

THE COMMUNICATOR

A QUARTERLY PUBLICATION OF UTAH'S COMMUNITY-BASED CONSERVATION PROGRAM



April 2022

Volume 18, Issue 2

A 20-YEAR REVIEW OF RANGE-WIDE SAGE-GROUSE CONSERVATION EFFORTS-A RENEWED CALL TO ACTION

San Stiver, Sagebrush Initiative Coordinator, Western Association of Fish and Wildlife Agencies

On a warm September afternoon in 2015 at the Rocky Mountain Arsenal National Wildlife Refuge outside of Denver, Secretary of the Interior Sally Jewell began her remarks, “Thanks to unprecedented conservation cooperation across the western United States, the U.S. Fish, and Wildlife Service announced earlier today that the charismatic rangeland bird – greater sage-grouse – does not need to be protected under the Endangered Species Act (ESA). The greater sage-grouse conservation strategy comprises the largest landscape-level conservation effort in U.S. history and demonstrates that through strong Federal, state, and private collaboration, the ESA can be an effective and flexible tool in encouraging conservation and providing certainty needed for sustainable economic development in our states and communities.” As part of the team that developed the Comprehensive Greater Sage-grouse Conservation Strategy, I was pleased with the conservation collaboration and efforts directed toward the sagebrush biome, specifically in habitats occupied by sage-grouse. Although I had long believed the conservation effort was huge, it was significant when the Secretary cited the effort as “the largest landscape-level conservation effort in U.S. history...”. Optimism

abounded among the dignitaries in attendance that the sage-grouse listing issue had been averted, not by a political tactic, but by an honest coordinated conservation effort backed by regulation reform, science, management, and funding.

Conservation practitioners were also optimistic. Under the potential of listing, states, counties, state and federal agencies, landowners, NGOs, universities, and industries had truly engaged in the conservation effort. Federal agencies, led by the Natural Resources Conservation Service and their Sage Grouse Initiative and with cooperators directed hundreds of millions of dollars into conservation practices, primarily on the farm and ranch lands in the western states. The Bureau of Land Management (BLM) and the U.S. Forest Service (USFS) directed their efforts to the development of sage-grouse-centric land use plans. Nearly 100 land use plan amendments were completed in a three-year window before Jewell’s announcement, also an unprecedented effort. The U.S. Fish and Wildlife Service (USFWS) directed significant funding toward the science of the sagebrush biome. The USFWS correctly found invasive plants and subsequent wildfire as the major change agent, particularly in the western part of the sage-grouse range. Several science gaps were found, and studies were developed to fill those gaps. The U.S. Geological Survey and western land-grant universities stepped up their efforts in the sagebrush biome.

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Governors were drawn into the “Sage-grouse Conservation Cooperative” when the then-Secretary of the Interior Salazar set up the Sage-grouse Task Force. The ultimate aim was to focus state conservation efforts through state sage-grouse conservation plans, Executive Orders, and state sage-grouse teams. The “Conservation Cooperative” had also promised to continue efforts once the listing decision was made. However, many conservationists believed that a “not warranted” decision would diminish the level of conservation for sage-grouse.

For me, the fact that sage-grouse, either the Gunnison or greater called for such attention was staggering (Figure 1). I grew up with abundant sage-grouse numbers and wide distribution in my home state of Nevada. In 1970, I hunted birds north of Wells, Nevada, and honestly can’t tell you how many birds I observed in one covey. I was walking in a line with 8 – 10 other hunters when a covey flushed toward us. As they came in range we began to shoot at the

passing birds. From the first birds in the covey to the last birds, everyone shot their limit of 3 birds, some even reloading within the passage of the flight. An estimate of hundreds would have been woefully short of the actual numbers. I don’t know if 1970 was the zenith of contemporary numbers, but Nevada’s peak harvest was 1978 with about 28,000 birds reported harvested, and Wyoming, if memory serves me, hit its peak estimated harvest in 1980 with nearly 100,000 birds taken by hunters. A short 15-years later, the Sage and Columbian Sharp-tailed Technical Committee met with the Directors of the Western Association of Fish and Wildlife Agencies to report that they were very concerned about the long-term trajectory of sage-grouse numbers, particularly that the nadir and zenith of each population cycle or oscillation were trending lower.

The analysis completed by the Technical Committee and presented to the WAFWA Directors was likely the

beginnings of contemporary conservation concern for sage-grouse in the Western US. The meeting in 1995 between the WAFWA directors and their sage-grouse technical committee took action that led to collaboration between the states on habitat models, genetic characteristics, agreements for collaboration with the BLM, FWS, and USFS, an assessment of the status of sagebrush habitats and the development of the Comprehensive Greater Sage-grouse Conservation Strategy. Senior leadership in the USFWS voiced opinions that the Strategy provided the roadmap for sage-grouse conservation. During this same period, several petitions to list both Gunnison and greater sage-grouse for protection under ESA were submitted to the USFWS. These petitions helped drive the urgency to develop conservation strategies and conservation plans.

Between 2005 and 2015 several findings were issued by the USFWS for sage grouse. For Gunnison sage-grouse, the USFWS found in 2013 that the species was warranted for protection as endangered under ESA. In 2005 the USFWS found that greater sage grouse did not warrant protection under ESA; however, that finding was challenged in U.S. District Court in Idaho and that finding was sent back to the USFWS for reconsideration. In 2010, the USFWS found that greater sage-grouse did warrant protection under ESA but was precluded because of species of higher conservation need. The Bi-State distinct population segment was petitioned and the USFWS found, in a proposed rule, that the population was threatened; however, the USFWS withdrew the finding because of a series of conservation measures that were believed to be highly effective. In 2015, the USFWS, visiting the greater sage-grouse, found that the species did not warrant protection under the ESA.



Figure 1. The greater and Gunnison sage-grouse

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The 2015 finding was based, to some extent on the premise that the “unprecedented conservation efforts undertaken by the Conservation Cooperative would continue. In the federal register notice, several commitments to implement conservation efforts were made by federal and state agencies. The commitments were significant and promised even more funding post-funding than pre-2015 or 2010 findings. The commitments to implement were based on the “likelihood of implementation” found in the 2003 Policy for Evaluation of Conservation Efforts published in the Federal Register by the USFWS, National Marine Fisheries Service, NOAA, and Commerce. The “likelihood of effectiveness” clause of the Policy was not used because of the slow ecological response of the sage biome.

The 2006 Conservation Strategy devoted several chapters to the monitoring of sage-grouse and sage habitat as well as adaptive management. The Strategy proposed; 1) identification of conservation issues, 2) treatment to address the issue, 3) monitoring of the population or habitat to gauge the effectiveness of the treatment, and 4) finally adaptively changing the treatment based upon the assessment of monitoring the subject. The Western Association of Fish and Wildlife Agencies (WAFWA) led an effort in 2020 with the Conservation Cooperative to catalog conservation efforts, changes in habitat availability, changes in habitat quality, and changes in bird populations from 2015 to 2021. In essence, we developed a balance sheet to enumerate conservation gains and losses since the 2015 finding. For some datasets, we evaluated longer time frames. We are still in the draft stage, but we can share some significant data points.

Conservation efforts were conducted across the range of sage grouse. The Conservation Efforts Database (CED) has logged nearly 10,000 spatially explicit conservation efforts totaling 12,347,718 acres. Conservation efforts are categorized in the following: Restoration – conifer management; Restoration of livestock and rangeland management; Restoration – non-fire related habitat improvement and restoration; Restoration – post-disturbance or habitat enhancement; and finally, sagebrush protection. Of these categories, conifer management, post-disturbance habitat improvement, and sagebrush protection logged the largest number of acres and projects. The efforts from 2015–to 2021 continued and expanded upon “the largest landscape-scale conservation effort in US history”. Any conservation partners are justifiably proud of these accomplishments. It is an immense undertaking using the best science, management techniques, and administrative facilitation.

The conservation efforts show the positive side of the conservation equation. The interim conservation story is only written when you evaluate other changes in the habitat and population responses. The debit side of the equation is concerning. The BLM developed a monitoring report which developed metrics on habitat gains or losses, changes in condition, or the health of the rangelands. The USGS produced an evaluation of sage-grouse population trends.

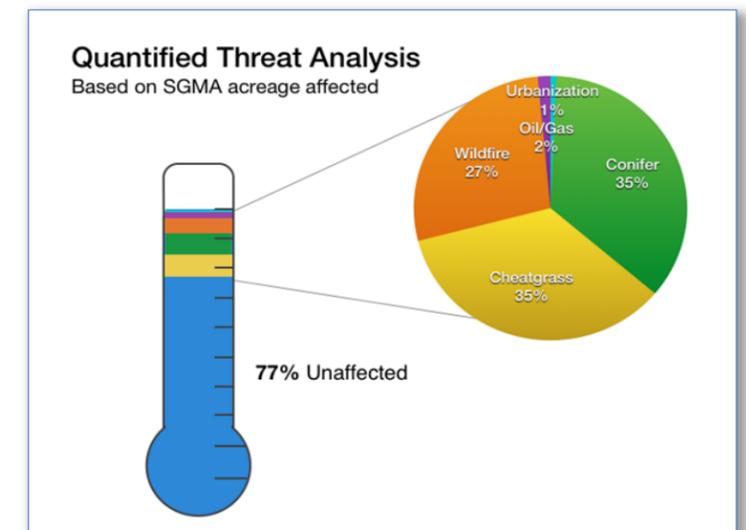


Figure 2. A qualified sage-grouse conservation threat analysis based on the 2013 Utah state

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The BLM reported that anthropogenic habitat loss was limited to 3% during the reporting period. We suspect that disturbance caps found in the land use plans adopted in 2015 helped limit those disturbances. Rangeland's health was monitored by the BLM, and they reported that rangelands showed slight improvements or maintenance in their samples. We recommended the monitoring of the condition be expanded in the next evaluation period. The cheatgrass invasion continues to grow and the attendant wildfires or wildfire risks grow with it (Figure 2). We burned about 1.2 million acres per year. Burned acres in sagebrush with a large cheatgrass component tend to have a truncated succession cycle where cheatgrass supplies a flash fuel, carries to the sagebrush, and then regenerates only to burn again, before other plants establish. Conifer expansion or invasion is growing at a rate that is slightly faster than our efforts to remove conifers; however, that is a goal that is in reach.

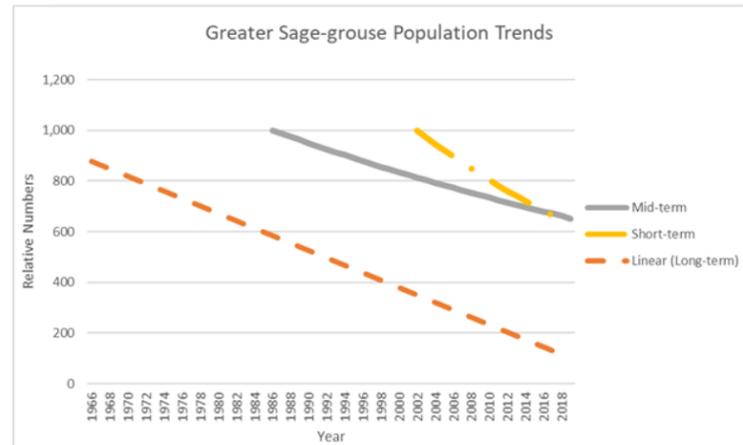


Figure 3. Greater sage-grouse range-wide population trends 1966-2019; 1986-2019 and 2002-2019

Still, sage-grouse population trends continued to decline (Figure 3). The rate of decline does not appear to have changed in the long-term 80.7% (1966-2019) the mid-term 65.2% (1986 - 2019) or the short-term 37.0% (2002 - 2019). Although the raw numbers are concerning, in a separate effort, the Landscape Conservation Design which is part of the Sagebrush Conservation Strategy, areas which were classified as core in 2002 to the present day showed a slight increase in numbers while other categories show downward trends. The core area trend is very encouraging! The loss of core habitat in the LCD modeling is not. The LCD analysis is showing a 1.3-million-acre loss per year from core to habitat which could transition to the core with significant management efforts.

An analysis of existing data leaves me with the following observations.

We have spent unprecedented resources in the quest to conserve sagebrush habitat and sage-grouse. The people and agencies engaged in this effort have faithfully executed their conservation efforts, often going beyond what is required.

1. Funding and the commitment to supply the resources to the conservation cooperative have been maintained and expanded. Conservation planning, land use plans, state conservation plans, and other efforts have for the most part used the best available science and applied. Overall, the effort has been an A+.
2. The reported outcomes have not been so successful. We have had small-scale successes, but the big picture trends are disturbing. Populations continue to decline we haven't made a change in trajectory. We may have a lag effect between conservation efforts and effect.
3. Habitat change in net acres is a minus, primarily due to cheatgrass invasion, conifer invasion, and wildfire. Losses of core habitat as modeled by the LCD project have been substantial during the 2000s.
4. Sage-grouse populations look good in core areas.
5. The remaining sagebrush habitat is declining at a rate that limits the window of time which we have for success. In ten years, at current rates of loss, we will have only 50% of the habitat we have today. That is not much time to act. In the conservation cycle, we find ourselves now at the adaptive management stage. We need to maintain and increase our efforts, but beyond that, we must consider doing something differently!
6. The likely courses of action include prioritizing conservation actions. The 10,000 conservation actions logged into the CED are impressive, but we need to cluster those actions to provide more synergy.

Range-wide conservation prioritization will result in some winners and some losers. It will be a challenge for agencies, states, and other practitioners to manage the expectations and realities of a dynamic conservation model; however, we must act, and we must act now.

By Simona Picardi-Utah State University

Our recent open-access article on behavioral state-dependent habitat selection in sage-grouse is published in the Journal of Applied Ecology. An important challenge in conservation translocations is to select appropriate release sites. Releasing animals in unsuitable habitat can lead them to wander off through an unknown landscape in search of resources, which puts them at risk of running out of energy or dying from predation or vehicle collisions. Habitat selection of translocated individuals can help us identify appropriate release sites; our study shows that, when doing so, it is crucial to account for underlying behavior. By analyzing habitat selection of 48 female sage-grouse translocated from Wyoming to North Dakota, we show that translocated individuals select for different habitat characteristics when exploring versus when they are settled. Translocated sage-grouse in North Dakota selected for high sagebrush cover when exploring their new environment, seeking features reminiscent of their natal habitat in Wyoming. After settling in the new area, individuals stopped selecting for high sagebrush cover and started to use resources in proportion to their availability. We also found strong seasonal patterns in habitat selection after settlement (but not during exploration), indicating that high herbaceous cover during the summer is critical for brood-rearing. Failing to account for underlying behavior when quantifying habitat selection can lead us to the wrong conclusions about what makes good settlement habitat, and it can lead us to release animals in unsuitable habitat. Our study brings attention to this important issue and provides a path to address it.



Photo of a Sage Grouse Courtesy of the University of Lethbridge

-For any inquiries about this work, contact Simona Picardi at simona.picardi@usu.edu.

By Terry Messmer, Utah State University

On December 14, 2021, the Janey Quinney Lawson Institute for Land, Water and Air (ILWA), released 2021 Report to the Governor on Utah's Land, Water, and Air (<https://www.usu.edu/ilwa/files/report-2021.pdf>). Authored by 43 Utah State University (USU) researchers, the report identified 25 land, water, and air conservation issues and provided Utah citizens, policymakers, and statewide leaders with information on the current status and trends, as well as areas needing further study. The report shared the ILWA vision of creating a new community-science partnership leading to better informed decisions about how best manage shared resources while managing continued growth. The ILWA proposes to develop a shared vision for land, water, air resources management in Utah by engaging USU researchers in open dialogue with local communities in a collaborative non-partisan effort that also enhances the role of science in conservation decision-making. No single strategy will be effective in creating a universally shared vision in every topic and in every community, but, there are some general principles, based both on scientific research and practitioners' experience, that can be applied. They involve a change in the way the scientific community typically approaches the public on science-related issues, by shifting the overall strategy from simply educating the public about science to public engagement with science. For more information on the ILWA and to read the report visit <https://www.usu.edu/ilwa/index>.



Photo of a Sage Grouse Courtesy of DAVE SHOWALTER/COLORADO PARKS AND WILDLIFE/AP

***If it's not good for communities,
it's not good for wildlife.***

BEHAVIORAL STATE-DEPENDENT HABITAT SELECTION AND IMPLICATIONS FOR ANIMAL TRANSLOCATIONS

Our own Simona Picardi has a great article in Applied Ecology on Translocations. Read about it today!

Behavioral state-dependent habitat selection and implications for animal translocations
<https://doi.org/10.1111/1365-2664.14080>

Simona won the best professional presentation award!
Congratulations Simona!



Simona is a Post-Doctoral Fellow with the Berryman Institute (<http://berrymaninstitute.org/>) She coordinates Utah's Sage-grouse Habitat Assessment Framework effort. (<https://www.picardiecolony.com/>)

Utah's Community-Based Conservation Program Mission

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