



MONTANA FISH, WILDLIFE & PARKS

Montana Greater Sage-grouse Population Report

August 20, 2025

Montana Greater Sage-grouse population estimates and associated uncertainty, and the number of known breeding sites (called leks) are presented here in compliance with MCA 87-1-201(1)(11), as amended in 2017.

Montana Fish, Wildlife and Parks (FWP) biologists work with federal agencies, non-governmental organization partners, and volunteers to count the number of displaying males at lek sites across the state in spring of each year. Counts are conducted at leks 1-3 times within a season; however, all leks are not monitored in every year. FWP also updates and manages the sage-grouse lek count and activity status database for the State of Montana. These data are used to assess population trends for use in sage-grouse management decisions. They are also provided to the Montana Sage-grouse Habitat Conservation Program and the Bureau of Land Management for use in land use decisions and permitting. Each lek is also categorized based on activity status, such as confirmed active or confirmed inactive, according to established definitions (see lek status definitions below).

Population Estimates - Methods

Montana uses a model that estimates sage-grouse population numbers based on counts of displaying males at leks replicated over space and time. This modeling approach is a robust analytical method for estimating population size and trend over time for species like sage-grouse that congregate at discrete breeding sites (McCaffrey et al. 2016). Although the database of male counts at leks dates to 1952, only data from 2002 onward could be used for this approach. For the last three years, including this report, the model was run by Dr. Alixandra Godar, FWP Wildlife Population Ecologist/Biometrician.

It is important to recognize these models use algorithms that will estimate similar, but not precisely the same, population numbers each time the models are run. This means that population estimates may vary slightly from previous reports but are within reported confidence limits.

Population Estimates – Results and Discussion

Montana FWP and partners surveyed 714 leks at least once in spring 2025. The model estimates that there were approximately 66,749 (95% credible interval (CI): 51,340–82,159) sage-grouse in Montana in spring 2025 (Figure 1, Table 1). This estimate is up 27.82% from last year's estimate of 48,180 (95% CI: 37,029–59,331). This is the highest estimate, down ~10%, from the last "peak" that occurred in 2020-2021 with an estimate in 2021 of 74,334 (95% CI: 57,241–91,428).

We have seen favorable spring and summer conditions the past two seasons, 2023 and 2024, providing well timed moisture that is critical for nesting, chick survival, brood rearing, and hen survival, and likely contributed to the increased population size in 2025.

Montana experienced exceptional drought conditions in 2021 and 2022

(<https://droughtmonitor.unl.edu/Maps/MapArchive.aspx>) with higher-than-average temperatures and well

below average precipitation. This meant that wet areas critical for cover and food resources, forbs and insects, were likely limited during the brood-rearing season. Extremely difficult and compressed survey conditions occurred in spring of 2023 which affected overall the 2023 estimate.

Sage-grouse population numbers generally oscillate over a period of 8 – 10 years across large scales (Fedy and Doherty 2011). In Montana weather patterns, mainly precipitation, is believed to be the main driver of these oscillations. Longer term trends, over multiple oscillations, are important to consider when making management decisions. This increase hopefully indicates that the population is out of the nadir and starting to trend upwards. The natural population cycles of sage-grouse combined with good moisture that benefited sagebrush habitat is reflected in the population estimate uptick.

An assumption used in the development of these estimates is a male to female ratio of 1:2.45 (Taylor et al. 2011). The 2018 and 2019 population reports list other main assumptions. There are also other analytical models that have utility for estimating population size and trends, such as Integrated Population Models. However, these models require additional demographic information, such as recruitment data, that are currently unavailable statewide. FWP may explore additional and/or improved modeling techniques in the future as new data become available.

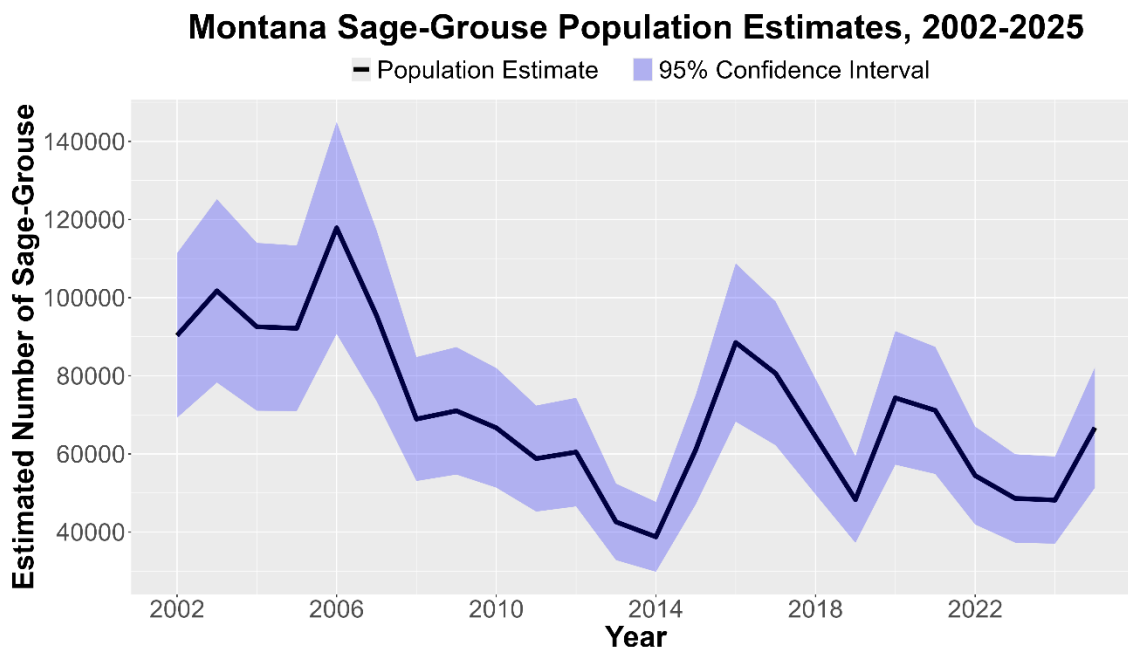


Figure 1. Greater Sage-grouse population estimates and associated uncertainty (95% credible intervals) from *N*-mixture models in Montana, 2002-2025. In general terms, credible intervals describe the uncertainty around the population estimate due to imperfect detectability of grouse on leks and variable lek count effort each year.

Table 1. Numerical estimates of Greater Sage-grouse population numbers and associated uncertainty from *N*-mixture models in Montana, 2002-2025.

Year	Population Estimate	Standard Error	Confidence Interval	
			<i>Lower Bound</i>	<i>Upper Bound</i>
2002	90302	10744	69243	111361
2003	101741	11969	78282	125199
2004	92541	10960	71060	114023
2005	92160	10808	70975	113344
2006	117864	13841	90734	144993
2007	95417	11159	73546	117288
2008	68925	8092	53064	84786
2009	71037	8319	54731	87342
2010	66678	7806	51377	81978
2011	58808	6919	45246	72370
2012	60463	7091	46564	74362
2013	42604	4995	32813	52395
2014	38777	4558	29842	47711
2015	61126	7141	47130	75123
2016	88516	10335	68259	108774
2017	80602	9381	62215	98989
2018	64432	7543	49648	79217
2019	48315	5647	37247	59383
2020	74334	8721	57241	91428
2021	71137	8300	54868	87405
2022	54449	6390	41926	66973
2023	48613	5776	37293	59934
2024	48180	5689	37029	59331
2025	66749	7862	51340	82159

Number of Leaks

FWP maintains a spatial database of Greater Sage-grouse leks, summarized by activity status in Table 2. FWP staff annually work to confirm and record lek locations and update lek status. In 2018, FWP added a new status category, *Provisionally Active*, to alert the Montana Sage Grouse Habitat Conservation Program, the Bureau of Land Management, and industry proponents of newly discovered leks immediately. Two survey years are required to meet the definition of a Confirmed Active lek; thus, without a Provisionally Active status option, there was a delay of over one year before resource agencies and industry were notified of newly discovered leks. Provisionally Active status is meant to be temporary. If data are not sufficient to meet the definition of Confirmed Active after a second year of surveys, a Provisionally Active lek will revert to Unconfirmed and would not be evaluated under state or federal assessments for new development. If data is sufficient in the second year of surveys, the lek will immediately be classified as Confirmed Active.

Table 2. Number of known Greater Sage-grouse leks in Montana by classification status, 2002-2025.

Year	Confirmed Active	Confirmed Inactive	Confirmed Extirpated	Provisionally Active^	Never Confirmed Active	Unconfirmed	Total
2002	548	79	17	.	29	508	1181
2003	615	84	17	.	47	509	1272
2004	651	88	19	.	56	521	1335
2005	677	94	19	.	64	533	1387
2006	718	96	19	.	67	594	1494
2007	753	98	20	.	72	619	1562
2008	808	100	22	.	75	577	1582
2009	850	104	25	.	92	535	1606
2010	941	110	40	.	118	435	1644
2011	964	125	50	.	147	373	1659
2012	973	132	50	.	176	344	1675
2013	970	144	60	.	195	323	1692
2014	976	154	66	.	223	283	1702
2015	979	172	66	.	237	263	1717
2016	985	184	67	.	252	265	1753
2017	1000	199	67	.	251	280	1797
2018	1003	221	67	.	259	262	1812
2019	1011	234	67	.	268	254	1834
2020	986	271	67	.	271	255	1850
2021	986	292	67	.	279	250	1874
2022	983	310	67	.	286	243	1889
2023	980	322	73	.	295	230	1900
2024	972	346	73	.	299	218	1908
2025	971	356	74	(6)	301	212	1920

*FWP's database is dynamic and the status of a lek can change retroactively based on new information entered at any time. Reviewers may notice small changes in classification numbers from previous reports. These are not errors; rather they are the most up-to-date numbers as of this report.

^New status created in 2018. See definition below. Provisionally Active status is only relevant for the current year; leks categorized as Provisionally Active in previous years have been moved to Confirmed Active or Unconfirmed status, as appropriate. The number of leks that meet the Provisionally Active criteria in the past two years is noted in parenthesis.

Lek Status Definitions

Confirmed Active - Data supports existence of a lek. Supporting data defined as 1 year with 2 or more males lekking on site followed by evidence of lekking (Birds - male, female or unclassified; -OR- Sign - vegetation trampling, feathers, or droppings) within 10 years of that observation.

Confirmed Inactive - A Confirmed Active lek with no evidence of lekking (Birds - male, female or unclassified; -OR- Sign - vegetation trampling, feathers, or droppings) for the last 10 years. Requires a minimum of 3 survey

years with no evidence of lekking during a 10-year period. Reinstating Confirmed Active status requires meeting the supporting data requirements.

Confirmed Extirpated - Habitat changes have caused birds to permanently abandon a lek (e.g., plowing, urban development, overhead power line) as determined by the biologists monitoring the lek.

Never confirmed active – An Unconfirmed lek that was never confirmed active. Requires 3 or more survey years with no evidence of lekking (Birds - male, female or unclassified; -OR- Sign - vegetation trampling, feathers, or droppings) over any period of time.

Provisionally Active – Preliminary data supports existence of an active lek. This status can only apply during the first year of detection. Supporting data defined as 1 observation with 2 or more males lekking on site AND sign of lekking (vegetation trampling, feather, or droppings) or followed by a 2nd observation of 2 or more males lekking within the same survey year.

Unconfirmed - Possible lek. Grouse activity documented. Data insufficient to classify as Confirmed Active status.

References

- Berkeley, L., M. Szczypinski, J. Helm, and V. Dreitz. 2019. The impacts of grazing on greater sage-grouse habitat and population dynamics in central Montana, FY2019 Annual Progress Report. Montana Fish, Wildlife and Parks, Helena.
- Fedy, B.C. and K.E. Doherty. 2010. Population cycles are highly correlated over long time series and large spatial scales in two unrelated species: greater sage-grouse and cottontail rabbits. *Oecologia*; DOI 10.1007/s00442-010-1768-0.
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- Taylor, R.L., B.L. Walker, D.E. Naugle, and L.S. Mills. 2011. Managing multiple vital rates to maximize Greater Sage-grouse population growth. *Journal of Wildlife Management*; DOI: 10.1002/jwmg.267