2004, Wyoming Sage-Grouse Working Group 2003 and LWG plans). In conjunction with population trend counts, these data contribute to understanding the dynamics of sage-grouse populations (Connelly et al. 2004).

Harvest is also an incentive for conservation (Sika 2006). Hunting creates a constituency of sage-grouse advocates who are interested in seeing the needs of grouse populations are met (Wyoming Sage-Grouse Working Group 2003 and LWG plans) and license fees provide revenue for management. Wyomingites are generally supportive of a multiple-use management philosophy on public lands. Regulated hunting, as recommended by state and local conservation plans, is a sustainable multiple-use activity similar to well-managed grazing and energy development. Eliminating hunting would eliminate an ally in the effort to prevent the need for listing under the Endangered Species Act.

The number of hunters is declining (USFWS 2006). Recruitment of hunters has been cited as a critical need for the future of hunting and support for conservation in Wyoming (WGFD 2007). Sage-grouse provide an excellent quarry for a beginning hunter in Wyoming because they are spread across much of the state, are locally abundant, and usually allow close approach – often being seen prior to flushing allowing the novice hunter time to prepare to shoot. Only cottontail rabbits provide a greater combination of characteristics favorable to young or beginning hunters.

Biological Considerations

This section is largely based on excerpts from the Western Association of Fish and Wildlife Agencies' (WAFWA) Conservation Assessment of Greater Sage-Grouse and Sagebrush Habitats (Connelly et al. 2004).

For upland gamebird populations, harvest mortality that reduces the population for the subsequent spring breeding season is termed “additive” (Anderson and Burnham 1976, Williams et al. 2004). Each bird harvested is in addition to those that die naturally through disease, starvation, accidents or predation. Additive hunting mortality results in a spring breeding population lower than if harvest had not occurred.

In contrast, mortality from hunters could replace natural mortality through a number of density dependent mechanisms including reduced loss from predators or lower competition for food or shelter, such that total mortality is no higher than without harvest. This “compensatory” mortality does not reduce subsequent spring breeding population size below what it would have been due to natural mortality (Anderson and Burnham 1976). Partial compensation could also occur in hunted populations (Anderson and Burnham 1976). Robertson and Rosenberg (1988) also addressed the issue of compensatory and additive mortality and concluded that in natural populations hunting mortality usually falls between the 2 extremes of being totally additive or totally compensatory.

Life history characteristics of greater sage-grouse differ from many other upland game birds. Many of these other species exhibit a life history characterized by high fecundity and large clutch sizes of 10-17 eggs, high annual rates of natural mortality, especially over winter (40-70%), and short life spans of 1-2 years. Removal of individuals of these species through hunting likely compensates for the many birds that would die naturally during their first or second winter (Kokko 2001, Sutherland 2001). Greater sage-grouse, however, exhibit a life history characterized by relatively low productivity with clutch sizes of 6-9 eggs, low overwinter mortality rates of 2-20%, and long life spans of 3-6 years (Schroeder et al. 1999). Hunting will not have as large an impact on species exhibiting high reproductive potential verses those like sage grouse with lower potential (Anderson 2002:55).

Researchers in the 1970s and 1980s largely concluded hunting had little impact on sage-grouse populations (Crawford 1982, Crawford and Lutz 1985, Braun and Beck 1985), although Zunino (1987) found fall densities to be higher on un hunted study sites but

populations increased on both hunted and unhunted areas. More recent research has suggested that harvest mortality may not be compensatory (Johnson and Braun 1999, Connelly et al. 2000*b*, Connelly et al. 2003). Nevertheless, research conducted to date has not demonstrated that hunting is a primary cause of reduced numbers of greater sage-grouse. Greater sage-grouse do however experience low mortality over winter (Beck and Braun 1978, Connelly et al. 2000*a*, Remington and Braun 1988, Sherfy 1992, Wik 2002, Zablan et al. 2003, Sika 2006). Recognizing the typically low over-winter mortality of sage-grouse is vital to understanding impacts of harvest. Mortality from hunter harvest in September and October may not be compensatory to a large extent.

Connelly et al. (2003) conducted an experimental study of greater sage-grouse response to harvest. They used lek counts to assess response to 3 levels of harvest. All lek routes were in areas with the same harvest regulations in 1996 (30-day season, 3 bird bag, 6 in possession). In 1997 and continuing through 2001, regulations changed to either no hunting, a restrictive 7-day season with 1 bird bag, 2 in possession, or a moderate 23-day season with 2 bird bag, 4 in possession. Lek routes were also categorized as being in lowland areas close (< 1.5 hours drive) to major cities and towns or in high elevation mountain valleys farther from urban centers. After reducing harvest opportunities, areas that remained open to hunting had lower rates of population increase than did areas with no hunting (Connelly et al. 2003). Both the moderate and restrictive hunting seasons produced harvests that apparently slowed population recovery (Connelly et al. 2003). Populations in low elevation habitats, close to urban centers and isolated because of habitat fragmentation, may be less able to withstand a harvest rate that has little or no effect on populations in more extensive, contiguous, remote, or mesic areas (Gibson 1998, Connelly et al. 2003).

Sika (2006) found females on a hunted site in Montana had lower survival than females on a non-hunted site. However, lower survival rates on the hunted site could not be attributed to hunter kill because no radio-marked females were bagged or reported by hunters and no evidence of hunter kill was observed. Survival was also lower on the hunted site during late summer (prior to hunting) suggesting site-level differences such as land-use or habitat.

In Wyoming studies Heath et al. (1997) reported more hens were harvested when the hunting season opened on September 1 than during years with a mid-September opening date. When precipitation was at or above normal and the season commenced on or after September 15, hens and chicks dispersed away from wet sites and scattered into the uplands, and hen harvest was reduced (Heath et al. 1997). The delayed season also greatly reduced hunter numbers thereby reducing harvest (Heath et al. 1997, Table 1, Figure 1). During a subsequent two-year study only 1 radio-collared hen was harvested out of 53 that were marked (Heath et al. 1998). However, Slater (2003) reported that of 105 collared birds, 50 died over a three-year period and 9 of these were attributed to hunting. Most of these occurred during an extremely dry year (2000). The hunting season began on September 16 that year but the author attributed the high harvest rate to drought conditions concentrating the birds near wet sites making them more vulnerable to harvest.

Year	Season Dates	Season Length	Bag Limit Daily/Poss.	Hunters	Harvest	Males/Lek
1991	Aug 31-Sept 30	31	3/6	15,087	47,918	26
1992	Sept 1-Sept 30	30	3/6	11,976	34,388	23
1993	Sept 1-Sept 30	30	3/6	12,800	30,469	19
1994	Sept 1-Sept 30	30	3/6	9,928	26,458	15
1995	Sept 16-Sept 30	15	3/6	6,259	13,975	12
1996	Sept 21-Oct 4	14	3/6	5,138	13,192	12
1997	Sept 20-Oct 5	16	3/6	4,969	11,551	16
1998	Sept 19-Oct 4	16	3/6	5,899	16,787	21
1999	Sept 18-Oct 3	16	3/6	7,625	21,556	26
2000	Sept 16-Oct 1	16	3/6	8,667	20,685	29
2001	Sept 22-Oct 7	16	3/6	5,593	12,742	23
2002	Sept 28-Oct 6	9	2/4	2,947	4,835	20
2003	Sept 27-Oct 5	9	2/4	2,504	5,666	20
2004	Sept 23-Oct 3	11	2/4	5,436	11,783	21
2005	Sept 23-Oct 3	11	2/4	5,231	13,176	33
2006	Sept 23-Oct 3	11	2/4	5,412	12,920	39
2007	Sept 22-Oct 2	11	2/4	Not avail.	Not avail.	37

Table 1. Wyoming sage-grouse harvest and males/lek statistics, 1991-2007.

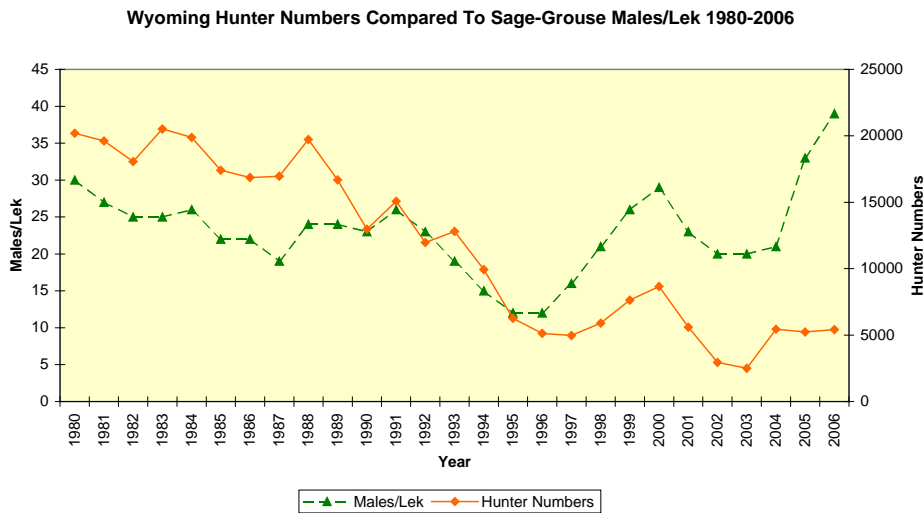


Figure 1. Wyoming sage-grouse hunter numbers compared to sage-grouse males/lek 1980-2006.

Length of sage-grouse hunting seasons is less important than timing. Harvest rates are dramatically reduced during the middle and later portions of the season. Of the 3,500+ wings collected in the WGFD Green River Region between 2003 and 2007, 60% were taken before the end of the opening weekend (WGFD unpublished data). Longer seasons allow the opportunity to hunt with minimal impact to the grouse population. Montana has historically allowed 60-90 day seasons with no population effects being documented. However, in response to public concern, season length has been shortened in recent years from 90 to 60 days and the daily bag reduced from 4 to 2.

Hunter participation is affected by season structure, grouse population trends and hunter perceptions. When Wyoming hunting season dates were changed from a September 1 opener in 1994 to mid-September in 1995, hunter participation was reduced in half (Table 1, Figure 1). The later date was coupled with historically low populations. In this regard hunters were self-regulating as fewer hunters participated when hunting was more difficult due to lower grouse populations. Moreover, fewer hunters may have participated when there was merely a perception that grouse numbers were declining. Recent concerns for sage-grouse across their range has resulted in lower hunter participation even though populations across much of Wyoming are as high as they have been in 30 years (as indexed by average male lek attendance) (Table 1, Figure 1).

Changes made to hunting seasons in 1995 significantly reduced hunter participation and sage-grouse harvest rates in Wyoming (Table 1, Figure 1). *This fact is not well understood by many in Wyoming.* The public-at-large and others were not concerned because greater sage-grouse had not been petitioned for listing under the Endangered Species Act. The fact that the changes were made pro-actively prior to the widespread concern for sage-grouse has led to a perception that WGFD has not responded to the concerns by closing hunting seasons or otherwise minimizing harvest effects. In addition to the changes made in 1995, more recent examples of increasingly restrictive hunting seasons include: 1) hunting season closures established in 2000 for NW and SE Wyoming, 2) shortened seasons with reduced bag limits in 2002, 3) emergency closure of three counties in 2003 due to a West Nile virus outbreak, 4) expansion of the SE Wyoming closure in 2007, and 5) additional restrictions recommended for 2008.

Falconry harvest is essentially inconsequential. In 2006, a total of 180 sage-grouse were harvested by falconers statewide. But falconers, via the Wyoming Falconers Association and the North American Grouse Partnership, are highly engaged in Wyoming's sage-grouse conservation efforts via their participation on several local working groups.

In summary, recent investigations generally support hunting seasons that result in low rates of harvest that allow populations to increase if habitat quality is not limiting population numbers.

General Harvest Recommendations

The peer-reviewed "Guidelines to Manage Sage Grouse Populations and Their Habitats" (Connelly et al. 2000c) and Wyoming's state and local conservation planning efforts have recommended management practices that recognize the biological concepts discussed above. The WGFD supports these guidelines and recommendations as reflected in the hunting season proposals.

The Wyoming Sage Grouse Working Group's Greater Sage-Grouse Conservation Plan (2003) top three recommended management practices (RMPs) for hunting are:

- 1) In stable to increasing populations (based on lek count information) maintain a 2 to 4 week hunting season with a 3-bird bag limit beginning no earlier than September 15.
- 2) If populations are declining (for 3 or more consecutive years based on lek count information) implement more conservative regulations that might include: reduced bag limits, adjusted season dates, limited quota seasons or closed seasons.
- 3) Populations should not be hunted where less than 300 birds comprise the breeding populations. (i.e. less than 100 total males are counted on the population's leks)

Wyoming's eight local conservation plans contain similar language.

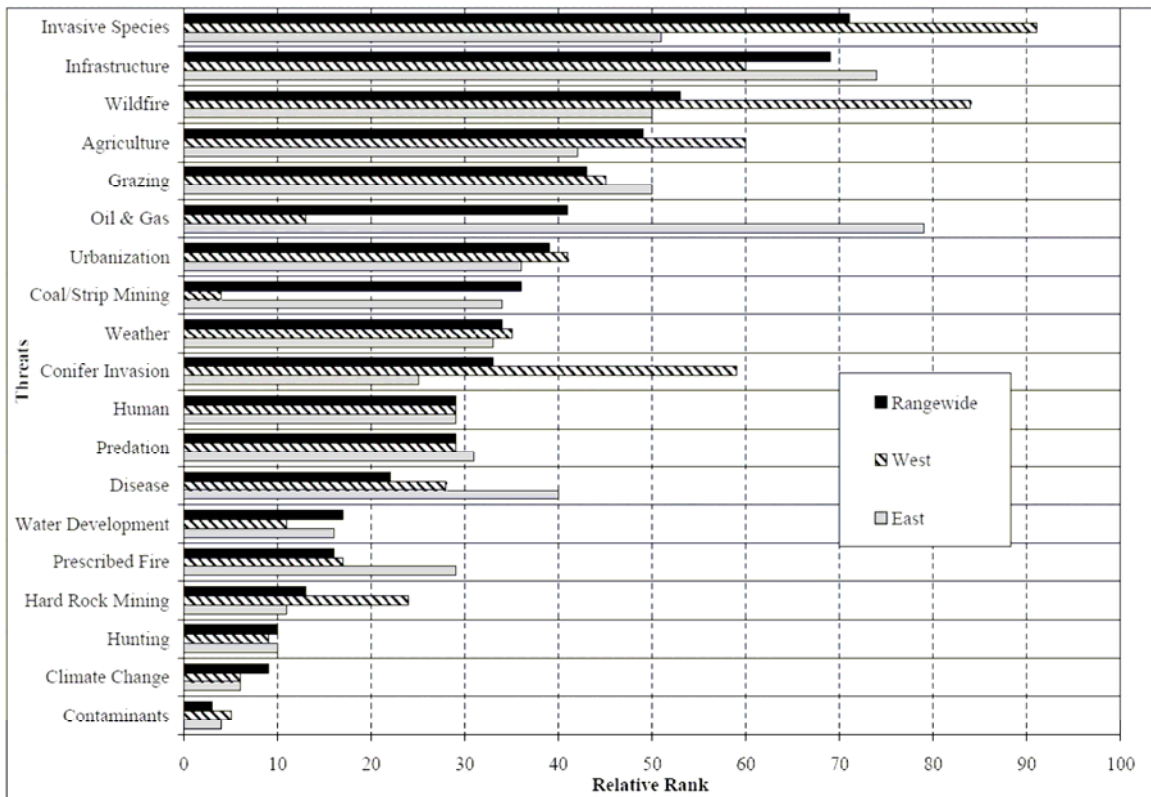
Based on a review of the literature, the Connelly et al. (2000c) guidelines suggested that no more than 10% of the autumn population be removed through harvest. Harvest equal to 5-10% of the autumn population may be appropriate, but assumes detailed and specific knowledge of population size in September or October. Given the uncertainty in abundance estimates for breeding season populations, adequately determining size of any population of greater sage-grouse in fall is not currently realistic.

While the lack of a statistically reliable technique to estimate sage-grouse population size does not allow for a precise estimate of harvest rates (% of the population harvested), it is apparent that harvest rates have declined over the last 30 years in Wyoming. Admittedly crude population estimates together with harvest data suggest harvest rates have declined from perhaps as high as 20% of the fall population in the late 1970s and early 1980s to below 5% in recent years.

Sage-Grouse Hunting and the Endangered Species Act

The USFWS examined the effects of hunting on greater sage-grouse in their status review of the species. In its January 2005 finding on whether or not to list the species as threatened or endangered under the Endangered Species Act of 1973 the USFWS determined that hunting as currently regulated by state wildlife agencies was not a significant threat to the conservation of sage-grouse (USFWS 2005). The expert panel used by the USFWS to make this determination ranked hunting 17th out of 19 potential threats considered (Figure 2). In the attached letter (Appendix A), dated January 30, 2008, the USFWS states, "We are not aware of any new information that would change the results of that analysis," and, "it would not be necessary or appropriate to apply the PECE (Policy for Evaluation of Conservation Efforts When Making Listing Decisions) framework to conservation actions related to hunting that have already been demonstrated to be effective and do not threaten the species."

Similarly, Wyoming's sage-grouse LWGs have not identified hunting as a high priority issue in their plans but do provide concrete recommendations for how hunting should be managed. In addition, Governor Freudenthal's Sage-Grouse Implementation Team did not mention hunting in their list of 21 recommendations they believed would "contribute to the stabilization of sage-grouse populations and long-term conservation of sagebrush habitat in Wyoming" (Wyoming Governor's Office 2007.)



Notes:

- Wyoming is in the “east” portion of the range.
- Infrastructure includes fences, roads, powerlines, communication towers, and pipelines, developed for any purpose.
- Agriculture includes activities primarily associated with farming.
- Grazing includes all activities primarily associated with grazing.
- Weather refers to short time events, including but not limited to late season snowstorms, drought, etc. Climate change refers to long-term, permanent weather changes, usually occurring over a period of 100 years or more.
- Conifer invasion primarily refers to pinyon/juniper.
- Human refers to an increased human presence in sagebrush ecosystems from recreational, residential, and resource development activities.

Figure 2. Threats to sage-grouse as ranked by an expert panel convened by the U.S. Fish & Wildlife Service in 2004. The rationale for these rankings can be found in the final listing decision document (U.S. Fish & Wildlife Service, 2005).

Wyoming Population Status and Trends

Sage-grouse populations have declined in Wyoming and across the West over the last half-century. Over the last decade however, the average number of males at leks has increased in Wyoming reflecting a generally increasing population. The same is true for the most recent three-year period. Thus, there have been long-term declines but more recent mid- and short-term increases in sage-grouse populations in Wyoming (Figures 3-5). Over 43,000 sage-grouse cocks were observed on leks in Wyoming in 2006.

These trends are valid at the statewide scale. Trends are more varied at the local scale. Sub-populations more heavily influenced by anthropogenic impacts (sub-divisions, intensive energy development, large-scale conversion of habitat from sagebrush to

grassland or agriculture, Interstate highways, etc.) have experienced declining populations or extirpation.

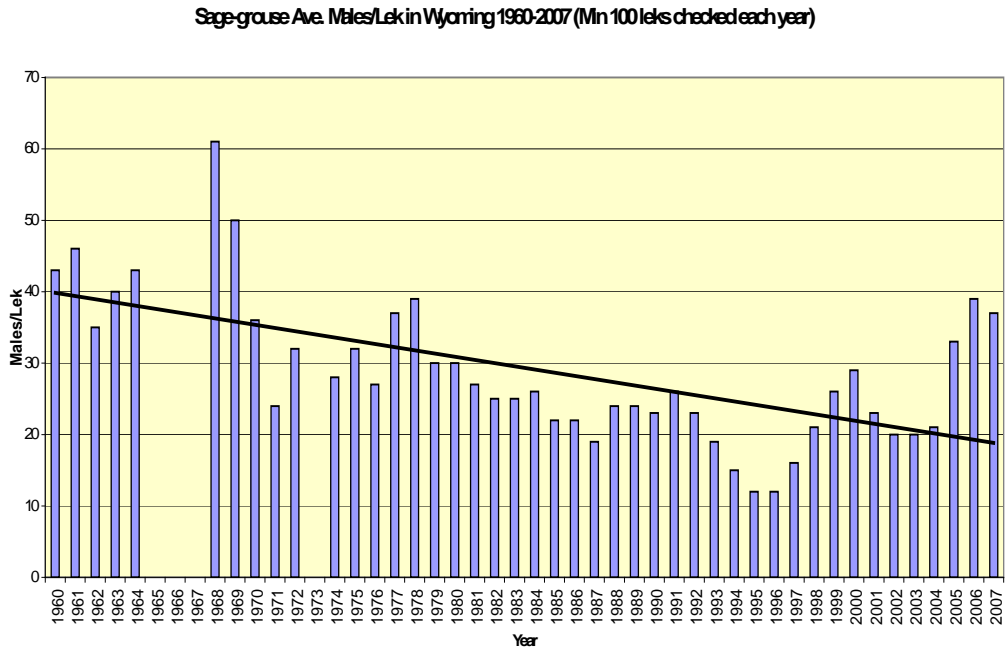


Figure 3. Sage-grouse males/lek in Wyoming 1960-2007.

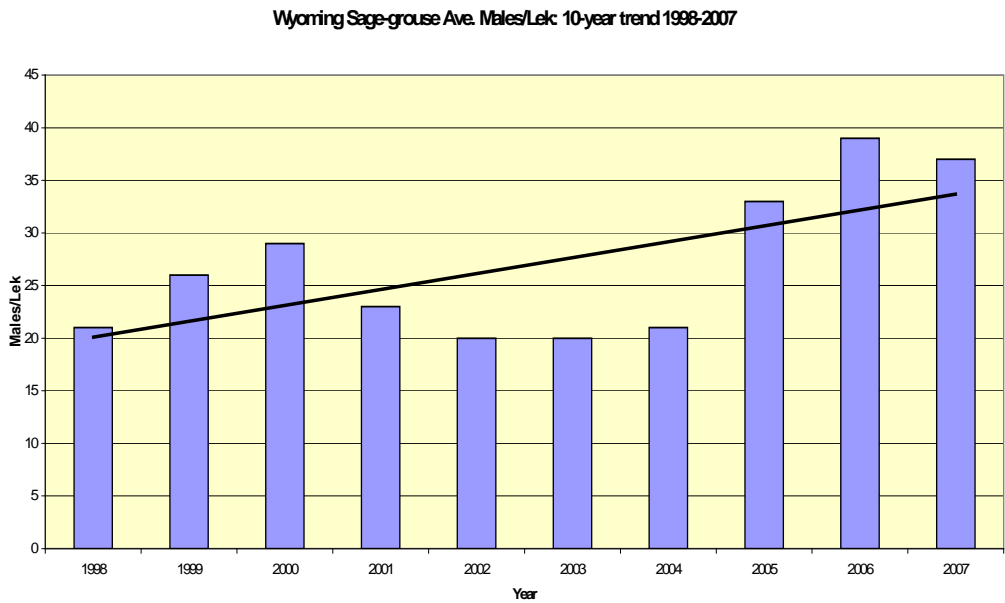


Figure 4. Wyoming sage-grouse males/lek, 10-year trend, 1998-2007.

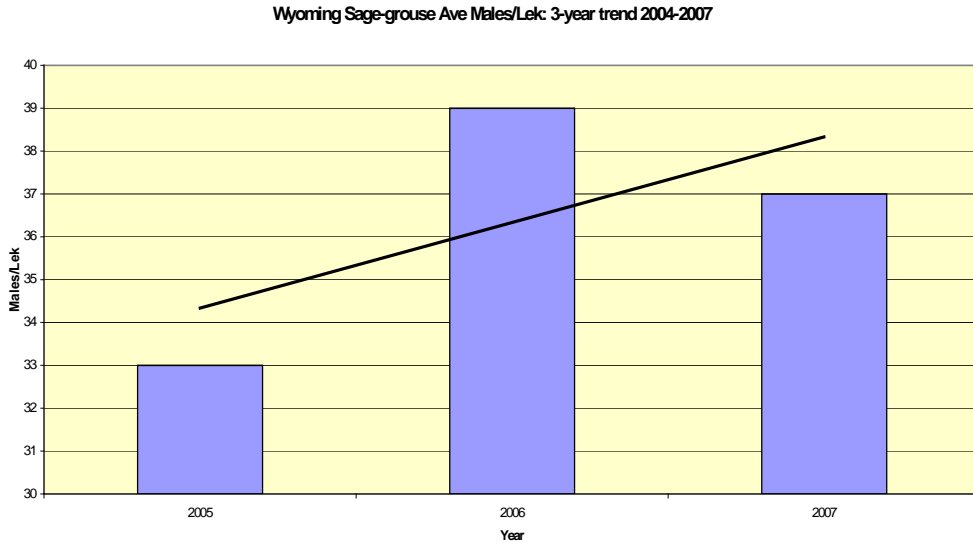


Figure 5. Wyoming sage-grouse males/lek, 3-year trend, 2004-2007.

Preliminary Recommendations for 2008

Except in areas that do not meet the minimum criteria for hunting (RMP #3 above), a statewide hunting season structure that includes up to 21 days and daily bags of 2-3 birds is biologically justifiable and well within the recommendations put forth by Wyoming state and local plans and published guidelines. However, until there is wider awareness and acceptance of these recommendations and guidelines, more conservative hunting season structures are likely and the recommendations below reflect that reality as well as the biology. Effort has been made to keep the recommendations consistent with state and local planning efforts. Hunting seasons approved in 2007 were generally more conservative than what state and local plans recommended.

WGFD Regional Wildlife Division personnel responsible for recommending hunting season structure were instructed to evaluate local data and provide hunting season recommendations for 2008.

The WGFD field personnel recommend the following:

- 1) Close hunting in several local populations in northeastern Wyoming (Table 2, Figure 6). These areas are believed to contain generally island populations (Figure 7) of sage-grouse characterized by naturally and anthropogenically fragmented habitats. This recommendation is consistent with local and state conservation plans and published sage-grouse management guidelines (Connelly et al. 2000c), which recommend sage-grouse populations not be hunted where less than 300 birds comprise the breeding populations. (i.e. less than 100 total males are counted on the population's leks). The newly recommended closure includes 5.9 million acres. However, because hunter access is highly restricted in northeast Wyoming, harvest is already minimal and population level effects (i.e. increases) are not anticipated to result from the closures.

- 2) Establish a new hunt area (Area 4) in northeast Wyoming (Table 2, Figure 6) that has a more conservative season structure (7 days including one weekend) than the other areas open to hunting (11 days with two weekends). This recommendation is based on research results (Aldridge and Boyce 2007, Doherty et al. 2008, Holloran 2005, Holloran et al. 2007, Kaiser 2006, Lyon and Anderson 2003, Walker et al. 2007 and others) that have demonstrated impacts from natural gas development. Concurrently, industry officials have argued for more restrictive hunting seasons to minimize mortality in areas where they are under increasing pressure to develop gas resources with greater consideration for sage-grouse habitat requirements. As with Recommendation 1, because hunter access is highly restricted in northeast Wyoming, harvest is already minimal and population level effects (i.e. increases) are not anticipated to result from the more conservative season. A daily bag of 2 and possession of 4 is recommended.
- 3) For the remainder of the state (Area 1; Table 2, Figure 6), a hunting season similar to recent years is recommended for 2008: September 20 through September 30, 2 birds daily bag, 4 in possession.
- 4) Shorten the falconry season for sage-grouse by changing the closing date from March 1 through January 31 (Table 2). While sage-grouse harvest rates from falconry are low and inconsequential to sage-grouse populations, the falconers are willing to support more conservative regulations in light of the overall concern for sage-grouse.

In summary, these sage-grouse hunting recommendations take into account biology, formal public involvement via state and local planning efforts, and informal public perceptions. Consequences of varying greatly from these recommendations, e.g. closing large areas not supported by existing plans, could undermine local sage-grouse conservation efforts in Wyoming. Severely restricting or closing hunting seasons could create a public perception that sage-grouse populations in Wyoming may indeed require protection under the Endangered Species Act. Conversely, not recognizing real, but biologically unfounded, concerns about hunting impacts could threaten voluntary industry-led conservation initiatives and/or generate resistance to comply with federal land use stipulations/regulations. Efforts to inform all stakeholders of the issues associated with sage-grouse hunting should be increased in addition to continuing generally conservative sage-grouse hunting seasons.

Area	Season Dates	Daily/Poss. Limits	Falconry
1	Sept. 20-Sept. 30	2/4	Sept. 1-Jan. 31
2, 3	Closed	Closed	Closed
4	Sept. 20-Sept. 26	2/4	Sept. 1-Jan. 31

Table 2. Preliminary recommendations for 2008 Wyoming sage-grouse hunting seasons.

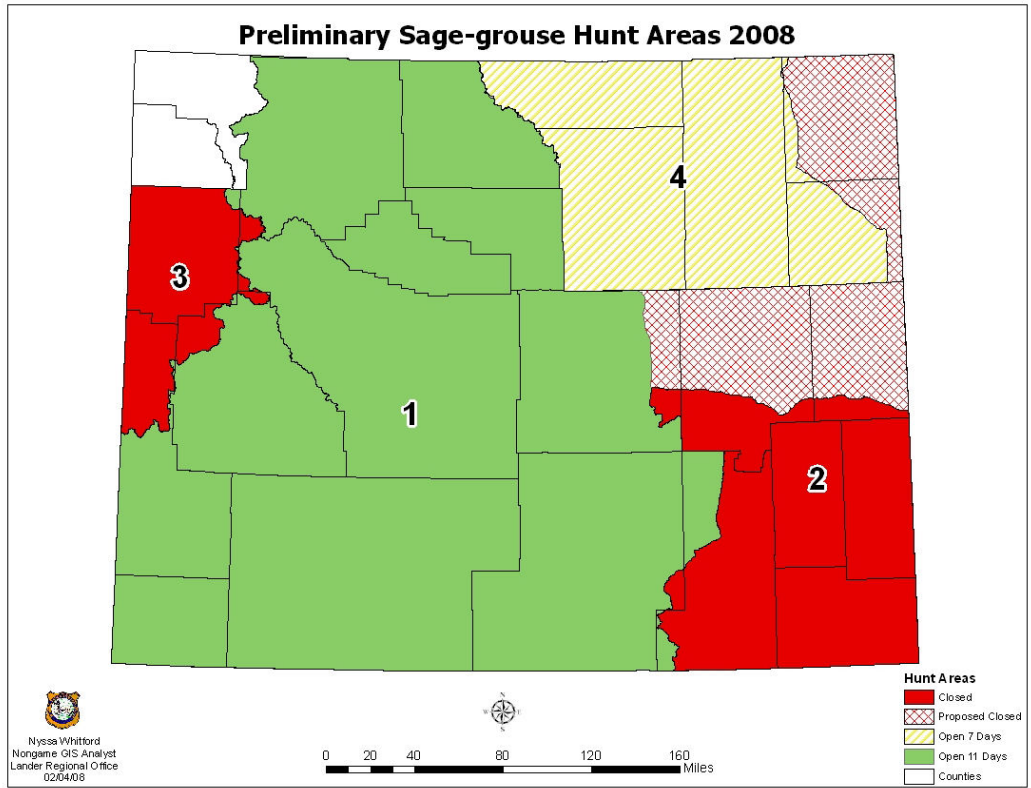


Figure 6. Wyoming preliminary sage-grouse hunt areas 2008.

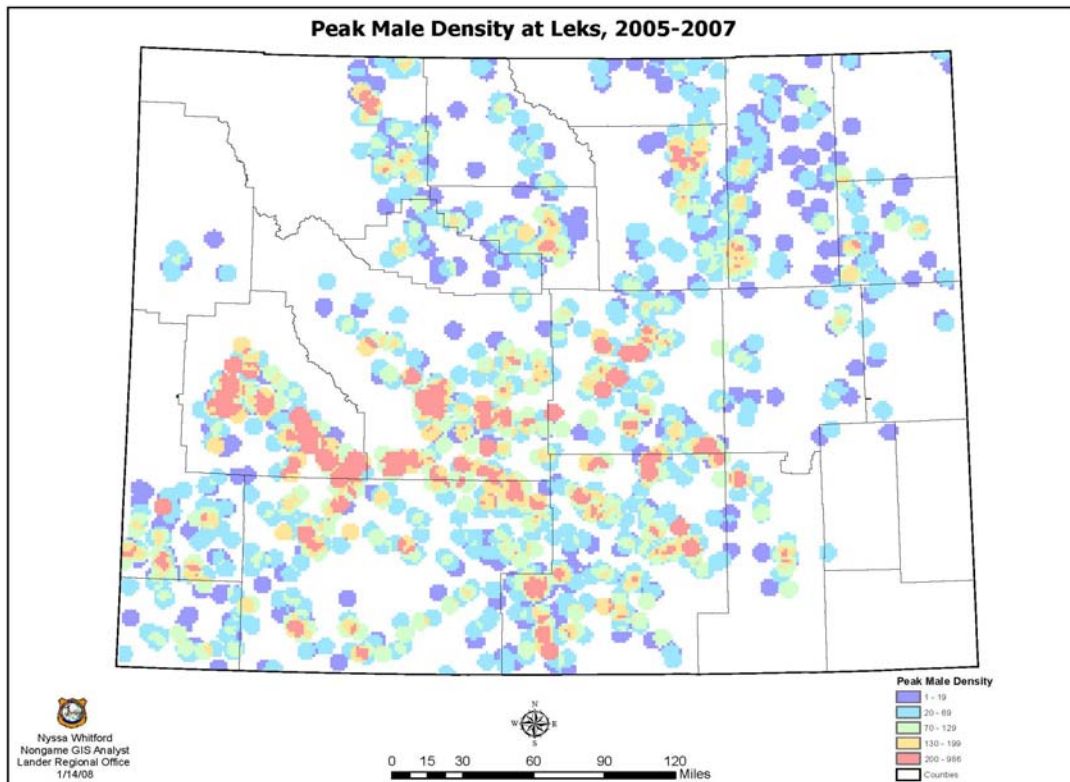


Figure 7. Wyoming sage-grouse density map based on 2005-2007 lek data.

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Appendix A.



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
5353 Yellowstone Rd, Suite, 308A
Cheyenne, Wyoming 82009

In Reply Refer To:
ES-61411/W.39/WY10520

JAN 30 2008

Mr. Tom Christiansen
Wyoming Game and Fish Department
351 Astle
Green River, WY 82935

Dear Mr. Christiansen:

Thank you for your electronic mail request of January 22, 2008, regarding the U.S. Fish and Wildlife Service's (Service) "position" on the role of hunting relative to a determination on whether or not to list the Greater sage-grouse under the Endangered Species Act of 1973, as amended (Act; 16 U.S.C. 1531 et seq., Section 4(b)(3)(B)).

While the Service does not have a formal position on this issue, we did examine the effects of hunting on greater sage-grouse in our status review of the species. In our January 12, 2005 finding (70 FR 2244) on whether or not to list the species as threatened or endangered under the Act, we determined that hunting as currently regulated by state wildlife agencies was not a significant threat to the conservation of the greater sage-grouse. We based this determination on the best scientific and commercial information that showed that hunting was (a) occurring within a limited timeframe when productivity to the species was unlikely to be affected and (b) highly regulated and could be quickly adjusted to meet the needs of the species. We are not aware of any new information that would change the results of that analysis.

You had specifically asked whether Wyoming's sage-grouse hunting regulations would meet the Service's Policy for Evaluation of Conservation Efforts When making Listing Decisions (PECE; 68 FR 15100). PECE provides a framework to evaluate conservation efforts by State and local governments and other entities that have been planned but have not been implemented, or have been implemented, but have not been demonstrated effective at reducing a threat to a species. This policy allows the Service to determine if such conservation actions will reduce a threat to a species to the extent that listing will not be necessary. Since hunting was not considered a threat to the species at the time of the 2005 finding, the effectiveness of those regulatory measures had been demonstrated and PECE would not have been applicable.

Your correspondence also asked whether the complete cessation of hunting, would meet the PECE framework. Again, PECE is only applicable to identified threats to the continued survival of a species. It would not be necessary or appropriate to apply the PECE framework to

conservation actions related to hunting that have already been demonstrated to be effective and do not threaten the species.

We appreciate your efforts to ensure the conservation of the Greater sage-grouse. If you have further questions regarding this letter or any listing questions, please contact Pat Deibert of my staff at the letterhead address or at (307) 772-2374, ext. 226.

Sincerely,

A handwritten signature in black ink, appearing to read "B. T. Kelly". The signature is fluid and cursive, with the first name "Brian" and last name "Kelly" clearly legible.

Brian T. Kelly
Field Supervisor
Wyoming Field Office