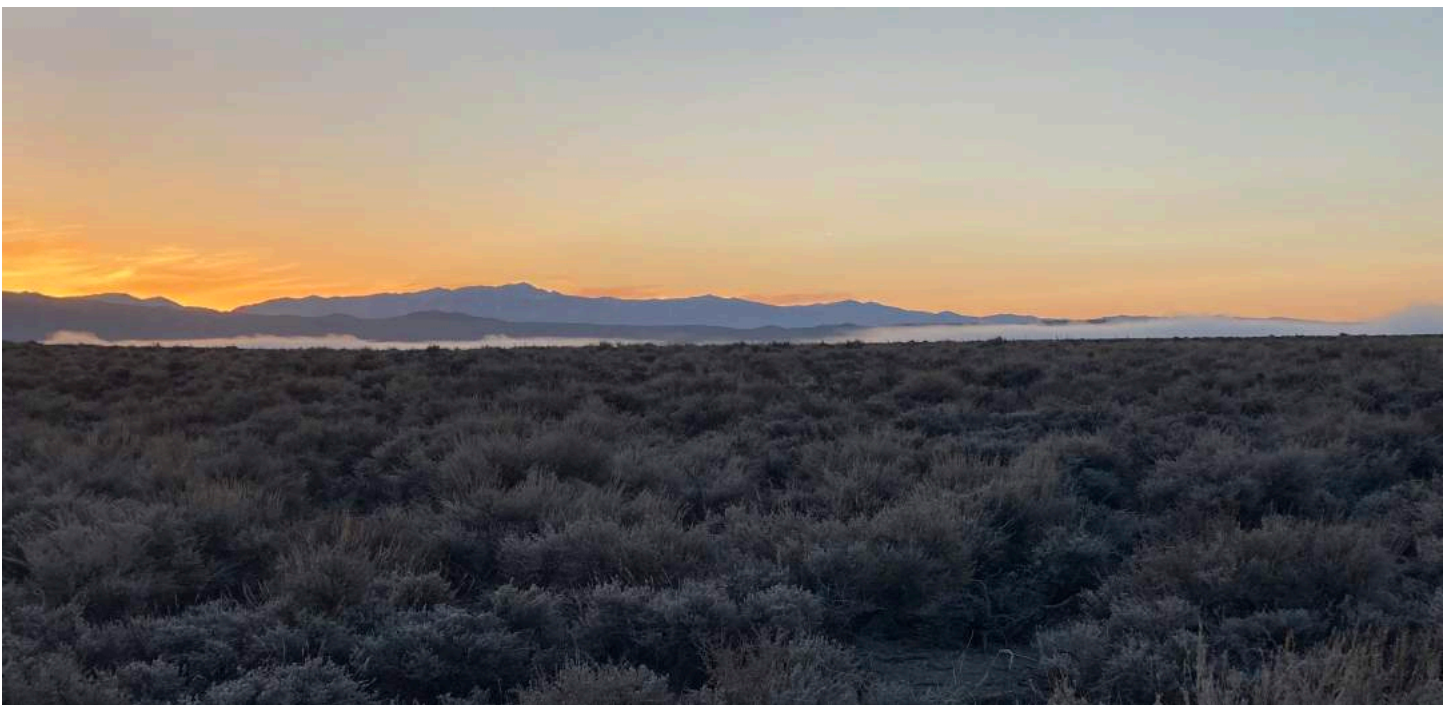
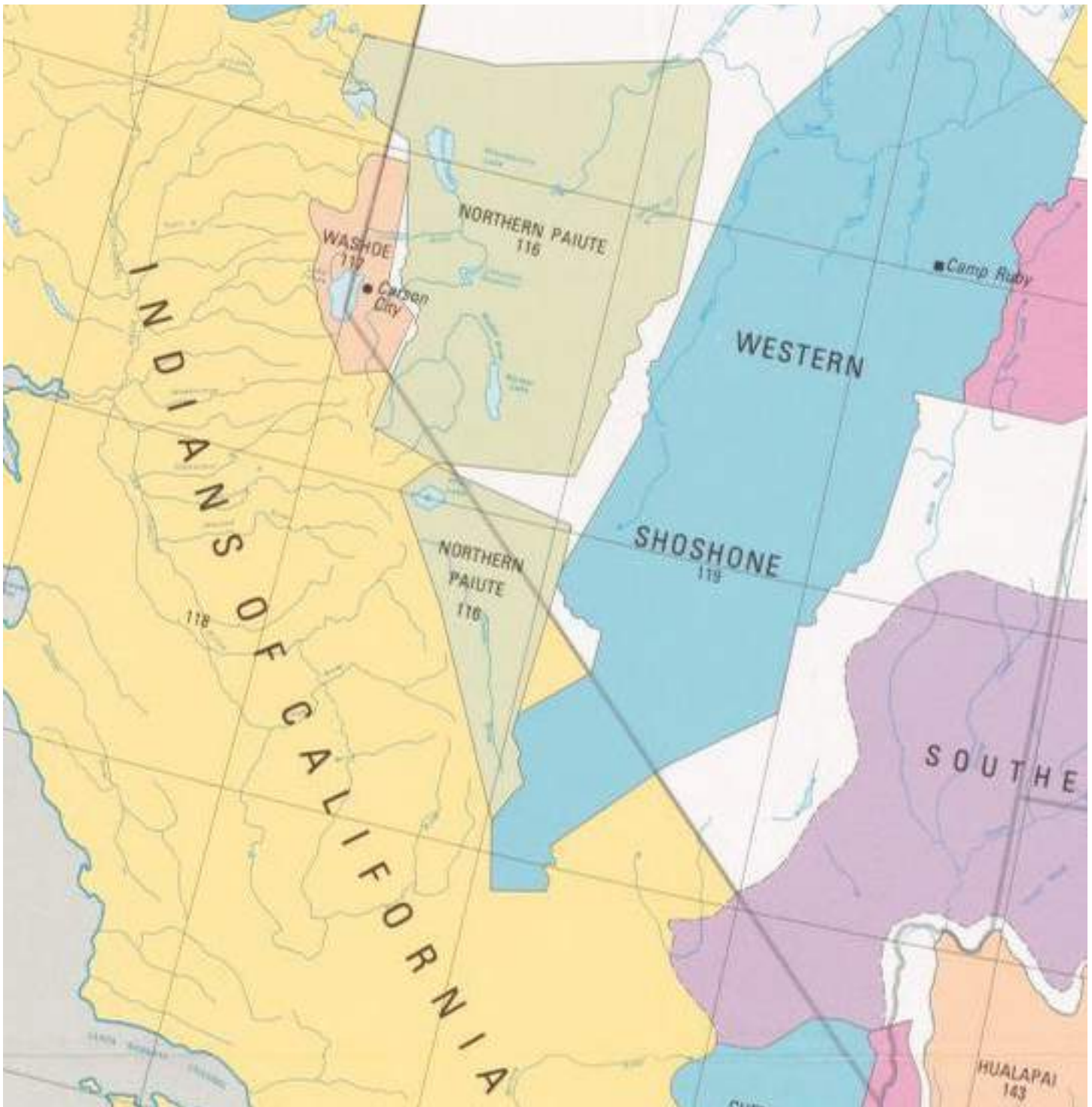




# 2020 Bi-State Sage-Grouse Accomplishment Report





*Ancestral lands of the Bi-State area*

## **ANCESTRAL LANDS ACKNOWLEDGMENT**

The Bi-State area is located in the heart of the Northern Paiute (Numu) territory and extends to include the lands of the Washoe (Wa She Shu) in the north, and Western Shoshone (Newe) in the south. We honor the Indigenous caretakers who have stewarded these lands, waters, and animals since time immemorial and pay respect to the elders who lived before, the people of today, and the generations to come.

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## PHOTO CREDIT

Photos provided by the following Bi-State partners: UC Davis-Gail Patricelli, USGS-Mary Rebecca Kelble, GBI-Jessica Saenz, NDOW-Bobby Jones, Bi-State Coordinator Amy Sturgill, ESLT-Sus Danner, BLM-Bob Wick, USFS-Inyo NF, BLM-Bishop Field Office.



*Sage-grouse lekking grounds.*

## EXECUTIVE SUMMARY:

The 2012 Bi-State Action Plan (Action Plan) summarized prior conservation efforts and established a road map to conservation of Bi-State sage-grouse populations. In 2014, federal, state, and other partner agencies established a \$45 million-dollar commitment to ensure Action Plan implementation over 10 years. Each year, projects are implemented by the Bi-State Local Area Working Group (Bi-State LAWG), a diverse group of stakeholders made up of federal, state, and local government agencies, Tribal members and representatives, nonprofit organizations, and private landowners. In 2020, Bi-State LAWG partners allocated approximately \$7.6 million dollars to Bi-State sage-grouse conservation efforts.

The objectives, strategies, and actions outlined in the Action Plan include population monitoring, habitat monitoring, and the implementation of a wide variety of conservation actions to maintain healthy sage-grouse populations and habitat in the Bi-State conservation planning area. Population monitoring includes sage-grouse capture, demographic and vital rate collection, and annual lek monitoring. The collection of these data provides information on habitat selection and utilization as well as factors influencing sage-grouse population trends. Vegetation monitoring is completed by the Nevada Partners for Conservation and Development (NPCD). Their efforts aim to evaluate habitat quality and the effectiveness of completed conservation actions including post-fire restoration and conifer treatment. Action Plan directed conservation projects are carried out to address the following threats to Bi-State sage-grouse and their habitats:

- Wildfire
- Urbanization
- Conifer expansion
- Invasive species
- Loss of sagebrush/meadows
- Human disturbance
- Wild horse grazing
- Permitted livestock grazing

In 2020, research, monitoring, and conservation action implementation were greatly affected by the COVID-19 global pandemic. All organizations participating in the Bi-State collaborative conservation effort were forced to alter normal operations and implement new directives and strategies to ensure public health and safety. These directives required personnel to work remotely and adhere to travel restrictions which affected their ability to carry out fieldwork and implement planned conservation actions. Despite these challenges, Bi-State partners were able to conduct lek counts on a select number of leks, carry out limited population monitoring activities, assess sage-grouse habitat through vegetation monitoring, and complete planned conservation projects.

In March, USGS began population monitoring efforts in the Bodie Hills, South Mono, and White Mountains PMUs as scheduled. In April, field technicians were removed from the field and monitoring activities were suspended in accordance with COVID-19 directives. In September monitoring efforts resumed with a smaller than normal crew of technicians. Data collection efforts were atypical this year, monitoring results will reflect this, therefore data presented in this report should be considered a somewhat incomplete account compared to information reported in previous years.

In 2020, a total of 63 birds were captured and fitted with VHF collars or GPS transmitters to better understand habitat use, seasonal movement, and demography in the Bodie Hills, South Mono, and White Mountains PMUs. Apparent annual survival for Bi-State sage-grouse was 69%. Nest and brood success was not monitored this year.

Translocation efforts to bolster the Parker Meadow subpopulation of the South Mono PMU were put on hold in 2020 and will resume

in 2021. Funding was secured to carry out translocation efforts for an additional five years.

Annual lek counts were conducted in all Bi-State PMUs between March and May. However, it should be noted that monitoring efforts were impacted by COVID-19 restrictions and directives. Lek count results will reflect changes in protocol as well as limited staff and volunteer availability. A total of 470 males were counted on 30 of the 56 leks surveyed in 2020. The majority of sage-grouse were observed in the Bodie Hills PMU and the Long Valley portion of the South Mono PMU. The highest lek attendance was observed at the Dry Lakes complex in the Bodie Hills (n=73), followed by Long Valley lek 2 (n=43). Lek trends are reported for both the California and Nevada portions of the Bi-State and summaries are provided for individual PMUs.

Vegetation monitoring of treatment and control sites was implemented by the NCPD through the Nevada Department of Wildlife (NDOW). In 2020, the NCPD monitored 277 plots within the Desert Creek-Fales, Bodie Hills, Mount Grant, and South Mono PMUs.

Conservation actions to address identified threats to Bi-State sage-grouse and their habitats were carried out on approximately 17,400 acres in the Bi-State area. Projects completed by Bi-State partners are summarized in the following section.

Accomplishments completed to limit the loss of habitat resulting from wildfire include:

- targeted wildfire prevention and suppression,
- and post-fire rehabilitation.

To address the threat of urbanization and to maintain high quality, intact habitat conditions:

- through funding provided by NRCS, the Eastern Sierra Land Trust secured a 4,100-acre conservation easement on the Hunewill Ranch in the Bodie Hills PMU
- and RCPP funding was available to carry out NRCS conservation projects aimed at improving sage-grouse habitat conditions on private lands.

To address the threat of conifer expansion into sagebrush systems:

- 7,854 acres of conifer treatment were completed in the Pine Nut and Mount Grant PMUs,
- and 3,282 acres of conifer treatment maintenance was completed on previously treated sites in the Bodie Hills and Desert Creek/Fales PMUs.

To maintain healthy sagebrush and meadow systems numerous projects were implemented including:

- stream restoration and meadow irrigation,
- a TAC subgroup was formed to inventory, assess, and prioritize future mesic resource restoration efforts,

- a meadow monitoring effort was established in the Pine Nut PMU,
- and NEPA was completed for a meadow restoration project in the Bodie Hills PMU.

To limit invasive and noxious weeds:

- 724 acres of chemical and mechanical treatment were completed in the Pine Nut, Desert Creek-Fales, Mount Grant, and Bodie Hills PMUs.

Impacts from human disturbance were addressed through the following efforts:

- recreation technicians provided education and outreach information to recreational visitors in the South Mono PMU,
- recreation monitoring surveys were completed,
- and a dispersed campsite inventory was completed in the Bodie Hills PMU.

To address habitat degradation associated with wild horse and permitted livestock grazing:

- an aerial survey of the Montgomery Pass wild horse territory was completed herd in the Bodie Hills, Mount Grant, and White Mountain PMUs,
- on the ground surveys occurred in the Bodie Hills and South Mono PMUs,
- seven range improvement inspections occurred in the Pine Nut and Mount Grant PMUs,
- and 1,054 acres were protected under a 15-year Conservation Reserve Program lease in the Bodie Hills PMU.

In addition to these conservation projects aimed at alleviating threats, additional accomplishments were completed to support the Bi-State sage-grouse conservation effort. Some highlights include:

- two Executive Oversight Committee (EOC) meetings,
- two Technical Advisory Committee (TAC) meetings,
- 10 Bi-State Tribal Natural Resource Committee (BTNRC) meetings,
- one Bi-State LAWG meeting.

Completed monitoring and conservation actions often build upon efforts completed in previous years. They expand our knowledge of population demographics, measure ecosystem health, improve collaborative efforts, and provide ecological benefits to Bi-State sage-grouse.

The 2020 Bi-State Accomplishment Report will summarize population monitoring, habitat monitoring, and conservation action efforts implemented during the year to benefit sage-grouse populations and the habitats they depend on. Understanding what has been completed each year aids Bi-State partners in developing a plan of work and prioritizing projects for the upcoming year. This year's efforts were altered due to the global pandemic and the accomplishment information shared in this report will reflect that.



*South Mono PMU in the spring*

## INTRODUCTION

The Bi-State Local Area Working Group (Bi-State LAWG) was formed in 2002 to establish a landscape-level approach to conservation and management of the Bi-State greater sage-grouse distinct population segment (Bi-State DPS). This diverse group of stakeholders includes, federal, state, and local government agencies, Tribal members and representatives, non-profit organizations, and private landowners.

This group has been striving to implement a collaborative approach to sage-grouse conservation and management for nearly twenty years and has been lauded nationally as a model of collaborative conservation success. Together they developed the first Bi-State sage-grouse conservation plan in 2004. In 2012, the Bi-State LAWG organized a planning and strategy approach to build and improve upon the multi-pronged effort to affect the conservation of the Bi-State DPS. While an important milestone, it was not the beginning of the Bi-State LAWG's effort but a continuation of efforts that began a decade before. Encouraged by a potential listing of the species under the Endangered Species Act, the Bi-State LAWG set out to re-evaluate threats to Bi-State sage-grouse and identify tangible on-the-ground actions to alleviate these concerns. This effort culminated in the 2012 Bi-State Conservation Action Plan (Action Plan), which provides a 10-year adaptable scope of work, grounded in the best available

science and supported by funding commitments provided by local, state, and federal agency partners. The Action Plan summarized relevant threats and prior conservation efforts and outlined a comprehensive set of strategies, objectives, and actions designed to achieve conservation of sustainable populations and habitats for the Bi-State DPS (Bi-State TAC, 2012).

In March of 2020, the U.S. Fish and Wildlife Service announced the withdrawal of the 2013 proposed rule to list the Bi-State DPS of greater sage-grouse as threatened under the Endangered Species Act. After an extended, comprehensive analysis of the best available science, the Service concluded that successful implementation of conservation actions to date, as well as the Bi-State LAWG's future commitments to aid the species and habitat were sufficient to alleviate threats and therefore a listing decision was not warranted. In October that decision was challenged and will return to the court. Despite the uncertainty regarding the designated status of sage-grouse in the Bi-State, partners continued to work together to put into effect the strategies and objectives outlined in the Action Plan. The purpose of this report is to provide an annual summary of Bi-State Action Plan implementation in 2020, which includes population monitoring, vegetation monitoring, and the implementation of a wide variety of habitat improvement and conservation projects.

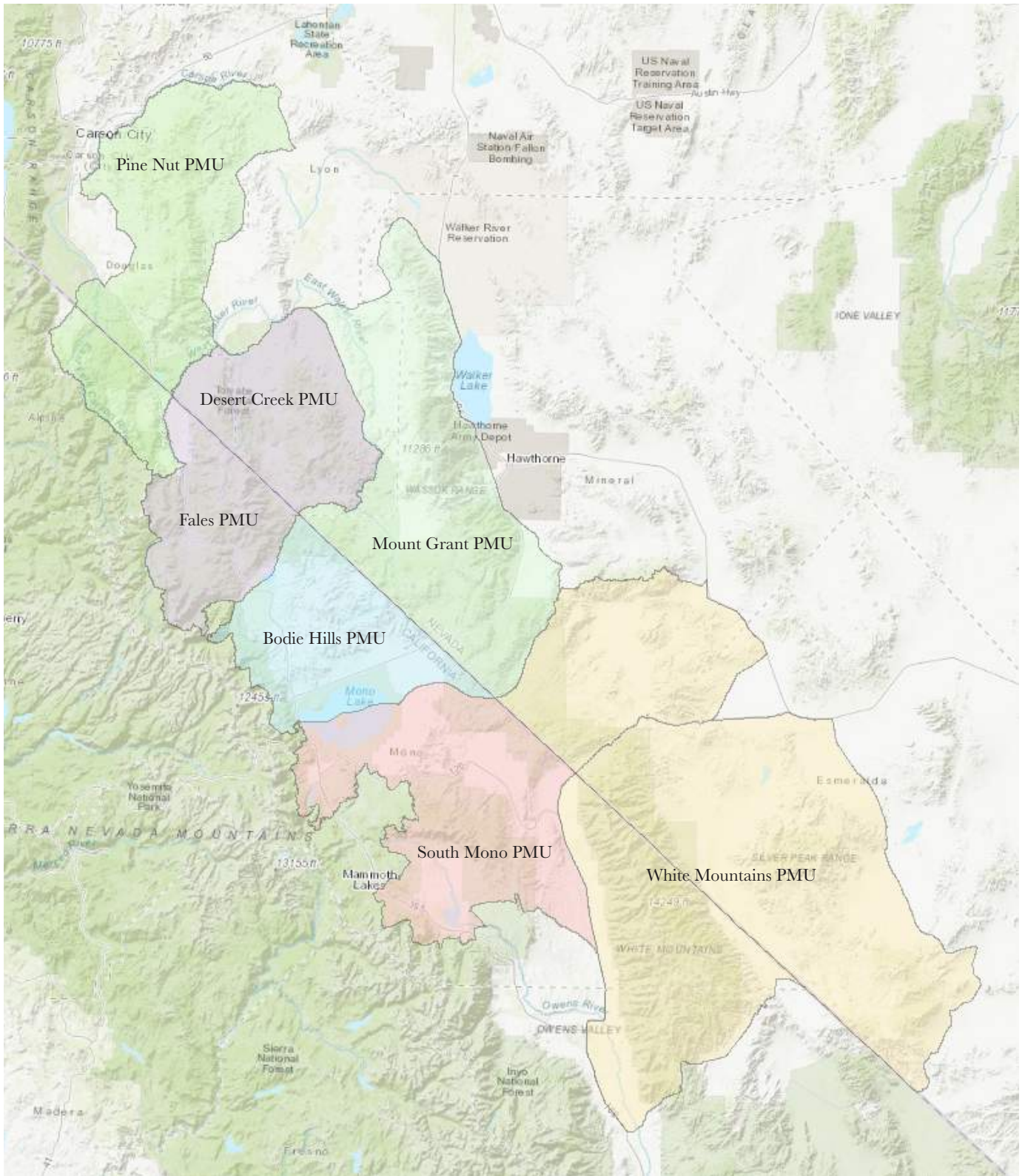


Figure 1: Bi-State sage-grouse Population Management Units (PMUs)



*Sage-grouse capture for monitoring efforts*

## POPULATION MONITORING

There are six Population Management Units (PMUs) within the Bi-State, including the Bodie Hills, Desert Creek/Fales, Mount Grant, Pine Nut, South Mono, and the White Mountains. Research and monitoring projects detailed in the Action Plan include telemetry, habitat, and vital rate data collection and the coordination of annual lek counts to better understand population demographics and improve predictive models and adaptive management capabilities.

Birds from scheduled PMUs are captured each year in the spring and fall seasons and fitted with Very High Frequency (VHF) transmitters or Global Positioning Satellite (GPS) transmitters. Body measurement data is collected during capture and sage-grouse movement and survival is tracked in the consecutive years. Intensive monitoring is conducted during the nesting and brood-rearing periods to track reproduction and recruitment (Mathews et al., 2018).

In 2020, capture and monitoring efforts were scheduled to occur in the Bodie Hills, South Mono, and White Mountains PMUs. USGS crews began their capture efforts in March and deployed nine VHF collars in the Bodie Hills and nine VHF collars in the Long Valley portion of the South Mono PMU before field efforts were suspended due to COVID-19. Aerial telemetry flights were completed to monitor sage-grouse survival in lieu of on the ground monitoring that would typically take place.

A limited crew resumed work over the summer to carry out modified population monitoring activities and to implement a new meadow monitoring project in the Pine Nut PMU designed to analyze the effects of wild horse and cattle grazing on meadow habitat. This study uses cameras to capture the presence of wild horses and cattle in the meadows within the study area. The USGS

also hopes these cameras will detect sage-grouse and act as a low impact monitoring method in this PMU. In September a fall field season was launched with four technicians to complete capture efforts in the Bodie Hills, South Mono, and White Mountains PMUs. These captures in combination with spring efforts resulted in a total of 63 marked birds across these PMUs (Table 1).

### Parker Meadow Translocation

Parker Meadow translocation efforts began in 2017 to increase the sage-grouse population within Parker Meadows and address the underlying issues of low genetic diversity and low egg hatchability rates. Since 2017, a total of 25 males, 27 pre-nesting females, 21 brood rearing females, and 125 chicks were translocated from the Bodie Hills PMU to the Parker Meadow area of the South Mono PMU. Translocated birds are closely monitored to assess clutch size, nest survival, hatchability, and survival. Scheduled 2020 translocation plans to continue this effort were put on hold this year when field work was suspended due to COVID-19.

In 2020, USGS biologist and graduate student Mary Meyerpeter completed a preliminary analysis of efforts so far. The goal of Meyerpeter’s research is to understand the effects of augmentation on population dynamics including the dynamics of the source population in the Bodie Hills. Her analysis showed that translocation efforts conducted between 2017 and 2019 improved hatchability in Parker Meadows by 179% relative to control sites, chick survival rates were elevated, and the Parker Meadow overall population increased by 180%. The Bodie Hills population experienced a 25% population decrease over the three-year study period, however it is thought to be a result of low adult survival (44%) during this time and not a result of translocation. A similar study conducted in Wyoming and South Dakota showed little or no effects of translocation on source populations.

The U.S. Fish and Wildlife Service has acquired funding to support Bi-State translocation efforts for an additional five years. Both translocated and source populations will continue to be closely monitored.

**Please note these data are preliminary, and subject to revision. The authors of these data require that users direct any questions on appropriate use or assistance with understanding the limitations and interpretation of the data to the USGS.**

PMU	GPS	VHF	Total
Bodie Hills	0	26	26
South Mono	0	9	9
White Mountains-CA	4	21	25
White Mountains-NV	1	2	3
<b>2020 Total</b>	<b>5</b>	<b>58</b>	<b>63</b>

*Table 1: 2020 bird capture and collar deployment summary*



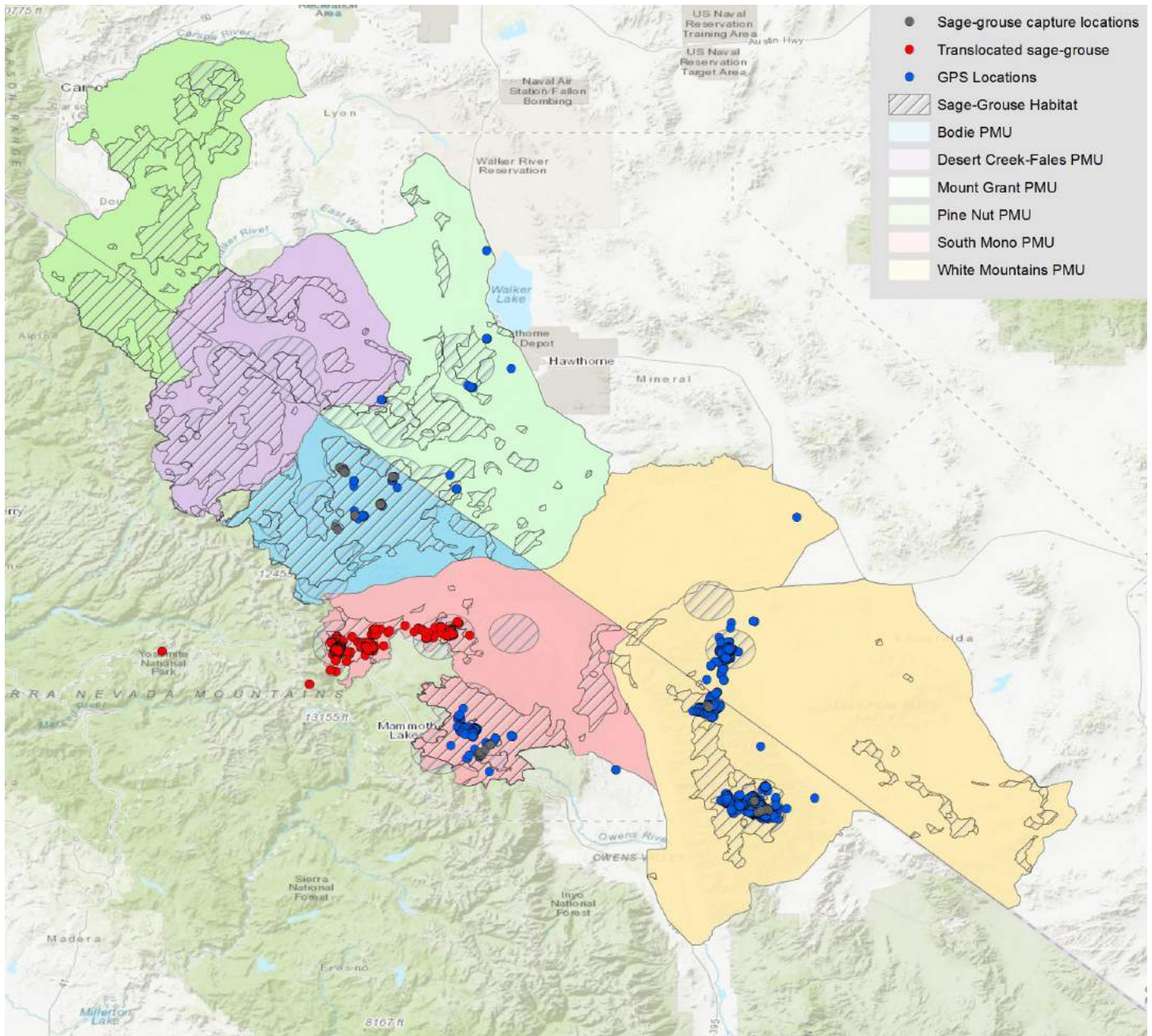


Figure 2: Key habitat identified by utilization distribution and resource selection function models, sage-grouse capture locations, and GPS locations of all captured birds in 2020



*Long Valley lek survey in the South Mono PMU*

## LEK MONITORING

### Overview

Each spring Bi-State partners collaborate to monitor known leks to count sage-grouse when they congregate and visibly display on lekking grounds. These counts generate annual population estimates which help Bi-State partners understand population trends over time. These population trends are cyclical and count results fluctuate year to year. To determine long-term trends, annual lek count data is incorporated into an Integrated Population Model which accounts for low counts or leks not counted and generates modeled population estimates.

### Lek Status

Within the Bi-State area, there are a total of 101 documented lek locations between California and Nevada, of which 49 are considered currently active (Figure 3). The active lek status is defined by two or more males present for at least two of five recorded years (Connelly et al., 2003). The total number of documented leks may be somewhat misleading due to the presence of “satellite leks” within many of the PMUs. Satellite leks are small leks that often occur near larger active leks during years of relatively high abundance. The “active” definition is sometimes difficult to apply to satellite leks that are utilized sporadically and do not persist each year. State agencies including NDOW and CDFW are currently working on delineating satellite leks as autonomous or connected, thereby removing some uncertainty surrounding lek counts as an index of population change.

### 2020 Lek Survey Summary

In 2020, lek monitoring efforts were affected by the COVID-19 global pandemic. Early in the monitoring season, Bi-State partners were forced to alter scheduled monitoring plans to adhere to public safety guidelines and regulations that limited the ability to travel and to complete fieldwork. 2020 lek monitoring efforts in both California and Nevada portions of the Bi-State were greatly reduced compared to previous years efforts. Therefore, the 2020 reported results may misrepresent the actual number of males on leks and should be considered incomplete.

Bi-State partners were still able to conduct counts in the months between March and May but the number of leks visited and the number of visits to each lek were significantly decreased compared to previous years. For example, 144 lek counts were completed in 2020 compared to 317 in 2019 and 372 in 2018 (Figure 4). A total of 56 leks were surveyed across the Bi-State area, down from 78 surveyed in 2019. Males were detected on 30 of the 56 monitored leks. A total of 455 males were observed in 2020 compared to 501 in 2019. In California, peak day counts increased 21.3% from peak day counts conducted in 2019 (Figure 5). In Nevada, average males observed on leks declined 14.4% from the 2019 average and 43.6% from the long-term average (Figure 6). Trends should not be estimated from 2020 counts due to the inconsistency in monitoring efforts experienced this year.

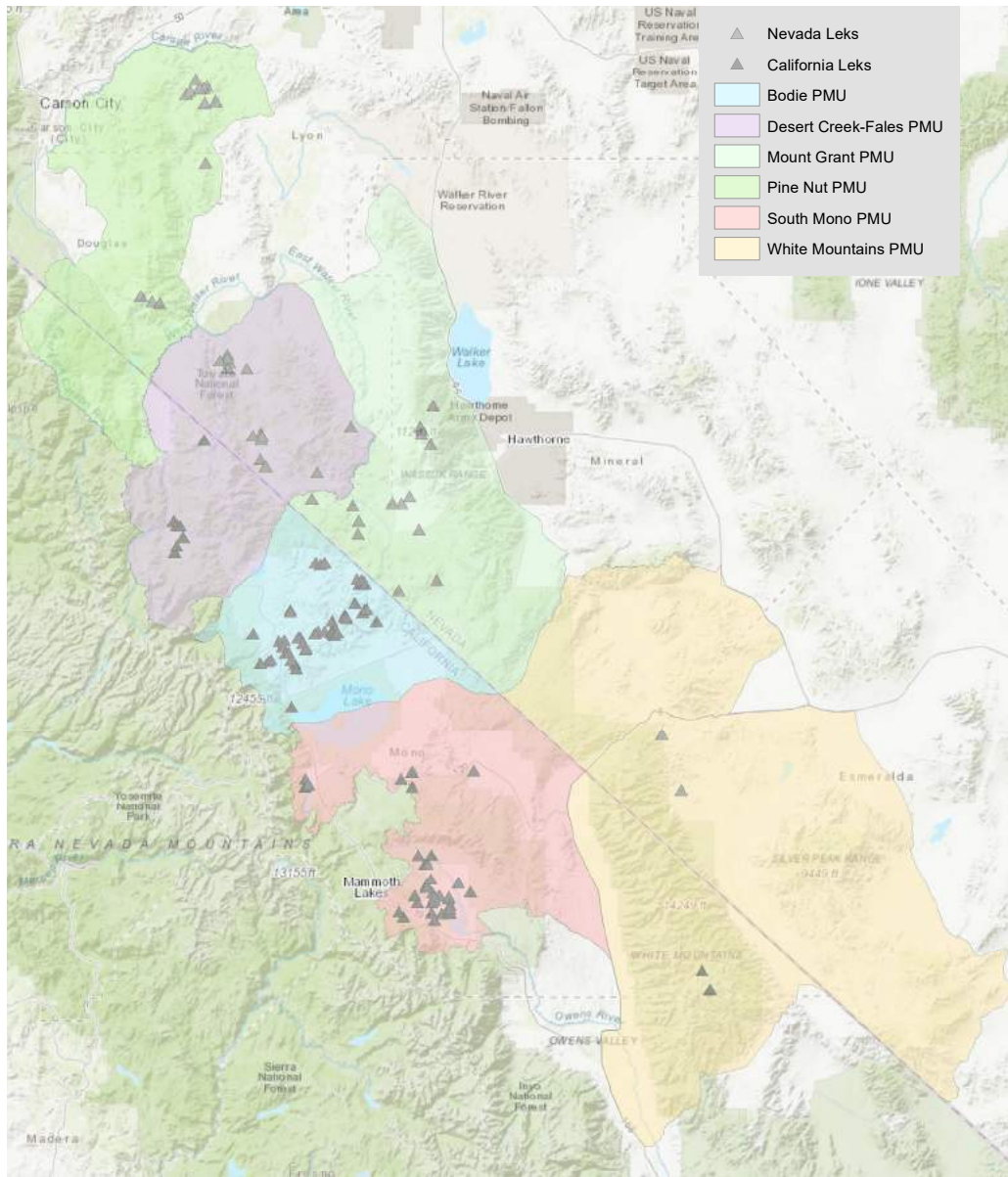


Figure 3: Known Bi-State lek locations

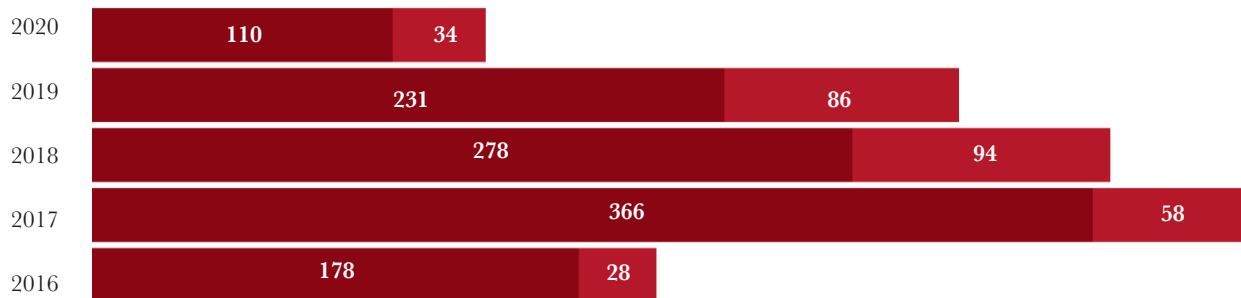


Figure 4: Completed lek counts (CA-dark red, NV-light red)

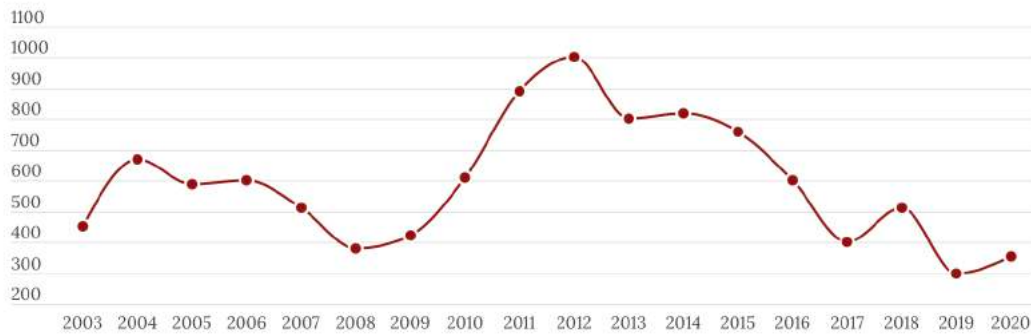


Figure 5: Male lek attendance in the California portion of the Bi-State

## California Lek Surveys

Lek counts were conducted in California between March 9 and May 15, 2020 using ground survey methods conducted by CDFW, USFS, USGS, LADWP, BLM, and Mono County. Saturation counts are the primary method typically used to count leks in California which involves counting all leks within a breeding complex simultaneously. These counts typically take place a minimum of three days spaced throughout the survey period. The peak male count is represented by the survey that has the highest cumulative number of grouse counted on all leks on any one day. This year, due to COVID-19, personnel was limited, and saturation counts were not always feasible. Counts that were obtained without using the saturation count method will be noted.

In 2020, 33 leks were monitored in the California portion of the Bi-State. A total of 353 males were observed on 21 of the 33 leks surveyed. Most birds (90.3%) were observed in the Bodie Hills (50.4%) and the Long Valley (39.9%) breeding complexes. 2020 counts represent a 21.3% increase from 2019 peak counts (291 males) and a 31% decrease from counts in 2018 (512 males). The following section summarizes lek count information for individual PMUs in the California portion of the Bi-State. COVID-19 travel restrictions and regulations limited travel and fieldwork. Fewer surveys were completed and peak lek period may have been missed in some areas, therefore 2020 monitoring results should be considered incomplete.

### *Bodie Hills*

Lek counts occurred in the Bodie Hills PMU between March 19 and April 28, 2020. Birds observed in the Bodie Hills PMU account for 50.4% of all males counted on the California side of the Bi-State and 47% of all males counted in the Bi-State as a whole. A total of nine leks were surveyed in the Bodie Hills, 6 of which had birds present during the breeding season. Two saturation counts were completed in the Bodie Hills PMU on April 14 and April 28. Peak count occurred on April 14 when a total of 178 males were observed on six leks. This is a 1.6% decrease from 2019 counts (181 males) and a 7.3% decrease from the long-term average in the Bodie Hills PMU (192 males).

### *Fales*

In 2020, four leks were surveyed between March 9 and May 15, 2020. Peak count occurred on April 27 when a total of 13 birds were observed on two leks in the Fales PMU. 2020 counts represent an increase of 160% from counts completed in 2019 (5 males).

### *Long Valley*

Lek counts occurred in the Long Valley portion of the South Mono PMU between March 12 and April 15, 2020. Five saturation counts were completed during the survey period. Birds were detected on nine of the 17 surveyed leks. Peak count occurred on April 3 when 111 males were observed on three leks. 2020 counts represent a 5.7% increase from 2019 counts (105 males) and a 48.6% decrease from the long-term average in the Long Valley breeding complex (216 males). Additional surveys conducted not using the saturation count method detected an additional 30 males on six leks.

### *Parker Meadow*

There is one known lek in the Parker Meadow sub-population of the South Mono PMU. This lek was surveyed on April 2 and April 10, 2020. Peak count was observed on April 2 when 10 males were counted. Results this year represent a 25% increase from 2019 counts (8 males).

### *South Mono*

No additional leks in the South Mono PMU were surveyed outside of the Long Valley and Parker Meadows areas during the 2020 lek season.

### *White Mountains-California*

Three leks were surveyed on May 14th in the White Mountains-California PMU. 11 males were observed on two of the three leks surveyed. Lek counts were not completed on the California portion of the White Mountains-California PMU in 2019 due to heavy snow and an inability to access lek sites during the lekking season. 2020 results represent a 36.3% decrease from 2018 counts (17 males).

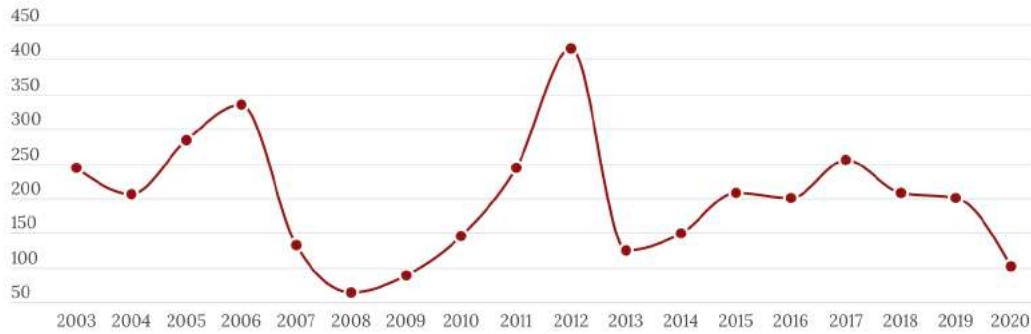


Figure 6: Male lek attendance in the Nevada portion of the Bi-State

## Nevada Lek Surveys

Lek counts in the Nevada portion of the Bi-State were completed between March 4 and May 15, 2020. Counts were conducted by NDOW, USFS, BLM, USGS personnel, and volunteers using on-the-ground survey methods. Because many leks in Nevada are remote in nature and difficult to access, saturation counts are not attempted.

There are 46 identified leks in the Nevada portion of the Bi-State area. Of the 22 leks surveyed in 2020, males were observed on eight leks. The largest number of males were observed at the Pine Grove lek in the Desert Creek PMU (n= 39). Average male attendance for active leks in the Nevada portion of the Bi-State during 2020 was 11.3 males per lek. This average is down 4.2% from the 2019 attendance rate (11.8 males per active lek) and down 30.3% from the long-term average recorded since 2000 (16.2 males per active lek). The following section summarizes lek count information for individual Population Management Units in the Nevada portion of the Bi-State. COVID-19 restrictions and regulations limited travel and fieldwork and greatly impacted monitoring efforts in Nevada. Fewer surveys were completed and peak lek period may have been missed in some areas, therefore population trends cannot be accurately determined from 2020 monitoring results.

### *Pine Nut*

There are 13 known lek locations with 3 leks classified as active and 1 lek in “pending” active status in the Pine Nut PMU. In 2020, eight leks were surveyed between May 12 and May 15. A total of five males were documented at the Pine Nut South lek that is pending active status. In 2019, a total of five males were observed in the Pine Nut PMU. Counts this year represent no change compared to the previous year

### *Mount Grant*

There are 14 known lek sites in the Mount Grant PMU, consisting of eight active and three pending active leks. In 2020, seven leks were surveyed. A total of 22 males were documented on three leks. This year’s survey efforts in Mount Grant were impacted by COVID-19 restrictions and regulations. The number of leks surveyed and the number of visits to individual leks vary greatly from previous years. Comparing 2020 results to previous year’s counts may produce misleading results.

### *Desert Creek*

There are 16 known lek sites within the Desert Creek PMU consisting of seven active and four pending active status leks. In 2020 six were surveyed. A total of 64 males were documented on five leks. This year’s survey efforts in Desert Creek were impacted by COVID-19 restrictions and regulations. The number of leks surveyed and the number of visits to individual leks vary greatly from previous years. Comparing 2020 results to previous year’s counts may produce misleading results.

### *White Mountains-NV*

There are two known lek locations in the White Mountains-Nevada PMU. In 2020 one was surveyed and no males were present.

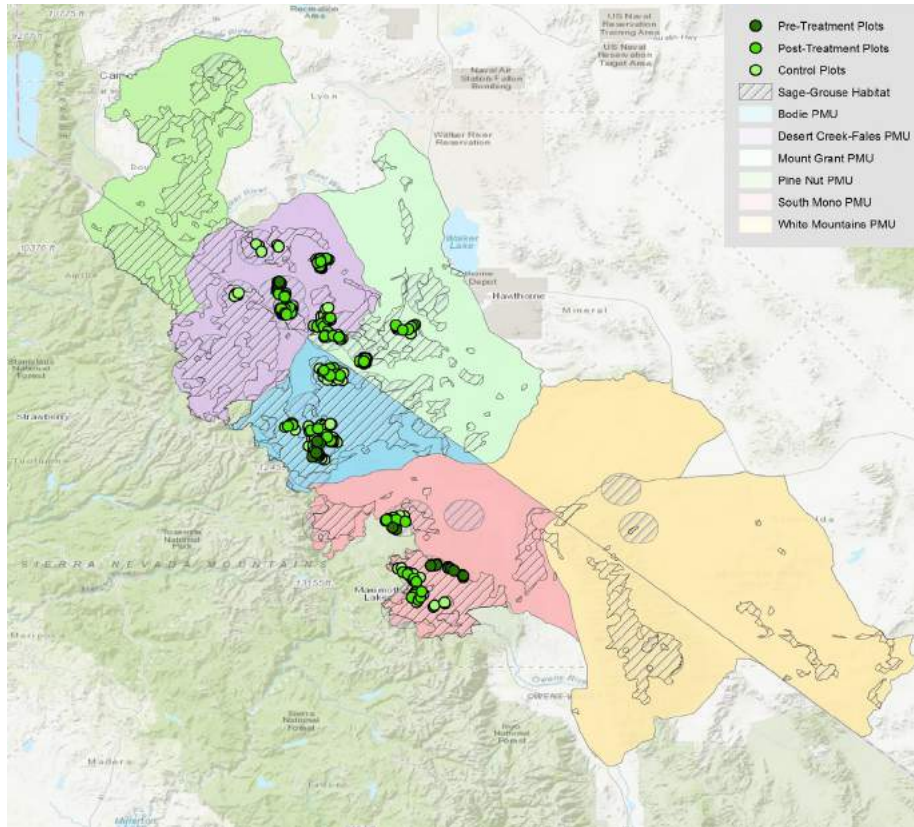


Figure 7: Vegetation monitoring plots completed in 2020

## HABITAT MONITORING

In 2011, the Nevada Partners for Conservation and Development (NPCD), housed within the Nevada Department of Wildlife (NDOW), initiated a long-term habitat restoration and monitoring project across the Bi-State to quantify the effects of conifer removal and fire restoration treatments on overall habitat health. Since then, they have collected vegetation data across numerous sites within the Bi-State sage-grouse PMUs.

In areas identified for conifer removal and at sites that have experienced episodes of wildfire, the NPCD establishes monitoring plots both within and outside of treatment and wildfire boundaries. Sampling is conducted before treatment to establish baseline conditions and sites are revisited post-treatment to determine conifer treatment and fire restoration effectiveness. Plots outside of treatment and wildfire boundaries serve as controls against which the restoration projects' effectiveness can be compared (Figure 7,8).

In 2020, 277 vegetation plots (140 control plots/137 treatment plots) were monitored across the Bi-State in all PMUs. Each year the NPCD implements a statistically rigorous and ecologically meaningful protocol to measure vegetation response to treatment including changes in sagebrush cover, perennial grass cover, species richness and presence of non-native and invasive species. Vegetation response to treatment is often slow and continued analyses are needed; however, preliminary results reported in the 2019 Bi-State Habitat Restoration Monitoring Report suggest that species richness,

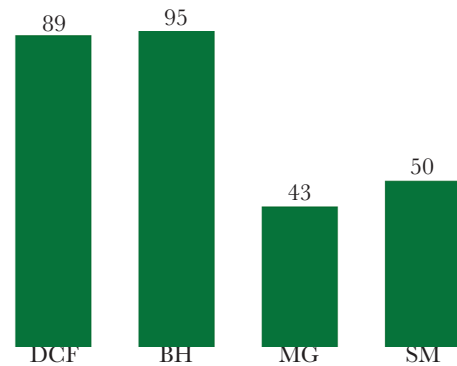


Figure 8: Completed vegetation monitoring plots

sagebrush, perennial grass, and forb cover are often elevated in treatment plots compared to control plots. Nonnative cheatgrass cover and abundance have been variable where conifer removal or wildfire has occurred. Long and short-term studies following restoration efforts have shown that seasonal variation in cheatgrass is tied to the previous 1-3 years precipitation totals (Holmgren 2006; Pilloid 2017).

The NPCD will continue to monitor plots to collect data in all areas that have been identified for treatment or restoration. Future analyses are expected to provide strong evidence that sagebrush restoration techniques, such as conifer treatment and wildfire rehabilitation, provide ecological benefits to sage-grouse.





*Bi-State collaborative conservation*

## CONSERVATION ACTION IMPLEMENTATION

### Background

The Action Plan was written in 2012 to provide a road-map to conservation for the Bi-State DPS. It called out priority actions deemed necessary to protect both sage-grouse populations and their habitats. In each Population Management Unit, threats were identified and ranked. Projects in the Action Plan sought to:

- implement a coordinated interagency approach,
- incorporate science-based adaptive management,
- increase regulatory mechanisms,
- minimize and eliminate risk,
- improve and restore habitat,
- monitor populations,
- and maintain stakeholder involvement.

At every step it was assumed that projects would be altered or added as 1) priorities change based on new information; and 2) new priorities occur that were unknown when the Action Plan was written. Since the establishment of this plan, Bi-State LAWG members have been working to implement the outlined strategies, objectives, and actions.

In 2014, agency partners announced a \$45 million dollar commitment to implement the Action Plan over a 10-year period. These letters were updated in 2019 to extend an additional five years, an act that demonstrates the ongoing commitment to the conservation of Bi-State sage-grouse and their habitats. In 2020, partners allocated approximately \$3.9 million dollars to complete conservation projects identified in the Action Plan.

### 2020 Accomplishment Summary

Much has been accomplished since the implementation of the Action Plan in 2012. Each year projects outlined in the Action Plan are implemented utilizing a science-based adaptive management and collaborative conservation approach. In 2020, Bi-State partners completed numerous projects to address various threats to Bi-State sage-grouse (Figure 9,10). Identified threats include:

- Wildfire
- Urbanization
- Conifer expansion
- Invasive species
- Loss of sagebrush/meadows
- Human disturbance
- Wild horse grazing
- Permitted livestock grazing

Annual work plans are developed to guide project implementation efforts. Work completed each year often builds upon accomplishments from previous years. Completed projects represent the highest priority actions in the Bi-State informed by research, the Conservation Planning Tool (CPT), input from the Bi-State LAWG, and common-sense realities of implementing projects.

The following pages outline actions completed in 2020 to address identified threats to Bi-State sage-grouse and their habitats as well as actions taken to implement a coordinated interagency approach, increase regulatory mechanisms, and maintain stakeholder involvement.



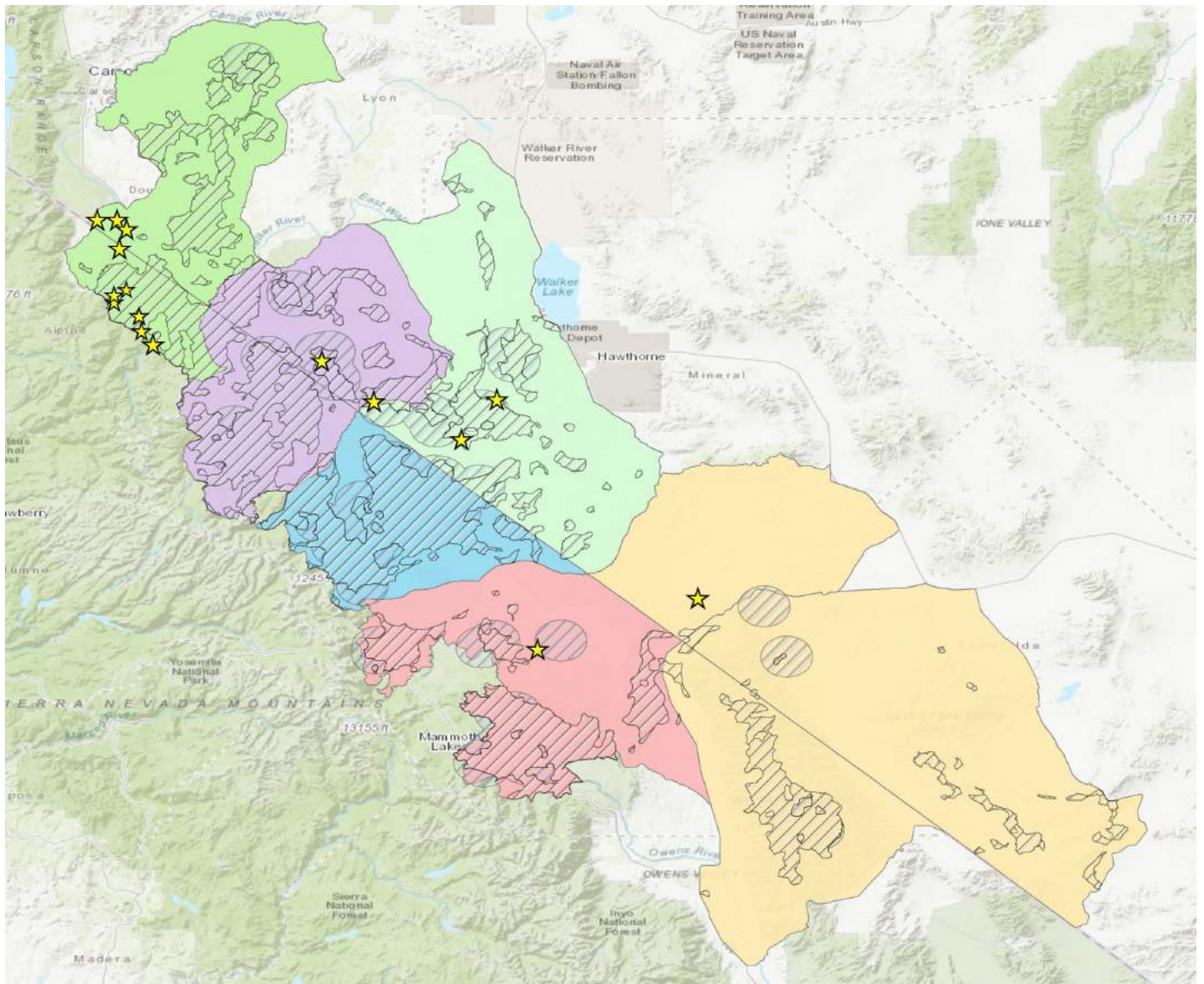


Figure 9: Completed conservation projects containing spatial data only)

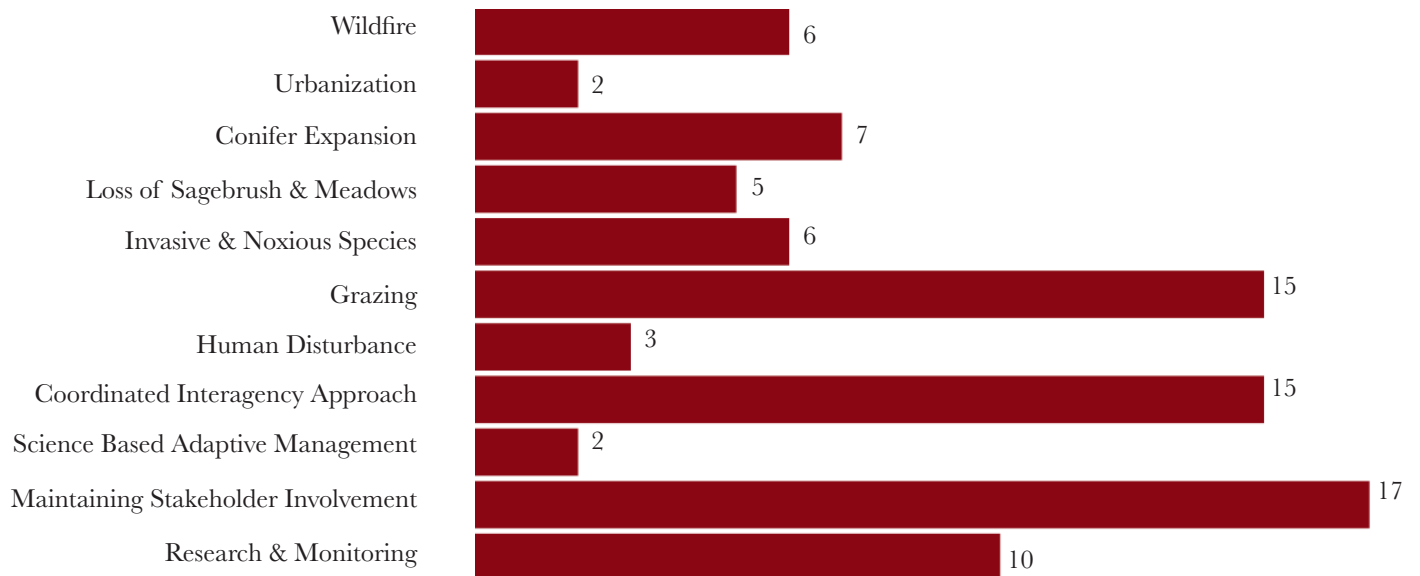


Figure 10: Completed conservation actions



*The Beach fire in the South Mono PMU*

## Wildfire

Addressing wildfire is identified as a high priority threat in the Pine Nut, Desert Creek-Fales, Mount Grant, Bodie Hills, and South Mono PMUs. Bi-State LAWG partners communicate across jurisdictional boundaries to implement coordinated fire-management strategies that minimize the loss of suitable sage-grouse habitat. Interagency fire management and suppression agreements were established between the BLM and USFS and existing fire management plans were updated to include conservation measures identified by the National Sage-Grouse Technical Team to reduce the long-term loss of sagebrush. Targeted wildfire suppression actions are taken in identified sage-grouse habitat and fire rehabilitation efforts are implemented to decrease post-fire habitat loss.

In 2020 the following actions were implemented to address the threat of wildfire in the Bi-State:

- Notable fires within the Bi-State area include the Slink, Mountain View, and Beach fires. In each instance, fire personnel implemented appropriate fire suppression methods and tactics when working in identified sage-grouse habitat
- Local seed collection efforts were completed. Approximately 350 pounds from a variety of species were collected to be used in future post-wildfire restoration projects
- Post-fire rehabilitation efforts include 108 acres of sagebrush seedling and native grass planting within the Hot Creek, Lyon, and Indian fire scars. A total of 18,916 sagebrush seedlings and native grasses were planted
- Wind fences were maintained within the area burned in the Indian fire to increase soil stability and vegetation recovery
- Exclosure fencing was maintained around the area burned by the Hot Creek fire to prevent livestock from grazing burned portions of the allotment and to aid restoration efforts



*Privately owned lands in the Bi-State*

## **Urbanization**

Maintaining high quality, intact habitat conditions into the future and addressing the risks associated with urbanization is a high priority in the Desert Creek-Fales, Pine Nut and South Mono PMUs. Conservation easements are voluntary but legally binding agreements between a landowner and a qualified organization, like a land trust, which places some restrictions on the use of a property to protect its natural values. These agreements provide benefits to both landowners and wildlife. They protect large quantities of suitable habitat from further development and allow landowners to pursue available funding to implement conservation projects on their land.

In addition to conservation easements on private lands, land purchases or exchanges have occurred that resulted in public, state or federal ownership of occupied sage-grouse habitat. These acquisitions ensure that land remains intact for generations and are managed in a way that will maintain quality habitat and provide conservation value to Bi-State sage-grouse.

The following projects were completed in 2020 to address the threat of urban development and habitat loss in the Bi-State:

- The Eastern Sierra Land Trust (ESLT) secured a 4,100-acre conservation easement for the Hunewill Ranch in the Bodie Hills PMU. Funding for this project was provided by NRCS, ESLT, California Deer Association, California Wildlife Conservation Board, and California Department of Conservation. The Hunewills are one of the region's longest-established ranching families and have proven themselves to be exceptional stewards of the land
- NRCS and ESLT offer funding through the Regional Conservation Partnership Program (RCPP) and the Agricultural Conservation Easement Program (ACEP) for conservation easements on private lands and through the Environmental Quality Incentives Program (EQIP) for habitat improvements on private and public lands in the Bi-State



*Sagebrush habitat restoration through conifer treatment before and after treatment*

## **Conifer Expansion**

The loss and fragmentation of high-quality, intact sage-grouse habitat to encroaching conifer is a high priority threat in the Pine Nut, Desert Creek-Fales, Mount Grant, Bodie Hills, and White Mountains PMUs.

Pinyon pine, juniper, and Jeffery pine are native species in the Bi-State but expansion beyond historical limits due to fire suppression, historic overgrazing by domestic livestock, and favorable climate conditions has become problematic (Baruch-Mordo, 2013). Across the Bi-State area, it is estimated that approximately 40 percent of the historically available sagebrush habitat has been usurped by woodland succession over the past 150 years (USGS, 2012).

Conifer projects within the Bi-State are ranked using the CPT and the TAC's expertise regarding areas of occupied sage-grouse habitat being impacted by conifer encroachment. Conifer removal projects aim to improve habitat, increase connectivity, and reduce predation risk to sage-grouse. Phase I conifer cover is targeted to provide the most benefit at the lowest cost. Post-treatment maintenance is often required in the years following initial treatment to ensure that small seedlings were not missed in the original treatment.

In 2020 the following actions were completed to address the threat of conifer expansion into sagebrush ecosystems:

- 7,854 acres of conifer treatment completed in the Pine Nut and Mount Grant PMUs
- 3,282 acres of conifer treatment maintenance on previously treated sites in the Desert Creek/Fales and Bodie Hills PMUs

## Loss of Sagebrush and Meadows

Healthy sagebrush and meadow conditions are necessary components of sage-grouse habitat, crucial to supporting sage-grouse throughout their life cycle. Land managers make every effort to implement best management practices to avoid the degradation of intact meadow habitat through adopted regulatory mechanisms. When sagebrush and meadow conditions are compromised, improvements are made through installation of check dams to stabilize stream head-cuts, prescribed fire, irrigation, and fencing areas to allow recovery from livestock grazing.

The following projects were completed in 2020 to improve sage-grouse habitat in the Bi-State:

- A subgroup of the TAC was formed to develop a coordinated strategy to inventory, assess, and restore meadow habitat in the Bi-State. This group will help to establish future conservation priorities related to mesic resources
- USGS established a new study to analyze at wet meadows within the Pine Nut PMU. The goal of the study is to assess the grazing impacts of cattle and wild horses on wet meadow vegetation by assessing vegetation inside and outside of grazing exclosures
- 126 acres of conifer were removed to improve meadow and spring health in the Pine Nut PMU
- Bishop BLM completed ongoing head cut stabilization efforts in Aurora Canyon
- 160 acres of meadow restoration occurred in the Kirkwood meadow in the Bodie Hills PMU
- NEPA was completed for an upcoming meadow restoration project in the Bodie Hills PMU

## Invasive and Noxious Species

Non-native plants are not overly abundant in the Bi-State area, except for cheatgrass, which occurs in all PMUs. It is most prevalent in the Pine Nut PMU where it is identified as a high priority threat and in the Desert Creek/Fales and Mount Grant PMU where it is listed as a moderate threat.

In 2020 the following projects were completed to address the spread of non-native and invasive plant species:

- 724 acres of chemical and mechanical weed treatment in Pine Nut, Desert Creek-Fales, Mount Grant, Bodie Hills, and South Mono PMUs
- The Western Governors Association and the USDA released a Toolkit for Invasive Annual Grass Management in the West. They developed a 30m resolution geospatial data layer for annual grasses which may be beneficial in understanding the extent of non-native annual grasses and identifying priority restoration areas in the Bi-State



*Sagebrush, meadow habitat, and cheatgrass*



*Human and recreational impacts in and adjacent to sage-grouse habitat*

## **Human Disturbance**

Threats associated with human disturbance include illegal hunting and recreational use impacts to sage-grouse habitat. Human disturbance and impacts from recreation were identified as a high priority threat in the Pine Nut and South Mono PMUs. These threats have been addressed through increased law enforcement, public education and the adoption of land management policies that restrict access to key habitat through road closures, regulation of new road development, and seasonally enforced regulations.

The following action was implemented in 2020 to address the threat of human disturbance:

- Bishop BLM completed a dispersed camp site inventory in the Bodie Hills
- Bishop BLM recreation technicians provided education/outreach information to 145 recreational visitors in the South Mono PMU
- Recreation monitoring surveys were carried out in Wilderness Study Areas in the Bodie Hills PMU
- Inyo NF annually monitors and patrol off-road and snow travel within 3.2 miles of active leks during breeding season as part of the OHV and OSV Habitat Management Program



*Wild horse and permitted livestock grazing in the Bi-State area*

## **Grazing**

### ***Wild Horses***

Grazing of wild horses and burros is listed as a moderate threat in the Pine Nut, Mount Grant, and White Mountains PMUs and a low priority threat in the Bodie Hills and South Mono PMUs. Each year the USGS documents the presence of wild horses and burros through the completion of raptor, raven, horse, and livestock (RRHL) surveys. Land management agencies make efforts to monitor Bi-State wild horse and burro populations to establish and maintain Appropriate Management Levels (AML) to protect their health as well as that of the habitat they and other species rely upon.

In 2020 the following actions were completed to address the habitat degradation associated with wild horse grazing:

- USGS completed wild horse surveys in conjunction with sage-grouse monitoring efforts
- The U.S. Forest Service and BLM completed aerial surveys of the Montgomery Pass Wild Horse Territory to generate a minimum count and assess the herds size compared to the established AML in the Desert Creek Fales PMU
- Bishop BLM completed five wild horse surveys in the South Mono and Bodie Hills PMUs

### ***Permitted Livestock***

The grazing of permitted livestock is listed as a low priority threat in all PMUs across the Bi-State. Each year the USGS documents the presence of livestock within sage-grouse habitat through the completion of raptor, raven, horse, and livestock (RRHL) surveys. Land management agencies work with permittees to ensure terms and conditions of grazing leases are met.

To address the threat of habitat degradation caused by grazing and to implement beneficial livestock management strategies, the following actions were completed:

- A 15-year USDA Conservation Reserve Program lease in the Bodie PMU was signed this year protecting 1,054 acres of land
- USGS completed livestock surveys in conjunction with sage-grouse monitoring efforts
- Grazing management tactics to improve sage-grouse habitat were employed across 1,127 acres in the Bodie Hills PMU
- Fences were erected around the area burned during the Hot Creek Fire in the South Mono PMU to limit grazing impacts to recovering resources
- Seven range improvement inspections were completed in the Pine Nut and Mount Grant PMUs



*Bi-State stakeholder collaboration in action*

## COLLABORATIVE CONSERVATION

Additional actions to improve sage-grouse conservation efforts are completed each year to implement a coordinated interagency approach, maintain stakeholder involvement, incorporate a science-based adaptive management plan, and carry out research and monitoring efforts. The following section highlights actions completed in 2020 to achieve these goals.

### Coordinated Interagency Approach

The Executive Oversight Committee (EOC) includes resource agency directors from state and federal land and wildlife management agencies. The EOC works to leverage collective resources, assemble the best technical talent to direct and prioritize future conservation actions, maintain consistent regulatory oversight, and to ensure a coordinated conservation effort across jurisdictional boundaries to achieve the long-term conservation of the Bi-State DPS.

In 2020, two Executive Oversight Committee meetings were held. EOC partners:

- acquired funding for ongoing research, monitoring, and habitat improvement efforts,
- provided support for the USFWS species status assessment,
- solidified funding and support for the Traditional Ecological Knowledge Summit,
- and fostered Bi-State partnership collaboration and growth.

The Technical Advisory Committee (TAC) is made up of agency biologists who provide technical assistance to guide sage-grouse conservation efforts. This year the TAC convened two times to:

- provide scientific support for the upcoming listing decision,
- develop conservation strategies to address loss of meadow habitat and invasive annual grasses,
- and establish an annual program of work for the upcoming year.

### Maintaining Stakeholder Involvement

Maintaining a foundation of trust and cooperation through stakeholder involvement is essential to the success of this collaborative conservation effort. In 2020, partners came together at the Bi-State LAWG meeting held in January. During this meeting stakeholders:

- received updates from EOC regarding agency coordination,
- heard science updates from the USGS and the TAC,
- completed a survey to direct the LAWG's future efforts,
- and shared sage-grouse conservation-related information.

The Bi-State Natural Resource Committee (BTNRC), made up of official Tribal representatives, individual Tribal members, and land and wildlife management agency officers, held 10 meetings to plan for the upcoming Traditional Ecological Knowledge Summit.

Additional actions completed to maintain current stakeholder involvement and to increase public knowledge around sage-grouse and sagebrush ecosystem conservation include:

- scientific presentations,
- public education and outreach presentations,
- and distribution of information through Bi-State newsletters and website updates.





*Male and female sage-grouse*

### **Science-Based Adaptive Management**

Each year, Bi-State partners utilize a science-based adaptive management approach to generate a strategic process for guiding sage-grouse management. This approach integrates the best available science to inform local and landscape-level management and conservation decisions. Science-based adaptive management guides decisions based on data-driven models, implementation of actions, outcome evaluation, and modification of management practices based on this iterative learning process (Bi-State Action Plan, 2012).

### **Improved Regulatory Mechanisms**

Bi-State land management agencies have adopted plan amendments to incorporate best management practices, standardize operating procedures, implement conservation measures, and mitigate threats to sage-grouse. In 2020, regulatory mechanisms were implemented to provide consistent land management direction across jurisdictional boundaries.

### **Research and Monitoring**

Ongoing research and monitoring efforts aid the development of a science-based adaptive management plan. 2020 research and monitoring efforts include:

- Sage-grouse capture and monitoring in the Bodie Hills, South Mono, and White Mountains PMUs
- Lek counts were completed in all PMUs across the Bi-State
- USGS completed raptor, raven, horse, and livestock surveys
- USGS initiated a meadow monitoring survey in the Pine Nut PMU
- USGS continued to define successful translocation protocols for sage-grouse
- Vegetation plots were sampled throughout the Bi-State conservation area

<b>Risk Addressed</b>	<b>Project Description</b>	<b>Projects Completed</b>	<b>Measure</b>	<b>PMU</b>
<b>Wildfire</b>	Exclosure fencing	1	3 miles	SM
	Fire restoration	4	120.5 acres	PN, SM
	Restoration planning	1	1 contract secured	SM
<b>Urbanization</b>	Conservation Easement	1	4,100 acres	BH, DCF
	RCPP Funding	1	Annual funding available	All PMUs
<b>Conifer Expansion</b>	Conifer Treatment	4	7,854 acres	PN, MG
	Conifer Maintenance	3	3,282 acres	BH, DCF
<b>Loss of Sagebrush and Meadows</b>	TAC subgroup formed	1	1 meeting	All PMUs
	Meadow restoration NEPA completed	1	1 plan	BH, DCF
	Meadow restoration	2	288 acres	PN, BH
	LADWP water allocation meeting	1	1 meeting	SM
<b>Invasive and Noxious Species</b>	Weed treatment	5	758 acres	PN, DCF, BH, MG, SM
	Weed survey	1	360 acres	MG
<b>Grazing Wild Horses</b>	Wild horse survey	6	6 surveys	MG, BH, SM, WM
<b>Grazing Permitted Livestock</b>	Grazing rest	1	1,054 acres	BH
	Allotment inspections	7	7 site visits	PN, MG
	Allotment vegetation surveys	1	20 surveys	BH, SM
<b>Human Disturbance</b>	Dispersed camping surveys	1	26 sites documented	BH
	Recreation surveys	1	1,359 surveys	SM
	Recreation education and outreach	1	145 contacts	SM

Table 2: 2020 conservation projects

Other Action Plan Accomplishments	Description/Measure
<b>Coordinated Interagency Approach</b>	2 Executive Oversight Committee meetings
	2 Technical Advisory Committee meetings
	10 Tribal Natural Resource Committee meetings
	3 Interagency funding agreements
<b>Science-Based Adaptive Management</b>	Funding for USGS Science Advisor
	Conservation Planning Tool used in project implementation
<b>Research and Monitoring</b>	Annual lek counts
	Capture and monitoring efforts in the BH, SM and WM PMUs
	Research and monitoring agreements and funding secured
	Sage-grouse survival monitoring flights completed
	Raptor, raven, horse and livestock surveys
	Vegetation surveys
	USGS Pine Nut PMU meadow monitoring study initiated
<b>Maintain and Improve Stakeholder Involvement</b>	1 LAWG meeting
	3 Bi-State specific conference presentations
	3 Interpretive and education presentations
	9 Bi-State newsletters and website updates
	Bi-State website updates

*Table 3: 2020 collaborative conservation actions*

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