State of Nevada
Sagebrush Ecosystem Program

SEMI-ANNUAL REPORT

June 2021

A view from the Tumbling JR Ranch Credit Project. (Kathleen Petter)

STATE OF NEVADA
SAGEBRUSH ECOSYSTEM PROGRAM

The *Semi-Annual Report* is a product of the Nevada Sagebrush Ecosystem Program (SEP). The Sagebrush Ecosystem Technical Team (SETT) and Sagebrush Ecosystem Council (SEC) submit this document semi-annually to report on the status of Greater Sage-grouse and the sagebrush ecosystem in Nevada, the Progress of the Nevada Conservation Credit System (CCS), as well as other strategies, programs, or projects carried out in pursuant of NRS 321.592 and NRS 321.594.

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The Sagebrush Ecosystem Council's mission is to maintain and restore a functional and resilient sagebrush ecosystem to benefit all species while allowing for various land uses. This will be accomplished by working through a diverse coalition of public and private stakeholders.

sagebrusheco.nv.gov

JUNE 2020 PROGRAM UPDATES

A curlew in a meadow on the Tumbling JR project. (Kathleen Petter)

CONSERVATION CREDIT SYSTEM • BACKGROUND

- As required by the 2013 legislation establishing the SEP, we immediately began development of a system to mitigate authorized adverse impacts (disturbances) to sagebrush ecosystems in the State.
- After a year of robust engagement with stakeholders and scientific community, the Council unanimously adopted the Conservation Credit System as the mitigation program in December 2014.
- A primary goal expressed by all stakeholders was to develop a system that, based on best available science, could be used consistently to both quantify authorized adverse impacts to Greater Sage-grouse habitat (debits) and quantify the value of preservation and restoration projects (credits). To achieve this goal, the Habitat Quantification Tool (HQT) was developed and consequently approved by the Council.
- The 2015 Legislature appropriated funds to be used for grants to "kick start" credit projects. Funding was awarded initially in 2016 and, in addition, several landowners began credit projects on their own without any state funding.
- The transfer of credits began in 2017. However, transfers stalled upon the issuance of Instructional Memorandum (IM) 2019-018 by the Department of Interior on December 6, 2018 directing that the Bureau of Land Management (BLM) could only require mitigation on federal lands if there was a state regulation requiring it.
- Because the vast majority of disturbances occur on lands managed by the BLM, Nevada became more at risk of having the Greater Sage-grouse listed as threatened or endangered species due to lack of regulatory mechanisms to mitigate disturbances.
- In answer, the Sagebrush Ecosystem Council immediately began work on a regulation requiring mitigation on public lands. A permanent regulation was passed in 2019.
- A combination of continuous program engagement and the adoption of the regulation has resulted in a significant increase in credit project development and CCS mitigation transactions.
- Nevada began development of the mitigation program after many other western states with Sage-grouse habitat had begun development of their systems. Nevada is considered a regional leader in the implementation of a conservation credit system or habitat exchange, being one of the first to have finalized several transactions.

JUNE 2021 CCS UPDATES • EARLY 2021 MITIGATION TRANSACTIONS

- Ormat's Tungsten Mountain Solar Debit Project, which incorporates both solar & geothermal energy, offset 4 debits with credits from the Crawford Cattle Snowstorms Credit Project. This action resulted in conservation of 1,332 acres for an extended commitment of 30 years.
- Ormat's Dixie Meadows Geothermal Debit Project mitigated the 109 debits associated with Phase 1 of the project with credits from the Crawford Cattle Snowstorms Credit Project. The map units relevant to credits used were already to be conserved for a 30-year term.
- Gold Standard's South Railroad Exploration Debit Project offset the 16 debits associated with Phase 1 of the project with credits from the Heguy Ranch Credit project. The map units relevant to credits used were already to be conserved for a 30-year term.
- The Jerritt Canyon Mine Closure Debit Project & Jerritt Canyon Mine's Snow Canyon Exploration Debit Project are offsetting a total of 131 debits with credits from the Cottonwood Ranch Credit Project. This action results in conservation of 101 acres for an extended commitment of 30 years.
- Nevada Gold's Twin Creeks Mine Sage Tailings Debit Project is offsetting 33 debits with credits from the West IL Ranch Credit Project, which has committed long-term to its management plan.
- Long-term commitments of these credit projects include:
    - Improve creek/meadow complexes though various actions, annual monitoring, periodic assessment & verification, financial assurances & additional credits contributed to the reserve account, and all actions in the management plan including maintenance of grazing management infrastructure, weed treatment actions, & grazing as described in their management plans.

A rattlesnake seeking cover beneath a rock near the Estill Ranch Credit Project. (Dan Huser)

JUNE 2021 CCS UPDATES • OTHER CCS IMPLEMENTATION NEWS

As of 5/5/21:

- In total, since inception of the program, 16 mitigation transactions have been finalized using the CCS.
- The six mitigation transactions previously described were finalized using the CCS in early 2021.
- These six transactions account for 279 credits and 1,434 acres of high value sage-grouse habitats to be conserved a minimum of 30 years. Four of the credit projects involved were seed funded by the state.
- Eight credit project proponents are working toward completion of their CCS management plans that conserve more than 35,000 acres with more 12,000 credits anticipated.
- The SETT plans to visit at least six projects in 2021 as part of the Five-Year Qualitative Assessments. They will also assist credit producers in planning conservation treatments.
- To date, nearly 20 debit projects representing various industries have used the Habitat Quantification Tool (HQT) to quantify their debits & more than ten potential debit projects will use the HQT this year with at least six planning field implementation.
- The SETT worked on CCS Improvements related to additional anthropogenic categories, an appeals process related to disputes, and clarification of when and how planned debit & credit projects affect one another in the HQT.
- The 6th Annual CCS Certified Verifier Training was held by the SETT in January of 2021. More than fifty consultants generally attend and seek certification.

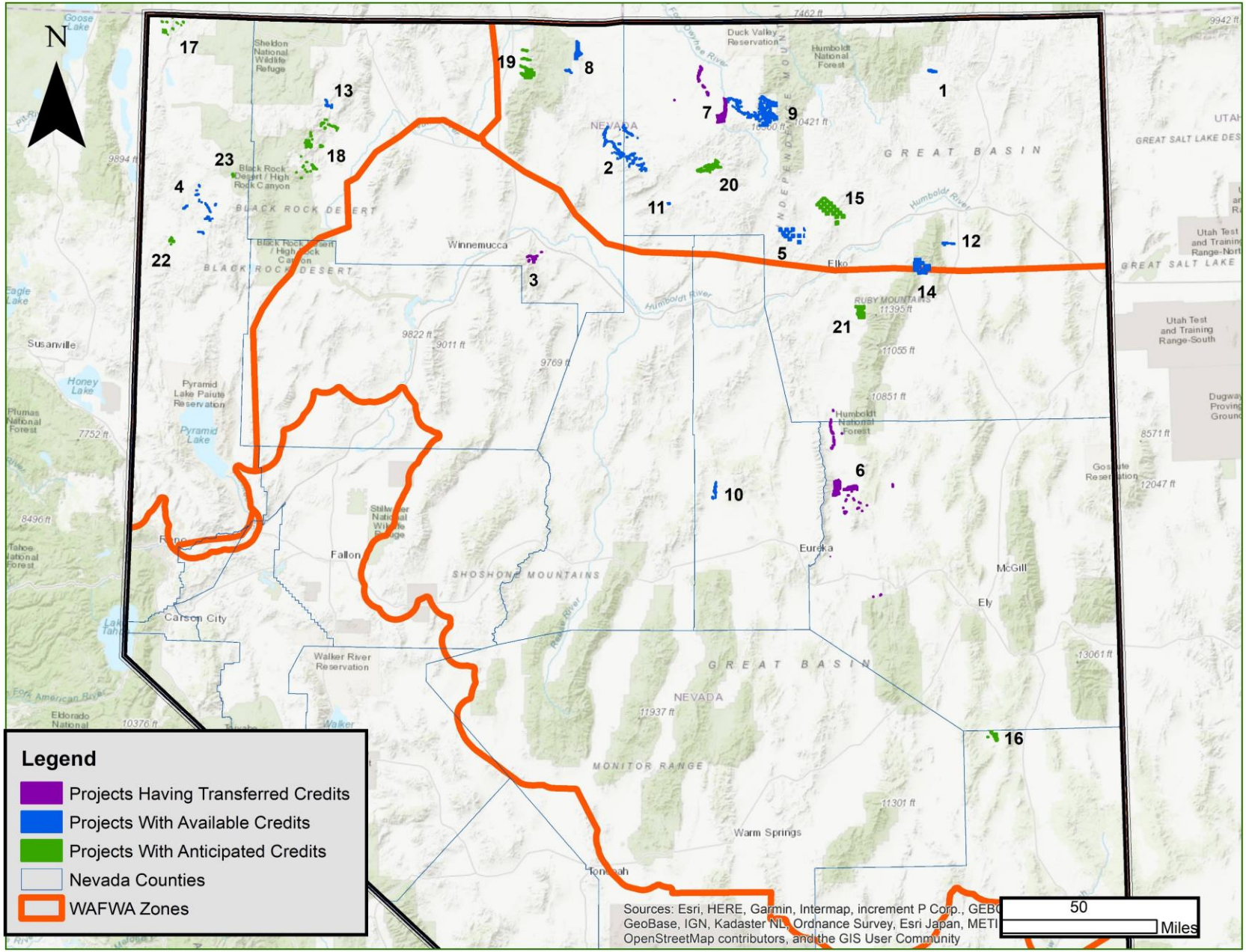
Greater sage-grouse along the margins of a Tumbling JR Ranch meadow. (Kathleen Petter)

JUNE 2021 CCS UPDATES • STATUS OF CREDIT PROJECTS AS OF 5/5/21

PROJECT NAME	CREDITS	COUNTY	ACRES CONSERVED	WAFWA MGMT. ZONE	STATE SEED FUNDED
TRANSFERRED CREDITS					
Cottonwood Ranch (1)	50	Elko	109	IV	Yes
Crawford Cattle – Snowstorms (2)	641	Elko, Humboldt	3,932	IV	Yes
Crawford Cattle – Sonoma (3)	467	Humboldt	1,498	III	Yes
Estill Ranch (4)	22	Washoe	11	V	No
Heguy Ranch (5)	68	Elko	26	IV	Yes
Tumbling JR Ranch* (6)	2,514	Elko, White Pine	5,868	III	Yes
West IL Ranch* (7)	283	Elko	6,279	IV	No
TOTAL	**4,045**		**17,723**		
AVAILABLE CREDITS					
Cottonwood Ranch (1)	779	Elko	997	IV	Yes
Crawford Cattle – Calico Mtn (8)	2,970	Humboldt	5,120	IV	Yes
Crawford Cattle – Snowstorms (2)	1,234	Elko, Humboldt	6,599	IV	Yes
East IL Ranch* (9)	8,873	Elko	23,721	IV	No
Estill Ranch (4)	618	Washoe	3,041	V	No
Eureka Livestock (10)	1,718	Eureka	1,623	III	Yes
Heguy Ranch (5)	698	Elko	6,464	IV	Yes
Humboldt Ranch - Hot Lake* (11)	694	Elko	198	IV	No
Johns Ranch (12)	164	Elko	1,073	IV	Yes
RDD (13)	740	Humboldt	1,094	V	Yes
Secret Pass Ranch (14)	3,642	Elko	10,269	III, IV	Yes
Tumbling JR Ranch* (6)	1,663	Elko, White Pine	3,882	III	No
West IL Ranch* (7)	2,614	Elko	-	IV	No
TOTAL	**26,407**		**64,081**		
ANTICIPATED CREDITS					
Adobe Peak* (15)	TBD	Elko	10,901	IV	No
Cave Valley Ranch (16)	TBD	Lincoln	1,769	III	No
Coleman Valley Ranch (17)	TBD	Washoe	1,137	V	Yes
Foster Ranch (18)	TBD	Humboldt	6,170	V	Yes
Getch Lands (19)	TBD	Humboldt	6,229	IV	No
Humboldt Ranch – ToeJam* (20)	TBD	Elko	5,330	IV	No
Owl Creek Ranch (21)	TBD	Elko	5,363	III	Yes
Washoe Livestock (22)	TBD	Washoe	799	V	No
Little High Rock (23)	TBD	Washoe	322	V	No
TOTAL	**~14,085**		**38,020**		
CUMULATIVE TOTAL	**~44,537**		**119,824**		

* Indicates credit projects intended for internal transfers.

JUNE 2021 CCS UPDATES • MAP OF CREDIT PROJECTS AS OF 5/5/21

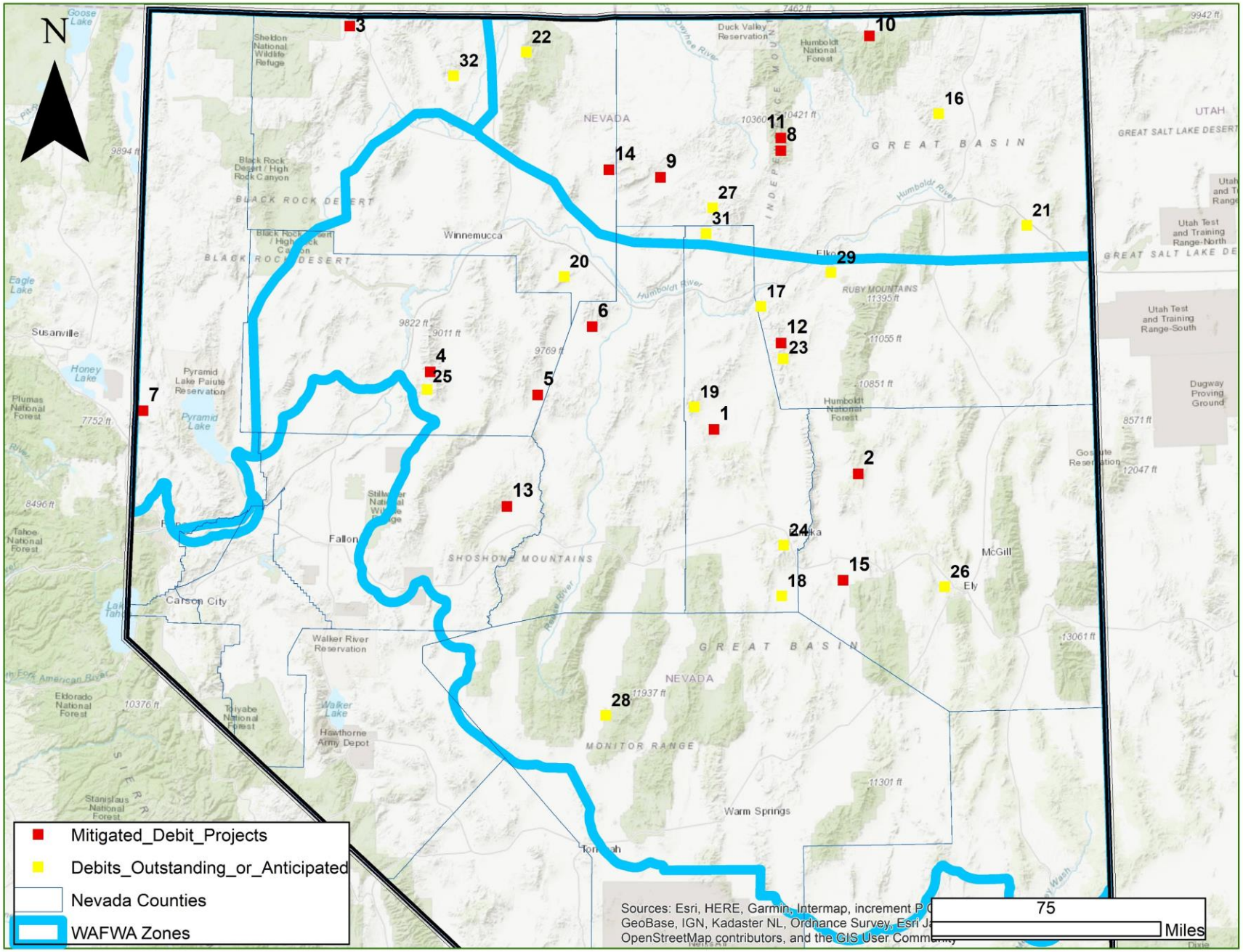


Projects 1, 2, 4, and 5 have transferred credits and have available credits. See the Status of Credit Projects table for further details.

JUNE 2021 CCS UPDATES • STATUS OF DEBIT PROJECTS AS OF 5/5/21

PROJECT NAME	TOTAL DEBITS	COUNTY	ACRES OF DIRECT IMPACT	WAFWA MGMT. ZONE
		DEBITS MITIGATED		
Avocado Exploration (1)	38	Eureka	68	III
Bald Mountain Mine – Phase 1 (2)	2,514	White Pine	2,521	III
Baltazor (3)	254	Humboldt	0	V
Couer Rochester (4)	607	Pershing	2,567	III
Dixie Meadows (5)	95	Pershing, Lander	3	III
Greater Phoenix (6)	211	Lander	513	III
Greater Phoenix – Philadelphia Expansion (6)	4	Lander	203	III
Fish Springs Solar (7)	51	Washoe	10	V
Jerritt Canyon (8)	129	Elko	384	IV
Midas Exploration (9)	19	Elko	50	IV
Newcrest Exploration – Phase 1 (10)	3	Elko	10	IV
Snow Canyon (11)	2	Elko	76	IV
South Railroad Exploration (12)	16	Elko	41	III
Tungsten Mountain Solar (13)	4	Churchill	85	III
Twin Creeks Mine – Sage Tailings (14)	33	Humboldt	0	IV
Western Oil Exploration (15)	14	White Pine	24	III
TOTAL	**3,994**		**6,555**	
		DEBITS OUTSTANDING/ANTICIPATED		
Bald Mountain Mine – Later Phase (2)	2,737	White Pine	2,745	III
Big Ledge – Dry Creek (16)	310	Elko	59	IV
Big Ledge – Tabor Creek (16)	383	Elko	263	IV
Carlin Vanadium Exploration (17)	71	Elko	85	III
Dixie Meadows (5)	189	Pershing	7	III
Gibellini (18)	TBD	Eureka, Nye, White Pine	TBD	III
Goldrush (19)	TBD	Eureka, Lander	TBD	III
Lone Tree Mine – Buffalo Mtn (20)	TBD	Humboldt	0	III
Long Canyon Mine – Phase 2 (21)	1,956	Elko	815	III, IV
National Exploration (22)	28	Humboldt	40	IV
Pony Creek Exploration (23)	131	Elko	150	III
Prospect (24)	152	Eureka	28	III
Relief Canyon (25)	33	Pershing	0	III
Robinson (26)	183	White Pine	51	III
Rossi (27)	410	Elko	1,094	IV
Round Mtn (28)	41	Nye	264	III
Ruby Vista (29)	1	Elko	2	III
South Railroad Exploration (12)	82	Elko	81	III
TSPP (31)	4	Elko, Eureka	1	IV
Western Lithium (32)	1,375	Humboldt	5,169	V
TOTAL	**≥8,086**		**10,854**	
CUMULATIVE TOTAL	**≥12,080**		**17,409**	

JUNE 2021 CCS UPDATES • MAP OF DEBIT PROJECTS AS OF 5/5/21



JUNE 2021 PROGRAM UPDATES • OTHER PROGRAM EFFORTS

Other efforts of the Sagebrush Ecosystem Technical Team through June of 2021 included:

- Held three Sagebrush Ecosystem Council Meetings.
- Finished 2nd annual Adaptive Management report (available at: https://sagebrusheco.nv.gov/Adaptive_Management/2020/2020/).
- Conducted other Adaptive Management work including kickstarting & participating in meetings to help with recommendations.
- Conducted efforts related to managing subgrants to USGS and Environmental Incentives.
- Took part in ROGER (Results Oriented Grazing for Ecological Resiliency) & NV Collaborative Conservation Network (NvCCN) meetings.
- Worked with the Nevada Creeks and Communities Team to put together and implement PFC Workshops.
- Participation on the WAFWA Conservation Assessment Team to draft the greater sage-grouse population status assessment report.
- Began weed data sharing coordination with BLM/USFS/NDA & producing mapping products to highlight issues and prioritize actions.
- Continued collaborative efforts with federal and state agencies to improve and coordinate planning and conservation efforts & work towards developing credits on public lands.
- Participated in the DCNR Earth Day outreach and helped with Range Camp.
- Took part in various meetings, webinars, etc. related to sage-grouse, wildfire, conservation efforts and tracking, mining, etc.
- Efforts to increase take of ravens by the SEP were recently rewarded with increased raven take in the state of Nevada.

Views of the Tumbling JR Ranch Credit Project. (Kathleen Petter)

JUNE 2021 PROGRAM UPDATES • PLANS FOR THE COMING YEAR

- Continue to implement the CCS and work with credit & debit project proponents navigating the CCS, train & assist verifiers to assess the planned disturbances & impacts of debit projects and the conservation values of credit projects, as well as implement mitigation offsets.
- Ensure credit projects that were awarded seed funding continue move forward with habitat improvements & management planning.
- Conduct 1st site visits as part of Five-Year Qualitative Assessment for 2016 credit projects in 2021 Spring.
- Participate in additional meetings with BLM, USFS, USFWS and NDOW staff to foster greater awareness of the CCS, Adaptive Management, and the mitigation regulation and its implementation.
- Continue to implement and streamline the adaptive management process now defined in the Nevada Greater Sage-Grouse Conservation Plan, BLM, and USFS plans.
- Implement the new tools developed within the CCS that encourage focused conservation efforts within credit projects.
- Continue to update FWS/USGS Conservation Efforts Database & USFS SMART Database on CCS credit projects.
- With the assistance of the science work group, develop a methodology for quantifying post-fire restoration efforts on public lands as part of the mitigation process.
- Seek to put further conservation actions on-the-ground through partnerships and grant opportunities.
- Establish an annual sharing/learning meeting with other Western States involved in sagebrush ecosystem conservation and Greater Sage-Grouse mitigation.

A sandhill crane along its migration path at Tumbling JR Ranch credit site. (Kathleen Petter)

NEW RESEARCH • GRSG DECLINES & A ROADMAP TO CONSERVATION

- Coates et al. and USGS published an open file report on 3.30.21 entitled "Range-wide Greater Sage-Grouse Hierarchical Monitoring Framework: Implications for Defining Population Boundaries, Trend Estimation, and a Targeted Annual Warning System" & available here.
- **The report documents the dramatic decline of greater sage-grouse at a likely 75% decline over the last 50 years and a nearly 40% decline since 2002. The rate of decline has increased most within the Great Basin.**
- A Targeted Annual Warning System has been developed as well, which will aid in signaling when populations have deviated in trajectory from those in their vicinity.
- In addition, tools have been developed in part with funding from the SEP and will soon be available to assess where pinyon-juniper or fire restoration projects will be most beneficial to sage-grouse per dollar invested, and where raven and wild horse populations are most problematic and demand action. Altogether, conservation actions geared toward sage-grouse conservation can soon be made more surgically on the landscape.
- With that said, fire & invasive annual grasses and the continued spiral of more fire & more invasive annual grasses remain supreme as threats that need addressed through further conservation actions and funding.
- Wild horse populations well above AML also remain a threat to habitat that must be addressed further if sage-grouse populations are to have a chance to stabilize.

Fire in the Great Basin continues to be a major threat to sage-grouse. (Dan Huser)

GREATER SAGE-GROUSE POPULATION OVERVIEW

The Nevada Department of Wildlife, in conjunction with federal agency partners including the Bureau of Land Management (BLM), U.S. Forest Service (USFS), U.S. Geological Survey (USGS) and the U.S. Fish and Wildlife Service (USFWS), conducts sage-grouse lek counts and surveys annually. Techniques to monitor leks include traditional ground surveys using accepted protocols and aerial survey using rotary or fixed wing aircraft. Some fixed wing surveys are outfitted with cooled infrared camera technology (thermal imaging) with telephoto capabilities and flown at altitudes that minimize or negate disturbance to birds. Approximately 40% of the 1,993 known sage-grouse leks and approximately 75% of trend leks identified within the state are surveyed each year. Trend leks are a subset of total leks in Nevada that are monitored several times each year to enable a better trend estimate for sage-grouse populations in Nevada.

Due to the Covid-19 pandemic, NDOW biologists and volunteers were challenged to survey leks during the spring 2020 lek surveying season. For this reason, only about 20% of known lek locations were surveyed, and some were counted once as compared to traditional multiple counts.

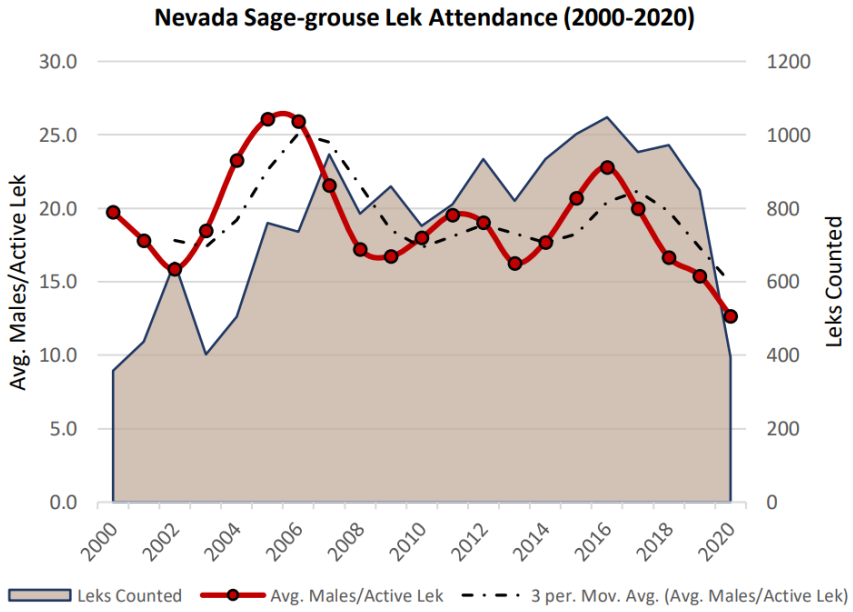


FIGURE 1. Sage-grouse lek attendance (2000–2020) including 3-year moving averages.

During the 2020 spring breeding season, 394 leks were counted of the 1,993 leks known in the State of Nevada; this is well below the average number of leks counted each year for the period from 2000-2019 of 776 leks. The average male peak attendance value for all active leks surveyed (n=182) during the spring of 2020 was 12.7 males per lek. This equated to approximately 20 percent of the known lek locations. The Nevada Sage-grouse Lek Database was updated with 2020 observation data and lek status was assigned as follows: active=633, pending active 273, inactive=354, unknown=586, and historic=146

Source: *Nevada Department of Wildlife, Nevada Sage-grouse Conservation Project Final Performance Report. September 2020.*

GREATER SAGE-GROUSE POPULATION OVERVIEW

During the 2020 sage-grouse hunting season, 1,262 wings were collected from various open hunt units across Nevada. Sample size was up 51.5 percent over the previous year's collection of 833 wings but was just 68.8 percent of the long-term annual average of 1,834 wings.

Production was estimated at 1.22 chicks per hen, which was an improvement over the previous three years (Table 1), but well below the long-term average of 1.51 chicks per hen. Production values have averaged 1.34 chicks per hen over the last 10-year period. To maintain a stable sage-grouse population, it is estimated that 1.56 chicks per hen are necessary (population growth rate = 1.0). This level of recruitment was essentially realized between 2013-2016; however, the last four years have been well below those levels and likely explains recent male lek attendance trends.

Nest success values were also estimated from the examination of adult female wings and the molt pattern (progression of replacement through outer primary feathers). Statewide nest success values were estimated at 56.3 percent in 2020 compared to 37 percent in 2019. This is a relatively high nest success rate compared to the long-term average of 44.2%. Unfortunately, the high nest success did not culminate in improved recruitment, which may have been due to the extremely dry conditions observed at the end of the 2020 summer.

Source: Shawn Espinosa, Nevada Department of Wildlife, pers. comm.

TABLE 1. Wing collection and estimated demographic metrics over the last decade in Nevada.

Year	Total Wings Collected	Chicks per Hen	Nest Success
2011	2,023	1.44	52.4%
2012	1,121	0.73	48.4%
2013	855	1.67	45.7%
2014	1,034	1.54	47.1%
2015	1,667	1.52	39.6%
2016	1,541	1.56	36.5%
2017	1,278	0.98	46.5%
2018	1,138	0.89	43.0%
2019	833	1.14	36.9%
2020	1,262	1.22	56.3%
10-year Avg.	1,369	1.34	45.6%

GREATER SAGE-GROUSE • SAGEBRUSH ECOSYSTEM & GRSG STATUS

GREATER SAGE-GROUSE POPULATION OVERVIEW

U.S. Geological Survey developed a range-wide hierarchical population monitoring framework for the 11 westerns states with sage-grouse populations (Coates et al., 2021). The study used lek count data from 1960 – 2019 and had four main study objectives:

1. Create a range-wide database for sage-grouse lek counts;
2. Develop nested population lek clusters;
3. Estimate spatiotemporal trends in population abundance; and
4. Develop a targeted annual warning system (TWAS) to signal declining leks and lek clusters

Lek data were split into short (17 years), medium (33 years), and long (53 years) temporal scales to derive population trends and estimate extinction probabilities for leks and lek clusters. Over the past 17, 34 and 52 years, sage-grouse populations have declined by 42, 59 and 78% respectively in the Great Basin Climate Cluster. In Nevada during 1990-2019, the TAWS activated a total of 290 and 179 leks as watches and warnings, respectively, and activated 33 and 22 neighborhood (lek) clusters as watches and warnings, respectively (Figure 2). At the lek level range-wide, models predicted 46%, 60%, and 78% of leks have over 50% probability of extirpation over 19, 38, and 56-year projections from 2019.

Coates, P.S., Prochazka, B.G., O'Donnell, M.S., Aldridge, C.L., Edmunds, D.R., Monroe, A.P., Ricca, M.A., Wann, G.T., Hanser, S.E., Wiechman, L.A., and Chenaille, M.P., 2021. Range-wide greater sage-grouse hierarchical monitoring framework—Implications for defining population boundaries, trend estimation, and a targeted annual warning system: U.S. Geological Survey Open-File Report 2020–1154, 243 p., https://doi.org/10.3133/ofr20201154.

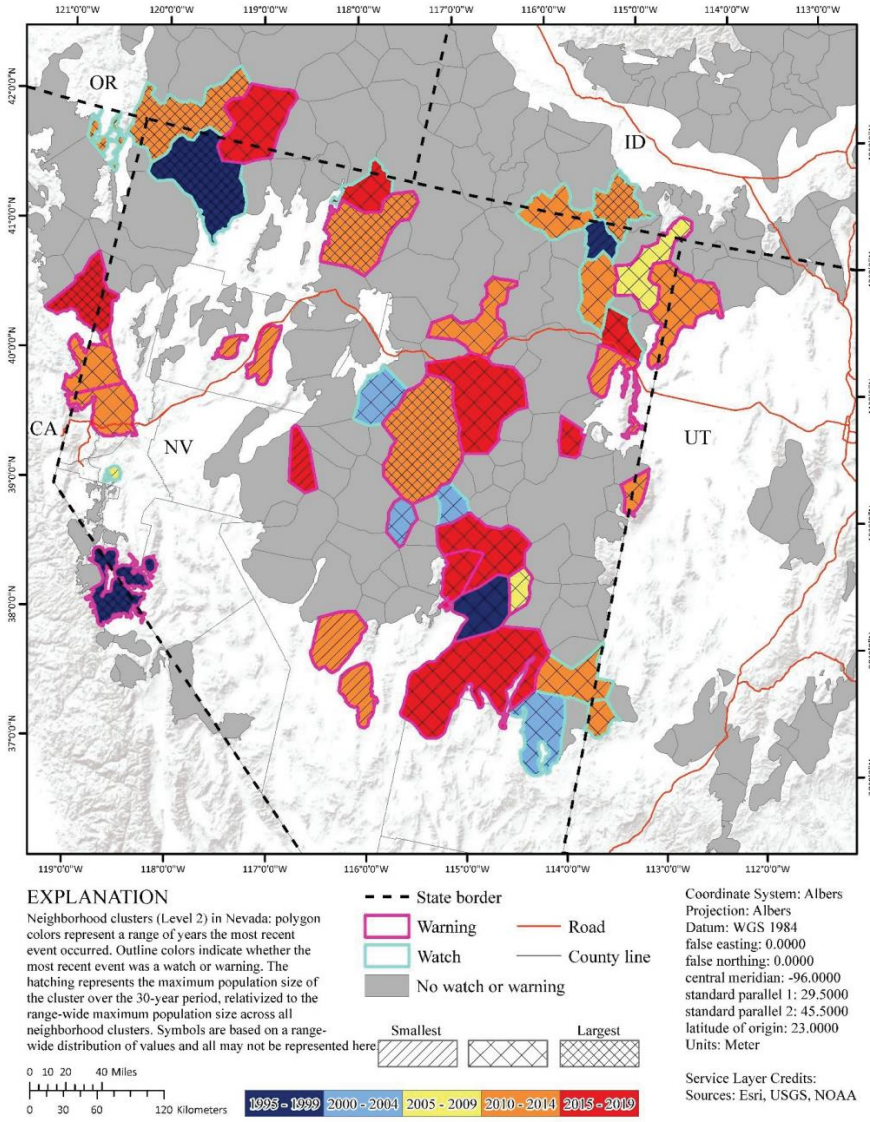


FIGURE 2. Spatial and temporal depiction of watches and warnings of greater sage-grouse population declines at neighborhood clusters in Nevada from 1990-2019.

GREATER SAGE-GROUSE • THREATS

THREATS TO THE SAGEBRUSH ECOSYSTEM AND THE GREATER SAGE-GROUSE

Threats to the greater sage-grouse are numerous but can be placed into several categories that all affect the grouse's habitat. Direct habitat loss from wildfire and invasive species and habitat fragmentation are the greatest contributing factors to the declining grouse population.

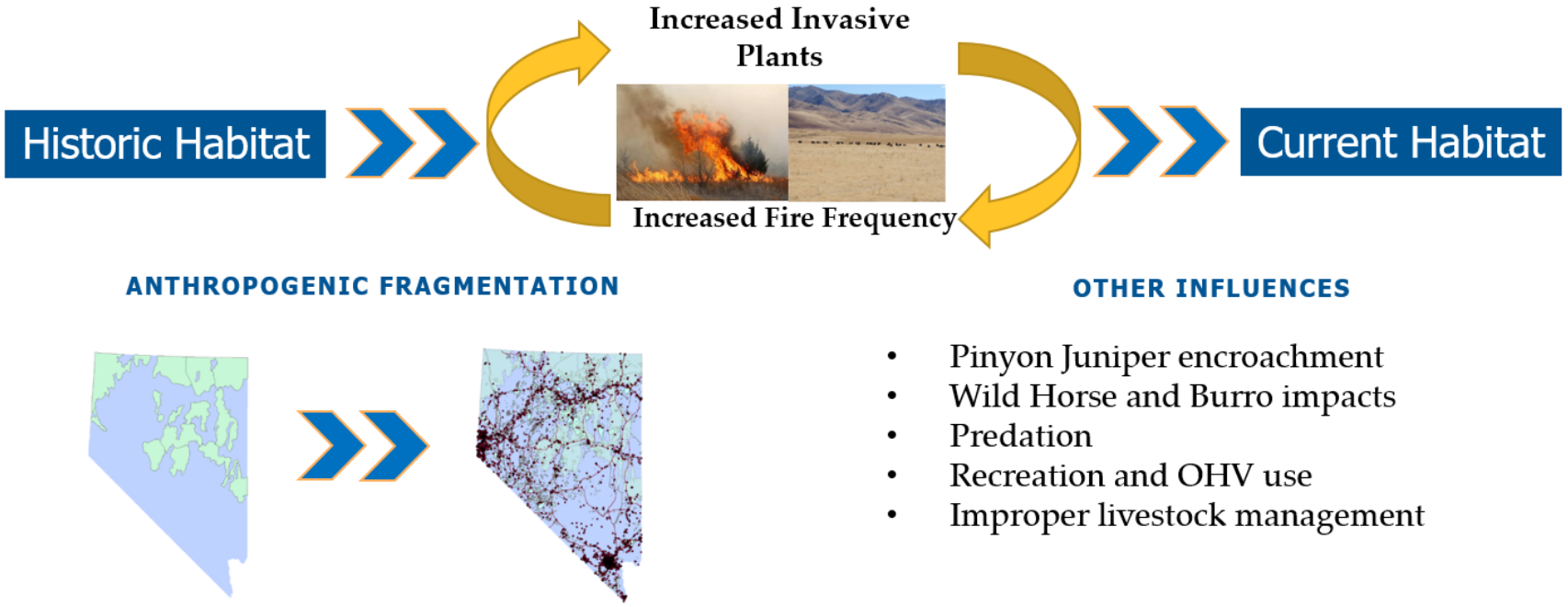


FIGURE 4: Threats to Sagebrush Ecosystems.

As habitat loss from wildfire and cheatgrass continue along with fragmentation, post-fire restoration and pre-suppression actions to reduce wildfire frequency as well as appropriate mitigation of other impacts and preservation of intact landscapes become even more important to conservation of Nevada's sagebrush ecosystems and greater sage-grouse habitats.

EARLY 2021 • GRSG LOCAL AREA WORKING GROUP (LAWG) UPDATES

This page is awaiting final input from the Working Groups and will be filled out prior to submission.