



State of Nevada Sagebrush Ecosystem Program

SEMI-ANNUAL REPORT

June 2023

**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.

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JUNE 2023 PROGRAM UPDATES



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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.

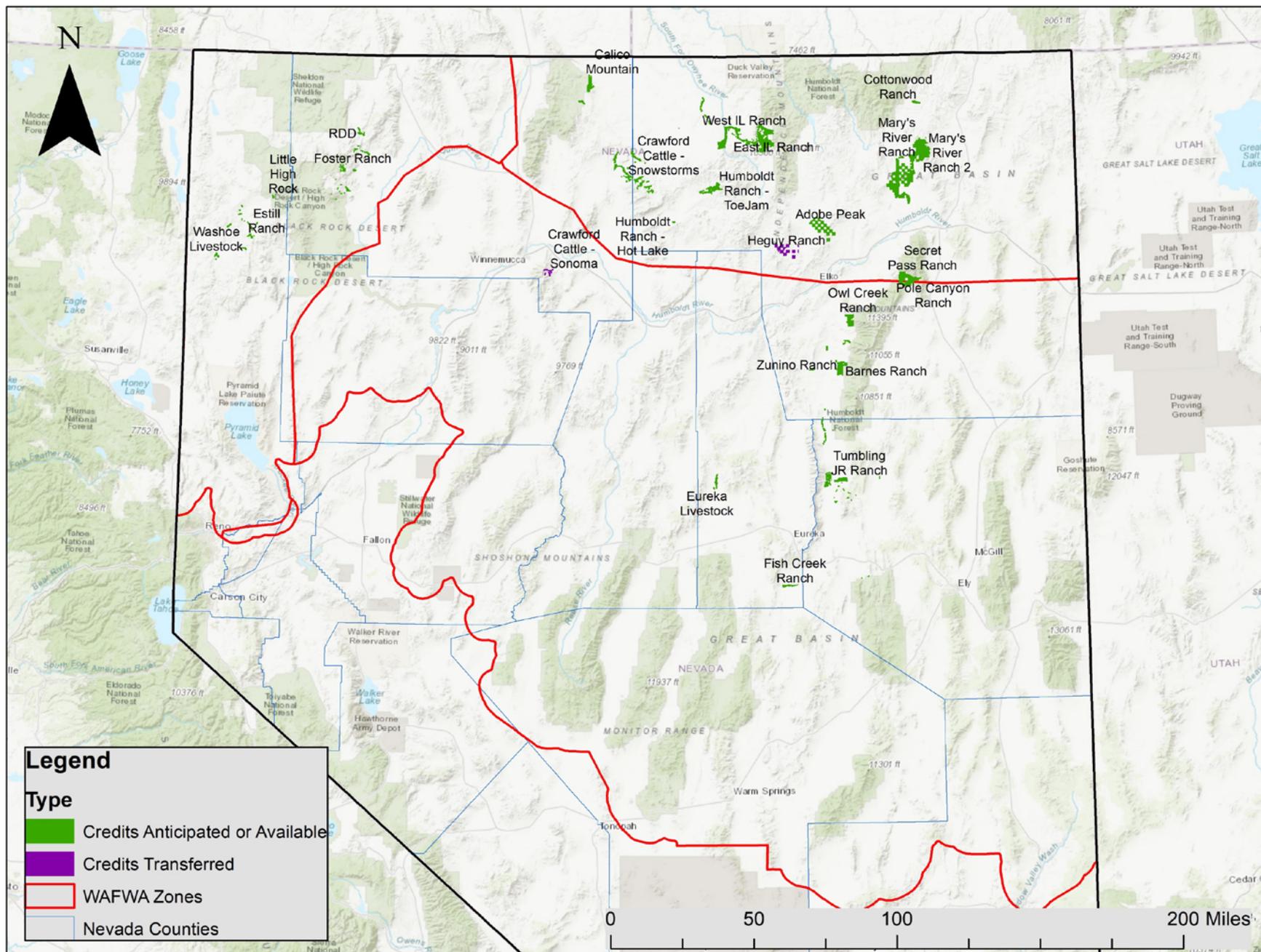
JUNE 2023 CCS UPDATES • EARLY 2023 HIGHLIGHTS

- Forty-one mitigation transactions have been finalized using the CCS since inception of the program, conserving over 29,000 acres for at least a 30-year term.
- Three new credit projects anticipate conducting fieldwork this year. All three ranches fall primarily in Priority Habitat Management Areas and can potentially conserve over 63,000 acres for sage-grouse. Preliminary estimates indicate these projects can add an estimated 20,000 credits to the System.
- Several debit projects representing various industries are working toward gathering field data for quantification of debits this spring with some final submissions from previous years now going through the SETT's quality assurance process.
- Twenty-one debit projects have submitted plans to conduct fieldwork or simple desktop assessments for 2023 so far, adding over 30,000 debits to our totals and directly impacting over 20,000 acres.
- The SETT will visit one credit project in 2023 as part of the Five-Year Qualitative Assessments. They will also assist credit producers in planning conservation treatments as well as meeting with future credit producers.
- The 8th Annual CCS Certified Verifier Training was held by the SETT in January of 2023. Over 74 consultants attended, and 60 were certified.



Verifier Training 2023. (NDF)

JUNE 2023 CCS UPDATES • MAP OF CREDIT PROJECTS AS OF 5/12/23



JUNE 2023 CCS UPDATES • STATUS OF TRANSACTIONS AS OF 5/12/23

DEBIT PROJECT	CREDITS TRANSFERRED OR SOLD	CREDIT PROJECT	ACRES CONSERVED**	WAFWA MGMT. ZONE
Transactions*				
Bald Mountain Mine	2,514	Tumbling JR Ranch	9,717	III
Greater Phoenix Mine	243	West IL Ranch	6,279	IV
Greater Phoenix Mine - Philadelphia Canyon	5	West IL Ranch	Acres Included in other Transaction	IV
Coeur Rochester Mine	467	Crawford Cattle - Sonoma	1,498	III
Coeur Rochester Mine	186	Crawford Cattle - Snowstorms	1,313	IV
Baltazor Geothermal	292	Crawford Cattle - Snowstorms	1,033	IV
Midas Exploration	22	Estill Ranch	346	V
Avocado Exploration	44	Crawford Cattle - Snowstorms	254	IV
Newcrest Exploration Phase I	3	Cottonwood Ranch	13	IV
Fish Springs Solar	59	Heguy Ranch	26	IV
Western Oil Exploration	5	Crawford Cattle - Snowstorms	Acres Included in other Transaction	IV
Jerritt Canyon Exploration	45	Cottonwood Ranch	103	IV
Snow Canyon Mine Closure	2	Cottonwood Ranch	Acres Included in other Transaction	IV
Twin Creeks Mine - Sage Tailings	35	West IL Ranch	Acres Included in other Transaction	IV
Tungsten Mountain Solar	5	Crawford Cattle - Snowstorms	1,332	IV
Dixie Meadows Geothermal	104	Crawford Cattle - Snowstorms	Acres Included in other Transaction	IV
South Railroad Exploration	9	Heguy Ranch	Acres Included in other Transaction	IV
Peterson Mountains Mine	1	Heguy Ranch	Acres Included in other Transaction	IV
White Pine Hydropower Pump Exploration	9	Secret Pass Ranch	226	III, IV
Cherry Creek Tower	3	Secret Pass Ranch	Acres Included in other Transaction	III, IV
Round Springs Tower	3	Secret Pass Ranch	Acres Included in other Transaction	III, IV
Lincoln Hill Exploration	9	Heguy Ranch	Acres Included in other Transaction	IV
Round Mountain Mine	45	Tumbling JR Ranch	Acres Included in other Transaction	III
SW Energy Road	13	Cottonwood Ranch	Acres Included in other Transaction	IV
Big Ledge - Dry Creek Mine Closure	310	Mary's River Ranch	463	IV
Western Lithium Mine	550	Estill Ranch	1,901	V
TOTAL	4,983		24,504	

* Reserve account contributions associated with transfers are excluded from this table. Proximity factors associated with the transactions are included.

** "Acres Included in other Transaction" refers to acres already accounted for in a previous transaction, as all credits within a Credit Project map unit are required to be managed in their entirety, regardless of the number of credits transferred within.

JUNE 2023 CCS UPDATES • STATUS OF TRANSACTIONS AS OF 5/12/23

DEBIT PROJECT	CREDITS TRANSFERRED OR SOLD	CREDIT PROJECT	ACRES CONSERVED**	WAFWA MGMT. ZONE
Transactions*				
Baker Ranch Powerline	1	Cottonwood Ranch	Acres Included in other Transaction	IV
Gold Bar South Mine	662	Heguy Ranch	3,397	IV
South Railroad Exploration	24	Heguy Ranch	Acres Included in other Transaction	IV
Beehive Telephone Fiber Optic	2	Heguy Ranch	Acres Included in other Transaction	IV
Gold Bar South Mine	127	Cottonwood Ranch	306	IV
White Pine Hydropower Pump Exploration	6	Secret Pass Ranch	Acres Included in other Transaction	III, IV
Bald Mountain Mine	462	Tumbling JR Ranch	Acres Included in other Transaction	III
Robinson Mine	201	Owl Creek Ranch	631	III
Marigold - Valmy Mine	59	Owl Creek Ranch	Acres Included in other Transaction	III
Great Basin Diamond 1-27 APD Exploration	5	Owl Creek Ranch	Acres Included in other Transaction	III
Crescent Valley Exploration	5	Crawford Cattle - Snowstorms	Acres Included in other Transaction	IV
Robertson Exploration One	7	West IL Ranch	Included in other Transaction	IV
Goldrush Mine	2,037	West IL Ranch	Included in other Transaction	IV
Goldrush Exploration	26	West IL Ranch	Included in other Transaction	IV
Goldrush Mine	601	East IL Ranch	486	IV
TOTAL	4,225		4,820	
ALL TRANSACTIONS TOTAL	9,208		29,324	

• Reserve account contributions associated with transfers are excluded from this table. Proximity factors associated with the transactions are included.

** "Acres Included in other Transaction" refers to acres already accounted for in a previous transaction, as all credits within a Credit Project map unit are required to be managed in their entirety, regardless of the number of credits transferred within.

JUNE 2023 CCS UPDATES • STATUS OF CREDIT PROJECTS AS OF 5/12/23

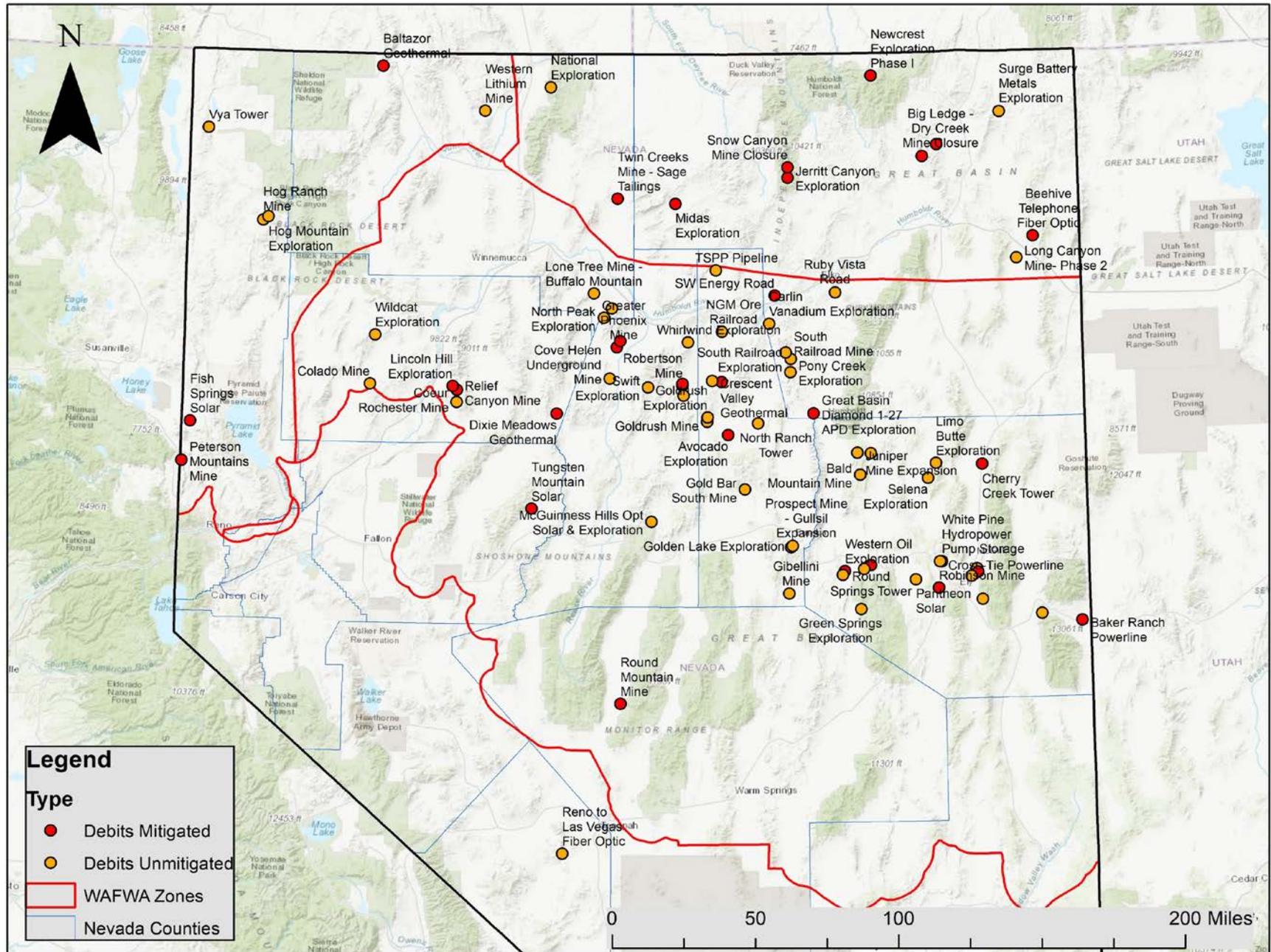
PROJECT NAME	CREDITS	COUNTY	ACRES	WAFWA MGMT. ZONE	STATE SEED FUNDED***
ANTICIPATED CREDITS*					
Eureka Livestock	TBD	Eureka	1,623	III	State Seed Funded
Washoe Livestock	TBD	Washoe	799	V	Privately Funded
Humboldt Ranch - Toejam	TBD	Elko	5,330	IV	Privately Funded
East IL Ranch	TBD	Elko	23,721	IV	Privately Funded
Calico Mountain	TBD	Humboldt	5,120	IV	State Seed Funded
Little High Rock	TBD	Washoe	322	V	Privately Funded
Fish Creek Ranch	TBD	Eureka	1,180	III	Privately Funded
Zunino Ranch	TBD	Elko	3,219	III	Privately Funded
Barnes Ranch	TBD	Elko	4,981	III	Privately Funded
Mary's River Ranch 2	TBD	Elko	54,833	IV	Privately Funded
TOTAL	~27,000		101,128		
AVAILABLE CREDITS**					
Tumbling JR Ranch	1,143	Elko, White Pine	All Acres Conserved	III	State Seed Funded
Cottonwood Ranch	638	Elko	685	IV	State Seed Funded
West IL Ranch	539	Elko	All Acres Conserved	IV	Privately Funded
Crawford Cattle - Snowstorms	1,234	Humboldt, Elko	6,598	IV	State Seed Funded
Estill Ranch	68	Washoe	804	V	Privately Funded
RDD	740	Humboldt	1,094	V	State Seed Funded
Eureka Livestock	1,718	Eureka	1,623	III	State Seed Funded
Adobe Peak	3,618	Elko	10,901	IV	Privately Funded
Humboldt Ranch - Hot Lake	694	Elko	198	IV	Privately Funded
East IL Ranch	8,272	Elko	23,235	IV	Privately Funded
Secret Pass Ranch	3,621	Elko	10,043	III, IV	State Seed Funded
Owl Creek Ranch	2,664	Elko	4,732	III	State Seed Funded
Foster Ranch	1,624	Humboldt	6,170	V	State Seed Funded
Pole Canyon Ranch	435	Elko	2,068	IV	Privately Funded
Mary's River Ranch	1,441	Elko	2,236	IV	Privately Funded
TOTAL	28,449		70,387		

* Anticipated credits are estimated, but not finalized or eligible for transfer/sale.

** Available Credits are finalized and eligible for transfer/sale to mitigate for anthropogenic disturbances.

*** Projects receiving state seed funding also included varying amounts of matching funds from the landowners.

JUNE 2023 CCS UPDATES • MAP OF DEBIT PROJECTS AS OF 5/12/23



JUNE 2023 CCS UPDATES • STATUS OF DEBIT PROJECTS AS OF 5/12/23

PROJECT NAME	DEBITS*	COUNTY	ACRES OF DIRECT IMPACT**	WAFWA MGMT. ZONE
ANTICIPATED DEBITS***				
Bald Mountain Mine	2356	White Pine	5,734	III
Western Lithium Mine	875	Humboldt	5,169	V
Long Canyon Mine- Phase 2	1676	Elko	815	III, IV
Lone Tree Mine - Buffalo Mountain	271	Humboldt	4	III
Gibellini Mine	1932	Eureka, Nye, White Pine	328	III
Pony Creek Exploration	131	Elko	150	III
Relief Canyon Mine	33	Pershing	0	III
Carlin Vanadium Exploration	TBD	Elko	85	III
National Exploration	28	Humboldt	40	IV
TSP Pipeline	4	Elko, Eureka	1	IV
Jerritt Canyon Exploration	39	Elko	384	IV
Ruby Vista Road	2	Elko	2	III
Big Ledge - Dry Creek Mine Closure	5	Elko	118	IV
South Railroad Exploration	41	Elko	122	III
Prospect Mine - Gullsil Expansion	TBD	Eureka	28	III
Rossi Mine	TBD	Elko	1,094	IV
Gold Bar South Mine	1372	Eureka	210	III
Juniper Mine Expansion	869	Elko, White Pine	2,300	III
Marigold - Valmy Mine	289	Humboldt, Lander	542	III
White Pine Hydropower Pump Storage	827	White Pine	860	III
Selena Exploration	39	White Pine	100	III
Hog Ranch Mine	5831	Washoe	456	V
Golden Lake Exploration	TBD	Eureka	0	III
Greenlink North Powerline	TBD	Churchill, White Pine, Eureka	599	III
NGM Ore Railroad	2926	Eureka, Lander, Elko	1,755	III, IV
North Ranch Tower	TBD	Eureka	1	III
Beck Cottonwood Powerline	590	Eureka	1	III
Limo Butte Exploration	TBD	White Pine	300	III
McGuinness Hills Optimization - Solar & Exploration	39	Lander	235	III
Pilot Peak Mine	13	Elko	228	III, IV
TOTAL	~28,700		21,659	

* Debits listed are the total of both term and permanent debits

** Direct impact refers to the disturbance footprint associated with a project. It does not account for the indirect impacts to Greater Sage-grouse habitats

*** Anticipated debits only reflect projects that are in an advanced state of project planning

JUNE 2023 CCS UPDATES • STATUS OF DEBIT PROJECTS AS OF 5/12/23

PROJECT NAME	DEBITS*	COUNTY	ACRES OF DIRECT IMPACT**	WAFWA MGMT. ZONE
ANTICIPATED DEBITS***				
Green Springs Exploration	97	White Pine	137	III
Whirlwind Exploration	5	Lander	29	III
Hog Mountain Exploration	90	Washoe	187	V
Reno to Las Vegas Fiber Optic	21	Washoe	8	V
Cove Helen Underground Mine	TBD	Lander	283	III
Hot Creek Other Medium	TBD	Nye	10,497	III
Crescent Valley Geothermal	TBD	Eureka, Lander	152	III
Ruby Hill Mine	TBD	Eureka	4,588	III
NW Deeps Mine Expansion	TBD	Eureka, Lander	156	III
Dry Creek Mine Expansion	TBD	Elko	0	III
Swift Exploration	TBD	Lander	200	III
Surge Battery Metals Exploration	TBD	Elko	2,707	IV
Railroad Valley Mine	TBD	Nye	1,208	III
Wildcat Exploration	TBD	Pershing	194	III
North Peak Exploration	TBD	Humboldt, Lander	5	III
Stagecoach Wind	TBD	White Pine	443	III
Pantheon Solar	TBD	White Pine	1,745	III
Colado Mine	TBD	Pershing	0	III
TOTAL	~33,200		22,538	
ANTICIPATED DEBITS TOTAL	~61,900		44,197	

* Debits listed are the total of both term and permanent debits

** Direct impact refers to the disturbance footprint associated with a project. It does not account for the indirect impacts to Greater Sage-grouse habitats

*** Anticipated debits only reflect projects that are in an advanced state of project planning

JUNE 2023 PROGRAM UPDATES • OTHER PROGRAM EFFORTS

Other efforts of the Sagebrush Ecosystem Technical Team through June of 2023 included:

- Held three Sagebrush Ecosystem Council Meetings.
- Coordinated and participated in several Science Work Group meetings to review new science to potentially incorporate more population modeling into the CCS which could provide a more surgical approach to mitigation.
- Conducted efforts related to managing subgrants to USGS and Environmental Incentives.
- Began working on Sagebrush Ecosystem Program Strategic Action Plan update.
- Continued collaborative efforts with federal and state agencies to improve and coordinate planning and conservation efforts.
- Served as collaborating agency in various stages of more than a dozen NEPA processes for large-scale disturbances.
- Assessed the values to Greater Sage-Grouse of various public lands improvement efforts that could be implemented to achieve mitigation.
- Took part in various meetings, webinars, etc. related to Greater Sage-Grouse , wildfire, conservation efforts and tracking, mining, etc.
- Worked with the Nevada Creeks and Communities Team to put together and implement PFC Workshops.
- Assisted in the annual Nevada Youth Nevada Range Camp in June, teaching plant identification to high schoolers.



Views of the Crawford Snowstorms (Left) and West IL (Right) Ranches. (SETT)

JUNE 2023 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 State seed-funding continue move forward with habitat improvements & management planning.
- Participate in meetings with BLM, USFS, USFWS and NDOW staff to foster greater awareness of the CCS and the mitigation regulation and its implementation.
- Draft update of SEP Strategic Action Plan.
- Take part in land management agency plan amendments.
- Aim to restart and better implement and streamline the adaptive management process now defined in the Nevada Greater Sage-Grouse Conservation Plan, BLM, and USFS plans.
- Continue to update FWS/USGS Conservation Efforts Database & USFS SMART Database on CCS credit projects.
- Coordinate with other western states to establish an annual meeting to share knowledge on sagebrush ecosystem conservation and Greater Sage-Grouse mitigation.
- Continue to integrate new science/tools into the CCS to achieve more effective mitigation for the Greater Sage-Grouse and its habitats.

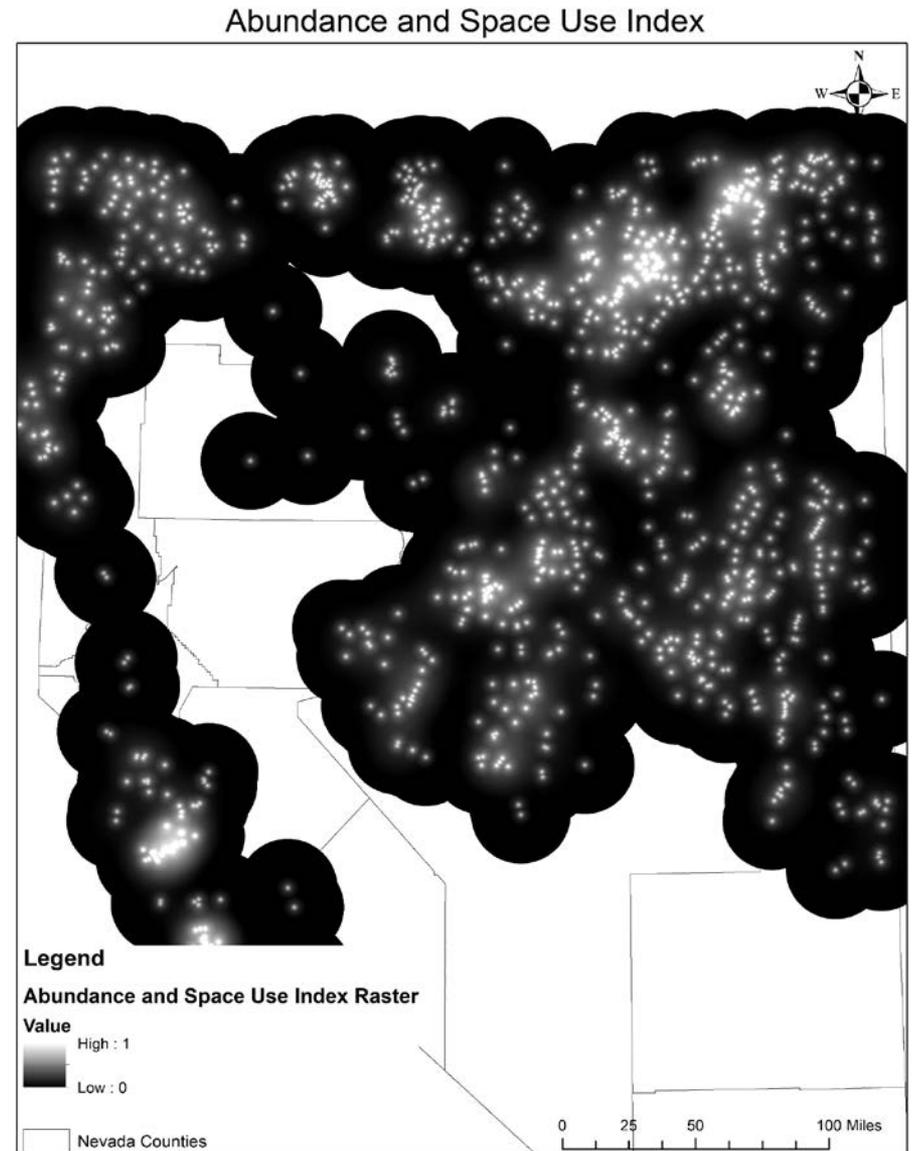


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NEW RESEARCH • ABUNDANCE AND SPACE USE INDEX UPDATE

Abundance and Space Use Index (ASUI)

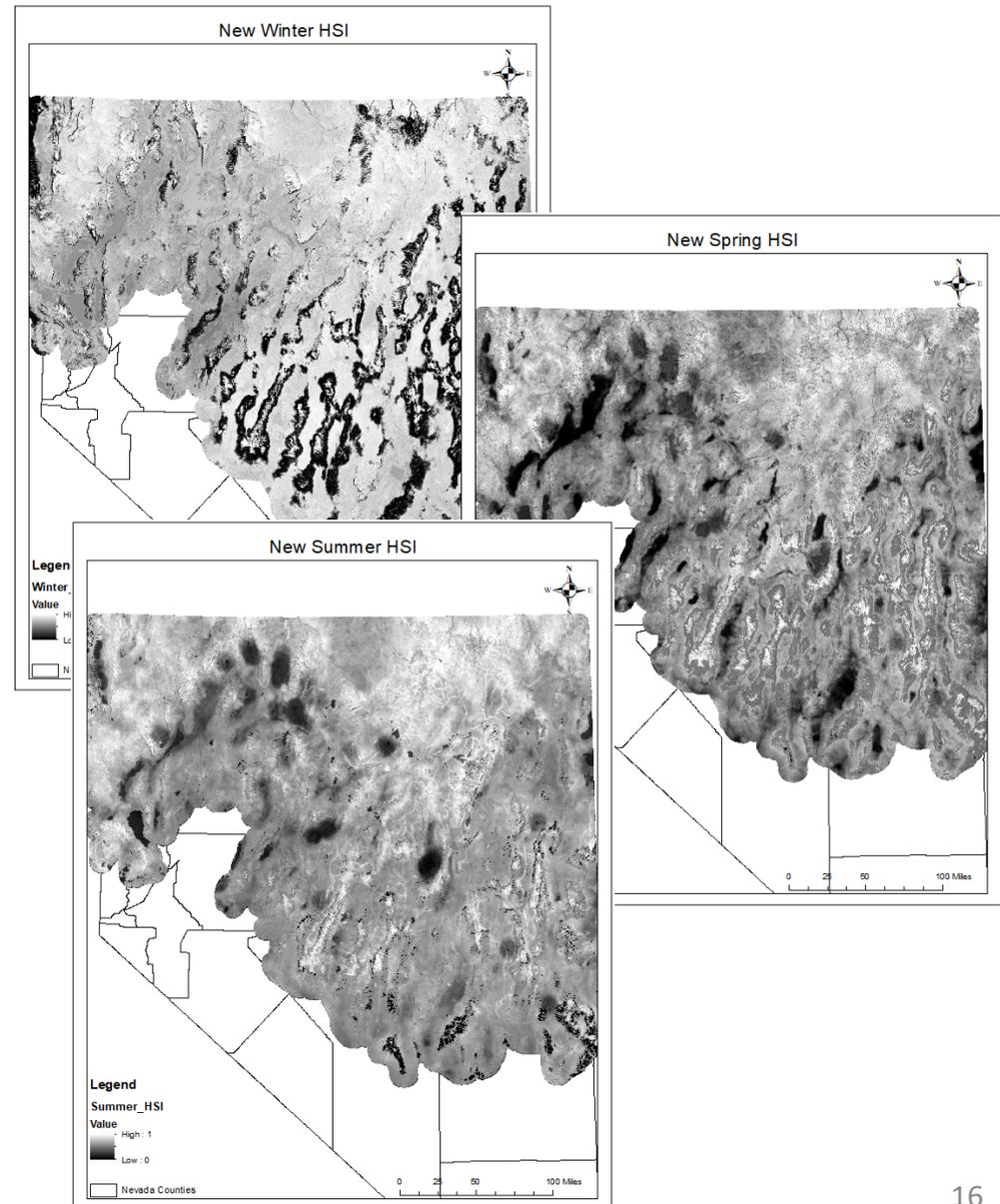
- The incorporation of ASUI within the current Habitat Quantification Tool (HQT) format will allow the SEP to more accurately interpret population loss from surface development in close proximity sage-grouse leks. The ASUI layer would account for:
 - Lek abundance: configuration and size to other leks to account for movement.
 - Lek trend: increasing leks have a greater importance than decreasing leks.
 - Survival: demographic response of impacts for different vital rates (e.g., nest success, chick success and juvenile recruitment) and different life history stages (e.g., breeding, nesting and brooding)
 - Exponential decay curve of impact the farther away from a lek.
- The Current HQT version uses a Distance to Lek layer to measure impacts within a given distance to leks.
 - Accounts for loss of habitat functionality but does not account for population loss when leks are impacted.
 - Does not consider lek size, configuration, or population demographics.



NEW RESEARCH • HABITAT SUITABILITY INDEX UPDATE

Habitat Suitability Index (HSI)

- The new HSI layers were created using the original Spring, Summer, and Winter HSI and then combined with Nesting, Early Brood Rearing, and Late Brood rearing Selection and Survival Indexes.
- Updating the Habitat Quantification Tool's (HQT) existing HSI with the new HSI will improve the quantification of impacts to individual leks and lek cluster and associated habitats.
- Inclusion of the new HSI layers will:
 - More effectively account for loss in functional habitat from surface development, both direct and indirect.
 - Increase the HQT's ability to interpret habitat suitability at a higher resolution than the previous version due to being derived from more robust space use data and model advancements.
 - Increased accuracy of impacts further from a lek center.
 - Direct 1:1 replacement of the original Spring, Summer, and Winter Suitability Indexes.



GREATER SAGE-GROUSE • SAGEBRUSH ECOSYSTEM & GRSG STATUS

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 54% of the 1,995 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.

In 2022, NDOW and partners counted 164 trend leks, which exceeded the previous 20-year average of 152 trend leks counted per year. Average male attendance at trend leks was 10.2 males during the 2022 spring breeding season, which represented a marginal increase from the 2021 breeding season's historic low attendance rate of 9.9 males. However, the 2022 male attendance was still 57% below the 20-year average 23.6 males per trend lek. Trend lek attendance is provided in Figure 1 from 2000-2022.

Source: Nevada Department of Wildlife, Nevada Sage-grouse Conservation Project Final Performance Report. September 2022

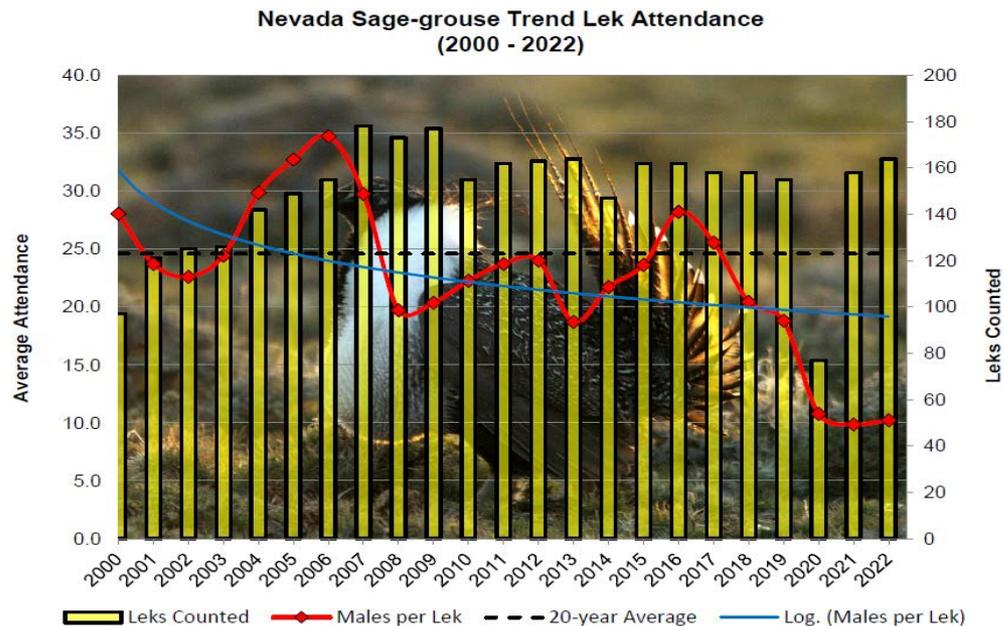


FIGURE 1: Sage-grouse lek attendance (2000-2022).

GREATER SAGE-GROUSE • SAGEBRUSH ECOSYSTEM & GRSG STATUS

GREATER SAGE-GROUSE POPULATION OVERVIEW

During the 2021 sage-grouse hunting season, 616 wings were collected from various open hunt units across Nevada. Sample size was down 51.2% over the previous year's collection of 1262 wings; this represents the lowest number of wings recorded over the 25 years.

Production was estimated at 1.09 chicks per hen, which was a decrease of 10.7 % from the previous season's 1.22 chicks per hen average. (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 39.3 percent in 2021 compared to 56.3 percent in 2020. The 2021 nest success rate was approximately 5% below the 25 year average of 44.4%. From the 242 adult female wings analyzed, 147 nests failed to hatch and 95 hatched successfully. This highlights a 61% rate of nest failure across Nevada, however this is comparable to range-wide averages for greater sage-grouse.

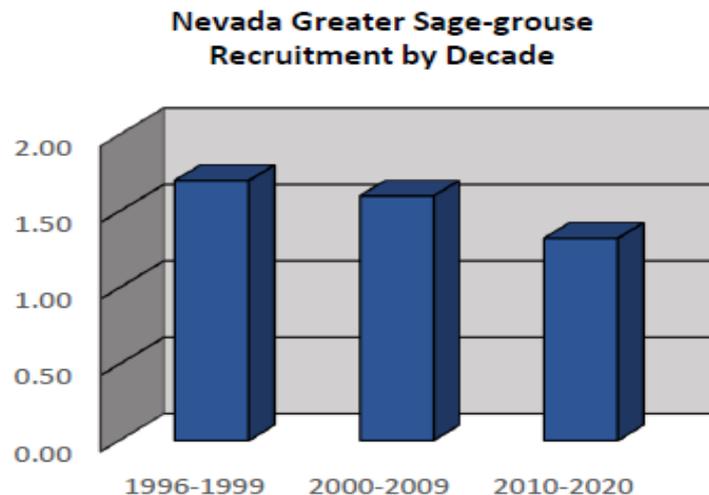
When binned by decade, average juvenile recruitment values indicate an overall decline in productivity from sage-grouse. Recruitment values during the late 1990s and during the 2000s likely contributed to some population sustainability; however, sage-grouse productivity values during the last decade are at levels that will not likely support population sustainability over time (Figure 1).

Source: Shawn Espinosa, Nevada Department of Wildlife, Nevada Sage-grouse Conservation Project Final Performance Report. September 2021.

TABLE 6. Wing collection and estimated demographic metrics over the last decade in Nevada.

Year	Total Wings Collected	Chicks per Hen	Nest Success
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%
2021	616	1.09	39.3%
10-year Avg.	1,135	1.23	44.0%

FIGURE 2. Average recruitment of sage-grouse juveniles in Nevada per decade.



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.

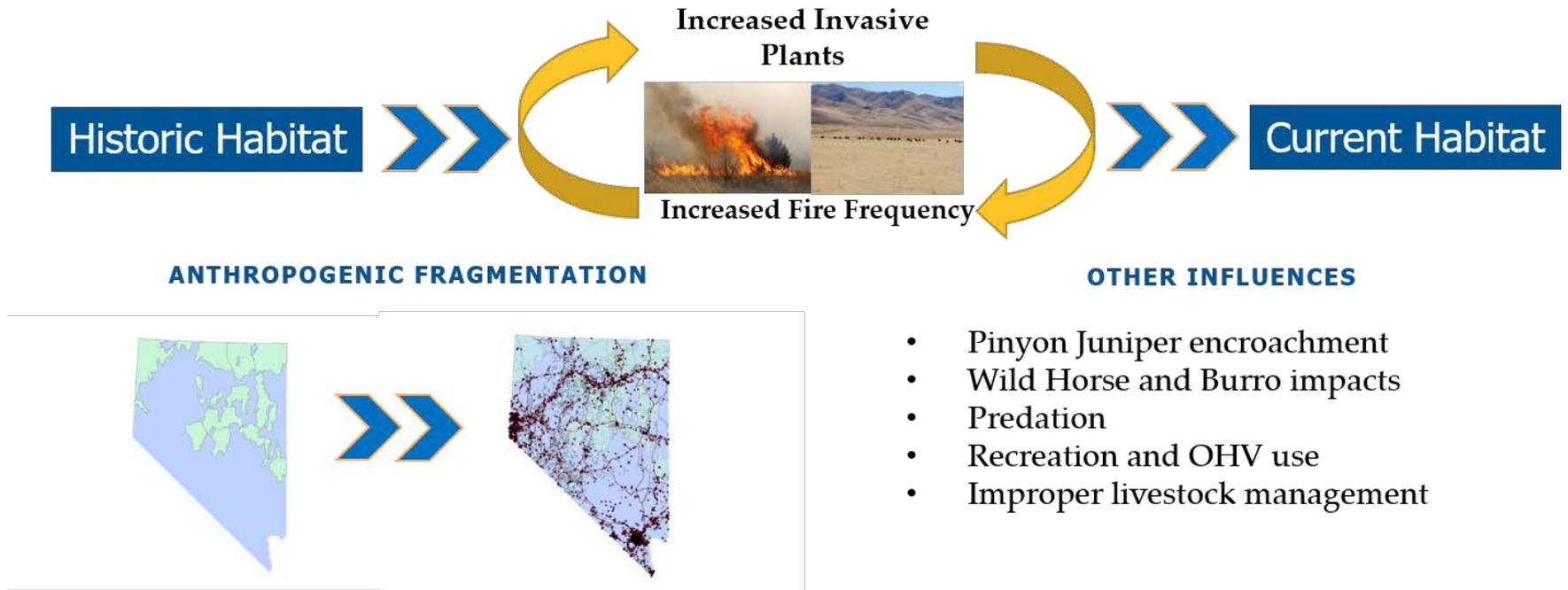


FIGURE 4: Threats to Sagebrush Ecosystems.

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.