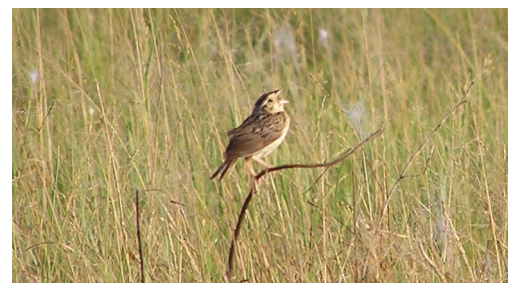
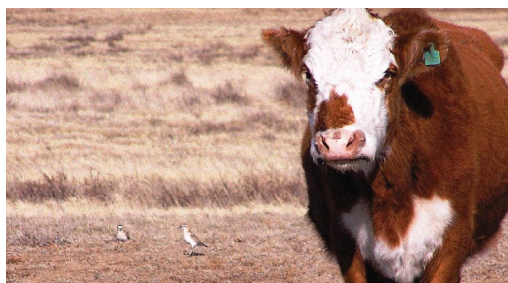
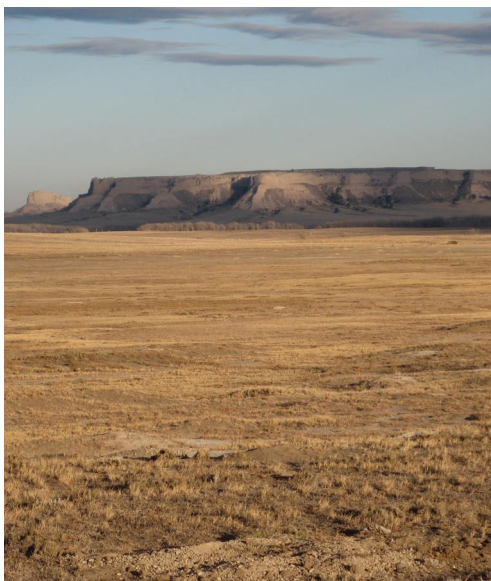


Are Wyoming Range Practices Working at Cross-purposes with Wildlife Habitat Goals?



AN ANALYSIS OF NRCS PROGRAM AND PRACTICE EXPENDITURES RELATED TO GRASSLAND PRIORITY BIRD SPECIES, 2004-2007



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Cover photos: (top left) McCown's longspur; (bottom left) livestock and nest-ing mountain plover; (center) rangeland in southeastern Wyoming; (top right) livestock watering tank; (bottom right) grasshopper sparrow. All photos courtesy Seth Gallagher/Rocky Mountain Bird Observatory except Wyoming rangeland (EDF photo) and watering tank photo courtesy Justin Derner/United States Department of Agriculture Agricultural Research Service.

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Executive Summary

Wyoming is a stronghold for declining grassland birds. But with approximately 8.6 million acres of native grassland habitat in the eastern part of the state, Wyoming has enormous potential to play a pivotal role in providing well-managed grasslands to help reverse the declining population trends of grassland birds. The fact that most of these grasslands are in private ownership and managed for livestock production underscores the need to work in partnership with private ranchers to encourage management that can improve their lands for birds while maintaining the productivity of their agricultural operations.

In particular, critical support for grassland birds could come from the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS), which assists private landowners with implementation of USDA programs that support voluntary conservation practices and management. NRCS spending is the largest source of technical and financial assistance available for the conservation and management of U.S. private rangelands. If NRCS program goals are properly aligned with declining grassland bird needs, these programs could play a key role in their recovery.

Our analysis evaluated NRCS's planning and spending practices for its private lands incentive programs in Wyoming between 2003 and 2007. We assessed the effectiveness and availability of NRCS funding for managing and restoring habitat for high-priority grassland birds, highlighting existing successes and also suggesting opportunities for improvement.

Our findings indicate that NRCS has done much to incorporate basic grassland bird priorities into its state-level planning. For example, the Wildlife Habitat Incentives Program (WHIP) and the special initiative for wildlife funded through the Environmental Quality Incentives Program (EQIP) have clearly incorporated Wyoming Game and Fish (WGF) and Wyoming Partners in Flight priorities into their planning. At the same time, numerous opportunities exist to:

- better coordinate between NRCS and wildlife organizations,
- increase the number of wildlife projects that get funded through NRCS programs and
- ensure that NRCS grazing recommendations do not adversely affect grassland birds.

Strengths of current NRCS programs

- 1) **The use of WGF priority areas in NRCS programs.** Both WHIP spending and an EQIP special initiative focused on wildlife benefited from incorporating WGF wildlife priority areas. Coordinating priority areas is an excellent strategy that steers NRCS spending to regions where wildlife need it most.
- 2) **Significant funding targeting rangeland and wildlife objectives.** About 45 percent of all NRCS spending in Wyoming was directed toward areas that can have the greatest benefits for at-risk grassland birds.
- 3) **Widespread use of the 'upland wildlife habitat management' practice.** Upland wildlife habitat management presents a unique opportunity to apply and provide financial incentives for wildlife-oriented management. Encouragingly, NRCS's EQIP program has a high use of this practice, though add-

ing an incentive payment and improving targeting for wildlife benefits could increase its impact.

- 4) **Strong focus on key wildlife goals in WHIP and an EQIP initiative focused on wildlife.** NRCS has carefully incorporated WGF and Wyoming Partners in Flight priorities for grassland birds into the ranking criteria and available practices for its wildlife-focused program and initiative.

Areas for improvement in NRCS programs

- 1) **Coordination on conservation funding opportunities.** While NRCS and the wildlife community have worked hard in recent years to improve coordination, closer communication appears necessary to maximize the use and benefits of available conservation funding for wildlife.
- 2) **Under use of practices important for grassland birds.** As an example, fire suppression was listed as a major cause of habitat degradation for grassland birds, and all the Wyoming wildlife plans recommend its use. Yet only 3,011 acres of rangelands were burned in 4 years through all NRCS programs in Wyoming. For comparison, this is only seven percent of the acreage that was placed under brush management.
- 3) **Widespread implementation of grazing management systems that may contradict wildlife plan recommendations.** WGF plans, other state bird initiatives and NRCS itself (in its WHIP recommendations) all recommend heterogeneity-promoting grazing management to help reach grassland bird goals. Assessing the implementation of heterogeneity versus homogeneity-promoting management is difficult to determine conclusively because the objective of the management is as important as the practices implemented. While we could not conclusively determine the extent to which NRCS range management goals implemented heterogeneity versus homogenous management, we were concerned that habitat heterogeneity goals could be better incorporated into NRCS range management practices.
- 4) **The incentivizing of structural practices that can degrade grassland bird habitat.** NRCS funding supported the implementation of a significant number of structures that can contribute to grassland bird habitat fragmentation and degradation. Encouragingly, steps are being taken to increase the use of bird escape ladders in stock tanks, but fence implementation is still widespread despite its potential to increase bird mortality and predation.

Recommendations: Harmonizing range management and wildlife goals

Our analysis has helped us identify several areas of improvement in NRCS programs:

- 1) Continue to improve targeting of NRCS programs to WGF priorities;
- 2) Improve coordination of program spending by holding meetings for all state “wildlife conservation funders” twice a year;
- 3) Develop new heterogeneity-promoting management guidelines, practice standards and demonstration projects as an alternative to traditional range management techniques that promote habitat homogeneity;
- 4) Conduct or participate in workshops to educate range and wildlife professionals on how to implement heterogeneity-promoting management practices;

- 5) Minimize negative impacts of structural practices on bird habitat (e.g., reduce use of water tanks and fencing, encourage the use of wildlife-friendly fence, minimize windbreak establishment in priority grassland bird habitats);
- 6) Increase support for and effectiveness of the upland wildlife habitat management practice by authorizing incentive payments for the practice and by increasing its emphasis on heterogeneity-promoting management;
- 7) Develop state- and county-level ranking sheets for grazing and wildlife concerns that emphasize environmental benefit and proper stocking rates rather than structural practices and grazing systems.

Wyoming's tremendous grassland resources represent one of the best hopes for grassland bird habitat and preservation. NRCS, the state's leader in assisting private landowners with implementing environmentally sensitive projects and management, plays a key role in helping producers safeguard and steward these valuable natural assets. Ensuring that the twin rangeland and wildlife goals of NRCS work in concert can double the benefits of limited funding resources, supporting both range resources as they face a sustained drought and wildlife as they face continued pressure. We believe that the recommendations detailed in this report offer an ambitious but feasible strategy to further harmonize range and wildlife goals.

Introduction: Wyoming's vital role in grassland bird conservation



Environmental Defense Fund

Privately-owned ranchlands managed for livestock production are critical habitat for grassland birds in Wyoming and throughout the West.

Wyoming is a stronghold for declining grassland birds. Approximately 8.6 million acres of untilled grasslands comprise the eastern part of the state, some portions in large, un-fragmented blocks. As a result, Wyoming has great potential to play a pivotal role in reviving dwindling populations of grassland birds by providing well-managed habitat. Such action could also preclude the need to list species under the Endangered Species Act. Since most of these grasslands are privately owned and managed for livestock production, working in

partnership with private ranchers is critical. Encouraging and helping implement management that can improve bird habitat while maintaining the productivity of their agricultural operations can help reverse the declining populations of these grassland birds.

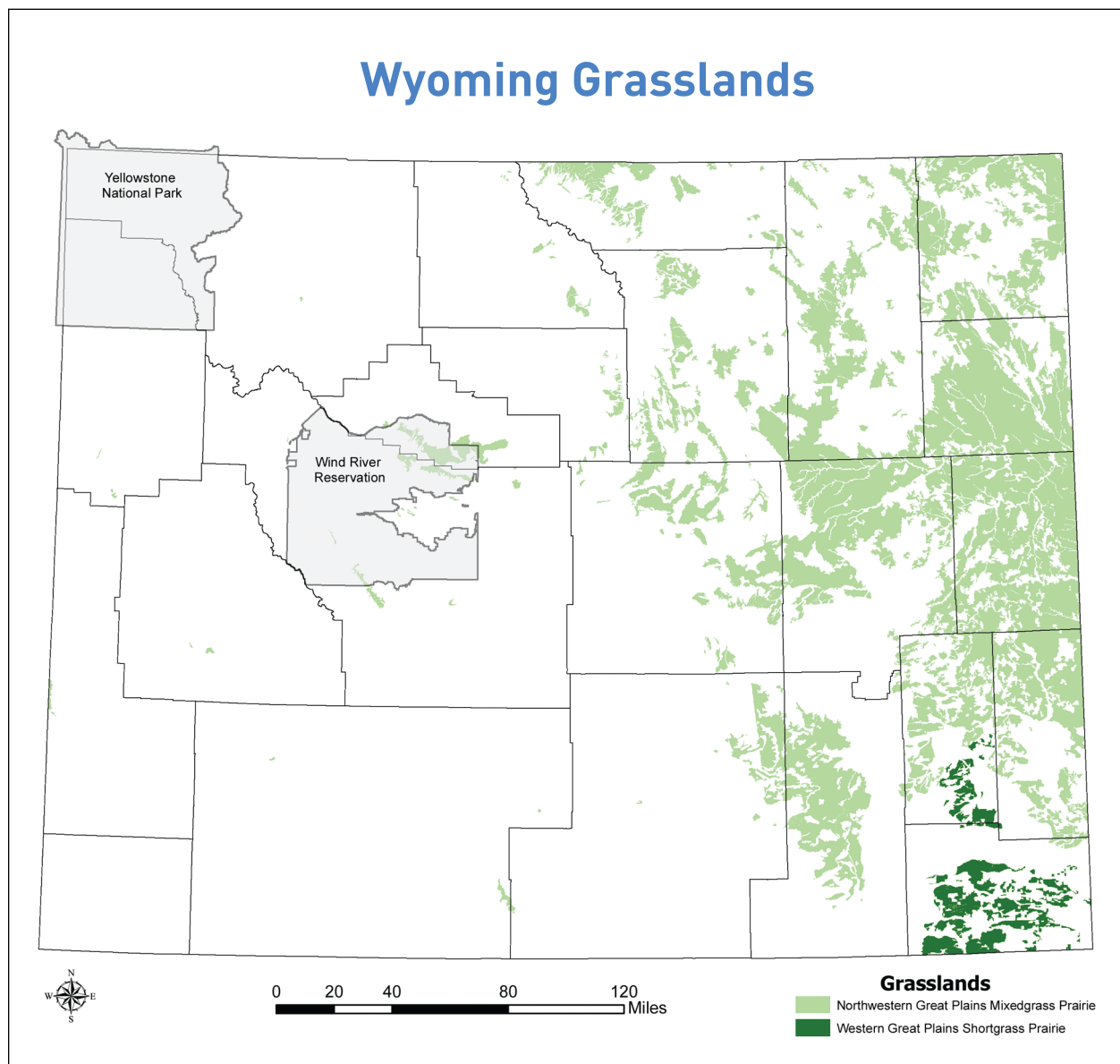
Most upland grassland birds have shown negative population trends over the last 30 years, according to U. S. Geological Survey's Breeding Bird Survey Trends (Peterjohn and Sauer 1999). Their decline is related to a number of factors, including habitat conversion and fragmentation, changes in grassland and agricultural management, herbicide and pesticide use, and threats to wintering and migratory habitats. No species is currently on the U.S. endangered species list, but many are high-priority species at the state level and among bird conservation organizations. Wyoming Game and Fish (WGF) has chosen grasslands as a "priority habitat" in need of immediate conservation action, and has developed a set of management recommendations for the following 12 birds species of greatest need: Ferruginous Hawk, Mountain Plover, Lark Bunting, Bobolink, Dickcissel, Grasshopper Sparrow, Upland Sandpiper, Long-billed Curlew, Burrowing Owl, Short-eared Owl, Chestnut-collard Longspur and McCown's Longspur.

Left to right: Lark bunting, burrowing owl, mountain plover.



Rocky Mountain Bird Observatory

A number of private and public sources of funds in Wyoming can help address grassland bird conservation priorities. But the largest source of technical and financial assistance for the conservation and management of U.S. private rangelands is the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS), the federal agency charged with assisting private landowners with implementation of Farm Bill programs that support voluntary conservation practices and management. NRCS can play a critical role in grassland bird recovery if its programs are properly aligned with grassland bird needs. In particular, the Environmental Quality Incentives Program (EQIP) and the Wildlife Habitat Incentives Program (WHIP) could be key to grassland bird recovery, since EQIP makes up the majority of NRCS spending in Wyoming (73-81 percent in recent years) and WHIP is focused specifically on wildlife.



There are approximately 8.6 million acres of untilled grasslands in eastern Wyoming.
Source: Meg Ewald

Objectives: Assess existing private land incentive programs

Our analysis set out to accomplish two things:

- to assess the effectiveness and availability of private lands incentive programs in Wyoming for managing and restoring habitat for high-priority grassland birds and other associated wildlife and
- to suggest opportunities for improvement.

In particular, we aimed to evaluate how well current NRCS programs were helping WGF and other organizations achieve their habitat goals for these birds. It is important to note that our analysis only assessed NRCS programs with respect to one resource concern, and not the effectiveness of NRCS programs overall.

Specific goals for the project included:

- conducting an analysis of current NRCS program and practice expenditures and components with respect to WGF priority grassland birds;
- exploring opportunities to create synergy between NRCS programs and bird conservation goals by integrating priorities, strategies, and spending in the state; and
- developing recommendations based on the above analyses for NRCS and bird conservation organizations in the state.

A summary of conservation plan priorities

We reviewed five Wyoming-based bird management plans in order to determine which grassland birds have been prioritized and which management practices have been recommended. Our findings helped us evaluate the implementation of these priorities by NRCS. The plans reviewed included:

- “A Comprehensive Wildlife Conservation Strategy for Wyoming” – Wyoming Game and Fish, 2006;
- “A Plan for Bird and Mammal Species of Greatest Conservation Need in Eastern Wyoming Grasslands” – Wyoming Game and Fish, 2006;
- “Migratory Bird Management for the Northern Great Plains Joint Venture: Implementation Plan” – D.B. Pool and J.E. Austin, eds., 2006;
- “Wyoming Partners in Flight: Wyoming bird conservation plan” – A. Cerovski, M. Gorges, T. Byer, K. Duffy, and D. Felley, 2001; and
- “Intermountain West Joint Venture: Coordinated Implementation Plan for Bird Conservation” – A. Cerovski, A. Lyon, M. Gorges, P. Hnilicka, S. Patla, J. Warder, J. Ward, H. Smith, D. McDonald, and S. Scott, 2005.

“A Comprehensive Wildlife Conservation Strategy for Wyoming (CWCS).” The CWCS is the overriding planning document for wildlife conservation in the state. It identifies species of greatest conservation need, threats to key habitats, the current conservation status of habitats, management challenges for priority species and priority actions for their conservation. Our report focuses on priority bird species native to the Northern Great Plains Steppe and Central Shortgrass Prairie

ecoregions as identified in the CWCS. The CWCS lists habitat conversion, a low degree of protection, energy development, invasive plants, and urbanization as major threats to key habitats. Habitat degradation and fragmentation were listed as the primary threats to priority grassland birds. To address the threats to the key habitats and priority species of the grassland regions, the CWCS lists eight priority actions:

- increase grassland heterogeneity by:
 - introducing fire via patch burning,
 - encouraging grazing strategies that also favor habitats for native vegetation and sensitive wildlife habitat and
 - introducing habitat disturbance via mechanical treatments
- cooperative agreements to prevent conversion and fragmentation,
- cooperative efforts to control invasive plants,
- reseeding native grasses and forbs,
- developing grass bank agreements,
- mitigation for energy development,
- implementing specific measures in the grassland conservation plan and
- integration of public agency planning efforts.

“A Plan for Bird and Mammal Species of Greatest Conservation Need in Eastern Wyoming Grasslands.” This 2006 WGF grassland plan provides more detail on management actions specifically geared toward species of greatest conservation need. The grassland plan identifies the same actions as the CWCS but adds two additional ones:

- work cooperatively with NRCS and the Farm Service Agency to maximize grassland benefits of Farm Bill programs and develop new grassland conservation opportunities and
- where appropriate, encourage the implementation of “Growing Grassland Birds—Best Management Practices,” Wyoming Partners in Flight 2002, and grassland species suggested conservation practices.

“Migratory Bird Management for the Northern Great Plains Joint Venture: Implementation Plan.” This plan by Pool and Austin 2006 identifies goals and objectives, risks to habitats, priority species and suggested management actions to address the species. Joint Ventures are partnerships that help set bird conservation priorities by coordinating and implementing a variety of national and international conservation plans across state boundaries. The Great Plains Joint Venture encompasses most of Wyoming’s eastern plains, especially the Northern Plains Steppe. The Great Plains Joint Venture’s priority species are mostly the same as identified by WGF. Identified risks to habitats include:

- habitat conversion and fragmentation,
- fire suppression and grazing,
- mineral and energy development,
- invasive species,
- wildland urban interface and
- climate change.

The “Northern Great Plains Joint Venture,” like Wyoming’s Comprehensive

Wildlife Conservation Strategy, specifically mentions the importance of habitat and grazing diversity for grassland bird populations. With respect to grazing, the Joint Venture’s plan points out that “the pattern and size of patches created by herbivory have generally been lost resulting in a more homogenous stand structure,” and that the “loss of habitat heterogeneity negatively effects numerous species.” It states further that current management does not incorporate “the full spectrum of historic grazing intensity,” and encourages changes in NRCS and state programs that “favor the use of livestock grazing that addresses the full range of habitat variability” important to birds and other wildlife.

The “Wyoming Partners in Flight” plan also prioritizes grassland species and describes best management practices for the species. According to the plan, the major habitat challenges facing grassland birds include: fire suppression, prairie dog control, urbanization, habitat conversion, shrub and tree encroachment, increased incompatible recreation, exotic species, incompatible grazing focused on grazing uniformity, and predation and cowbirds. Causes of these problems include: changes in grazing patterns due to fencing and water distribution and persistence, fire suppression, shelterbelt planting, draining wetlands, prairie dog control and plowing. Specific grazing-related practices recommended include management for late or early seral stages (depending on target species and location), using grazing or grazing and fire in combination to create shifting mosaic patterns (heterogeneity) that mimic historical disturbance regimes, use of rest from grazing to create refugia for nesting, and use of wildlife escape ladders in stock tanks. “Growing Grassland Birds: Best Management Practices for Grasslands to Benefit Birds in Wyoming” is a companion piece to the plan and contains the same recommendations (Wyoming Partners in Flight 2002).

The “Intermountain West Joint Venture” also identifies priority actions for grassland bird recovery for their region of the Central Shortgrass Prairie (also referred to as “prairie grasslands”). Their main goal is to restore 282,000 acres of priority bird habitat there. Habitat management priorities include:

- restoring fire regimes,
- applying mechanical treatments for habitat diversity and
- implementing grazing systems with non-continuous, heterogeneous management systems.

Three critical findings: Habitat heterogeneity, fire, stocking rates

Habitat heterogeneity is key

WGF plans, other state bird initiatives and NRCS itself (in its WHIP recommendations) each recommend heterogeneous grazing management among and within pastures to help reach grassland bird goals. These recommendations stem from ecological research that has demonstrated that habitat heterogeneity at various scales (e.g., landscape, ranch, pasture, patch) is a key factor in generating the biodiversity observed in nature (Fuhlendorf et al. 2006, Tews et al. 2004, Reice 1994). Plant and animal biodiversity is enhanced with more structurally complex habitats that provide more spatiotemporal niches (Fuhlendorf et al. 2006; Benton et al. 2003; Rook and Tallwin 2003; Severson and Urness 1994). In particular, avian

ecologists have long recognized the importance of rangeland compositional and structural heterogeneity for healthy grassland bird habitats (Askins et al. 2007, Knopf 1996). Others claim that “uneven grazing distribution may be required to maintain early or late seral habitats for threatened and endangered species” (Bailey et al. 1996).

Scientists have suggested that traditional range management practices run counter to the heterogeneous habitat conditions generated by the historical disturbance regime. Researchers Fuhlendorf and Engle (2001), for example, concluded that traditional rangeland management techniques that focus on rotational grazing, cross-fencing and water developments can increase homogeneity by creating uniform distribution of grazing pressure. Their studies argue that conventional range management is “based on a paradigm of uniformity that ignores or even manages against heterogeneity” and is rarely capable of maintaining the biodiversity dependent on heterogeneity (Fuhlendorf, et al. 2006, Fuhlendorf and Engle 2001).

Such research indicates that maintaining and promoting habitat heterogeneity is an important priority for grassland bird habitat health. Shifting the emphasis of programs, practices and incentives toward heterogeneity-promoting management and away from homogeneity-promoting management could play a key role in supporting grassland bird recovery.

Top: Grassland bird conservation plans encourage fire management to maintain and improve habitat for declining grassland birds.

Bottom: Stocking rates are a critical management factor strongly influencing plant and animal productivity as well as habitat structure for grassland birds.



David Augustine/USDA ARS

An essential tool: Fire

Fire was listed by grassland scientists and all bird conservation plans as a primary driver of grassland ecology with significant impact on plant and animal communities (Askins, et al. 2007). Fire suppression was mentioned as a cause of woody species expansion, changes in nutrient cycling (i.e., carbon nitrogen ratio), and reduced plant productivity (D.B. Pool and J.E. Austin, eds. 2006; Wyoming Game and Fish 2006; Wyoming Partners in Flight 2002). Fire management was recommended to control woody species expansion, improve plant productivity through improved nutrient cycling, concentrate livestock to create vegetation patches and insect concentrations (e.g., patch-burn grazing), and manage vegetation structure more generally.



Environmental Defense Fund

Stocking rates are a critical management factor

Additional research has indicated that stocking rate, rather than grazing system, may be the manager’s most important grazing management decision (Holechek et al. 1989). Stocking rates influence plant production and animal production more than grazing system (Briske et al. 2007, Hart et al. 1993). Moderate stocking rates

have been found to be the most economically and ecologically sustainable (Manley et. al. 1997, Holechek 1989). Stocking rates can also influence the structure of vegetation, which is related to habitat use by grassland birds (Knopf 1996).

Findings from interviews: Better coordination needed

Through informal interviews we conducted with leaders of wildlife groups and agencies in Wyoming and Wyoming NRCS staff, we assessed the level of coordination between wildlife groups and agencies and NRCS in supporting grassland bird priority goals when implementing Farm Bill programs. (Interviewees included staff of the Natural Resources Conservation Service, the Intermountain West Joint Venture, the Great Plains Joint Venture, Wyoming Audubon Society, U.S. Fish and Wildlife Service, Partners for Fish and Wildlife Program, the Wyoming Nature Conservancy and the coordinator of the Wyoming Game and Fish Landowner Incentive program.) We concluded from these interviews that a considerable amount of coordination has taken place in the state, some of it initiated by NRCS through the state technical committee.

Still, most of those interviewed suggested that a higher level of coordination between the agencies with regard to funding priorities and spending would be valuable. Closer coordination would:

- help prioritize funding,
- increase efficiency of spending and
- help agencies achieve their program goals.

Using 2007 as an example, NRCS allocated \$500,000 to at-risk species under a special EQIP initiative. Unfortunately, less than one half of this was spent on at-risk wildlife projects due to a lack of proposals. Meanwhile, the WHIP program was oversubscribed, so that many excellent proposals went unfunded due to a lack of program dollars (Cheryl Grapes, state technical committee presentation, September 2007). Better coordination with state agencies and others working with private landowners on project development could have prevented this result.

Better coordination could benefit species by increasing efficiency of spending, allowing more projects to receive funding. It could also help agencies achieve the goals of their programs.

Findings from NRCS programs

To assess private land programs implemented in Wyoming, we collected data from the NRCS Performance Results System (PRS), state-level NRCS staff, and a variety of bird conservation plans. A large number of different grazing and wildlife programs exist in Wyoming, so we focused our analysis on the largest programs and those related to private rangelands. The data analyzed included:

- state-level NRCS practices implemented for 2004-7,
- state-level NRCS expenditures for all programs in 2004-7,
- county-level EQIP ranking sheets and
- state-level WHIP data.

To assess NRCS range and wildlife priorities at the state level, we reviewed ranking sheets for WHIP projects and EQIP wildlife-related special initiatives. We found that NRCS has clearly incorporated WGF and Wyoming Partners in Flight priorities for grassland birds into its WHIP program. First, the WHIP program follows WGF priorities by providing: higher cost-share for practices directly benefiting WGF designated at-risk species (70 percent of practice costs vs. 50-60 percent for others), project prioritization points for partnerships targeted towards WGF priorities and lists of WGF priority species on its web site as a guide for project developers and landowners. In addition, the WHIP program's list of the types of practices that may be applied on upland rangeland sites is generally consistent with grassland bird-management recommendations of all the plans we reviewed. These practices include: shrub thickets, grass or legume seedings, water facilities such as guzzlers, fencing and livestock management, and fire. While fencing is a recommended practice, the program description specifically mentions the importance of heterogeneity-promoting grazing management for wildlife, stating that "because uniformity can be detrimental to grassland birds and other wildlife, projects will focus on generating diversity through these practices." However, not all aspects of the WHIP program prioritize grassland bird needs: for example, the program gives higher priority to wetland/riparian practices by giving them the highest cost-share (75 percent versus 60 percent) for upland/rangeland practices.

We also reviewed the EQIP special initiative for wildlife. Wyoming NRCS has established a special initiative for at-risk wildlife species under the EQIP program, and has allocated \$500,000 to this initiative in years 2005-7. This special initiative is an excellent effort to devote greater EQIP resources towards addressing wildlife challenges and concerns. The program uses the same ranking criteria as the WHIP program and incorporates many factors and practices that are consistent with priority management actions identified by WGF, such as points for aiding rare species, proximity to WGF priority areas and adding escape ladders to stock tanks for wildlife. Of special note are the 10 points given for uneven grazing distribution to encourage plant diversity for grassland wildlife. This is consistent with heterogeneity-based management recommendation of WGF. However, grasslands are given a lower priority (20 points) than other upland habitats such as sagebrush, aspen and wetlands communities (30 points). Also, grassland projects have less opportunity to earn points for additional practices because the uneven grazing practice is the only upland practice that specifically addresses grassland management.

The NRCS has also allocated EQIP dollars at the state level toward a Grazing Lands Initiative, which also has the potential to indirectly benefit wildlife. In fact, the plan is targeted to WGF priority areas and provides points for grazing projects that benefit wildlife. The ranking sheet used by NRCS to prioritize these projects includes a mix of both prioritizing projects that increase the number of pastures and amount of fence, as well as rewarding expected environmental benefits of the project. High intensity-low duration systems are given priority (more points) over other systems, and continuous systems are given no points. Producers are not eligible if they do not implement a new grazing system. According to Fuhlendorf and Engle (2001), these grazing systems typically increase uniformity of pasture use and can contradict grassland bird habitat needs. However, the second part of the ranking sheet does focus on expected environmental benefits of the project,

including deferment, wildlife benefits and invasive species control. The sheet does not consider stocking rate directly as a ranking factor, but gives points to producers for considering “cover/forage needs” for wildlife.

NRCS program expenditures: EQIP far outpaces WHIP

Our goal was to determine the extent to which NRCS program and practice expenditures address the goals of Wyoming bird management priorities. In particular, since a larger proportion of spending goes to range management projects than to wildlife, we wanted to determine whether NRCS grazing practices might help meet grassland bird goals. This way, grassland birds might benefit from NRCS grazing management projects that took into account grassland bird needs even if little funding was spent on wildlife projects designed specifically for at-risk bird species.

Spending under the WHIP program over the last four years was low and scattered across four counties. WHIP spending was the smallest NRCS program in terms of expenditures, making up only 2 percent of the total NRCS spending for all programs (Table 1). Perhaps due to the low amount of funding available and relatively high landowner demand, only 26 percent of project applications were funded.

Table 1. Total NRCS spending by program in Wyoming, 2004-7

Program	Number of Applicants	Number of Applicants Funded	Percent of Applicants Funded	Total Allocation (\$)	Percent of Total NRCS Spending (Rounded)
EQIP	4,186	2,168	52	53,016,705	76
CSP	154	139	90	3,597,156	5
FRPP	8	8	100	3,263,750	5
AMA	148	78	53	3,091,115	4
GRP	114	8	7	3,089,322	4
WRP	87	44	51	2,222,758	3
WHIP	191	50	26	1,554,193	2
TOTAL	4,888	2,495	51	69,834,999	100

EQIP: Environmental Quality Incentives Program; CSP: Conservation Security Program; FRPP: Farm and Ranch Lands Protection Program; AMA: Agricultural Management Assistance; GRP: Grassland Reserve Program; WRP: Wetlands Reserve Program; WHIP: Wildlife Habitat Incentives Program.

The EQIP program is by far the largest program in Wyoming, making up 76 percent of NRCS spending over the last four years. A substantial portion of EQIP funding is allocated to counties annually (averaging 68 percent) and the rest is dedicated to statewide initiatives. Local project priorities are determined by local working groups that focus on local concerns but are guided by the national program objectives. These groups are made up of private landowners, agricultural groups and conservationists. Based on local working group recommendations, ranking sheets are developed by NRCS to help determine which projects get funded. Because local priorities vary, county-level ranking sheets may differ from one another.

EQIP's county priorities: Rangeland health

In lieu of county-level spending data, which were not available to us, we reviewed all 2007 EQIP ranking sheets to identify county-level priorities and assumed these priorities directly reflected actual spending.¹ Ranking sheets include a series of yes or no questions on whether the applicants' projects address national, state, and local priorities. National and state priorities were identical for each county, so for this analysis we focused only on local priorities.

We found that all counties selected "rangeland health" as a priority resource concern and therefore created a "rangeland health" ranking sheet. More than 30 local issues were identified in the 21 ranking sheets for the rangeland health resource concern. All ranking sheets identified "managed, planned, or rotational" grazing or related practices making it the most common issue. Related issues included improving water distribution and availability (listed in 18 sheets), incorporating growing season rest (in 13), improving animal distribution, reducing pasture size, increasing cross-fencing (in 9), improving grazing "flexibility" (in 4). It was sometimes unclear how the projects were prioritized at the local level since no points (with the exception of Sheridan County) were allocated to particular issues.

However, it was possible to gain some understanding of the goal of grazing management. Water distribution and availability to livestock was a stated objective in most counties. Ranking sheets generally seemed to encourage the elimination of large expanses of land without water sources and making water sources more reliable by adding wells or pipeline. Applicants appeared to be ranked according to how far apart their current water sources were. Adding more water sources that were close together appeared to be the goal.

While most ranking sheets did not mention uniform grazing explicitly, such an outcome was often implied. For example, Sublette County's ranking sheet asked whether "additional pastures [would] be created through this application through fencing?" We assumed that a "yes" response to this question would mean his application would be favored. Park County asked whether "pasture size limits the opportunity for proper grazing—pastures in treatment area are too large and planned treatment includes reducing pasture size to improve grazing."

A commonly identified practice and assumed goal was to provide plant rest during the growing season. This is a worthwhile goal in semi-arid grasslands if for a season or more in length, and rest-rotation would promote vegetation heterogeneity among pastures. However, it appeared that rest-rotation was not a commonly used grazing method, because the prescribed grazing standard (2005) appears to discourage it by stating "complete year long rest is generally not required to restore



Justin Derner/USDA ARS

Improving water distribution and availability through the addition of water tanks and pipeline was a primary goal of county-level EQIP project ranking sheets. Almost 4,000 watering facilities were installed in just four years.

¹ Two counties did not have ranking sheets posted on the NRCS web site.

vigor to depleted grazing lands, and over time, can become detrimental to plant vigor and species composition.” Furthermore, stocking rate was not identified as an issue for any county and was never used as a prioritization factor, nor was it mentioned as a way to achieve plant rest.

Thus, our overall impression of the goal of grazing management in county-level ranking sheets was that they created incentives for uniform livestock distribution through implementing rotational grazing systems and adding structural practices that range research has associated with detrimental impacts on habitat heterogeneity. While these practices can be used to protect critical resources (such as riparian areas), their installation can potentially be detrimental to grassland bird habitat (Samson, et al. 2004).

Encouragingly, 12 of the 21 rangeland health ranking sheets also mentioned habitat for at-risk wildlife species as an important local issue. However, it was unclear how this issue was addressed, and it was often included on the same ranking sheets as priorities that may have been conflicting (e.g., improving water distribution and grassland bird habitat). We were also impressed by the fact that 16 counties used cost-effectiveness, 12 used vegetation monitoring and 6 listed restoring former cropland to rangeland as priority issues.

EQIP’s county priorities: Wildlife

Separate from the rangeland health resource priority, eight counties also specifically chose wildlife as a county-level resource concern in 2007. These counties created eight separate ranking sheets for wildlife in EQIP at the county level. Of these, we had access to only four, and what we found on them were yes or no questions associated with wildlife but with no point allocation. Consequently, it was difficult to determine definitively what species, practices or concerns NRCS intended wildlife projects to be targeted toward at the county level, but the sheets did give some indication of priorities and goals.

Two counties, Park and Sublette, grouped wildlife priorities together with other priorities. Park County encouraged planting “wildlife-friendly windbreaks” and combined the two as one concern, although windbreaks are often associated with habitat fragmentation and negative impacts on grassland habitat. Park County’s ranking sheet did prioritize windbreaks built within 1000 feet of residences, farmsteads or county roads—an important step towards addressing habitat fragmentation concerns stemming from windbreak implementation. However, it is still unclear how windbreaks can benefit native wildlife, though they can be valuable for livestock and home shelter. Another county combined wildlife with streambank protection.

Sublette County focused its wildlife allocation on sage grouse and allowed producers to choose between predator control and grazing management to benefit the species. Applicants for grazing projects to benefit sage grouse were referred to the rangeland health concern sheet, which gave high priority to projects that added cross-fencing and water developments and used high-intensity grazing.

EQIP expenditures

We examined allocated spending on both state (32 percent) and county (68 percent) levels to gauge the distribution of EQIP funding. Of all statewide initiatives, two were particularly relevant to rangelands and wildlife: the Grazing Lands

Initiative and the Wildlife and Sage Grouse Initiatives. A total of \$3,678,028 was spent on these initiatives combined over four years: \$2,595,872 on the grazing initiative and \$1,082,156 for wildlife.

Because few counties stated the percentage distribution of their spending, it was difficult to assess EQIP spending patterns at the county level. Only Carbon County indicated the proportion of EQIP spending on wildlife on their web site (15 percent). Two counties choosing wildlife as a concern (Bighorn and Weston) allocated no county funding to it, but instead stipulated that funding come from the statewide wildlife allocation. It is not clear if others choosing wildlife as a concern allocated a portion of their county money to this concern. Similarly, only a few counties that chose rangeland health as a concern indicated what portion of the county-level funding was allocated to it. Those allocations ranged from 30 to 40 percent for rangeland health.

We used these figures on EQIP expenditures to gain a sense of the proportion of county-level spending allocated toward the rangeland health and wildlife priorities (see Table 2). If we assume that 30 percent of county allocations went to rangeland health and 15 percent of five county allocations were spent on wildlife, then counties would have spent roughly \$9.8 million on range and \$1.1 million on wildlife over the last 4 years (total county allocation divided by 23 counties multiplied by 5 counties multiplied by 15 percent). If statewide expenditures through special initiatives (such as grazing and wildlife) are added to these totals, about \$12.4 million went to rangeland health and \$2.2 million to wildlife.

Table 2. EQIP expenditures by initiative in Wyoming, 2004-7

Initiative	Allocation (\$)	Percent of Total	Number of Contracts
Watershed	3,440,050	7	141
GSWC*	3,368,894	7	183
Livestock Waste	3,098,018	6	96
Grazing	2,595,872	5	157
Reservation	1,524,045	3	35
Wildlife	1,082,156	2	30
Forestry	189,664	.3	20
Salinity	22,735	.05	2
Allocated to Counties	32,796,780	68	1,496
TOTAL	48,118,214	99	2,160

*GSWC = Ground and Surface Water Conservation

Our assumptions conservatively estimated rangeland spending and most likely overestimated wildlife spending. Even so, this “guesstimate” indicates that rangeland practices likely receive significantly more funding than wildlife, highlighting the importance of harmonizing wildlife and range management goals in order to assure that range management practices do not contradict wildlife priorities.



Meg Ewald

NRCS helped landowners install 242 miles of additional interior fencing in Wyoming from 2004-07.

NRCS practices implemented

To determine what types of practices were funded, we compiled a list of the most common ones related to range or wildlife management over the last 4 years for all programs.

Based on our review of ranking sheets and the Fuhlendorf and Engle 2001 article, we assumed in our analysis that livestock distribution practices were promoting homogeneity within pastures and that wildlife-related practices were not. In some cases, however, livestock distribution practices may produce compositional

and structural heterogeneity of vegetation (especially among pastures), and wildlife-related practices may promote homogeneity, depending on how the management was implemented and the scale of observation. For example, using fencing and off-site water development to manage grazing in riparian areas creates zones of light to no grazing pressure, which may increase heterogeneity among pastures, but not within them. Similarly, wildlife practices may create homogeneity within or among pastures. The management objective is as important as the practices implemented. Still, evidence from the EQIP rangeland health ranking sheets, which often prioritized implementation of additional fencing, water facilities and more intensive grazing systems, indicated that the primary goal was to create more uniform livestock grazing within pastures.

Using these assumptions, we inferred that the majority of practices implemented were oriented toward improving livestock distribution to the detriment of wildlife habitat. The one exception was upland wildlife habitat management, which was applied on over 1.6 million acres over four years.

Other practices related to wildlife, such as brush management and prescribed burning, were relatively minor in comparison. Despite the importance of fire management to grassland birds and grassland health more generally, only 3,011 acres were burned over the course of four years. Brush management is of less importance to grassland birds, and was most likely more commonly implemented in the western portion of the state outside the range of the grassland bird priority species of concern in this report.

Our findings suggest that NRCS has done much to incorporate basic WGF priorities into its state-level planning. For example, the WHIP program closely follows the priorities identified in the state's wildlife and grassland bird planning documents. At the same time, numerous opportunities exist to:

- better coordinate between NRCS and wildlife organizations,
- increase the number of wildlife projects that get funded through NRCS programs and
- ensure that NRCS grazing recommendations do not adversely affect grassland birds.

Table 3. Selected NRCS conservation practices applied in all programs on grazed range in Wyoming, 2004-7

Applied Conservation Practices	2004	2005	2006	2007	TOTAL	Units
Livestock Distribution						
Prescribed Grazing	678,859	806,489	1,275,018	1,163,579	3,923,945	acres
Pipeline	820,945	840,314	1,006,095	750,549	3,417,903	feet
Fence	355,182	224,283	364,551	333,212	1,277,228	feet
Watering Facility	271	285	3002	349	3,907	number
Spring Development or Pond	22	28	70	37	157	number
Other						
Upland Wildlife Habitat Management	218,043	251,331	704,378	434,604	1,608,356	acres
Brush Management	9,793	10,855	10,714	14,292	45,654	acres
Wetland Wildlife Habitat Management	37	404	5,217	6,491	12,149	acres
Use Exclusion	3,358	55	3,751	103	7,267	acres
Prescribed Burning	0	0	1,807	1,204	3,011	acres
Range Planting	0	0	1,317	680	1,997	acres
Stream Habitat Improvement and Mgmt.	0	55	22	712	789	acres
Windbreak/Shelterbelt Establishment	16,999	5,378	9,637	8,826	40,840	feet

Source: NRCS PRS data, prms.nrcs.usda.gov

Strengths of current NRCS programs

1) Use of WGF priority areas in NRCS programs.

We were encouraged by the use of WGF wildlife priority areas in WHIP and in an EQIP special initiative focused on wildlife. Coordinating priority areas is an excellent strategy that steers NRCS spending to areas where wildlife need it most.

2) Significant funding targeted rangeland and wildlife objectives.

Also encouraging is the fact that about 45 percent of all NRCS spending in Wyoming was directed toward rangeland health and wildlife projects. This spending reflects the importance of these two resources to the state. Data were not available to determine how much of that spending went explicitly to grassland birds.

3) Widespread use of the ‘upland wildlife habitat management’ practice.

NRCS’s EQIP program has a high use of the upland wildlife habitat management

practice, which targets upland wildlife, including grassland birds. Its basic goal is improving habitat conditions for wildlife. It is unclear from the data or ranking sheets for what specific purposes the practice is applied, but what is clear is that upland wildlife habitat management presents a unique opportunity to apply and provide financial incentives for wildlife-oriented management. Unfortunately, a payment for this practice is not authorized in Wyoming, limiting its value as an incentive.

Upland wildlife habitat management can be applied separately for specific wildlife management, or it can be applied and reported in combination with other practices (e.g., prescribed grazing) when those practices have a perceived benefit to wildlife. For example, NRCS staff reported to us that in the past, upland wildlife habitat management was reported as an assumed benefit of prescribed grazing practices (Cheryl Grapes, personal communication). In this case, upland wildlife habitat management was reported as implemented based on the perceived benefit of prescribed grazing not because of the implementation of any specific management for wildlife. But assuming that landowners who apply rangeland management practices, particularly prescribed grazing, also achieve the goals of the upland wildlife habitat management practice is problematic since the rangeland management goals may not coincide with wildlife needs. Encouragingly, reporting upland wildlife habitat management due to perceived benefits will no longer be permitted under new prescribed grazing standards; projects will require additional direct management for wildlife (Cheryl Grapes, personal communication).

4) Strong focus on key wildlife goals in WHIP and an EQIP initiative focused on wildlife.

We found that NRCS has carefully incorporated WGF and Wyoming Partners in Flight priorities for grassland birds into its WHIP program and its EQIP special initiative for wildlife. Both use the same ranking criteria, which closely follow WGF priorities. The ranking sheet incorporates many factors consistent with priority management actions identified by WGF, such as points for aiding rare species, proximity to WGF priority areas and adding escape ladders to stock tanks for wildlife. In particular, 10 points are given for uneven grazing distribution to encourage plant diversity for grassland wildlife. This is consistent with heterogeneity-based management recommendation of WGF.

The long-billed curlew is a priority grassland bird that could benefit from the incorporation of Wyoming Game and Fish priorities into NRCS programs.



Lee Karney/USFWS

In addition, the WHIP program's list of the types of practices that may be applied on upland rangeland sites is consistent with grassland bird management recommendations of all the plans we reviewed. While fencing is included as a recommended practice, the program description specifically mentions the importance of heterogeneous grazing management for wildlife, stating that "because uniformity can be detrimental to grassland birds and other wildlife, projects will focus on generating diversity through these practices."

Areas for improvement for NRCS Programs

1) Improving coordination on conservation funding opportunities.

Interviews indicated the need to better coordinate between wildlife organizations and NRCS in order to maximize the use and benefits of available conservation funding for wildlife. For example, NRCS allocated \$500,000 to at-risk species under a special EQIP initiative in 2007. Unfortunately, less than one half of this was spent on at-risk wildlife projects due to a lack of proposals. Meanwhile, the WHIP program was oversubscribed, so that many excellent proposals went unfunded due to a lack of program dollars (Cheryl Grapes, state technical committee presentation, September 2007).

- First, better coordination with state agencies and others working with private landowners on project development could have prevented this result. For instance, NRCS could notify partner agencies and organizations and encourage them to ask their landowner partners to apply for EQIP. These organizations may have had projects in the hopper that were in need of funding.
- Second, NRCS could organize a “conservation funders” group that meets regularly through the year and discusses funding priorities, sources of matching funds, and other ways to cooperate.
- Third, NRCS could expand its cooperative agreements to house biologists with other organizations in NRCS offices. Current agreements exist with WGF, the US Fish and Wildlife Service, and the National Wild Turkey Federation. NRCS should use these cooperative agreements to expand its expertise on grassland birds and improve its outreach and technical assistance to private landowners for this important resource concern.

2) Boosting practices important for grassland birds.

Fire suppression was listed as a major cause of habitat degradation for grassland birds, and all the Wyoming wildlife plans recommend its use. Still, only 3,011 acres of rangelands were burned in four years through all NRCS programs in Wyoming. Given the importance of prescribed fire highlighted by bird conservation organizations, this practice should be more widely used, not only to control woody species but also to manage vegetation structure more generally and increase plant productivity through improved nutrient cycling.

3) Reducing the widespread implementation of grazing management systems that may conflict with wildlife plan recommendations.

Assessing the implementation of management practices that promote heterogeneity versus homogeneity is difficult. The extent to which different grazing systems can encourage greater uniformity depends on management goals, a factor that is difficult to evaluate with existing NRCS data. For example, using fencing and off-site water development to manage grazing in riparian areas creates zones of light to no grazing pressure, which may increase heterogeneity among pastures but not within them. Similarly, wildlife practices may create homogeneity. The objective of the management is as important as the practices implemented.

While we cannot conclusively determine the extent to which NRCS range

management goals implemented heterogeneous versus homogenous management, we did find significant cause for concern that indicates that habitat heterogeneity goals could be better incorporated into NRCS range management practices. In particular, we found that most ranking sheets for the rangeland health resource concern emphasized homogeneity promoting practices and methods. While these practices can be used to protect critical resources, their implementation is most typically associated with increasing grazing uniformity to the detriment of wildlife habitat (Fuhlendorf and Engle 2001).

4) De-incentivizing structural practices that can harm grassland birds.

NRCS funding supported the implementation of a significant number of structural practices that can contribute to grassland bird habitat fragmentation and degradation. NRCS funding helped landowners install almost 242 miles of fence and 3,907 watering facilities on rangelands in just four years. Evidence indicates that fencing can have direct and indirect negative impacts on grassland birds through lethal collisions (e.g., lesser prairie chicken and sage grouse), by creating habitat fragmentation (which can reduce habitat quality for area-sensitive birds), and by providing perches and travel corridors for predators resulting in greater mortality (Wolfe et al. 2007; Patten et al. 2005; Freilich et al. 2003; Connelly et al. 2000). Watering facilities for livestock can also negatively affect sage grouse habitats (Braun 2006) and kill birds that fall into them and cannot escape. It is unclear how many installed watering facilities contained wildlife-escape devices and how much of the fence was “wildlife-friendly.”

Clearly, fencing and watering facilities can sometimes benefit wildlife by allowing producers to better control livestock and protect sensitive resources like riparian areas. Still, their potential, direct impacts should be evaluated before installation on any project, and use of temporary-electric fence and escape ladders in watering tanks should be supported. Encouragingly, new stock tanks installed with NRCS funding in Wyoming are now required to have escape ladders for birds, and escape ladders are being provided free of charge to producers to make older stock tanks more wildlife friendly (Cheryl Grapes, personal communication).

NRCS funding also supported tree and windbreak planting that could contribute to ongoing degradation of grassland bird habitats. Wyoming Partners in Flight specifically mentions shelterbelt planting as a cause of tree and shrub encroachment and predation, two major threats to grassland birds. In total, NRCS funding supported the installation of about eight miles of windbreaks across the state in four years. Three counties, including the two prairie counties of Albany and Platte, had special initiatives for windbreaks. The third county, Park, spent funding allocated for wildlife county concerns on

Collisions with barbed wire fencing can be lethal for low-flying birds like the lesser prairie chicken, the sage grouse, and this barn owl. Fencing can also fragment habitat and provide perches and travel corridors for predators.



Seth Gallagher/Rocky Mountain Bird Observatory

windbreaks, perhaps with the false assumption that windbreaks benefit at-risk species. Park County's ranking sheet did prioritize windbreaks built within 1,000 feet of residences, farmsteads or county roads, an important step towards addressing habitat fragmentation concerns. While windbreaks can be valuable for livestock and home shelter, support for windbreaks should be limited exclusively to areas close to existing development, and NRCS should avoid spending limited wildlife funding on windbreak planting.

In general, we found that NRCS ranking sheets placed a potentially troubling focus on grazing systems and structural practices, particularly fence and water development, with the underlying assumption that these practices have inherent benefits. A better strategy might be to focus directly on environmental outcomes. Ranking sheets for Sheridan and Natrona Counties offer the best example of this approach. These sheets ask the applicant whether the project intends to make a "positive trend toward a desired plant community" and "improved range condition," making outcomes, not practices or systems, the focus. Many other ranking sheets also rewarded points for expected environmental benefits from the project, including providing at-risk species habitat. Shifting the focus of these ranking systems entirely toward expected environmental benefits, instead of structural practices and systems, could help reduce implementation of unnecessary structural practices and avoid their negative impacts on wildlife. It could also leave more funding available for innovative practices or management techniques that could achieve intended results.

Conclusions: More opportunities exist to build on successes

Our findings suggest that NRCS and the wildlife community have made great strides in coordinating goals and priorities for grassland birds for many wildlife programs, particularly WHIP and an EQIP special incentive program for wildlife. These programs follow and meet many of the key goals suggested by Wyoming's bird and wildlife conservation planning documents.

At the same time, additional care is needed to ensure that NRCS rangeland management practices do not adversely impact wildlife resources. We found concerning signs that indicated that NRCS goals, expenditures and practices under the rangeland management concern may be oriented toward uniform livestock distribution. If so, these practices would contradict the focus of WGF and other organizations, which focused on creating more heterogeneity and reducing habitat homogeneity to meet bird conservation goals.

Because a great deal more NRCS spending goes towards implementing range practices than to supporting WHIP or wildlife practices through EQIP, considering impacts on grassland birds and other wildlife when applying NRCS rangeland management practices is critical for NRCS spending to meet wildlife goals. Ensuring that range practices are carried out in a manner that maintains or improves habitat quality for birds would greatly increase the value of Farm Bill conservation programs to birds, even when those programs are implemented primarily for reasons other than wildlife conservation.

Recommendations: Harmonize range management and wildlife goals

Fortunately, there are relatively straightforward ways to rectify these concerns. For example, focusing rangeland management on the goal of maintaining or maximizing vegetation heterogeneity, rather than homogeneity, could simultaneously meet wildlife, livestock production and rangeland health goals and help reduce detrimental impacts.

Based on our analysis, we have identified several steps that NRCS can take to harmonize range practices with wildlife goals in Wyoming:

- 1) Continue to improve targeting of NRCS programs to WGF priorities;
- 2) Improve coordination of program spending by holding coordination meetings for all state “wildlife conservation funders” in the state twice per year;
- 3) Develop new heterogeneity-based management guidelines, practice standards and demonstration projects as an alternative to techniques that promote habitat homogeneity;
- 4) Conduct or participate in workshops to educate range and wildlife professionals on how to implement heterogeneity-based management practices;
- 5) Minimize negative impacts of structural practices on bird habitat (e.g., encourage the use of wildlife-friendly fence or minimize windbreak establishment in priority grassland bird habitats);
- 6) Increase support for and effectiveness of the upland wildlife habitat management practice by authorizing incentive payments for the practice and increasing its emphasis on heterogeneity-based management;
- 7) Develop state and county-level ranking sheets for grazing and wildlife concerns that emphasize environmental benefit and proper stocking rates rather than structural practices and grazing systems.

Wyoming’s tremendous grassland resources represent one of the best hopes for grassland bird habitat and preservation. NRCS, the state’s leader in assisting private landowners with implementing environmentally sensitive projects and management, plays a key role in helping producers safeguard and steward these valuable natural assets. Ensuring that the twin rangeland and wildlife goals of NRCS work in concert can double the benefits of limited funding resources, supporting both

Focusing range management on promoting habitat heterogeneity can improve bird habitat while maintaining livestock production.



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range resources (as they face a sustained drought) and wildlife resources (as they face continued pressure). We believe that the recommendations detailed in this report offer an ambitious but feasible strategy to further harmonize range and wildlife goals.

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