Wyoming Sage-Grouse Job Completion Report

June 2023-December 2024

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Statewide

Job Completion Report

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Period Covered: 6-30-2023 to 12-31-2024

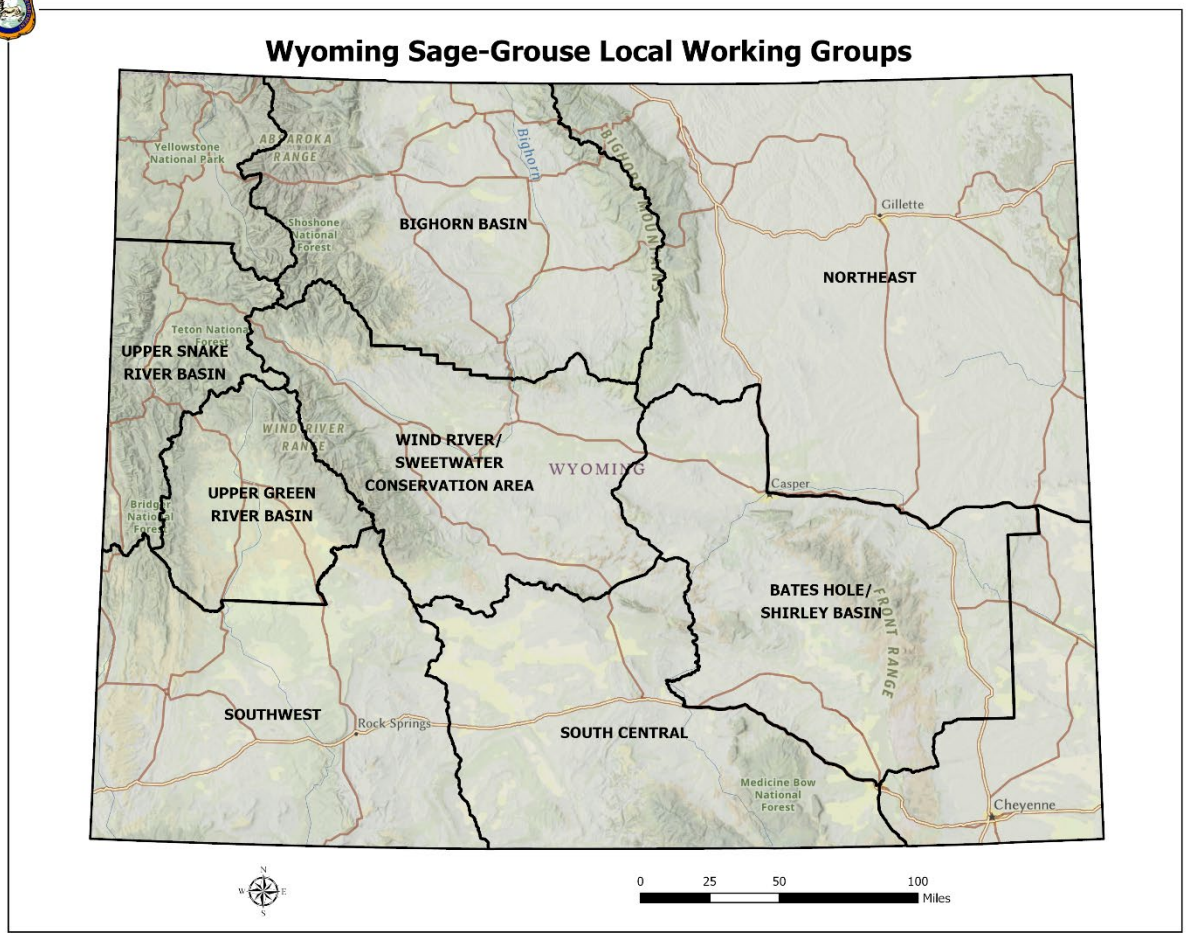


Table 1: Leks Counted

Year	Occupied	Counted	Percent Counted	Peak Males	Average Peak Males
2015	1,826	742	40.6%	19,505	34.2
2016	1,845	735	39.8%	23,441	40.3
2017	1,834	692	37.7%	18,764	35.3
2018	1,824	800	43.9%	17,124	28.2
2019	1,802	701	38.9%	11,892	21.8
2020	1,774	780	44%	12,402	21.5
2021	1,759	764	43.4%	10,281	19.0
2022	1,745	707	40.5%	9,917	20.1
2023	1,724	466	27%	6,717	20.8
2024	1,732	746	43.1%	17,845	31.0

Occupied - Must have been active once during previous 10 years, calculated based on the official definitions

Average Peak Males - Includes only those leks where one or more strutting males were observed. Does not include "Active" leks where only sign was documented

Table 2: Leks Surveyed

Year	Occupied	Surveyed	Percent Surveyed	Peak Males	Average Peak Males
2015	1,826	880	48.2%	17,029	27.7
2016	1,845	949	51.4%	19,888	31.3
2017	1,834	960	52.3%	17,893	28.1
2018	1,824	809	44.4%	12,407	22.8
2019	1,802	870	48.3%	9,565	18.2
2020	1,774	676	38.1%	6,741	16.5
2021	1,759	755	42.9%	6,020	14.1
2022	1,745	823	47.2%	7,048	15.5
2023	1,724	946	54.9%	11,423	21.2
2024	1,732	813	46.9%	11,506	24.3

Occupied - Must have been active once during previous 10 years, calculated based on the official definitions

Average Peak Males - Includes only those leks where one or more strutting males were observed. Does not include "Active" leks where only sign was documented

Table 3: Leks Checked

Year	Occupied	Checked	Percent Checked	Peak Males	Average Peak Males
2015	1,826	1,622	88.8%	36,534	30.9
2016	1,845	1,684	91.3%	43,329	35.6
2017	1,834	1,652	90.1%	36,657	31.4
2018	1,824	1,609	88.2%	29,531	25.6
2019	1,802	1,571	87.2%	21,457	20.0
2020	1,774	1,456	82.1%	19,143	19.5
2021	1,759	1,519	86.4%	16,301	16.8
2022	1,745	1,530	87.7%	16,965	17.9
2023	1,724	1,412	81.9%	18,140	21.0
2024	1,732	1,559	90%	29,351	28.0

Occupied - Must have been active once during previous 10 years, calculated based on the official definitions

Average Peak Males - Includes only those leks where one or more strutting males were observed. Does not include "Active" leks where only sign was documented

Table 4: Lek Status of Leks Checked

Year	Active	Inactive	Unknown	Known Status	% Active	% Inactive
2015	1,215	275	132	1,490	81.5%	18.5%
2016	1,262	275	147	1,537	82.1%	17.9%
2017	1,207	304	141	1,511	79.9%	20.1%
2018	1,180	300	129	1,480	79.7%	20.3%
2019	1,136	298	137	1,434	79.2%	20.8%
2020	1,028	338	90	1,366	75.3%	24.7%
2021	1,025	320	174	1,345	76.2%	23.8%
2022	1,011	327	192	1,338	75.6%	24.4%
2023	931	246	235	1,177	79.1%	20.9%
2024	1,110	281	168	1,391	79.8%	20.2%

Occupied - Must have been active once during previous 10 years, calculated based on the official definitions

Inactive - Confirmed no birds/sign present (see official definitions)

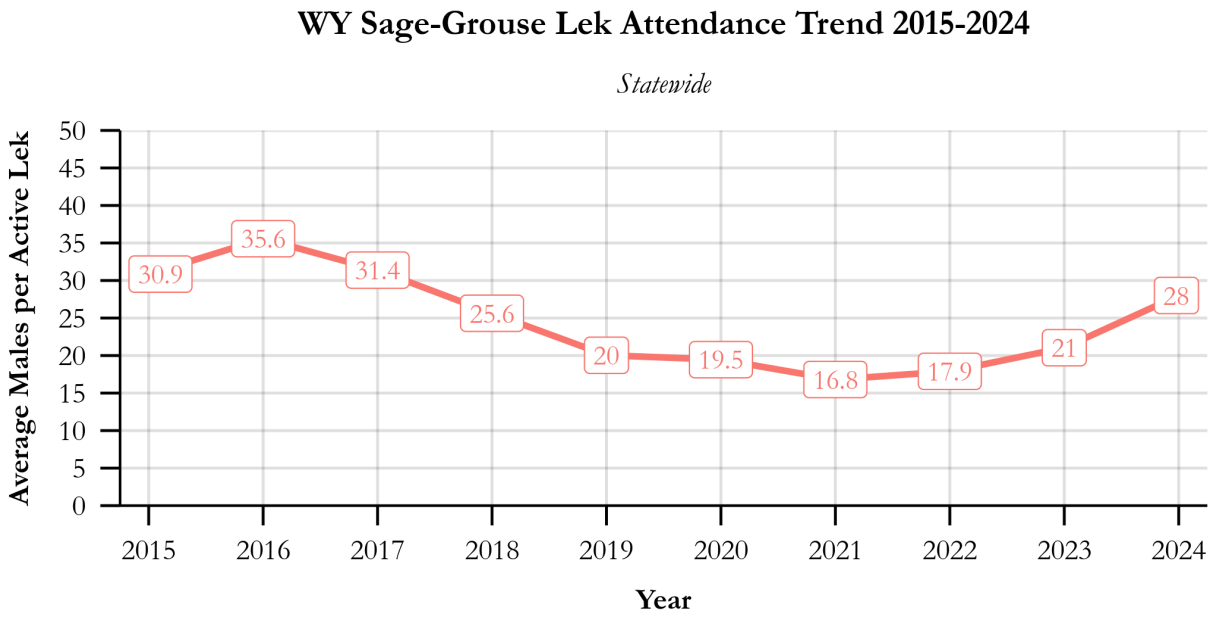


Figure 1: Average Peak Males

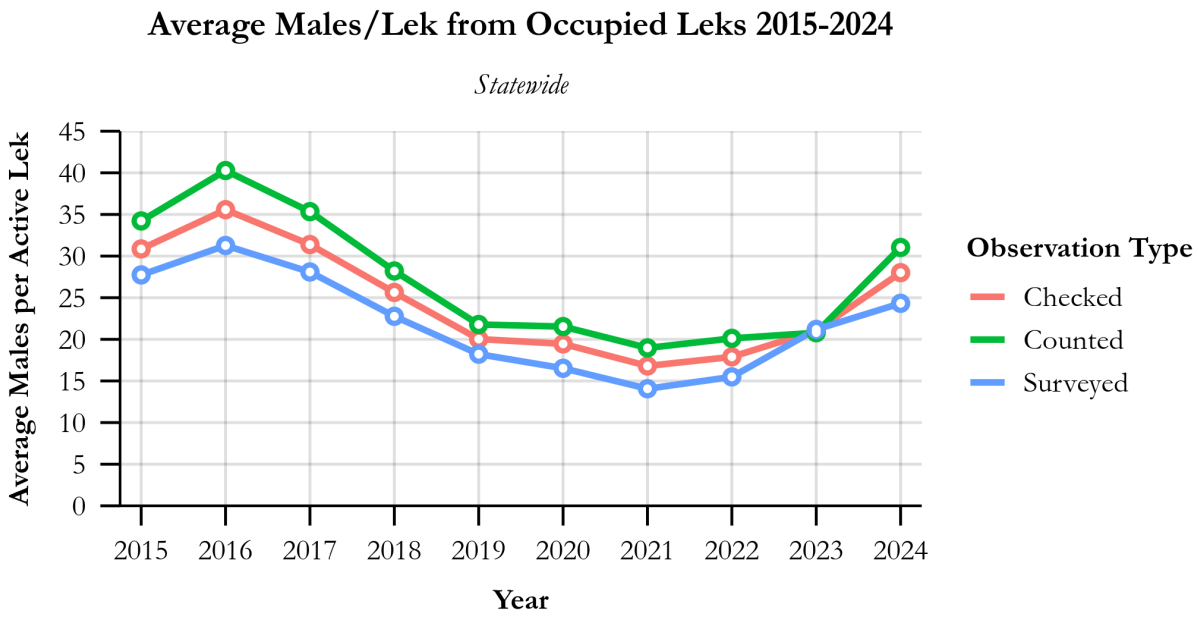


Figure 2: Average Peak Males

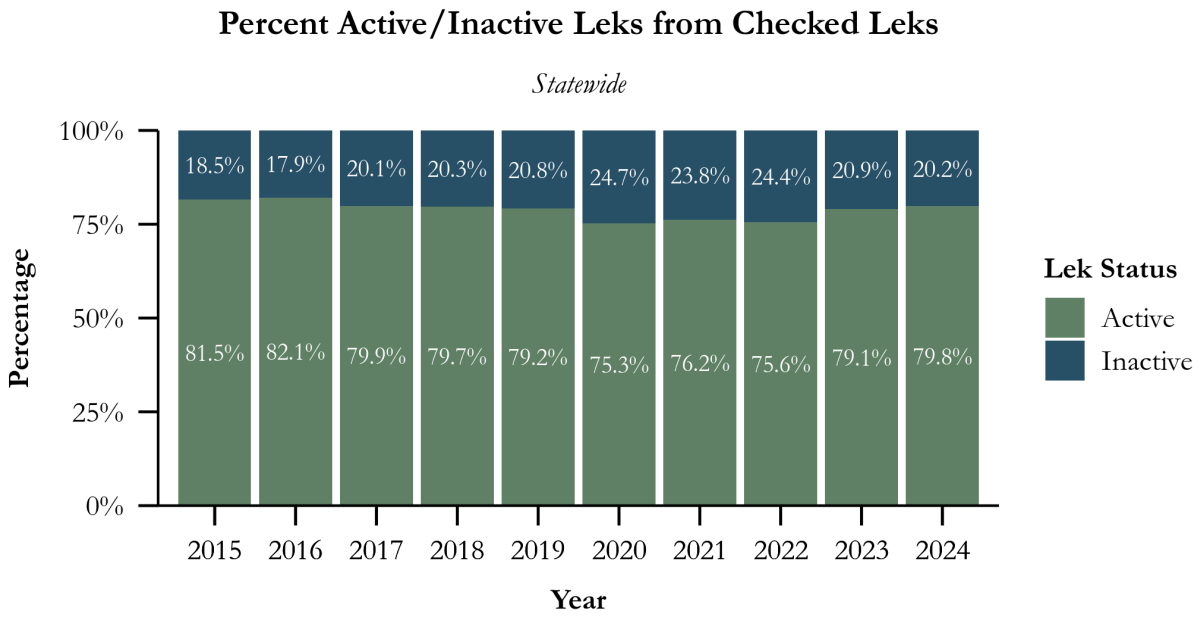


Figure 3: Lek Status

Table 5: Hunting Seasons

Year	Season Start	Season End	Length	Bag/Possession Limit
2015-1	Sep-19	Sep-30	12	2/4
2015-4	Sep-19	Sep-21	3	2/4
2016-1	Sep-17	Sep-30	14	2/4
2016-4	Sep-17	Sep-19	3	2/4
2017-1	Sep-16	Sep-30	15	2/4
2017-4	Sep-16	Sep-18	3	2/4
2018-1	Sep-15	Sep-30	16	2/4
2018-4	Sep-15	Sep-17	3	2/4
2019-1	Sep-21	Sep-30	10	2/4
2019-4	Sep-21	Sep-23	3	2/4
2020-1	Sep-19	Sep-30	12	2/4
2020-4	Sep-19	Sep-21	3	2/4
2021-1	Sep-18	Sep-30	13	2/4
2021-4	Sep-18	Sep-20	3	2/4
2022-1	Sep-17	Sep-30	14	2/4
2022-4	Sep-17	Sep-19	3	2/4
2023-1	Sep-16	Sep-30	15	2/4
2024-1	Sep-21	Sep-30	10	2/4

Table 6: Harvest Totals

Year	Harvest	Hunters	Days	Birds/Day	Birds/Hunter	Days/Hunter
2015	10,498	4,299	10,231	1.0	2.4	2.4
2016	10,526	4,674	11,476	0.9	2.3	2.5
2017	7,817	3,576	8,646	0.9	2.2	2.4
2018	10,422	5,035	13,092	0.8	2.1	2.6
2019	7,615	4,229	9,473	0.8	1.8	2.2
2020	6,544	3,227	9,705	0.7	2.0	3.0
2021	8,457	5,107	14,465	0.6	1.7	2.8
2022	11,640	6,361	16,467	0.7	1.8	2.6
2023	12,323	5,598	14,587	0.8	2.2	2.6
2024	8,198	4,398	9,761	0.8	1.9	2.2
Average	**9,404**	**4,650**	**11,790**	**0.8**	**2.0**	**2.5**

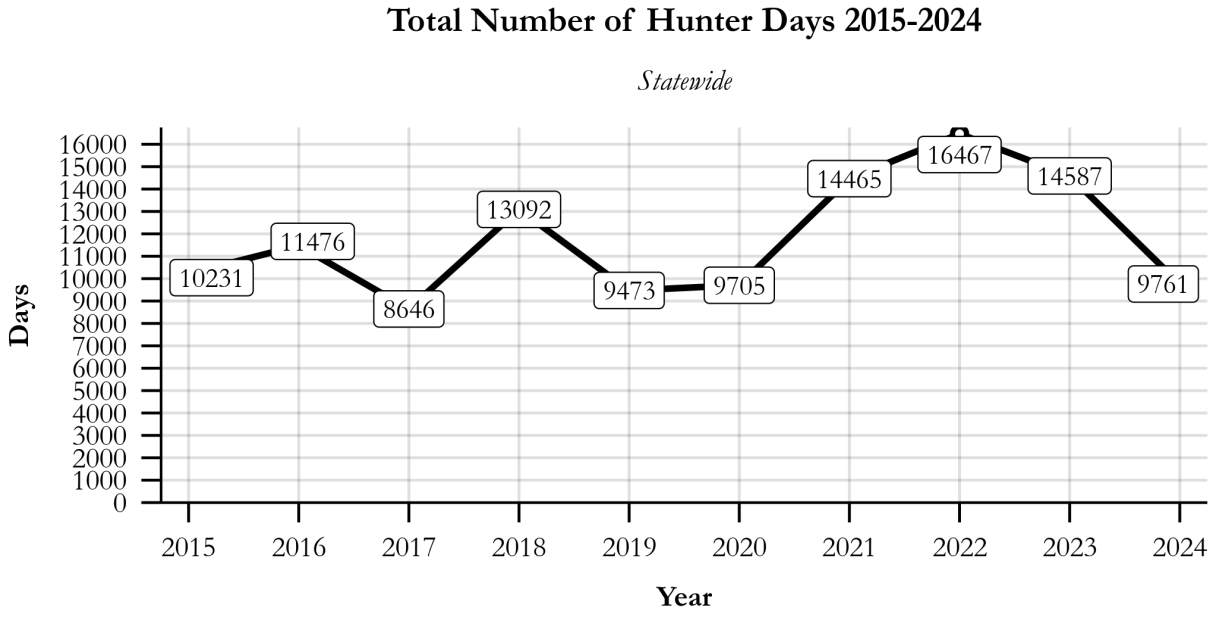


Figure 4: Harvest Days

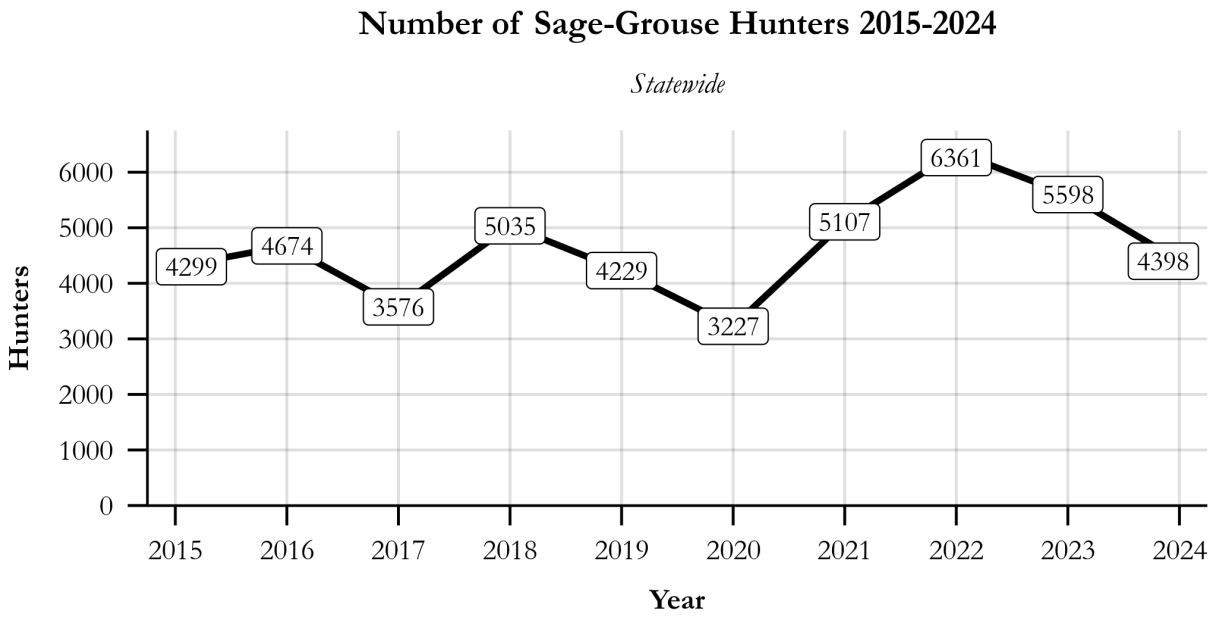


Figure 5: Hunters

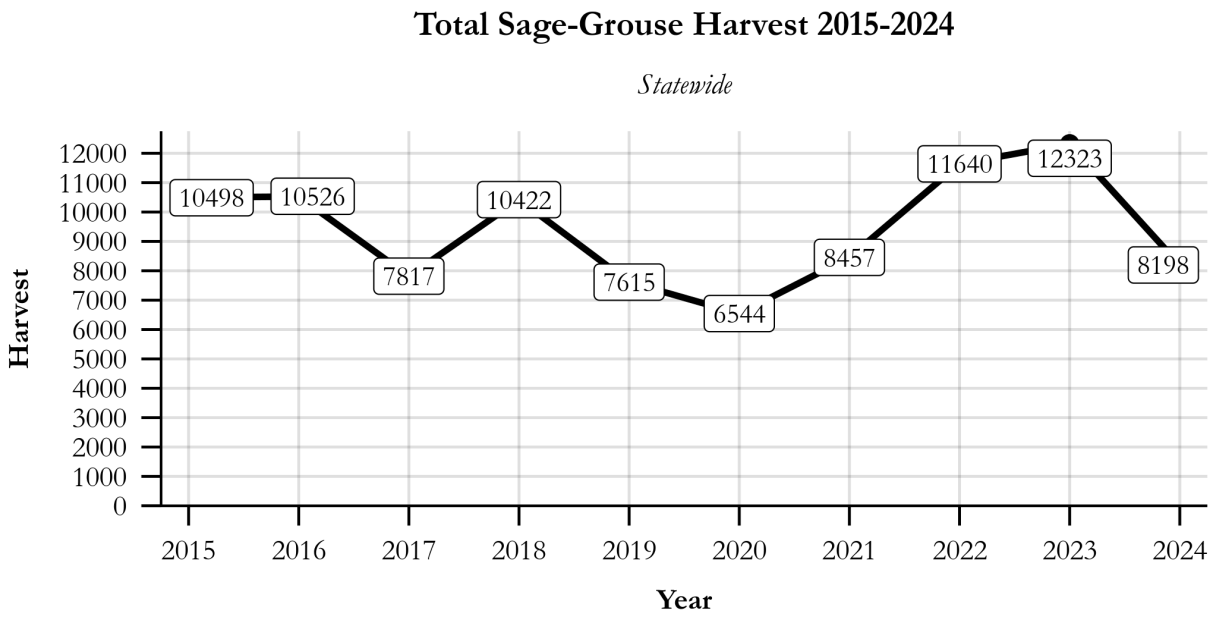


Figure 6: Total Harvest

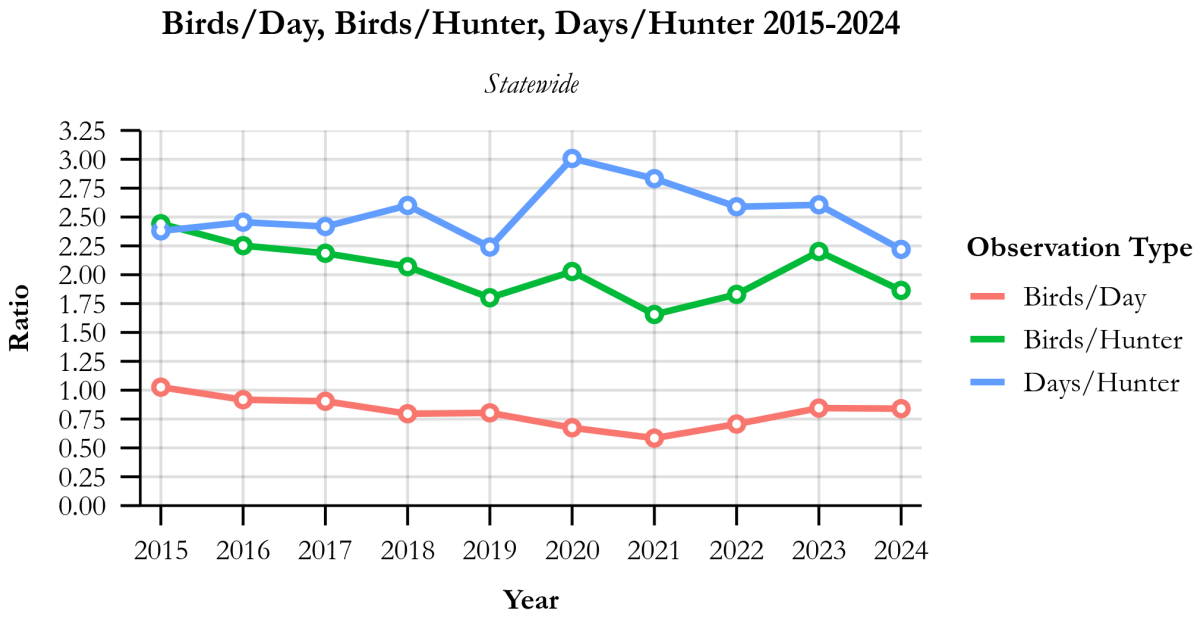


Figure 7: Harvest Ratios

Table 7: Harvest Composition

		Percent Adult		Percent Yearling		Percent Chick		
Year	Sample Size	Male	Female	Male	Female	Male	Female	Chicks/Hens
2015	2,300	12.7%	25.8%	3.6%	5.4%	24.8%	27.7%	1.7
2016	2,097	16.9%	33%	4.5%	7.6%	16.7%	21.2%	0.9
2017	2,047	13.8%	31.7%	3.3%	6%	20.7%	24.6%	1.2
2018	2,112	14.2%	32.4%	6.2%	11.3%	13.9%	22%	0.8
2019	1,631	10.4%	31.5%	3.2%	9.7%	14.9%	30.3%	1.1
2020	2,171	9.8%	31.5%	4.1%	9.1%	17.4%	28.1%	1.1
2021	1,542	10.2%	39.8%	2.8%	8%	16%	23%	0.8
2022	1,829	8.3%	29.5%	2.6%	7.9%	22.2%	29.5%	1.4
2023	2,753	7.7%	22%	4.8%	8.8%	23.5%	33.1%	1.8
2024	2,775	13.6%	23%	6.8%	11.1%	20.9%	24.6%	1.3

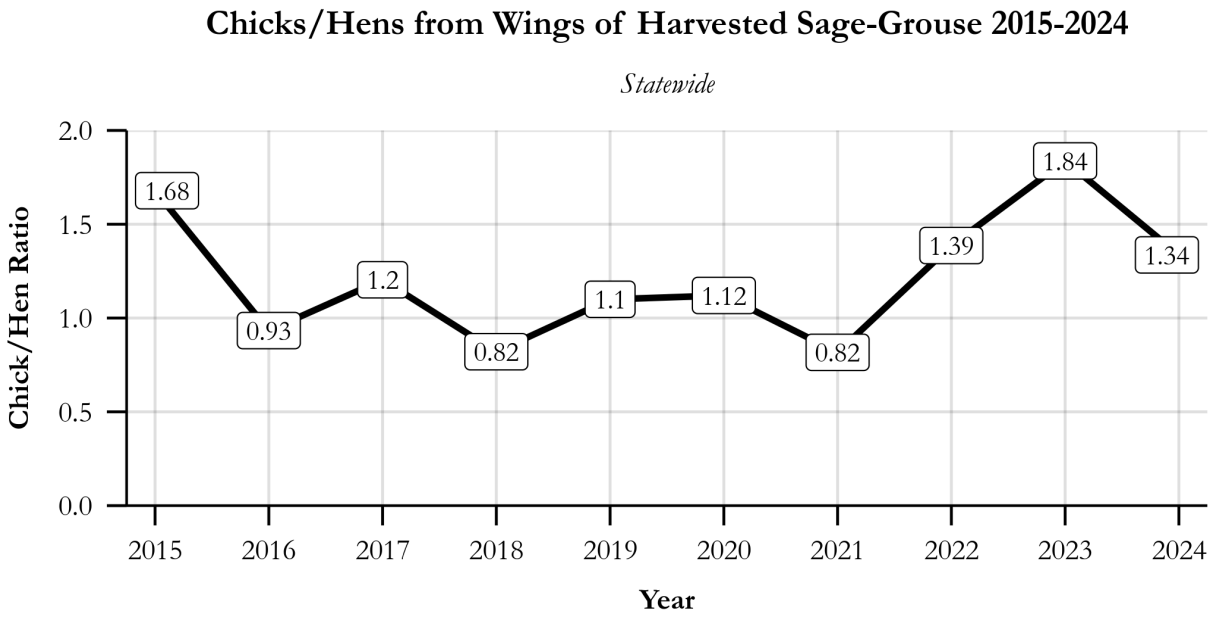


Figure 8: Chick/Hen Ratio

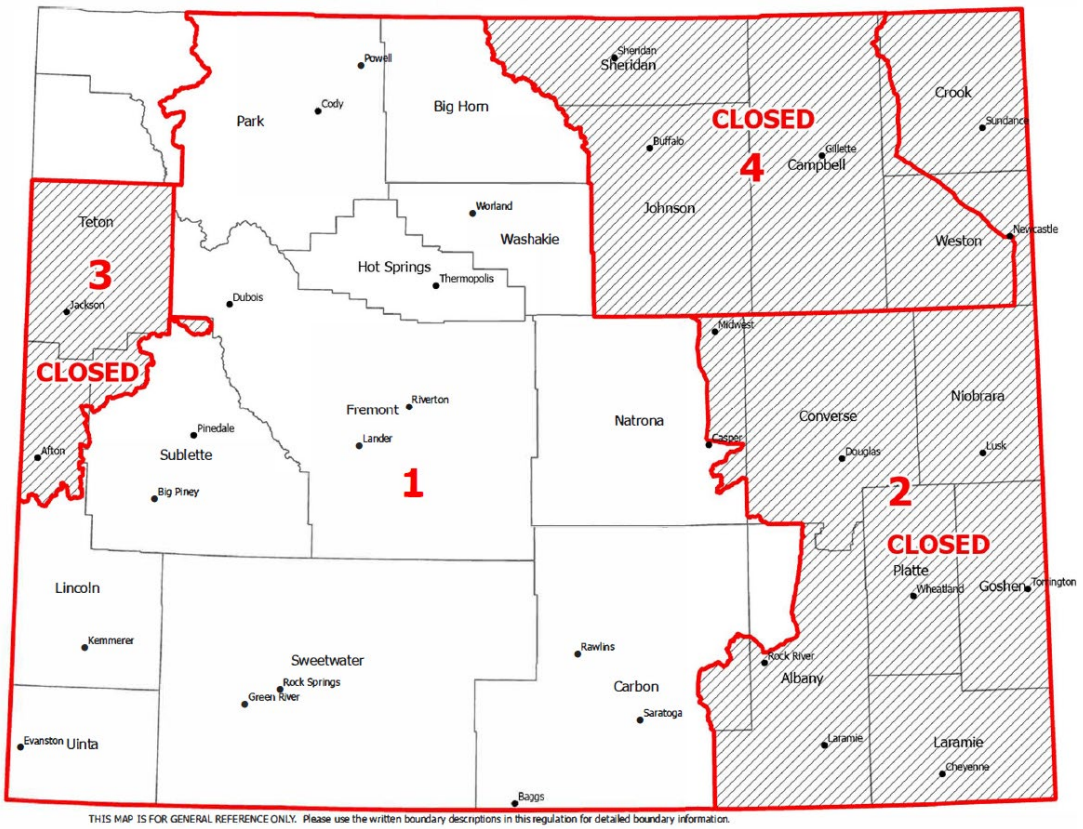
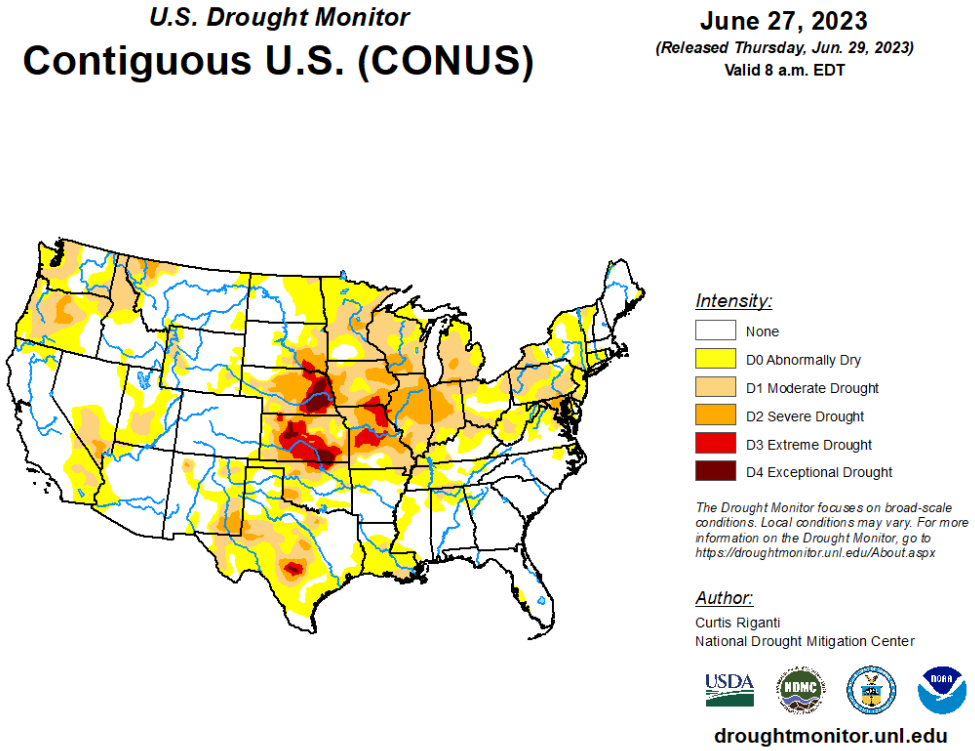


Figure 9: 2024 Sage-Grouse Hunt Areas



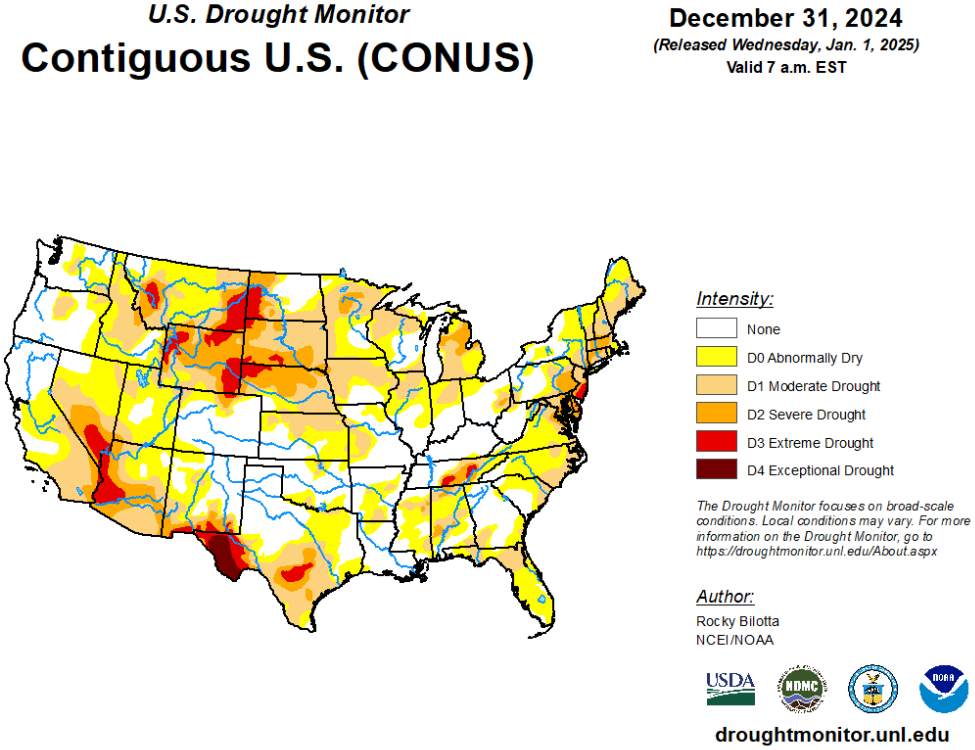


Figure 10: June 27, 2023 vs December 31, 2024 Drought Monitor Maps (National Drought Mitigation Center)

Period Covered:

Wyoming Game and Fish Department Job Completion Reports (JCRs) have historically covered the biological year which runs from June till May the following year. This biological year would start with brood surveys, if conducted, roll into hunting and harvest, and end with spring lek monitoring. While this format highlighted chick survival to fall and then recruitment from the past year into lek attendance, it delayed reporting and caused confusion for some. With improvements in data management and reporting, the Department will be transitioning to a calendar year JCR covering January till December. The JCR will start with lek monitoring results and end with harvest information. This JCR is the transition between the previous JCRs that reported on the biological year and the future JCRs which will follow the calendar. This JCR covers from June 2023 till December 2024, or 18 months, and includes two hunting seasons, 2023 and 2024. The 2025 JCR will be the first calendar year JCR.

Lek Monitoring:

Approximately 37% of the range wide greater sage-grouse (Centrocercus urophasianus; hereafter, sage-grouse) population lives in Wyoming and 90% of estimated historic habitat in Wyoming is still occupied. There are just over 1,700 known, occupied sage-grouse leks in Wyoming. Wyoming Game and Fish Department (WGFD) personnel and sage-grouse stakeholders monitored 90% of these leks in the spring of 2024 (Table 3). Results indicate 1110 leks were confirmed active, 281 confirmed inactive, and 168 were unknown or unchecked. The average number of males observed was 28 per active lek, a 33% increase from the 21 males per active lek observed in the spring of 2023, suggesting an overall population increase (Table 3). In 2024, 29,351 male sage-grouse were observed on leks compared to 18,140 males observed on leks in 2023 (Table 3). Methods for collecting sage-grouse data are described in the sage-grouse chapter of the WGFD Handbook of Biological Techniques (Whitford and Bish 2022), which is largely based on Connelly et al. 2003.

Lek monitoring data for the 2024 breeding season are summarized in Tables 1-4 and Figure 1-3. For the 10-year period (2015-2024), average male lek attendance ranged from 16.8 males/lek in 2021, the lowest average males per lek since 2013, to a high of 35.6 males/lek in 2016 (Table 3). The proportion of active, occupied leks increased slightly from 79.1% in 2023 to 79.8% in 2024 (Table 4). In 2024, average lek size was 28 males/active lek which is 13.4% higher than the previous 10-year (2015-2024) average of 24.7 males/active lek (Table 3). This indicates a population increase over a 10 year period. Sage-grouse populations are cyclical with a range wide peak on average every 9.2 years (Prochazka et al. 2023). Different areas in Wyoming cycle at different rates with eastern Wyoming having a shorter cycle, around every 6 years and western Wyoming every 9 years (Prochazka et al 2023). A shorter cycle, with lower peak populations, indicates a long term, decreasing population (Coates et al. 2021). Based on previous trends, Wyoming is likely at, or near, a population peak. Short-term trends in statewide populations are believed to be largely weather related. In the late 1990s, 2004-05, and again in 2014-15, timely precipitation resulted in improved habitat conditions allowing greater numbers of sage-grouse to successfully reproduce. Drought conditions throughout this decade are believed to have caused lower grouse survival leading to population declines. The current lessening of drought conditions could be influencing a slight increase in population trends over the last couple years. While these trends are valid at the statewide scale, trends can be more varied at the local level. Sub-populations more heavily influenced by anthropogenic impacts (residential development, intensive energy development, large-scale conversion of habitat from sagebrush to grassland or agriculture, interstate highways, etc.) have experienced declining populations or localized extirpation.

It is important to note that not all leks were checked from year to year over the last 10 years. However, leks that were checked consistently over the same period demonstrated the same trends except in some local areas as described in the Regional JCRs. Small changes in the statistics reported between annual JCRs are due to revisions and/or the submission of data not previously available for entry into the database (late submission of data, discovery of historical data from outside sources, etc.). These changes have not been significant on a statewide scale and interpretation of these data has not changed.

While a statistically valid method for estimating population size for sage-grouse has not yet been applied in Wyoming, monitoring male attendance on leks provides a reasonable index of relative change in abundance in response to prevailing environmental conditions over time. However, lek data must be interpreted with caution for several reasons: 1) the observation effort and the number of leks visited has varied over time, 2) not all leks have been located, 3) sage-grouse populations cycle, 4) the effects of yet to be located or unmonitored leks that have become inactive cannot be quantified or qualified, and 5) lek locations may change over time. Both the number of leks and the number of males attending these leks must be quantified in order to estimate population size.

Harvest:

The 2023 hunting season (Figures 4-8 and Tables 5-7) for most of the state (Area 1) was 1 day longer than 2022 due to the calendar effect of opening the season on the third Saturday of September. In 2022, the third Saturday was September 17, but in 2023, it was September 16.

The 202 hunting season (Figures 4-8 and Tables 5-7) for most of the state (Area 1) was 5 days shorter than 2023 due to the calendar effect of opening the season on the third Saturday of September. In 2023, the third Saturday was September 16, but in 2023, it was September 21.

Hunting seasons and harvest in Wyoming are shown in Tables 5-7. Due to concerns over low populations, the statewide hunting season was shortened and the daily bag limit decreased to two sage-grouse in 2002 and has remained very conservative since that time. Two areas, eastern Wyoming (Area 2) and the Snake River Drainage in northwest Wyoming (Area 3), are closed to sage-grouse hunting (Figure 9). The data presented in Tables 6 and 7 and Figures 4-8 are estimated from a voluntary hunter survey. Generally, during the past 10 years, overall harvest appeared to be correlated to both hunter numbers, sage-grouse abundance, and favorable weather conditions.

In 2023, north eastern Wyoming (Area 4) was closed to all sage-grouse hunting. When making this recommendation, the Department considered long-term population trends, habitat conditions, genetic connectivity between states, and possible effects of West Nile virus.

Starting in 2024, hunting sage-grouse required a free, annual permit in addition to a hunting license. This permit allows the Department to send a harvest survey specifically to sage-grouse hunters shortly after the sage-grouse hunting season closes each fall, and provides accurate and timely information on sage-grouse harvest that will aid the management of this iconic species. The 2024 implementation of the permit was successful with near 100% hunter compliance during the hunting season and an almost 50% response rate to emailed harvest surveys. For more information please see the 2024 Sage-Grouse Harvest Survey.

Production:

Hunters voluntarily submit sage-grouse wings at wing barrels across half of the state. Wings are gathered and then aged/sexed by molt patterns, and numbers of chicks per hen are calculated and

used as an index of productivity. While there are biases associated with the hunter selectivity of different age/sex groups of sage-grouse, trends still provide yearly comparisons of relative chick production. The 2023 wing data indicate a chick: hen ratio of 1.8 chicks per hen (Table 7 and Figure 8). This level of productivity is typically associated with a stable population. The 2024 lek data (all leks checked) indicated a 33% increase in the average numbers of males on leks (Table 3). The 2024 wing data indicate a chick: hen ratio of 1.3 chicks per hen (Table 7 and Figure 8). This level of productivity is typically associated with a decreasing population. While Wyoming might be near the top, or at the top, of the latest population cycle, 2025 lek monitoring trends will confirm this information as wing data only sets expectations for the coming spring leks trends and does not provide an absolute index. Considering the opportunistic sampling of hunter harvested wings and that wings are not collected statewide, due to shorter seasons or closed hunting areas, this inconsistency is not unexpected. When 1999-2023 data are pooled, average male lek attendance declined an average of 11% when chick: hen ratios the previous fall were less than 1.4:1, were closer to 0% change (-3%) when chick: hen ratios the previous fall were 1.4 to 1.7:1 and increased an average of 37% when chick: hens ratios were 1.8:1 or higher. Additional data are required to strengthen the statistical basis of these analyses.

Habitat:

As of June 2023, approximately 40% of Wyoming was experiencing abnormally dry or moderate, drought conditions (Figure 10). As of December 2024, conditions had deteriorated with every area in Wyoming experiencing drought (Figure 10). For the reporting time frame considered, conditions worsened across the state with the western, northeastern, and southeastern Wyoming experiencing extreme drought. The severe and prolonged winter much of Wyoming experienced in early 2023 was largely responsible for the improvement in drought conditions experienced in June of 2023 with the mild winter and long, hot summer, and a mild start to another winter, leading to the worsening drought conditions. As of this report the winter of 2024/2025 is still underway and what affect it will have on forage and insect production this spring remains to be determined. In general, spring precipitation is positively linked to summer chick survival, and autumn chick: hen ratios, which are in turn, linked to the next year's lek observations of males. However, periods of prolonged cold, wet weather may have adverse effects on hatching success, chick survival, and plant and insect phenology and production. Efforts to quantify/qualify these effects in a predictable fashion over meaningful scales have largely failed.

While we believe that most of the currently occupied leks in Wyoming have been documented, other seasonal habitats such as nesting/early brood-rearing and winter concentration areas have not been identified. Efforts to map seasonal ranges for sage-grouse will continue by utilizing winter observation flights and the on-going land cover mapping efforts of the USGS (Fedy et al. 2014), BLM, WGFD, the Wyoming Geographic Information Science Center (WYGISC) of the University of Wyoming, and others.

Disease:

A highly pathogenic form of avian influenza (HPAI) was again documented in large portions of the sage-grouse range in Wyoming. Although no sage-grouse in Wyoming were documented having contracted this disease, several other avian species were lab verified across the state. It is unknown how this disease may affect sage-grouse, but it is of concern and should continue to be closely monitored as this strain of HPAI continues to surface.

While West Nile virus (WNv) was documented in Wyoming during this biological year, no sage-grouse mortality events were documented. The last major mortality event was in 2003 when West Nile virus was first documented in sage-grouse in northeast Wyoming. Due to the difficulty in monitoring WNv in sage-grouse, human and livestock cases can provide an indication of WNv prevalence in a given year. (Wyoming State Vet Lab, https://www.uwyo.edu/wyovet/index.html).

Conservation Planning:

The Wyoming Game and Fish Commission typically allocates $548,000 annually to fund Sage-Grouse local working group projects. From June 30, 2023 till December 31, 2024, thirty (30) projects (Attachment A) were funded. Most of the projects are supported by multiple cost-sharing partners. Cumulatively, three-hundred and sixty-four (364) projects have been approved since the Local Working Groups inception in 2005. Projects include habitat treatments/restoration, improved range management infrastructure and grazing management plans, applied research, inventories, monitoring, and public outreach.

In November of 2023, the Department implemented a new data sharing policy in response to new interpretation of W.S. 16-4-203(b)(viii). This data sharing policy better aligns with our obligation to protect sensitive wildlife location data. Wildlife data on public lands may be considered sensitive and all private land wildlife data are considered sensitive as the location data identifies land ownership. The Department has developed safeguards to prevent the unauthorized release or publication of this data. A formal agreement in the form of either a memorandum of understanding (MOU) or a transfer of material agreement (TMA) shall be in place prior to release of this data. The Department is still working through specifics of implementing this policy and is examining our sage-grouse data management, distribution, and display of data to ensure compliance.

Management of greater sage-grouse habitat in Wyoming is based on a "core area" strategy of limiting human disturbance in the most important sage-grouse habitats. This strategy is codified by a Governor's executive order. The Executive Order and related materials are available at: https://wgfd.wyo.gov/Habitat/Sage-Grouse-Management

The Core Area Strategy is being implemented across the state under the guidance of a state/federal interagency team of specialists (Sage-grouse Implementation Team; SGIT) who meet on a regular basis to discuss issues related to implementation of the strategy. A key component of the strategy's implementation is the Density and Disturbance Calculation Tool (DDCT). This tool was developed by agency GIS specialists as an interactive, on-line application.

As part of the ongoing Bureau of Land Management (BLM) Resource Management Planning (RMP) process for sage-grouse, the BLM is updating their priority habitat, or core areas. In March 2023, the SGIT assigned a subcommittee to review the Wyoming Sage-Grouse Core Area Map and recommend changes. The subcommittee reached out to WGFD for biological information and also met at least once with each Sage-Grouse Local Working Group. The goal was to have extensive stakeholder engagement and provide BLM an updated version of the core areas as an alternative for their RMP amendment. As of December 2024, this process is still ongoing but the BLM has incorporated core area recommendations from the state of Wyoming into their RMP amendment which was published on November 8, 2024. Following protest resolutions and responses to state consistency reviews with their various state and local plans, the BLM will issue a Record of Decision for each state. Until the BLM sage-grouse RMP is finalized, Wyoming will continue to use version 4 of the Sage-Grouse Core Areas referenced in the State of Wyoming Executive Order 2019-3.

Management Recommendations:

1. Implement Wyoming Governor's Sage-Grouse Executive Order and Core Area Strategy.

2. Continue to implement local conservation plans in all 8 planning areas.

3. Continue to refine and enhance the sage-grouse database and Job Completion Report intranet program.

4. Continue to map lek perimeters and integrate these data into the WGF lek database. Priority for this effort should be based on the lek size of lek and impending development actions that may impact leks.

5. Personnel monitoring leks should review and consistently follow established lek monitoring protocol each year.

6. Continue to refine and document the new data sharing policy in response to state statute W.S. 16-4-203(b) (viii).

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Bates Hole/Shirley Basin

Job Completion Report

Prepared By: Willow Bish, Terrestrial Habitat Biologist

Period Covered: 6-1-2023 to 12-31-2024

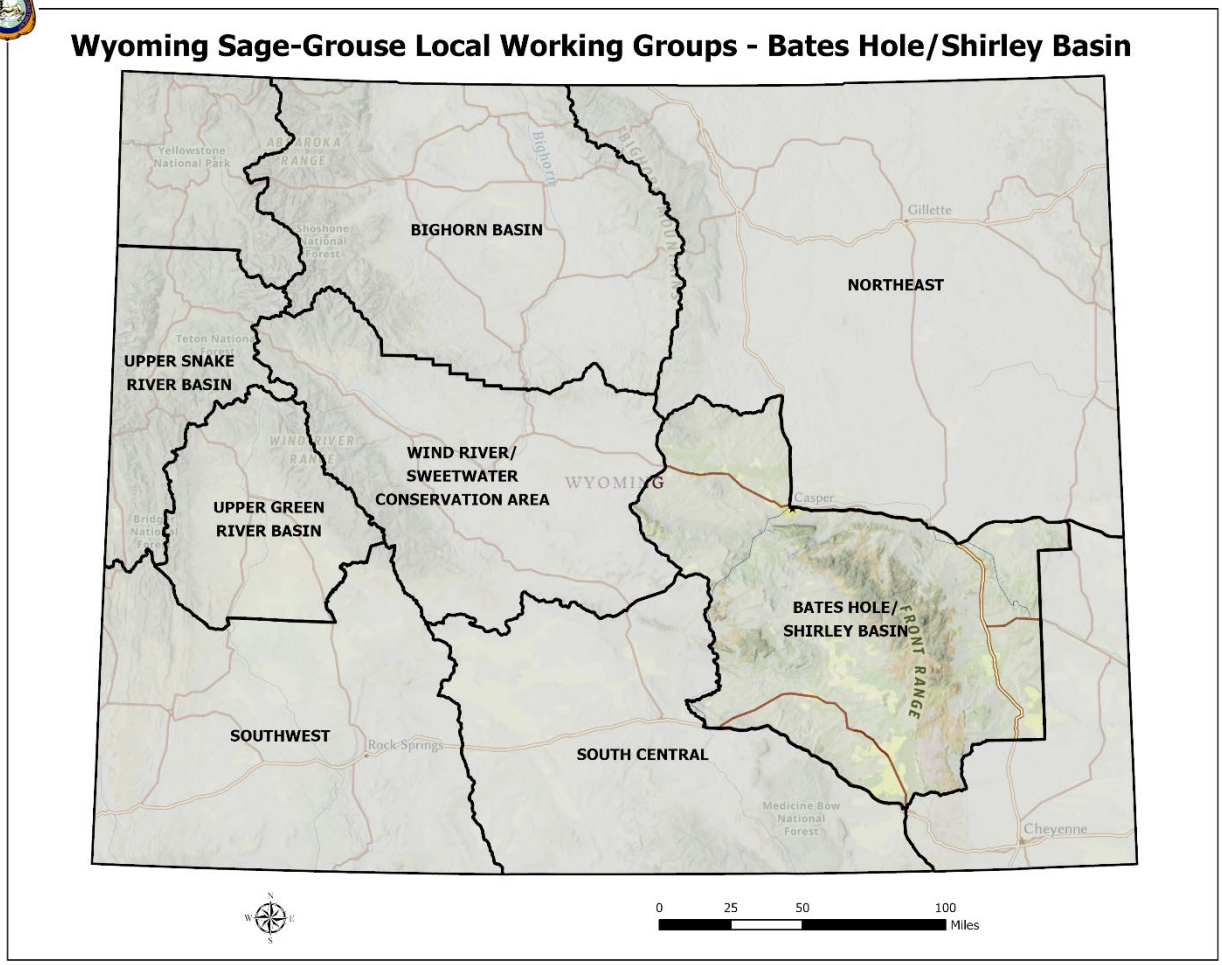

Table 1: Sage-Grouse Lek Characteristics

	Group	N	Percent
BLM Office			
	Casper	132	40.4%
	Lander	2	0.6%
	Newcastle	1	0.3%
	Rawlins	192	58.7%
Biologist			
	Casper	118	36.1%
	Douglas	13	4%
	Laramie	113	34.6%
	Saratoga	74	22.6%
	Sinclair	2	0.6%
	Wheatland	7	2.1%
Classification			
	Occupied	205	62.7%
	Undetermined	22	6.7%
	Unoccupied	100	30.6%
County			
	Albany	81	24.8%
	Carbon	109	33.3%
	Converse	14	4.3%
	Laramie	2	0.6%
	Natrona	114	34.9%
	Niobrara	1	0.3%
	Platte	6	1.8%

	Group	N	Percent
Land Status			
	BLM	109	33.3%
	BOR	1	0.3%
	Private	189	57.8%
	State	28	8.6%
Lek Status			
	Active	145	44.3%
	Inactive	138	42.2%
	Unknown	44	13.5%
Management Area			
	F	327	100%
Region			
	Casper	131	40.1%
	Lander	2	0.6%
	Laramie	194	59.3%
Warden			
	Douglas	3	0.9%
	East Casper	37	11.3%
	East Rawlins	2	0.6%
	Elk Mountain	70	21.4%
	Glenrock	11	3.4%
	Lusk	1	0.3%
	Medicine Bow	75	22.9%
	North Laramie	41	12.5%
	West Casper	79	24.2%
	West Cheyenne	2	0.6%
	Wheatland	6	1.8%

Table 2: Leks Counted

Year	Occupied	Counted	Percent Counted	Peak Males	Average Peak Males
2015	222	102	45.9%	2,869	33.0
2016	223	86	38.6%	2,893	40.2
2017	224	79	35.3%	2,213	35.7
2018	220	109	49.5%	1,944	24.0
2019	218	89	40.8%	1,474	21.1
2020	214	116	54.2%	1,513	18.2
2021	213	106	49.8%	1,259	16.4
2022	210	108	51.4%	1,524	19.8
2023	207	60	29%	997	23.2
2024	207	104	50.2%	2,013	25.8

Occupied - Must have been active once during previous 10 years, calculated based on the official definitions

Average Peak Males - Includes only those leks where one or more strutting males were observed. Does not include "Active" leks where only sign was documented

Table 3: Leks Surveyed

Year	Occupied	Surveyed	Percent Surveyed	Peak Males	Average Peak Males
2015	222	94	42.3%	1,677	26.6
2016	223	103	46.2%	2,298	31.9
2017	224	124	55.4%	2,143	29.0
2018	220	81	36.8%	1,115	20.3
2019	218	100	45.9%	1,071	20.2
2020	214	58	27.1%	648	18.5
2021	213	75	35.2%	662	16.1
2022	210	83	39.5%	737	18.9
2023	207	131	63.3%	1,862	24.2
2024	207	88	42.5%	1,487	28.1

Occupied - Must have been active once during previous 10 years, calculated based on the official definitions

Average Peak Males - Includes only those leks where one or more strutting males were observed. Does not include "Active" leks where only sign was documented

Table 4: Leks Checked

Year	Occupied	Checked	Percent Checked	Peak Males	Average Peak Males
2015	222	196	88.3%	4,546	30.3
2016	223	189	84.8%	5,191	36.0
2017	224	203	90.6%	4,356	32.0
2018	220	190	86.4%	3,059	22.5
2019	218	189	86.7%	2,545	20.7
2020	214	174	81.3%	2,161	18.3
2021	213	181	85%	1,921	16.3
2022	210	191	91%	2,261	19.5
2023	207	191	92.3%	2,859	23.8
2024	207	192	92.8%	3,500	26.7

Occupied - Must have been active once during previous 10 years, calculated based on the official definitions

Average Peak Males - Includes only those leks where one or more strutting males were observed. Does not include "Active" leks where only sign was documented

Table 5: Lek Status of Leks Checked

Year	Active	Inactive	Unknown	Known Status	% Active	% Inactive
2015	154	33	9	187	82.4%	17.6%
2016	146	22	21	168	86.9%	13.1%
2017	148	45	10	193	76.7%	23.3%
2018	139	43	8	182	76.4%	23.6%
2019	134	37	18	171	78.4%	21.6%
2020	125	38	11	163	76.7%	23.3%
2021	123	36	22	159	77.4%	22.6%
2022	129	38	24	167	77.2%	22.8%
2023	125	23	43	148	84.5%	15.5%
2024	136	48	8	184	73.9%	26.1%

Occupied - Must have been active once during previous 10 years, calculated based on the official definitions

Inactive - Confirmed no birds/sign present (see official definitions)

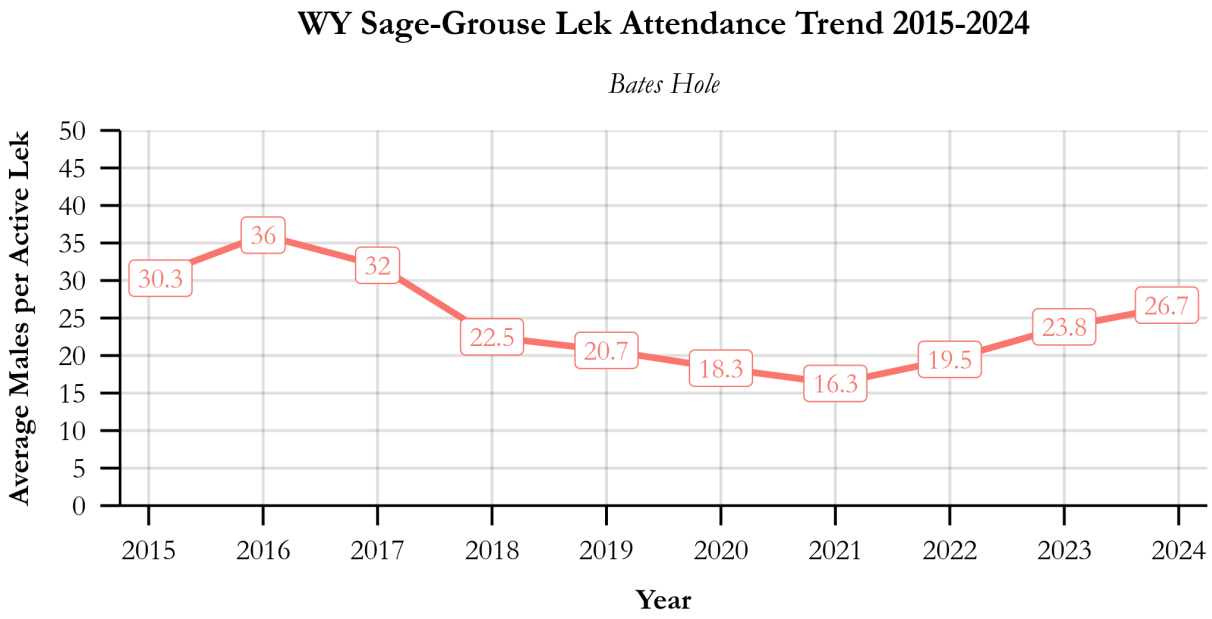

Figure 1: Average Peak Males

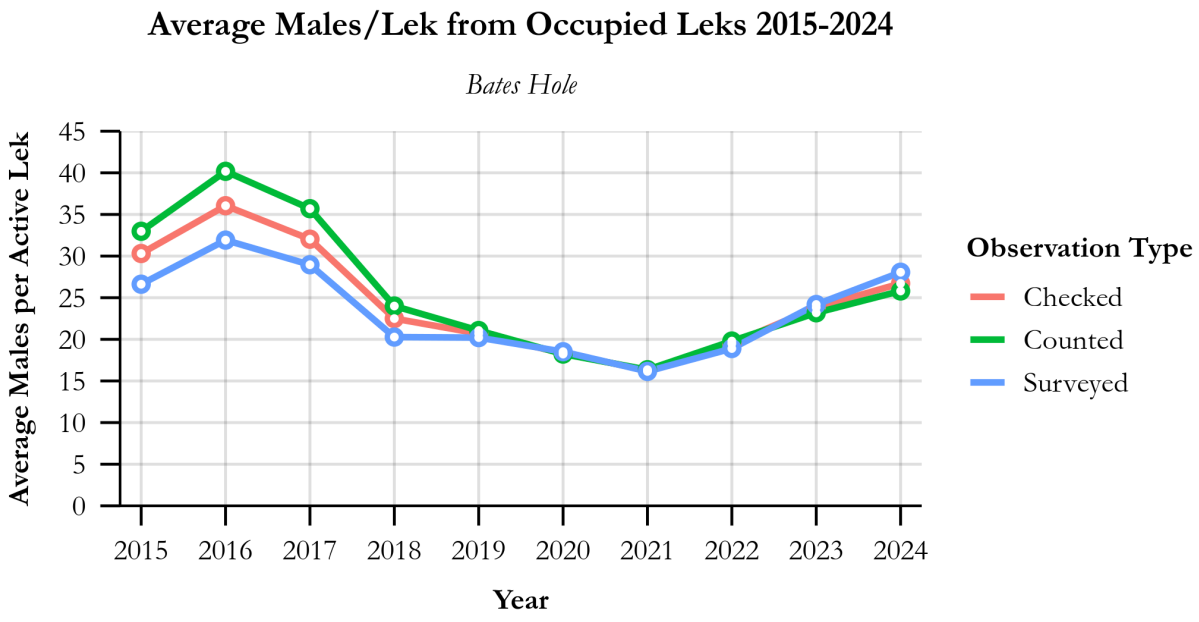

Figure 2: Average Peak Males

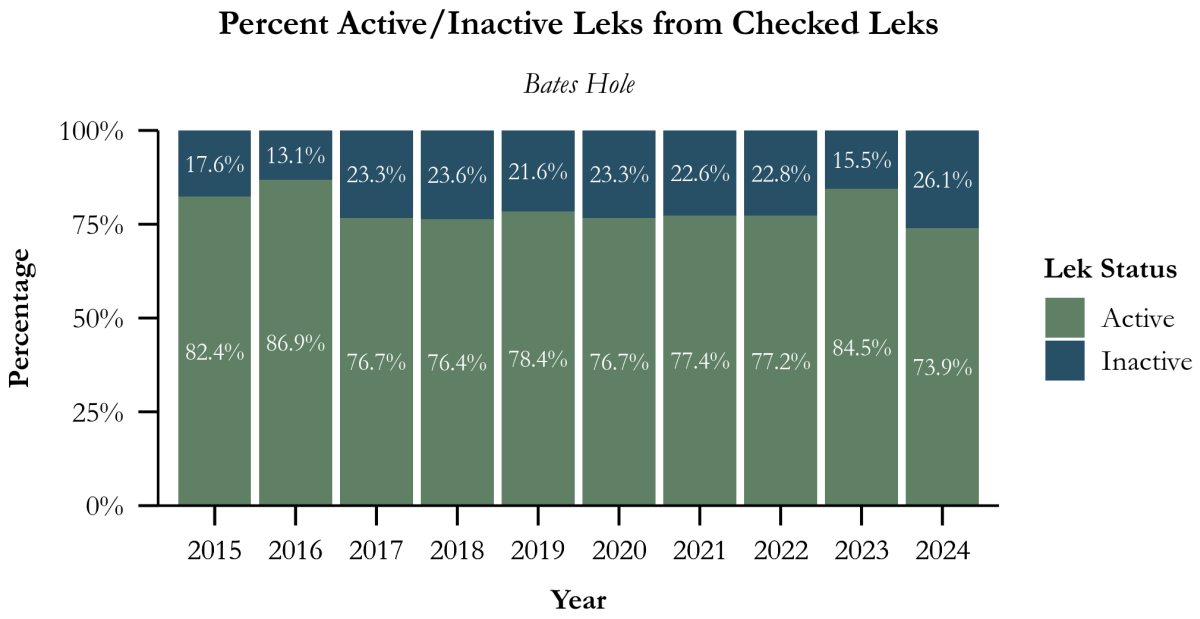

Figure 3: Lek Status

Table 6: Hunting Seasons

Year	Season Start	Season End	Length	Bag/Possession Limit
2015	Sep-19	Sep-30	12	2/4
2016	Sep-17	Sep-30	14	2/4
2017	Sep-16	Sep-30	15	2/4
2018	Sep-15	Sep-30	16	2/4
2019	Sep-21	Sep-30	10	2/4
2020	Sep-19	Sep-30	12	2/4
2021	Sep-18	Sep-30	13	2/4
2022	Sep-17	Sep-30	14	2/4
2023	Sep-16	Sep-30	15	2/4
2024	Sep-21	Sep-30	10	2/4

Table 7: Harvest Totals

Year	Harvest	Hunters	Days	Birds/Day	Birds/Hunter	Days/Hunter
2015	837	380	889	0.9	2.2	2.3
2016	869	466	869	1.0	1.9	1.9
2017	621	315	688	0.9	2.0	2.2
2018	805	464	993	0.8	1.7	2.1
2019	723	403	736	1.0	1.8	1.8
2020	252	212	595	0.4	1.2	2.8
2021	1,071	513	1,195	0.9	2.1	2.3
2022	1,397	631	1,561	0.9	2.2	2.5
2023	1,628	825	1,920	0.8	2.0	2.3
2024	877	506	975	0.9	1.7	1.9
Average	**908**	**472**	**1,042**	**0.8**	**1.9**	**2.2**

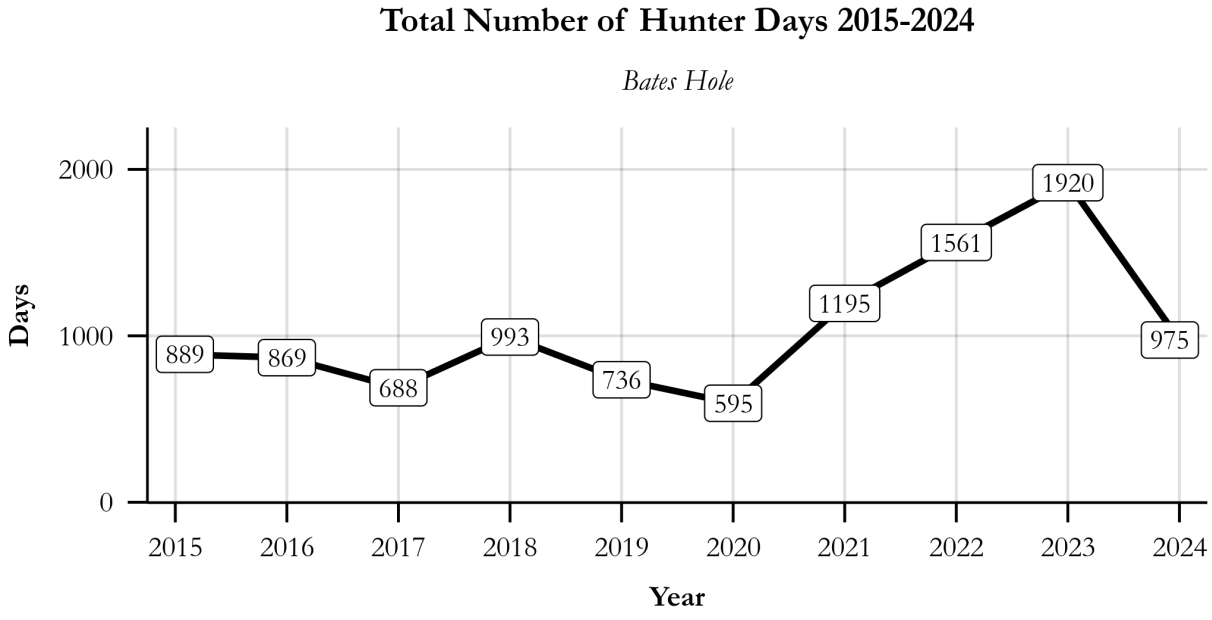

Figure 4: Harvest Days

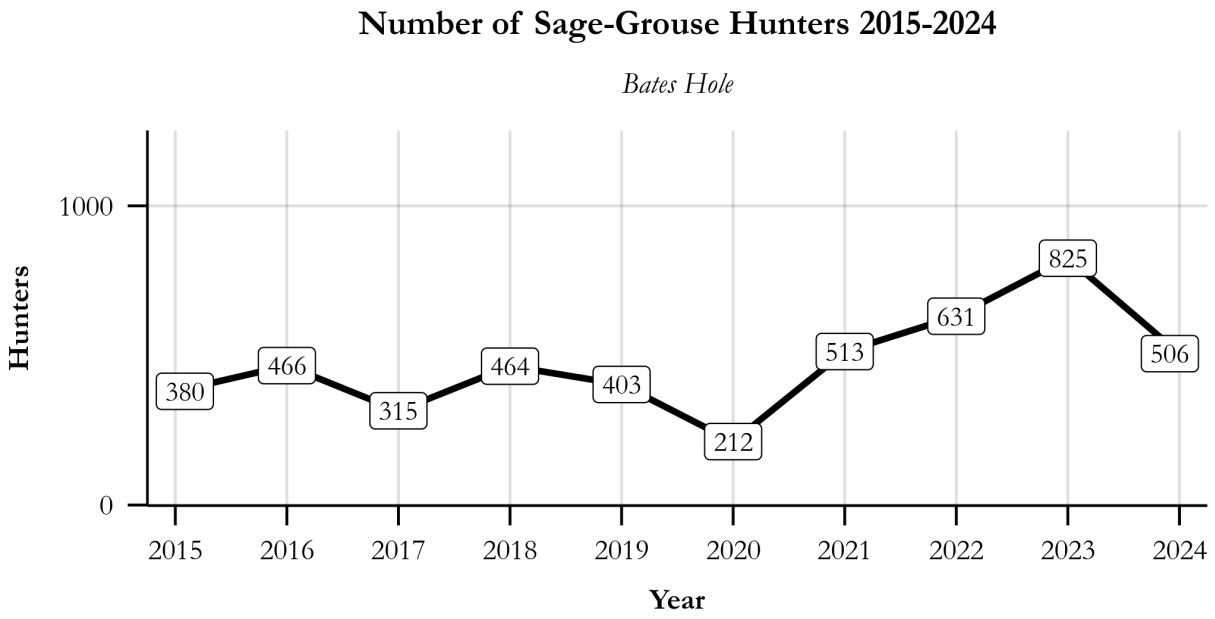

Figure 5: Hunters

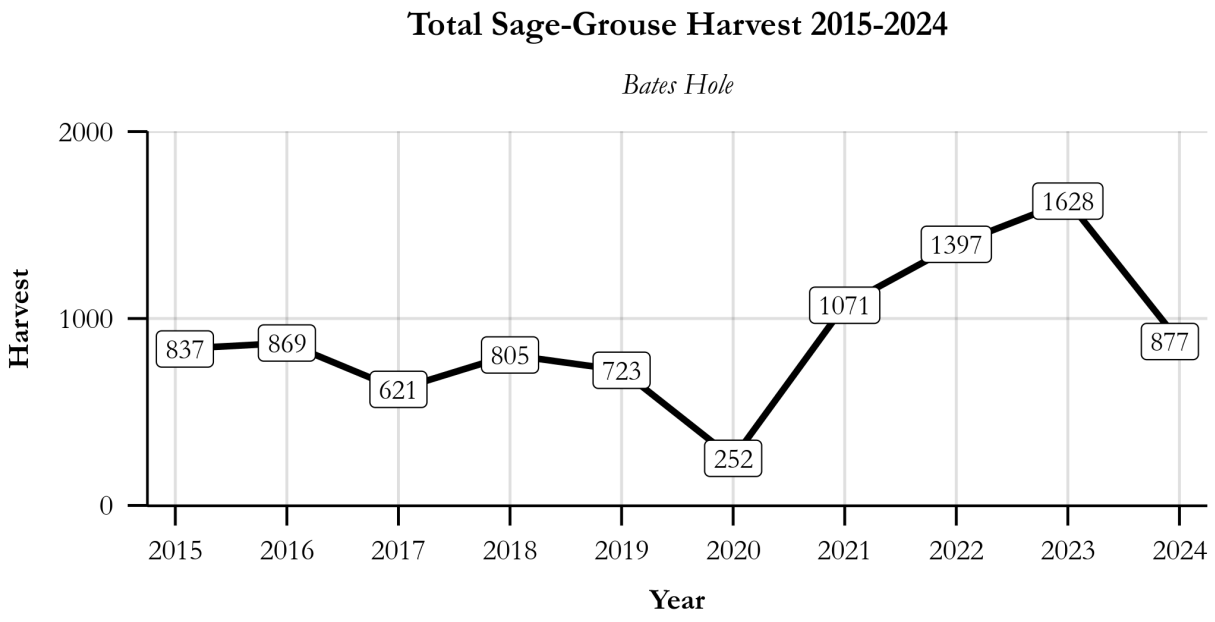

Figure 6: Total Harvest

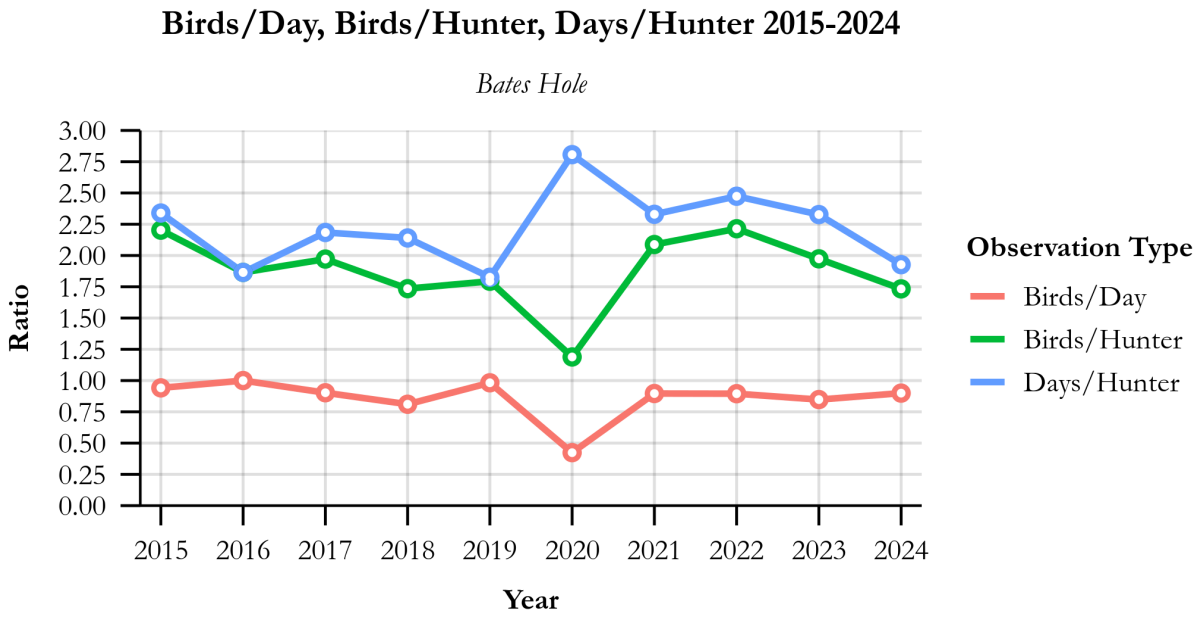

Figure 7: Harvest Ratios

Table 8: Harvest Composition

		Percent Adult		Percent Yearling		Percent Chick		
Year	Sample Size	Male	Female	Male	Female	Male	Female	Chicks/Hens
2015	253	14.6%	31.6%	5.5%	6.7%	22.9%	18.6%	1.1
2016	217	19.4%	33.2%	10.1%	16.6%	11.5%	9.2%	0.4
2017	145	20%	23.4%	4.8%	6.9%	20%	24.8%	1.5
2018	168	15.5%	25%	4.2%	7.7%	19%	28.6%	1.5
2019	212	13.2%	32.5%	3.8%	14.6%	12.3%	23.6%	0.8
2020	273	8.8%	30.8%	4.8%	11.7%	10.6%	33.3%	1.0
2021	195	8.7%	31.8%	3.1%	10.8%	21%	24.6%	1.1
2022	300	5.7%	24.7%	3%	14.3%	21.3%	31%	1.3
2023	421	11.4%	22.8%	6.2%	13.5%	26.6%	19.5%	1.3
2024	307	17.9%	16%	8.8%	10.1%	18.9%	28.3%	1.8

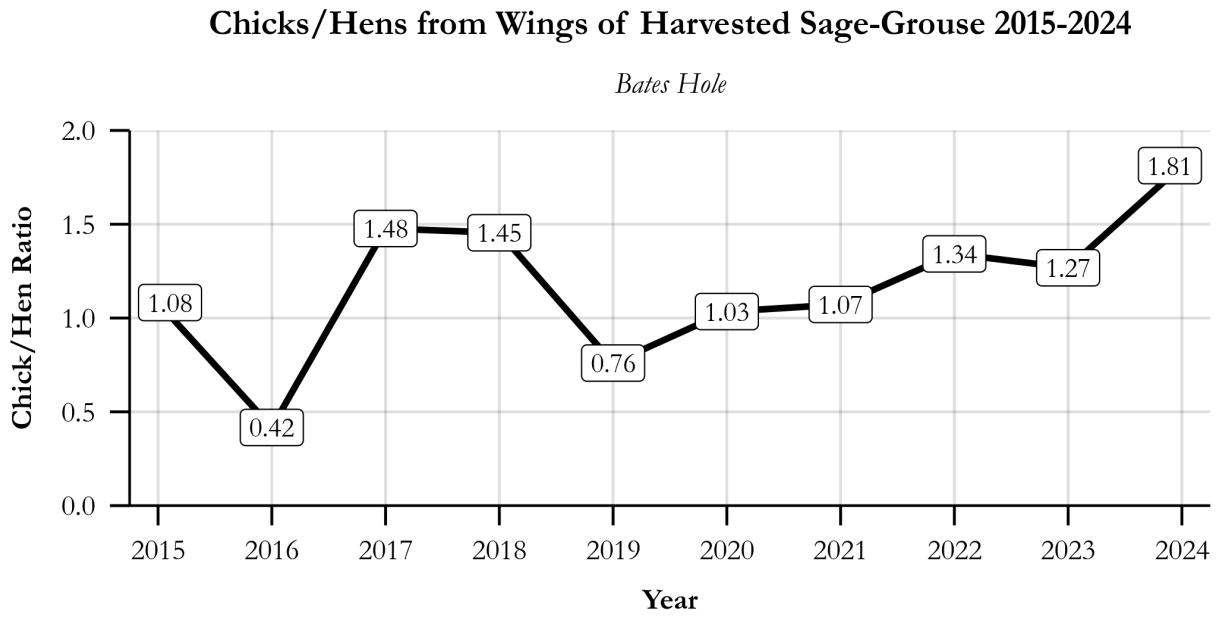

Figure 8: Chick/Hen Ratio

Lek Monitoring:

As of spring 2024, there are 205 known occupied leks, 100 unoccupied leks, and 22 leks of an undetermined classification within the Bates Hole/ Shirley Basin Local Working Group (BHSBLWG) area (**Table 1)**. In 2024, WGFD personnel, BLM personnel, volunteers, and consultants combined efforts to check 92.8% of known occupied leks in the BHSBLWG area (**Table 4)**. A total of 104 occupied leks were counted while 88 were surveyed, with annual status being confirmed on 184 occupied leks in 2024 (**Table 2, Table 3)**. Of these, 136 (73.9%) were active and 48 (26.1%) were inactive (**Table 5)**.

In April 2023, Owyhee Air Research LLC conducted a lek census survey with an infrared imaging system. The survey area occurred in Shirley Basin, 40 miles south of Casper, Wyoming. In total 1,139 greater sage-grouse were detected in the survey area. Of the 40 known lek locations surveyed, 20 were found to be active. 13 detections beyond one mile from the nearest known lek were determined to be "potential new lek locations", including one location with 132 individuals and another with 206 individuals. During the 2024 lekking season, managers worked to verify potential new leks that were detected during the 2023 survey. Five of the 13 potential new leks had male sage-grouse strutting in 2024. Managers will continue to evaluate whether these locations will be classified as miscellaneous strutting areas or leks, based on male sage-grouse attendance.

Production:

Sage-grouse populations exhibit cyclical patterns. The 2024 average males/ lek from all (counts and surveys) occupied lek observations (26.1) was slightly higher than the average males/ lek in 2018 (22.5). The last cyclical peak occurred in 2016, with 36 males per lek on average. Male lek attendance

then declined sharply from 2016-2021 and has been slowly increasing since (**Figure 1**; **Figure 2**). Anecdotal field observations by managers have reported increased numbers of birds as well.

Harvest:

In general, chick/hen ratios of about 1.5:1 result in relatively stable lek counts the following spring, while chick/hen ratios of 1.7:1 or greater result in subsequent increased lek attendance and ratios below 1.2:1 result in decline. Over the last 10 years, estimated productivity from wing-barrel data has fluctuated between 0.4 and 1.5 chicks per hen within the BHSBLWG area. Wing barrel data within the BHSBLWG area show that the 2023 chicks/hen ratio was 1.3 and the 2024 chicks/hen ratio was 1.8. This is the first time in the past 10 years that chick/hen ratios have exceeded 1.8. Only two years (2017 and 2018) showed chick/hen ratios near 1.5. Ratios in all other years within the past 10 years have indicated declines (**Table 8**). However, populations have appeared to stabilize and begin to increase. Managers are unsure why chick ratios from wing barrel data are often so low given other signs of population increase. Chick/hen ratios from 2024 are more representative of managers' observations of recent population growth. The chick to hen values for 2023 and 2024 were calculated using a sample of 421 and 307 wings, which represents 26% and 35%, respectively, of the estimated harvest based on hunter surveys (**Figure 6**).

According to survey data, in 2023, total sage-grouse harvest (1628) and number of hunters (825) peaked, and were higher than any time in the past 10 years, and are similar to levels experienced in the mid to late 2000s. However, a new survey design was implemented in 2024 to obtain better harvest information. According to this survey, these numbers dropped in 2024 to 877 birds harvested and 506 hunters (**Figure 5; Figure 6**). Managers believe previous harvest surveys may have over-estimated harvest so it's difficult to say if this decline was realized in the field, or if it a result of the data. When assessing harvest, it's important to note that there was a survey error in 2020 which resulted in inaccurate and unreliable data obtained for that year.

Habitat:

The BHSBLWG area has many of the same habitat quality concerns that occur throughout sage-grouse range including habitat alteration, development and fragmentation, drought, noxious and invasive weeds, especially annual invasive grasses, declines in mesic habitat, and improper livestock grazing in some areas. In recent years, managers are most concerned about on-going large-scale industrial wind development projects as well as the potential for expansion of wind development within Shirley Basin. The transmission lines within the BHSBLWG area have also been a recent and on-going large scale disturbance within prime sage-grouse habitat.

Sagebrush condition throughout some portions of the area may also be of concern. Past sagebrush transects have repeatedly shown high levels of browse utilization by pronghorn and domestic sheep. These issues likely continue in some areas.

The RR316 wildfire burned 14,200 acres outside of Hanna, Wyoming in late summer 2020. High fire severity resulted in substantial loss of sagebrush cover in the Hanna Core Area. Over ten miles of woven wire/barbed combination fence were replaced with four-wire wildlife-friendly fence in 2021 and marked with reflective markers in spring 2022. At least two tire tanks with associated pipes and wildlife access modifications will be constructed in 2024. The fire scar continues to recover while native, perennial ground cover continues to increase. A lack of invasive grasses within the burn scar

area is promising for recovery. To date, no sagebrush shrub seedling establishment has been witnessed.

The Pedro Mountain Fire burned about 19,000 acres in 2019. However, very little of the fire was in suitable sage-grouse habitat. The very southern portion of the burn is of most concern to sage-grouse managers. Sagebrush restoration efforts have not occurred. However, the area has been sprayed for cheatgrass, but recent on-the-ground observations of large areas of cheatgrass are concerning to managers. Managers will continue to assess options to re-treat the Pedro Mountains and adjacent sagebrush habitats.

Extensive habitat work is occurring in the Upper Bates Hole portion of this working group area and includes conifer removal, mountain big sagebrush treatments to increase vegetation diversity and production, wet meadow/riparian/mesic improvements, fence marking, and cheatgrass treatments. Planned cheatgrass treatments extend into the Shirley Basin and will address sources of cheatgrass which threaten large, intact portions of high-quality sagebrush habitat.

Disease:

There were no confirmed cases of West Nile virus (WNv) in sage-grouse within the BHSBLWG area during this reporting period. While WGFD field personnel, other agency personnel and the public are requested to recover and submit carcasses of dead birds to the Wyoming State Vet Lab for necropsy, very few, if any birds are submitted. Sage-grouse carcasses typically do not persist in the field for very long, making it difficult for timely discovery and submission. The extent of WNv infection and its effects on sage-grouse populations throughout the BHSBLWG area is unknown, but potentially significant in years when outbreaks occur.

Conservation Planning:

Sage-grouse Core Area revisions were recommended in 2023. It is currently unknown what the final outcome of this process will be.

Management Recommendations:

Changes in regulation implemented in 2024 required sage-grouse hunters to obtain a permit. This has allowed for the acquisition of more accurate harvest data to inform management and hunting seasons. Managers believe there may be some areas within the BHSBLWG area that have unsustainably high concentrations of hunters throughout the course of the season, and are awaiting for continued improved harvest data to more accurately assess the situation.

Big Horn Basin

Job Completion Report

Prepared By: Sam Stephens, Greybull Wildlife Biologist

Period Covered: 6-1-2023 to 12-31-2024

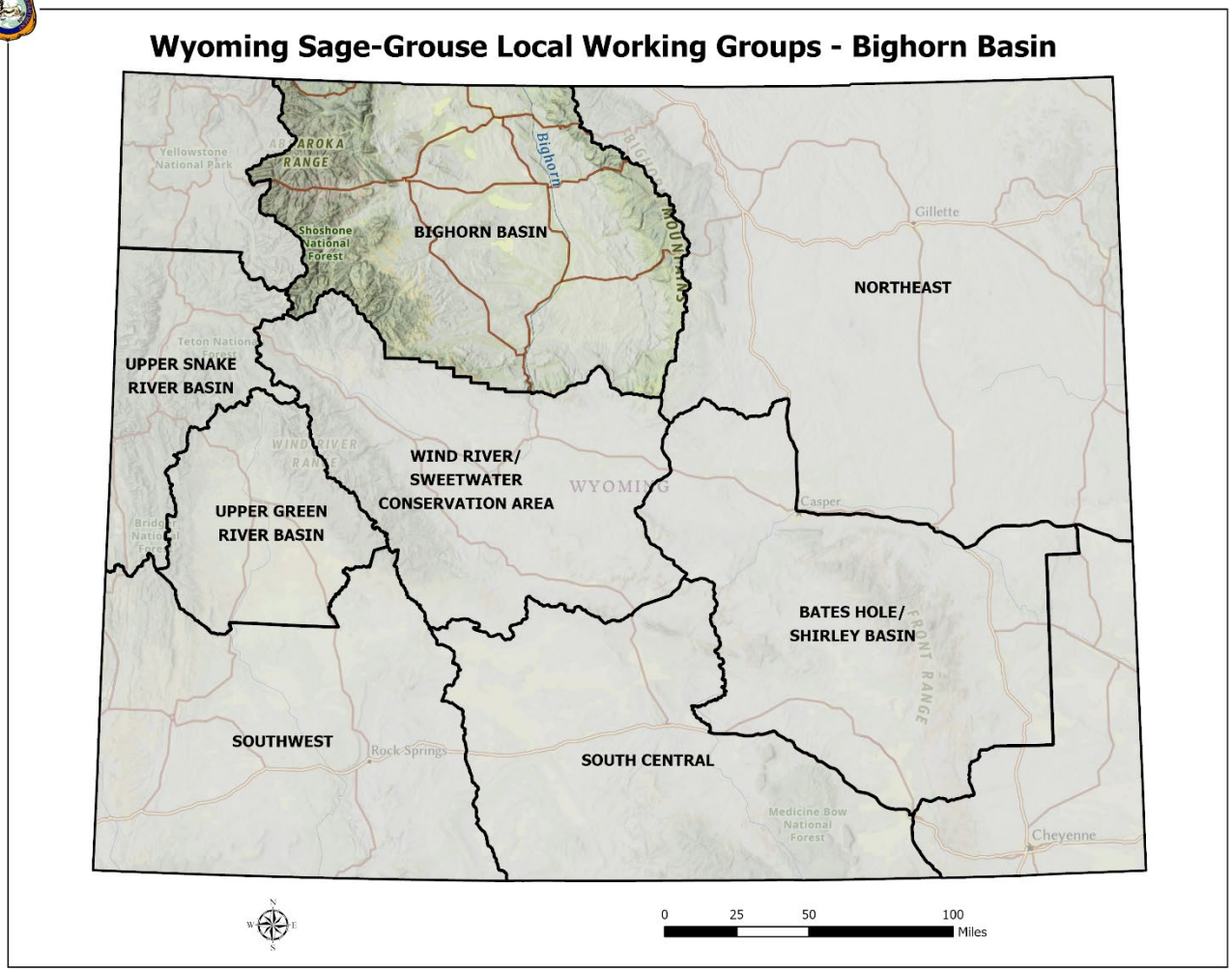

Table 1: Sage-Grouse Lek Characteristics

	Group	N	Percent
BLM Office			
	Cody	117	37.3%
	Worland	197	62.7%
Biologist			
	Cody	88	28%
	Greybull	52	16.6%
	Worland	174	55.4%
Classification			
	Occupied	216	68.8%
	Undetermined	41	13.1%
	Unoccupied	57	18.2%
County			
	Big Horn	48	15.3%
	Hot Springs	57	18.2%
	Park	107	34.1%
	Washakie	102	32.5%
Land Status			
	BOR	3	1%
	State	19	6.1%

	Group	N	Percent
Land Status			
	BLM	209	66.6%
	Private	83	26.4%
Lek Status			
	Active	154	49%
	Inactive	104	33.1%
	Unknown	56	17.8%
Management Area			
	B	314	100%
Region			
	Cody	314	100%
Warden			
	Greybull	23	7.3%
	Lovell	31	9.9%
	Meeteetse	32	10.2%
	North Cody	26	8.3%
	Powell	13	4.1%
	South Cody	29	9.2%
	Ten Sleep	54	17.2%
	Thermopolis	48	15.3%
	Worland	58	18.5%

Table 2: Leks Counted

Year	Occupied	Counted	Percent Counted	Peak Males	Average Peak Males
2015	244	53	21.7%	1,108	26.4
2016	250	86	34.4%	2,258	30.5
2017	252	56	22.2%	1,636	34.8
2018	243	60	24.7%	1,115	24.2
2019	243	59	24.3%	897	17.2
2020	234	70	29.9%	894	16.9
2021	233	113	48.5%	1,082	14.2
2022	231	79	34.2%	815	15.7
2023	227	80	35.2%	1,168	19.1
2024	226	88	38.9%	1,720	23.9

Occupied - Must have been active once during previous 10 years, calculated based on the official definitions

Average Peak Males - Includes only those leks where one or more strutting males were observed. Does not include "Active" leks where only sign was documented

Table 3: Leks Surveyed

Year	Occupied	Surveyed	Percent Surveyed	Peak Males	Average Peak Males
2015	244	141	57.8%	2,297	20.3
2016	250	140	56%	2,053	23.3
2017	252	175	69.4%	2,286	19.2
2018	243	153	63%	1,434	14.2
2019	243	139	57.2%	835	9.6
2020	234	127	54.3%	617	7.9
2021	233	82	35.2%	313	7.8
2022	231	123	53.2%	637	10.1
2023	227	110	48.5%	654	10.5
2024	226	121	53.5%	721	12.4

Occupied - Must have been active once during previous 10 years, calculated based on the official definitions

Average Peak Males - Includes only those leks where one or more strutting males were observed. Does not include "Active" leks where only sign was documented

Table 4: Leks Checked

Year	Occupied	Checked	Percent Checked	Peak Males	Average Peak Males
2015	244	194	79.5%	3,405	22.0
2016	250	226	90.4%	4,311	26.6
2017	252	231	91.7%	3,922	23.6
2018	243	213	87.7%	2,549	17.3
2019	243	198	81.5%	1,732	12.5
2020	234	197	84.2%	1,511	11.5
2021	233	195	83.7%	1,395	12.0
2022	231	202	87.4%	1,452	12.6
2023	227	190	83.7%	1,822	14.8
2024	226	209	92.5%	2,441	18.8

Occupied - Must have been active once during previous 10 years, calculated based on the official definitions

Average Peak Males - Includes only those leks where one or more strutting males were observed. Does not include "Active" leks where only sign was documented

Table 5: Lek Status of Leks Checked

Year	Active	Inactive	Unknown	Known Status	% Active	% Inactive
2015	156	27	11	183	85.2%	14.8%
2016	173	26	27	199	86.9%	13.1%
2017	171	35	25	206	83%	17%
2018	152	34	27	186	81.7%	18.3%
2019	149	42	7	191	78%	22%
2020	137	58	2	195	70.3%	29.7%
2021	125	53	17	178	70.2%	29.8%
2022	118	60	24	178	66.3%	33.7%
2023	126	53	11	179	70.4%	29.6%
2024	146	32	31	178	82%	18%

Occupied - Must have been active once during previous 10 years, calculated based on the official definitions

Inactive - Confirmed no birds/sign present (see official definitions)

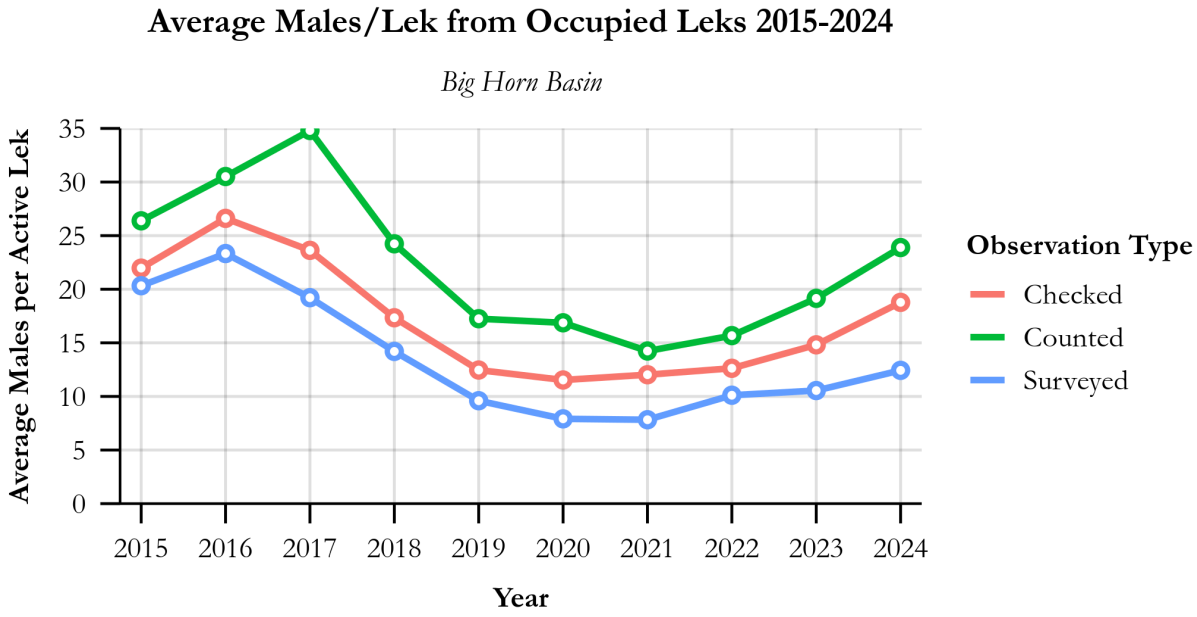

Figure 1: Average Peak Males

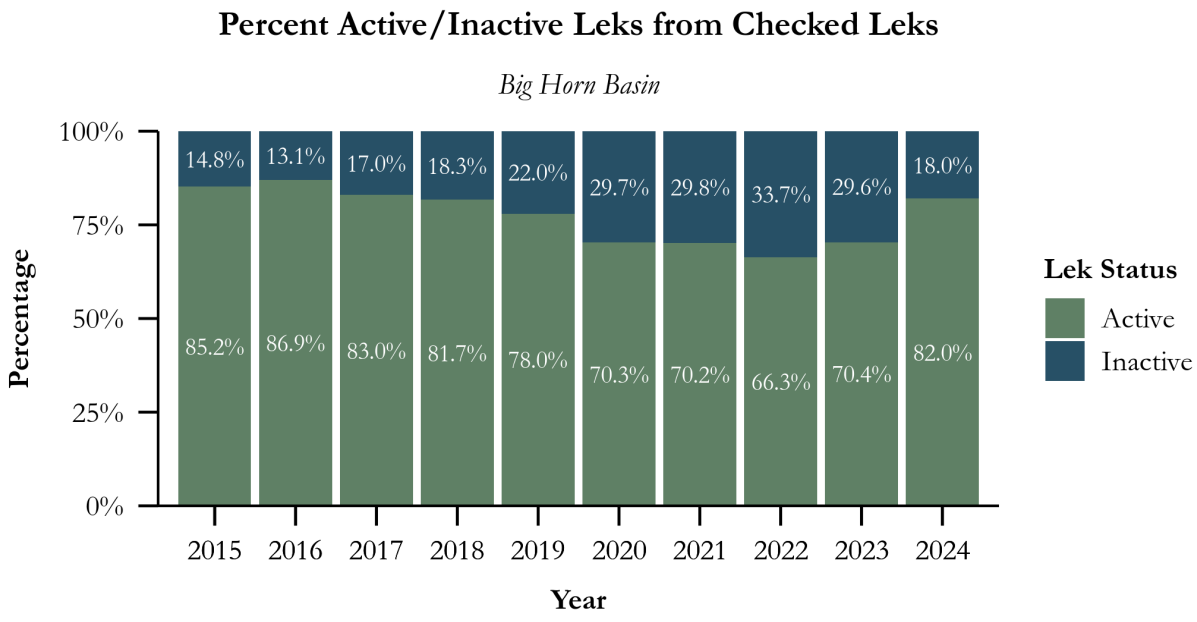

Figure 2: Lek Status

Table 6: Hunting Seasons

Year	Season Start	Season End	Length	Bag/Possession Limit
2015	Sep-19	Sep-30	12	2/4
2016	Sep-17	Sep-30	14	2/4
2017	Sep-16	Sep-30	15	2/4
2018	Sep-15	Sep-30	16	2/4
2019	Sep-21	Sep-30	10	2/4
2020	Sep-19	Sep-30	12	2/4
2021	Sep-18	Sep-30	13	2/4
2022	Sep-17	Sep-30	14	2/4
2023	Sep-16	Sep-30	15	2/4
2024	Sep-21	Sep-30	10	2/4

Table 7: Harvest Totals

Year	Harvest	Hunters	Days	Birds/Day	Birds/Hunter	Days/Hunter
2015	729	411	947	0.8	1.8	2.3
2016	594	302	868	0.7	2.0	2.9
2017	635	300	745	0.9	2.1	2.5
2018	648	418	1,351	0.5	1.6	3.2
2019	312	244	463	0.7	1.3	1.9
2020	767	331	1,037	0.7	2.3	3.1
2021	586	493	1,290	0.5	1.2	2.6
2022	497	674	1,731	0.3	0.7	2.6
2023	703	611	1,384	0.5	1.2	2.3
2024	924	578	1,342	0.7	1.6	2.3
Average	**640**	**436**	**1,116**	**0.6**	**1.6**	**2.6**

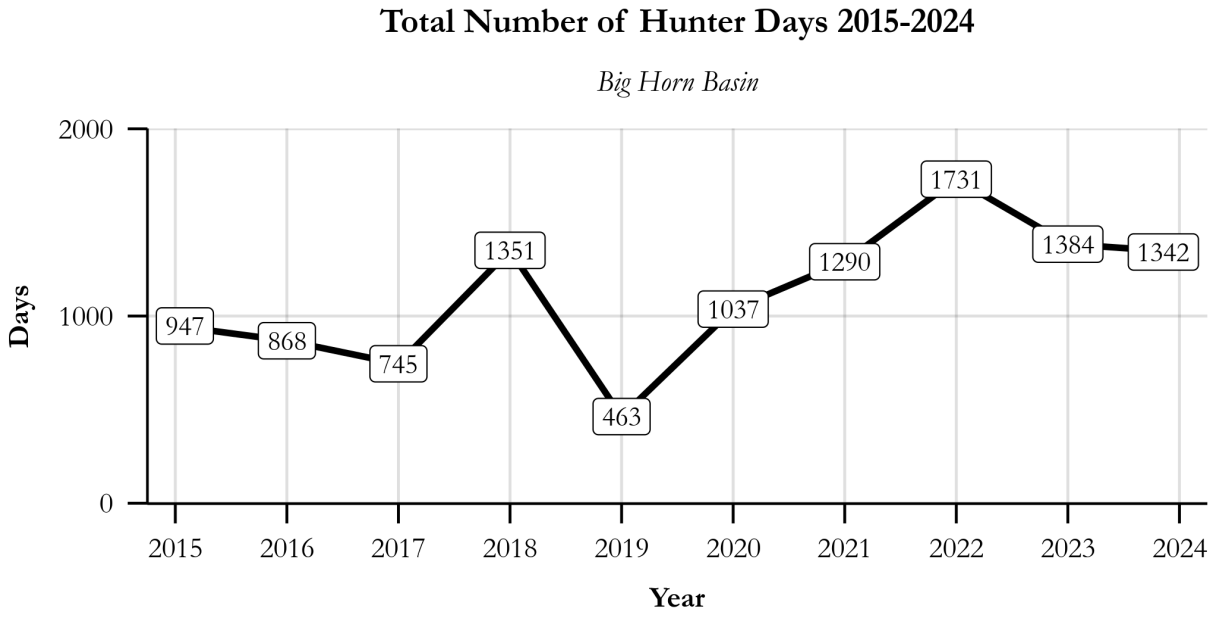

Figure 3: Harvest Days

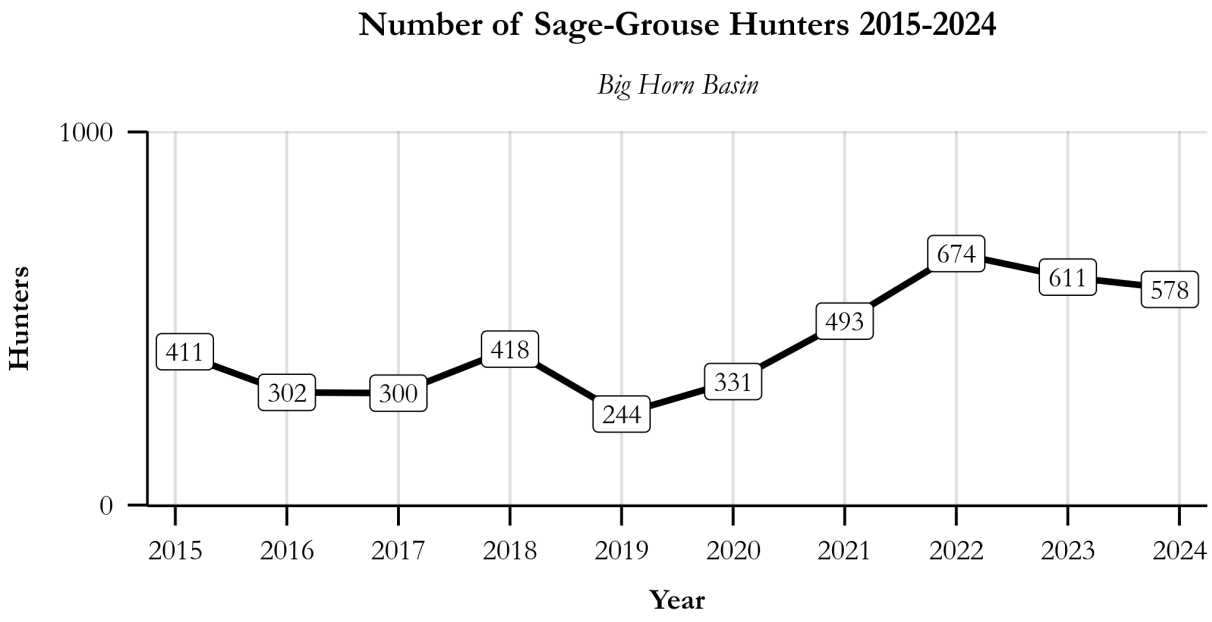

Figure 4: Hunters

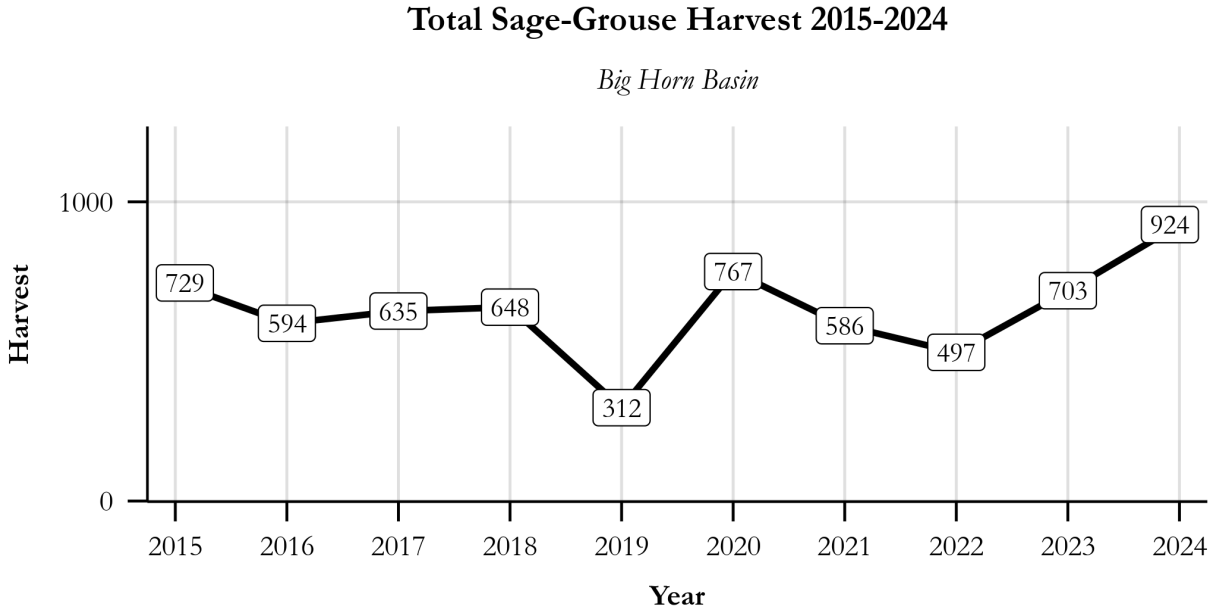

Figure 5: Total Harvest

Table 8: Harvest Composition

		Percent Adult		Percent Yearling		Percent Chick		
Year	Sample Size	Male	Female	Male	Female	Male	Female	Chicks/Hens
2024	34	14.7%	8.8%	5.9%	11.8%	29.4%	29.4%	2.9

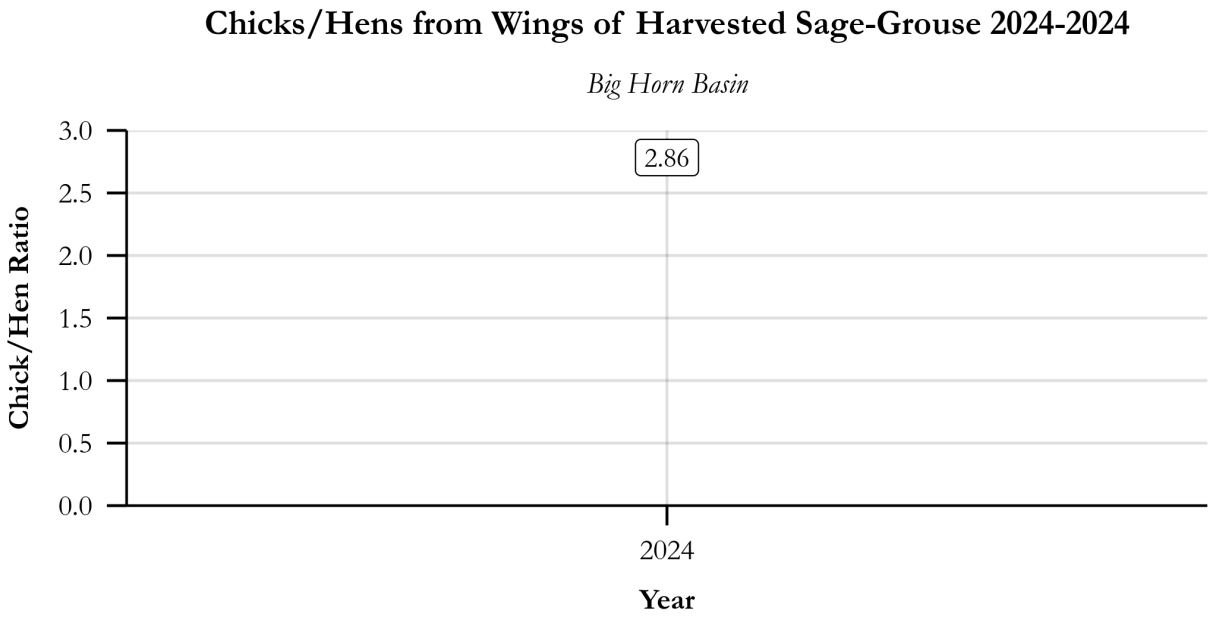

Figure 6: Chick/Hen Ratio

Table 9. Brood survey data collected by Wyoming Game & Fish Department personnel in the Bighorn Basin, 2014-23.

Year Observed	Broods	Chicks	Hens	Chicks/brood	Chicks/hen
2014	6	31	27	5.2	1.1
2015	13	69	24	5.3	2.9
2016	8	21	5	2.6	4.2
2017	5	32	7	6.4	4.6
2018	5	22	6	4.4	3.7
2019	4	15	4	3.8	3.8
2020	4	22	4	5.5	5.5
2021	4	22	4	5.5	5.5
2022	11	56	13	5.0	4.3
2023	5	32	6	6.4	5.3
2014-23 average	**6.5**	**32**	**10**	**5**	**4.1**

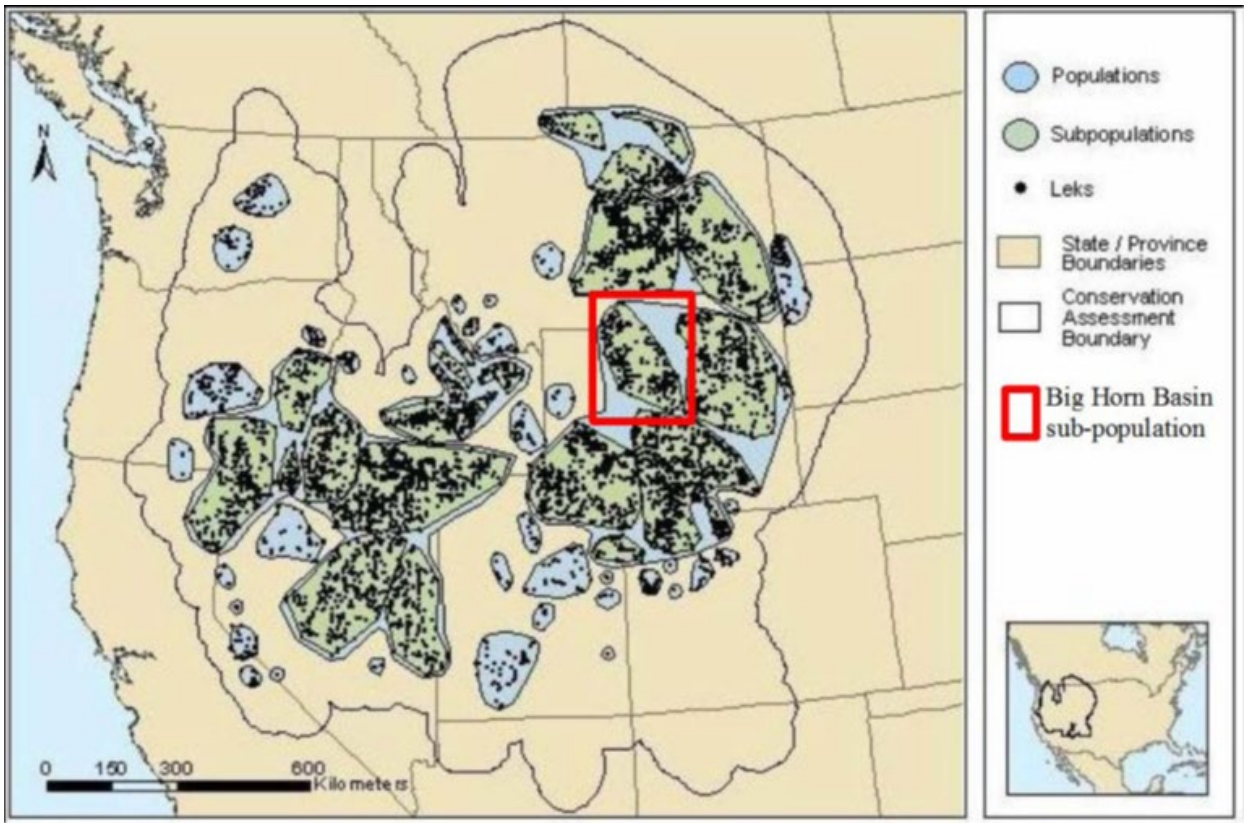

Figure 7. Discrete populations and subpopulations of sage-grouse in western North America, with the Big Horn Basin sub-population surrounded by the red rectangle. (Adapted from Connelly et. al. 2004).

Lek Monitoring:

In spring 2024, 88 occupied leks were counted in the Basin, resulting in an average of 23.9 males per lek (Table 2). We surveyed 121 leks for a total of 209 leks checked during the 2024 season (2015-24 average=206; Table 4). To evaluate long-term population trends, we combine and average survey and count lek data since the count protocol was not used during the late 1980s and early 1990s. Fortunately, long-term data sets from Wyoming and neighboring states indicate similar trends from both counts and surveys (Fedy and Aldridge 2011).

The average number of male sage-grouse on all occupied leks showed an increase from the 2023 count of 14.8 to 18.8 in 2024 (**Table 4**). Sage-grouse populations cycle on approximate 7 to 10-year intervals (Fedy and Doherty 2010). The proportion of inactive leks increased significantly during the 2020-2023 period (average: 30.7% inactive). In 2024 the proportion of inactive leks decreased to 18% inactive (**Table 5**).

Production:

Five sage-grouse broods were documented in 2023 (**Table 9**). Low sample sizes are likely a product of lack of effort by field personnel, because sage-grouse brood data is opportunistically collected while performing other duties during July, August and Early September. A direct connection

between effort (time spent surveying for broods) and number of broods observed was presented in previous Job Completion Reports. Wing barrels were deployed in the Worland Biologist district in order to collect wings from harvested birds and estimate the chick:hen ratio. Typically a ratio exceeding 1.6 chicks per hen indicates a growing population. In 2024, 34 sage-grouse wings were collected to derive a recruitment ratio of 2.86 chicks per hen (Figure 6). This ratio is significantly higher than what was estimated statewide (1.81) but this could be a product of small sample size. Wing barrels will again be deployed for wing collection in the Worland District in 2025.

Harvest:

Average (1982-1994) annual harvest in the Basin was 3,756 sage-grouse taken by 1,300 hunters during 3,118 hunter days (2.8 birds/hunter, 2.4 days/hunter). During 1995-2001 an average of 549 hunters took 1,056 sage-grouse during 1,567 days of hunting (1.9 birds/hunter, 2.8 days/hunter). During the most recent period (2015-2024), hunters averaged 1.6 birds/hunter and 2.6 days/hunter. In 2024, 578 hunters in the Big Horn Basin harvested 924 sage-grouse (1.6 birds/hunter) (**Table 7**); spending 1342 hunter-days afield (2.3 days/hunter) during the 10-day hunting season (**Table 6**). The significant increase in sage-grouse harvest from 2023 to 2024 could be attributed to an increase in grouse or could also be due to an increase in the hunter response rate when surveyed. Historically when sage-grouse harvest was estimated through the annual small/upland game survey, hunters responded at a rate of 15%. Following the implementation of the sage-grouse hunting permit, sage-grouse hunters were surveyed through a more targeted approach and responded at a rate of near 50%.

Habitat:

Sage-grouse habitat within the Bighorn Basin exists predominantly in low precipitation zones ranging from 5-9" to 7-12" annually. Vegetation communities within the Basin are diverse and vary according to soil type, annual precipitation, and elevation. Major vegetation communities in the Basin include sagebrush steppe, saltbush badlands, irrigated agricultural lands, cottonwood dominated riparian corridors, mixed mountain shrub, and mixed conifer forests with interspersed aspen stands at higher elevations.

Connelly et al. (2004) recognized sage-grouse in the Basin as a distinct sub-population (**Figure 7**). Mountain ranges to the east and west restrict most sage-grouse movement due to unsuitable habitat. There are several leks near the Wyoming/Montana state line with movement between states occurring. Copper Mountain, the Owl Creek Mountains, and the southern Bighorn Mountains provide suitable habitat serving as travel corridors to adjacent populations.

In 2024, 314 sage-grouse leks are known to occur in the conservation area with 216 leks known to be occupied and 57 leks known to be unoccupied (**Table 1**). Undetermined leks (n=41) need additional observations before being reclassified as occupied or unoccupied. A majority of leks (67%) occur on BLM managed land and 26% of leks occur on private land (**Table 1**). There are potentially other leks in the Basin not yet discovered.

Conservation Planning:

The BHBLWG was formed in September 2004 to develop and implement a local conservation plan for sage-grouse and sagebrush habitats. The BHBLWG's mission statement is, "*Through the efforts of local concerned citizens, recommend management actions that are based on the best science to enhance sagebrush habitats and ultimately sage-grouse populations within the Big Horn Basin.*"

The BHBLWG's local plan identifies factors and impacts that may influence sage-grouse populations in the Basin, and outlines goals and objectives to address habitats, populations, research and education. Strategies and commitments in the local plan are designed to improve sage-grouse habitats and populations in the Basin. The local plan was updated in 2013 and highlights completed and ongoing projects in the Basin in addition to summarizing state- and nation-wide policy and programs. The updated plan can be viewed at the WGFD website: **https://wgfd.wyo.gov/Habitat/Sage-Grouse-Management**.

Most recently, the BHBLWG met in 2024 to discuss project funding allocation to sage-grouse research and habitat improvement projects. The group agreed to grant $55,000 to fund riparian enhancement through the use of beaver dam analogs on Sage Creek in Park County. Additionally $20,000 was granted to fund a conservation easement in sage-grouse core area in Park County.

Management Recommendations:

For the 2023 biological year sage-grouse populations in the Bighorn Basin appear to be on an upward trend. Peak male attendance in both 2023 and 2024 indicate a reversal of negative trends in the population. Although the sample size is limited the 2024 chick:hen data suggest that for the following biological year, sage-grouse populations in the Bighorn Basin will likely continue along the same increasing trend. Sage-grouse in the Basin face threats, but are not in danger of foreseeable extirpation, and on-going conservation efforts are intended to mitigate some anthropogenic impacts.

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Northeast

Job Completion Report

Prepared By: Erika Peckham, Gillette Wildlife Biologist

Period Covered: 6-1-2023 to 12-31-2024

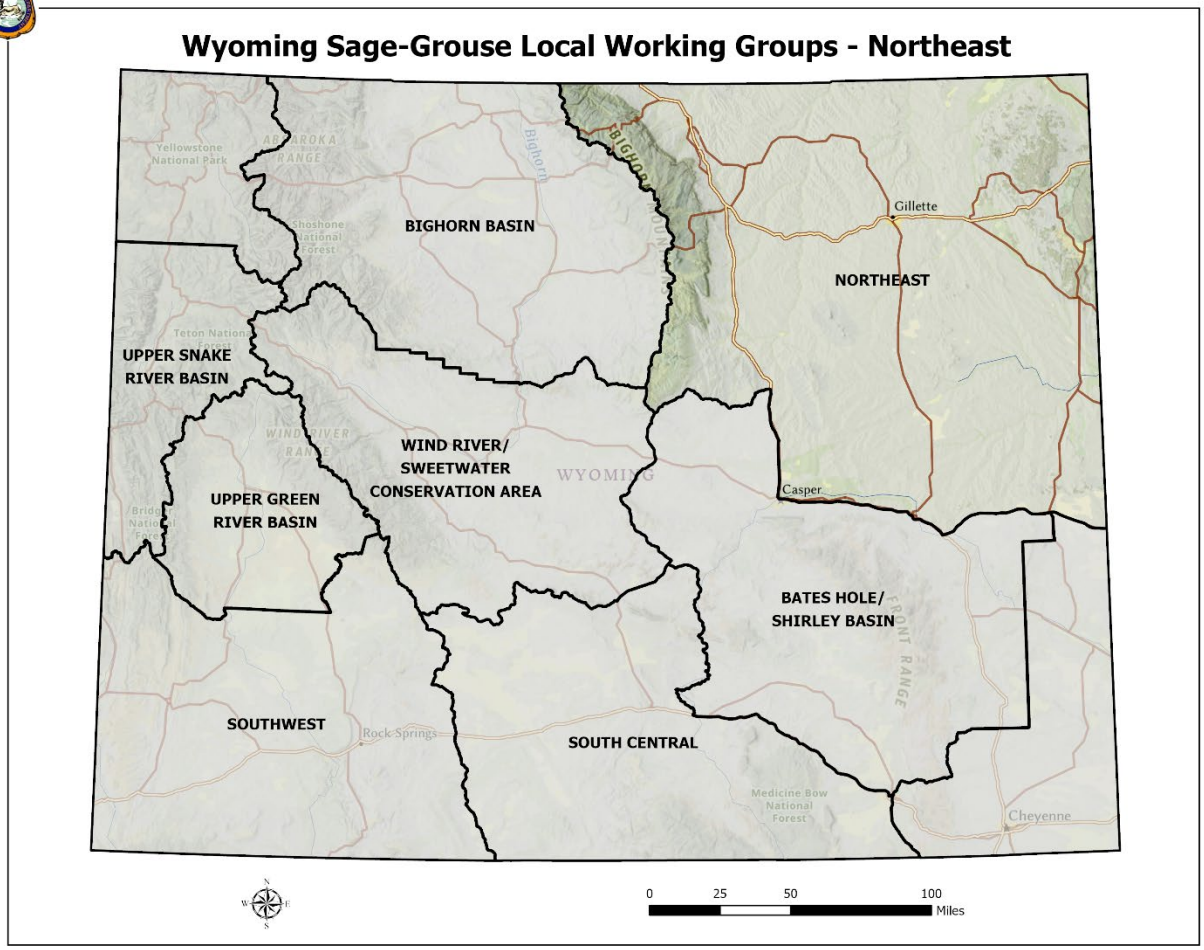

Table 1: Sage-Grouse Lek Characteristics

	Group	N	Percent
BLM Office			
	Buffalo	398	65.7%
	Casper	74	12.2%
	Newcastle	134	22.1%
Biologist			
	Buffalo	78	12.9%
	Casper	15	2.5%
	Douglas	65	10.7%
	Gillette	276	45.5%
	Newcastle	81	13.4%
	Sheridan	91	15%
Classification			
	Occupied	326	53.8%
	Undetermined	87	14.4%
	Unoccupied	193	31.8%
County			
	Big Horn, MT	1	0.2%
	Campbell	214	35.3%
	Carter, MT	1	0.2%
	Converse	58	9.6%
	Crook	27	4.5%
	Johnson	148	24.4%
	Natrona	16	2.6%
	Niobrara	27	4.5%
	Powder River, MT	1	0.2%
	Sheridan	34	5.6%
	Weston	79	13%

	Group	N	Percent
Land Status			
	BLM	55	9.1%
	Private	469	77.4%
	State	44	7.3%
	USFS	38	6.3%
Lek Status			
	Active	178	29.4%
	Inactive	235	38.8%
	Unknown	193	31.8%
Management Area			
	C	606	100%
Region			
	Casper	161	26.6%
	Sheridan	445	73.4%
Warden			
	Buffalo	79	13%
	Dayton	24	4%
	Douglas	27	4.5%
	East Casper	6	1%
	Glenrock	30	5%
	Kaycee	61	10.1%
	Lusk	27	4.5%
	Moorcroft	78	12.9%
	Newcastle	64	10.6%
	North Gillette	69	11.4%
	Sheridan	12	2%
	South Gillette	122	20.1%
	Sundance	6	1%
	West Casper	1	0.2%

Table 2: Leks Counted

Year	Occupied	Counted	Percent Counted	Peak Males	Average Peak Males
2015	395	188	47.6%	1,933	16.2
2016	390	166	42.6%	1,961	20.4
2017	373	162	43.4%	1,845	20.1
2018	368	175	47.6%	1,376	13.8
2019	360	153	42.5%	1,116	12.3
2020	357	159	44.5%	1,516	15.5
2021	351	147	41.9%	1,044	13.9
2022	349	133	38.1%	1,004	13.8
2023	343	160	46.6%	1,396	15.0
2024	340	127	37.4%	1,258	16.3

Occupied - Must have been active once during previous 10 years, calculated based on the official definitions

Average Peak Males - Includes only those leks where one or more strutting males were observed. Does not include "Active" leks where only sign was documented

Table 3: Leks Surveyed

Year	Occupied	Surveyed	Percent Surveyed	Peak Males	Average Peak Males
2015	395	146	37%	1,057	16.3
2016	390	179	45.9%	1,708	19.2
2017	373	163	43.7%	1,375	16.4
2018	368	107	29.1%	654	12.3
2019	360	142	39.4%	829	11.5
2020	357	81	22.7%	495	13.4
2021	351	140	39.9%	848	13.0
2022	349	150	43%	623	9.6
2023	343	119	34.7%	505	10.7
2024	340	153	45%	759	12.4

Occupied - Must have been active once during previous 10 years, calculated based on the official definitions

Average Peak Males - Includes only those leks where one or more strutting males were observed. Does not include "Active" leks where only sign was documented

Table 4: Leks Checked

Year	Occupied	Checked	Percent Checked	Peak Males	Average Peak Males
2015	395	334	84.6%	2,990	16.2
2016	390	345	88.5%	3,669	19.8
2017	373	325	87.1%	3,220	18.3
2018	368	282	76.6%	2,030	13.3
2019	360	295	81.9%	1,945	11.9
2020	357	240	67.2%	2,011	14.9
2021	351	287	81.8%	1,892	13.5
2022	349	283	81.1%	1,627	11.8
2023	343	279	81.3%	1,901	13.6
2024	340	280	82.4%	2,017	14.6

Occupied - Must have been active once during previous 10 years, calculated based on the official definitions

Average Peak Males - Includes only those leks where one or more strutting males were observed. Does not include "Active" leks where only sign was documented

Table 5: Lek Status of Leks Checked

Year	Active	Inactive	Unknown	Known Status	% Active	% Inactive
2015	187	94	53	281	66.5%	33.5%
2016	191	108	46	299	63.9%	36.1%
2017	179	98	48	277	64.6%	35.4%
2018	157	97	28	254	61.8%	38.2%
2019	165	79	51	244	67.6%	32.4%
2020	137	87	16	224	61.2%	38.8%
2021	145	84	58	229	63.3%	36.7%
2022	141	93	49	234	60.3%	39.7%
2023	142	83	54	225	63.1%	36.9%
2024	146	76	58	222	65.8%	34.2%

Occupied - Must have been active once during previous 10 years, calculated based on the official definitions

Inactive - Confirmed no birds/sign present (see official definitions)

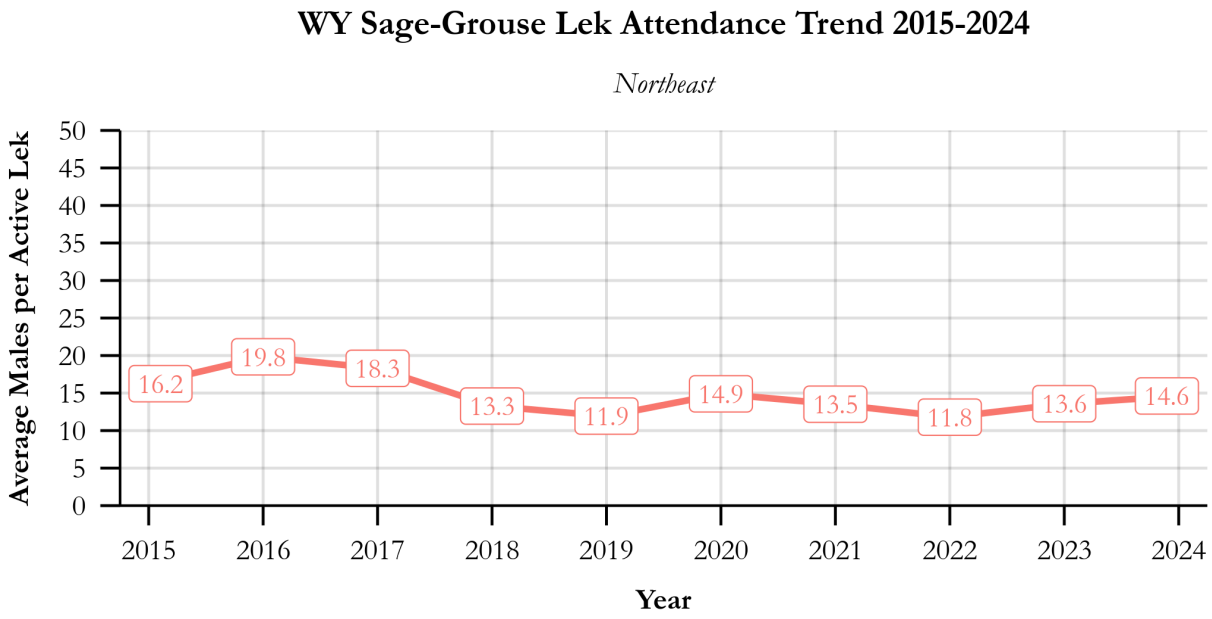

Figure 1: Average Peak Males

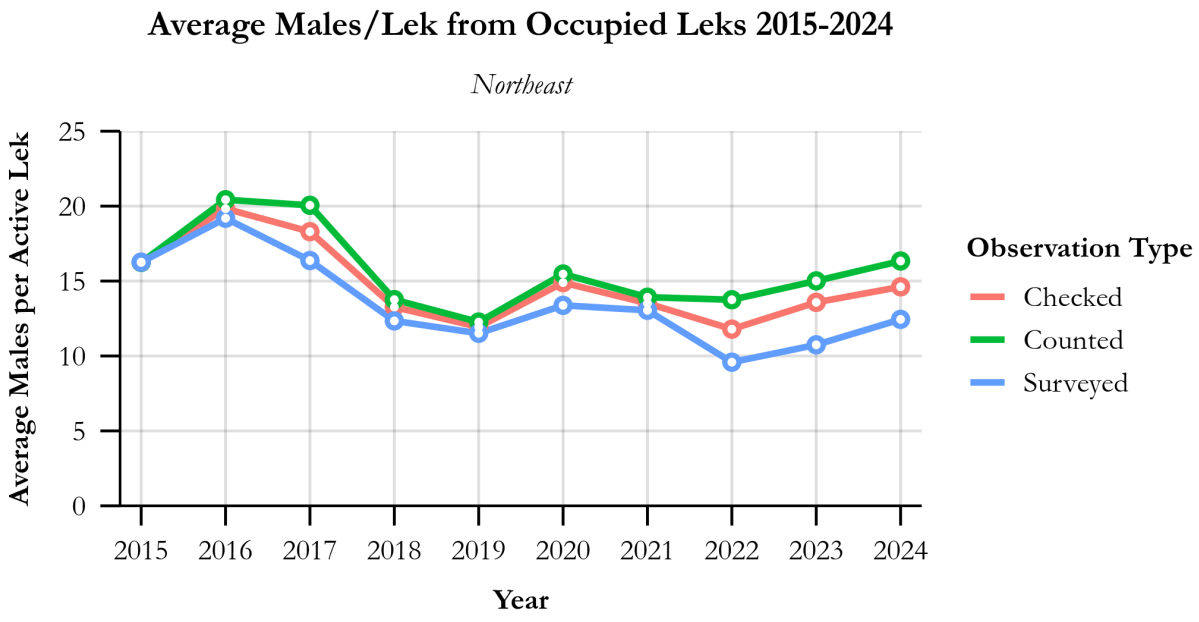

Figure 2: Average Peak Males

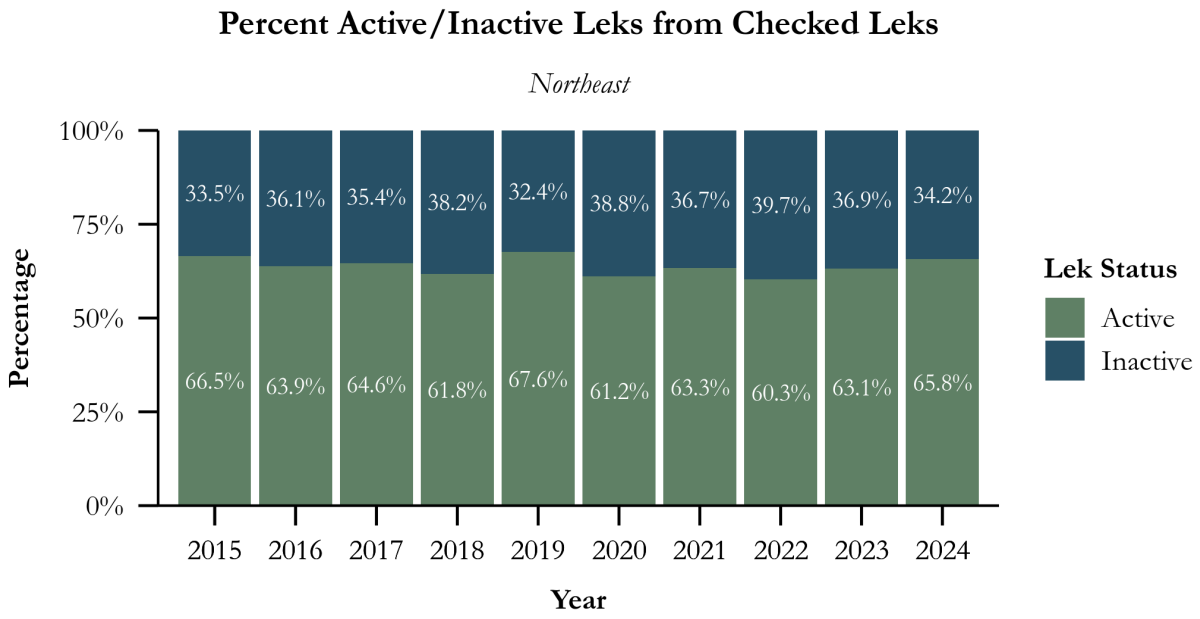

Figure 3: Lek Status

Table 6: Hunting Seasons

Year	Season Start	Season End	Length	Bag/Possession Limit
2015	Sep-19	Sep-21	3	2/4
2016	Sep-17	Sep-19	3	2/4
2017	Sep-16	Sep-18	3	2/4
2018	Sep-15	Sep-17	3	2/4
2019	Sep-21	Sep-23	3	2/4
2020	Sep-19	Sep-21	3	2/4
2021	Sep-18	Sep-20	3	2/4
2022	Sep-17	Sep-19	3	2/4

Table 7: Harvest Totals

Year	Harvest	Hunters	Days	Birds/Day	Birds/Hunter	Days/Hunter
2015	314	228	400	0.8	1.4	1.8
2016	89	129	265	0.3	0.7	2.1
2017	118	145	344	0.3	0.8	2.4
2018	245	200	479	0.5	1.2	2.4
2019	129	122	203	0.6	1.1	1.7
2020	126	168	798	0.2	0.8	4.8
2021	404	205	755	0.5	2.0	3.7
2022	429	217	698	0.6	2.0	3.2
2023	139	95	221	0.6	1.5	2.3
2024	71	37	67	1.1	1.9	1.8
Average	**206**	**155**	**423**	**0.6**	**1.3**	**2.6**

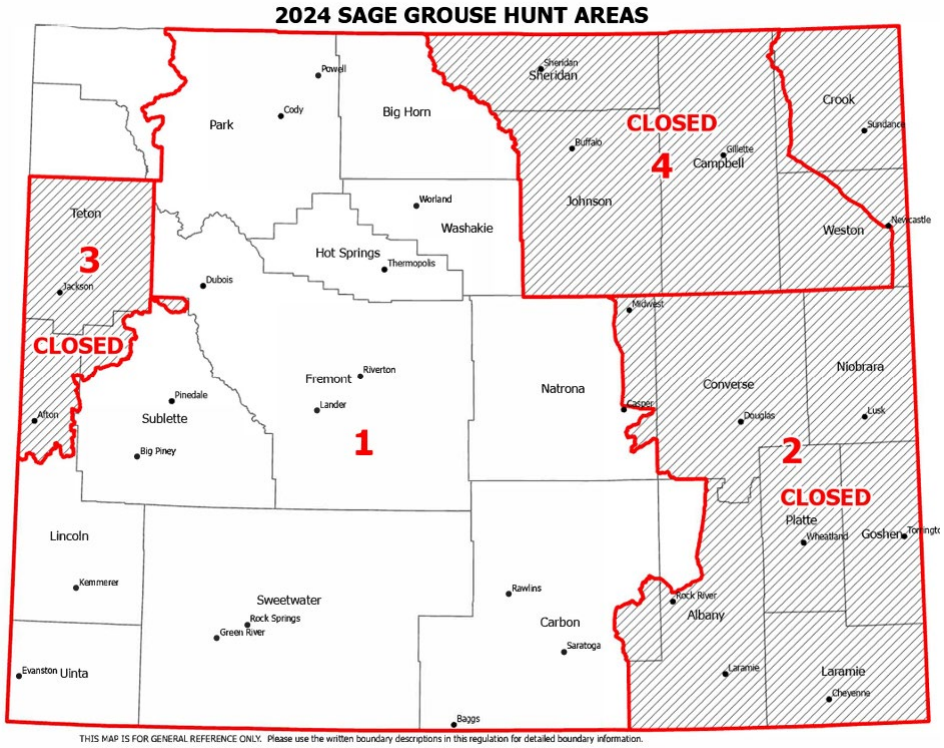

Figure 4. Wyoming Sage-Grouse Hunt Areas

Table 8: Sage-Grouse Data for Northeast Wyoming Fires – August 27, 2024

Fire	Core, Connectivity, or Proposed Area	Acres Burnt	% of Core, Connectivity, or Proposed Area
Flat Rock	NE E	8,481	5%
House Draw	Buffalo Core	113,085	32%
House Draw	NE C	18,198	19%
Remington	Buffalo Connectivity	1,076	<1%
Wildcat Creek	Thunder Basin Core	5,200	<1%

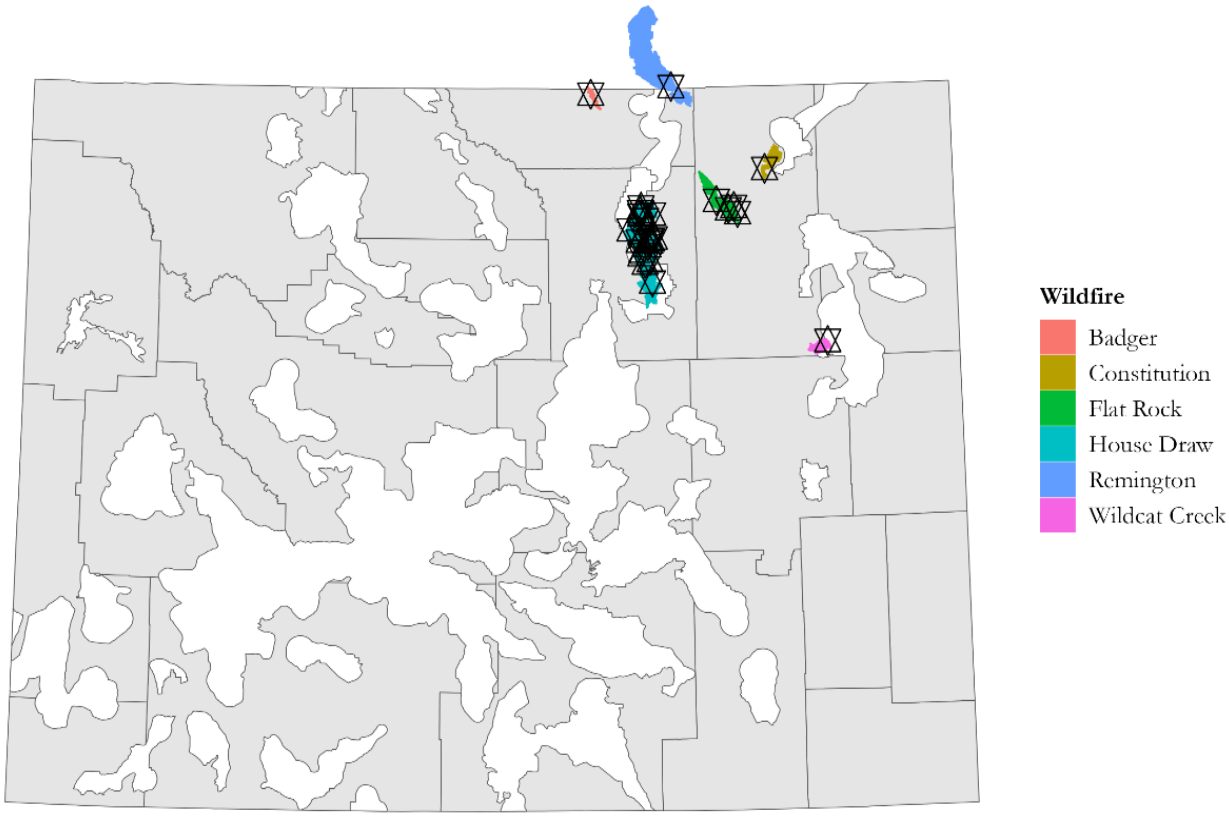

Figure 5. 2024 Wildfire Perimeters in Northeast Wyoming

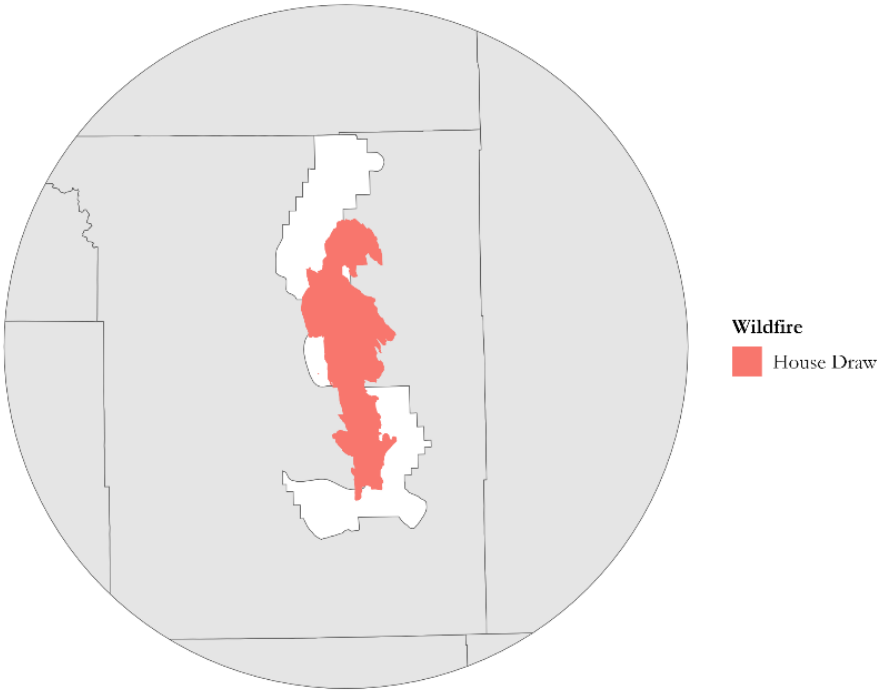

Figure 6. Buffalo Core Area and House Draw Fire

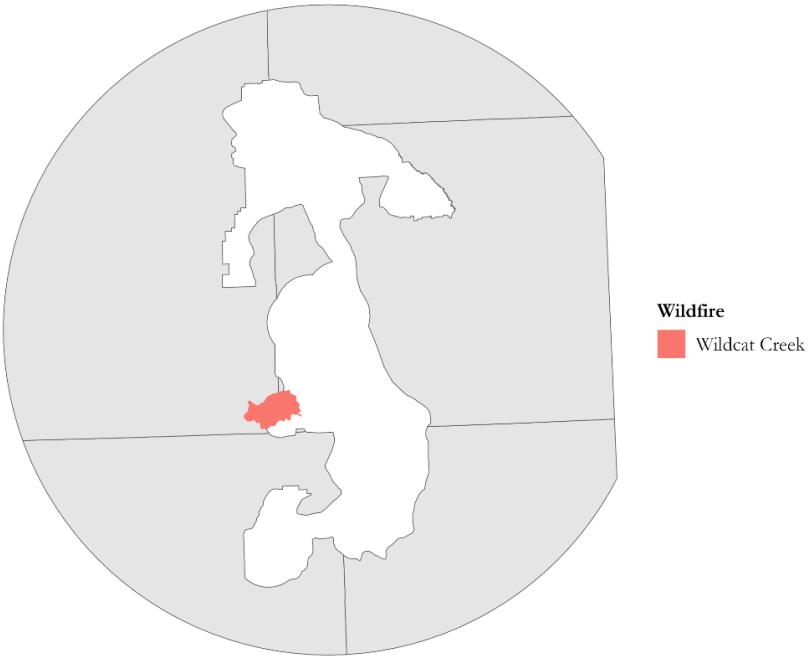

Figure 7. Thunder Basin Core Area and Wildcat Fire

Table 9: 2024 Funding Allocation of the Northeast Sage-Grouse Local Working Group

Project Title	Total Amount	Sage-Grouse funds	Partners
Thunder Basin Zeedyks	$222,000	$33,000	NFWF, WGBGLC, WWNRT, Thunder Basin Grazing Assoc., LWG, In kind
Spring Creek Grazing Association Rangelands Restoration II	$970,575	$25,000	WGFD, Spring Creek Grazing Assoc., WWNRT, PreCorp, NFWF-Northern Great Plains Initiative
Factors Contributing to Sage-Grouse Persistence in a Non-Sagebrush Area	$17,000	$17,000	

Lek Monitoring:

Background

The number of males per active lek provides a reasonable index of abundance of the sage-grouse population over time, particularly given the rigorous methods and long-term nature of the dataset in Wyoming. However, it should be noted that lek data must be interpreted with caution for several reasons: 1) the survey effort and the number of leks surveyed/counted has varied over time; 2) it is assumed that not all leks in the area have been located; 3) sage-grouse populations can exhibit cyclic patterns over approximately a decade; 4) the effects of unknown or unmonitored leks that have become inactive cannot be quantified or qualified; and 5) lek sites may change over time.

In the Northeast Working Group area, lek monitoring efforts increased substantially in 2000 due to concerns over range wide declines in sage-grouse populations. Additionally, coalbed natural gas (CBNG) development in the Powder River Basin resulted in extensive survey work to meet federal permitting requirements. Surveys in relation to CBNG were extensive from roughly 2000-2008. The Wyoming Game and Fish Department (WGFD), Bureau of Land Management (BLM), U.S. Forest Service (USFS), private consultants, landowners, and volunteers participate in annual lek monitoring. A significant portion of leks in northeast Wyoming are checked using a fixed-wing airplane. Many leks are on private land where access might be difficult to attain. Although aerial surveys are not as accurate as ground visits, sometimes this is the only available method to monitor leks in this part of the state. CBNG development tapered off around 2008, resulting in a continued reduction of lek survey work being completed by private consultants. Conventional oil wells have increased in some parts of this area resulting in an increase in monitoring in those areas. WGFD personnel have re-examined our annual coordination efforts with the goals of increasing consistency with the leks that are monitored each year. Additionally, WGFD is putting forth effort to target undetermined and long-term inactive occupied leks. The ultimate goal is to collect sufficient data on these leks to ensure an appropriate designated management status, based on our lek monitoring protocols and definitions.

Results

Following the 2024 lek monitoring period, there were 606 documented leks in the Northeast Working Group area. Of this total, 326 (54%) were occupied and of those, 178 (29%) were active during the 2024 breeding season. There were 87 (14%) undetermined leks and 193 (32%) unoccupied leks (**Table 1**).

The number of known occupied leks checked by lek counts and lek surveys combined was 280 leks, or 82% of the known occupied leks. (**Table 4**). The percent of occupied leks checked has varied between 67% and 88% since 2015.

Northeast Wyoming has one of the lowest average male lek attendance rates in the state, averaging only 14.6 males per active lek in 2024 compared to the statewide average of 28 males per active lek. Most leks in northeast Wyoming are small, with less than 20 males. In years when grouse are at the apex of their population cycle less than 10% of the active leks have greater than 50 males at peak count. Three leks exceeded 50 males in 2024. No lek has exceeded 100 males since 2007. This is important because regular population fluctuation presents small leks with a greater risk of becoming inactive in poor years and greater difficulty rebounding in productive years.

Average male lek attendance in northeast Wyoming has decreased significantly over time, decreasing by more than half over the last 30 years. With the exception of the 2007 peak, subsequent peaks in the average male lek attendance are usually lower, or similar, to previous peaks. Likewise, periodic lows in the average male attendance are generally lower, or similar, to the previous low. The long-term trend suggests a steadily declining population. This concern is confounded by the decreasing number of occupied leks, despite new leks still being discovered.

The 2024 lek data suggests the sage-grouse population decreased after peaking in 2016 at 19.8 males per active lek. The previous cycle peaked at 22.1 males per active lek in 2007. With 14.6 males per active lek in 2024, lek attendance was slightly higher than last year.

Production:

Composition of the harvest, as determined by analysis of wings deposited by hunters in wing barrels, can provide insight into current year's chick production. Although there are other areas in the state that garner considerable data from wing barrels, we do not have that information for northeast Wyoming. In past years a limited number of sage-grouse wings were collected during the hunting season, primarily in the eastern portion of the area. Sample sizes were small due to the low harvest and the difficulty in strategically placing enough collection barrels along the many roads and highways within the area. As such, we do not have production information for northeast Wyoming.

Harvest:

The Northeast Working Group area is comprised of Hunt Area 4 and portions of Hunt Areas 1 and 2 (**Figure 4**). Hunt Area 2 is closed to hunting. In past years, Hunt Area 4 has had a very conservative season, however 2023 was the first year in which this area was designated as a closed area. WGFD did not take this decision lightly. It is important to note that hunting is not the cause of decline in sage-grouse in this part of the state. It is not anticipated that the closure will have much effect on bird numbers in Northeast Wyoming. Many factors were considered and input received before this decision was recommended.

Although WGFD does not have control over the factors that are adversely affecting sage-grouse, we do have the ability to limit harvest. Hunting is considered to be an additive source of mortality for populations with less than 300 sage-grouse (<100 males attending leks) (Connelly et al. 2000). No individual lek counts have reached 100 males since 2007 in northeast Wyoming. Additionally, this area of the state is considered to be on the fringe of sage-grouse habitat. As such, this contributes to fragmented and isolated subpopulations of sage-grouse. Genetic connectivity between subpopulations is not well understood but research has shown there is little genetic exchange between Management Zone I (NEWY) and Management Zone II populations (rest of WY) (Row et al. 2018). WGFD recognizes that sage-grouse populations in NEWY may play a smaller role in terms of Wyoming population persistence, yet it may be critical to maintaining genetic connectivity between overall Wyoming Basin populations and those of North Dakota, South Dakota, and Montana (Cross et al. 2018, Row et al. 2018). Every attempt should be made to keep these small groupings of birds intact.

Another factor that was considered in recommending a season closure was the incomplete management data. As stated previously, there is no data available for production in this area. Harvest data is another important source of data when making management decisions. Although there is a harvest survey that is sent to upland game bird license holders, prior to the 2024 season, the harvest survey data was not as reliable and managers were suspect of harvest estimates. Although falconers are required to report number of birds harvested this does not measure effort, and therefore potential impacts from disturbing sage-grouse whether or not grouse were actually harvested. Many falconers use dogs in addition to raptors which may increase disturbance. To address this issue the Department has instituted a free mandatory sage-grouse permit to better target harvest surveys. This has allowed for more accurate surveillance of harvest. This improved accuracy likely accounts for the disparity in the predicted number of birds harvested in 2023 and 2024. It should be noted that most of the northeast working group is closed to sage-grouse hunting with the exception of a small piece of Hunt Area 1 which falls within boundary. It is recommended to align these Hunt Area boundaries with the working group boundaries for continuity.

Habitat:

Most occupied habitat for sage-grouse in northeast Wyoming is held in private ownership. Approximately 75 percent of known leks are found on private land with the remaining 25 percent found on BLM, USFS, and State owned lands. Because most sage-grouse are found on private land, little direct control exists to protect important habitats, including breeding and nesting areas, brood rearing areas, and major wintering areas.

Of utmost significance for this reporting period are the wildfires that occurred with the Northeast Working Group boundary. Although there were multiple fires totaling around 400,000 acres, not all of this was in sage-grouse habitat. The most notable fires in relation to sage-grouse were the House Draw fire (~175,000 acres total) and the Wildcat Creek fire (~19,000 acres). Both of these fires occurred within Core Areas.

It is estimated that at least 113,000 acres of sagebrush in the Buffalo Core Area were burned in the House Draw fire alone, affecting 12 active leks and associated nesting and wintering areas. Aside from the loss of sagebrush in Core Area, there was also other suitable sage-grouse habitat that was burned. Not only was there the loss of habitat in this area, but losing this swath of sagebrush will also impact the connectivity to the leks both north and south of this burned area.

The impacts to the sage-grouse in this area cannot be understated. It has been shown that Wyoming Big Sagebrush recovery, post-fire, is extremely slow. Historic fires in southeast Montana (a comparable ecoregion) that were investigated in subsequent post-fire years indicate that it can take up to 100 years for sagebrush to reach pre-burn canopy cover ("Post-fire Recovery of Wyoming Big Sagebrush Steppe in Central and Southeast Montana", Cooper, 2011).

Table 8 shows a brief summary of number of acres affected in core, connectivity, and proposed stewardship areas. **Figures 5**, **6 and 7** show fire perimeters in relation to sage-grouse core areas.

The primary economic uses of lands currently or historically providing sage-grouse habitat are agriculture and energy. Livestock grazing, mainly cattle along with some sheep production, is the primary agriculture use. Some crop production occurs as irrigated and dry land hay and some small grains. Historically, large parcels of sagebrush habitat were converted either to grasslands or crops. Limitations of remote sensing technology have prevented quantifying and mapping these conversions.

Oil and natural gas production has occurred in much of the area since the early 20th century. Oil production has remained a constant with cycles of increased and then decreased activity at times. An unprecedented energy boom began in the Powder River Basin in the late 1990's with the exploration and development of CBNG reserves. Although much of the active CBNG extraction has ceased there are still wells, roads, power lines and other structures on the landscape that are relics of the development. Deep well oil and gas development has increased in recent years with new technologies enabling horizontal and directional drilling.

In addition to oil and gas development, vast coal reserves continue to be developed with surface pit mines in eastern Campbell County and northern Converse County.

Considerable debate has occurred on the effects of energy development on sage-grouse. Peer reviewed research findings show significant impacts (Walker et al. 2007, Doherty et al. 2008, Doherty et al. 2010, Harju et al. 2010 and others). These findings have yet to be accepted by some and this has contributed to uncertainty in the public and political arenas as to the real effects of energy development. Furthermore, many continue to blame predation or harvest for sage-grouse population declines, which have much lower population impacts than habitat fragmentation, direct loss, and indirect loss. A population viability analysis by Taylor et al. (2012) found that energy development had the greatest influence on male grouse lek attendance within 12.4 miles of a lek. At 8 wells per section (80 acre spacing), only 39% of males persisted while the number of large leks significantly decreased (Taylor et al. 2012).

More recent research provides further insight into sage-grouse and development. Kirol and Fedy (2023) found that hens that successfully raised chicks demonstrated a strong avoidance of overhead power line corridors (~1/4 mile on each side of the line) and man-made reservoirs. It was also found that successful brooding females spent most of their time in sagebrush cover and not using disturbed surfaces, such as roads, and reclaimed surfaces, such as pipeline corridors. Older and more

experienced brood-rearing hens were showing stronger avoidance of infrastructure and converted surfaces than first-year hens.

The growing season of 2023 experienced moderate moisture levels throughout much of the Northeast Wyoming Working group area. Cheatgrass continues to thrive in the Powder River Basin, competing with native grasses and forbs in sagebrush understory. The increased wildfire risk due to cheatgrass invasion is being realized, with several fires having occurred in the preceding several years, some within core and connectivity areas. Sagebrush restoration has not occurred following these fires due to lack of interest from private landowners. Invasive species management following fires has occurred on some, but not all recent burns.

Disease:

West Nile Virus did not seem to be a factor in 2023 or 2024 for livestock according to the Wyoming State Vet Lab. Because of the difficulty in monitoring WNv in sage-grouse, human and livestock cases can provide an indication of WNv prevalence in a given year. (Wyoming State Vet Lab, **https://www.uwyo.edu/wyovet/index.html**). Historically, when Taylor et al. (2012) predicted that the low elevation population of northeast Wyoming is susceptible to WNv outbreaks which can decrease a population by more than 50%. Furthermore, even with no additional energy development the authors predict that one outbreak year could result in the extirpation of some local populations due to the small lek sizes in the area.

A highly pathogenic form of avian influenza (HPAI) was only documented in a wild turkey in Sheridan County in 2024. This is down from a number of cases reported wild birds in 2023. Although no sage-grouse were documented having contracted this disease, it is unknown how this disease may effect sage-grouse and is of concern and should continue to be closely monitored in subsequent years.

Conservation Planning:

In 2024 the northeast working group allocated $75,000 to help fund three projects that will be completed in 2025. **Table 9** illustrates how these funds were allocated.

In the spring of 2023 the Sage-Grouse Implementation Team (Hereafter, SGIT) commenced a core area review. Input was requested from WGFD field personnel and a versions presented at various locations around the state. Attendance at some of these meetings was high and much public input was received. To date, draft number 5 is being reviewed and yet to be finalized.

Sage-grouse are influenced by many factors, both individually and cumulatively. Habitat loss and fragmentation, direct mortality and disturbance affect sage-grouse populations. In 2006, the NEWG identified and ranked those factors believed to be most influencing the northeast Wyoming sage-grouse population, as well as actions that might provide the greatest benefit for sage-grouse conservation in northeast Wyoming. In the opinion of the group, conservation efforts targeting oil, gas and CBNG development, vegetation management, invasive plants, local residential land use, and livestock grazing would be most effective in benefiting sage-grouse. As a follow-up, in 2021 the NEWG initiated a GIS mapping exercise to spatially overlay these key factors influencing sage-grouse populations under their area of responsibility. The goal is to have a tool to solicit more funding applications that address the most pressing needs for regional sage-grouse populations as well as create project ranking priorities.

Management Recommendations:

Post-Fire Habitat Management

Currently, it is planned to seed around 1,100 acres of Wyoming big bage in the Buffalo Core Area in January of 2025. The selected areas were prioritized by utilizing a suitability model developed by Chris Kirol and Josh Oakleaf. Covariates used to predict the most suitable sites within the House Draw fire boundary were proximity to active leks, pre-burn sagebrush cover, and annual grass presence. This model was utilized to ensure that the planned seeding was most likely to succeed and have the greatest positive impact to sage-grouse. This funding was granted by the Clear Creek Conservation District, Mule Deer Foundation and Sage-Grouse Local Working Groups.

The concern of invasive annual grasses and wildfire frequencies in sagebrush habitats is an immediate threat to the long-term viability of sage-grouse habitats in northeast Wyoming. There is a need to effectively treat cheatgrass in viable sagebrush habitats at a large scale. This is vital for the long-term viability of sagebrush habitats in northeast Wyoming. Often sagebrush plantings cannot be done at scale to make up for what is lost after wildfires, and private landowner interest in such plantings is low. Thus proactive efforts must take place to control high levels of cheatgrass infestation in key sage-grouse habitats to reduce the frequency and severity of wildfires to preserve existing sagebrush habitat. This will require managers to find ways to engage with landowners on a massive scale. Additionally, work to increase brood-rearing habitats would help address low chick recruitment rates (Kirol 2021).

Conifer encroachment, particularly juniper, is an increasing threat to sage-grouse habitat in northeast Wyoming particularly in portions of the Thunder Basin, Natrona, and North Gillette Core Areas. Conifer encroachment reduces available habitat to sage-grouse through predator avoidance. Identifying areas of sage-grouse habitat threatened by conifer encroachment is key to addressing this threat. During the summer of 2023, WGFD partnered with UNL to host a conifer encroachment workshop in Gillette, Wyoming. The purpose of the workshop was to discuss the woody encroachment problem in the Northern Great Plains and to introduce a spatial tool that could be used to identify encroachment areas in eastern Wyoming.

There are also many different opportunities to reclaim, or mitigate, existing energy infrastructure currently on the landscape that are effectively limiting sage-grouse habitat. Efforts should focus on locating opportunities where overhead power lines, and other energy infrastructure, can be removed and or mitigated (i.e. locating power lines underground) in key sage-grouse habitats. Other potential projects include reclaiming defunct livestock stock dams and cropland/pasture reclamation to native rangeland where possible. Areas of critical habitat to sage-grouse should be evaluated for the potential to exercise these reclamation activities.

Mesic draws have been identified as a very critical and often overlooked component of habitat. A mesic habitat restoration workshop was hosted by Pheasants Forever in the fall of 2023. Focusing on mesic restoration could be a relatively simple and cost-effective method of gaining critical habitat for sage-grouse, particularly in brood-rearing habitat.

Lek Monitoring Coordination

In recent years, coal bed natural gas (CBNG) development has slowed, resulting in a reduction of lek survey work being completed by private consultants. In response, WGFD personnel are spearheading efforts to re-examine the annual coordination efforts with the goals of increasing consistency with the leks that are monitored each year, as well as targeting undetermined and long-

term inactive occupied leks to update management status to unoccupied as appropriate based on our lek monitoring protocols and definitions. This project should be conducted with the cooperation of local partners. This effort was commenced in 2021 and will occur on an annual basis to ensure maximization of personnel time and minimization of duplicated efforts.

Within the northeast working group boundary, the BLM has historically contributed money to conduct aerial lek surveys, searches and infrared flights. Although much of the surface is privately owned, mineral rights are retained by the federal government in the majority of the area. These flights have helped inform managers with both the BLM and WGFD. The WGFD has relied on these funds to accomplish much of the surveying as private land access is becoming more restrictive. The WGFD has also depended on assistance from BLM personnel to conduct lek observations from the ground. Should these arrangements change, there will be a considerable decrease in the Department's ability to monitor sage-grouse leks. In this case, alternative funding sources for aerial surveys should be investigated and existing ground surveys will need to be prioritized and reduced.

General Recommendations – Continue Long-Term Work

- Utilize the prioritization tool to key in on areas in the House Draw fire to begin the reclamation process
- Assist the BLM with developing and implementing the sage-grouse monitoring program as prescribed by the Powder River Basin CBNG EIS Record of Decision (April 2003)
- Annually monitor 80% of the occupied leks in the Northeast Local Working Group area
- WNv monitoring
- Assist the BLM with coordinating sage-grouse population monitoring efforts with the private consultants doing work for energy development companies
- Use any additional flight money for lek searches and surveys
- Check all leks at least once every three years
- Review the sage-grouse database to eliminate leks without adequate documentation to support a lek designation
- The Northeast Local Working Group should continue to solicit habitat projects on private lands that will benefit sage-grouse
- The WGFD should continue to recommend protection of occupied sage-grouse leks during environmental commenting and promote their protection on private land projects
- Additional effort is needed to document the status of undetermined leks.
- Encourage reporting of lek activity from the public and landowners
- Better document wintering sage-grouse locations and develop a seasonal range map for sage-grouse for the Northeast Local Working Group Area.
- Continue to map lek perimeters to ensure adequate buffer distance in protecting leks

Report Notice

Variation in this report from previous years' reports is expected because of new data added to the lek database. Old records are added each year as data become available and newly discovered leks are added to the database. New lek observation routes may also be added. Data adjustments should be taken into consideration when the current report and tables are compared to previous editions.

Relevant Research

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South Central

Job Completion Report

Prepared By: Teal Cufaude, Saratoga Wildlife Biologist

Period Covered: 6-1-2023 to 12-31-2024

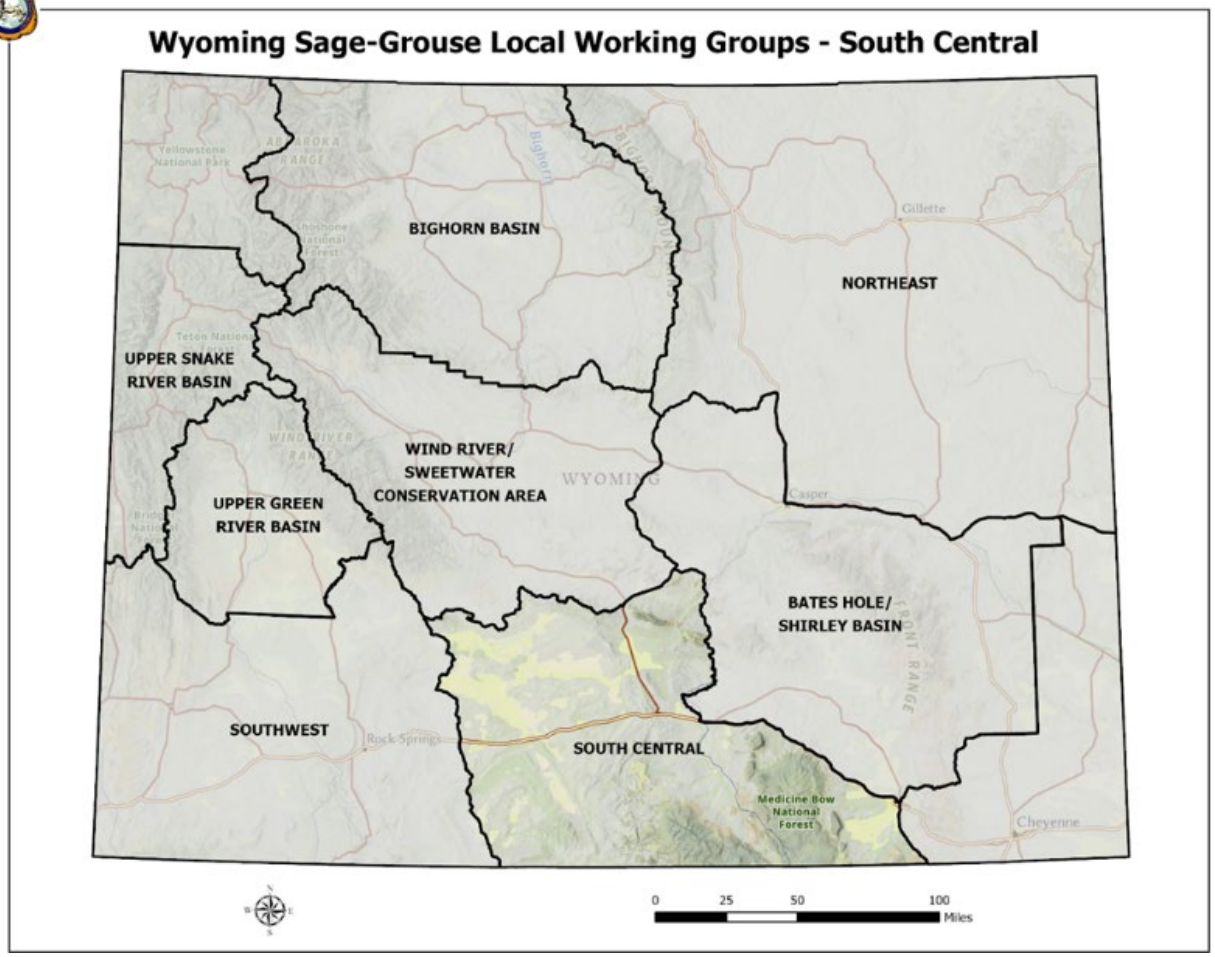

Table 1: Sage-Grouse Lek Characteristics

	Group	N	Percent
BLM Office			
	Casper	2	0.5%
	Lander	27	6.5%
	Rawlins	367	88.6%
	Rock Springs	18	4.3%
Biologist			
	Baggs	129	31.2%
	Green River	14	3.4%
	Lander	16	3.9%
	Laramie	5	1.2%
	Saratoga	55	13.3%
	Sinclair	195	47.1%
Classification			
	Occupied	257	62.1%
	Undetermined	44	10.6%
	Unoccupied	113	27.3%
County			
	Albany	5	1.2%
	Carbon	274	66.2%
	Fremont	14	3.4%
	Natrona	2	0.5%
	Sweetwater	119	28.7%

	Group	N	Percent
Land Status			
	BLM	232	56%
	LocalGov	1	0.2%
	Private	150	36.2%
	State	30	7.2%
	USFWS	1	0.2%
Lek Status			
	Active	193	46.6%
	Inactive	148	35.7%
	Unknown	73	17.6%
Management Area			
	H	414	100%
Region			
	Green River	142	34.3%
	Lander	212	51.2%
	Laramie	60	14.5%
Warden			
	Baggs	128	30.9%
	East Rawlins	106	25.6%
	Elk Mountain	6	1.4%
	Lander	2	0.5%
	Rock Springs	14	3.4%
	Saratoga	49	11.8%
	South Laramie	5	1.2%
	West Rawlins	104	25.1%

Table 2: Leks Counted

Year	Occupied	Counted	Percent Counted	Peak Males	Average Peak Males
2015	282	90	31.9%	1,915	32.5
2016	286	73	25.5%	2,381	39.0
2017	286	96	33.6%	2,176	29.4
2018	285	113	39.6%	2,210	24.6
2019	278	131	47.1%	2,419	22.0
2020	272	146	53.7%	2,584	22.7
2021	272	91	33.5%	1,604	21.7
2022	267	82	30.7%	1,470	23.0
2023	262	20	7.6%	344	26.5
2024	268	106	39.6%	3,012	36.3

Occupied - Must have been active once during previous 10 years, calculated based on the official definitions

Average Peak Males - Includes only those leks where one or more strutting males were observed. Does not include "Active" leks where only sign was documented

Table 3: Leks Surveyed

Year	Occupied	Surveyed	Percent Surveyed	Peak Males	Average Peak Males
2015	282	170	60.3%	3,224	27.8
2016	286	192	67.1%	3,707	28.1
2017	286	162	56.6%	2,465	22.6
2018	285	153	53.7%	1,961	20.9
2019	278	126	45.3%	1,078	16.8
2020	272	101	37.1%	875	18.6
2021	272	160	58.8%	1,285	15.7
2022	267	150	56.2%	1,668	19.6
2023	262	189	72.1%	2,597	21.6
2024	268	144	53.7%	1,993	21.2

Occupied - Must have been active once during previous 10 years, calculated based on the official definitions

Average Peak Males - Includes only those leks where one or more strutting males were observed. Does not include "Active" leks where only sign was documented

Table 4: Leks Checked

Year	Occupied	Checked	Percent Checked	Peak Males	Average Peak Males
2015	282	260	92.2%	5,139	29.4
2016	286	265	92.7%	6,088	31.5
2017	286	258	90.2%	4,641	25.4
2018	285	266	93.3%	4,171	22.7
2019	278	257	92.4%	3,497	20.1
2020	272	247	90.8%	3,459	21.5
2021	272	251	92.3%	2,889	18.5
2022	267	232	86.9%	3,138	21.1
2023	262	209	79.8%	2,941	22.1
2024	268	250	93.3%	5,005	28.3

Occupied - Must have been active once during previous 10 years, calculated based on the official definitions

Average Peak Males - Includes only those leks where one or more strutting males were observed. Does not include "Active" leks where only sign was documented

Table 5: Lek Status of Leks Checked

Year	Active	Inactive	Unknown	Known Status	% Active	% Inactive
2015	185	54	21	239	77.4%	22.6%
2016	198	54	13	252	78.6%	21.4%
2017	188	55	15	243	77.4%	22.6%
2018	192	53	21	245	78.4%	21.6%
2019	189	48	20	237	79.7%	20.3%
2020	172	68	7	240	71.7%	28.3%
2021	172	64	15	236	72.9%	27.1%
2022	163	45	24	208	78.4%	21.6%
2023	144	15	50	159	90.6%	9.4%
2024	187	42	21	229	81.7%	18.3%

Occupied - Must have been active once during previous 10 years, calculated based on the official definitions

Inactive - Confirmed no birds/sign present (see official definitions)

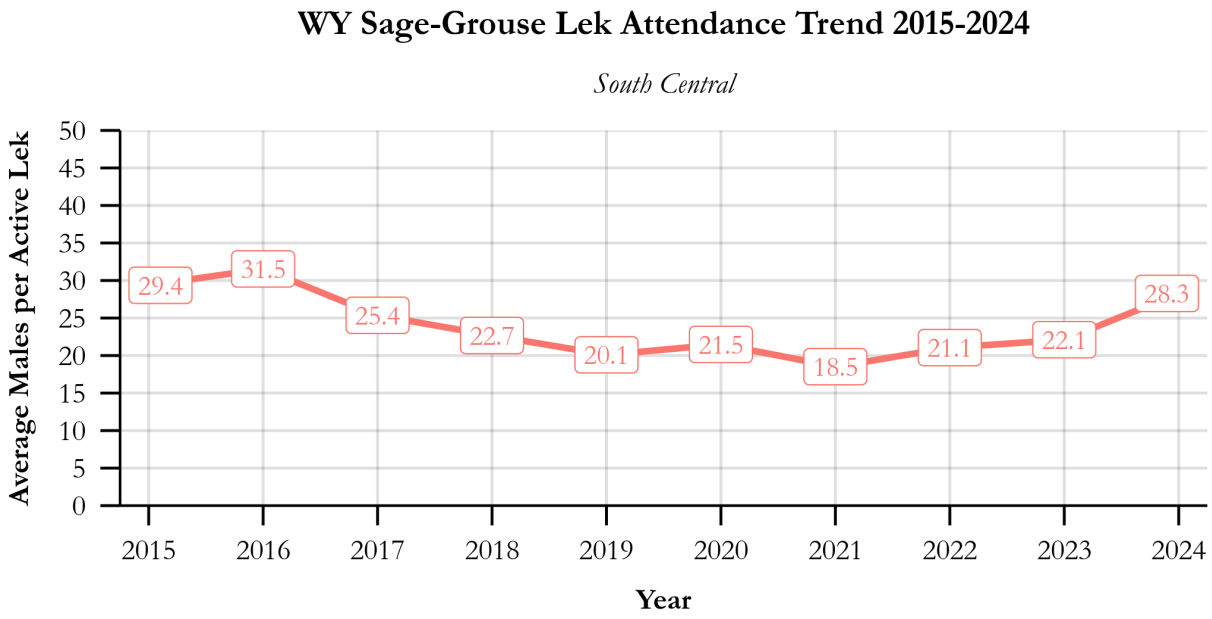

Figure 1: Average Peak Males

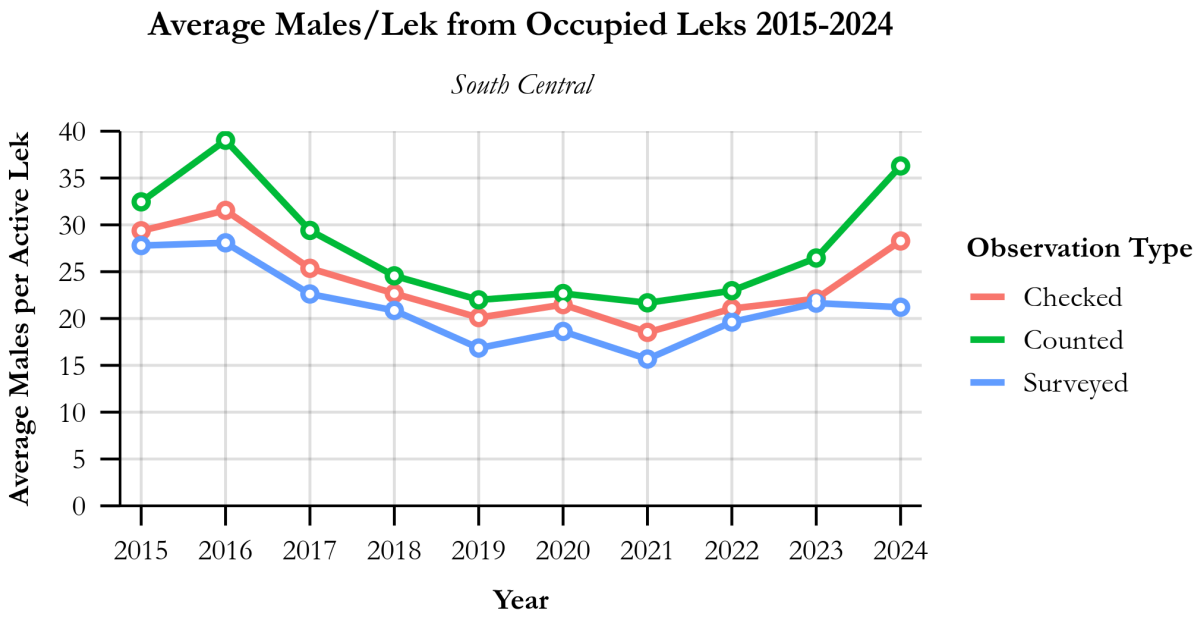

Figure 2: Average Peak Males

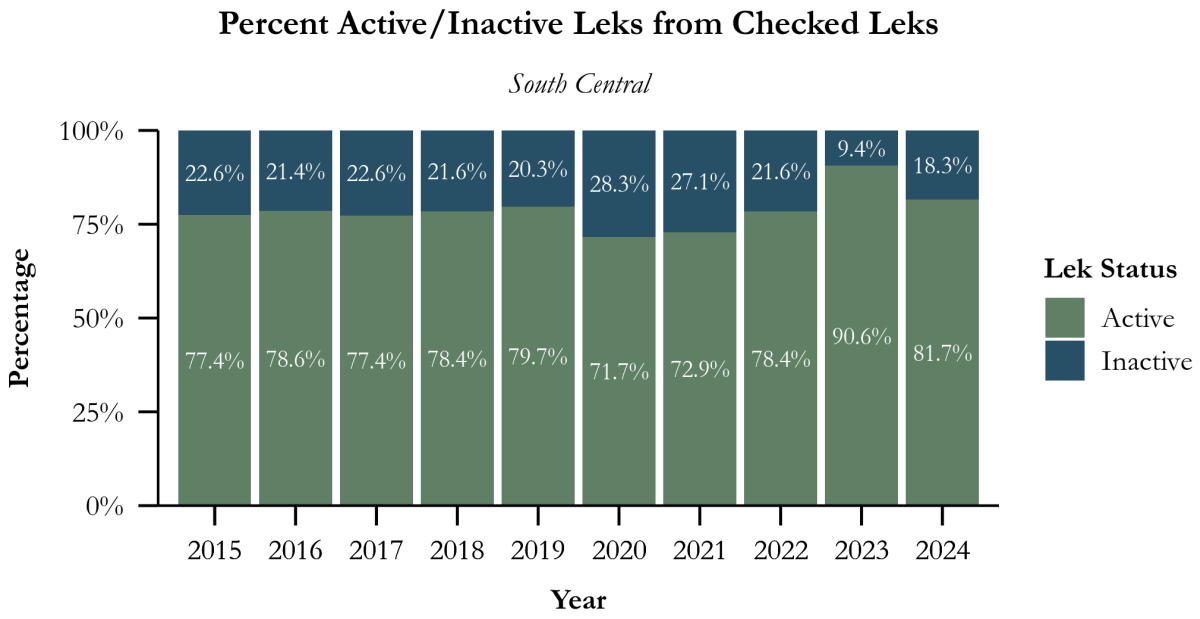

Figure 3: Lek Status

Table 6: Hunting Seasons

Year	Season Start	Season End	Length	Bag/Possession Limit
2015	Sep-19	Sep-30	12	2/4
2016	Sep-17	Sep-30	14	2/4
2017	Sep-16	Sep-30	15	2/4
2018	Sep-15	Sep-30	16	2/4
2019	Sep-21	Sep-30	10	2/4
2020	Sep-19	Sep-30	12	2/4
2021	Sep-18	Sep-30	13	2/4
2022	Sep-17	Sep-30	14	2/4
2023	Sep-16	Sep-30	15	2/4
2024	Sep-21	Sep-30	10	2/4

Table 7: Harvest Totals

Year	Harvest	Hunters	Days	Birds/Day	Birds/Hunter	Days/Hunter
2015	776	457	963	0.8	1.7	2.1
2016	911	477	1,162	0.8	1.9	2.4
2017	501	363	846	0.6	1.4	2.3
2018	903	500	1,245	0.7	1.8	2.5
2019	1,052	584	1,186	0.9	1.8	2.0
2020	1,023	465	1,250	0.8	2.2	2.7
2021	1,080	691	2,178	0.5	1.6	3.2
2022	1,510	983	2,564	0.6	1.5	2.6
2023	1,882	820	2,255	0.8	2.3	2.8
2024	865	495	1,154	0.7	1.7	2.3
Average	**1,050**	**584**	**1,480**	**0.7**	**1.8**	**2.5**

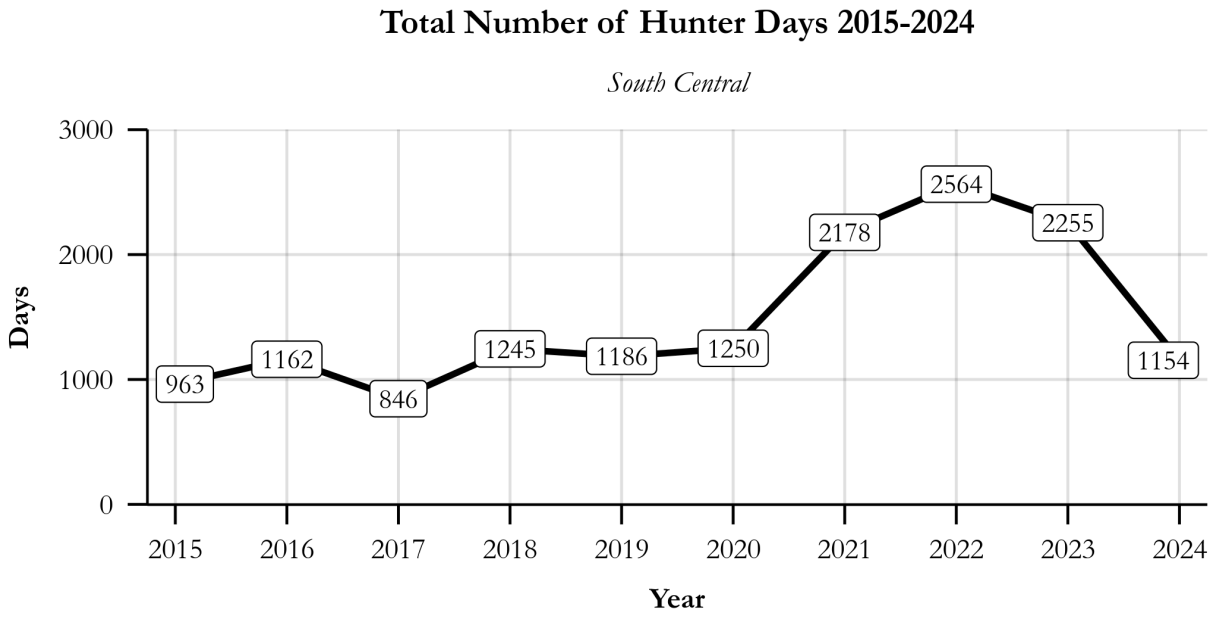

Figure 4: Harvest Days

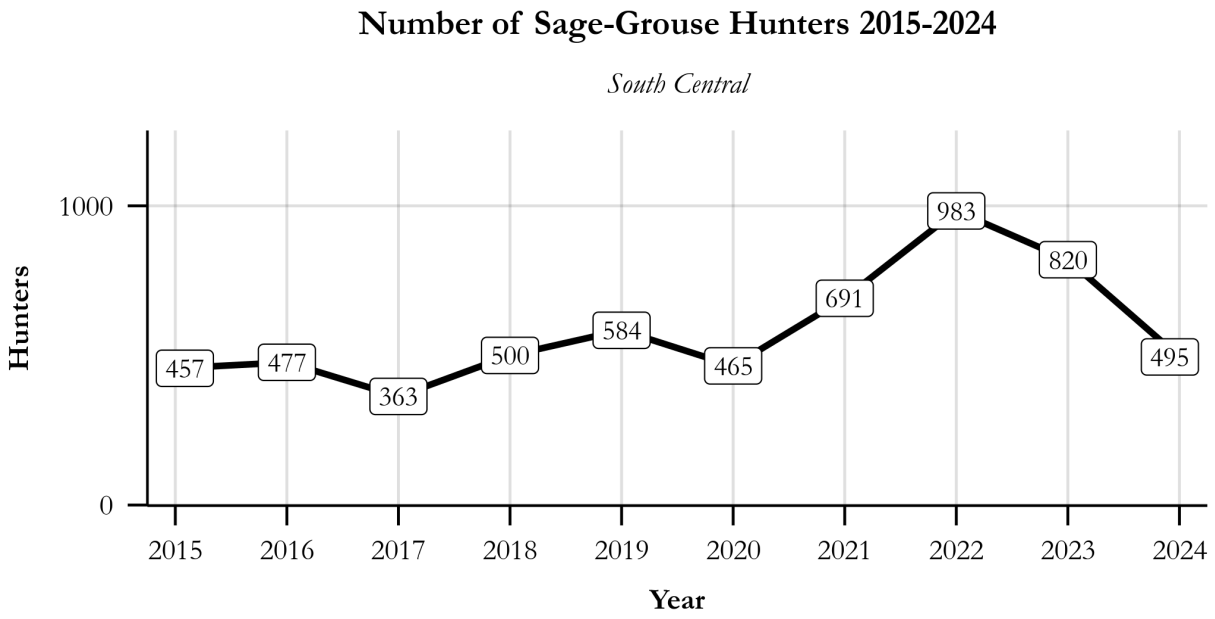

Figure 5: Hunters

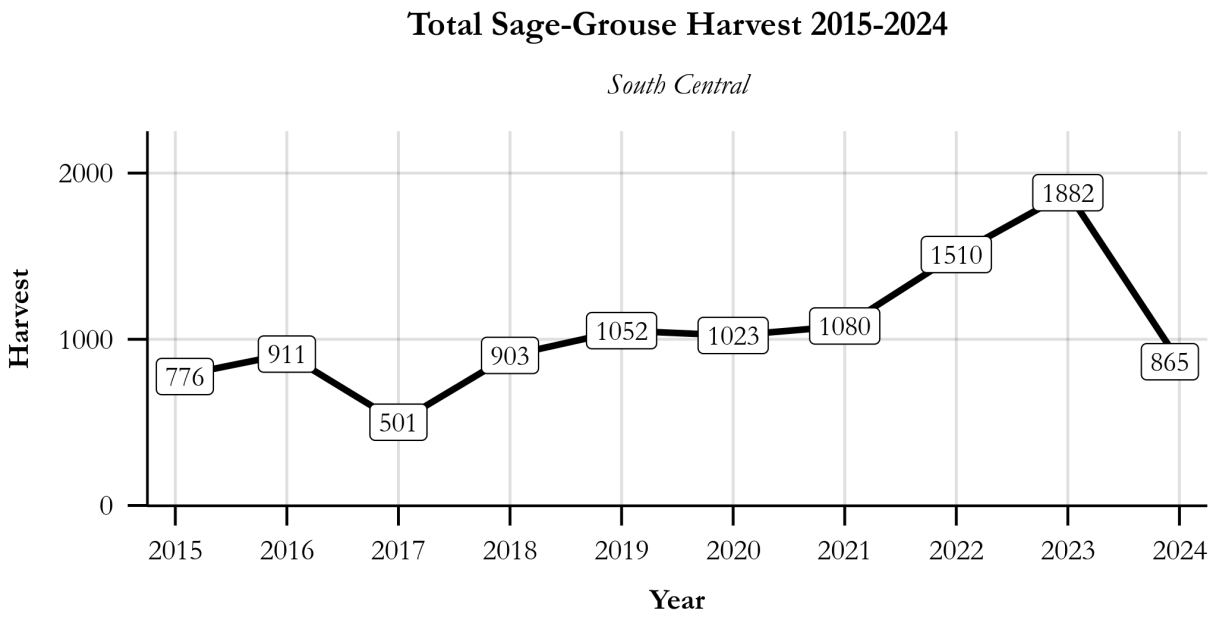

Figure 6: Total Harvest

Table 8: Harvest Composition

		Percent Adult		Percent Yearling		Percent Chick		
Year	Sample Size	Male	Female	Male	Female	Male	Female	Chicks/Hens
2015	192	10.4%	30.7%	2.6%	5.7%	24.5%	26%	1.4
2016	174	21.8%	27%	4%	5.7%	16.1%	25.3%	1.3
2017	123	13.8%	39.8%	5.7%	8.9%	16.3%	15.4%	0.7
2018	131	20.6%	26.7%	6.1%	8.4%	20.6%	17.6%	1.1
2019	196	13.8%	25%	6.6%	9.7%	13.8%	31.1%	1.3
2020	258	11.6%	27.1%	5.8%	16.7%	13.2%	25.6%	0.9
2021	201	10%	26.4%	4.5%	12.4%	23.9%	22.9%	1.2
2022	257	7.8%	17.5%	5.4%	9.3%	26.1%	33.5%	2.2
2023	371	7.5%	17.3%	8.6%	13.7%	20.2%	32.3%	1.7
2024	303	13.9%	22.1%	5.3%	15.2%	19.8%	23.8%	1.2

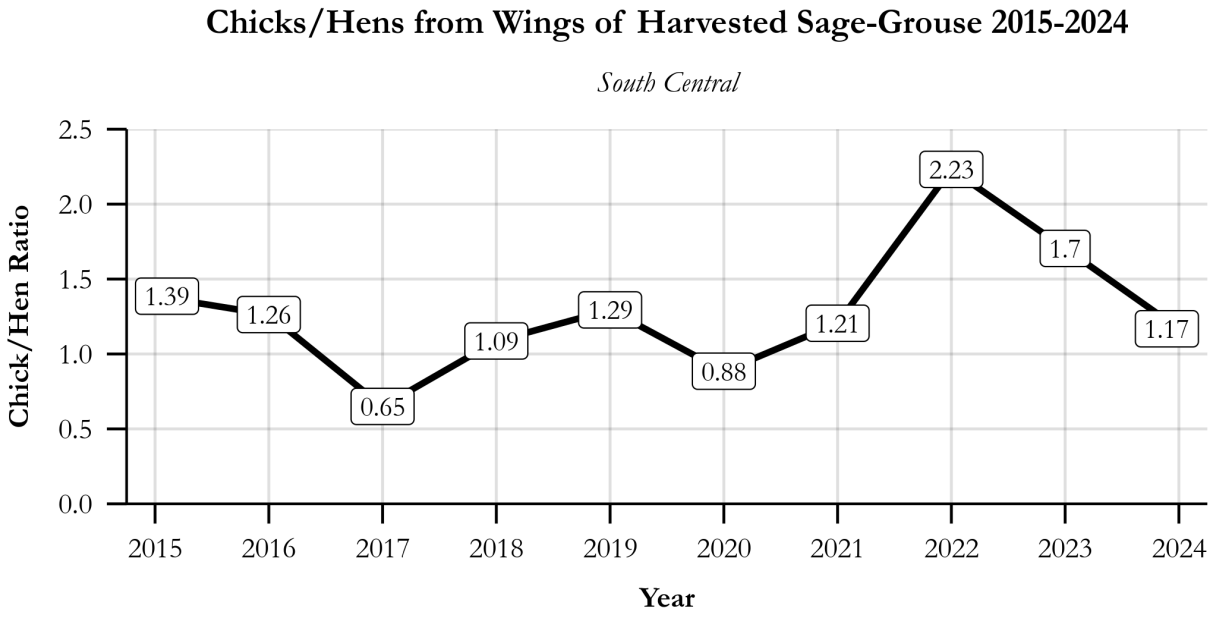

Figure 7: Chick/Hen Ratio

Lek Monitoring:

For biological year 2023, 414 sage-grouse leks were known to occur in the South-Central Conservation Area (SCCA). In the SCCA, the majority of known leks (56%) occur on Bureau of Land Management (BLM) managed lands and 36% occur on private lands (**Table 1**).

During the 2024 lekking season, Wyoming Game and Fish Department (WGFD), United States Forest Service (USFS) and BLM personnel, environmental consultants, and volunteers monitored 250 leks. This represented checking 93% of the occupied status leks in the SCCA. This rate of effort exceeded the 10-year average percent leks checked. This increased effort was due to environmental conditions being favorable to ground visits to leks throughout the lekking season. Availability of funding to conduct aerial lek surveys also contributed to the increased lek monitoring efforts.

Sage-grouse populations in Wyoming cycle on approximately 6 to 8-year intervals (Row and Fredy 2017). **Figure 1** illustrates the trends in average peak males per lek for SCCA from 2015-2024. The 2024 average peak males per lek from all occupied lek observations was the highest recorded since the last cyclical peak occurred in 2016, when the average males per lek was 31.5.

A total of 106 leks were *counted* in the SCCA, resulting in an average of 36.3 males per lek (**Table 2**). A total of 144 leks were *surveyed* resulting in an average of 21.2 males per lek (**Table 3**). Across the SCCA, more leks were monitored with *survey* protocol and fewer were monitored with *count* protocol. To evaluate long-term population trends, average lek *survey* and *count* data are combined because long-term data sets from Wyoming indicate similar trends from both *counts* and *surveys*. In 2024, the peak male lek attendance within the SCCA totaled 5,005 males (**Table 4**). The average number of male sage-grouse on *counted* leks increased from 26.5 in 2023 to 36.3 in 2024. The average number of male sage-grouse on *surveyed* leks decreased slightly from 21.6 in 2023 to 21.2 in 2024 (**Figure 2**).

The proportion of occupied leks which were considered inactive increased from 8% in 2023 to 19% in 2024 (**Table 5**). Although the number of inactive leks increased, the management status for many "unknown" leks were verified after they were not monitored or monitoring protocol requirements were not met in 2023. The percentage of inactive status leks was below the 10-year average for the SCCA. During an upswing in the sage-grouse population, we expect a decrease in the number of inactive leks.

In the Saratoga Biologist District, an aerial lek census was conducted in April 2024 to monitor 14 known lek locations and search for new leks. One new lek was discovered during this aerial survey effort. Across the Saratoga Biologist District, we discovered several miscellaneous strutting grounds in 2024, indicating that some leks may have been more "full" than we have observed in previous years. These strutting grounds will require more checks in 2025 to verify whether they will be considered leks.

Across the Baggs Biologist District, male lek attendance in both 2023 and 2024 generally improved. On some leks, male lek attendance improved dramatically in 2024 compared to previous years. In higher elevations, east of Highway 789, leks were "full" and managers observed many "new" or "satellite" leks, with some previously inactive leks having birds again. In lower elevations west of Highway 789, managers observed increases in male attendance at leks with decent bird numbers in previous years. However, contrary to higher elevations, lower elevation leks with no or few birds in previous years did not show improvements. This was true for leks that have had development or disturbance cause them to go away in the past, but also for leks that had diminished due to other unknown factors.

No reliable method for estimating the sage-grouse population for the SCCA exists at this time, however the number of males per lek provides a reasonable index of abundance of the population over time. The increase in the average males per lek, increase in peak male lek attendance, and fewer inactive status leks (compared to 10-year average) indicated a stable to increasing sage-grouse population across the SCCA during biological year 2023.

Harvest:

The 2023 sage-grouse hunting season was from 16 September to 30 September (15 days), and the 2024 season was from 21 September to 30 September (10 days). Both hunting seasons allowed for the harvest of 2 sage-grouse per day and 4 in possession (**Table 6**).

The 2023 upland harvest survey estimated 820 hunters spent 2,255 days to harvest 1,882 sage-grouse in the SCCA. The average number of birds harvested per hunter day was 0.8. The average number of sage-grouse harvested per hunter was 2.3 and the average number of days hunted was 2.8. These data indicated that hunter participation was the second highest in the last ten years, only exceeded by estimated hunter participation in 2022. A new Sage-Grouse Permit was implemented in 2024 to obtain better harvest information from sage-grouse hunters (**Figure 4**, **Figure 5**, and **Figure 6**). The 2024 sage-grouse hunter survey estimated 495 hunters spent 1,154 days to harvest 865 sage-grouse in the SCCA. The average number of birds harvested per hunter day was 0.7. The average number of sage-grouse harvested per hunter was 1.7 and the average number of days hunted was 2.3 (**Table 7**).

Previous harvest surveys may have over-estimated harvest, so it's difficult to say if the decline in hunter participation in SCCA actually occurred, or if it is a result of these new survey data. Hunter participation gauged by field checks and check station visits varied across the SCCA. Increased hunter participation in the 2024 hunting season was noted in the Baggs area, likely because of an increase in sage-grouse being observed. Hunter participation seemed to have peaked in 2022 and 2023 in the Saratoga area, with perceived participation comparable but reduced in 2024. Based on fewer hunter-harvested wings submitted in the Rawlins area in 2024, hunter participation may have also been lower.

Production:

Hunter-harvested sage-grouse wings have been collected annually and are used for estimating productivity. Wings are gathered and then aged/sexed by molt patterns, and numbers of chicks per hen are calculated and used as a measure of productivity. While there are biases associated with the hunter selectivity of different age/sex groups of sage-grouse, trends still provide yearly comparisons of relative chick production.

During the 2023 hunting season, WGFD collected 371 wings from wing barrels within the SCCA, which was 20% of the estimated harvest of 1,882 birds. During the 2024 hunting season, 303 wings were collected within the SCCA, which was 35% of the estimated harvest of 865 birds. Age and sex composition of the wings indicated the proportion of chicks per hen decreased from 1.7 in 2023 to 1.2 in 2024 (**Table 8**).

Statewide analyses of wing data from harvested sage-grouse have suggested chick per hen ratios of 1.4-1.7 typically results in relatively stable populations as determined by lek monitoring the following year. Over the last 10 years, estimated productivity from wing barrel data has fluctuated between 0.7 and 2.2 chicks per hen within SCCA (**Figure 7**). Only three years (2015, 2022, and 2023) showed

chick/hen ratios within the "stable" range. Ratios in all other years within the past 10 years have indicated declining populations even when populations have appeared to stabilize and even increase.

2024 harvest composition results do not align with managers' observations of recent population growth and observed broods throughout the summer and early fall. Managers are unsure why chick ratios from SCCA wing barrels are often so low given other signs of population increase. The good productivity in 2023 and the recruitment of those yearling females may have increased the representation of "hens" in harvest composition. It is presumed the increased number of young hens may not have been as successful at brood rearing and ultimately influenced the harvest composition to lower chick ratios.

Habitat:

Sage-grouse habitat within the SCCA is comprised of relatively intact sagebrush communities. The health of these communities is predominately dependent on the type, amount, and timing of annual precipitation. Spring precipitation is an important factor in the quantity and quality of grass and forb production, which have been linked to sage-grouse nest success and chick survival. Much of the sagebrush habitat in the SCCA is trending towards older, decadent age classes. While mature sagebrush stands are important to sage-grouse for both forage and cover, a monoculture of older and decadent stands may lead to lower nutrient content of this key forage. We continue to see the proliferation of cheatgrass throughout sagebrush communities within the SCCA, reducing native plant density and diversity as well as increasing the risk of large fires that have the potential to devastate sage-grouse habitat.

Primary land use in the SCCA is livestock grazing and energy development. In the first half of the 20th century, much of the sage-grouse habitat in the SCCA provided winter grazing for hundreds of thousands of both domestic sheep and cattle. Sheep numbers have since declined and cattle have become the primary species of livestock grazing in the SCCA. Improved grazing management on both public and private lands during the last few decades has generally led to improved habitat for sage-grouse and other sagebrush obligate species. Feral horses continue to inhabit the western and northern portions of the SCCA.

Energy development and mineral extraction continue to be a primary use of sage-grouse habitat within the SCCA, with a majority of the energy development focused on producing natural gas from both deep gas and coalbed methane sources. Large-scale wind farm developments and transmission lines have begun over the past few years in the northern part of the SCCA, introducing new challenges within sage-grouse habitat. Development for the Chokecherry/Sierra Madre Wind Energy Project continued throughout 2023-2024. Past and present uranium mining has also contributed to reducing sage-grouse habitat in the SCCA. Energy development has, directly and indirectly, reduced the functionality of sage-grouse habitat in portions of the SCCA. The Interstate 80/Union Pacific Railroad transportation corridor bisects the SCCA east to west and is a major cause of habitat fragmentation. Continued urban/rural development within sagebrush communities also continues to fragment sage-grouse habitat.

Spring moisture was above normal and cooler temperatures resulted in a delayed green up of herbaceous vegetation. Once snow melted and temperatures finally increased, herbaceous growth utilized by sage-grouse for nesting cover was excellent and likely improved brood rearing success in 2023 and 2024. Spring precipitation diminished in early June of 2023 and 2024. Through fall and early winter 2023 and 2024, conditions remained mild, with no persistent snow accumulations.

WGFD continues to plan and implement habitat projects including cheatgrass control, sagebrush mowing, juniper removal, and wet meadow restoration within the SCCA to improve sage-grouse habitat. To mitigate habitat issues related to cheatgrass in sage-grouse habitats, aerial herbicide treatments continue to be conducted throughout the SCCA. This effort continues through existing collaborations between the Department, the Little Snake River Conservation District, Carbon County Weed and Pest, WWNRT, BLM, USFS, NRCS, SCSGLWG, and private landowners. Carbon County Weed and Pest was awarded a large grant from the mitigation fund for the Gateway South Transmission Project to continue to treat cheatgrass in western Carbon County. This award will be used as leverage to match additional funding opportunities.

In 2023, 647 acres of sagebrush were treated with the Lawson aerator to reduce mountain sagebrush canopy cover and 39 acres of mesic habitat were inter-seeded with legumes to improve brood-rearing habitat. In 2024, 441 acres of mixed mountain shrubs were mechanically treated, 546 acres of sagebrush communities were treated with the Lawson aerator, and 174 acres of junipers were removed on private land. These treatments will increase age-class diversity, improve shrub health, and increase herbaceous species diversity. Additionally, 1,286 acres of juniper mastication treatments occurred on BLM targeting stage I and II juniper encroachment into high value sagebrush habitat in sage-grouse core area.

In the coming years, WGFD plans to focus efforts on low-tech process-based restoration techniques to restore wet meadows within sage-grouse core. Low-tech structures, such as zeedyks, can re-connect floodplains and increase the quality and quantity of brood-rearing habitat.

Disease:

There were no cases of West Nile Virus in sage-grouse, or other diseases detrimental to sage-grouse documented within the SCCA in 2023 and 2024.

Conservation Planning:

The South Central Local Working Group (SCLWG) held one meeting during this reporting period but allocated their funds via email voting. Projects that received support from SCLWG during this reporting period included:

This Big Creek Pipeline project included the installation of five miles of pipeline and eight tire tanks to supply water to multiple pastures throughout the Big Creek allotment. Water sources and the associated riparian areas were being heavily utilized by both livestock and wildlife, resulting in erosion and head cutting. Improved water availability should allow for more uniform and dispersed utilization within the allotment and the reduced pressure on the riparian areas should lead to improved riparian health and water quality downstream.

Systematic Review on Vegetation Management Practices for Sage-grouse Habitat was a research project that is expected to provide land and vegetation managers a central repository from which to easily gather information to make informed management decisions and improve management practices.

The House Draw Fire aerial sagebrush seeding project should give large portions of the Buffalo Sage-Grouse Core Area a chance to come back as functional sagebrush habitat. The House Draw Fire burned one third of the and arguably the best of the best habitat, hosting the best sage-grouse numbers, in northeast Wyoming.

Adaptive Management of the Normally Pressured Lance Natural Gas Development Project for Greater Sage-Grouse Project is a continuation of research to monitor sage-grouse as influenced by the NPL Gas Field in Sublette County. It should provide a management-focused foundation for informing energy development.

In the spring of 2023 the Sage-grouse Implementation Team (SGIT) commenced a core area review. Input was requested from WGFD field personnel. Working Groups presented an initial core revision proposal at various locations around the state. It is currently unknown what the final outcome of this process will be.

Management Recommendations:

1. Continue to monitor a minimum of 80% of the occupied leks in the SCCA.
2. Update all lek observers on WGFD survey protocols, and familiarize them with standardized datasheets.
3. Expand lek searches to ensure all active leks within the SCCA have been identified.
4. Seek out opportunities to increase flight money for lek searches and surveys in hard to access portions of the SCCA.
5. Support WGFD and BLM efforts to address mitigation and reclamation issues.
6. Support research efforts to identify seasonal habitats, especially winter concentration habitat.
7. Coordinate with BLM and USFS to ensure development and habitat treatments in Sage-grouse Core Area comply with WY-EO-2019-3.
8. Continue to build partnerships with private landowners to maintain or improve sage-grouse habitat on private lands through mutually beneficial habitat projects.

Changes in regulation implemented in 2024 required sage-grouse hunters to obtain a permit. This has allowed for the acquisition of more accurate harvest data to inform management and hunting seasons.

Literature Cited:

Row, J. R. and B. C. Fedy. 2017. Spatial and temporal variation in the range-wide cyclic dynamics of greater sage-grouse. Oecologia doi: 10.1007/s00442-017-3970-9.

Southwest

Job Completion Report

Prepared by: Patrick Burke, Green River Wildlife Biologist

Period Covered: 6-1-2023 to 12-31-2024

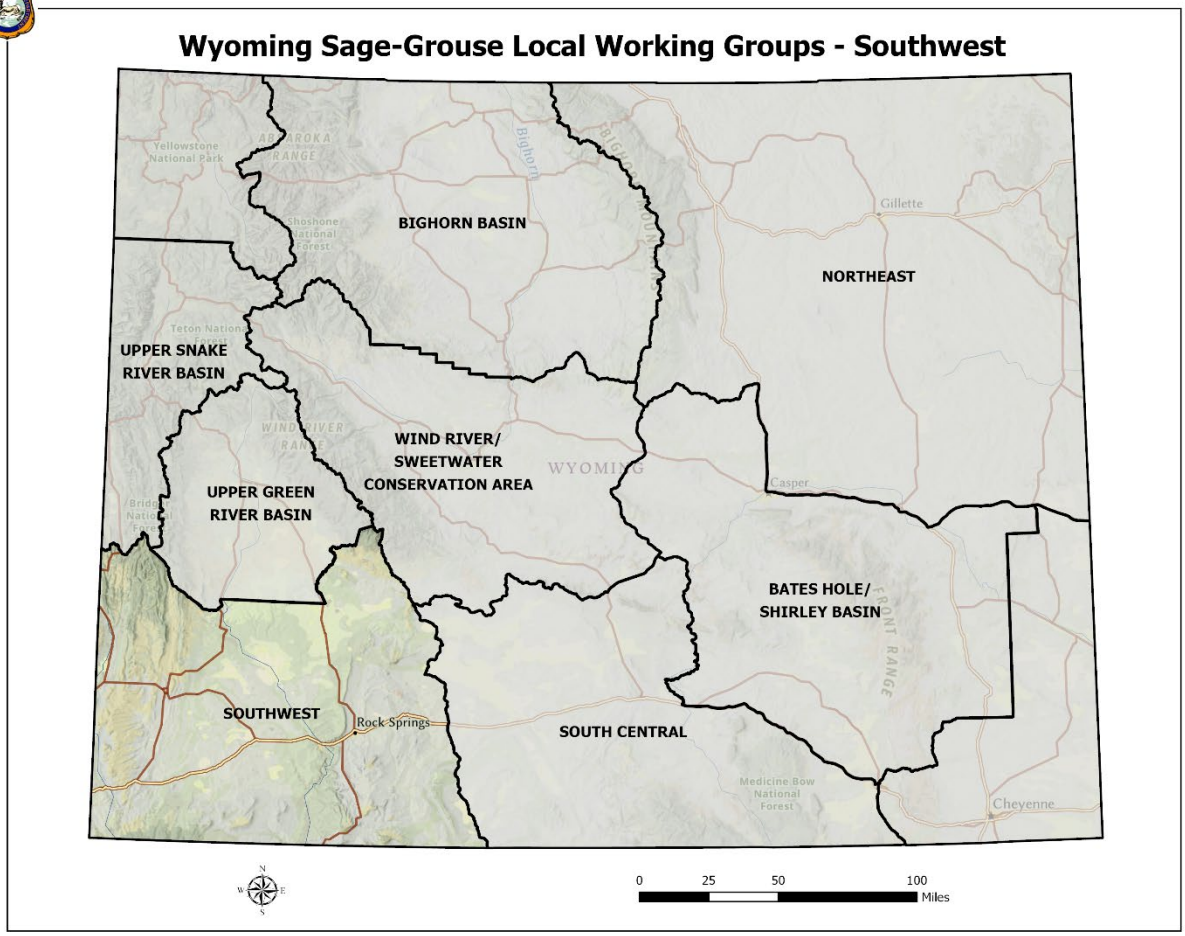

Table 1: Sage-Grouse Lek Characteristics

	Group	N	Percent
BLM Office			
	Kemmerer	206	44.5%
	Pinedale	14	3%
	Rawlins	4	0.9%
	Rock Springs	239	51.6%
Biologist			
	Green River	171	36.9%
	Lander	1	0.2%
	Mountain View	237	51.2%
	Pinedale	54	11.7%
Classification			
	Occupied	329	71.1%
	Undetermined	10	2.2%
	Unoccupied	124	26.8%
County			
	Fremont	4	0.9%
	Lincoln	137	29.6%
	Sublette	35	7.6%
	Sweetwater	213	46%
	Uinta	74	16%

	Group	N	Percent
Land Status			
		1	0.2%
	BLM	318	68.7%
	BOR	15	3.2%
	National Park	2	0.4%
	Private	109	23.5%
	State	17	3.7%
	USFS	1	0.2%
Lek Status			
	Active	269	58.1%
	Inactive	89	19.2%
	Unknown	105	22.7%
Management Area			
	G	463	100%
Region			
	Green River	409	88.3%
	Pinedale	54	11.7%
Warden			
	Cokeville	55	11.9%
	Evanston	43	9.3%
	Green River	75	16.2%
	Kemmerer	72	15.6%
	Mountain View	51	11%
	Rock Springs	113	24.4%
	South Pinedale	54	11.7%

Table 2: Leks Counted

Year	Occupied	Counted	Percent Counted	Peak Males	Average Peak Males
2015	316	70	22.2%	2,197	34.9
2016	328	97	29.6%	3,798	43.2
2017	337	100	29.7%	3,013	33.9
2018	341	102	29.9%	2,654	30.2
2019	341	88	25.8%	1,437	19.2
2020	340	73	21.5%	1,224	20.4
2021	341	92	27%	1,231	17.1
2022	339	80	23.6%	804	14.4
2023	335	43	12.8%	719	21.1
2024	337	88	26.1%	2,446	33.5

Occupied - Must have been active once during previous 10 years, calculated based on the official definitions

Average Peak Males - Includes only those leks where one or more strutting males were observed. Does not include "Active" leks where only sign was documented

Table 3: Leks Surveyed

Year	Occupied	Surveyed	Percent Surveyed	Peak Males	Average Peak Males
2015	316	222	70.3%	6,256	35.7
2016	328	211	64.3%	6,488	40.5
2017	337	203	60.2%	5,991	38.9
2018	341	210	61.6%	5,357	32.1
2019	341	201	58.9%	3,068	23.6
2020	340	212	62.4%	3,003	20.0
2021	341	183	53.7%	1,933	14.6
2022	339	206	60.8%	2,242	16.0
2023	335	177	52.8%	1,886	21.7
2024	337	215	63.8%	4,718	31.7

Occupied - Must have been active once during previous 10 years, calculated based on the official definitions

Average Peak Males - Includes only those leks where one or more strutting males were observed. Does not include "Active" leks where only sign was documented

Table 4: Leks Checked

Year	Occupied	Checked	Percent Checked	Peak Males	Average Peak Males
2015	316	292	92.4%	8,453	35.5
2016	328	308	93.9%	10,286	41.5
2017	337	303	89.9%	9,004	37.1
2018	341	312	91.5%	8,011	31.4
2019	341	289	84.8%	4,505	22.0
2020	340	285	83.8%	4,227	20.1
2021	341	275	80.6%	3,164	15.5
2022	339	286	84.4%	3,046	15.5
2023	335	220	65.7%	2,605	21.5
2024	337	303	89.9%	7,164	32.3

Occupied - Must have been active once during previous 10 years, calculated based on the official definitions

Average Peak Males - Includes only those leks where one or more strutting males were observed. Does not include "Active" leks where only sign was documented

Table 5: Lek Status of Leks Checked

Year	Active	Inactive	Unknown	Known Status	% Active	% Inactive
2015	251	20	21	271	92.6%	7.4%
2016	266	26	16	292	91.1%	8.9%
2017	256	30	17	286	89.5%	10.5%
2018	262	31	19	293	89.4%	10.6%
2019	231	46	12	277	83.4%	16.6%
2020	225	31	29	256	87.9%	12.1%
2021	221	33	21	254	87%	13%
2022	223	28	35	251	88.8%	11.2%
2023	162	31	27	193	83.9%	16.1%
2024	244	39	20	283	86.2%	13.8%

Occupied - Must have been active once during previous 10 years, calculated based on the official definitions

Inactive - Confirmed no birds/sign present (see official definitions)

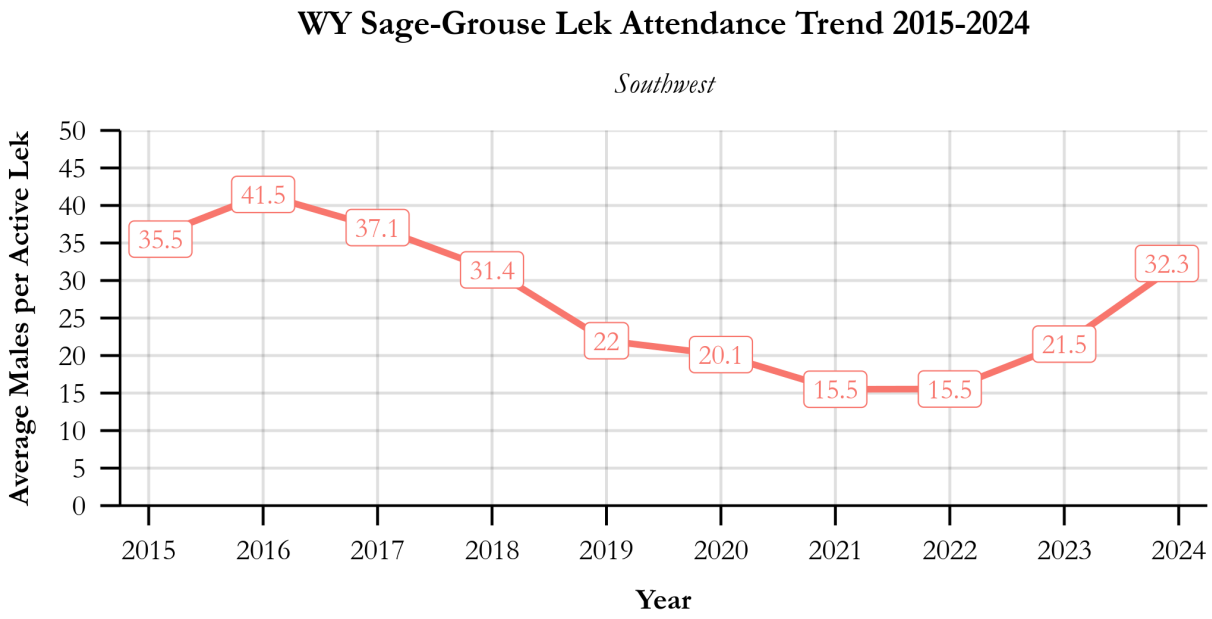

Figure 1: Average Peak Males

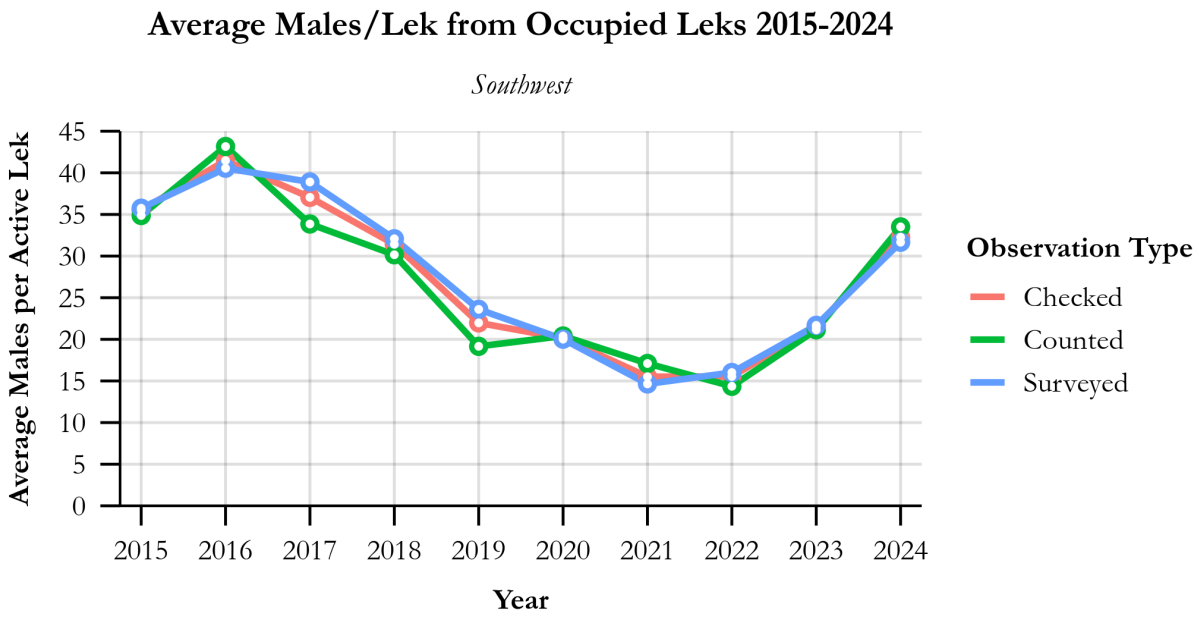

Figure 2: Average Peak Males

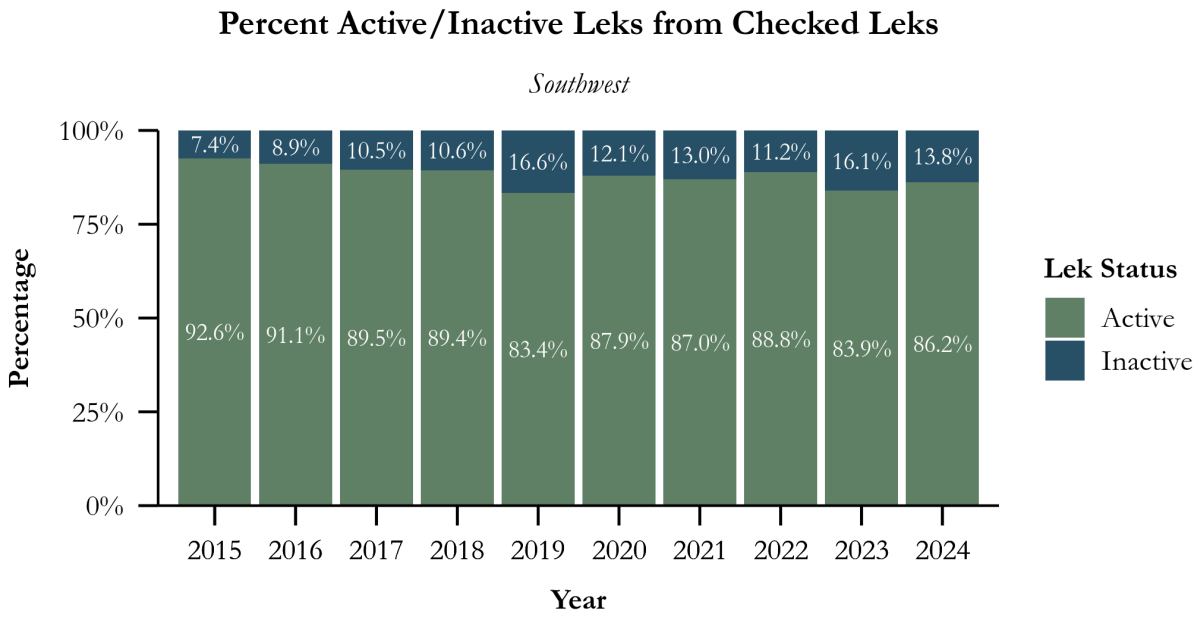

Figure 3: Lek Status

Table 6: Hunting Seasons

Year	Season Start	Season End	Length	Bag/Possession Limit
2015	Sep-19	Sep-30	12	2/4
2016	Sep-17	Sep-30	14	2/4
2017	Sep-16	Sep-30	15	2/4
2018	Sep-15	Sep-30	16	2/4
2019	Sep-21	Sep-30	10	2/4
2020	Sep-19	Sep-30	12	2/4
2021	Sep-18	Sep-30	13	2/4
2022	Sep-17	Sep-30	14	2/4
2023	Sep-16	Sep-30	15	2/4
2024	Sep-21	Sep-30	10	2/4

Table 7: Harvest Totals

Year	Harvest	Hunters	Days	Birds/Day	Birds/Hunter	Days/Hunter
2015	4,479	1,586	4,057	1.1	2.8	2.6
2016	4,163	1,672	4,036	1.0	2.5	2.4
2017	3,590	1,421	3,675	1.0	2.5	2.6
2018	3,410	1,630	3,873	0.9	2.1	2.4
2019	2,821	1,514	3,746	0.8	1.9	2.5
2020	1,491	737	2,336	0.6	2.0	3.2
2021	2,937	1,650	5,022	0.6	1.8	3.0
2022	3,968	1,974	5,371	0.7	2.0	2.7
2023	4,160	1,680	4,675	0.9	2.5	2.8
2024	3,025	1,495	3,343	0.9	2.0	2.2
Average	**3,404**	**1,536**	**4,013**	**0.8**	**2.2**	**2.6**

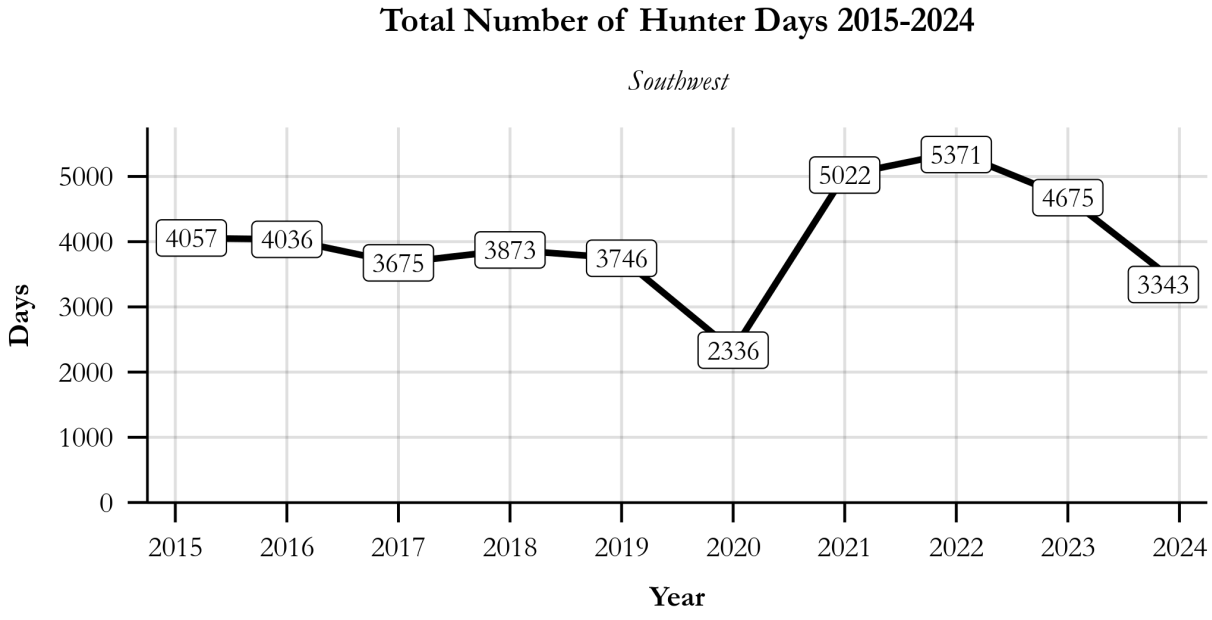

Figure 4: Harvest Days

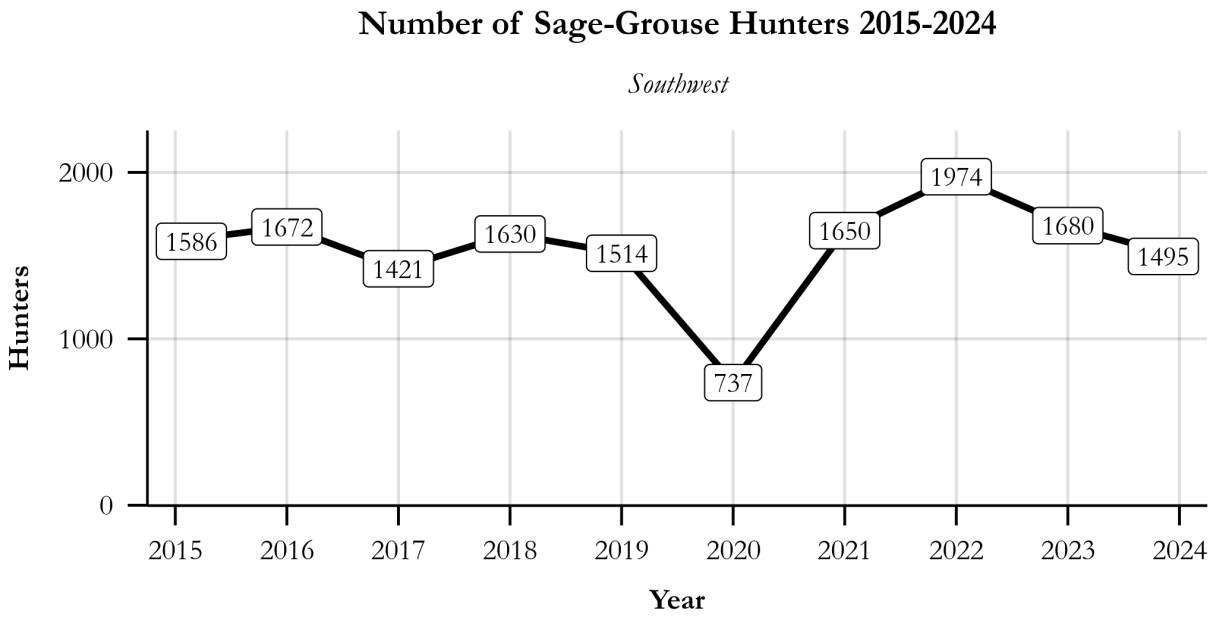

Figure 5: Hunters

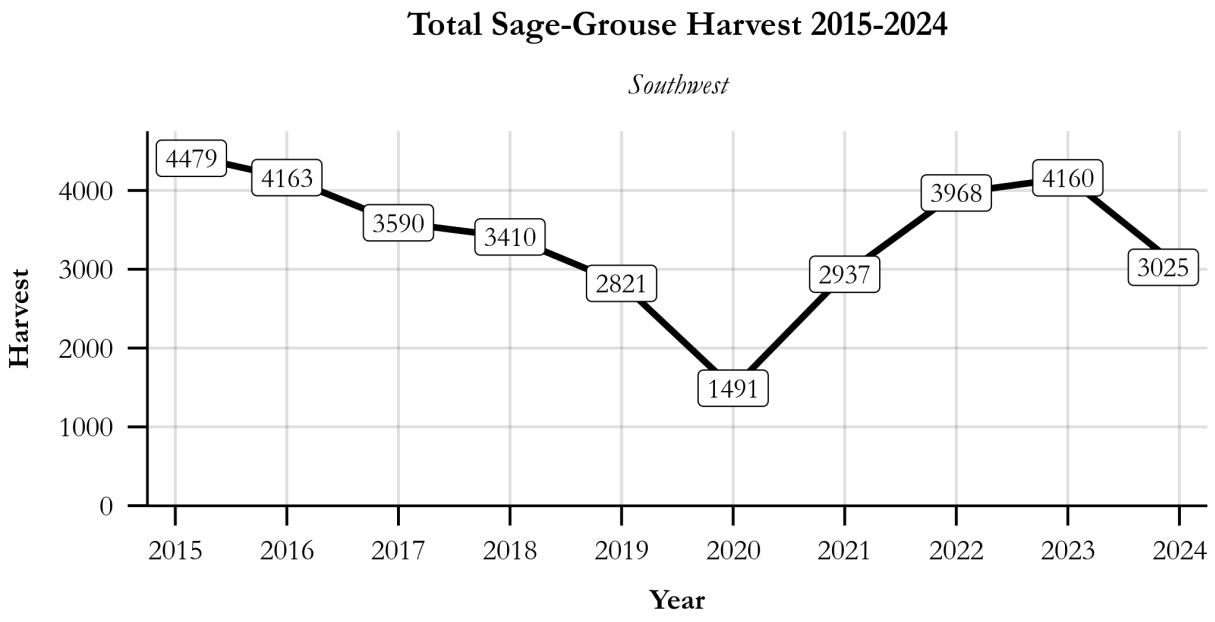

Figure 6: Total Harvest

Table 8: Harvest Composition

		Percent Adult		Percent Yearling		Percent Chick		
Year	Sample Size	Male	Female	Male	Female	Male	Female	Chicks/Hens
2015	860	13.5%	25.1%	3.1%	4.3%	27.4%	26.5%	1.8
2016	949	15.2%	30.5%	4.2%	5.6%	19.9%	24.7%	1.2
2017	813	9.5%	31%	2.8%	7%	22.6%	27.1%	1.3
2018	827	12%	33.4%	6.5%	13.4%	13.1%	21.6%	0.7
2019	570	7.9%	37.5%	2.1%	6.3%	14.4%	31.8%	1.1
2020	779	7.8%	31.3%	3.6%	6.4%	20.5%	30.3%	1.3
2021	447	12.8%	46.1%	1.6%	6.9%	15%	17.7%	0.6
2022	677	7.4%	30.1%	1.9%	4.6%	25.3%	30.7%	1.6
2023	958	7%	26.1%	2%	3.3%	26.6%	35%	2.1
2024	1,040	12.1%	25.5%	6.2%	9.2%	21.9%	25.1%	1.4

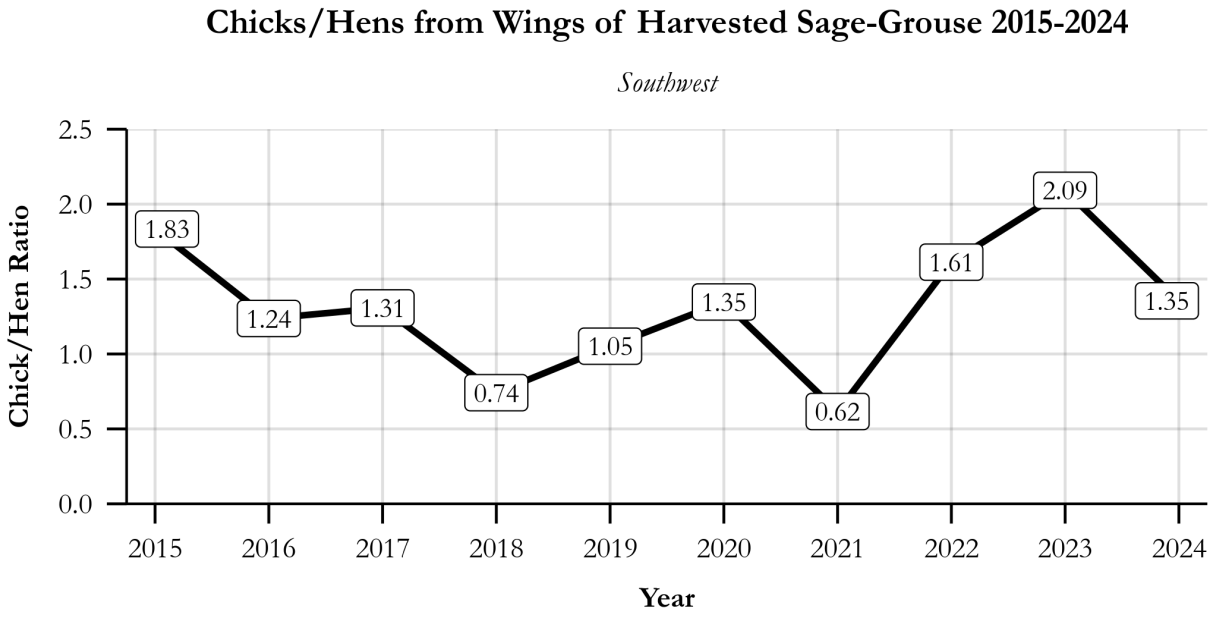

Figure 7: Chick/Hen Ratio

Table 9: Spring precipitation compared to fall chick:hen ratios in the Southwest Sage-Grouse Conservation Area (SWSGCA) 2014-2024. Precipitation obtained data from: http://www.wrcc.dri.edu/index.html

Year	% of Average March-June Precipitation	Chicks:Hen
2014	79%	2.3
2015	128%	1.8
2016	145%	1.2
2017	105%	1.3
2018	96%	0.7
2019	125%	1.1
2020	91%	1.3
2021	67%	0.6
2022	91%	1.6
2023	122%	2.1
2024	90%	1.4

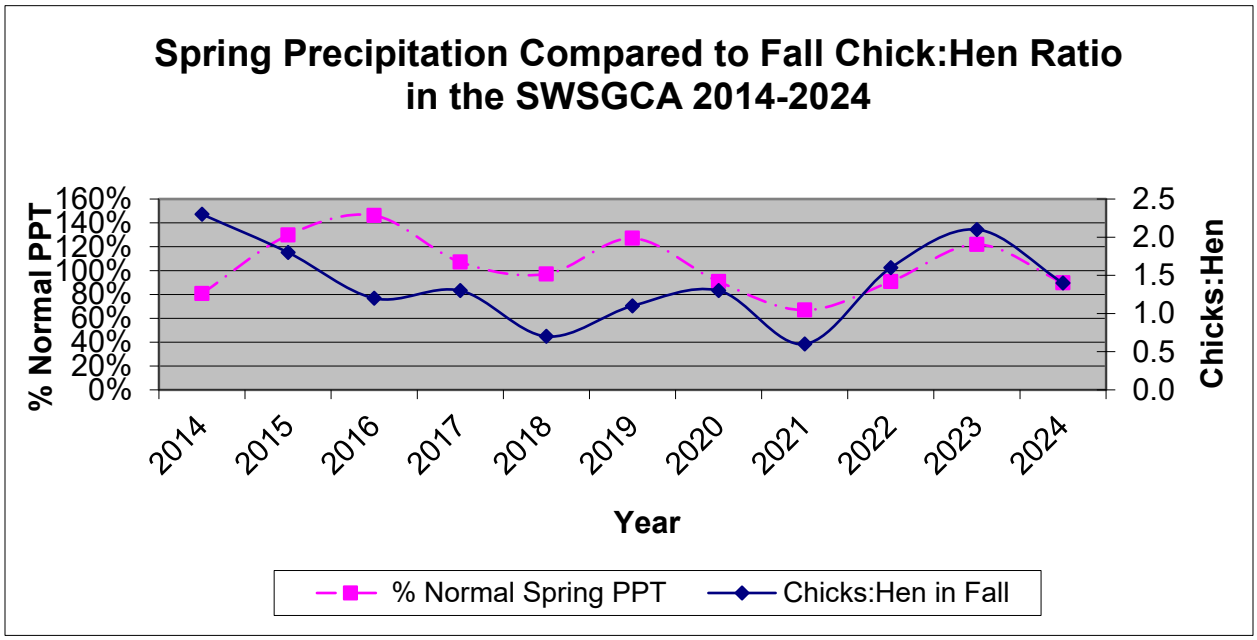

Figure 8: Spring precipitation compared to fall chick:hen ratios in the SWSGCA 2014-2024.

Lek Monitoring:

A total of 337 occupied leks were known to exist in the Southwest Wyoming Sage-Grouse Conservation Area (SWSGCA) during the 2024 lekking season. Of these 337 occupied leks, 303 of them were checked, with 88 of those checks being lek counts with three or more visits during the breeding season, with the remaining 215 checks consisting of lek surveys where less than three lek visits were made during the breeding season. The percentage of the known sage-grouse leks that were checked during the 2024 lekking season was 89.9%.

Because of the quantity of leks in the SWSGCA, data collection efforts have focused on lek surveys, which involved at least one visit to the lek during the breeding season over lek counts, which are more labor intensive and involve three or more visits during the breeding season. Fedy and Aldridge (2011) determined that population trends demonstrated by lek surveys are the same as those indicated by lek counts as long as the number of leks surveyed exceeds 50 leks in an area.

Since only "occupied" leks are being reported on Tables 1-5, it is important to consider trends in the numbers of active versus inactive leks in addition to the average size of active leks. During a period of population decline, the size of active leks typically declines and the number of inactive leks increases. The converse is typically true of an increasing population. Therefore the magnitude of both increases and decreases is usually greater than what is indicated by the average lek size alone. The proportion of known status leks that were active in the SWSGCA has remained relatively steady over the 10-year reporting period varying from 83-93% active. The proportion of active leks for the 2024 lekking season was in line with typical values having 86.2% of the occupied leks being active.

Monitoring the total number of males on a lek is used as an index of trend, but these data should be viewed with caution for several reasons: 1) the survey effort and the number of leks surveyed/counted has varied over time, 2) it can be safely assumed that not all leks in the area have been located, 3) sage-grouse populations can exhibit cyclic patterns over approximately a decade long period, 4) the effects of un-located or un-monitored leks that have become inactive cannot be quantified or qualified, 5) lek sites may shift over time, and 6) new leks may be created. Both the number of leks and the number of males attending these leks must be quantified in order to estimate population trend.

The average number of males per active lek for all leks checked (both counted and surveyed) during the 2024 lekking season was 32.3 males per active lek. This is down from the high observations of 35 to 41 males per active lek observed from 2016 to 2018, but is above the average from the previous nine years of 26.7 males per active lek. The average number of males in attendance on the 88 count leks in 2024 was 33.5 males per lek. This number is above the average from the previous nine years of 26 males per lek. For the 215 leks that were surveyed in 2024, the average lek had 31.7 males in attendance; which is above the average from the previous nine years of 27 males per lek, but is still below 2016's and 2017's observed values of 40.3 and 38.7 males per survey lek.

It is important to note that data collection efforts have increased considerably since the early 2000's. In 2000, only 63% of known occupied leks were checked, but in recent years, the number annually checked is usually above 90% of the known occupied leks. In addition, efforts by WGFD personnel, volunteers, and other government and private industry biologists have led to increased numbers of known leks.

Currently, no method exists to estimate total sage-grouse population size in a statistically significant way. However, the recent male per lek averages along with the observed chick per hen ratios in hunter submitted wings indicate that the sage-grouse population in southwest Wyoming had been increasing during the period covered by this report.

Production:

Sage-grouse wings are collected each hunting season via voluntary hunter submission to allow for the determination of the sex and age of harvested birds. Successful hunters submitted 958 grouse wings from the 2023 hunting season and 1,040 sage-grouse wings from the 2024 hunting season (Table 8). This represents just over 23% of the estimated total harvest for 2023 and 34% of the reported harvest in 2024, which are both slightly above the average submission rate of around 18%-19% of the reported harvest.

The most important ratio obtained from the wing analysis is the chick to hen ratio; this ratio provides a general indication of chick recruitment. Assuming that hen and chick harvest is proportional to the actual makeup of the population, chick production for that year can be estimated by comparing the proportion of chicks to hens in the sample of submitted wings. Even if the rate of harvest between age/sex groups is not random, the information can be used as a tool for looking at population trends as long as any biases are relatively consistent across years.

In general it appears that chick:hen ratios of about 1.3:1 to 1.7:1 result in relatively stable grouse populations, while chick:hen ratios of 1.8:1 or greater result in increasing grouse numbers and ratios below 1.2:1 result in subsequent declines. The chick:hen ratio as determined from hunter submitted wings for the 2023 hunting season was 2.1 chicks/hen, while the wings submitted from the 2024 season resulted in a chick to hen ratio of 1.4 chicks per hen harvested (**Table 8**). These ratios suggest an increasing grouse population in 2023, which corresponds well with the increased male lek attendance seen in the spring of 2024.

Harvest:

The 2023 hunting season for sage-grouse in the SWSGCA ran from September 16 to September 30 and allowed for a daily take of 2 birds with a limit of 4 grouse in possession and the 2024 season ran from September 21 through September 30 with the same daily bag and possession limit (**Table 6**). The 2023 and 2024 seasons were consistent with how the season has been run since 2002 when the season opening date was moved to the third Saturday in September and the daily bag limit was reduced to 2 birds and a possession limit of 4 birds. The sage-grouse season had historically started as early as September first and ran for 30 days; during this time the daily limit was 3 grouse with a possession limit of up to 9 birds. Over time, the season was gradually shortened and the daily bag and possession limits reduced because of concern over declining sage-grouse populations. The opening date was moved back from the first of September to the third weekend because research suggested that hens with broods were concentrated near water sources earlier in the fall and therefore more susceptible to harvest. The later opening date allowed more time for those broods to disperse and therefore reduced hunting pressure on those hens that were successful breeders and on young of the year birds.

The data for grouse harvested in the SWSGCA are reported under Sage-Grouse Management Area G for the 2015 through 2024 hunting seasons in this report (**Table 7**). Based on harvest survey estimates, 1,680 hunters harvested 4,160 sage-grouse during the 2023 hunting season and 1,495 hunters harvested 3,025 sage-grouse during the 2024 season. These numbers are down

from the 4,479 birds reported harvested in 2015, but are generally in line with recent harvest estimates for the SWSGCA. The trends in harvest statistics over the last 10 years are not well correlated with average male lek attendance due to changes in hunting season structure, weather conditions, and hunter participation levels over that period.

Habitat:

Spring habitat conditions are one of the most important factors in determining nesting success and chick survival for sage-grouse. Specifically, shrub height and cover, live and residual grass height and cover, and forb production, all have a large impact on sage-grouse nesting and brood rearing success. The shrubs and grasses provide screening cover from predators and weather, while the forbs provide forage and insects that reside in the forbs, which are an important food source for chicks. Spring precipitation is an important determinant of the quality and quantity of these vegetation characteristics. Residual grass height and cover depends on the previous year's growing conditions and grazing pressure while live grass and forb cover are largely dependent on the current year's precipitation.

In general, winter weather has not been shown to be a limiting factor to sage-grouse except in areas with persistent snow cover that is deep enough to limit sagebrush availability. This condition is rarely present in the SWSGCA even during severe winters.

The spring (March-June) precipitation and fall chick:hen ratios (as determined by hunter submitted wings) are given in **Table 9** and **Figure 8**. Generally speaking, when spring precipitation is at or above 90% of average, chick to hen ratios are above average, but when spring precipitation is below average, chick:hen ratios also tend to be below average. However, periods of prolonged or poorly timed cold, wet weather may have adverse effects on hatching success, plant and insect phenology and production and chick survival.

Disease:

No cases of West Nile Virus (WNv) or other avian diseases are known to have occurred in sage-grouse in the SWSGCA in 2023 or 2024.

Conservation Planning:

The Southwest Local Working Group (SWLWG) was established in September of 2004 and they completed their Sage-grouse Conservation Plan (Plan) in 2007. In 2014, the SWLWG adopted an addendum to their Plan which is available at https://wgfd.wyo.gov/Habitat/Sage-Grouse-Management/Sage-Grouse-Local-Working-Groups. This addendum documented conservation action such as research and habitat projects the SCLWG had supported since their Plan was completed, as well as how these projects addressed the goals and action items identified in the Plan.

Three projects funded by the SWLWG completed work during the 2024 calendar year. Those projects were the Monument Draw Wet Meadow Restoration Project Implementation, Ariel Seeding of Sagebrush in North Eastern Wyoming and the Adaptive Management of the Normally Pressured Lance Natural Gas Development Project for Greater Sage-Grouse projects.

Monument Draw Wet Meadow Restoration Project Implementation:

The Monument Draw Project began in 2022 with 16 Zeedyk structures being installed. In 2024, The White Acorn Ranch approved the proposal to install Zeedyk structures on private land in Monument Draw downstream from the existing structures. These two structures would have been installed during the summer of 2024 but the commercial quarry was unable to provide rock in a timely manner due to other priorities. The rock was delivered in late August by WGFD. In addition to the Zeedyk structures, 3.7 miles of range fences were marked to reduce sage-grouse fence collisions. Maintenance was performed on 5.8 miles of previously marked fence and an additional 6.4 miles of fence were identified for marking in 2025. Sage-grouse mortalities were documented while conducting this work. Lastly, there was continuation of necessary maintenance at five spring sites previously protected with steel-jack fencing in the Little Prospect Allotment.

Ariel Seeding of Sagebrush in North Eastern Wyoming:

Following the catastrophic fires in Northeast Wyoming, the SWLWG decided to contribute to restoration efforts. The focus is the House Draw fire as the core areas burned were arguably some of the best habitats, hosting the best sage-grouse numbers, in northeast Wyoming. There was an immediate funding need for an early winter aerial seeding project.

Adaptive Management of the Normally Pressured Lance Natural Gas Development Project for Greater Sage-Grouse:

The SWLWG contributed funding to the ongoing project that is a continuation of research to monitor sage-grouse as influenced by the NPL Gas Field in Sublette County, Wyoming. Goals and objectives of the research that directly reference the SWLWG Conservation Plan are:

Overall conservation goal in the SW LWG Conservation Plan (pg. 25):

• "Better understand the dynamics of sage-grouse populations and their habitats through monitoring, research and education."

Energy Development sub-goals in the SW LWG Conservation Plan (pg. 33):

• "Minimize negative impacts of exploration and/or development of natural resources for energy development on sage-grouse habitats."

• "Determine cause and effect relationships between forage, drought, multiple uses and sage-grouse recruitment."

Management Recommendations:

1. Continue to monitor a minimum of 80% of the known occupied leks in the SWSGCA

2. Update all lek observers on WGFD survey protocols in order to ensure that established lek monitoring protocols are followed

3. Continue to collect sage-grouse wings in wing barrels placed across the landscape in order to obtain an adequate and representative sample to derive sex/age and harvest trend information

4. Work with land management agencies to reduce negative impacts to crucial sage-grouse habitats

5. Work to increase the mapping of seasonal sage-grouse habitats

Upper Green River

Job Completion Report

Prepared By: Dean Clause, Pinedale Wildlife Biologist

Period Covered: 6-1-2023 to 12-31-2024

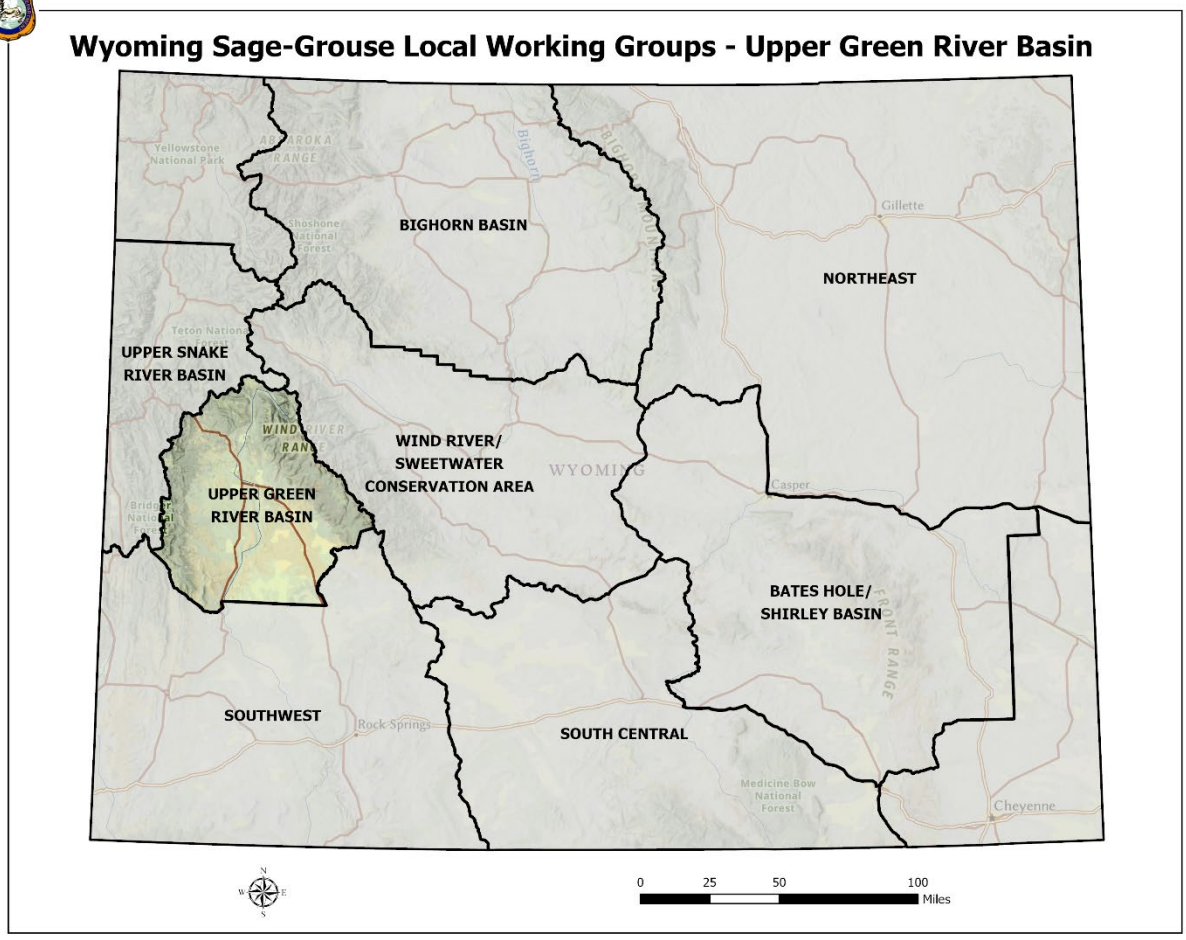

Table 1: Sage-Grouse Lek Characteristics

	Group	N	Percent
BLM Office			
	Pinedale	156	92.3%
	Rock Springs	13	7.7%
Biologist			
	Pinedale	94	55.6%
	Thayne	75	44.4%
Classification			
	Occupied	128	75.7%
	Unoccupied	41	24.3%
County			
	Lincoln	2	1.2%
	Sublette	167	98.8%

	Group	N	Percent
Land Status			
	BLM	137	81.1%
	Private	21	12.4%
	State	9	5.3%
	USFS	2	1.2%
Lek Status			
	Active	99	58.6%
	Inactive	65	38.5%
	Unknown	5	3%
Management Area			
	D	169	100%
Region			
	Pinedale	169	100%
Warden			
	Big Piney	87	51.5%
	North Pinedale	24	14.2%
	South Pinedale	58	34.3%

Table 2: Leks Counted

Year	Occupied	Counted	Percent Counted	Peak Males	Average Peak Males
2015	135	110	81.5%	4,684	53.2
2016	139	118	84.9%	5,241	54.6
2017	139	99	71.2%	4,224	53.5
2018	142	118	83.1%	4,052	40.9
2019	140	71	50.7%	2,081	33.6
2020	137	100	73%	2,423	31.5
2021	132	117	88.6%	2,505	25.8
2022	132	105	79.5%	1,966	22.9
2023	130	22	16.9%	380	19.0
2024	129	97	75.2%	3,214	39.2

Occupied - Must have been active once during previous 10 years, calculated based on the official definitions

Average Peak Males - Includes only those leks where one or more strutting males were observed. Does not include "Active" leks where only sign was documented

Table 3: Leks Surveyed

Year	Occupied	Surveyed	Percent Surveyed	Peak Males	Average Peak Males
2015	135	22	16.3%	923	48.6
2016	139	19	13.7%	886	63.3
2017	139	30	21.6%	1,091	52.0
2018	142	18	12.7%	484	40.3
2019	140	62	44.3%	1,489	30.4
2020	137	29	21.2%	498	23.7
2021	132	10	7.6%	105	15.0
2022	132	23	17.4%	418	29.9
2023	130	102	78.5%	1,849	26.0
2024	129	24	18.6%	487	32.5

Occupied - Must have been active once during previous 10 years, calculated based on the official definitions

Average Peak Males - Includes only those leks where one or more strutting males were observed. Does not include "Active" leks where only sign was documented

Table 4: Leks Checked

Year	Occupied	Checked	Percent Checked	Peak Males	Average Peak Males
2015	135	132	97.8%	5,607	52.4
2016	139	137	98.6%	6,127	55.7
2017	139	129	92.8%	5,315	53.1
2018	142	136	95.8%	4,536	40.9
2019	140	133	95%	3,570	32.2
2020	137	129	94.2%	2,921	29.8
2021	132	127	96.2%	2,610	25.1
2022	132	128	97%	2,384	23.8
2023	130	124	95.4%	2,229	24.5
2024	129	121	93.8%	3,701	38.2

Occupied - Must have been active once during previous 10 years, calculated based on the official definitions

Average Peak Males - Includes only those leks where one or more strutting males were observed. Does not include "Active" leks where only sign was documented

Table 5: Lek Status of Leks Checked

Year	Active	Inactive	Unknown	Known Status	% Active	% Inactive
2015	107	25	0	132	81.1%	18.9%
2016	110	24	3	134	82.1%	17.9%
2017	100	29	0	129	77.5%	22.5%
2018	111	24	1	135	82.2%	17.8%
2019	111	22	0	133	83.5%	16.5%
2020	98	31	0	129	76%	24%
2021	105	22	0	127	82.7%	17.3%
2022	100	28	0	128	78.1%	21.9%
2023	98	18	8	116	84.5%	15.5%
2024	97	23	1	120	80.8%	19.2%

Occupied - Must have been active once during previous 10 years, calculated based on the official definitions

Inactive - Confirmed no birds/sign present (see official definitions)

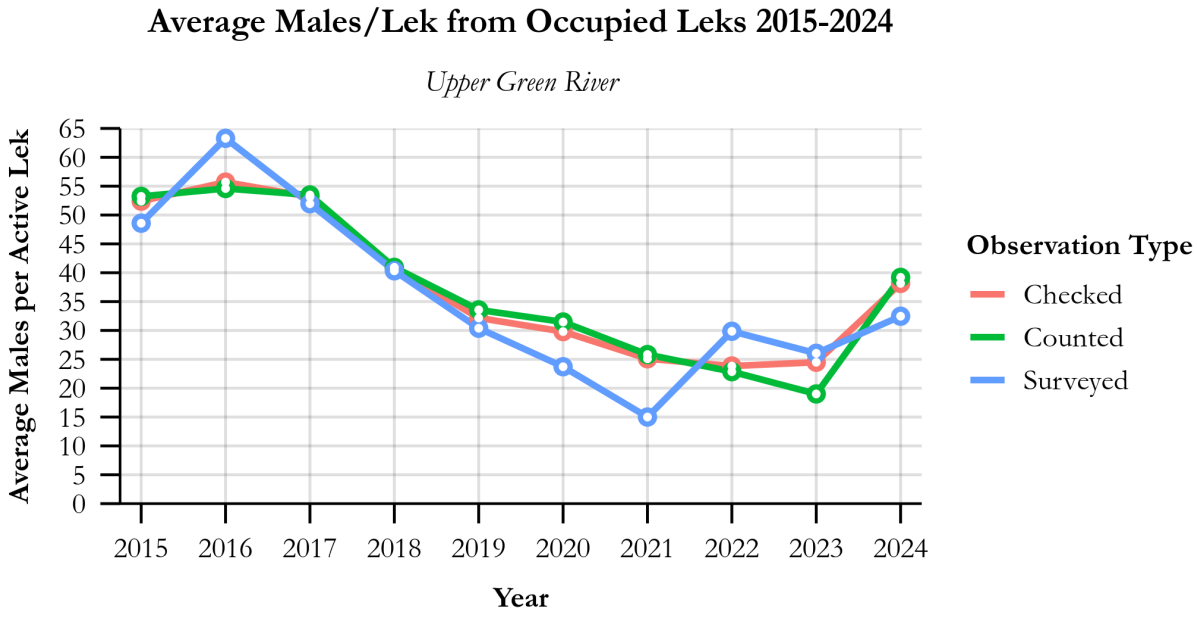

Figure 1: Average Peak Males

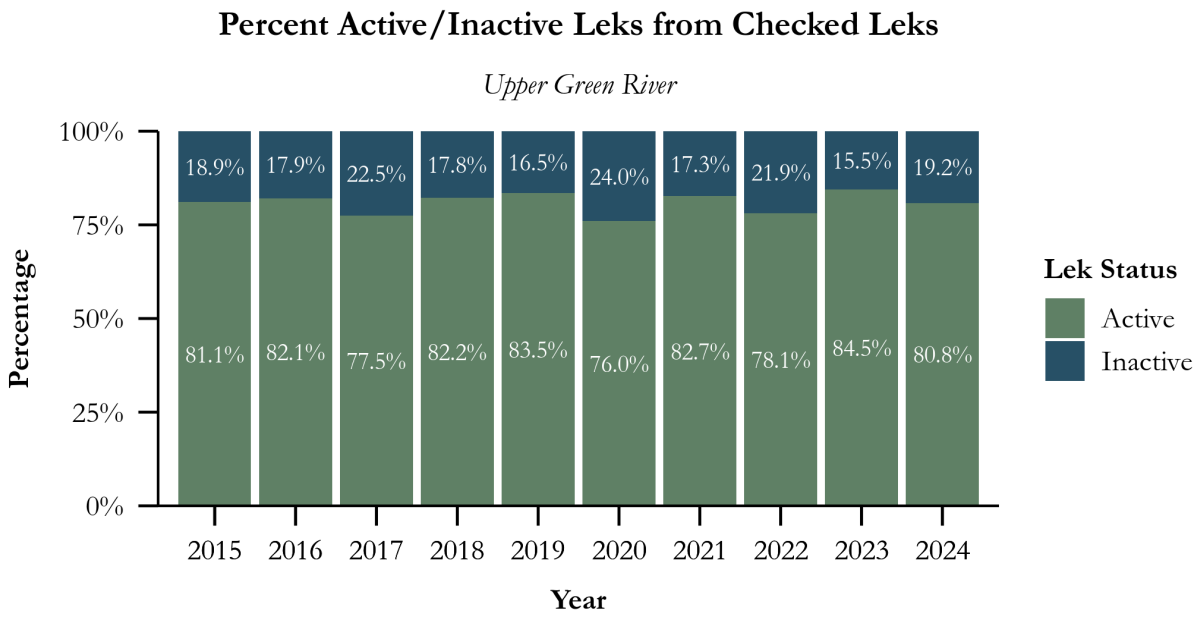

Figure 2: Lek Status

Table 6: Hunting Seasons

Year	Season Start	Season End	Length	Bag/Possession Limit
2015	Sep-19	Sep-30	12	2/4
2016	Sep-17	Sep-30	14	2/4
2017	Sep-16	Sep-30	15	2/4
2018	Sep-15	Sep-30	16	2/4
2019	Sep-21	Sep-30	10	2/4
2020	Sep-19	Sep-30	12	2/4
2021	Sep-18	Sep-30	13	2/4
2022	Sep-17	Sep-30	14	2/4
2023	Sep-16	Sep-30	15	2/4
2024	Sep-21	Sep-30	10	2/4

Table 7: Harvest Totals

Year	Harvest	Hunters	Days	Birds/Day	Birds/Hunter	Days/Hunter
2015	1,205	500	1,129	1.1	2.4	2.3
2016	1,990	706	2,012	1.0	2.8	2.8
2017	988	402	921	1.1	2.5	2.3
2018	2,161	853	2,632	0.8	2.5	3.1
2019	1,053	548	1,248	0.8	1.9	2.3
2020	1,770	704	1,922	0.9	2.5	2.7
2021	1,238	772	1,998	0.6	1.6	2.6
2022	1,502	673	1,551	1.0	2.2	2.3
2023	2,161	818	2,211	1.0	2.6	2.7
2024	930	562	1,315	0.7	1.7	2.3
Average	**1,500**	**654**	**1,694**	**0.9**	**2.3**	**2.5**

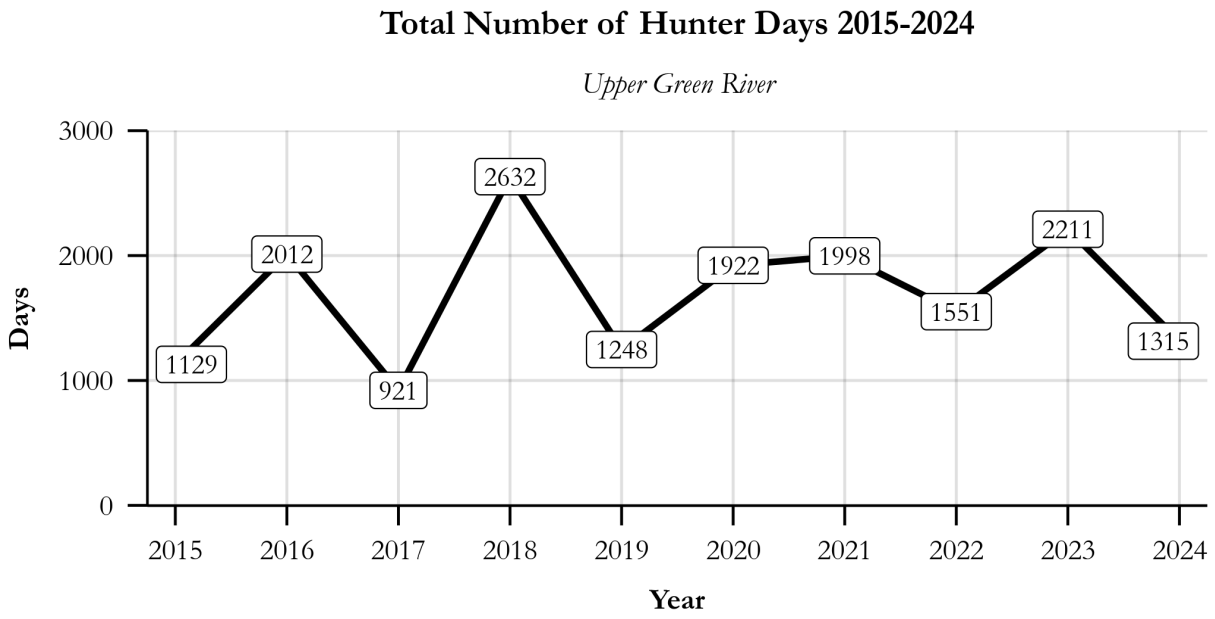

Figure 3: Harvest Days

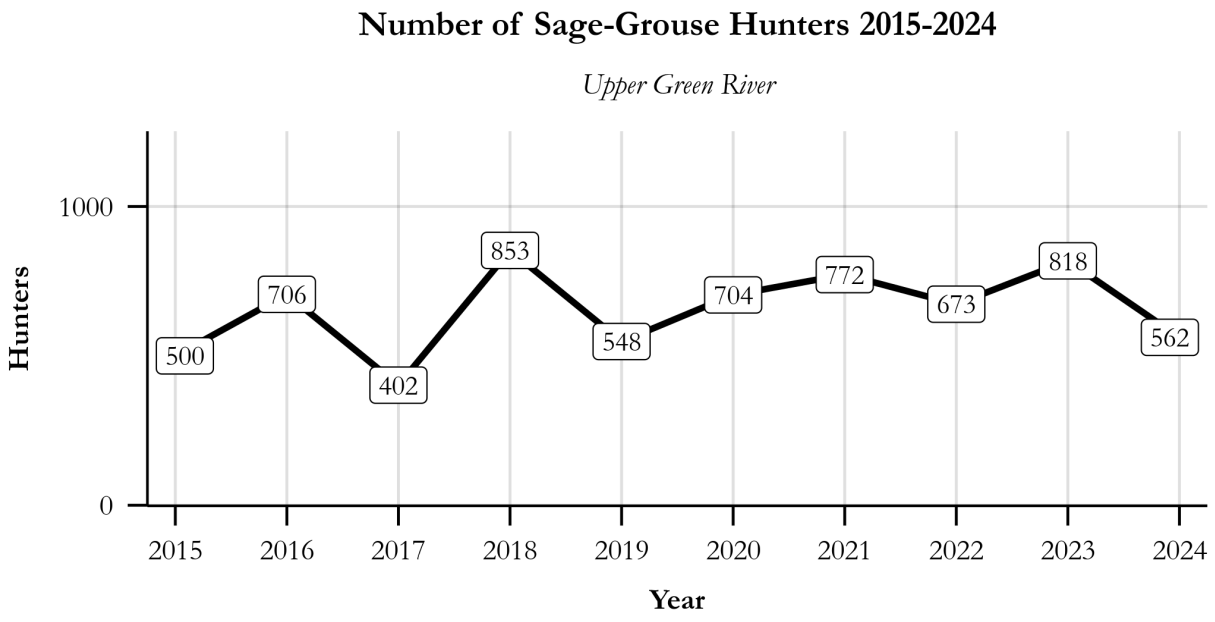

Figure 4: Hunters

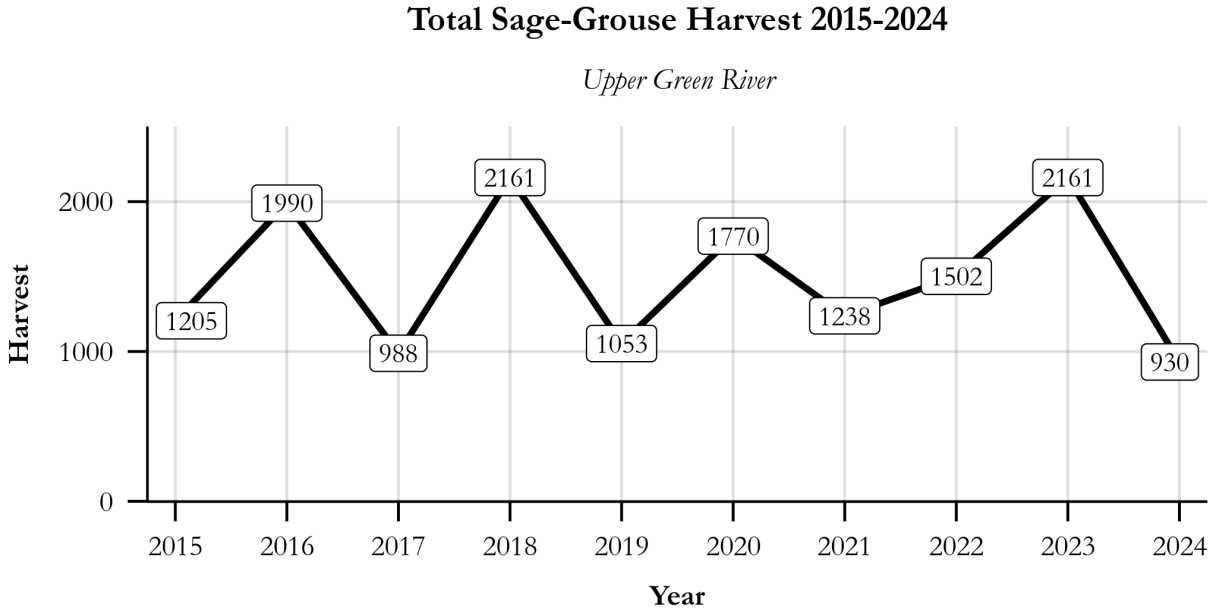

Figure 5: Total Harvest

Table 8: Harvest Composition

		Percent Adult		Percent Yearling		Percent Chick		
Year	Sample Size	Male	Female	Male	Female	Male	Female	Chicks/Hens
2015	482	12.4%	27%	2.1%	5.4%	24.7%	28.4%	1.6
2016	450	17.6%	43.1%	3.1%	5.8%	12.4%	18%	0.6
2017	573	15%	35.1%	3.3%	6.3%	18.8%	21.5%	1.0
2018	466	11.8%	38.8%	5.8%	10.7%	11.8%	21%	0.7
2019	342	7.3%	32.5%	1.8%	12%	14.3%	32.2%	1.0
2020	471	10.2%	37.6%	3%	7.9%	18.3%	23.1%	0.9
2021	410	11.2%	47.1%	2.9%	5.9%	12.2%	20.5%	0.6
2022	310	12.3%	41.3%	1.6%	8.1%	13.5%	23.2%	0.7
2023	500	4.8%	22%	5.6%	10.4%	19.4%	37.8%	1.8
2024	411	10.9%	31.4%	4.6%	15.1%	17.5%	20.4%	0.8

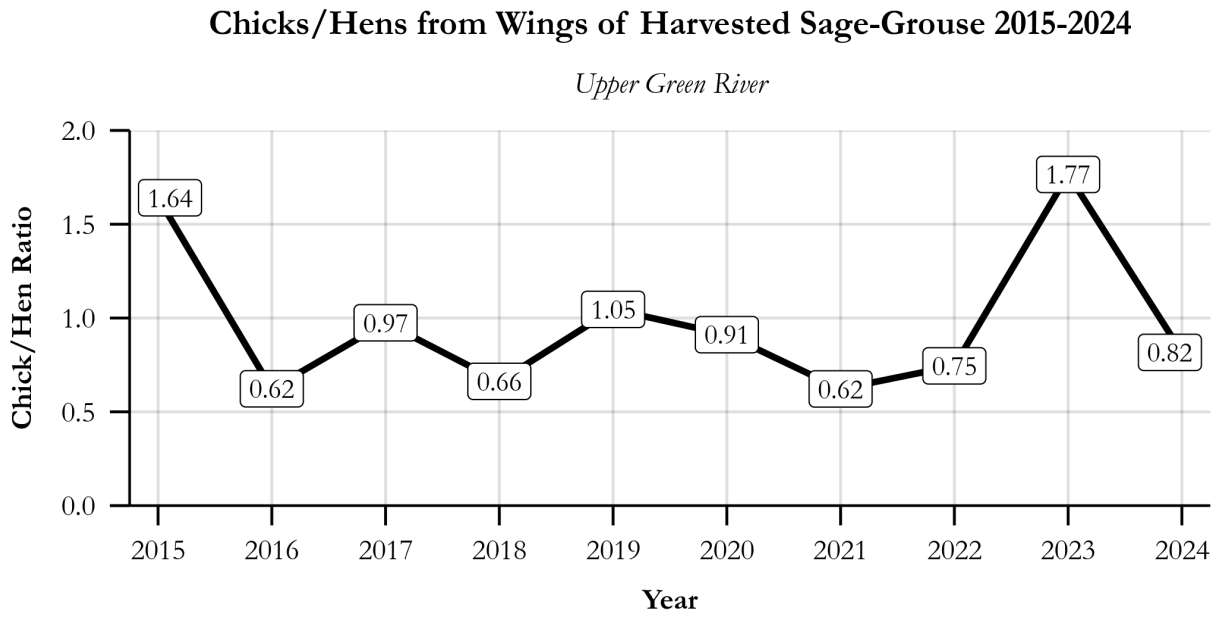

Figure 6: Chick/Hen Ratio

Lek Monitoring:

A total of 169 leks are currently documented in the Upper Green River Basin Working Group Area (UGRBWGA). These leks are classified as follows; 128 occupied, 41 unoccupied, and 0 undetermined. During 2024, a total of 121 occupied leks (94%) were checked (survey or count). Lek monitoring efforts in 2024 resulted in a high proportion of counts (80%) verses surveys (20%), Results from lek monitoring in 2024 showed 81% were active and 19% inactive of those leks classified as occupied. The average number of males/lek for all active leks increased to 38 in 2024, compared to the past two years of 25 in 2023, and 24 in 2022. This results in a 56% increase from 2023 but 31% lower than the last peak in 2016 (**Table 4**).

The highest documented average peak male attendance occurred in 2007 at 69 for this UGRBWGA. Since 2007, the observed average peak males has declined through 2010, stabilized from 2011-2014, and increased in 2015, stabilized in 2016-2017, declined in 2018-2021, stabilized during 2022-2023, and increased in 2024. Sage-grouse trends are likely a combination of the cyclic nature of sage-grouse populations (Fedy and Doherty 2010), drought, and influences from habitat fragmentation in the Upper Green River Basin. Caution is warranted when analyzing long-range data sets (20+ years) within the UGRBWG area as the number of known (documented) leks have more than doubled during the past 20 years. Since many of these newly documented leks probably existed but were not monitored, there is some speculation in regards to what the average number of males/lek actually was prior to the mid 1990's.

The proportion of leks checked that are confirmed "active" has stayed relatively stable during the past 10 years, ranging from 76% to 84% (**Figure 2**). Although, there has been increased lek inactivity and abandonment in areas associated with gas development activity. Additional lek monitoring efforts and searches have resulted in locating new or undiscovered leks (67 new leks

since 2004) mathematically negating the downward trend in the proportion of active leks in the UGRBWGA.

Harvest:

The 2023 sage-grouse season was September 16 through September 30, a 15-day hunting season while the 2024 season was shorter by 5 days, September 21 through September 30 (**Table 6**). Hunting seasons since 2002 have allowed the season to remain open through two consecutive weekends. From 1995 – 2001 hunting seasons were shortened to a 15-16 day season that typically opened during the third week of September and closed in early October. Prior to 1995, the sage-grouse seasons opened on September 1 with a 30 day season. Seasons have been shortened with later opening dates to increase survival of successful nesting hens (as they are usually more dispersed later in the fall) and to reduce overall harvest.

Bag limits from 2003 to 2024 have been 2 per day and 4 in possession. 2003 was the first year that bag/possession limits had been this conservative. Bag limits traditionally (prior to 2003) were 3 birds/day with a possession limit 9 (changed to 6 birds from 1994-2002). Prior to 2010, harvest estimates in the UGRBWGA were only reported from UGBMA 3 and not in that portion of UGBMA 7 that lies within the UGRBWGA. New Sage-Grouse Management Areas (SGMA) were developed in 2010, where SGMA D covers all of the UGRBWGA and has been reported that way since 2010.

The 2023 harvest survey estimated that 818 hunters bagged 2,161 sage-grouse and spent 2,211 days hunting (**Table 7**). The average number of birds per day was 1.0, the average number of birds per hunter was 2.6, and the number of days spent hunting per hunter was 2.7 during 2023. A mandatory sage-grouse permit was required during 2024 to expand efforts to survey sage-grouse hunters. This permit allows harvest survey efforts to target a much higher portion of actual sage-grouse hunters compared to previous years, therefore resulting in improved reported harvest metrics. The 2024 harvest survey estimated that 562 hunters bagged 930 sage-grouse and spent 1,315 days hunting. The average number of birds per day was 0.7, the average number of birds per hunter was 1.7, and the number of days spent hunting per hunter was 2.3 during 2024 (**Table 7**). During the past 10 year period, hunter participation and harvest metrics have varied somewhat, probably attributed to a combination of population trends, yearly bird recruitment, weather conditions, and season length (**Table 7**). In general these trends in harvest metrics have varied somewhat which can attributed to a combination of weather conditions during the hunting season, grouse populations (or perceived population trend), and season length. In addition, the efforts to improve accuracy of reported harvest in 2024 most likely is not comparable to that reported in previous years. Since 1995, overall harvest and harvest rates significantly declined following altered seasons (shortened and moved to a later date).

<u>Wing Collections</u>

Eighteen sage-grouse wing barrels were distributed throughout Sublette County during the 2023 and 2024 hunting seasons within SGMA D. Barrels were placed prior to the sage-grouse hunting season opener and were taken down following the closing date. Wing collections were typically made following each weekend of the hunting season. The wings are used to determine age and sex based on molting patterns and feather characteristics, and calculate harvest composition proportions.

A total of 500 and 411 sage-grouse wings were collected from barrels in the UGRBWGA during 2023 and 2024. The number of wings collected during the past 10-year period ranged from 310 to 573 (**Table 8**). Of the 411 wings collected in 2024, 38% were juvenile birds and 47% were adult and yearling hens. The overall composition of wings in 2024 indicated a ratio of 0.8 chicks/hen (adult and yearling females), which typically results in static to lower lek attendance the following spring. In 2023 a total of 500 wings were collected, 57% were juvenile birds and 32% were adult and yearling hens for a ratio of 1.8 chicks/hen (adult and yearling females) resulting in a 56% increase. This 2023 chick/hen ratio of 1.8 is the highest ever documented for this UGRBWGA. **Figure 6** shows the past 10-year chick/hen ratios, with only 2015, 2019, and 2023 above 1.0 chicks/hen. This assessment of chick production from wing collections has correlated well with male lek trends and a relatively good indicator for future population trends.

Winter Distribution Surveys:

No specific winter sage-grouse surveys were conducted during the 2024-2024 winter within the UGRBWG Area. Winter surveys were initially conducted in 2004 and continued through 2013 within portions of the Upper Green River Basin. This winter data has been used to develop winter concentrations area maps (first map developed in 2008). Additional analysis methods such as Resource Selection Function (RSF) models have recently been utilized with winter survey data to help refine previously identified winter concentration areas (WCA), see project details below. Although, WCA have been identified throughout the UGRBWG Area, the Sage-Grouse Implementation Team has recognized one area located in the Alkali Draw & Alkali Creek Area as of 2015. Efforts to identify or delineate additional WCA's throughout the UGRBWGA are planned for completion in 2025.

Sage-Grouse Research Projects:

Significance of Geophagy:
There has been on-going study (initiated in 2013) looking into the significance of geophagy by sage-grouse within the UGRBWGA. The field work was completed in the fall of 2021 with a possible publication report in 2025.

Sage-grouse geophagy, or intentional ingestion of soil, was documented in Sublette County Wyoming during the winter of 2012 – 2013. While it is well-known for a variety of other birds and mammals, it represents a behavior that has not been described for sage-grouse. The goal of this project is to assess the importance of "soil-eating" areas in describing winter habitat selection by sage-grouse. Currently, within the Upper Green River Basin researchers have identified 24 confirmed locations of geophagy behavior. An additional 20+ potential locations have also been identified. Past collaborators on the project have been the BLM, Teton Raptor Center, Wyoming Wildlife Consultants, and Sublette County Conservation District. Soil has been collected and tested at each confirmed location and compared to soil at random locations in order to identify the potential target mineral or compound responsible for the behavior. Soil tests indicate higher sodium, pH, and clay content at the documented geophagy sites.

A Utah State University graduate student is currently assessing habitat selection for wintering sage-grouse in the presence of geophagy sites. This resource selection analysis will not only help determine how geophagy sites influence winter habitat selection, but also help predict areas of importance to wintering sage-grouse in these areas. A second graduate student from Utah State

University is continuing research and data collection efforts for this geophagy project specifically to evaluate how geophagy behavior may influence reproduction during the breeding season.

Adaptive Management of the Normally Pressured Lance Natural Gas Development Project for Greater Sage-Grouse – 2023 Progress Report for Pre-development Data Collection:
Future collection and continuation of this NPL study is unknown as of December of 2025 and may not resume until outside funding is secured or gas development is initiated within this winter concentration area.

Abstract - Our study has focused on monitoring greater sage-grouse (Centrocercus urophasianus; hereafter 'sage-grouse') habitat use and survival during winter relative to the Normally Pressured Lance (NPL) natural gas development project in Sublette County, Wyoming. The NPL development project has the potential to include a maximum of 3,500 wells, some of which will occur in the Alkali Creek and Alkali Draw winter sage-grouse concentration areas (WCA) where large numbers of grouse utilize winter habitat. This population includes both residents of the local area and migratory individuals from surrounding areas in the Upper Green River Basin including grouse associated with leks within designated Core Area Protection habitat. The record of decision from the Bureau of Land Management (which administers 96% of the NPL) provides for two development scenarios depending on the results of a study monitoring the response of sage-grouse as the development of the NPL is initiated. Our objectives were to monitor habitat selection and survival at the intersection of the NPL Development Area 1 and the WCAs (treatment), and surrounding areas unaffected by NPL development (control), to guide the development and post-development evaluation of the NPL project in an adaptive management framework. Between February 2019 and December 2022, we captured 263 female sage-grouse and equipped them with GPS transmitters. We have also received location data from 26 grouse equipped with GPS transmitters from a concurrent unrelated study. We have collected location and survival data for about 92,746 bird-days from 270 sage-grouse. Of these, we obtained 31,385 bird-days during winter (1 Dec–14 Mar). The GPS transmitters record between 4 and 61 locations per bird-day depending on the season and the model of transmitter. Of the grouse monitored, 52% were classified as treatment grouse and 48% as control grouse based on the distribution of their winter locations. Substantial areas of winter habitat were used outside the NPL-WCA study area by GPS-marked grouse caught within the NPL-WCA study area. The fidelity of winter range use from one year to the next was 76%. The median date of arrival to habitat associated with the NPL-WCA study area was 23 November and the median date of departure was 28 March. The survival probability was 0.880 (SE = 0.019) during winters 2018–2023. Our observations on grouse behavior and demographic rates over multiple winters with a variety of winter weather conditions have revealed a significant influence of winter weather on grouse behavior (e.g., timing of interseasonal movements) but little apparent effect on grouse survival or reproductive success. Seventy-five percent of the treatment grouse nested within designated core breeding areas to the north. We finished collecting pre-development data in July 2023. We are preparing a final report (in conjunction with Clawson Statistical Services LLC) detailing analyses of the factors affecting the survival and habitat selection of treatment and control grouse during the pre-development phase of the NPL. If funding becomes available, and dependent on future development plans, we are in a position to proceed with a monitoring study to determine if grouse are responding to lower-level development if development is substantially reduced from what was originally proposed, which will likely be the case according to Jonah Energy LLC. We will also be prepared to initiate a full study addressing all objectives with a before-after control-impact design if appropriate.

Sage-Grouse Winter Concentration Area (WCA) Delineation - Pinedale WGFD Region
April 19, 2023 - Summary for final development of WCA polygons:

During 2019-2022 analysis work was conducted using documented winter sage-grouse observations (December 1 – March 15) to develop Resource Selection Function (RSF) models along with other potential methods to delineate WCA. Two reports are available from this data and RSF analysis work as identified below.

Millspaugh J. J., and Clawson M. V. 2020. Sage-Grouse Winter Concentration Modeling and Delineation for the Pinedale Region of Wyoming.

Millspaugh J. J., and Clawson M. V. 2022. Refinement of Sage-Grouse Winter Concentration Modeling and Delineation for the Pinedale Region of Wyoming.

Two RSF models from the most recent report (Millspaugh 2022) were determined as the best top models. One of the top models analyzed the data for the entire region (singular model), referred to as the "SageGrouse_RPA_2020_Top15%". The other top model analyzed data based on 3 individual areas (regional model), referred to as the "Regional_RPA_2020_Top30".

Regional field personnel evaluated both the singular and regional model outputs (maps) along with sage-grouse live observation points and sage-grouse global positioning system (GPS) transmitter points to develop final delineated WCA polygons. Over 95% of the observation data are from years 2004 -2022 and GPS data from 2014 to present. During this evaluation process, it was determined that the singular model (SageGrouse_RPA_2020_Top15%) fit the overall observation data better and was used as the primary model template for final WCA polygon development. The regional model map output was more extensive (larger area) with more habitat that did not include documented sage-grouse observations and therefore was not utilized for final development of WCA polygons.

WCA polygons were digitized at a fine scale using the singular model map output, imagery data, along with the observation and GPS data as mentioned above. These final WCA polygons both include and exclude some modeled habitat based on observation data points. In some instances areas outside the modeled habitat were included if observation data points with larger flocks (>50 birds) were located near the modeled boundary. In addition, small (smaller than 1280 acres or 2 square miles) isolated modeled areas were not included. Overall, the WCA polygons are comprised of 47,031 fewer acres than the modeled habitat.

One existing WCA (Alkali Creek WCA) was designated in the Pinedale Region in 2015. This Alkali Creek WCA was also delineated from an RSF model, although not all the model designated/mapped area was included at that time and only the modeled habitat within the identified Normally Pressured Lance Gas Development Project (NPL) was designated. A similar evaluation was conducted using the past RSF model output from 2014 and sage-grouse locations (WOS observations and transmitters) to develop a revised and expanded Alkali Creek WCA polygon.

A total of 7 individual WCA polygons (7 areas combined = 239,471 acres) are identified and delineated for future designation consideration, these include the following:

- Elk Mountain South: 48,794 acres; 13,339 live birds – 4,477 max/yr (WOS); 179 GPS locations (1 loc/bird/day)

- East Fork: 52,472 acres; 17,176 live birds – 3,878 max/yr (WOS); 2,542 GPS locations (1 loc/bird/day)
- Two Buttes: 4,966 acres; 1,269 live birds – 382 max/yr (WOS); 139 GPS locations (1 loc/bird/day)
- West Mesa: 17,518 acres; 13,558 live birds – 3,866 max/yr (WOS); 2,705 GPS locations (1 loc/bird/day)
- Ryegrass/Grindstone: 20,208 acres; 8,604 live birds – 1,475 max/yr (WOS); 1,776 GPS locations (1 loc/bird/day)
- Meadow Canyon/Muddy: 23,184 acres; 4,268 live birds – 976 max/yr (WOS); 482 GPS locations (1 loc/bird/day)
- Alkali Creek Expanded: 72,329 acres; ~1700 max/yr (WOS); 10,145 GPS locations (1 loc/bird/day)

Sage-Grouse Working Group:

The UGRBWG was formed in March of 2004. The group is comprised of representatives from agriculture, industry, sportsmen, public at large, conservation groups, and government agencies (federal and state). The purpose of the UGRBWG is to work towards maintaining or improving sage-grouse populations in the Upper Green River basin. The group is directed to formulate plans, recommend management actions, identify projects, and allocate available funding to support projects that will benefit sage-grouse. The Upper Green River Basin Sage-Grouse Conservation Plan was finalized in May of 2007 and can be found on the WGFD website (https://wgfd.wyo.gov/Habitat/Sage-Grouse-Management). This plan identified past, proposed, and ongoing projects; recommended management activities; funding sources; and other relevant sage-grouse information within the UGRBWGA intended to maintain and/or increase sage-grouse populations. The Working Group completed an addendum to this 2007 plan (Upper Green River Basin Sage-Grouse Conservation Plan Addendum – 2014) that provides updated information on activities, projects, and management strategies within the UGRBWGA. Appropriation of State monies approved for sage-grouse projects during past years have been allocated to the UGRBWG for local conservation measures that benefit sage-grouse. Virtual fencing, research projects, and cheatgrass inventory/control projects account for the majority of allocated funds granted to the UGRBWG in recent years.

Management Summary:

Data collected and reported in this 2023-2024 Sage-Grouse Job Completion Report (June 2023 thru Dec 2024) gives insight to population trends. Analysis of lek trend data indicates that the sage-grouse populations steadily increased from 2003 to 2007, dropped slightly in 2008, continued to decline through 2011, stabilized through 2014, increased significantly in 2015, followed by a relatively stable population in 2016 and 2017, population decline in 2018-2021, stabilized in 2022-2023, and increased in 2024. Lek trend data suggest grouse populations were at the lowest level with the highest level occurring in 2007.

Lek monitoring in the UGRBWGA showed a 146% increase in the peak number of males per lek from 2003 to 2007 as males increased from 28 males/lek to 69 males/lek. This trend reversed after 2007, as the number of males/lek declined by 48% dropping to 36 males/lek by spring of 2014.

During 2015, lek counts showed a 47% (53 males/lek) increase followed by an 8% increase in 2016, 4% decrease in 2017, 23% decrease in 2018, 21% decrease in 2019 a decrease of 9% in 2020 (30 males/lek), a continued decrease of 15% in 2021(25 males/lek), remained static in 2022 and 2023, and increased 56% (38 males/lek) in 2024. Sage-grouse leks within developing gas fields continue to show declines and lek abandonment regardless of lek trends outside of gas development, indicating negative impacts to sage-grouse in and near natural gas fields. Existing leks within non-core habitats and within gas development fields will be subject to further impacts.

Sage-grouse hunting season dates, season length, and bag limits have remained similar since 2002, running from mid to late September for 9-15 days with a daily bag limit of 2 birds and a possession limit of 4 birds. Although season length and bag limits have remained similar since 2002, overall harvest and hunter participation has varied somewhat, while some harvest metrics (# birds taken/day, and # days/hunter) have remained similar in past years. Overall hunter numbers has not shown a correlation with grouse trends as one would expect and has remained somewhat similar during the past 10-year period (**Figure 4)**. Variation in hunter participation can be affected by hunting season structure, weather conditions, population trends, and hunter perceptions of sage-grouse populations.

Wing collection from barrels (drop locations) continues to provide good sample sizes to determine overall chick survival trends within the UGRBWGA. During 2008-2024 wing collections ranged from 21% to 58% of the reported harvest. The sample size of 500 wings in 2023 accounted for 23% of the reported harvest while the 2024 sample of 411 wings accounted for 44% of the harvest. These annual wing samples can vary significantly based on weather conditions affecting hunter participation, especially during the weekend days of hunting season. Overall, some correlation exists between trends in wing sample sizes and harvest, and provides managers the most reliable data for determining annual reproductive rates in the UGRBWGA.

Trends in chicks/hen derived from wing collections continue to show a correlation with following year lek trends. An increase (or decrease) in the number of chicks/hen in the harvest typically results in similar trends documented on leks the following year(s). In general, a chick/hen ratio below 1.0 has shown declines in overall male lek attendance the following spring, 1.0 to 1.2 chicks/hen has shown stable attendance, and a chick/hen ratio greater than 1.2 has shown increases in lek attendance in the UGRBWGA. During the past 5 years (2020-2024) the chicks/hen ratio has varied from 0.6 to 1.8 and averaging 1.0 chicks/hen, correlating to little change from 2020-2023 and the recent increase in 2024 in male lek attendance.

Above normal precipitation during 2004 and 2005 during key periods (specifically in the spring and early summer) contributed to increased sage-grouse numbers due to enhanced production and juvenile survival in the Upper Green River Basin. Declining chick survival was documented in 2006 and 2007 caused by spring and summer drought conditions in the Upper Green River Basin. Male sage-grouse lek numbers declined from 2007-2011 and remained stable from 2012-2014. Good to above average spring precipitation during 2008-2011 led to good herbaceous production, which should have helped turn around the recent declining trends in the UGRBWGA. It appears the cold temperatures during the spring of 2009 and 2010 impacted reproduction resulting in further declines in lek numbers in 2010. Spring moisture in 2011 resulted in very good habitat production, and most likely contributing to the slight increase in bird numbers documented during the spring of 2012. Drought conditions in 2012 and 2013 most likely attributed to poor chick survival as spring temperatures were near normal, resulting in little change on spring lek counts in 2014. In 2014, good

forage production was the result of increased precipitation during the fall of 2013 and spring of 2014 which likely contributed to increased male lek counts in 2015. Although the winter of 2014-15 was mild with low precipitation, the spring of 2015 had above average precipitation, primarily attributed to a very wet May, apparently resulting in very good chick production. The 2015-2016 winter and 2016 spring conditions were very similar to the previous year with dry winter and wet spring conditions, but resulted in poor chick production and similar lek counts. The 2016-17 winter conditions were severe with heavy snow loads and cold temperatures followed by a dry spring, yet lek counts in 2017 were similar to those recorded in 2016. The 2017-18 winter was mild with low snow accumulations and above average temperatures followed by a relatively wet spring, and a decline in 2018 lek counts. The 2018-19 winter resulted in late persistent snow and cold temperatures through the spring of 2019, and a decline in 2019 lek counts. The 2019-20 winter had average snow and cold temperatures with a slight decline in 2020 lek counts. The 2020-2021 winter had very low snow and average temperatures with a decline in 2021 lek counts. The 2021-2022 winter had below average snow and average temperatures followed by dry spring conditions and a slight decline in 2022 lek counts. The 2022-2023 winter had well above average snow and below average temperatures with similar 2023 lek counts. The 2023-2024 winter was very mild with below average snow and above average temperatures followed by average spring moisture and a significant increase in 2024 lek counts. Summer and fall conditions were dry with below average moisture in 2024. The predictability of factors that determine nest success and chick survival remains complex and is likely more dynamic than just climate conditions such as precipitation and temperature trends, although cold and wet weather events around nest hatch appears to influence chick production and survival in the UGRBWGA located at relatively higher elevation than most other breeding habitat range-wide.

The current amount and rate of natural gas development in the Upper Green River Basin has and will continue to impact sage-grouse habitat and localized populations. Lek monitoring data has shown lower male attendance and a high rate of lek abandonment within and adjacent to developing gas fields. Sage-grouse studies and research conducted in the UGRBWGA has also documented impacts to grouse from gas development (Doherty el al. 2008, Green et al. 2016, Holloran et al. 2006, Holloran et al. 2007, Kaiser 2006, Kirol et al. 2020, Walker et al. 2007). Direct, indirect, and cumulative impacts to sage-grouse from gas and residential development will continue to challenge managers to maintain current grouse numbers.

Recommendations:

1. Continue to monitor sage-grouse leks and look for new and previously undocumented ones.
2. Continue to monitor and provide input on natural gas development/sage-grouse projects being conducted.
3. Continue to place wing barrels in enough locations to obtain an adequate and representative sample to derive sex/age and harvest trend information.
4. Continue existing efforts and encourage new efforts to document and identify important sage-grouse areas (breeding, brood rearing, and winter).
5. Continue to work with GIS personnel and land managers to create and update seasonal range maps (breeding, summer/fall, and winter) to aid land managers in protecting and maintaining important sage-grouse habitats. Delineation of winter concentration areas will be a priority.
6. Continue to identify needed sage-grouse research, data collection efforts, project proposals, development mitigation, and funding.

7. Implement proposals and management recommendations identified in the Upper Green River Basin Sage-Grouse Working Group Conservation Plan and Plan Addendum where possible.

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Upper Snake River Basin

Job Completion Report

Prepared By: Alyson Courtemanch, North Jackson Wildlife Biologist

Period Covered: 6-1-2023 to 12-31-2024

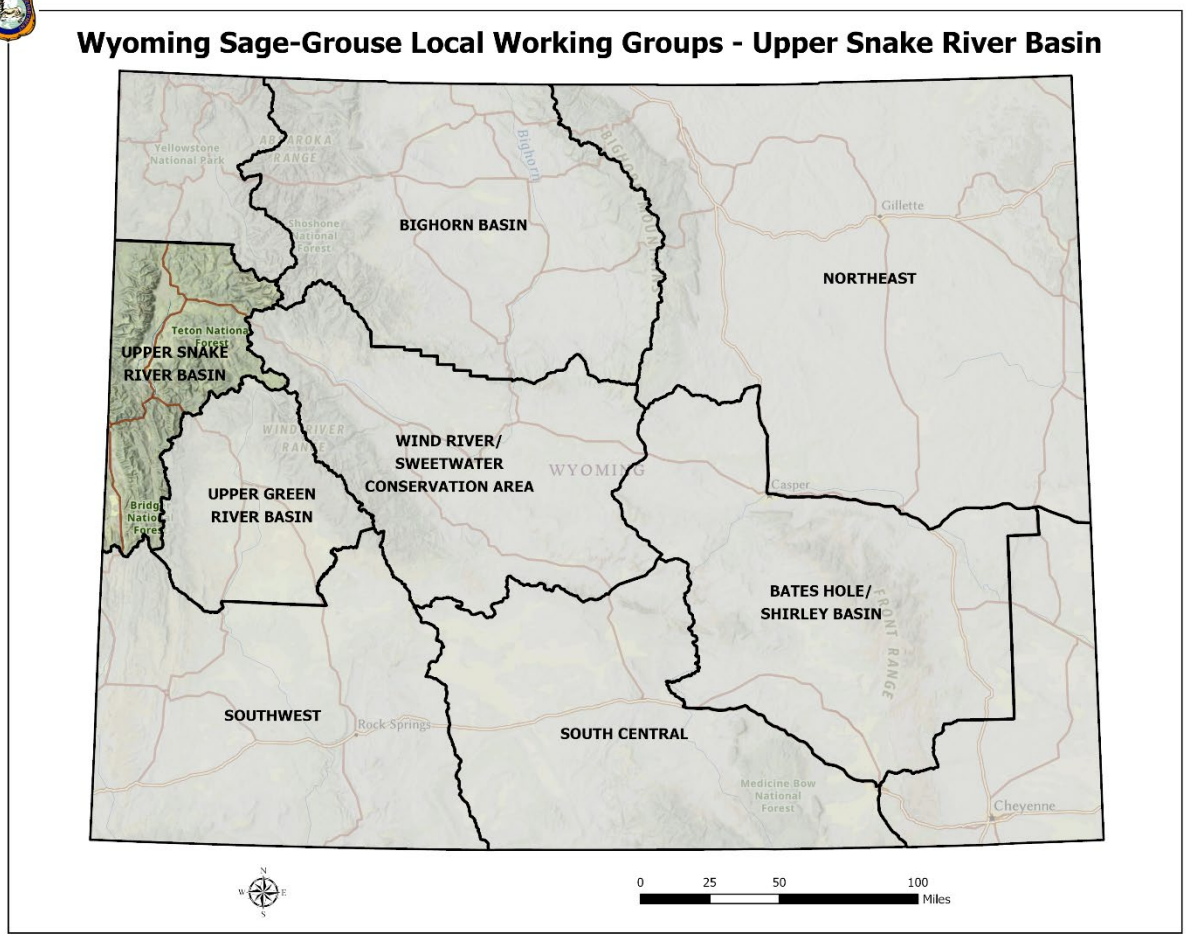

Table 1: Sage-Grouse Lek Characteristics

	Group	N	Percent
BLM Office			
	Pinedale	17	100%
Biologist			
	Jackson	17	100%
Classification			
	Occupied	10	58.8%
	Undetermined	1	5.9%
	Unoccupied	6	35.3%
County			
	Teton	17	100%

	Group	N	Percent
Land Status			
	National Park	12	70.6%
	USFS	2	11.8%
	USFWS	3	17.6%
Lek Status			
	Active	7	41.2%
	Inactive	9	52.9%
	Unknown	1	5.9%
Management Area			
	A	17	100%
Region			
	Jackson	17	100%
Warden			
	North Jackson	15	88.2%
	South Jackson	2	11.8%

Table 2: Leks Counted

Year	Occupied	Counted	Percent Counted	Peak Males	Average Peak Males
2015	15	13	86.7%	210	26.2
2016	14	14	100%	215	21.5
2017	13	13	100%	158	17.6
2018	13	13	100%	95	11.9
2019	13	13	100%	52	5.8
2020	13	12	92.3%	67	8.4
2021	13	13	100%	53	8.8
2022	12	12	100%	70	11.7
2023	12	12	100%	93	11.6
2024	10	10	100%	75	10.7

Occupied - Must have been active once during previous 10 years, calculated based on the official definitions

Average Peak Males - Includes only those leks where one or more strutting males were observed. Does not include "Active" leks where only sign was documented

Table 3: Leks Surveyed

Year	Occupied	Surveyed	Percent Surveyed
2015	15	0	0%
2016	14	0	0%
2017	13	0	0%
2018	13	0	0%
2019	13	0	0%
2020	13	0	0%
2021	13	0	0%
2022	12	0	0%
2023	12	0	0%
2024	10	0	0%

Occupied - Must have been active once during previous 10 years, calculated based on the official definitions

Average Peak Males - Includes only those leks where one or more strutting males were observed. Does not include "Active" leks where only sign was documented

Table 4: Leks Checked

Year	Occupied	Checked	Percent Checked	Peak Males	Average Peak Males
2015	15	13	86.7%	210	26.2
2016	14	14	100%	215	21.5
2017	13	13	100%	158	17.6
2018	13	13	100%	95	11.9
2019	13	13	100%	52	5.8
2020	13	12	92.3%	67	8.4
2021	13	13	100%	53	8.8
2022	12	12	100%	70	11.7
2023	12	12	100%	93	11.6
2024	10	10	100%	75	10.7

Occupied - Must have been active once during previous 10 years, calculated based on the official definitions

Average Peak Males - Includes only those leks where one or more strutting males were observed. Does not include "Active" leks where only sign was documented

Table 5: Lek Status of Leks Checked

Year	Active	Inactive	Unknown	Known Status	% Active	% Inactive
2015	8	5	0	13	61.5%	38.5%
2016	10	4	0	14	71.4%	28.6%
2017	9	4	0	13	69.2%	30.8%
2018	9	4	0	13	69.2%	30.8%
2019	9	4	0	13	69.2%	30.8%
2020	8	4	0	12	66.7%	33.3%
2021	6	7	0	13	46.2%	53.8%
2022	7	5	0	12	58.3%	41.7%
2023	8	4	0	12	66.7%	33.3%
2024	7	3	0	10	70%	30%

Occupied - Must have been active once during previous 10 years, calculated based on the official definitions

Inactive - Confirmed no birds/sign present (see official definitions)

Table 6. Maximum male counts at leks in the Upper Snake River Basin Conservation Area, 1995-2024. "NC" denotes the lek was not checked that year, "0" denotes the lek was checked but no birds were seen, and grey cells denote the lek had not been discovered yet. Clark's Draw and Olllie's Draw leks were transferred to the Upper Green Conservation Area before the 2024 season (see document text).

Year	3 Bar H Road	Airport	Airport Pit	Antelope Flats	Bark Corral East	Bark Corral West	Beacon	Breakneck Flats	Clark Draw	Dry Cottonwood	McBride	Moulton East	Moulton West	NER-North Gap	NER-Simpson	Ollie's Draw	RKO	Spread Creek	Timbered Island
1995	NC	18		4	10		15				6	59	4	6	NC				
1996	NC	18		2	8		8				4	32	1	19	NC				
1997	NC	15		0	1		1				6	0	48	10	NC				
1998	NC	14		0	0		0				4	29	0	7	NC				
1999	NC	17		0	0		0				0	21	0	9	NC				
2000	NC	18		0	NC		NC	21			0	28	0	5	NC				
2001	NC	15		0	NC		NC	19			0	30	0	6	NC				
2002	NC	19		0	NC		24	9			0	28	0	4	NC				
2003	NC	25		0	NC		0	7			0	35	0	3	NC				8
2004	NC	17		0	2		0	14			0	54	0	4	NC				15
2005	NC	17		0	NC		0	16		6	NC	49	0	18	NC				17
2006	NC	23	6	0	0		4	21		9	0	44	0	30	0				20
2007	0	23	0	NC	1		NC	30		4	1	41	0	9	0			4	20
2008	0	16	0	NC	2	8	0	22		13	0	38	0	23	NC		12	5	26
2009	NC	10	2	0	5	NC	0	21		1	0	33	0	11	0		15	4	22
2010	NC	10	0	0	24	0	0	24	13	4	0	40	0	13	0		13	5	18
2011	0	11	0	0	0	10	0	5	13	0	0	27	0	21	0		10	15	0
2012	0	17	0	0	3	NC	0	14	14	0	0	44	14	18	3		8	0	7
2013	NC	17	0	0	0	0	NC	14	13	5	NC	46	NC	8	0		6	24	16
2014	NC	11	3	NC	10	0	NC	18	7	0	NC	61	NC	21	0		8	8	16
2015	NC	12	0	NC	0	11	NC	27	17	0	0	103	NC	10	0	NC	21	15	11
2016	NC	7	0	0	0	13	0	34	12	8	0	21	53	7	0	NC	48	6	18
2017	NC	10	0	NC	0	4	NC	22	13	0	0	36	46	4	0	5	15	5	16
2018	NC	13	0	NC	0	7	NC	8	5	0	NC	28	0	6	0	8	16	5	12
2019	NC	8	0	NC	0	1	NC	7	6	0	NC	14	5	1	0	4	8	1	7
2020	NC	7	0	NC	0	6	NC	3	NC	0	NC	24	0	12	0	NC	4	4	7
2021	NC	3	0	NC	0	0	NC	7	8	0	NC	22	0	1	0	0	10	0	10
2022	NC	2	0	NC	0	0	NC	4	16	0	0	23	0	0	0	6	20	6	15
2023	NC	2	0	NC	0	12	NC	3	6	0	NC	27	0	3	0	2	19	7	20
2024	NC	3	0	NC	0	0	NC	4	transferred	0	0	23	0	7	0	transferred	11	8	19

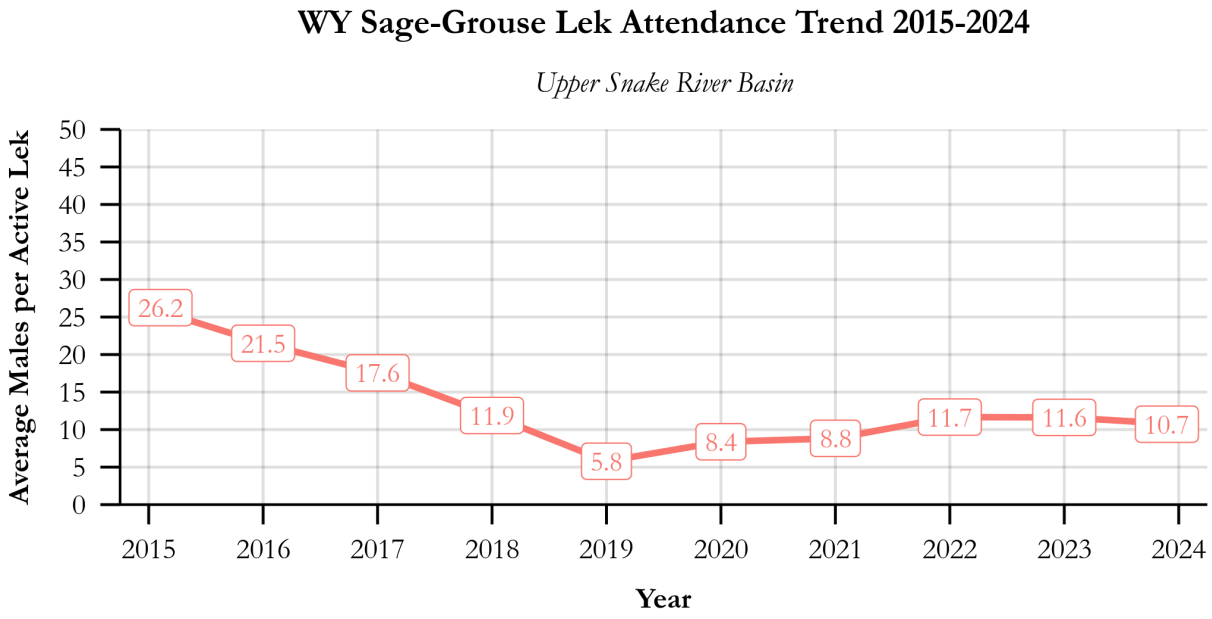

Figure 1: Average Peak Males

Figure 2: Average Peak Males

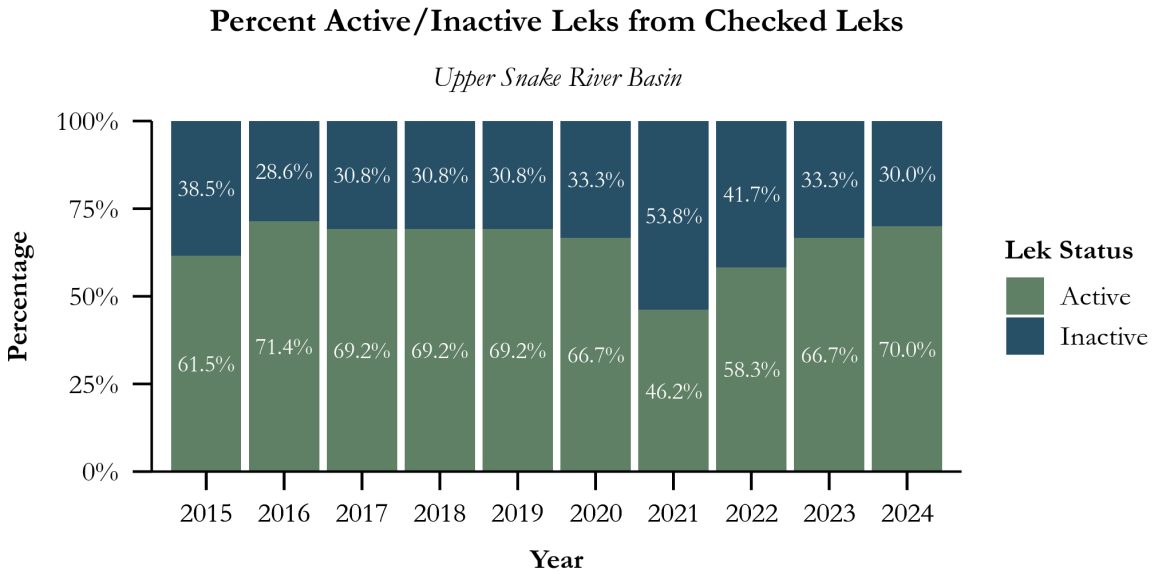

Figure 3: Lek Status

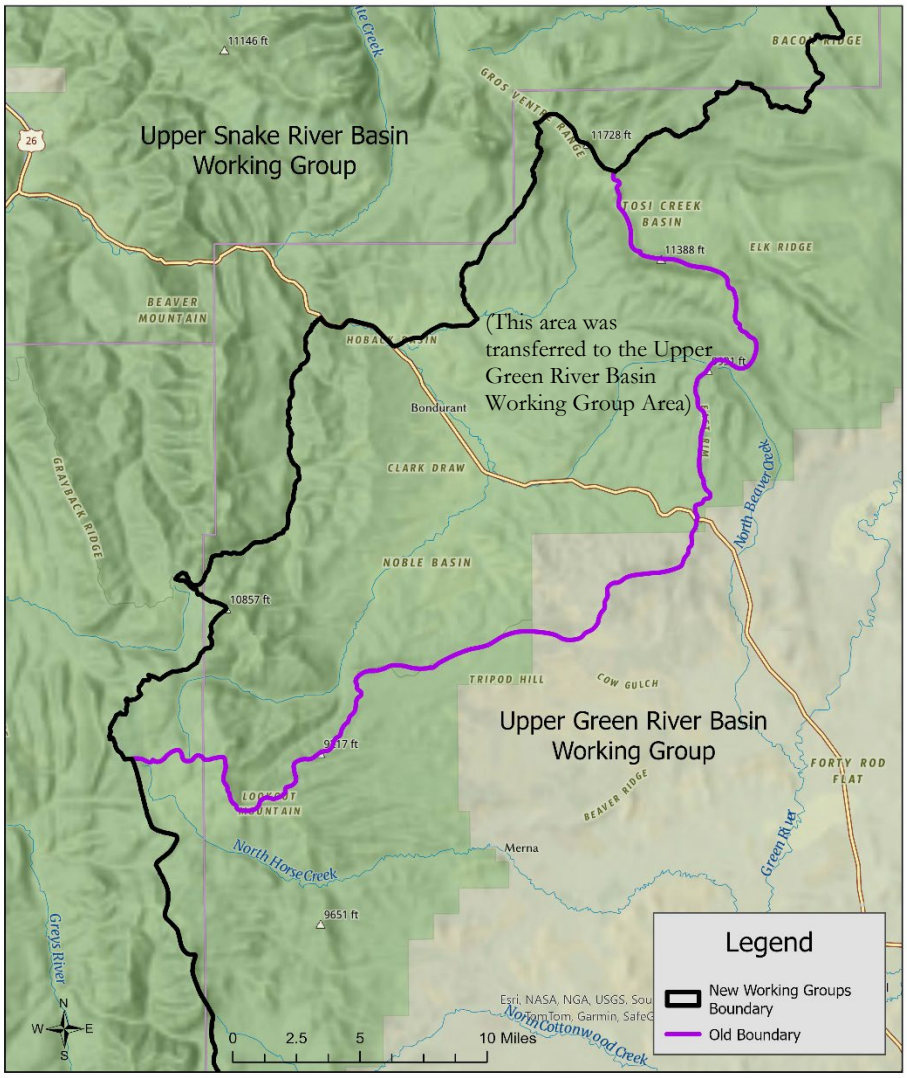

Figure 4. Map showing boundary change between Upper Snake River Basin and Upper Green River Basin Working Groups, 2024. The area between the purple line (old boundary) and black line (new boundary) was removed from the Upper Snake Basin Area and added to the Upper Green River Basin Area.

Lek Monitoring:

Sage-grouse data collection within the Upper Snake River Basin Conservation Area (USRBCA) focuses on lek surveys. Starting in 2005, lek counts in Grand Teton National Park (GTNP) and to some extent on the National Elk Refuge (NER), were coordinated to occur on the same days when it was logistically possible. This presumes that all leks in Jackson Hole constitute a sub-population and the leks in the Gros Ventre drainage constitute a second sub-population. No marked birds from the Gros Ventre leks have appeared on the Jackson Hole leks (Holloran and Anderson 2004, Bryan Bedrosian *pers. comm.*) and there is no evidence of current genetic flow from the Gros Ventre to Jackson Hole (Schulwitz et al. 2014).

Adjustment of working group boundary and reassignment of leks to Upper Green River Basin Area

Based on sage-grouse movement and genetic information, the Upper Snake River Basin Working Group, Upper Green River Basin Working Group, and Wyoming Game and Fish Department decided to adjust the boundary between the two working group areas near Bondurant, WY in 2024 (**Figure 4**). This resulted in two leks (Clark Draw and Ollie's Draw) being transferred from the Upper Snake River Basin Area to the Upper Green River Basin Area. The birds that attend these leks are much more associated with the population in the Upper Green River Basin Area. This change is reflected in the 2024 lek counts in which the Upper Snake River Basin Area decreased by two leks (from 19 to 17 leks). The adjusted boundary in this area is as follows: beginning at Hodges Peak, follow the divide between the Gros Ventre River and Hoback River northwesterly to Palmer Peak, follow the divide between Shoal Creek and Dell Creek southwesterly to the Riling Draw Road, southerly along the road to the Dell Creek Road, westerly along the road to U.S. Highway 191, westerly along the highway to Cliff Creek, southerly along Cliff Creek to the divide between the Greys River and the Hoback River, southerly along this divide to the divide between the Greys River and the Green River (**Figure 4**).

Lek counts

There are a total of 17 leks in the USRBCA: 10 leks are occupied (7 of these were active and 3 inactive this year (**Figure 3**)), 6 are unoccupied, and 1 is undetermined (**Table 1, Table 2**). The 3 occupied leks that were inactive this year were Bark Corral West, Moulton West, and Dry Cottonwood (**Table 6**). There were two leks that transitioned from occupied to unoccupied this year because this was the 10th year that no birds were observed; these leks are Bark Corral East and Airport Pit.

The peak number of males and average number of males per lek are used as the main measures of population trends over time in the USRBCA. The total peak males in 2024 was 75 and the average males per active lek was 10.7 (**Table 4**). Average peak number of males per active lek declined in the early 1990's but then rebounded in the early 2000s. Counts from 2009-2016 showed a generally increasing trend, however there was a sharp decrease from 2017–2019 (**Figure 2**). The average peak males per lek dropped to 5.8 in 2019, 8.4 in 2020, and 8.8 in 2021. Numbers have improved slightly in recent years but still remain well below the high of 26.2 average peak males in 2015 (**Figure 1**). The total number of males is also concerning. During the population low from 2019-2021, total peak males was 52-67 (**Table 2**). It has increased slightly in recent years, but is still well-below the highs of over 200 males in 2015 and 2016 (**Table 2**). Leks were difficult to access again this year due to late snow melt; many birds were observed strutting on nearly 100% snow. The Gros Ventre leks were visited twice on the ground and once via helicopter.

The sub-population in the Gros Ventre drainage is particularly concerning because these birds breed on only two known leks (Breakneck Flats and Dry Cottonwood). The Dry Cottonwood lek was last active in 2016. The Breakneck Flats lek had a high of 34 males in 2016, but since then has steadily declined, with only 4 males observed in 2024 (**Table 6**).

Local working group method compared to WGFD method for total peak males

Previous research on GPS-tagged sage-grouse has indicated that individual males move between leks throughout the season in Jackson Hole (leks in GTNP and National Elk Refuge; n=8). There is no evidence that birds move between the Jackson Hole leks and the Gros Ventre leks. Because of this

known movement between leks, the local working group is concerned that the WGFD method of using the high male count at each lek regardless of day results in double-counting birds and inflated numbers. Therefore, the local working group has coordinated lek counts to occur on the same day of the week for all Jackson Hole leks (n=8). Attempts are made to also count Gros Ventre leks on the same day as Jackson Hole, however, those visits have to be scheduled during optimal road condition time periods. When compared to the high male count using WGFD methodology, the local method is always lower but follows similar trends over time. For example, this year, the total peak males was 61 using the local method (57 males on Jackson Hole leks plus 4 males in the Gros Ventre) compared to 75 with the WGFD method. This is 19% difference. When the population is at very low numbers, the working group feels that using the local method better reflects true numbers and is important to demonstrate how concerningly low the numbers actually are. We recognize this method is not feasible in most other places due to the large number of leks, however, it is possible with the smaller numbers of leks in the Upper Snake River Basin Area.

Potential new leks in Gros Ventre drainage

Two potential new leks sites were discovered in 2024 in the Gros Ventre drainage, one on the west end of Bacon Ridge and one near the Soda Lake Road junction. For the last several years, managers have been flying a helicopter survey in the Gros Ventre drainage, searching for potential new leks. In recent years, we have observed single sage-grouse flushing at several locations on Bacon Ridge during the helicopter surveys, but have yet to confirm a lek. In 2023, a group of ~20 sage-grouse (mostly males) were flushed during a helicopter survey on the west end of Bacon Ridge, but observers could not confirm if they had been strutting. Later attempts were made to access this area from the ground, but it is impossible due to both Fish Creek and the Gros Ventre River at high flow during that time.

Therefore, we deployed 3 trail cameras and 3 automated recording units (ARU) in this area in March 2024 while rivers were still frozen and passable to attempt to detect strutting sage-grouse either by photos or sound recordings. The ARUs were funded by Teton Conservation District and the data were analyzed by Teton Raptor Center. The ARUs and cameras were programmed to begin recording on April 1. The ARUs detected many occasions of strutting male display sounds, calls, hen calls, and flapping wings. Some instances were very close to the ARUs and some farther away. There were multiple males detected, however, the recordings cannot distinguish a number. Detections started on April 4th and continued through mid-May. Most detections occurred between 4:10-6:00 am. On May 1, first light is at 5:45 am, therefore this may explain why we are missing these birds strutting during our helicopter flights. Unfortunately, no birds were observed on the trail cameras. This could be due to birds strutting behind the cameras because the exact location of the lek is unknown and/or most birds leaving before cameras turn on ½ hour before sunrise. In 2025, we plan to increase efforts to obtain a count on this likely new lek by 1) deploying ARUs again and additional cameras, 2) conducting helicopter flights on additional mornings, and 3) exploring the use of an infrared fixed wing flight and/or drones.

We flew another helicopter survey on April 20, 2024. We did not observe any strutting sage-grouse near the cameras or ARUs on Bacon Ridge. We flushed 3 males and 1 unknown sage-grouse at other locations on Bacon Ridge, but they were not displaying. We did observe 2 strutting males approximately ½ mile north of the junction of the Soda Lake Road and Gros Ventre Road in an area that previous wildlife biologist, Doug Brimeyer, had observed sporadic strutting males in the early 2000s. We plan to deploy additional cameras and ARUs at this location in 2025. This site is also accessible for ground observations, which will be added to the 2025 observation schedule.

Potential new lek in Grand Teton National Park

Four strutting male sage-grouse were observed at a new site near Ditch Creek in 2024. Grand Teton National Park staff conducted multiple visits and observed grouse each time. Females were also present and digging in the dirt, suggesting this could be a geophagy site. This location is in between the Moulton leks and Bark Corral West lek. Additional visits will be scheduled for 2025. If strutting males are observed for a second consecutive year, this lek could be added to the database.

Production:

No productivity data were collected on the population this year.

Harvest:

There are no sage-grouse hunting seasons in the USRBCA.

Habitat:

Pack Trail Fire

The Pack Trail Fire burned approximately 90,000 acres between Togwotee Pass and the Gros Ventre drainage from August–October, 2024. It burned approximately 3,000 acres of sage-grouse core area in the Gros Ventre drainage, mostly around Bacon Ridge, Fish Creek, and Cottonwood Creek. It burned within 2 miles of the Breakneck lek and ½ mile of the potential new Bacon Ridge lek. The primary concern from the fire will be new infestations of cheatgrass and/or other weeds in sage-grouse habitat. We are working with Bridger-Teton National Forest, Teton County Weed and Pest District, and Teton Conservation District on plans for weed surveying and mapping in summer 2025 followed up by treatments in summer/fall 2026.

Habitat projects

The Kelly Hayfields restoration project continued this year in GTNP, which is a project to remove smooth brome hayfields and reestablish a sagebrush community. Grand Teton National Park also continued a project south of the Jackson Hole Airport to hopefully establish a new lek and improve nesting and brood-rearing habitat near the historical McBride lek by doing vegetation treatments (eradicating smooth brome, treating weeds, and reseeding with native grasses and forbs), followed by using sage-grouse decoys and broadcast calls to lure birds to the area. The goal of this project is to offset impacts to the Airport lek and reduce the risk of plane strikes by enticing sage-grouse to shift their use away from the Airport to the area of the historical McBride lek.

Disease:

No disease data were collected on the population this year. No dead sage-grouse were found to test for highly pathogenic avian influenza (HPAI).

Conservation Planning:

The Upper Snake River Basin Sage-Grouse Conservation Plan was updated in March 2014 and can be found on the Wyoming Game and Fish Department (WGFD) website at:

https://wgfd.wyo.gov/wyoming-wildlife/sage-grouse-management/sage-grouse-local-working-groups

The Upper Snake River Basin Sage-Grouse Working Group met several times during the reporting period to plan lek monitoring schedules, review lek survey data, discuss and fund special projects, and review other issues affecting sage-grouse in the area.

Management Recommendations:

Following a population rebound in 2015 and 2016, the population underwent a significant decline from 2019-2021. Lek counts in spring 2019 were the lowest on record for this population. Numbers have increased slightly in recent years, but the population remains very low. Data collection and monitoring efforts continue at the local level. The Upper Snake River Basin Local Working Group has continued to voice concerns about this population at SGIT meetings and to WGFD.

Limited winter habitat continues to be the primary issue for this population. Therefore, protecting winter habitat is a priority. Continued documentation of sage-grouse distribution and habitat condition would be helpful to confirm seasonal distribution, movements, and habitat use. Key areas on public lands used by sage-grouse should be protected from management actions which could have adverse impacts on that habitat, including recreation disturbance. Wildfire suppression should be considered in occupied sage-grouse habitat in Jackson Hole and the Gros Ventre drainage. Restoration of native sagebrush habitats on lands formerly hayed in GTNP and the Gros Ventre drainage appears to have the greatest potential to expand and enhance habitat used by sage-grouse in the USRBCA. Protecting sagebrush habitat on private lands from rapidly expanding residential development is also important. Sagebrush restoration on private lands may also be an option in the future.

Specific actions include:

1. Continue to help coordinate lek surveys across jurisdictional boundaries.
2. Continue coordinating with other agencies to ensure periodic monitoring of historic, unoccupied or inactive leks.
3. Prioritize conducting counts on three potential new leks discovered in 2024 (1 in GTNP, 2 in the Gros Ventre drainage) and continue to search for new leks.
4. Work with partners to address impacts on sage-grouse core area from the Pack Trail Fire.
5. Work with Bridger-Teton National Forest to incorporate sage-grouse habitat protections in the new Forest Plan.
6. Continue to support GTNP's sagebrush habitat restoration projects in the Kelly Hayfields project and McBride lek project south of the Jackson Hole Airport.
7. Continue to work with land management agencies during the implementation of habitat improvement projects to minimize impacts to sage-grouse occupied habitats.
8. Implement the USRBWG Sage-Grouse Conservation Plan (2014). Work to implement the strategies and projects identified in the plan.

Wind River/Sweetwater River

Job Completion Report

Prepared By: Stan Harter, Lander Wildlife Biologist

Period Covered: 6-30-2023 to 12-31-2024

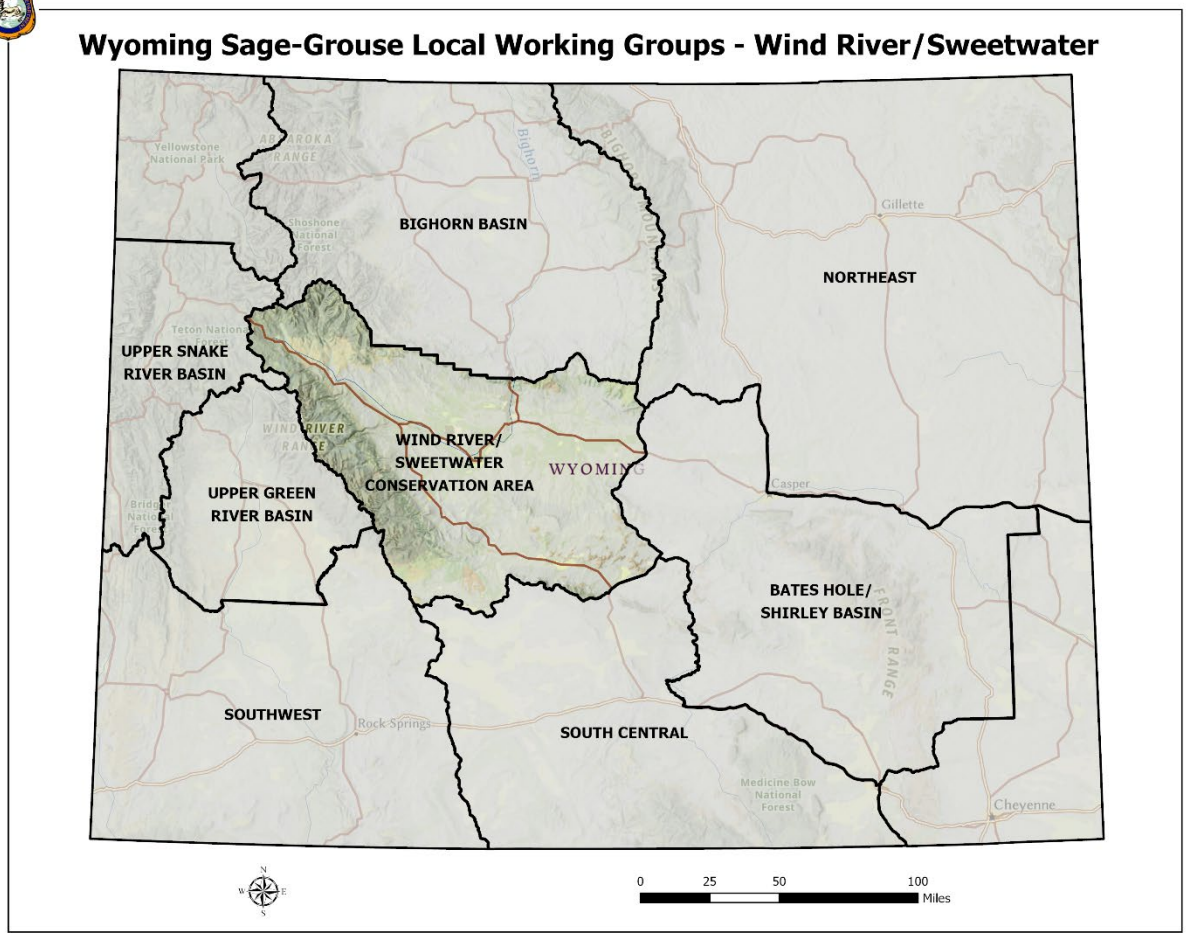

Table 1: Sage-Grouse Lek Characteristics

	Group	N	Percent
BLM Office			
		62	22.5%
	Casper	12	4.4%
	Lander	192	69.8%
	Rock Springs	7	2.5%
	Worland	2	0.7%
Biologist			
	WRR-USFWS	62	22.5%
	Casper	2	0.7%
	Dubois	69	25.1%
	Lander	140	50.9%
	Sinclair	1	0.4%
	Worland	1	0.4%
Classification			
	Occupied	210	76.4%
	Undetermined	17	6.2%
	Unoccupied	48	17.5%
County			
	Carbon	1	0.4%
	Fremont	245	89.1%
	Hot Springs	4	1.5%
	Natrona	24	8.7%
	Sweetwater	1	0.4%

	Group	N	Percent
Land Status			
	BLM	165	60%
	BOR	4	1.5%
	Private	31	11.3%
	Reservation	60	21.8%
	State	15	5.5%
Lek Status			
	Active	153	55.6%
	Inactive	43	15.6%
	Unknown	79	28.7%
Management Area			
	E	213	77.5%
	WR	62	22.5%
Region			
	Casper	2	0.7%
	Lander	211	76.7%
	WRIR	62	22.5%
Warden			
	Shoshone-Arapahoe Tribal	62	22.5%
	Dubois	1	0.4%
	Lander	81	29.5%
	North Riverton	27	9.8%
	South Riverton	65	23.6%
	West Casper	2	0.7%
	West Rawlins	37	13.5%

Table 2: Leks Counted

Year	Occupied	Counted	Percent Counted	Peak Males	Average Peak Males
2015	215	116	54%	4,589	44.1
2016	213	95	44.6%	4,694	55.2
2017	208	87	41.8%	3,499	44.3
2018	210	110	52.4%	3,678	38.7
2019	207	97	46.9%	2,416	31.4
2020	205	104	50.7%	2,181	26.3
2021	203	85	41.9%	1,503	23.1
2022	204	108	52.9%	2,264	28.7
2023	208	69	33.2%	1,620	31.8
2024	215	126	58.6%	4,107	39.9

Occupied - Must have been active once during previous 10 years, calculated based on the official definitions

Average Peak Males - Includes only those leks where one or more strutting males were observed. Does not include "Active" leks where only sign was documented

Table 3: Leks Surveyed

Year	Occupied	Surveyed	Percent Surveyed	Peak Males	Average Peak Males
2015	215	85	39.5%	1,595	25.3
2016	213	105	49.3%	2,748	33.9
2017	208	103	49.5%	2,542	33.4
2018	210	87	41.4%	1,402	22.3
2019	207	100	48.3%	1,195	17.1
2020	205	68	33.2%	605	15.1
2021	203	105	51.7%	874	14.3
2022	204	88	43.1%	723	14.8
2023	208	118	56.7%	2,070	27.6
2024	215	68	31.6%	1,341	31.2

Occupied - Must have been active once during previous 10 years, calculated based on the official definitions

Average Peak Males - Includes only those leks where one or more strutting males were observed. Does not include "Active" leks where only sign was documented

Table 4: Leks Checked

Year	Occupied	Checked	Percent Checked	Peak Males	Average Peak Males
2015	215	201	93.5%	6,184	37.0
2016	213	200	93.9%	7,442	44.8
2017	208	190	91.3%	6,041	39.0
2018	210	197	93.8%	5,080	32.2
2019	207	197	95.2%	3,611	24.6
2020	205	172	83.9%	2,786	22.7
2021	203	190	93.6%	2,377	18.9
2022	204	196	96.1%	2,987	23.3
2023	208	187	89.9%	3,690	29.3
2024	215	194	90.2%	5,448	37.3

Occupied - Must have been active once during previous 10 years, calculated based on the official definitions

Average Peak Males - Includes only those leks where one or more strutting males were observed. Does not include "Active" leks where only sign was documented

Table 5: Lek Status of Leks Checked

Year	Active	Inactive	Unknown	Known Status	% Active	% Inactive
2015	167	17	17	184	90.8%	9.2%
2016	168	11	21	179	93.9%	6.1%
2017	156	8	26	164	95.1%	4.9%
2018	158	14	25	172	91.9%	8.1%
2019	148	20	29	168	88.1%	11.9%
2020	126	21	25	147	85.7%	14.3%
2021	128	21	41	149	85.9%	14.1%
2022	130	30	36	160	81.2%	18.8%
2023	126	19	42	145	86.9%	13.1%
2024	147	18	29	165	89.1%	10.9%

Occupied - Must have been active once during previous 10 years, calculated based on the official definitions

Inactive - Confirmed no birds/sign present (see official definitions)

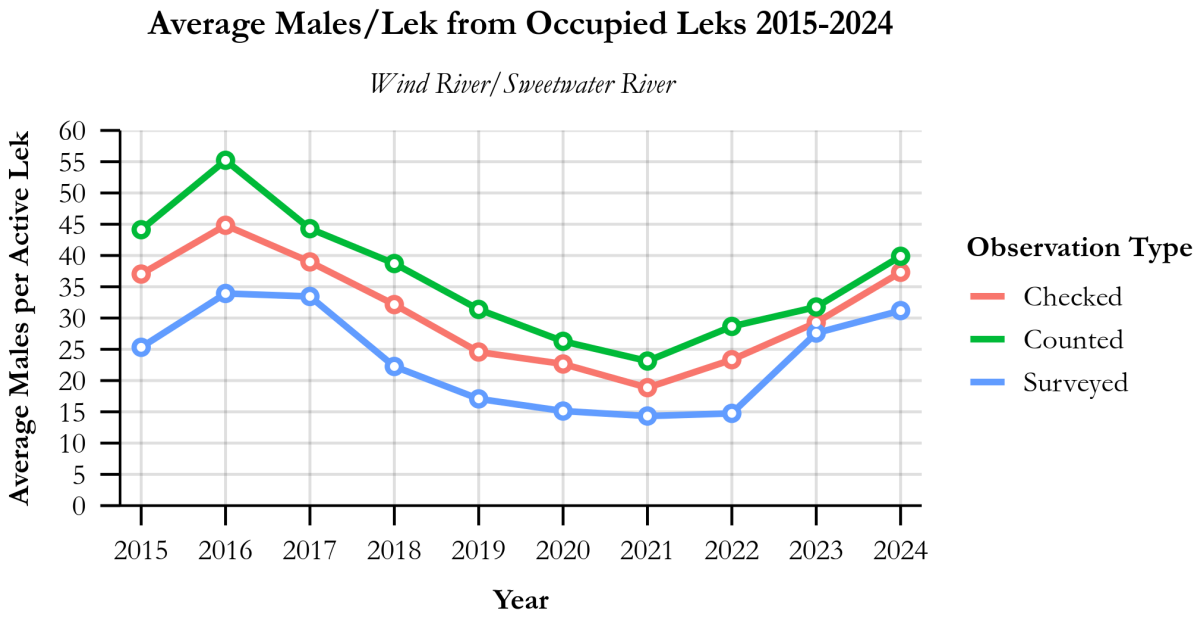

Figure 1: Average Peak Males

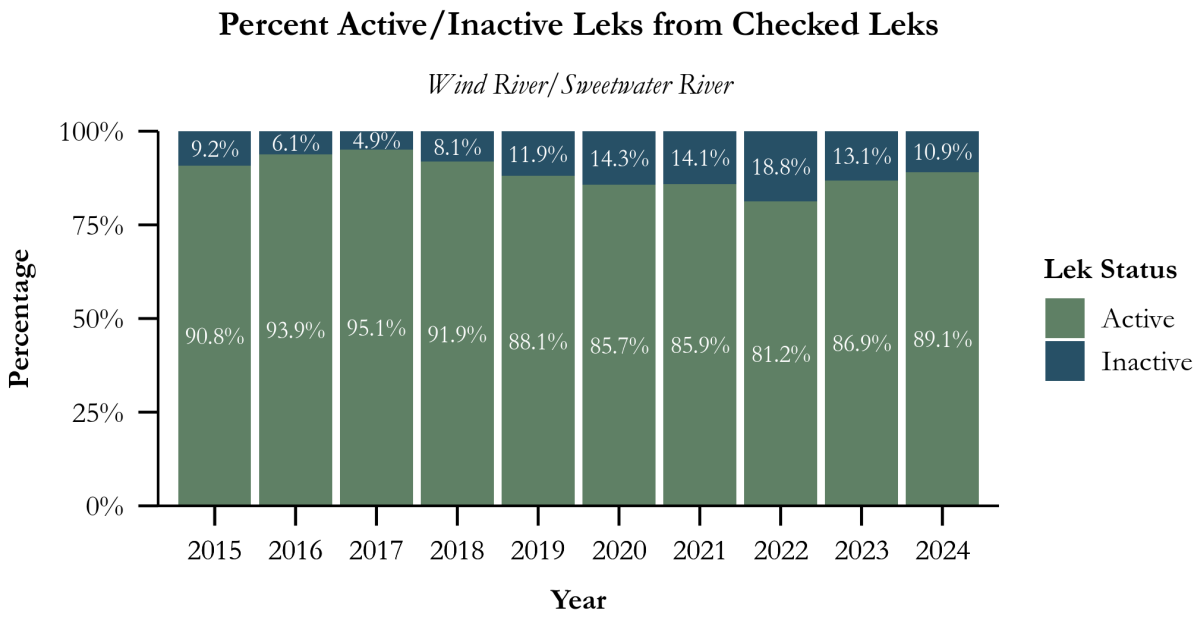

Figure 2: Lek Status

Table 6: Hunting Seasons

Year	Season Start	Season End	Length	Bag/Possession Limit
2015	Sep-19	Sep-30	12	2/4
2016	Sep-17	Sep-30	14	2/4
2017	Sep-16	Sep-30	15	2/4
2018	Sep-15	Sep-30	16	2/4
2019	Sep-21	Sep-30	10	2/4
2020	Sep-19	Sep-30	12	2/4
2021	Sep-18	Sep-30	13	2/4
2022	Sep-17	Sep-30	14	2/4
2023	Sep-16	Sep-30	15	2/4
2024	Sep-21	Sep-30	10	2/4

Table 7: Harvest Totals

Year	Harvest	Hunters	Days	Birds/Day	Birds/Hunter	Days/Hunter
2015	2,158	737	1,846	1.2	2.9	2.5
2016	1,910	922	2,264	0.8	2.1	2.5
2017	1,364	630	1,427	1.0	2.2	2.3
2018	2,250	970	2,519	0.9	2.3	2.6
2019	1,525	814	1,891	0.8	1.9	2.3
2020	1,115	610	1,767	0.6	1.8	2.9
2021	1,141	783	2,027	0.6	1.5	2.6
2022	2,337	1,209	2,991	0.8	1.9	2.5
2023	1,650	749	1,921	0.9	2.2	2.6
2024	1,506	725	1,565	1.0	2.1	2.2
Average	**1,696**	**815**	**2,022**	**0.9**	**2.1**	**2.5**

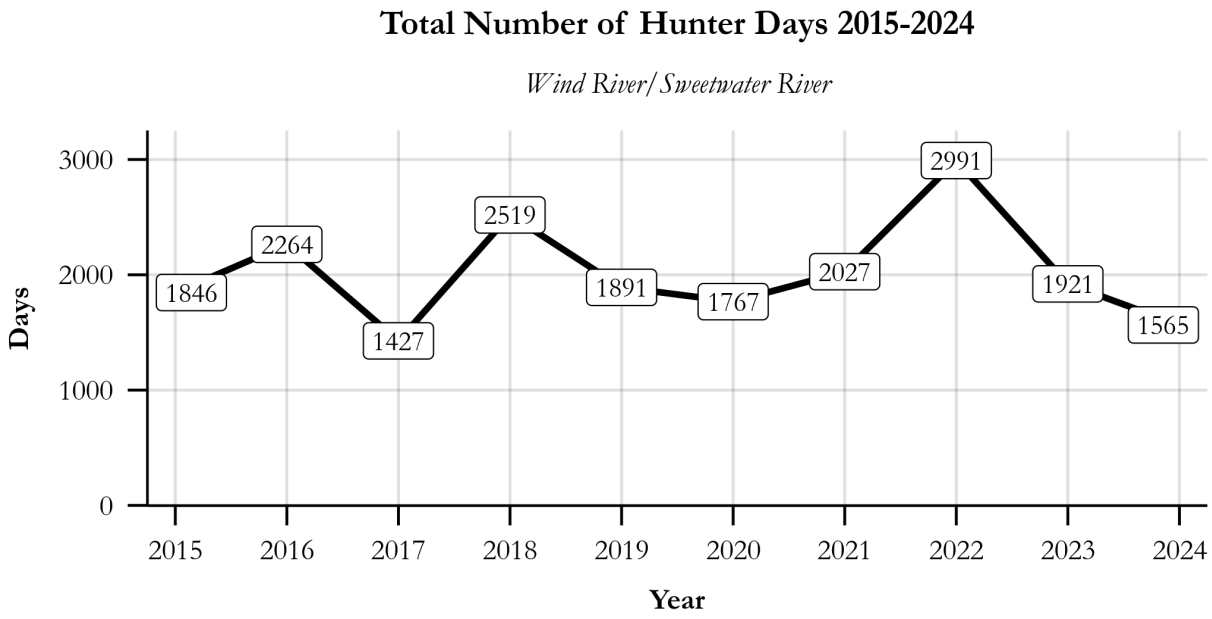

Figure 3: Harvest Days

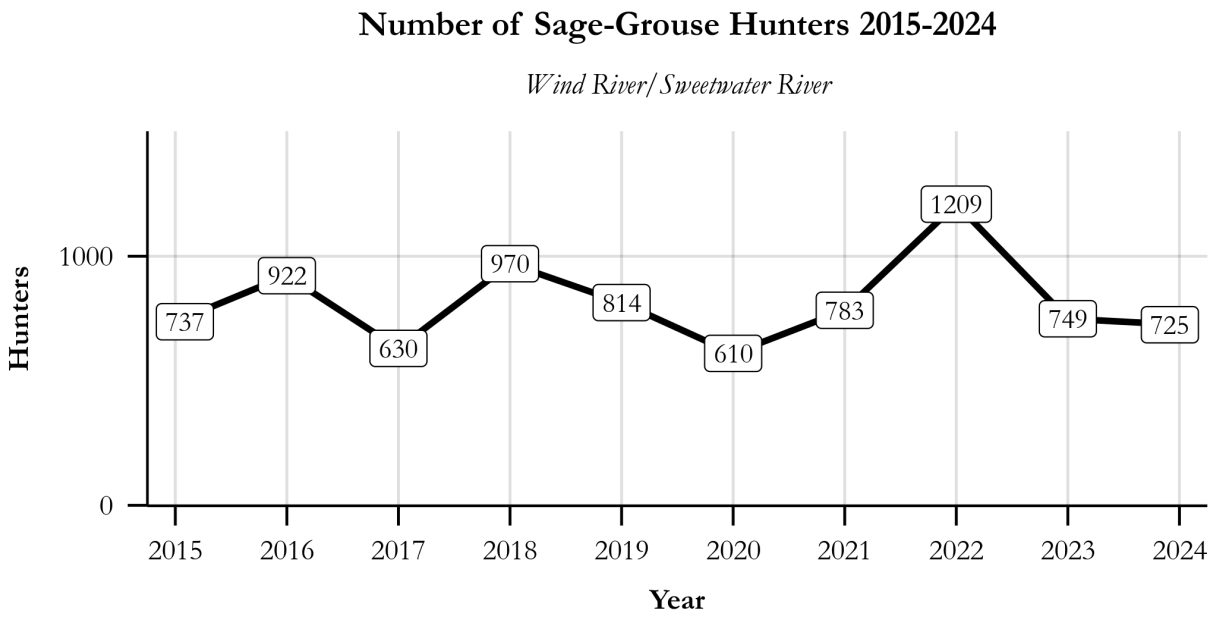

Figure 4: Hunters

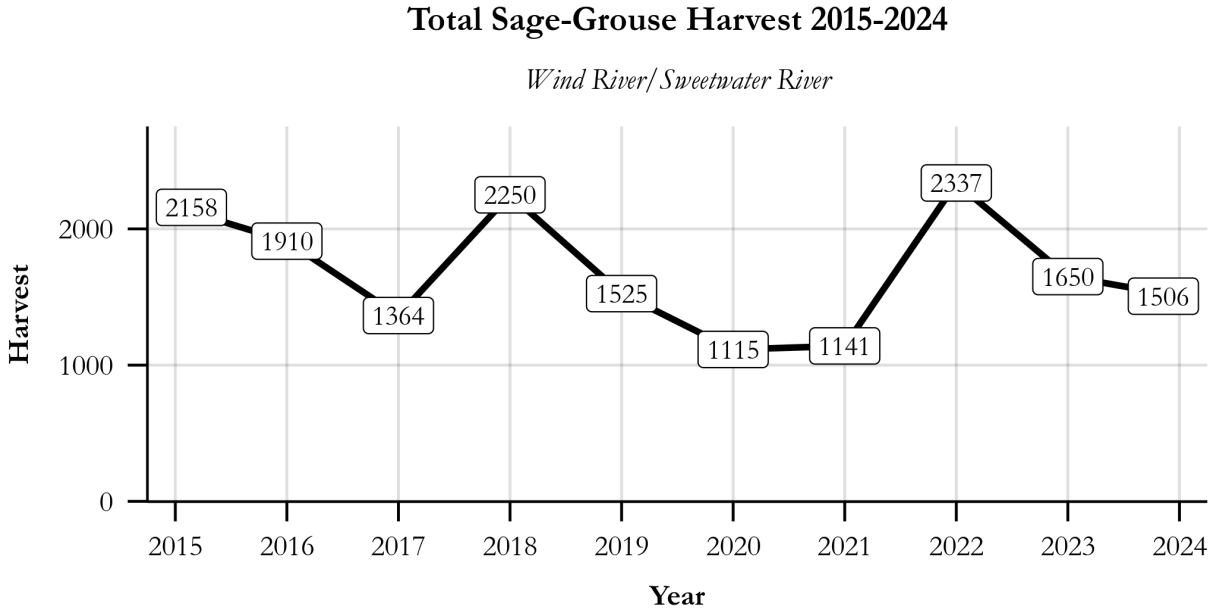

Figure 5: Total Harvest

Table 8: Harvest Composition

		Percent Adult		Percent Yearling		Percent Chick		
Year	Sample Size	Male	Female	Male	Female	Male	Female	Chicks/Hens
2015	513	11.3%	21.2%	5.3%	6.6%	21.4%	34.1%	2.0
2016	307	16.9%	29.6%	3.9%	11.1%	16.9%	21.5%	0.9
2017	393	18.8%	28.5%	2.8%	2%	20.9%	27%	1.6
2018	520	17.9%	29%	6.5%	10.4%	13.7%	22.5%	0.9
2019	311	14.5%	22.5%	4.2%	10%	19%	29.9%	1.5
2020	390	12.8%	27.9%	5.1%	9%	17.4%	27.7%	1.2
2021	289	6.2%	34.6%	3.1%	8%	14.2%	33.9%	1.1
2022	285	9.1%	30.9%	2.5%	7.4%	21.8%	28.4%	1.3
2023	503	9.1%	17.1%	5.2%	10.1%	21.5%	37%	2.1
2024	626	15%	16.9%	8.6%	9.7%	24%	25.6%	1.9

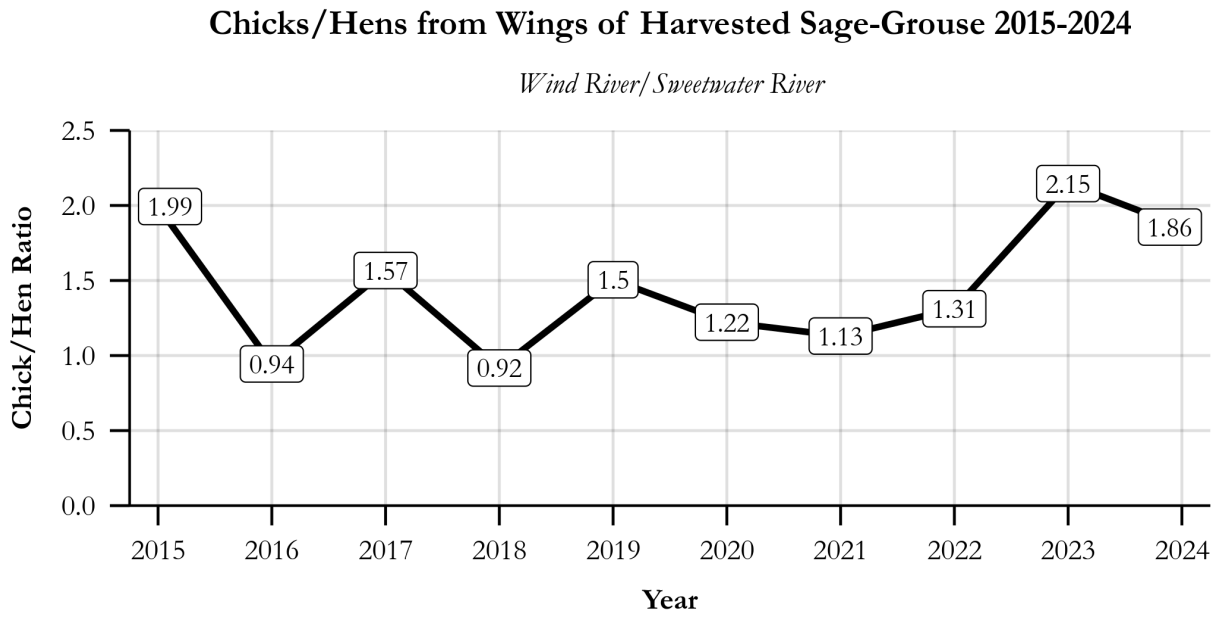

Figure 6: Chick/Hen Ratio

Lek Monitoring:

Sage-grouse are generally found throughout the Wind River-Sweetwater River Conservation Area (WRSRCA), except in heavily forested, agriculturally developed, or urbanized areas. Sage-grouse leks in the WRSRCA are located within the Lander WGFD Region, 4 BLM Resource Areas, 5 Wyoming counties, and the Wind River Reservation (WRR). In 2024, there were 210 occupied leks within the conservation area, along with 48 unoccupied and 17 undetermined leks (**Table 1**). The majority of leks of all 3 classification levels occur within the 3 core areas that are partially or entirely within the WRSRCA (Crowheart, Greater South Pass, and Washakie). It is highly likely there are leks within the WRSRCA that have not yet been documented, as evidenced by at least 149 (average 6 per year) new or newly discovered leks being documented in the WRSRCA through intensive monitoring and search efforts since 1995. Eight new leks were discovered in 2024. Similarly, there likely are leks that have been abandoned or destroyed that are undocumented. Lek attendance at all leks checked has fluctuated with cyclical patterns since 1995, with peaks occurring every 6-10 years. Following the most recent low attendance mark in 2021, the WRSRCA has had lek attendance increases of 24% in 2022, 26% in 2023, and 27.3% in 2024 (**Table 4)**. These lek attendance data mimic Wyoming's statewide trends, but with generally higher numbers than the Wyoming averages.

Personnel from WGFD, BLM, USFWS, and Shoshone-Arapahoe Tribal Fish and Game (SATFG), assisted by consultants and volunteers, checked 194 (90%) of the 215 known occupied leks in the WRSRCA in 2024 (**Table 4)**. The percentage of leks checked was similar to recent years, but the percentage of count leks was the highest in over a decade and 25% more than in 2023, with better weather and road conditions in 2024. Of those leks checked, 126 were counted and 68 were surveyed (**Table 2** and **Table 3)**. Of the 165 leks where status was confirmed in 2023, 147 (89.1%) were active and 18 (10.9%) were inactive (**Table 5)**.

Average male attendance for all leks checked improved from 29.3 males per active lek checked in 2023 to 37.3 in 2024. Average maximum male attendance at count leks also increased from 31.8 males per active lek in 2023 to 39.9 in 2024, above the count lek average since 2015 (36.4), but 47.5% below the long-term peak observed in 2006 (76.0).

A subset of 17 leks in the Government Draw area east of Lander which have been counted since 1995 also had a lek attendance increase in 2024, with a 32% increase in male attendance from 49.5 males per active lek in 2023 to 65.2 males per active lek in 2024. This area has outperformed the attendance averages for the entire WRSRCA over the last few years, with the average males at all leks checked in this subset in 2024 being the best since 2015 and 4th best since 1995, while the WRSRCA overall average lek attendance in 2024 was only the 3rd best since 2015. New leks found within the Government Draw area in 2024 are not included in this analysis.

Production:

Summer brood data are very limited in the WRSRCA, so wing data collected from harvested sage-grouse provide a more reliable indicator of recruitment than do brood survey data. Wings are collected from hunters at 8 wing barrels placed annually at exit roads from major hunting destinations in Sage-Grouse Management Area E and at the Lander Game Check Station. These wings typically provide significant data, due to a relatively high number of sage-grouse hunters in the area. The number of wings collected usually fluctuates over the years (mimicking lek attendance trends), with 2023 and 2024 having increases over 2022 - the lowest in the last 10 years. Wing data are summarized for the WRSRCA for hunting seasons 2015 – 2024 (**Table 8** and **Figure 8**). Wings collected from harvested birds yielded an average brood size of 2.1 chicks per hen in 2023 and 1.9 chicks per hen in 2024, well above the average of 1.45 chicks per hen observed over the last 10 years. Population growth typically requires 1.7 chicks/hen or more based on historic statewide averages. With chick survival in 2023 and 2024 being above that threshold, male lek attendance in the WRSRCA increased 27% in 2024 and is expected to increase in 2025.

Harvest:

Sage-grouse hunting season in Management Area E lies entirely within Wyoming Hunt Area 1, which has been "standardized" since 2009, keeping opening day on the 3rd Saturday in September and ending on September 30. The 2024 sage-grouse hunting season was 10 days long (Sept. 21 – 30). A new, free permit was required to hunt sage-grouse in 2024, with high compliance reported from field personnel. A primary function of this permit was to enhance harvest survey reporting, and with nearly 50% of permit holders surveyed completing the harvest survey, harvest information for 2024 is not directly comparable to prior years when sage-grouse harvest was extrapolated from the much larger pool of hunters surveyed in the Small and Upland Game Bird harvest survey (SMUG). As such, the sage-grouse permit harvest survey indicated a total of 1,506 sage-grouse were harvested in Management Area E in 2024, by 725 hunters who spent 1,565 days hunting sage-grouse. Although the harvest survey was different in 2024, hunter numbers, hunter days, along with effort (days/hunter) and success (birds/hunter and birds/day) statistics seemed within reason compared with the previous seasons (**Table 7**). The 2024 harvest survey data seem reasonable compared with increased 2024 lek attendance and ample productivity as shown by chick/hen ratios and wing barrel sample size in 2024.

Sage-grouse hunting on tribal lands within the Wind River Reservation is minimal and data are not included in this report.

Habitat:

Long-term sage-grouse habitat conditions have been affected by long-term drought throughout the WRSRCA. Disturbance (i.e., localized energy development, season-long grazing by livestock and wildlife, etc.) combined with lengthy drought periods and sagebrush eradication programs in many areas have negatively impacted sage-grouse and their habitats. In an effort to improve conditions for sage-grouse, habitat improvement projects are being planned and/or implemented throughout the WRSRCA to address declining sage-grouse habitat condition. In addition, research projects in the WRSRCA are continuing to provide more insight to sage-grouse movements and habitat use. Habitat conditions vary greatly within the WRSRCA, due to climatic differences, soil types, land use, and elevation.

Habitat Monitoring/Inventory

Habitat monitoring is discussed in past WRSRCA JCRs, and in the 2007 WRSRCA Local Sage-Grouse Conservation Plan and 2014 Addendum. No habitat monitoring transects were measured in 2024 specifically for sage-grouse. However, implementation of Rapid Habitat Assessments (RHAs) continued as part of the South Wind River and Sweetwater Mule Deer Initiatives, to develop a baseline from which to gauge overall habitat condition. Several RHAs covering shrub/rangeland habitats were completed within the WRSRCA in 2024, and offer insight as to the condition of sage-grouse habitats within the South Wind River and Sweetwater Mule Deer herd units that overlap a portion of the WRSRCA.

Winter Habitat Use Survey

Limited winter sage-grouse observations were collected in 2023-2024, mostly as opportunistic observations during deer, elk, and moose classification flights or random ground surveys. Reports from USDA Wildlife Services personnel during coyote removal flights in winter 2023-2024 anecdotally indicated high numbers of sage-grouse in several areas near the Sweetwater Rocks in the Sweetwater River drainage.

Habitat Treatments

Since adoption of the WRSR LWG plan in 2007, a number of vegetation treatments have been implemented with the intention of improving habitats for sage-grouse, mule deer, and other wildlife. Summaries of these treatments are reported in past JCRs and in the 2007 WRSRCA Local Sage-Grouse Conservation Plan and 2014 Addendum. No new treatments in sage-grouse habitats occurred during 2024.

Conservation Easements

Within the WRSRCA, several privately owned properties have been placed under conservation easements with deed restrictions ranging from minimal to no new construction of houses, barns, or other buildings. Conservation easements are mostly located in the Lander Foothills, Sweetwater River, Twin Creek, Dubois, and Ervay Basin areas. At present, over 32,000 acres of private lands are permanently protected by conservation easements within the WRSRCA, and provide protection of crucial wildlife habitat, water quality, maintain migration routes, and continue traditional agricultural land uses.

Disease:

No new cases of West Nile Virus (WNv) or other avian diseases are known to have occurred in sage-grouse in the WRSRCA in 2024.

Conservation Planning:

In 2024, the Wind River/Sweetwater River local working group (WRSR LWG) funded projects to enhance sage-grouse habitats and reduce risk of collisions with fences. These projects are covered by Recommended Actions in the Wind River/Sweetwater River Local Sage-Grouse Conservation Plan and Addendum (2007, 2014).

A new steel rail fence was installed around approximately 30 acres surrounding West Diamond Spring. This spring is important for sage-grouse mostly during late summer brood rearing. Removing livestock and feral horse use from this spring will allow grass and forb communities to flourish which will provide cover and forage for sage-grouse and other wildlife.

Fremont County Weed & Pest - The Government Draw Leafy Spurge and Cheatgrass Management project is a continuation of the aerial treatment efforts which began in the fall of 2017 within Zone 2 & 3 of the greater Lander-South Hudson Invasive Weed Control and Management program area. In addition, FRWP conducts annual herbicide applications to curtail the spread of noxious weeds, including cheatgrass in many other parts of the WRSRCA.

Two other projects were funded in 2024, a wet meadow/mesic sagebrush restoration project on the Wind River Indian Reservation and the Fish Creek restoration & enhancement project, with implementation planned for spring 2025.

Management Recommendations:

1. Continue intensive lek counts in the Government Draw area south of Hudson.
2. Continue ground checks of all non-intensively monitored leks.
3. Continue to search for new or undiscovered leks in remote areas of WRSRCA, including a new aerial infrared/thermal survey in the Black Mountain area and an aerial infrared/thermal survey in the Antelope Hills as a follow-up to a survey done in 2013.
4. Continue to collect age and sex composition of the harvest via wing collection and analyses.
5. Continue to cooperate with private landowners and Federal/State land managers to reduce negative impacts to crucial sage-grouse habitats.
6. Continue to coordinate research projects within or applicable to the WRSRCA.

Attachment A:							
Project #	Project Name	Fiscal Year	Local Working Group	Total Cost of Project	Sage-grouse Funds	Project Description	Partners
334	Assessment of Cheatgrass Treatments and Restoration for Sage-Grouse Habitat Phase 2	2024	Upper Snake	$ 98,658	$ 23,000	Reduce cheatgrass cover below 5%, Increase native plant cover relative to controls, Increase native plant diversity and richness relative to controls	Community Foundation of Jackson Hole, WGFD, Teton Conservation District, UW, National Museum of Wildlife Art, Teton Botatical Garden, Teton Area Wildfire Protection Coalition
335	Sagebrush Outreach Program	2024	Bates Hole	$ 41,000	$ 20,000	Provide outreach to Wyoming students, educators. Participate in engaging community events and develop sagebrush ecosystem resources.	Wyoming Community Foundation, Audubon
336	Government Draw Leafy Spurge and Cheatgrass Management	2024	Wind River	$ 150,000	$ 66,000	Control and management of of invasive weeds threatening a historic ecosystem structure, function, and biodiversity	Fremont County Weed and Pest, Private land owners, Dept of Ag Grant
337	South Central Habitat Improvement: Sagebrush Mowing Component	2024	Bates Hole	$ 240,000	$ 55,000	Mowing dense mountain big sagebrush stands	Gateway Trasnmission Line Mitgation Funds, WGFD Mule Deer Inititive, Landowner
338	Sg Livestock Predator Interactions - Dinkins/Ruth	2024	Bighorn	$ 549,087	$ 44,012	Continuing to Evaluate predator influence, evaluate predator abundance, evaluate seasonal habitat use and survival	BLM, Oregon State University, National Wildlife Research Center
339	Ball Place Conservation Easement	2024	Upper Green	$ 1,392,560	$ 10,000	Conservation easement on 1117 acres of private land in the Daniel Core Area	WWNRT, NCRS, WGFD, Landowner
340	2023 TBGPEA Sagebrush Habitat Project	2024	Northeast	$ 277,340	$ 25,000	Control invasives and develop green vegetative areas	TBGPEA, WGFD, National Fish and Wildlife Foundation, Converse County Conservation District, Weston County Natural Resource Distirct, WWNRT
341	Sage Grouse Core Habitat Restoration Projects	2024	Northeast	$ 93,478	$ 30,000	Work to recover sage-grouse nesting and wintering cover after wildfires in sage-grouse core area.	USFS, BLM, Coal Mines CP Funds
342	Cheatgrass Management in Sublette County	2024	Upper Green	$ 1,025,000	$ 25,000	Identify, treat and monitor cheatgrass infestations in Sublette county	BLM, NRCE, USFWS, WLCI, SCWP
343	Southwest Wyoming Local Sage-Grouse Project Monitoring and Maintenance (Phase 3)	2024	Southwest	$ 20,000	$ 10,000	Survey and develop projects for fence marking, spring protections, and wet meadow restoration	WGFD, Landowners, WWF, USFWS
344	A Systematic Review on Vegetation Management Practices for Sage-grouse Habitat	2024	Bighorn, Upper Green, South Central	$ 15,000	$ 15,000	Review of literature to synthesize the current state of best management practices and lessons learned associated with reclamation, restoration and other vegetation management components of sagebrush and other vegetation species associated with Greater sage-grouse habitat.	WWNRT, DEQ, WGFD
345	Virtual Fencing	2024	Upper Green	$ 72,500	$ 35,000	Provide virtual fence supplies to aid landowners in testing this new technologies and expanding pilot project in Sublette County	WGFD, BLM, SCCD, USFS
347	Thunder Basin Zeedyks	2025	Northeast	$ 222,000	$ 33,000	Additional funding to complete zeedyk projects associated with the FY23 Thunder Basin habitat efforts due to costs being higher than originally estimated.	NFWF, WGBGLC, WWNRT, Thunder Basin Grazing Assoc., LWG, In kind
348	S. Central Habitat	2025	Bates Hole	$ 4,151,500	$ 60,000	Habitat improvements include juniper removal, mountain big sagebrush mowing, riparian restoration, mesic habitat improvements, cheatgrass treatments, and fence modifications.	WWNRT, Roky Mountain Power, WGFD Trust Fund, WGBGLC, Mule Deer Inititive, LWG, BLM, WGFD, Natrona Landowner
349	Sage Creek Riparian Restoration	2025	Bighorn	$ 213,000	$ 55,000	Beaver dam analogues will be installed and woody riparian plants will be planted to restore riparian habitat functions on Sage Creek.	WWNRT, WGFD Mule Deer Initiative, Governors Big Game License Coalition, WGFD, BLM, Volunteers

350	Community Naturalists Hands-on in the Sagebrush	2025	Bates Hole	$ 40,000	$ 15,000	Expand local efforts to engage students with hands on experience in the sagebrush ecosystem.	Wyoming Community Foundation, Private Funders
351	Spring Creek Grazing Association Rangelands Restoration II	2025	Northeast	$ 970,575	$ 25,000	Improve grazing management, rangeland health, wildlife habitat, and wildlife habitat connectivity.	WGFD, Spring Creek Grazing Assoc., WWNRT, PreCorp, NFWF-Northern Great Plains Inititive
352	Adaptive Management of the Normally Pressured Lance Natural Gas Development Project for Greater Sage-Grouse	2025	Southwest, South Central, Upper Green	$ 830,777	$ 48,000	Our project is a continuation of research to monitor sage-grouse as influenced by the NPL Gas Field in Sublette County, Wyoming.	WGFD, BLM, Jonah Energy, UW
353	Paint Creek Ranch Conservation Easement - JHLT	2025	Bighorn	$ 3,542,800	$ 20,000	Paint Creek Ranch Conservation Easement Project will permanently protect 958 acres containing 2.3 miles of Paint Creek from being subdivided or developed, thus preserving critical wildlife habitat, including that of sage-grouse	WWNRT, NRCS, WGBGLC, Private Funds
354	Factors Contributing to Sage-Grouse Persistence in a Non-Sagebrush Area	2025	Northeast	$ 17,000	$ 17,000	Better understand why male sage-grouse numbers at the Watsabaugh 1 Lek in NE WY have remained high over many years despite the area containing little to no sagebrush, being surrounded by various forms of development, and being within a hayfield.	
355	Sage-grouse dietary composition study	2025	Upper Green, Southwest	$ 57,500	$ 13,500	Test the dietary composition of sage-grouse on reclaimed well pads in the Anticline natural gas field compared to adjacent reclamation sites and sites in the sagebrush system outside the gas field.	Pure West Energy, WWNRT, Abnova
356	Virtual Fence IY 2025	2025	Upper Green, Southwest	$ 307,500	$ 65,000	Funding of materials for virtual fence implementation.	SCCD, USFWS, JIO, WLCI, BLM
357	Jornado Ditch/Fish Creek Restoration	2025	Wind River	$ 15,000	$ 9,500	Structural treatment of Jornado ditch to allow for earlier irrigation to improve frequency and intensity of perennial plant species.	The Radosevich Family, NL Land & Livestock
358	Davies Ditch Rehabilitation	2025	Wind River	$ 82,500	$ 42,500	Install 1800 linear feet of 15” PIP buried pipe in the Davies Ditch	North Fork Land & Cattle
359	Wind River Reservation Wet Meadow Restoration	2025	Wind River	$ 60,000	$ 10,000	The project is addressing stabilization of meadow headcuts within the Little Sand Draw, Sage Creek and Norkok Meadows utilizing zeedyk structures on the Wind River Indian Reservation.	BIA, Ancestral Land Corp, PFW Wyoming, USFWS
360	Big Creek Pipeline	2025	South Central	$ 239,200	$ 35,000	Installing over 5 miles of pipe and 8 tire tanks to supply multiple pastures throughout the Prospect Mountain Allotment	Big Creek Ranch, SERCD, Wyoming WAter Development Commission, Rocky Mountain Power Mitigation, WWNRT
361	Greater Sage-Grouse and Fence Collisions	2025	Upper Green	$ 15,000	$ 15,000	Evaluate different models to predict priority areas to search for grouse-fence collisions on BLM-administered land in the BLM – Pinedale Field Office. Total cost for phase 1, other funding coming for phase 2 and 3.	Sutton Avian Research Institute, BLM
362	House Draw Fire Aerial Seeding	2025	Southwest, Wind River, South Central	$ 237,820	$ 58,500	Aerially seed sagebrush late this fall or early winter with a well timed moisture event in teh House Draw Fire Perimeter.	Johnson County Habitat Restoration Team, University of Wyoming Sheridan Extension and Research Center, WGFD, BLM, VArious Land Owners
363	Southwest Wyoming Local Sage-Grouse Project Monitoring and Maintenance Phase 3	2025	Southwest	$ 23,000	$ 3,000	Survey and develop projects for fence marking, spring protections, and wet meadow restoration	WGFD, Landowners, WWF, USFWS
364	Invasive Species Inventory & Treatment: Pack Trail Fire/Gros Ventre Watershed	2025	Upper Snake	$ 65,000	$ 23,000	Inventory, map, and treat invasives discovered in the Pack Trail Frie perimeter that burned within sage-grouse core area	Bridger Teton National Forest, Jackson Hole Weed Management Association