2024

Utah Greater Sage-grouse Lek Count Report

LEK COUNTS
ADAPTIVE MANAGEMENT TRIGGERS
AERIAL SEARCH

Prepared by the Utah Division of Wildlife Resources

UTAH DNR WILDLIFE RESOURCES

Abstract

Greater Sage-grouse (*Centrocercus urophasianus*) lek counts are conducted annually within Utah with a goal of counting the peak number of males on all known leks in the state. Statewide lek counts within Sage-grouse Management Areas (SGMAs) were up 55% from 2023 counts, with 4,623 male sage-grouse counted on 230 leks within SGMAs. Counts relative to the previous year are inconsistent across the state with nine SGMAs having increased counts and two declining. An additional 172 male sage-grouse were counted outside of SGMAs for total of 4,795 male sage-grouse counted statewide. Statewide 398 leks were counted at least once with males observed on 246 leks.

The Utah Bureau of Land Management and US Forest Service resource management plans contain a set of adaptive management triggers developed and evaluated in conjunction with the Utah Division of Wildlife Resources. In 2024 the Hamlin Valley Federal Population Area had positive population growth, but the preceding several years of negative population growth maintained the result of a Hard Trigger.

Systematic greater sage-grouse aerial lek searches are scheduled annually to document new or previously unknown leks. Surveys are conducted by a contractor using infrared (IR) imaging from a fixed wing aircraft. Surveys were conducted in the Panguitch, Ibapah, and Sheeprock Mountains SGMAs.

Background

Sage-grouse life history is tightly woven around leks and leks are a visible center of important sage-grouse habitats. Leks are associated with critical nesting and early brood-rearing habitats, and generally located within nesting habitat used by nesting sage-grouse hens, with the majority nesting within 3.1 miles of a lek. Annual counts of male sage-grouse on leks has been shown to accurately reflect population changes (Dahlgren et al. 2016). The effectiveness of lek counts as a population index and relative ease of data collection leads to lek counts forming the basis of most sage-grouse management and population monitoring.

Greater sage-grouse (*Centrocercus urophasianus*) leks have been counted in Utah for over half a century, and the Utah Division of Wildlife Resources (DWR) maintains lek records extending back to 1959. The DWR focused tremendous energy and resources into locating sage-grouse leks and defining populations during the 1960s and 1970s. Records of lek locations and counts form one of the most extensive and continuous monitoring systems for this species across its range. While ground searching for new leks continues, the majority of work is directed toward monitoring known leks.

Over the time period for which data is available, there is a consistent cyclic behavior with a peak and trough every eight to 10 years. Since 1959, we have seen an increase in the number of sage-grouse counted in Utah, however the raw counts are confounded by increasing levels of effort to count known leks and search for unknown leks. To compensate for additional effort increasing total male counts, average males per lek is also calculated to provide an index of population change less impacted by counting effort. However, males per lek also has potential bias as increased search effort is likely to document smaller leks and decrease the average numbers of males per lek. Despite some bias in metrics, the overall trend in lek counts is closely correlated with trends in populations. Lek counts accurately represent changes in sage-grouse populations over time.

Range wide loss of sagebrush habitat and concomitant decreases in populations have led to a number of petitions for listing under the Endangered Species Act. Greater sage-grouse were found warranted but precluded from listing in March of 2010, then in in October of 2015 were found not warranted for listing. However, they are still vulnerable to habitat loss and other factors and remain a species of greatest conservation need (SGCN; Utah Wildlife Action Plan). As a SGCN, considerable management time, effort, and funding is dedicated to the conservation of greater sage-grouse.

Although tremendous effort has been invested in lek searches, many areas of the state are relatively poorly surveyed for the existence of sage-grouse leks. Leks also have the potential to shift locations over time in response to habitat and population changes, making continued lek searches necessary for ongoing monitoring of sage-grouse populations. Ground searches are conducted by Division employees, researchers, agency partners, private landowners, and others. New leks found via ground-based searches are incorporated into the state lek database as an active lek once reported and verified in a second year.

In addition to ground-based searches, aerial lek searches have enabled a more systematic search for leks in remote and poorly accessible areas throughout the state. Aerial searches allow leks to be found in remote areas, in areas with impassable roads, or areas that are otherwise inaccessible. Aerial searches also allow a large area to be surveyed more thoroughly than is possible via ground-based searches. Aerial surveys also eliminate the time necessary to obtain permission to access private lands or other limited access areas.

Table of contents

Abstract 2

Background 3

Table of contents 5

Goals and Objectives 6

Objective A-1: Monitor, protect, and maintain current population numbers 6

Methods 6

Greater Sage-grouse Lek Counts 6

Fixed Wing Infrared Lek Search 7

Results: Greater Sage-grouse Lek Counts 8

Bald Hills 11

Box Elder 12

Carbon 13

Hamlin Valley 14

Ibapah 15

Panguitch 16

Parker Mountain Emery 17

Rich-Morgan-Summit 18

Sheeprock Mountains 19

Strawberry Valley 20

Uintah 21

Non-SGMA 22

BLM and USFS Adaptive Management Triggers 23

Soft Triggers 23

Hard Triggers 24

Results: Fixed Wing Infrared Lek Search 28

Goals and Objectives

The goal of this project is to maintain monitoring continuity of sage-grouse leks in Utah, and to inventory sage-grouse habitat in the state to expand the lek database and mapping record.

The Utah Greater Sage-grouse Management Plan 2009 states as an objective with related strategies, which is directly applicable to this work:

Objective A-1: Monitor, protect, and maintain current population numbers

A-1.1 Population Monitoring

A. Lek Surveys

1. Annual lek surveys will form the base metric to determine and assess both annual and long term population status and trend.

2. Strive to survey all known, occupied, and active leks annually utilizing standard UDWR protocol.

3. Conduct planned and systematic surveys and searches for new and unidentified leks in all potential habitats. Document, map, and file all search areas with GPS tracks.

Methods

Greater Sage-grouse Lek Counts

Greater sage-grouse lek counts are conducted in accordance with the protocol outlined in the 2009 Management Plan for Greater Sage-grouse in Utah, and the 2022 WAFWA Sage-grouse Monitoring Guidelines. The methods specify that a minimum of three counts at approximate weekly intervals be conducted at each known lek between March 20 and May 7. First counts are conducted in March or early April, depending on conditions to capture maximum male attendance which generally occurs mid-April, however date of maximum counts varies throughout the state. Counts are conducted from ½ hour before sunrise up to 1 ½ hours after sunrise. Sage-grouse are counted from a vehicle or on foot at sufficient distance to not disturb lekking activity. At each visit the lek is counted a minimum of three times in succession using binoculars or a spotting scope. For each count, the time and number of male, female and

unknown sex are recorded. Additional data on weather conditions and count location is recorded for each visit. Data is recorded digitally using an ArcGIS Survey123 app on a smart phone or tablet. See the 2009 Management Plan for Greater Sage-grouse in Utah for detailed protocol.

At the close of the lek counting season, data is compiled at the DWR state office where the counts are incorporated into the long-term sage-grouse database.

Undetermined leks have had displaying males observed, but they were either discovered this year, seen in previous years without males being documented in subsequent years, or had only one male observed. Undetermined leks are included in summary statistics.

The 2019 Utah Conservation Plan for Greater Sage-grouse in Utah specifies that population areas are evaluated using the slope of a linear regression line fitted to the most recent 20 years of data. The slope of the regression line represents the number of male sage-grouse added or lost from counts per year over the 20 year period. Results in this report are also presented as an annual percent population change over the 20 year evaluation period. Percent change is calculated as the slope of the regression line divided by the average number of male sage-grouse counted over the same period, multiplied by 100.

Fixed Wing Infrared Lek Search

Flight areas are prioritized based on known populations, past flight paths, state and regional priorities, data needs for state sage-grouse conservation efforts, and flight cost.

Transects were flown by Owyhee Air Research using a cryogenically cooled thermal imager mounted in stabilized gimbal mounts on fixed wing aircraft. Flights are conducted during morning periods from ½ hours before sunrise to 1 ½ hours past sunrise with weather conditions as specified in the Utah Lek Count Protocol. Polygons of the search area were provided to Owyhee Air Research who develops the flight plan and aircraft path within the specified polygons. Transects are flown at approximately 450 meters above ground level with and camera angle set to a predetermined tilt and zoom allowing for an approximately 500 meters swath of video coverage per pass. The pilot is responsible for flying pre-determined transects with a separate thermography specialist responsible for analyzing the video feed and operating the camera. Once detected along the transect, the aircraft orbits the detected grouse to view the potential lek from all angles, identify grouse to species, count number of birds, identify sex, and record the lek location. Flight data is entered into an excel spreadsheet and probable leks added to the internal DWR sage-grouse databases.

Results: Greater Sage-grouse Lek Counts

In Utah's Sage-grouse Management Areas, 368 greater sage-grouse leks were visited and 230 of those leks had at least one male counted. Across all leks counted within SGMAs there was a high count of 4,623 males, for an average of 20.1 males per lek (Figure 1).

Statewide a total of 398 greater sage-grouse leks were visited (this includes non-SGMA leks). Of the leks visited, 246 had at least one male counted. Across all counted leks where sage-grouse were detected there was a high count of 4,795 males, for an average of 19.5 males per lek.

Within SGMAs, 19 leks counted were classified as undetermined. These undetermined leks contributed 146 males to the total count. There were nine male sage-grouse counted on one undetermined lek outside of SGMAs.

Overall counts on SGMAs were up 54.9% from 2023. Total counts were expected to continue increasing in 2023 after a nadir in the cyclic population counts in 2019-2021. Counts relative to the previous year are inconsistent across the state with nine SGMAs having increased counts, and two declining.

The peaks and lows continue to decrease with each cycle of the populations – the low years are lower and the high years do not reach the previous peaks. Previous low years in 2002, 2011 and 2019 had 3,034, 2,710 and 2,094 males counted respectively. At the same time, Utah increased counting effort visiting 192 leks in 2002, 266 leks in 2011, 305 in 2019, and 379 in 2022. Effort is increasing over time; with accompanying decrease in males per lek and total males; with equal effort across years we would likely see a steeper decline in long-term sage-grouse counts (Figure 2).

Individual SGMA populations are more variable than the statewide aggregation of counts (Table 1). Population trajectories for individual SGMAs are described below.

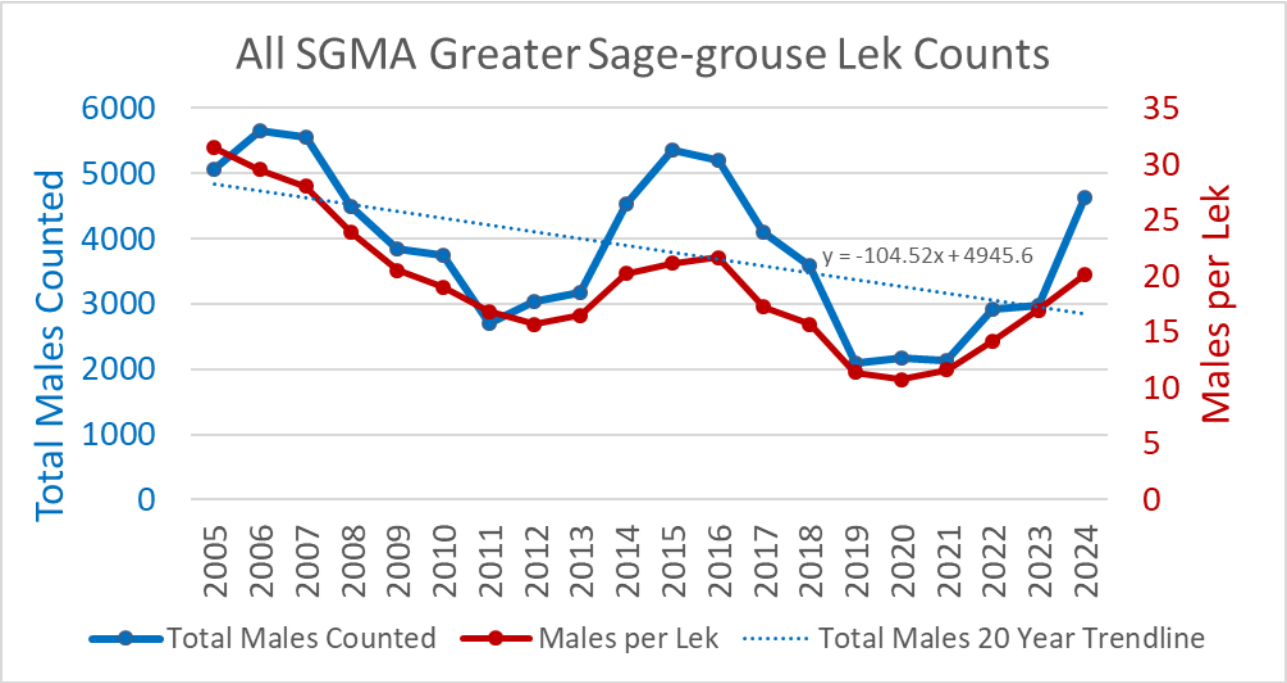

Figure 1. *Total high count for all Sage-grouse Management Areas within Utah over the past 20 years and males counted per lek for leks with males present. The trend line is fitted to total males counted and represents an overall annual change across 20 years to approximate two population cycles.*

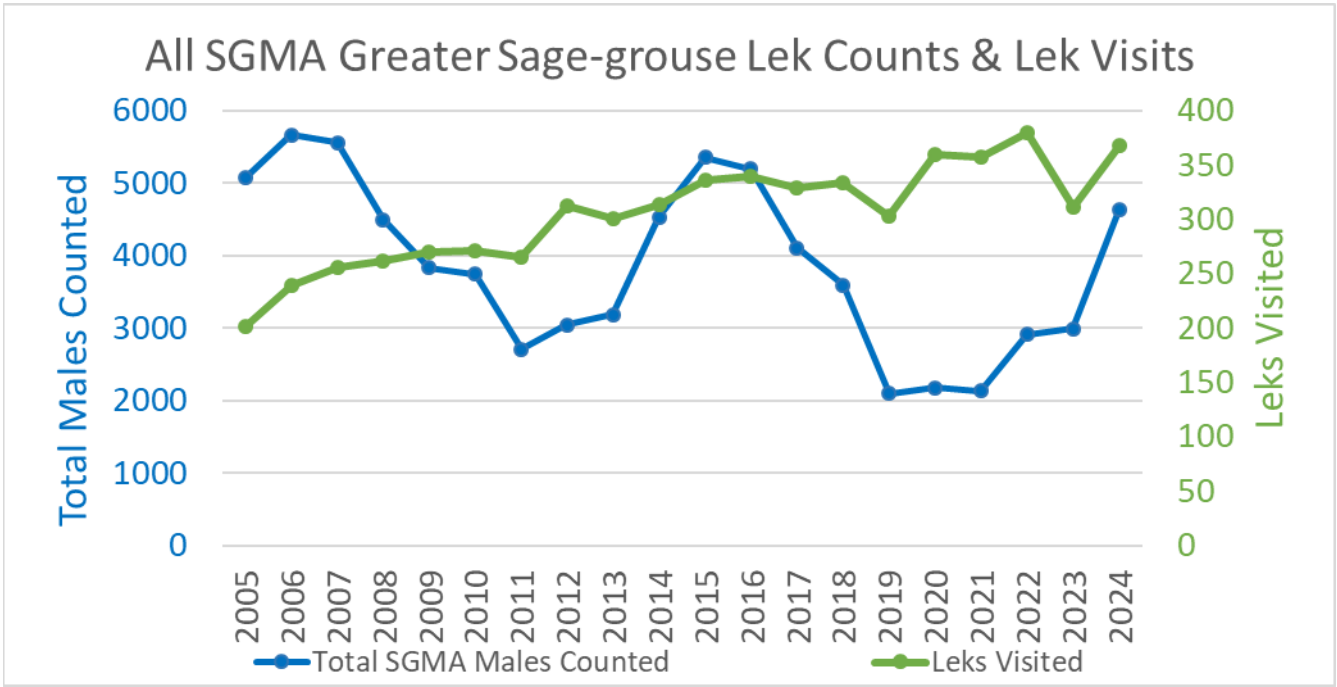

Figure 2. *Number of leks visited each lekking season in Utah relative to the total number of males counted. More leks are being counted to maintain the same overall total male counts. Decrease in leks counted in 2023 may be primarily attributable to access limitations resulting from above average snowpack.*

2024	Bald Hills	Box Elder	Carbon	Hamlin Valley	Ibapah	Panguitch	Parker Mountain-Emery	Rich-Morgan-Summit	Sheeprock Mountains	Strawberry Valley	Uintah	Non-SGMA	All SGMA	All Leks
Leks with Males	16	46	10	7	3	13	47	39	5	4	40	16	230	246
Total Leks Visited	19	73	14	12	4	27	74	60	10	7	68	30	368	398
Total Males Counted	217	743	117	73	39	364	1125	1094	65	74	704	172	4623	4795
Average Males per Lek (leks > 0)	13.6	16.2	11.7	10.4	13.0	28.0	23.9	28.1	13.0	18.5	17.6	10.8	20.1	19.5
Percent Change 2023-2024	71%	63%	30%	92%	-5%	93%	46%	107%	23%	-20%	18%	30%	55%	54%
20 Year Regression Slope	3.46	-20.52	-1.20	-3.02	-1.04	-8.76	-21.95	-48.95	-4.58	-0.14	2.07	-5.31	-104.9	-109.11
20 Year Average Count	107.0	631.1	137.3	77.2	42.8	312.7	837.9	961.6	63.3	102.4	574.7	256.4	3848.2	4104.6
Percent Change Per Year Over 20 Years	3%	-3%	-1%	-4%	-2%	-3%	-3%	-5%	-7%	0%	0%	-2%	-2.7%	-2.7%
Undetermined Leks Found	2	4	0	2	0	1	4	3	1	1	1	1	19	20
Percent of UT Population	5%	15%	2%	2%	1%	8%	24%	23%	1%	2%	15%	4%	96%	100%

Table 1. *Summary data for male greater sage-grouse high counts within each of Utah's Sage-grouse Management Areas and statewide for the 2024 lek counting season. See methods for definitions of fields.*

Bald Hills

In the Bald Hills SGMA 19 leks were visited, of those male sage-grouse were detected on 16. A total of 217 male sage-grouse were counted, for an average of 13.6 males per lek. From 2023 to 2024 the Bald Hills SGMA counts increased by 71%. This annual increase was a welcome reversal of the consistent downward trend from 2016 to 2021.

Overall, counts in the Bald Hills SMGA have trended up over the past 20 years when fitted to a 20 year trend line at an average rate of 3.2% per year. However, that growth rate is based on counting 19 leks per year in 2024, relative to only 5 leks per year at the beginning of the evaluation period.

Two potential new leks were found.

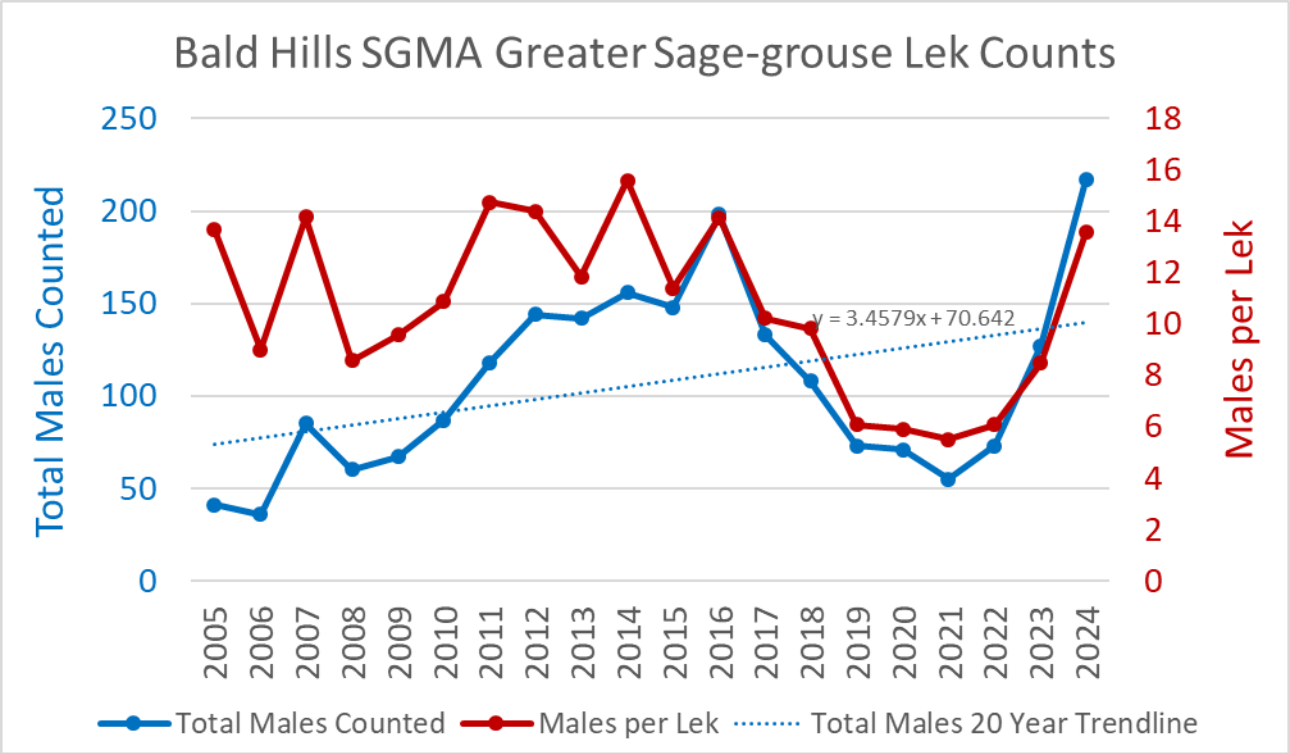

Figure 3. *Average males per lek for all leks with at least one male counted and total number of males counted within the Bald Hills Sage-grouse Management Area. Trend line represents a linear regression for total males counted over the last 20 year approximating two population cycles.*

Box Elder

In the Box Elder SGMA 73 leks were visited, of those male sage-grouse were detected on 46. A total of 743 male sage-grouse were counted, for an average of 16.2 males per lek. From 2023 to 2024 the Box Elder SGMA counts increased by 62.6%. Counts have trended down over the past 20 years, decreasing at an average annual rate of 3.3% per year.

There has been significant expansion of conifer cover into sagebrush habitat within the SGMA, however large areas of habitat have been restored in the SGMA in recent years. As restoration projects are completed in the area we hope to see an increase in population and a shift to a positive long term trend.

One potential new lek was found.

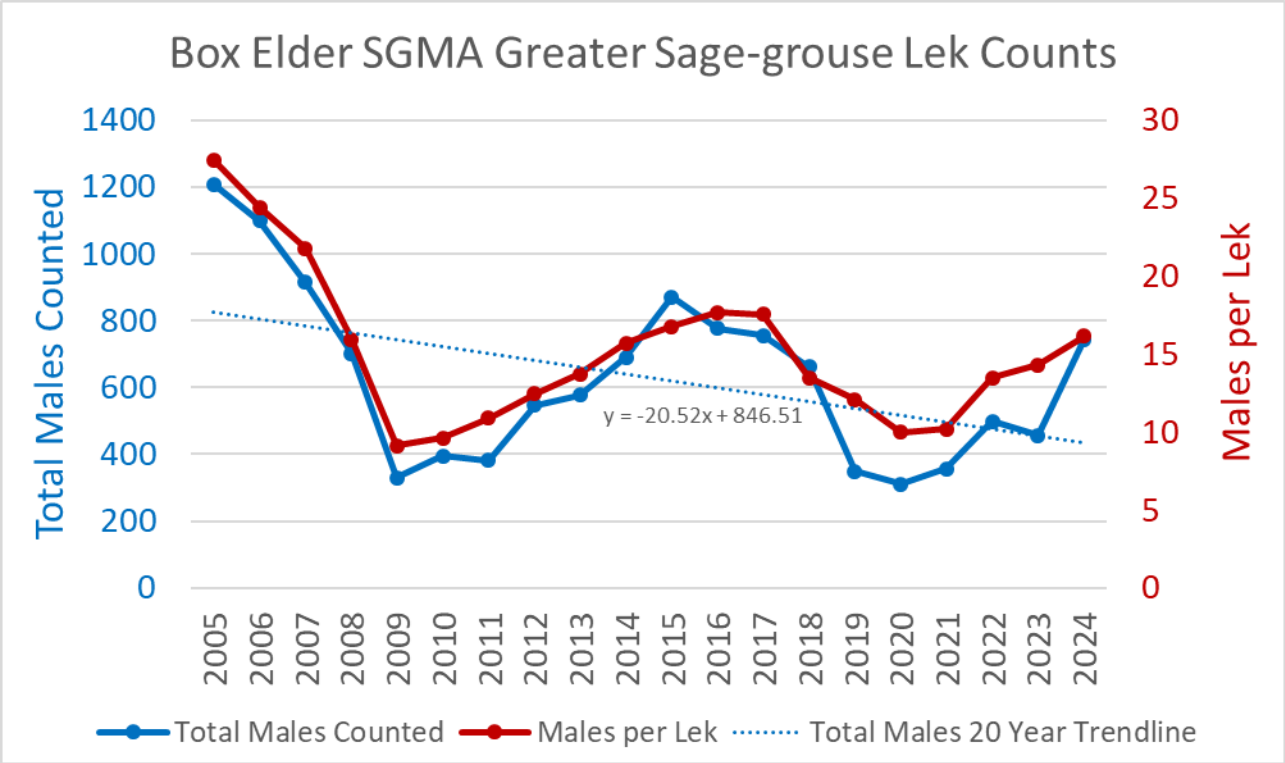

Figure 4. *Average males per lek for all leks with at least one male counted and total number of males counted within the Box Elder Sage-grouse Management Area. Trend line represents a linear regression for total males counted over the last 20 year approximating two population cycles.*

Carbon

In the Carbon SGMA 14 leks were visited, of those male sage-grouse were detected on 10. A total of 117 male sage-grouse were counted, for an average of 11.7 males per lek. From 2023 to 2024 the Carbon SGMA counts increased by 30.0%. Counts in the SMGA have been relatively flat over the past 20 years, decreasing at an average annual rate of 0.9% per year.

No new leks were found.

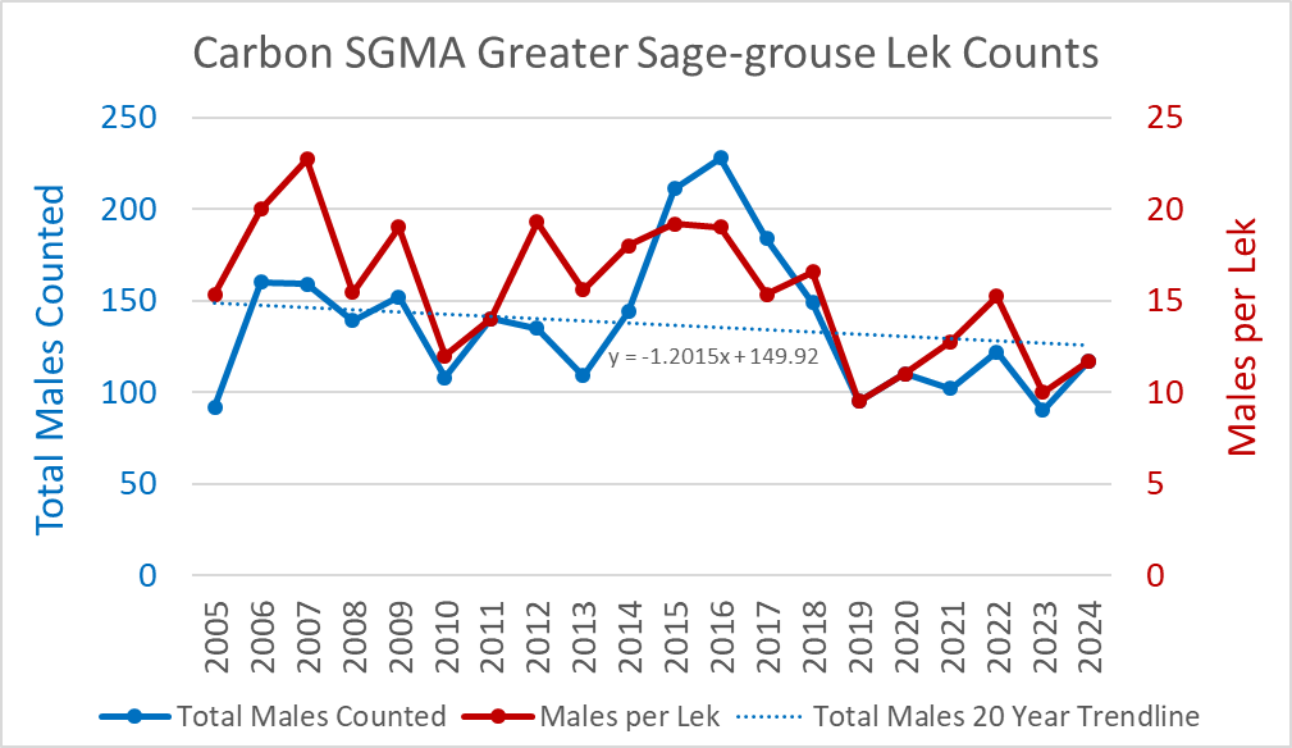

Figure 5. *Average males per lek for all leks with at least one male counted and total number of males counted within the Carbon Sage-grouse Management Area. Trend line represents a linear regression for total males counted over the last 20 year approximating two population cycles.*

Hamlin Valley

In the Hamlin Valley SGMA 12 leks were visited, of those male sage-grouse were detected on 7. A total of 73 male sage-grouse were counted, for an average of 10.4 males per lek. From 2023 to 2024 the Hamlin Valley SGMA counts increased by 92.1%. Counts in the SGMA have trended down over the past 20 years, decreasing at an average annual rate of 3.9% per year, or an average loss of 3.0 males per year.

One potential new lek was found.

The Hamlin Valley population area met criteria for a hard federal adaptive management trigger for a third consecutive year (Table 2). A hard trigger was indicated by lambda of less than one in 8 of 10 years for all PHMA leks. Contact the BLM or consult the BLM's causal factor analysis for more information on federal management plan triggers.

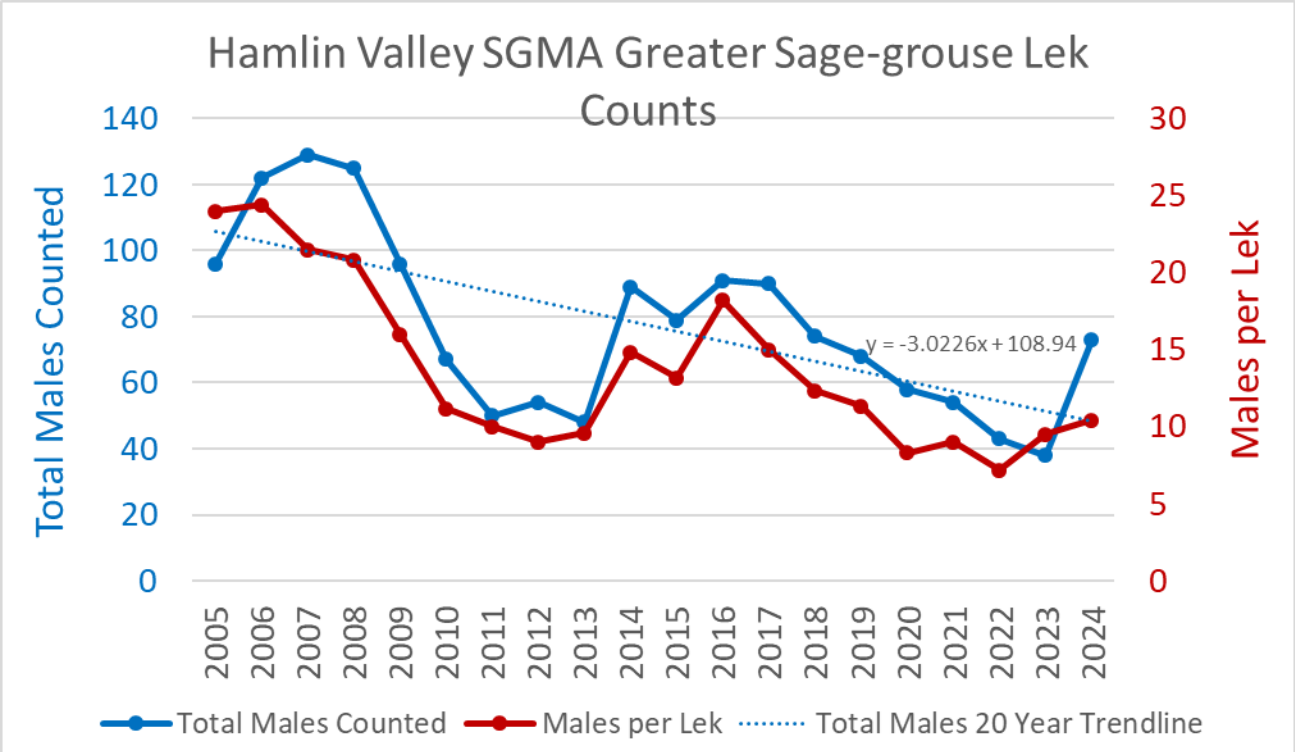

Figure 6. *Average males per lek for all leks with at least one male counted and total number of males counted within the Hamlin Valley Sage-grouse Management Area. Trend line represents a linear regression for total males counted over the last 20 year approximating two population cycles.*

Ibapah

In the Ibapah SGMA four leks were visited, of those male sage-grouse were detected on three. A total of 39 male sage-grouse were counted, for an average of 13.0 males per lek. From 2023 to 2024 the Ibapah SGMA counts decreased by 4.9%. Annual counts in this area are variable due to limited number of leks in the area. Counts have declined on average over the last 20 years with an average annual decrease of 2.4% per year.

No new leks were found.

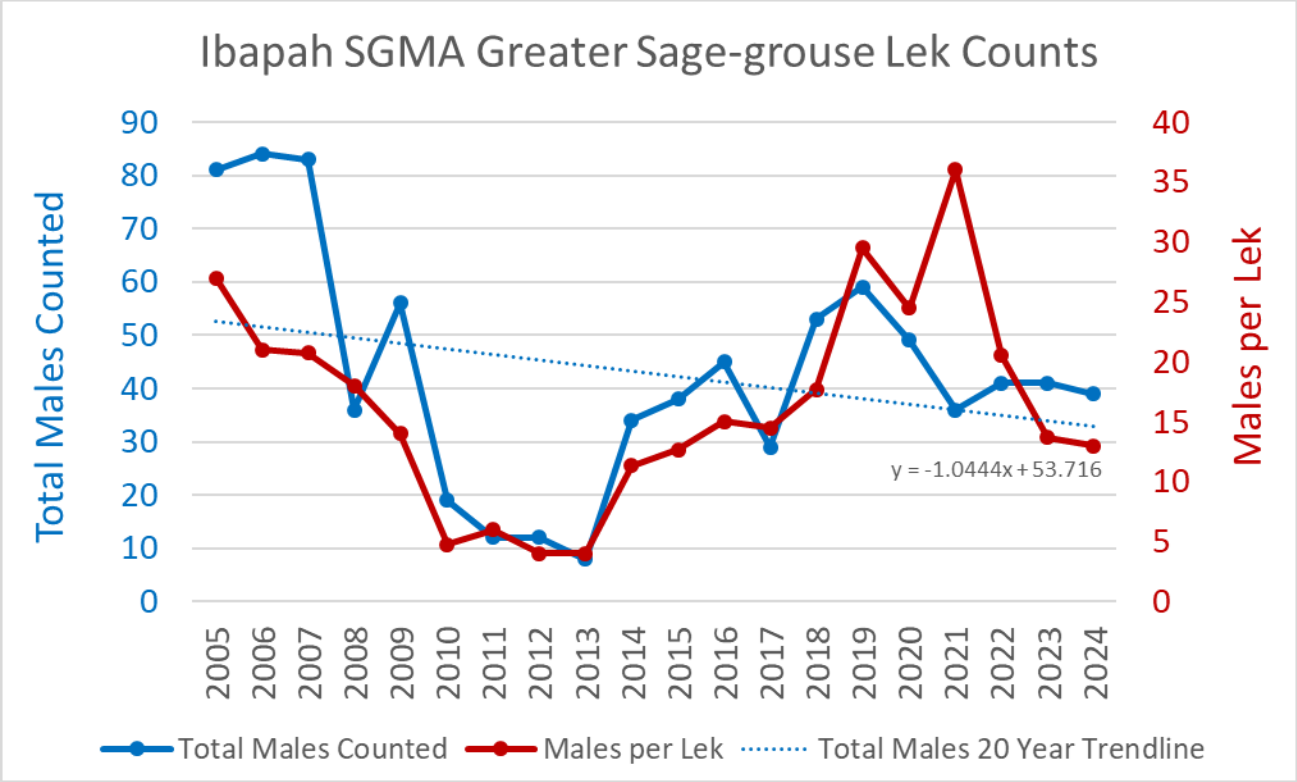

Figure 7. *Average males per lek for all leks with at least one male counted and total number of males counted within the Ibapah Sage-grouse Management Area. Trend line represents a linear regression for total males counted over the last 20 year approximating two population cycles.*

Panguitch

In the Panguitch SGMA 27 leks were visited, of those male sage-grouse were detected on 13. A total of 364 male sage-grouse were counted, for an average of 28.0 males per lek. From 2023 to 2024 the Panguitch SGMA counts increased by 92.6%. Counts declined on average over the past 20 years, decreasing at an average annual rate of 2.8% per year.

No new leks were found.

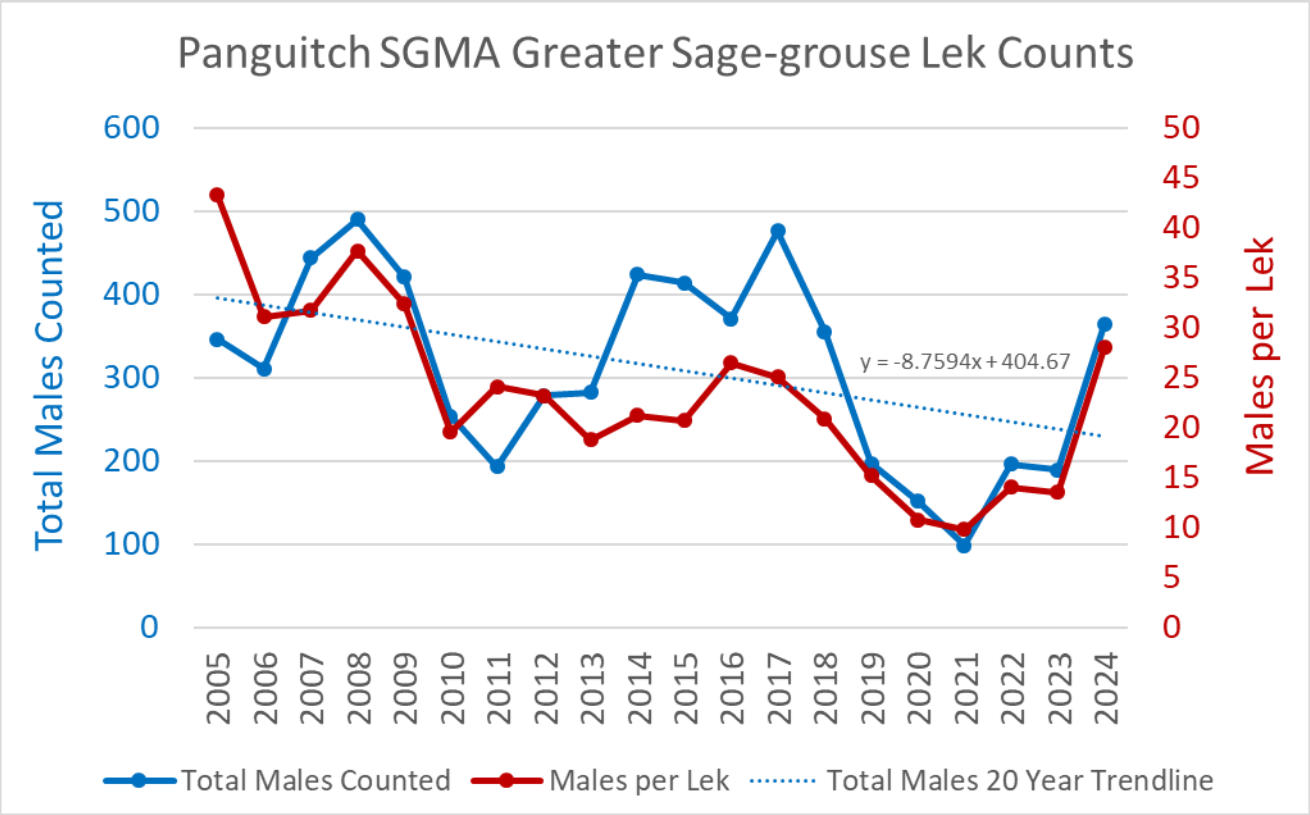

Figure 8. *Average males per lek for all leks with at least one male counted and total number of males counted within the Panguitch Sage-grouse Management Area. Trend line represents a linear regression for total males counted over the last 20 year approximating two population cycles.*

Parker Mountain Emery

In the Parker Mountain-Emery SGMA 74 leks were visited, of those male sage-grouse were detected on 47. A total of 1130 male sage-grouse were counted, for an average of 24.04 males per lek. From 2023 to 2024 the Parker Mountain-Emery SGMA counts increased by 46.6%. This annual increase following historic low counts brings overall counts up to levels slightly above the high point in the last population cycle (2014-2016). The SGMA trended down over the past 20 years, decreasing at an average rate of 2.6% per year, or an average loss of 22 males per year from the population. The new lek discovered last year again contributed significant numbers, with 112 males counted.

One potential new lek was found this year.

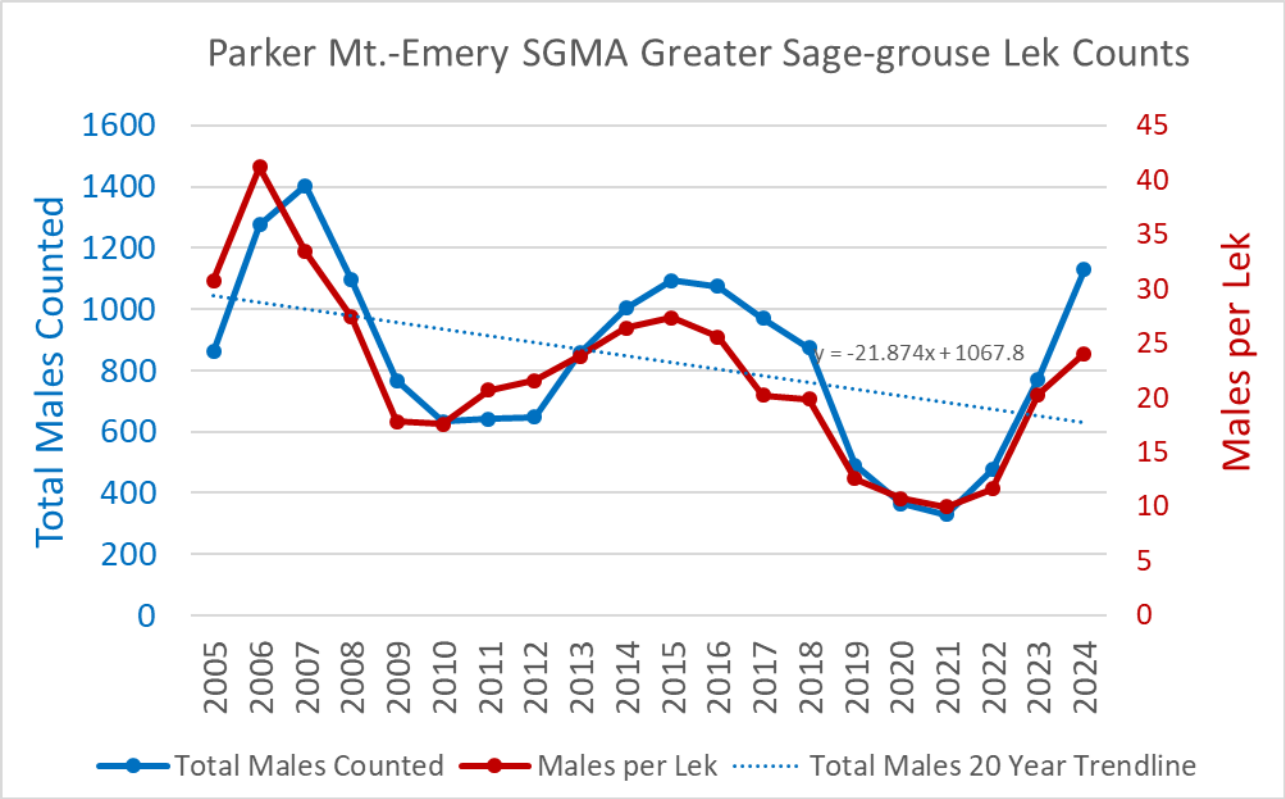

Figure 9. *Average males per lek for all leks with at least one male counted and total number of males counted within the Parker Mountain-Emery Sage-grouse Management Area. Trend line represents a linear regression for total males counted over the last 20 year approximating two population cycles.*

Rich-Morgan-Summit

In the Rich-Morgan-Summit SGMA 60 leks were visited, of those male sage-grouse were detected on 39. A total of 1097 male sage-grouse were counted, for an average of 28.1 males per lek. From 2023 to 2024 the Rich-Morgan-Summit SGMA counts increased by 107.4%. The SGMA trended down over the past 20 years, decreasing at an average rate of 5.1% per year, or an average loss of 49 males per year from the population.

Males per lek increased year over year, continuing an increasing trend that started in 2020.

Two potential new leks were found.

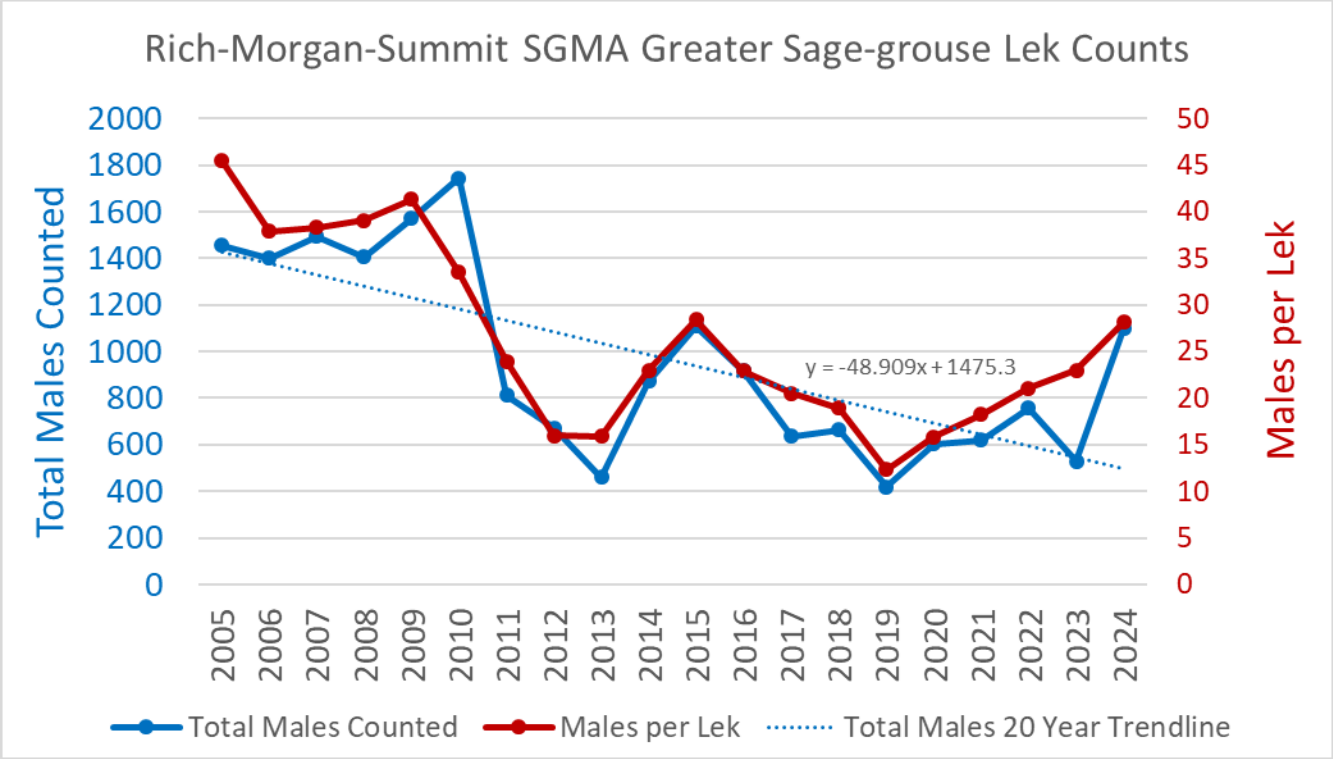

Figure 10. *Average males per lek for all leks with at least one male counted and total number of males counted within the Rich-Morgan-Summit Sage-grouse Management Area. Trend line represents a linear regression for total males counted over the last 20 year approximating two population cycles.*

Sheeprock Mountains

In the Sheeprock Mountains SGMA 10 leks were visited, of those male sage-grouse were detected on five. A total of 65 male sage-grouse were counted, for an average of 13.0 males per lek. From 2023 to 2024 the Sheeprock Mountains SGMA counts increased by 22.6%.

The Sheeprock Mountains SGMA has had long term declines in population and counts are down over the past 20 years, decreasing at an average annual rate of 7.2% per year.

No new leks were found.

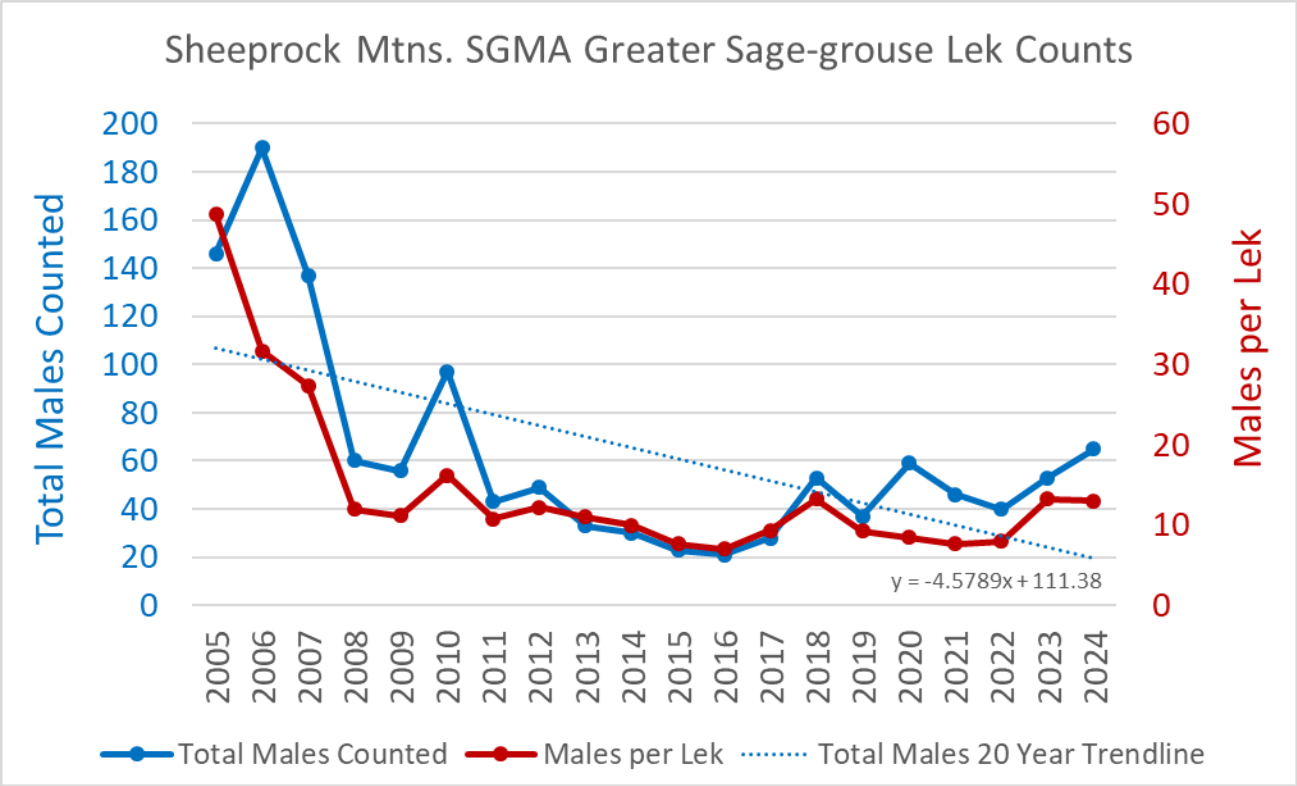

Figure 11. *Average males per lek for all leks with at least one male counted and total number of males counted within the Sheeprock Mountains Sage-grouse Management Area. Trend line represents a linear regression for total males counted over the last 20 year approximating two population cycles.*

Strawberry Valley

In the Strawberry Valley SGMA 7 leks were visited, of those male sage-grouse were detected on 4. A total of 74 male sage-grouse were counted, for an average of 18.5 males per lek. From 2023 to 2024 the Strawberry Valley SGMA counts decreased by 20.4%. This decrease is likely the result of access issues due to deep snow in some lek locations. Generally, counts were flat over the past 20 years, decreasing at an average annual rate of 0.1% per year.

No new leks were found.

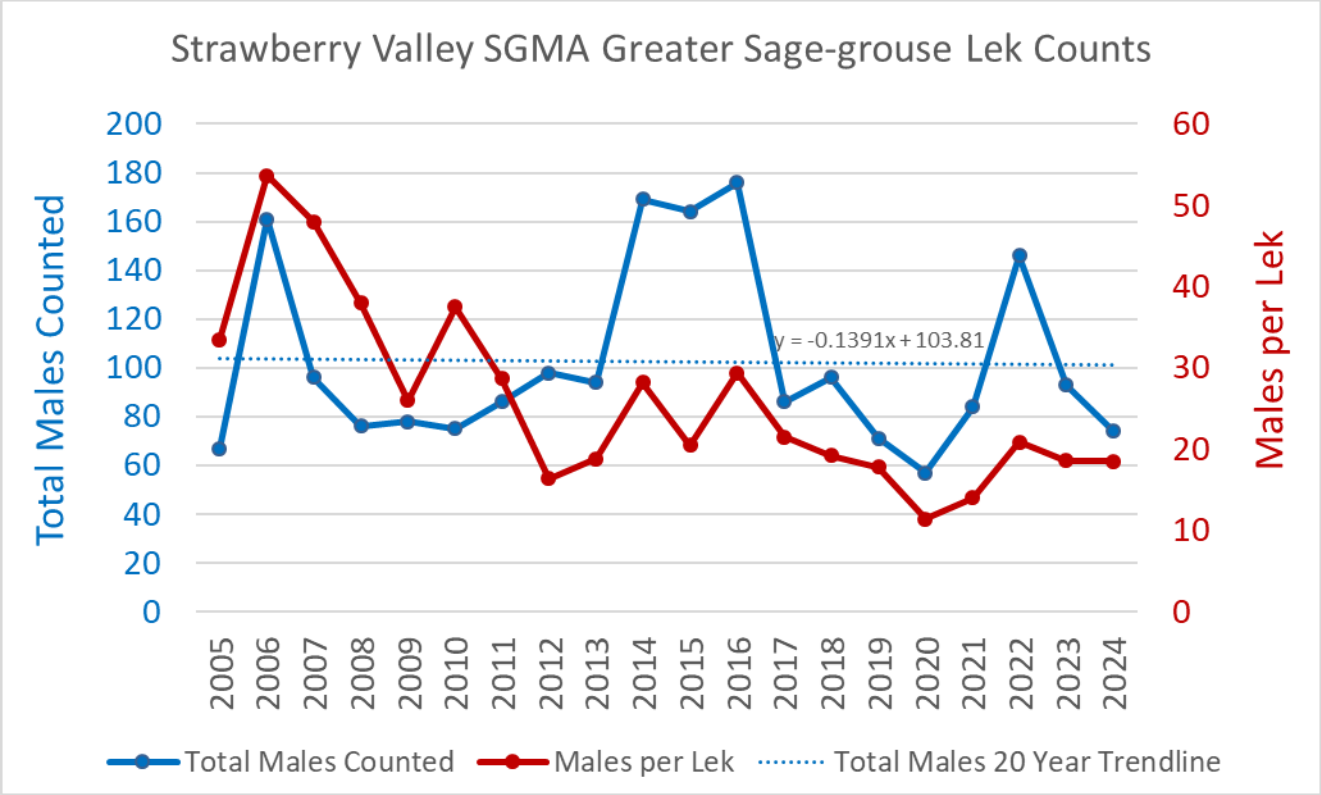

Figure 12. *Average males per lek for all leks with at least one male counted and total number of males counted within the Strawberry Valley Sage-grouse Management Area. Trend line represents a linear regression for total males counted over the last 20 year approximating two population cycles.*

Uintah

In the Uintah SGMA 68 leks were visited, of those male sage-grouse were detected on 40. A total of 704 male sage-grouse were counted, for an average of 17.6 males per lek. From 2023 to 2024 the Uintah SGMA counts increased by 18%. Overall counts are flat over the past 20 years, increasing at an annual rate of 0.4% per year.

One potential new lek was found.

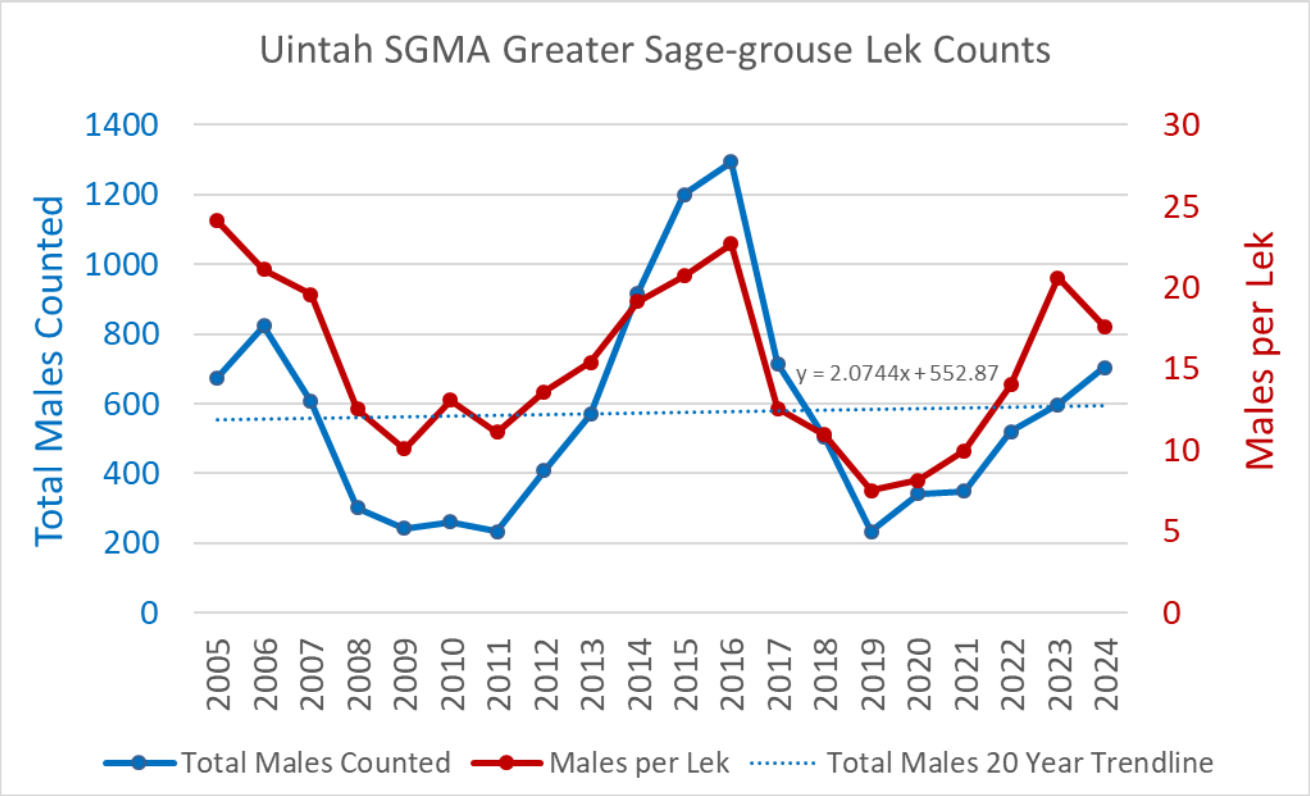

Figure 13. *Average males per lek for all leks with at least one male counted and total number of males counted within the Uintah Sage-grouse Management Area. Trend line represents a linear regression for total males counted over the last 20 year approximating two population cycles.*

Non-SGMA

Outside of designated SGMAs 30 leks were visited, of those male sage-grouse were detected on 16. A total of 172 male sage-grouse were counted, for an average of 10.8 males per lek. From 2023 to 2024 the non-SGMA counts increased by 30.3%. Counts were down over the past 20 years, decreasing at an average annual rate of 2.1% per year.

No new leks were found.

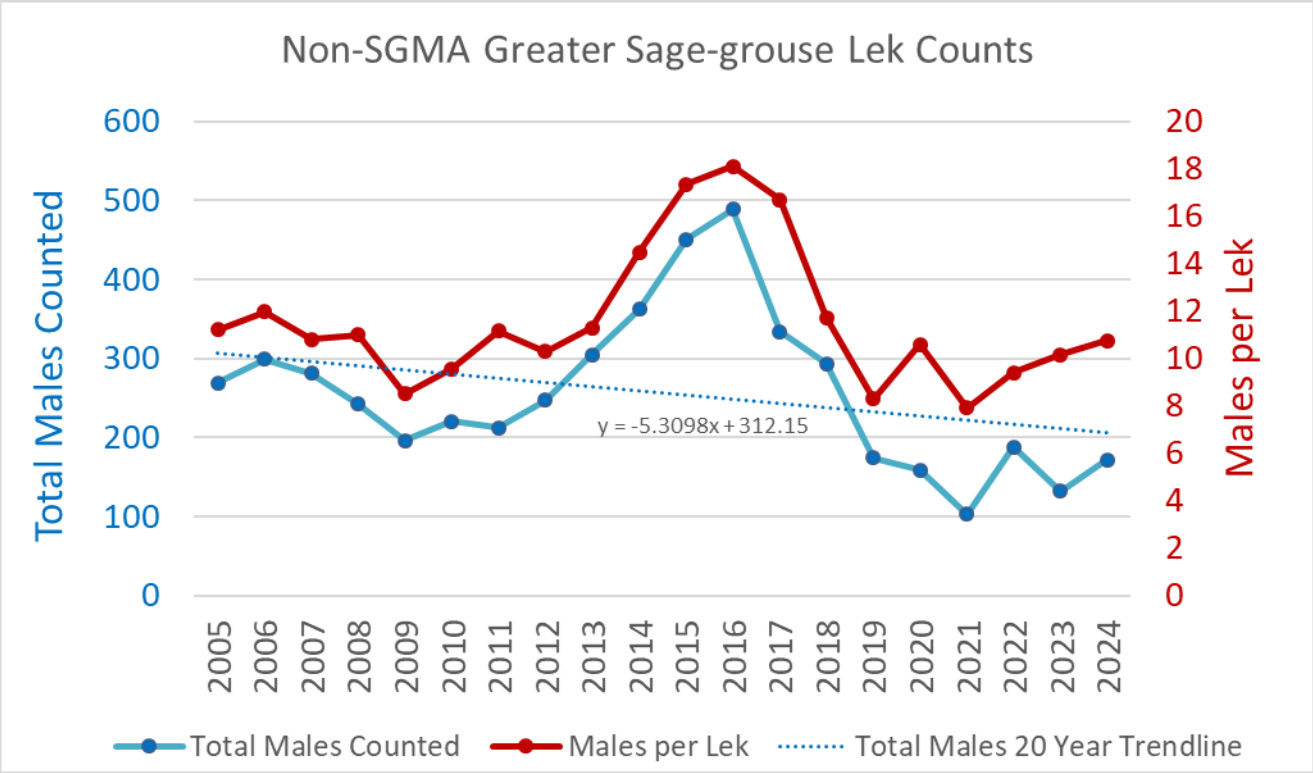

Figure 14. *Average males per lek for all leks with at least one male counted and total number of males counted outside of Sage-grouse Management Areas. Trend line represents a linear regression for total males counted over the last 20 year approximating two population cycles.*

BLM and USFS Adaptive Management Triggers

The Utah Bureau of Land Management and US Forest Service changes management actions based on a set of adaptive management triggers developed in conjunction with the Utah Division of Wildlife Resources. These adaptive management triggers are based on metrics of males per lek on trend leks (MPL) in each federal population area and overall population change (lambda) for all leks within federal Priority Habitat Management Area in each federal population area. It is important to note that the BLM population areas are similar to DWR Sage-grouse Management Areas; however there are differences in area and leks included. The federal plans containing the following adaptive management triggers are included here for informational purposes. The State of Utah continues to manage greater sage-grouse based on the Utah 2019 Conservation Plan for Greater Sage-grouse and 2009 Greater Sage-grouse Management Plan.

Triggers are defined as follows.

Soft Triggers

1a) 4 consecutive years of 10% or greater annual decline in average males per lek in each year, based on “trend leks”

OR

1b) 6 consecutive years of declining average males per lek in each year, based on “trend leks”

OR

1c) 40% or greater decline in average males per lek in any single year, based on “trend leks” for the 4 years covered by lambda values in soft trigger question 2

OR

1d) 50% or greater decline in average males per lek in a 4 consecutive year period, based on “trend leks”

AND

2) Lambda of less than 1 in 4 consecutive years, based on all leks in the PHMA.

Hard Triggers

a) 4 consecutive years of 20% or greater annual decline in average males per lek in each year, based on “trend leks”

OR

b) Average males per lek, based on trend leks, drops 75% below the 10-year rolling average males per lek in any single year (not a 75% decrease, but a decline under 25% of the 10-year rolling average)

OR

c) Lambda of less than 1 in 6 consecutive years, based on all leks within the PHMA

OR

d) Lambda of less than 1 in 8 years of a 10 year window, based on all leks within the PHMA

BLM POPULATION AREAS AND TRIGGER STATUS			
Federal Population Area	**Soft Trigger**	**Hard Trigger**	**Note**
Bald Hills	No	No	Trigger criteria not met.
Box Elder	No	No	Trigger criteria not met.
Carbon	No	No	Trigger criteria not met.
Emery	No	No	Trigger criteria not met.
Hamlin Valley	No	Yes	Hard Trigger: Lambda of less than one in 8 of 10 years (H.d).
Ibapah	No	No	Trigger criteria not met.
Panguitch	No	No	Trigger criteria not met.
Parker	No	No	Trigger criteria not met.
Rich	No	No	Trigger criteria not met.
Sheeprock Mountains	No	No	Trigger criteria not met.
Strawberry Valley	No	No	Trigger criteria not met.
Uintah	No	No	Trigger criteria not met.

Table 2. *BLM population areas and trigger status for 2024 lek counts. Red indicates trigger. Blue indicates no trigger. Lambda is calculated on all leks in PHMA within each population area.*

BLM POPULATION AREAS AND TRIGGER STATUS HISTORY								
	2017	2018	2019	2020	2021	2022	2023	2024
Bald Hills	OK	OK	OK (W)	OK (W)	S, H	OK (W)	OK (W)	OK (W)
Box Elder	OK	OK	OK (W)	OK (W)	H	OK	OK	OK
Carbon	OK	OK	OK (W)	OK (W)	OK (W)	OK (W)	OK	OK
Emery	OK	OK	OK (W)	S	OK (W)	OK (W)	OK	OK
Hamlin Valley	OK	OK	OK	OK (W)	S	S, H	H	H
Ibapah	OK	OK	OK	OK	OK	OK	OK	OK
Panguitch	OK	OK	OK (W)	OK (W)	S, H	OK (W)	OK (W)	OK
Parker	OK	OK	S	S	H	OK	OK	OK
Rich	OK	OK	OK	OK	OK	OK	OK	OK
Sheeprocks	OK	OK	OK	OK	OK	OK	OK	OK
Strawberry	OK (W)	OK (W)	OK (W)	OK (W)	OK (W)	OK (W)	OK	OK (W)
Uintah	OK (W)	OK (W)	OK (W)	OK (W)	OK (W)	OK (W)	OK	OK

Table 3. *A history of federal population adaptive management triggers. Red indicates a hard trigger. Orange indicates a soft trigger. Yellow indicates one of two needed criteria for a soft trigger was met, but a trigger was not indicated. OK = No Triggers, OK (W) = Warning without trigger, S = Soft Trigger, H = Hard Trigger.*

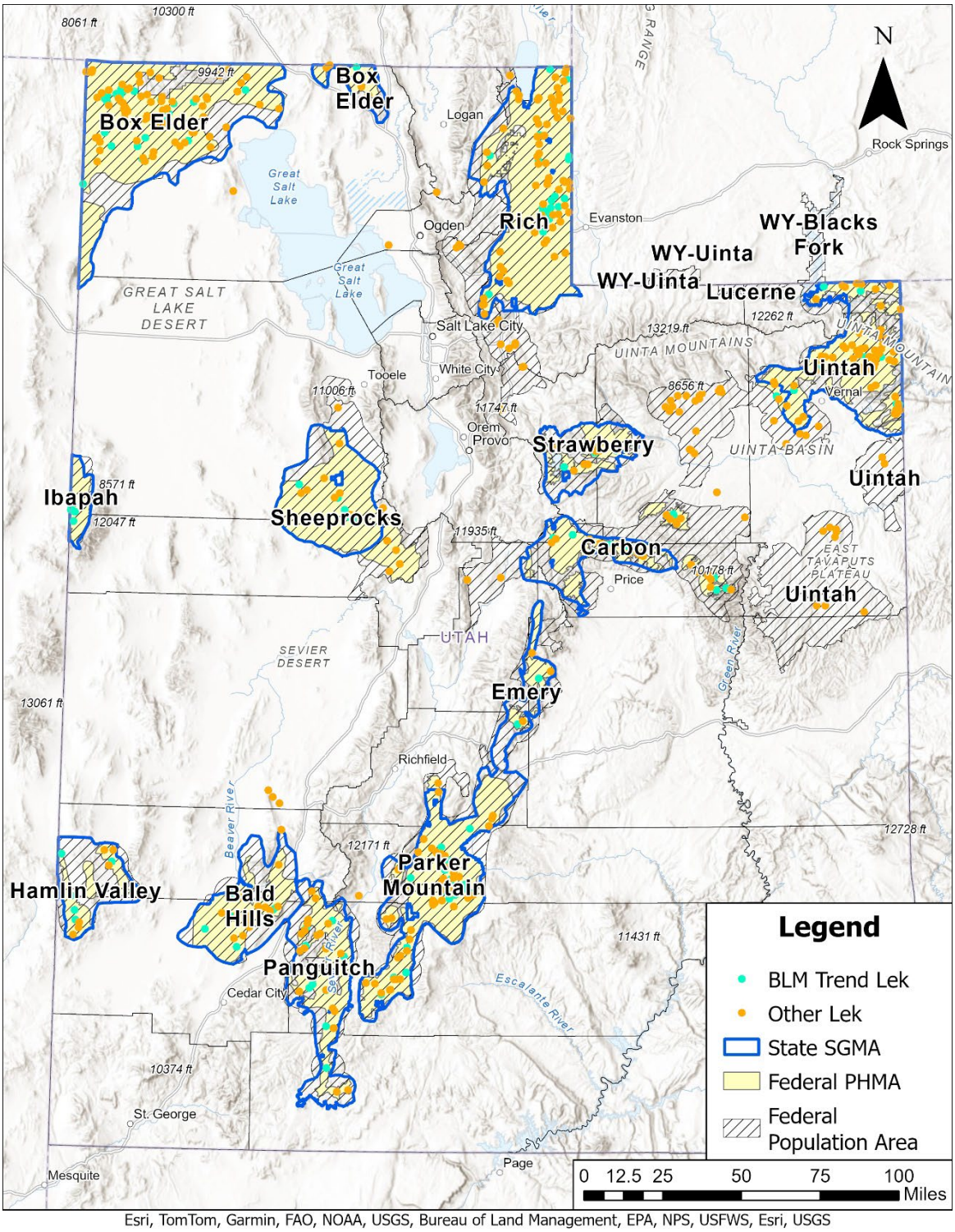

Figure 15. *State of Utah Sage-grouse Management Areas relative to Federal Priority Habitat Management Areas and Federal Greater Sage-grouse Population Areas with federal trend leks and other leks.*

Results: Fixed Wing Infrared Lek Search

Fixed wing infrared lek searches were conducted on the mornings of April 11, 12, 13, 16, 17, 18, and 19 by Owyhee Air Research in the Central and Southern Region. This year's survey was supported with $22,000 in funding provided by the Bureau of Land Management in addition to the ongoing $25,000 in funding provided by the Utah Division of Wildlife Resources. Lek searches covered approximately 112,000 acres made up of approximately 38,000 acres in the Panguitch SGMA, 29,000 acres in the Ibapah SGMA and 46,000 acres in the Sheeprock Mountains SGMA.

One objective of the 2024 lek search effort was to follow up on last year's efforts in the Panguitch SGMA East Bench and Dog Valley area. The goal was to determine if the newly observed lek could be confirmed this year as a new independent lek, or if it was a result of altered distribution due to the high snow pack last year.

This was the seventh year the UDWR has utilized aerial infrared surveys to search for greater sage-grouse. Previous searches have been successful in detecting new leks that DWR staff, university researchers, and previous helicopter lek searches were not able to locate. Sage-grouse populations regularly fluctuate on an 8-10 year period, and the populations have begun to increase again after a recent decline. Due to substantial growth in the last couple of years, it is likely that new leks would be discovered, as sage-grouse more commonly expand into new areas when populations are high. However, aerial searches were conducted in some areas of low density populations (such as Ibapah and the Sheeprock Mountains).

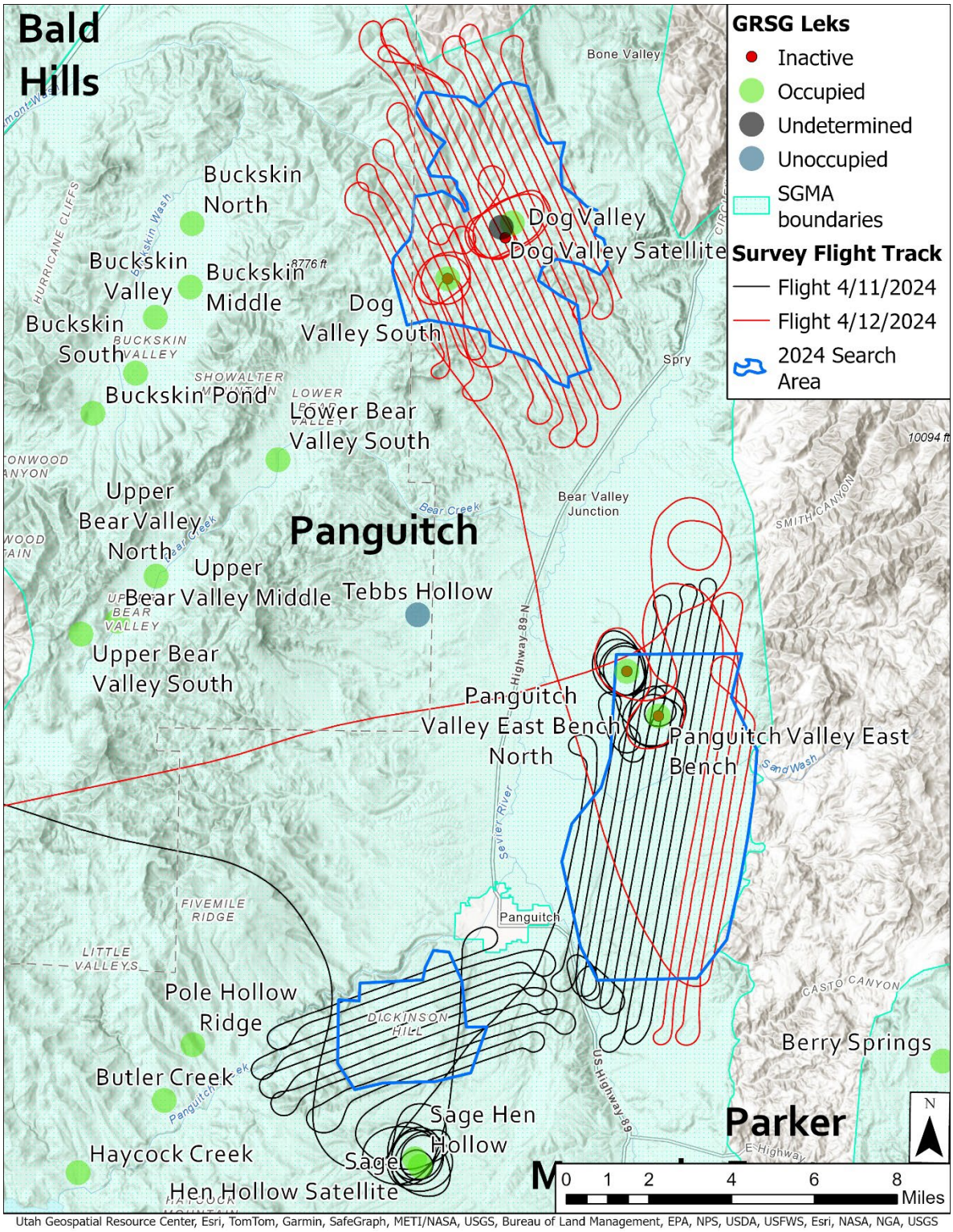

Figure 16. *Flight path of 2024 aerial infrared fixed wing lek searches in Dog Valley, East Bench, and Sage Hen Hollow within the Panguitch SGMA. One of the known lek sites in Dog Valley was under water. Sage-grouse were observed on a lek outside survey area. No new leks, or other sage-grouse, were detected within transect areas.*

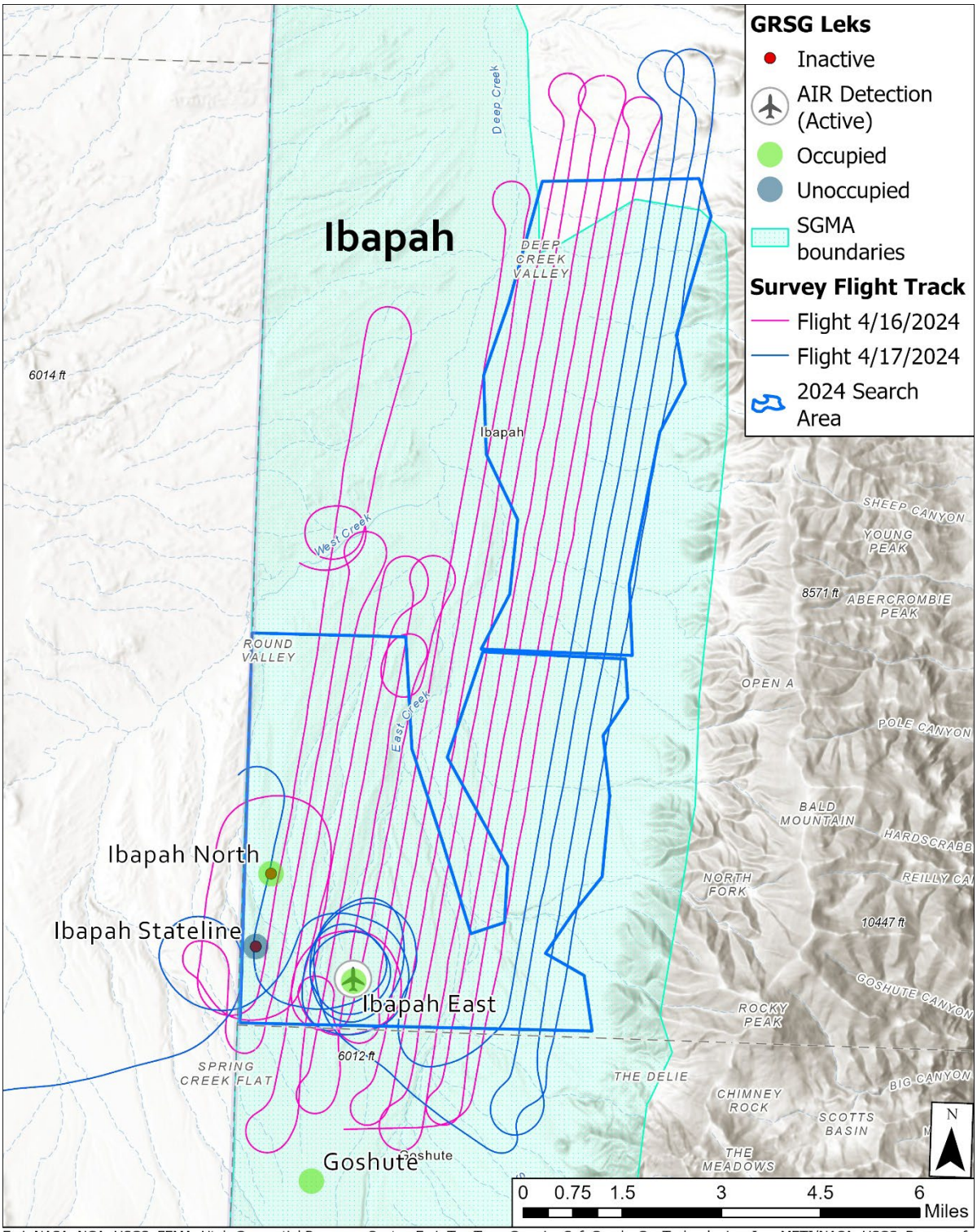

Figure 17. *Flight path of 2024 aerial infrared fixed wing lek searches in the Ibapah SGMA. No new leks were detected. Sage-grouse were observed on a lek within transect areas.*

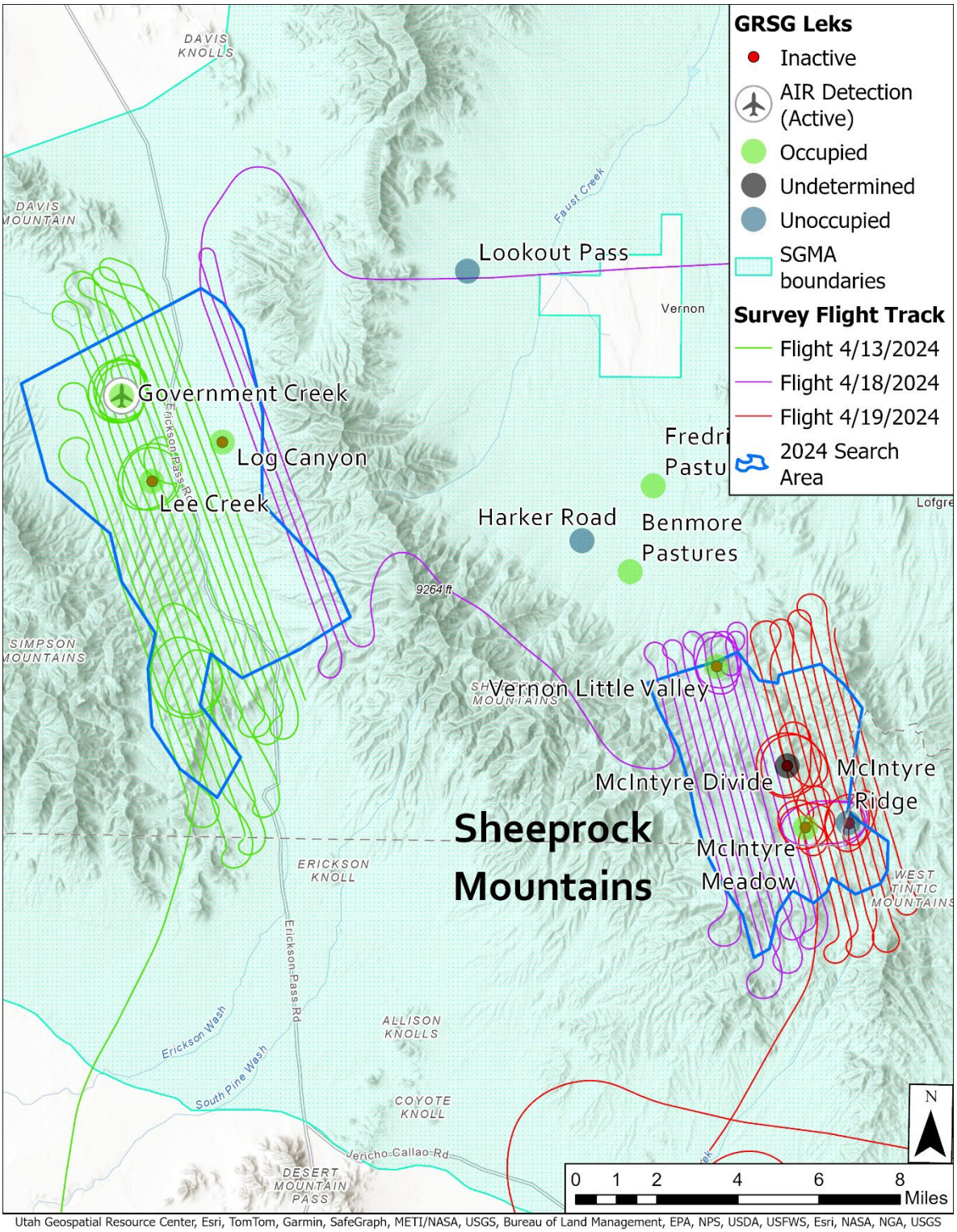

Figure 18. *Flight path of 2024 aerial infrared fixed wing lek searches in Government Creek and Horse Valley within the Sheeprock Mountains SGMA. No new leks were detected. Sage-grouse were observed on a lek within transect areas.*

AREA SEARCHED WITHIN SAGE-GROUSE MANAGEMENT AREAS		
SGMA	**Area**	**Estimated Area Searched (Acres)**
Panguitch	Dog Valley	14,426
Panguitch	East Bench	18,122
Panguitch	Sage Hen Hollow	5,147
Ibapah	Ibapah	17,658
Ibapah	Ibapah	11,127
Sheeprock Mountains	Government Creek	29,663
Sheeprock Mountains	Horse Valley	16,094
Total Area Searched		**112,237**

Table 4. *Estimated area searched within each SGMA during 2024 aerial detection flights.*

AERIAL DETECTIONS OF GREATER SAGE-GROUSE						
Date	**Lek Name**	**Time**	**Males**	**Females**	**Latitude**	**Longitude**
4/11/2024	Panguitch Valley Eastern Bench	8:09	N	N	37.89719	-112.36680
4/11/2024	Panguitch Valley Eastern Bench (N)	7:48	N	N	37.91263	-112.38100
4/11/2024	Sage Hen Hollow	6:25	Y	Y	37.74095	-112.47125
4/12/2024	Dog Valley (South)	7:22	N	N	38.04927	-112.46295
4/12/2024	Dog Valley + Satellite	8:07	N	N	38.06398	-112.43768
4/13/2024	Lee Creek	7:12	N	N	40.03036	-112.66641
4/13/2024	Government Creek	7:21	Y	Y	40.06070	-112.68130
4/16/2024	Ibapah North	6:38	N	N	39.93948	-114.03900
4/16/2024	Ibapah Stateline	6:38	N	N	39.92338	-114.04260
4/16/2024	Ibapah East	7:31	N	N	39.91649	-114.01435
4/17/2024	Ibapah East	7:24	Y	Y	39.91701	-114.01458
4/17/2024	Log Canyon	8:14	N	N	40.04482	-112.63408
4/18/2024	Vernon Little Valley	7:35	N	N	39.96761	-112.40237
4/19/2024	McIntyre Meadow	6:21	N	N	39.91057	-112.36000
4/19/2024	McIntyre Divide	6:28	N	N	39.93249	-112.36893
4/19/2024	McIntyre Ridge	6:54	N	N	39.91222	-112.33978

Table 5. *2024 aerial detections of greater sage-grouse. Count totals are redacted and replaced with yes/no due to data protection policies.*