35th Biennial Meeting

September 23-25, 2025

Valentine, Nebraska

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Acknowledgements

Special thanks to all the people that assisted with planning this meeting.

PGTC Conference Planning Committee

Katherine Crawley – Bird Conservancy of the Rockies

Tom Krolikowski – Nebraska Game and Parks Commission

John Laux – Pheasants Forever

Lance McNew – Montana State University

Melvin Nenneman – U.S. Fish and Wildlife Service

Bryan O'Connor – Nebraska Game and Parks Commission

Matt Steffl – Nebraska Game and Parks Commission

Shelley Steffl – Nebraska Game and Parks Commission

Jacob Wagner – Nebraska Game and Parks Commission

Scott Wessel – Nebraska Game and Parks Commission

Greg Wright – U.S. Forest Service

Don Wolfe – Sutton Avian Research Center

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Nebraska Game and Parks Commission

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Rainwater Basin Joint Venture

Program

Monday, 22 September

6:00 - 8:00 pm	Evening Social (finger foods and drinks) Niobrara Valley Vineyards 90254 State Spur 16F, Nenzel

Tuesday, 23 September

8:00 - 9:00 am	Registration / Check-in	
9:00 - 9:15 am	Welcome	
9:15 - 10:00 am	Opening Presentation - Large scale grassland conservation needs Dirac Twidwell, University of Nebraska Lincoln	
10:00 - 10:20 am	Kiera Kauffman	Does distance to burn affect prairie chicken reproductive success?
10:20 - 10:40 am	Rachel Rusten	As trees grow, chickens go: Examining woody encroachment and other threats to greater prairie chicken habitat in Kansas
10:40 - 11:00 am	Break	
11:00 - 11:20 am	Sarah Sonsthagen	Influence of the conservation reserve program on population structure, demography, and space use by greater prairie chickens in Kansas and Nebraska
11:20 - 11:40 am	Bryan O'Connor	Prairie grouse distribution models inform conservation return-on-investment modelling for woody management in Nebraska
11:40 - 12:00 pm	Ben Wheeler	Comparison of greater prairie chicken habitat suitability models derived from different methods for central Nebraska
12:00 - 1:00 pm	Lunch – Catered	

1:00 - 1:20 pm	Lesa Kardash Ashly Steinke	Teamwork makes the dream work: Public and private partnerships in Wisconsin's core greater prairie chicken range
1:20 - 1:40 pm	Tristan Murphy	Lek site selection for greater prairie chickens and sharp-tailed grouse in the Nebraska Sandhills
1:40 - 2:00 pm	Charlotte Roy	Hybridization of sharp-tailed grouse and greater prairie chickens in Minnesota and North Dakota
2:00 - 2:20 pm	Michael Schroeder	Twenty-eight years of Columbian sharp-tailed grouse translocations in Washington: Have we made a difference?
2:20 - 2:40 pm	Luke Johnson	Evaluating the mechanisms of rangeland management effects on the reproductive success of sharp-tailed grouse
2:40 - 3:00 pm	Michael Schroeder	Sharp-tailed grouse populations in forest clearcuts in south-central Bristish Columbia
3:00 - 3:20 pm	Break	
3:20 - 3:40 pm	Lance McNew	Restoration of sharp-tailed grouse in western Montana: An update
3:40 - 4:00 pm	Carly Kelly	Resource selection and survival of plains sharp-tailed grouse at a wind energy facility
4:00 - 4:20 pm	Cody Kamrowski	From courtroom to collaboration: Utility solar and wildlife
4:20 - 4:40 pm	Carly Kelly	Quantifying greater sage-grouse occurrence at a solar energy facility in Wyoming
4:40 - 5:00 pm	Charlotte Roy	Predator use of fences in conservation grazing applications
5:10 - 5:40 pm	Business Meeting	
6:00 - 8:00 pm	Poster Session / Social - Food catered	

Wednesday, 24 September

9:00 am – 4:00 pm	Field Tour Bagged lunches provided
6:00 - 9:00 pm	Banquet
	Keynote speakers:
	Ann Dvorak - World Wildlife Fund
	Laura Nelson – Nebraska Grazing Lands Coalition &

Thursday, 25 September

8:00 - 8:20 am	Nellie Hill-Sullins	Rancher perspectives on voluntary grassland conservation program design
8:20 - 8:40 am	Matthew Bain	Producer-led efforts to support lesser Prairie chicken strongholds (aka generational grasslands)
8:40 - 9:00 am	Liam Berigan	Probabilistic forecast of changes in conservation reserve program grasslands on lesser prairie chicken populations in Kansas
9:00 - 9:20 am	Elli Teige	Lesser prairie chicken hierarchical selection of conservation reserve program (CRP) grasslands
9:20 - 9:40 am	K Stafford	Relationships among landscape Composition and lesser prairie chicken lek persistence
9:40 - 10:00 am	Aaron Pratt	A 26-year retrospective analysis of factors affecting post-release survival of captive-reared Attwater's prairie chickens
10:00 - 10:10 am	Break	

10:10 - 10:30 am	Peter Coates	Evaluation of conservation actions for sage-grouse populations: Did the birds get the memo?
10:30 - 10:50 am	Steven Mathews	Brood translocations increases recruitment and population restoration of sage-grouse in California
10:50 - 11:10 am	Christian Hagen	Harvesting honey from wing-bees: An accuracy assessment of estimating nesting chronology and reproductive parameters from wings
11:10 - 11:30 am	David Dahlgren	Using automated recording units (ARUs) to monitor grouse and estimate breeding population abundance
11:30 - 11:50 am	Jon Haufler	Future vision and plans of the NAGP for prairie grouse
11:50 - 1:00 pm	State Reports / Discussion Closing Remarks Lunch (on your own)	

Keynote Presentation

The Kitchen Table: A Conservation Starter

Ann Dvorak & Laura Nelson

Ann Dvorak - World Wildlife Fund, Senior Specialist, Sustainable Ranching Initiative, Nebraska

Ann Dvorak grew up in the Sandhills of Nebraska on her family's organic, grass fed dairy and ranch. Her love of nature and preserving natural habitats was instilled in her by her father, who always thought progressively about how to best respect the resources on the ranch. The family currently has a small bison herd that was reintroduced to the land in 2014 as a way of restoring the ecology and relationships of the land. Ann graduated from the University of Nebraska at Lincoln with a bachelor's degree in Agricultural Education and a master's degree in leadership education. Before joining the SRI program, she taught 7-12 grade agricultural education at Rock County Public Schools in Bassett for 13 years. In this capacity she instructed students in several areas including rangeland management, conservation practices and livestock management. In the classroom, she specialized in entrepreneurship with a tie into global studies. She currently volunteers her time in service to the Nebraska Agriculture Academy, an agricultural education program for homeschooled students in Nebraska. Ann and her husband, Matt, have two children that are homeschooled, Elise and Dane. They live on an acreage by Newport with their many animals and growing garden and orchard.

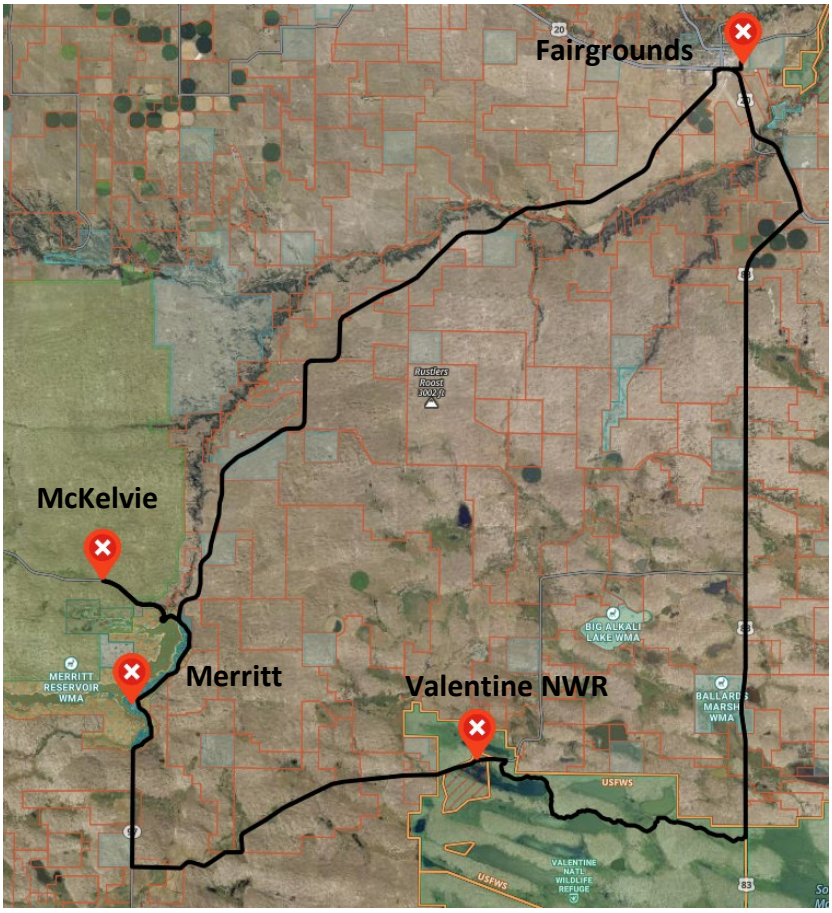
Laura Nelson – Nebraska Grazing Lands Coalition, State Grassland Coordinator

With a mission to create a platform for connection, collaboration, and community-building around Nebraska's grasslands and grassland agriculture, she is working with leaders in ranching, conservation, tribal nations, and rural communities to form the Nebraska Grassland Alliance.

Laura has been an agricultural journalist, farm and ranch photographer, strategic communications consultant, and special projects manager for agricultural organizations for more than 15 years. She grew up on a diverse farm and ranch in Kimball County and now calls Bassett, Nebraska, home.

Field Trip

We will travel across the beautiful Sandhills to visit a mix of federal, state, and private lands that support robust populations of sharp-tail grouse and greater prairie chickens. At each stop local biologist will give us insight into the ongoing habitat restoration efforts and goals for future management of each site. During the field trip we will highlight the efforts for large scale landscape management of grasslands in the area to improve habitat for prairie grouse and other grassland species. Stops will include visits to McKelvie National Forest, Merritt Reservoir, private lands project, and Valentine National Wildlife Refuge.



9:00 – Depart City of Valentine – We will leave from the fairgrounds
9:45 – Arrive at McKelvie – Speaker & explore – 1 hour
10:45 – Depart McKelvie
11:00 – Arrive at Merritt – Speaker, Lunch, Restrooms – 2 hours
1:00 – Depart Merritt
1:30 – Arrive Valentine NWR – Speaker & Explore – 1 hour
2:30 – Depart Valentine NWR
3:30 – Arrive at City of Valentine

The Hamerstrom Award

The Hamerstrom Award was established in honor of Fred and Fran Hamerstrom, pioneers of prairie grouse research and management. It will be awarded at the meeting of the Prairie Grouse Technical Council. The award will consist of a plaque with the engraved name of the recipient.

The Hamerstrom Award will be awarded to recognize individuals and organizations that have made significant contributions in prairie grouse research, management or other support programs which have enhanced the welfare of one or more species of prairie grouse in a particular state or region. The contribution of the awardee(s) should be evidenced by a sustained effort over at least 10 years. The contribution may be related to research, management activity, promotion of an integrated program, or some combination thereof. The relative importance given to these three categories of contributions is the prerogative of the Awards Committee but it should be based on how it has helped the overall welfare and survival of prairie grouse.

Past Recipients

1991 Fran Hamerstrom
1993 Ron Westemeier
1995 Dan Svedarsky and Jerry Kobriger
1998 Bob Robel
1999 Bill Berg
2001 Len McDaniel
2003 John Toepfer
2005 Nova Silvy and The Society of Tympanuchus Cupido Pinnatus, Ltd.
2007 Rick Baydack and Kerry Reese
2009 Randy Rodgers and Bill Vodehnal
2011 Mike Morrow, Jack Connelly, and The Minnesota Prairie Chicken Society
2013 Terry Wolfe, Mike Schroeder, and the Sutton Avian Research Center
2015 Patricia McDaniel and David Haukos
2017 K. C. Jensen, Don Wolfe, and The Minnesota Sharp-tailed Grouse Society
2019 Christian Hagen
2022 Jim Pitman and Jodie Provost

John Toepfer Prairie Grouse Research Scholarship

Dr. John Toepfer devoted 50 years to research and conservation of prairie grouse and mentored dozens of students. He unselfishly provided resources, encouragement, and advice to students and colleagues, and encouraged long-term field studies rather than purely academic research. To honor John's life and to continue his legacy of supporting prairie grouse students, the G. M. Sutton Avian Research Center, and a number of John's colleagues and friends, established the John Toepfer Prairie Grouse Research Scholarship fund. This fund will provide opportunities for continued work on the prairie grouse John committed his life to saving and will ensure the availability of perpetual support for graduate students studying prairie grouse. John's career was varied and covered a lot of ground, starting with a BS and MS degree at University of Wisconsin – Stevens Point working with Ray Anderson and Fred and Fran Hamerstrom. He also would later receive his PhD at Montana State University studying prairie chickens. John worked over several states but primarily with prairie grouse in the Midwest. From 1996 – 2015, he served as Research Consultant with the Society of Tympanuchus Cupido Pinnatus, Ltd. conducting field research on prairie chickens in Wisconsin and across their range. This was a group that was stewarded by the Hamerstroms. John served on the Attwater's Prairie-Chicken Recovery Team and on the Board of the North American Grouse Partnership. He received The Hamerstrom Award from the Prairie Grouse Technical Council and the Minnesota Award from the Minnesota Chapter of the Wildlife Society. John would use his photo of a prairie chicken sunrise and the question, "Is the sun rising for the prairie chicken...," as a springboard to challenge managers, conservationists, and students on whether their actions were creating a brighter future for the well-being of prairie chickens. This award will be given in recognition that with future professionals as those represented by the award's recipients then indeed "the sun is rising" on the future of prairie grouse. The only minimum criteria for consideration is that the applicant be a student actively researching prairie grouse and plan to attend and present their research findings at the upcoming Prairie Grouse Technical Council meeting. It will be viewed positively if the applicant exhibits a passion that is consistent with what John would have expected from a true student of prairie grouse.

If you would like to honor John's contribution to prairie grouse research and conservation, please donate to the scholarship fund. Tax-deductible contributions can be made to the John Toepfer Prairie Grouse Research Scholarship by donations to Sutton Avian Research Center. Define with the donation that it goes towards the scholarship. Credit card donations can be made on the website suttoncenter.org and checks can be mailed to G. M. Sutton Avian Research Center, P.O. Box 2007, Bartlesville, OK 74005.

Past PGTC Conferences

1ST	GRAND ISLAND, NEBRASKA	SEPTEMBER 1957
2ND	EMPORIA, KANSAS	MARCH 1959
3RD	STEVENS POINT, WISCONSIN	SEPTEMBER 1960
4TH	PIERRE, SOUTH DAKOTA	SEPTEMBER 1961
5TH	NEVADA, MISSOURI	SEPTEMBER 1963
6TH	WARROAD, MINNESOTA	SEPTEMBER 1965
7TH	EFFINGHAM, ILLINOIS	SEPTEMBER 1967
8TH	WOODWARD, OKLAHOMA	SEPTEMBER 1969
9TH	DICKINSON, NORTH DAKOTA	SEPTEMBER 1971
10TH	LAMAR, COLORADO	SEPTEMBER 1973
11TH	VICTORIA, TEXAS	SEPTEMBER 1975
12TH	PIERRE, SOUTH DAKOTA	SEPTEMBER 1977
13TH	WISCONSIN RAPIDS, WISCONSIN	SEPTEMBER 1979
14TH	HALSEY, NEBRASKA	SEPTEMBER 1981
15TH	EMPORIA, KANSAS	SEPTEMBER 1983
16TH	SEDALIA, MISSOURI	SEPTEMBER 1985
17TH	CROOKSTON, MINNESOTA	SEPTEMBER 1987
18TH	ESCANABA, MICHIGAN	SEPTEMBER 1989
19TH	BILLINGS, MONTANA	SEPTEMBER 1991
20TH	FT. COLLINS, COLORADO	JULY 1993
21ST	MEDORA, NORTH DAKOTA	AUGUST 1995
22ND	COLLEGE STATION, TEXAS	FEBRUARY 1998
23RD	GIMLI, MANITOBA	SEPTEMBER 1999
24TH	WOODWARD, OKLAHOMA	NOVEMBER 2001
25TH	SIREN, WISCONSIN	SEPTEMBER 2003
26TH	VALENTINE, NEBRASKA	SEPTEMBER 2005
27TH	CHAMBERLAIN, SOUTH DAKOTA	OCTOBER 2007
28TH	PORTALES, NEW MEXICO	OCTOBER 2009
29TH	HAYES, KANSAS	OCTOBER 2011
30TH	CROOKSTON, MINNESOTA	SEPTEMBER 2013
31ST	NEVADA, MISSOURI	SEPTEMBER 2015
32ND	DICKINSON, NORTH DAKOTA	OCTOBER 2017
33RD	BARTLESVILLE, OKLAHOMA	OCTOBER 2019
34TH	LEWISTOWN, MONTANA	OCTOBER 2022
35TH	VALENTINE, NEBRASKA	SEPTEMBER 2025

Oral Presentation Abstracts

DOES DISTANCE TO BURN AFFECT PRAIRIE-CHICKEN REPRODUCTIVE SUCCESS?

K. L. KAUFFMAN* and L. E. GOODMAN, Dept. Natural Resource Ecology and Management, Oklahoma State Univ., Stillwater, OK 74078 USA
D. R. ELMORE, Tall Timbers Research Station, Tallahassee, FL 32312 USA
J. Rutledge, El Coyote Ranch, Carrizo Springs, TX 78834 USA
C. J. DUCHARDT, School of Natural Resources and the Environment, Univ. of Arizona, Tucson, AZ 85721 USA
S. M. WILDER, Dept. Integrative Biology, Oklahoma State Univ., Stillwater, OK 74078 USA

Landscape-scale resource distribution can shape animal space use and survival. Greater prairie-chickens (*Tympanuchus cupido pinnatus*) require dense, unburned prairie for nesting and recently burned patches rich in forbs and insects for brood foraging. However, nests farther from foraging habitat might increase initial brood travel distance and associated risks. Conversely, nests close to burn edges might face a higher risk of detection by predators. We investigated whether proximity to the nearest burn influenced daily nest and brood survival up to two weeks post-hatch in the Flint Hills of Oklahoma. Using a multi-step model-building approach, we accounted for other known drivers of reproductive success in ground-nesting birds before modeling survival relative to distance from burns. We found no evidence of a relationship between the two. Instead, drought and brood movement characteristics explained the majority of variation in reproductive success. Our findings suggest that fire management alone may not suffice to support prairie-chicken reproduction. Effective grassland management should instead aim to provide adequate cover from adverse weather and facilitate brood movement across the landscape.

Notes:

AS TREES GROW, CHICKENS GO: EXAMINING WOODY ENCROACHMENT AND OTHER THREATS TO GREATER PRAIRIE-CHICKEN HABITAT IN KANSAS

R.H. Rusten*, School of Natural Resources, University of Nebraska-Lincoln, Lincoln, NE 68506 USA
D.S. Sullins, USGS Kansas Cooperative Fish and Wildlife Research Unit, Kansas State University, Manhattan, KS, 66506, USA
C.M. O'Meilia, U.S. Fish and Wildlife Service, Kansas Ecological Services Field Office, Manhattan, KS 66502, USA
K A. Fricke Wildilife Division, Nebraska Game and Parks, Lincoln, NE 68506, USA

Greater prairie-chicken (*Tympanuchus cupido;* GPC) lek surveys conducted in Kansas indicate state-level declines over the past 30 years and suggest a 56% decline from 2018 to 2021 in the Flint Hills Ecoregion. We evaluated possible links between surrounding landscape features and Kansas GPC lek site between 1993 and 2020. Using random forest, we determined use thresholds within the best-supported scales of the following features: the amount of grassland at 5km, woody cover percentage within 800m, and all compound pesticide application rates within 5km of available lek locations. Our analysis suggests that although the amount of grassland has declined, the amount of available habitat has increased across Kansas through shifts in grassland configuration. Regionally, the Flint Hills experienced a 15% loss of GPC habitat between 1993 – 2020 coinciding with a large increase of woody vegetation. Our broad examination of species distribution may overestimate current habitat where finer scale factors (i.e., vertical structures, road density, etc.) may decrease habitat. Conserving large grassland-dominated landscapes will be essential to maintaining greater prairie-chicken populations.

Notes:

INFLUENCE OF THE CONSERVATION RESERVE PROGRAM ON POPULATION STRUCTURE, DEMOGRAPHY, AND SPACE USE BY GREATER PRAIRIE-CHICKENS IN KANSAS AND NEBRASKA

S.A. SONSTHAGEN*, U.S. Geological Survey, Nebraska Cooperative Fish and Wildlife Research Unit, University of Nebraska-Lincoln
D.S. SULLINS, U.S. Geological Survey, Kansas Cooperative Fish and Wildlife Research Unit, Kansas State University
M. AGEE, R. GIORDANELLI, K. TRAVIS, Kansas Cooperative Fish and Wildlife Research Unit, Kansas State University
E. WATSON, Z. WHALEY, Nebraska Cooperative Fish and Wildlife Research Unit, University of Nebraska-Lincoln
D.A. HAUKOS, U.S. Geological Survey, Kansas Cooperative Fish and Wildlife Research Unit, Kansas State University

Kansas and Nebraska support the majority of Greater Prairie-Chickens with declines attributed to habitat loss and fragmentation. The Conservation Reserve Program (CRP) mediates grassland loss by restoring ecosystems services and providing conservation at relevant scales. Although 4.18 million acres of CRP occur in Kansas and Nebraska, there are few data on the influence of CRP on Greater Prairie-Chickens. The presence and type of CRP is likely influencing habitat use, movements, and demography for Greater Prairie-Chicken populations in the region. Our project evaluates the influence of CRP integrating movement, habitat, and genomic data. In 2025, we established 5 field sites that vary in abundance and CRP types. We captured 328 Greater Prairie-Chickens, deployed GPS transmitters on 160 females and collected 293 DNA samples. We have monitored hen movement, nests, and broods, and collected vegetation data from used and random locations. Our research seeks to advance strategic enrollment of CRP and inform management practices for Greater Prairie-Chickens.

Notes:

PRAIRIE GROUSE DISTRIBUTION MODELS INFORM CONSERVATION RETURN-ON-INVESTMENT MODELLING FOR WOODY MANAGEMENT IN NEBRASKA

Kevin W. Barnes, U.S. Fish and Wildlife Service, Habitat and Population Evaluation Team
Bryan J. O'Connor*, Nebraska Game and Parks Commission
Andy A. Bishop, Rainwater Basin Joint Venture
Gregory Brinkman, Rainwater Basin Joint Venture, and Nebraska Cooperative Fish and Wildlife Research Unit
Roger C. Grosse, Rainwater Basin Joint Venture
Neal D. Niemuth, U.S. Fish and Wildlife Service, Habitat and Population Evaluation Team, (retired)
Kevin L. Pope, U.S. Geological Survey—Nebraska Cooperative Fish and Wildlife Research Unit, and School of Natural Resources, University of Nebraska-Lincoln
Bradly S. Thornton, Rainwater Basin Joint Venture, and Nebraska Cooperative Fish and Wildlife Research Unit, University of Nebraska-Lincoln
John Laux, Nebraska Game and Parks Commission

To optimize conservation planning for prairie grouse, Nebraska wildlife agencies developed probabilistic area-based surveys for greater prairie-chicken (*T. cupido*) and sharp-tailed grouse (*T. phasianellus*), sampling landscapes across a range of environmental conditions. This survey design is more suitable for developing distribution models than historic surveys and enables quantitative habitat associations to be leveraged for scenario-based conservation planning. Using these data, we related occurrence and abundance observations (2020–2022) to landcover, topography, and climate data within generalized linear mixed effects models. We then conducted a cost-benefit analysis of woody cover treatments relative to the effects of woody encroachment on prairie grouse populations. These models demonstrate the importance of evidence-based, quantitative models for prioritizing and guiding conservation actions on working lands to benefit prairie grouse populations in Nebraska.

Notes:

COMPARISON OF GREATER PRAIRIE CHICKEN HABITAT SUITABILITY MODELS DERIVED FROM DIFFERENT METHODS FOR CENTRAL NEBRASKA

Ben Wheeler*, Pheasants Forever
Andy Bishop, Rainwater Basin Joint Venture
Roger Grosse, Rainwater Basin Joint Venture
Shaikh Rahman, Rainwater Basin Joint Venture, and Nebraska Cooperative Fish and Wildlife Research Unit, University of Nebraska-Lincoln
Bradly Thornton, Rainwater Basin Joint Venture, and Nebraska Cooperative Fish and Wildlife Research Unit, University of Nebraska-Lincoln
Bryan O'Connor, Nebraska Game and Parks Commission, Lincoln

Habitat suitability models provide input to support conservation decisions such as siting of habitat projects, allocation of funding, and areas for prioritization of programs and actions. We compare two Greater Prairie Chicken habitat suitability models developed for central Nebraska based upon different data collection methods: one based upon intensive surveys of lek location and attendance, and one generated from a rapid assessment roadside survey documenting the presence of audible lek behavior. Our results can help inform future surveying and monitoring efforts to most efficiently populate models for future conservation actions.

Notes:

TEAMWORK MAKES THE DREAM WORK: PUBLIC AND PRIVATE PARTNERSHIPS IN WISCONSIN'S CORE GREATER PRAIRIE-CHICKEN RANGE.

L.H. KARDASH*, Wisconsin Department of Natural Resources, 473 Griffith Avenue, Wisconsin Rapids, WI 54494, USA
A.D. STEINKE*, Audubon Great Lakes, 125 South Wacker Drive, #2125, Chicago, IL 60606, USA

The Wisconsin Department of Natural Resources' (WDNR) Greater Prairie-chicken (GRPC) management plan focuses public land management and private lands initiatives in a core area to focus efforts on the highest impact areas. The plan includes acreage goals for increasing habitat management on state lands, permanent grassland protections through acquisitions and easements, and private lands initiatives, in addition to expanding outreach and education. The WDNR collaborates with a diverse group of partner organizations and agencies to implement management plan goals. Organizations provide funding to support land acquisition, equipment purchases, and provide staff and time to conduct habitat management on public lands. Several groups provide valuable outreach efforts. A few key organizations promote programs that support open habitat and provide critical technical assistance to private landowners. One of several organizations we will showcase, Audubon Great Lakes, provides financial and technical assistance to private and public landowners for bird-friendly grazing and other conservation practices through the Audubon Conservation Ranching program and the NRCS Conservation Innovation Grant On-Farm Trials program. All efforts combined creates a team pushing to enhance and perpetuate GRPC populations in Wisconsin.

Notes:

LEK SITE SELECTION FOR GREATER PRAIRIE CHICKENS AND SHARP TAILED GROUSE IN THE NEBRASKA SANDHILLS

Tristan L. Murphy*, School of Biological Sciences, University of Nebraska-Lincoln, Lincoln, NE 68588
Chad E. Brassil, School of Biological Sciences, University of Nebraska-Lincoln, Lincoln, NE 68588
Mark P. Vrtiska, School of Natural Resources, University of Nebraska-Lincoln, Lincoln, NE 68583

The Greater-Prairie Chicken (*Tympanuchus cupido pinnatus*; GRPC) and Sharp-Tailed Grouse (*Tympanuchus phasianellus jamesi*; STGR) are two grouse subspecies found in the Nebraska Sandhills. Once common throughout much of the upper Midwest, both species face threats from habitat fragmentation and loss. The Nebraska Sandhills are one of the few areas where both species distributions overlap and allows for a unique study design. Both GRPC and STGR engage in lekking, which is a courtship ritual consisting of males conducting elaborate dancing displays and vocalization. Leks are the center of breeding habitat and are central to the life cycle for both species. My project objectives are to understand how vegetative communities, vegetative structure, and topography determine GRPC and STGR lekking and non-lekking habitat through small-scale landscape level vegetative analysis, camera studies, and GIS analysis. My study will also evaluate how historical land management has affected the number of leks present each spring for a variety of management methods. Findings from my study may aid in increasing the total number of available habitats and increase the effectiveness of habitat management and restoration.

Notes:

HYBRIDIZATION OF SHARP-TAILED GROUSE AND GREATER PRAIRIE-CHICKENS IN MINNESOTA AND NORTH DAKOTA.

C. L.ROY* and K. GOEBEL, Minnesota Department of Natural Resources, Grand Rapids, MN 55744 USA,
S. ELLIS-FELEGE, University of North Dakota, Grand Forks, ND 58203 USA,
J. KOLAR, North Dakota Game and Fish Department, Dickinson, ND 58601 USA,
S. L. VANDERZWAN and B. N. SACKS, University of California Davis, Davis, CA 95618 USA.

Sharp-tailed grouse (*Tympanuchus phasianellus*) and greater prairie-chickens (*Tympanuchus cupido*) are hybridizing in areas where they are coming into spatial overlap after a long period of separation. In Minnesota, sharp-tailed grouse range is expanding south into prairie-chicken range, and in North Dakota, sharp-tailed grouse have nearly replaced prairie-chickens in the eastern part of the state. This hybridization creates F1 offspring that are able to backcross with both prairie-chickens and sharp-tailed grouse. We collected hybrids from leks in the spring and also samples submitted by sharp-tailed grouse and prairie-chicken hunters for analysis using genotyping by sequencing. Our objectives were to determine the proportion of hybrids in the Minnesota population, whether backcrossing had any directionality (F1 hybrids backcrossing with sharp-tailed grouse or prairie-chickens), and whether barriers to genetic swamping exist. Sharp-tailed grouse were clearly differentiated from greater prairie-chickens and hybrids were intermediate at >38,000 SNPs based on output from NewHybrids, Program Admixture, and PCA analysis. We also found evidence of genetic structure between the sharp-tailed grouse subspecies in North Dakota and Minnesota. Our results indicate that 7.4% of the population is composed of hybrids. Hybrid backcrossing occurred into both the sharp-tailed grouse and prairie-chicken populations. Using a panel of 410 unlinked species-diagnostic SNPs ascertained from the dataset, we found no evidence of F2 hybrids, suggesting the possibility of genetic incompatibilities that prevent genetic swamping. Analysis of behavioral and morphological data are also underway to compare the displays and characteristics of hybrids with the parent phenotypes.

Notes:

TWENTY-EIGHT YEARS OF COLUMBIAN SHARP-TAILED GROUSE TRANSLOCATIONS IN WASHINGTON: HAVE WE MADE A DIFFERENCE?

M. A. SCHROEDER*, Washington Department of Fish and Wildlife, P.O. Box 1077, Bridgeport, WA 98813 USA,
M. T. ATAMIAN, Washington Department of Fish and Wildlife, 2315 North Discovery Place, Spokane Valley, WA 99216 USA,
B. Y. TURNOCK, Washington Department of Fish and Wildlife, 3860 Highway 97A, Wenatchee, WA 98801 USA, and
S. J. ZIMMERMAN, U.S. Geological Survey, Fort Collins Science Center, 2150 Centre Avenue, Building C, Fort Collins, CO 80526 USA.

The Columbian sharp-tailed grouse (*Tympanuchus phasianellus columbianus*) is listed as endangered in Washington state with the total population estimated to be about 700. Translocation from Utah, Idaho, and British Columbia is a management strategy that has been used to address the numerically small, genetically depauperate, and spatially fragmented populations in Washington. Between 1998 and 2025, 720 grouse (400 males and 320 females) were released in 6 of Washington's 8 isolated populations. These target areas ranged in initial population size from about 4 to 200 and all received efforts to improve habitat conditions. Assessment of translocated grouse has shown that the birds in the source populations were abundant, genetically heterogenous, and disease free. The population responses in the target populations have been mostly positive with an overall increase of >200% in the augmented populations. The analysis has been complicated by recent wildfires which have impacted all but 1 of the remaining Washington populations. Wildfires have resulted in declines of 63% within fire footprints as opposed to 15% increases outside fire footprints during the same time frames. Genetic analysis of translocated birds and from feathers collected on leks in Washington indicates that birds translocated from Idaho and Utah may have been more successful at integrating into the Washington populations than birds from British Columbia. We are considering the ramifications of these results so that future management efforts can be improved.

Notes:

EVALUATING THE MECHANISMS OF RANGELAND MANAGEMENT EFFECTS ON THE REPRODUCTIVE SUCCESS OF SHARP-TAILED GROUSE

L. B. JOHNSON*, Dept. of Animal and Range Sciences, Montana State Univ., Bozeman, MT 59717,
L. B. MCNEW, Dept. of Animal and Range Sciences, Montana State Univ., Bozeman, MT 59717.

Maximizing efforts to bolster sharp-tailed grouse populations requires an understanding of the relative impacts and benefits of potential management actions (e.g., cattle grazing, predator removal). The primary objective of this study is to identify and quantitatively evaluate the direct and indirect mechanisms by which livestock grazing influences sharp-tailed grouse reproductive success. In the first year of a two-year study, we monitored 60 sharp-tailed grouse hens in a northern mixed-grass prairie ecosystem in MT, during April–August. We used cryptic video cameras at nests to quantify parental behavior and identify nest predators, motion-activated camera-traps to evaluate the relative activities of cattle and potential predators at nest sites, and grazing metrics and vegetation assessments to evaluate habitat conditions at the pasture-scale. We will present preliminary information on the relative effects of nesting behavior, predation, and livestock grazing and their interactions on sharp-tailed grouse reproductive success during 2025.

Notes:

SHARP-TAILED GROUSE POPULATIONS IN FOREST CLEARCUTS IN SOUTH-CENTRAL BRITISH COLUMBIA

M. A. SCHROEDER*, Washington Department of Fish and Wildlife, P.O. Box 1077, Bridgeport, WA 98813 USA,
M. T. ATAMIAN, Washington Department of Fish and Wildlife, 2315 North Discovery Place, Spokane Valley, WA 99216 USA, and
B. Y. TURNOCK, Washington Department of Fish and Wildlife, 3860 Highway 97A, Wenatchee, WA 98801 USA.

The Columbian sharp-tailed grouse (*Tympanuchus phasianellus columbianus*) is listed as endangered in Washington State. Because of conservations concerns, substantial amounts of research have been conducted on populations in areas considered as source populations for translocation efforts. One of those areas is the southern end of the Fraser Plateau Ecoregion in British Columbia. There are a variety of habitats in this area, but lodgepole pine forests at mid elevations and bunchgrass-dominated grasslands at valley bottoms and near wetlands are particularly common. Sharp-tailed grouse thrive in these native grasslands, but also in forests that have been altered by expansive clearcuts and/or wildfires. Grouse appear to benefit from abundant herbaceous and shrub cover in these areas, often being observed in areas with sparse and/or burned tree cover. We conducted surveys of sharp-tailed grouse in 10 of the last 22 years in an area of approximately 2,000 km^2. The surveys offered substantial insight into the abundance of sharp-tailed grouse relative to the number of years following clearcutting and/or wildfire. Although it is difficult to be precise with estimates of density and counts of birds on leks, numbers appear to peak approximately 10 years following clearcutting and spring densities may exceed 15 birds/km^2. Eventually trees become tall and dense enough that sharp-tailed grouse are functionally extirpated, about 25 years following clearcutting.

Notes:

RESTORATION OF SHARP-TAILED GROUSE IN WESTERN MONTANA: AN UPDATE

K. HARKINS, Montana Fish, Wildlife, and Parks, Helena, MT 59602,
L. DYKSTRA, Dept. of Animal and Range Sciences, Montana State Univ., Bozeman, MT 59717,
M. NEWBERG, Montana Fish, Wildlife, and Parks, Helena, MT 59602
T. SMUCKER, Montana Fish, Wildlife, and Parks, Helena, MT 59602
B. LARKIN, MPG Ranch, Florence, MT, 59833
C. HAMMOND, Montana Fish, Wildlife, and Parks, Helena, MT 59602
L. B. MCNEW*, Dept. of Animal and Range Sciences, Montana State Univ., Bozeman, MT 59717.

Sharp-tailed grouse historically occupied intermountain grasslands west of the Continental Divide in Montana but were extirpated by the early 2000s. Montana Fish, Wildlife and Parks began reintroducing sharp-tailed grouse to western Montana in fall 2021 by translocating 75 males from eastern Montana to two intermountain valleys, identified through field-based habitat assessments as suitable, in hopes of establishing leks for subsequent spring translocations of females. Only 22 grouse were translocated in the spring of 2022 due to an avian influenza outbreak. We translocated 144, 212, and 200 grouse during 2023, 2024, and 2025, respectively. We equipped 332 females with GPS or VHF transmitters to monitor movements/settlement as well as demography. As is typical for translocations, most mortalities occurred during the first four weeks following release; survival during the 120-day post-release period was 0.22 – 0.56. Nest survival (0.40, 95% CI = 0.27 – 0.53) and brood success at 14 days post-hatch (74%) at both sites were similar to resident sharp-tailed grouse populations. In April 2025, we observed 4 newly established leks at reintroduction sites attended by 79 sharp-tailed grouse. Translocations will occur through 2026 with monitoring continuing 5-years post-translocation.

Notes:

RESOURCE SELECTION AND SURVIVAL OF PLAINS SHARP-TAILED GROUSE AT A WIND ENERGY FACILITY

Carly Kelly*, Western EcoSystems Technology, Inc., Laramie, WY, 82072, USA
Chad LeBeau, Western EcoSystems Technology, Inc., Laramie, WY, 82072, USA
Jeffrey Beck, University of Wyoming, Laramie, WY, 82071, USA
Alex Solem, South Dakota Game, Fish and Parks, Huron, SD, 57350, USA
Hilary Morey, South Dakota Game, Fish and Parks, Pierre, SD, 57501, USA
Kurt Smith, Western EcoSystems Technology, Inc., Laramie, WY, 82072, USA

Due to their extensive range across areas with high-quality wind resources, plains sharp-tailed grouse (*Tympanuchus phasianellus jamesi*; grouse) represent a valuable species to evaluate responses to wind energy development. We used spatial and demographic data from 130 radio-marked female grouse to evaluate the effects of a wind energy development on resource selection (nest, brood-rearing, and breeding season) and survival (nest and female) during the April to August breeding season over a 3-year period (2020–2022) in northeastern South Dakota, USA. We did not find evidence that females selected nest sites in relation to wind energy infrastructure but found females with broods and during the breeding season avoided areas near high densities of wind turbines within their home ranges. We found consistent transmission line avoidance across all life stages at the home range scale. We did not detect an effect of wind energy infrastructure on nest or female survival; however, the effect on female survival may be biologically meaningful. Our results have implications for siting future wind energy development to minimize impacts to breeding grouse.

Notes:

FROM COURTROOM TO COLLABORATION: UTILITY SOLAR AND WILDLIFE

C. N. KAMROWSKI, Executive Director, WI Wildlife Federation

In 2023, the Wisconsin Wildlife Federation (WiWF) intervened in the permitting process for the Vista Sands Solar Project before the Wisconsin Public Service Commission (PSC). At $2.5B, Vista Sands was set to become Wisconsin's largest solar field and the second largest in the U.S. While WiWF supports renewable energy, the proposed site raised serious concerns about impacts to habitat and wildlife—most notably the State Threatened Greater Prairie Chicken, two-thirds of the population resides on a public wildlife area adjacent to the project. Despite WiWF's testimony, public input, and participation in hearings, the PSC approved the project as proposed. WiWF subsequently filed a legal appeal, arguing the project violated Wisconsin's Threatened and Endangered Species statute. The appeal prompted months of negotiation with project developers, ultimately resulting in a June 2025 settlement agreement. The agreement excludes key habitat parcels from development and dedicates $1 million to WiWF for land acquisition and habitat restoration aimed at benefiting the Greater Prairie Chicken. This presentation outlines WiWF's strategic use of technical expertise, regulatory advocacy, and collaborative negotiation to influence large-scale renewable energy development in an ecologically responsible manner. It highlights the need for proactive engagement by conservation organizations to ensure clean energy goals do not come at the expense of critical habitats and wildlife. The Vista Sands case offers a replicable model for partnerships between wildlife advocates and energy developers, demonstrating how conservation can coexist with, and even strengthen, the path toward a renewable energy future.

Notes:

QUANTIFYING GREATER SAGE-GROUSE OCCURRENCE AT A SOLAR ENERGY FACILITY IN WYOMING

Carly Kelly*, Western EcoSystems Technology, Inc., Laramie, WY, 82072, USA
Jared Swenson, Western EcoSystems Technology, Inc., Fort Collins, CO, 80525, USA
Chad LeBeau, Western EcoSystems Technology, Inc., Laramie, WY, 82072, USA

Solar energy development is increasing rapidly due to the rising demand for affordable power and declining supply costs. However, as solar infrastructure expands across the Western US, few studies have examined how wildlife will respond. To understand the extent and patterns of utilization of greater sage-grouse (*Centrocercus urophasianus*) inside a solar energy facility, we analyzed pellet survey and camera trap data to compare greater sage-grouse winter and breeding season occurrence and abundance within the solar facility to the surrounding area. To complement occurrence data, we conducted vegetation surveys comparing vegetation composition inside the solar energy facility to the surrounding area. We recorded greater sage-grouse utilizing the solar facility 5 years after development. During the winter season, greater sage-grouse pellet occurrence was higher inside the solar facility compared to outside; however, camera trap detection rates were similar across seasons. Vegetation inside the solar facility consisted of higher proportions of grass and forbs than were found outside, which may play a role in greater sage-grouse occurrence. Regardless, our study suggests greater sage-grouse may be selecting seasonal habitats within a solar facility 5 years following construction. However, additional research is needed to better understand the implications and mechanisms behind these selection patterns.

Notes:

PREDATOR USE OF FENCES IN CONSERVATION GRAZING APPLICATIONS.

C. L. ROY*, Minnesota Department of Natural Resources, Grand Rapids, MN 55744 USA,
J. R. HORTON, Dept. Biological Sciences Bemidji State University, Bemidji MN 56601 USA.

Conservation Grazing has potential utility as an additional prairie management tool to augment prescribed fire and mowing on wildlife management areas. However, grazing as a management tool is relatively unstudied in highly fragmented landscapes composed predominantly of row crop agriculture east of the Great Plains, where fencing perimeter:area can be very high. Installation of fencing to keep cattle contained on conservation areas managed with grazing may alter the behavior of wildlife. We examined the use of fences by predators of ground-nesting birds as potential travel corridors and perching sites for hunting. We used 2 approaches to quantify the influence of permanent fences, temporary fences, and unfenced areas as controls. We walked transects along fences and quantified predator scat and tracks within 1 m of fencelines or control transects, and also examined raptors perching on fenceposts and whitewash on fence posts. Comparison of scats and tracks indicated that mammalian predators utiilized permanent fences more than temporary fences and unfenced transects, consistent with their use as travel corridors. Comparisons of perching raptors and white wash indicated use of both permanent and temporary fence posts as perch sites for hunting, especially in June, but that this effect was reduced when cattle were on pastures compared to years when cattle were not on pasture. Importantly, greater prairie-chicken nest survival was not related to distance from fences, but prairie chickens did not nest near fences.

Notes:

RANCHER PERSPECTIVES ON VOLUNTARY GRASSLAND CONSERVATION PROGRAM DESIGN

N. Hill-Sullins, Kansas State Univ., Manhattan, KS 66506

Understanding rancher decision pathways to voluntary grassland conservation program enrollment is critical to effective support of long-term ecosystem services. Generational Grasslands incorporates strategic efforts with producer collaboration to enhance working grasslands resilience in the Southern High Plains where private land management and connectivity impact lesser prairie chicken populations. We qualitatively examined Western Kansas ranchers' conservation program design preferences through interviews and focus groups. Three key findings emerged from thematic data analysis. First, ranchers need accessible, consistent multi-format communication providing transparency about contract terms, flexibilities, and cost-benefit analyses. Driven to maintain land management autonomy, ranchers seek to understand program intentions and managers' goals. Second, ranchers value relationships with conservation partners who understand regional norms, preferring sustained assistance progressing from general awareness-building to personalized program navigation. Conservation professionals pivotally influence enrollment decisions. Third, contract flexibility is essential, particularly cattle grazing options responsive to rainfall, shorter contract durations with regular revision intervals, and competitive yearly payments covering opportunity costs. Findings suggest framing program parameters in terms of desired conservation outcomes, producer benefits, and production optimization may enhance enrollment. Conservation professional and rancher relationship development must be prioritized, advocating for ranchers alongside conservation outcomes. Programs need adaptive requirements responding to market and environmental changes. Outcome-based payments may provide ranchers desired management control while achieving grassland resilience and lesser prairie chicken habitat conservation goals.

Notes:

PRODUCER-LED EFFORTS TO SUPPORT LESSER PRAIRIE-CHICKEN STRONGHOLDS (AKA GENERATIONAL GRASSLANDS)

M.R. BAIN*, The Nature Conservancy, 1114 Co Rd 370, Oakley, KS 67748
T.J. LINDER, North American Grouse Partnership, 2230 S. Ellis Rd #210, Sioux Falls, SD 57106

Grassland conservation can no longer afford to take either a short-term or shotgun approach. The Generational Grassland strategy couples and spatially focuses voluntary options for durable land conservation and effective management in grassland cores that are key to lesser prairie-chicken persistence. A robust partnership is identifying and addressing barriers to conservation practice initiation and long-term adoption, adding producer assistance, and expanding opportunities for conservation easements. Conservation easements serve as foundations to build-out conservation programming to outpace threats of conversion, invasive species, drought, and address limiting factors of habitat. Producer-led groups including Kansas Grazing Lands Coalition and Lesser Prairie-Chicken Landowner Alliance (LPCLA) are administering payments, hosting producer support specialist positions, and guiding program development and support. Results in two pilot landscapes represent progress, but highlight significant gaps in funding, staff capacity, scalable monitoring, and communications. LPCLA members have made it clear that in order to save ranching and chickens, producers need to be paid fair market value for ecosystem services beyond beef production. Program development and spatial planning to expand efforts beyond pilots to additional landscapes are underway, however, diversifying and strengthening funding streams will be pivotal to the future of these few remaining Southern High Plains grassland cores.

Notes:

PROBABILISTIC FORECASTS OF CHANGES IN CONSERVATION RESERVE PROGRAM GRASSLANDS ON LESSER PRAIRIE-CHICKEN POPULATIONS IN KANSAS

LIAM A. BERIGAN*, Kansas Cooperative Fish and Wildlife Research Unit, Division of Biology, Kansas State University, Manhattan, Kansas, USA
TREVOR J. HEFLEY, Department of Statistics, Kansas State University, Manhattan, Kansas, USA
ELISABETH C. TEIGE, Kansas Cooperative Fish and Wildlife Research Unit, Division of Biology, Kansas State University, Manhattan, Kansas, USA
DANIEL S. SULLINS, Kansas Cooperative Fish and Wildlife Research Unit, Division of Biology, Kansas State University, Manhattan, Kansas, USA
DAVID A. HAUKOS, Kansas Cooperative Fish and Wildlife Research Unit, Division of Biology, Kansas State University, Manhattan, Kansas, USA

Prairie grouse, including the lesser prairie-chicken (*Tympanuchus pallidicinctus*), are declining in North America due to grassland loss and degradation. The U.S. Department of Agriculture Conservation Reserve Program (CRP) incentivizes landowners to convert row-crop fields to grasslands by planting perennial grasses and forbs along with limiting grazing and haying. One benefit of CRP is the nesting and other habitats it provides for prairie grouse. The lesser prairie-chicken, listed as threatened in Kansas, USA, under the 1973 Endangered Species Act, selects CRP fields for nesting, during dispersal events, following translocation, and during other stages throughout its life cycle. As of 2023, Kansas has experienced a 44% decline in CRP enrollment since its 2007 peak, raising concerns for lesser prairie-chicken persistence. Using a dynamic occupancy model applied to long-term lek survey data, we modeled and forecasted lesser prairie-chicken dynamics in response to changing CRP enrollment levels in Kansas from 1985–2023. Posterior predictive simulations suggest that increasing CRP within 5 km of lesser prairie-chicken leks by 20% could increase lek numbers by 12% over 15 years and reduce the risk of severe lek declines (>20% reduction of leks) over a 5-year period from 6.5% to 3.4%. However, a further 50% decline in CRP would be expected to reduce lek numbers by 11% over 15 years, with a 23.1% probability of severe lek declines within 5 years. Our results suggest that continued declines in CRP enrollment may have severe implications for persistence of lesser prairie-chickens throughout Kansas and its occupied range.

Notes:

LESSER PRAIRIE-CHICKEN HIERARCHICAL SELECTION OF CONSERVATION RESERVE PROGRAM (CRP) GRASSLANDS

E. C. TEIGE*, Kansas Cooperative Fish and Wildlife Research Unit, Kansas State University
D. S. SULLINS, and D. A. HAUKOS, U.S. Geological Survey, Kansas Cooperative Fish and Wildlife Research Unit, Kansas State University

The Conservation Reserve Program (CRP) financially incentivizes landowners to voluntarily plant former row-crop land to grasslands for 10-15y. Previous studies have shown that grasslands created by CRP benefit demography, resource selection, and space use for the threatened and endangered lesser prairie-chicken (*Tympanuchus pallidicinctus*). However, CRP is often investigated as binary landcover (i.e., present, absent), negating relationships among landscape placement, management, structure, and planted species of CRP that may be important for linking CRP use to population level outcomes. We used GPS location data from 2013-2020 and conducted multi-scale analyses across three ecoregions to hierarchically evaluate lesser prairie-chicken selection of CRP. Lesser-prairie chicken selection of CRP varied ecoregionally, with birds in the Sand Sagebrush Prairie Ecoregion selecting CRP at greater levels than what was available on the landscape. However, when selection was investigated by CRP type or conservation practice compared to its distribution on the landscape, there was little apparent selection except CP2 (planted native grasses; Manly selection ratio = 1.15; 95% CI = 1.07–1.23). Lesser prairie-chickens selected CRP that had greater visual obstruction, but measurements varied within and among ecoregions. Our results investigate drivers of lesser prairie-chicken selection of CRP at multiple scales and can support conservation actions for continued population persistence.

Notes:

RELATIONSHIPS AMONG LANDSCAPE COMPOSITION AND LESSER PRAIRIE-CHICKEN LEK PERSISTENCE

K. H. STAFFORD*, Kansas Cooperative Fish and Wildlife Research Unit, Department of Biology, Kansas State University
D. S. SULLINS, U.S. Geological Survey, Kansas Cooperative Fish and Wildlife Research Unit, Department of Biology, Kansas State University
D. A. HAUKOS, U.S. Geological Survey, Kansas Cooperative Fish and Wildlife Research Unit, Department of Biology, Kansas State University

The lesser prairie-chicken (*Tympanuchus pallidicinctus*), a federally threatened species in Kansas, has experienced significant declines in abundance and occupied range since the mid-1980s, a result of habitat loss and degradation, anthropogenic disturbance, and woody encroachment. Lesser prairie-chicken populations are sensitive to several landscape scale thresholds, including lek attendance, percent grassland, density of anthropogenic structures, and other features within 5-km of leks. We compared percent grassland, cropland, Conservation Reserve Program cover, anthropogenic structures, and tree density within 5-km among leks with <10 attending males, with >10 attending males, and historical but extinct leks in the lesser prairie-chicken range in Kansas. We found that leks below the population threshold (<10 attending birds and extinct) have the most anthropogenic structures, with >97% being oil and gas wells. Leks above this threshold (>10) have less than half the number of anthropogenic structures compared to leks below the threshold. Approximately 15% of leks are located on CRP for leks with >10 attending birds compared to 18% and 6% of leks with <10 attending birds and extinct leks, respectively. Median woody vegetation cover values are approximately 6% and 11% for leks with <10 attending birds and extinct leks, and 9% for leks with >10 attending birds. These findings will be used to prioritize conservation actions to ensure the persistence of lesser prairie-chickens in Kansas.

Notes:

A 26-YEAR RETROSPECTIVE ANALYSIS OF FACTORS AFFECTING POST-RELEASE SURVIVAL OF CAPTIVE-REARED ATTWATER'S PRAIRIE-CHICKENS

M.E. MORROW, Attwater Prairie Chicken National Wildlife Refuge (retired), P.O. Box 519, Eagle Lake, TX 77434
A.C. PRATT*, G.M. Sutton Avian Research Center, P.O. Box 2007, Bartlesville, OK 74005
J.M. MUELLER, U.S. Fish and Wildlife Service, 24518 FM 1431, Marble Falls, TX 78654
P.W. SENNER, Alexander Center for Applied Population Biology, Lincoln Park Zoo, 2001 North Clark Street, Chicago, IL 60614

Biologists began releasing captive-reared Attwater's prairie-chickens in 1996 to minimize extinction risks for extant wild populations and reestablish extirpated populations at three sites within the historical range on Texas' coastal prairies, following acclimation in large pens. We estimated survival using VHF transmitters equipped with mortality sensors on 3,319 released grouse and found a mean Kaplan-Meier annual survival estimate of 15.3% (range 3.2–40.6%). Despite positive population trajectories over several years, small populations were repeatedly reduced to near-extirpation by population-limiting weather events before reaching sustainable levels. One of the keys to achieving a sustainable population size more quickly is to increase post-release survival. We retrospectively evaluated the effects of 28 variables in 3 categories on post-release survival. The categories included: 1) individual characteristics (e.g., age, body condition, rearing method), 2) release protocol (e.g., acclimation time, release timing, release cohort size), and 3) release site characteristics (e.g., drought index, habitat conditions, predator population size). This comprehensive long-term dataset provides a unique opportunity to inform future release protocols for Attwater's prairie-chickens and other translocation efforts.

Notes:

EVALUATION OF CONSERVATION ACTIONS FOR SAGE-GROUSE POPULATIONS: DID THE BIRDS GET THE MEMO?

Peter S. Coates*, U.S. Geological Survey, Dixon, California 95620 USA
Brian Prochazka, U.S. Geological Survey, Dixon, California 95620 USA
Sarah C. Webster, U.S. Geological Survey, Dixon, California 95620 USA
Cali L. Weise, U.S. Geological Survey, Dixon, California 95620 USA
Cameron L. Aldridge, Colorado State University, Fort Collins, CO 80526, USA
Michael S. O'Donnell, U.S. Geological Survey, Fort Collins, CO 80526, USA
Kevin E. Doherty, U.S. Fish and Wildlife Service, Reno, NV 89502 USA
Steven R. Mathews, U.S. Geological Survey, Dixon, California 95620 USA
John C. Tull, U.S. Fish and Wildlife Service, Reno, NV 89502 USA

Developing effective conservation monitoring and analytical frameworks that incorporate robust assessments of actions in relation to target species' viability is critical for successful recovery efforts, but quantifying conservation effectiveness is often difficult. Here, we present an analytical framework that allows for quantification of conservation efficacy using greater sage-grouse (*Centrocercus urophasianus*; sage-grouse) as an example. We compiled conservation actions conducted 2012 – 2021 within the Bi-State Distinct Population Segment (DPS) and used state-space model estimates of in a progressive-change before-after control-impact paired series framework to evaluate efficacy of numerous unique conservation efforts. Model results provided evidence of substantial increases in population abundance associated with most conservation actions. Relative to leks with no conservation actions, leks within 5 km of a conservation action had an average annual increase in abundance of 4.4% since 2012, resulting in a total increased abundance of 37.4%. While Bi-State sage-grouse populations declined overall through our study, the total sage-grouse abundance in the Bi-State DPS today is 37.4% higher than if no conservation actions had occurred.

Notes:

BROOD TRANSLOCATIONS INCREASES RECRUITMENT AND POPULATION RESTORATION OF SAGE-GROUSE IN CALIFORNIA

Steven R. Mathews*, U. S. Geological Survey, Western Ecological Research Center, Dixon, CA
Mary B. Meyerpeter, U. S. Geological Survey, Western Ecological Research Center, Dixon, CA
Pete S. Coates, U. S. Geological Survey, Western Ecological Research Center, Dixon, CA
Kade Lazenby[2], Utah State University, Logan, UT
David K. Dahlgren[2], Utah State University, Logan, UT
David J. Delehanty[3]. Idaho State University, Pocatello, ID

We performed two Greater Sage-Grouse (*Centrocercus urophasianus*) translocations in California and North Dakota from 2017 to 2020 using two methods at both sites: an established method of translocating females prior to nesting (pre-nesting translocation), and a novel method wherein females were translocated with chicks after successfully hatching nests in source populations (brood translocation). We radio-marked and monitored 135 translocated females and 284 source population females and used count data from leks in recipient and source populations to evaluate each method. Using an integrated population model (IPM), we estimated demographic parameters by females translocated with each method. We found that recruitment in recipient populations was substantially higher when brood translocations were employed compared to when pre-nesting translocations were employed. Most females translocated pre-nesting forewent reproduction entirely, whereas most females translocated with their broods successfully reared offspring in recipient populations. Brood translocations reversed population declines at one site in California and resulted in λ that were 11–30% greater than pre-nesting translocations across both sites, but also revealed that the removal of brood-rearing females from source populations resulted in larger reductions in λ when compared with presenting translocations. These findings are preliminary, provided for timely science communication and are subject to change.

Notes:

HARVESTING HONEY FROM WING-BEES: ANACCURACY ASSESSMENT OF ESTIMATINGNESTINGCHRONOLOGY AND REPRODUCTIVE PARAMETERS FROM WINGS

C. G. Lundblad, Oregon State University, Department of Fisheries, Wildlife & Conservation Sciences, Corvallis, OR 97331, USA
S. T. Vold, Oregon Department of Fish & Wildlife, Hines, OR 97738, USA
M. L. Cline, Oregon Department of Fish & Wildlife, Salem, OR 97302
C. A. Hagen*, Oregon State University, Department of Fisheries, Wildlife & Conservation Sciences, Corvallis, OR 97331, USA

Hunter-harvested wing collections ("wing bees") are widely used to derive demographic metrics in prairie grouse, yet several proposed applications remain untested. For greater sage-grouse (*Centrocercus urophasianus*), it has been suggested that (1) primary feather development of hatch-year (HY) birds can estimate hatch dates and nest phenology, (2) molt status can distinguish first from renesting attempts, and (3) primary molt of hens harvested in September reflects nesting success. We evaluated these assumptions using monitored nests with known hatch dates and fates (n = 311 nests, 2013–2021) in Warner Valley and Trout Creek Mountains, Oregon, and ODFW wing returns (n = 6,213 HY wings, including 4,466 P8 and 1,747 P6/7 birds, 2021–2022). Mean hatch dates from wing data closely matched nest records, differing by 1–3 Julian days (T-tests, $P \leq 0.006$), though hatch date distributions diverged. Molt-based classification of HY wings did not replicate observed first:renest ratios from nest monitoring (224:87; $\chi^2 = 29.5$, $P < 0.0001$), but estimated mean hatch dates per category aligned more closely with field data. Hen molt status showed limited ability to predict nesting success at the individual level. Results suggest wing-based data can approximate mean hatch timing but have limited reliability for inferring nesting attempt ratios or success rates. Ongoing work will incorporate additional wing-year datasets, refine hatch date estimation methods, and explore regression approaches to address sampling unit effects. Findings will inform the use of wing bee data for reproductive monitoring in prairie grouse management.

Notes:

USING AUTOMATED RECORDING UNITS (ARUs) TO MONITOR GROUSE AND ESTIMATE BREEDING POPULATION ABUNDANCE

D. K. DAHLGREN*, Dept. of Wildland Resources, Utah State University, Logan, UT 84322
L. CLARK, Dept. of Wildland Resources, Utah State University, Logan, UT 84322
E. T. THACKER, Dept. of Wildland Resources, Utah State University, Logan, UT 84322

Automated Recording Units (ARUs) are becoming a popular method for monitoring wildlife populations, especially for breeding avian species. ARUs have the advantage of continuous and pre-scheduled recording times with minimal labor once deployed. ARU-based data have primarily been used for occupancy modeling because detecting the number of distinct individuals calling is generally not available to an audio recording device. However, recently N-mixture models, e.g., Royal-Nichols and Time-to-Detection, have been applied to ARU-based data to estimate abundance. We used human-based observers to collect point-count data for breeding dusky (*Dendragapus obscurus*) and ruffed grouse (*Bonasa umbellus*) and we placed ARU devices at sampling locations during the same sampling period. We then used N-mixture models to estimate abundance for both datasets. We found that ARUs were generally more successful at detecting breeding grouse and we successfully estimated abundance with both datasets. Our human-observer data led to slightly inflated abundance estimates compared to ARU-based data. We were able to collect data for considerably more sampling periods with ARUs, compared to human-observers, which lowered the error rates for abundance estimates based on ARU data. We recommend further exploration using ARUs for more cost-efficient and broader spatial scale monitoring of grouse, and other gamebird, abundance.

Notes:

FUTURE VISION AND PLANS OF NAGP FOR PRAIRIE GROUSE

JONATHAN HAUFLER*, North American Grouse Partnership, PO Box 343, Garden Valley, ID. 83622.
TED KOCH, North American Grouse Partnership, PO Box 343, Garden Valley, ID. 83622.

The North American Grouse Partnership has had a primary focus on prairie grouse for most of its existence including our development of the Grassland Conservation Plan for Prairie Grouse in 2008. NAGP has been heavily engaged with conservation of lesser prairie-chickens for many years and coordinated the Interstate Working Groups for greater prairie-chickens and sharp-tailed grouse. We developed a conservation strategy for prairie grouse conservation that emphasized establishing a system of large conservation areas where private landowners would be incentivized to conserve grouse habitat by paying them true market value for the suite of ecosystem services grouse habitat conservation encompasses as benefits to society. Our work with the Lesser Prairie-chicken Landowner Alliance, reported on at this meeting, is an example of how we see landowner engagement occurring. NAGP is positioned to continue and increase our support for lesser prairie-chicken conservation through both policy and on-the-ground programs, and to expand our programs to conduct similar initiatives in the northern Great Plains for greater prairie-chickens and sharp-tailed grouse. Our plans include new staffing to lead policy and landowner support efforts in the northern Great Plains. Our policy work emphasizes expanding funding options for landowner payments through a combination of federal, state, and private sources, as well as ensuring adequate protections for prairie grouse that don't infringe on legitimate landowner activities. Engaging landowners who share this conservation vision is an essential component of any prairie grouse conservation effort.

Notes:

Poster Presentation Abstracts

BIG MOVEMENTS PROVIDE BIG OPPORTUNITIES TO UNDERSTAND GREATER PRAIRIE-CHICKEN POPULATION CONNECTIVITY AMONG LANDSCAPES OF VARYING CRP COMPOSITION

T. HOFFMANN, Nebraska Cooperative Fish and Wildlife Research Unit, University of Nebraska-Lincoln
R. GIORDANELLI, Kansas Cooperative Fish and Wildlife Research Unit, Kansas State University
S.A. SONSTHAGEN, U.S. Geological Survey, Nebraska Cooperative Fish and Wildlife Research Unit, University of Nebraska-Lincoln
D.S. SULLINS*, D.A. HAUKOS, U.S. Geological Survey, Kansas Cooperative Fish and Wildlife Research Unit, Kansas State University

Maintenance of connectivity among remaining grassland patches in the Great Plains may be essential for persistence of Greater Prairie-Chickens. Yet, we lack an understanding of dispersal potential in altered landscapes that include grasslands restored through the Conservation Reserve Program (CRP). We captured 160 female Greater Prairie-Chickens among five study sites in Kansas and Nebraska that differ in CRP composition, marked them with17g GPS transmitters, and monitored them from spring 2025 to current date. We estimated net displacement distances of marked hens from capture site to location farthest from capture site for each marked female. Overall, 27 % of hens made large movements (e.g., moved > 5km) from initial capture location during the study period and on average moved 7.0 km (SD= 11.0km). Our longest movement event was over 80 km one way and involved an individual moving across broad swaths of cropland in Northeastern Nebraska. Our results may provide inference on potential spacing among grassland habitat cores for Greater Prairie-Chickens and can inform strategic conservation efforts.

Notes:

CHARACTERISTICS OF LEK LANDSCAPES AND SPATIAL EXTENT OF BREEDING RELATIVE TO LEKS AMONG CRP AND NON-CRP LANDSCAPES IN KANSAS AND NEBRASKA

J. BOCIAN, Nebraska Cooperative Fish and Wildlife Research Unit, University of Nebraska-Lincoln
E. WATSON, Kansas Cooperative Fish and Wildlife Research Unit, Kansas State University
S.A. SONSTHAGEN, U.S. Geological Survey, Nebraska Cooperative Fish and Wildlife Research Unit, University of Nebraska-Lincoln
D.S. SULLINS*, D.A. HAUKOS, U.S. Geological Survey, Kansas Cooperative Fish and Wildlife Research Unit, Kansas State University

Greater Prairie-Chickens have declined through large portions of their distribution in the last century. Despite declines, Greater Prairie-Chickens have adapted to working landscapes that include Conservation Reserve Program (CRP) grasslands, cropland, and grazed pastures. We lack an understanding of how Greater Prairie-Chickens use working landscapes. Therefore, we examined lek counts and nest placement surrounding leks relative to CRP, grassland, and cropland 5km of each lek. We analyzed survey data from leks at three CRP study sites and two non-CRP study sites in Kansas and Nebraska in spring 2025. Our team captured, marked with 17g GPS transmitters, and monitored 160 female Greater Prairie-Chickens at these leks. Among 56 leks in Kansas and Nebraska, 8.42% (range = 0.01% to 25.79%) of the surrounding 5 km radius landscape was composed of CRP at our CRP study sites. Mean distance between nearest known leks was 6.22 km (range= 0.46 - 45.63 km). Future conservation efforts for Greater Prairie-Chickens could focus on 5km radius landscapes (e.g., ~8,000 ha areas) falling within the landscape constraints we have identified.

Notes:

DATA THAT DANCES IN SYNC: COLLABORATIVE APPROACHES TO PRAIRIE GROUSE POPULATION MONITORING

CAILEY D. ISAACSON*, Department of Biology, University of North Dakota, Grand Forks, ND 58202 USA.
JESSE L. KOLAR, North Dakota Game and Fish Department, Dickinson, ND 58601 USA.
SUSAN N. ELLIS-FELEGE, Department of Biology, University of North Dakota, Grand Forks, ND 58202 USA.

Collecting prairie grouse population data through lek surveys is vital for monitoring species trends and informing conservation strategies. With increasing conservation concerns for prairie grouse (e.g., greater prairie-chickens (*Tympanuchus cupido*) and sharp-tailed grouse (*Tympanuchus phasianellus*), long-term and broad-scale population trends are critical. There is a well-established need for targeted conservation efforts at strategically located areas and consistent monitoring approaches, yet multi-state collaboration efforts are rare and may be challenging to implement given a lack in coordinated monitoring protocols and few participants. The purpose of this research was to 1) synthesize and detail agency survey methods to be shared more broadly, and 2) evaluate potential paths for survey standardization and data collection to be used for both local and regional prairie grouse population trend data. We referenced the Conservation Strategy developed by the Greater Prairie-Chicken and Sharp-Tailed Grouse Interstate Workgroup in June 2022 and reached out to agency upland game biologists to determine survey methods and protocols for multiple states in the Northern Great Plains. We found opportunities for standardizing lek detection protocols and propose potential opportunities for coordinated multi-state protocols to collect consistent prairie grouse population data that can be used for regional trends, while also trying to preserving historic datasets at state levels.

Notes:

DISPERSAL MOVEMENTS OF SHARP-TAILED GROUSE REINTRODUCED TO WESTERN MONATANA

L. DYKSTRA, Dept. of Animal and Range Sciences, Montana State Univ., Bozeman, MT 59717,
K. HARKINS, Montana Fish, Wildlife, and Parks, Helena, MT 59602,
M. NEWBERG, Montana Fish, Wildlife, and Parks, Helena, MT 59602
T. SMUCKER, Montana Fish, Wildlife, and Parks, Helena, MT 59602
B. LARKIN, MPG Ranch, Florence, MT, 59833
L. B. MCNEW*, Dept. of Animal and Range Sciences, Montana State Univ., Bozeman, MT 59717.

Sharp-tailed grouse historically occupied intermountain grasslands west of the Continental Divide in Montana but were likely extirpated by the early 2000s. Montana Fish, Wildlife and Parks began reintroducing sharp-tailed grouse to western Montana in fall 2021. We monitored the movements of 149 female grouse captured in east-central Montana, fitted with GPS transmitters, and translocated to the Blackfoot and Bitterroot Valleys in April and May 2023–2025. Land use differs between the two valleys, which may affect reintroduction outcomes. Of the female grouse released, 35% in the Bitterroot and 55% in the Blackfoot eventually settled and established a home range. Dispersal movements differed between the two sites: grouse in the Bitterroot traveled an average of 168 km over 29 days and settled 29 km from the release site, while grouse in the Blackfoot traveled an average of 53 km over 12 days and settled 9 km from the release site. Despite increased lek sizes near some release sites in 2024, dispersal movements did not differ between the first two years of the study. Grouse alternated between an exploratory and an encamped behavioral state when dispersing. Grouse exhibited encamped behavior when on hilltops or ridges in areas with habitat similar to foothills nesting areas. Proximity to a lek increased encampment behavior in the Blackfoot but not in the Bitterroot. Most mortalities for grouse occurred during the month following release, when grouse were dispersing, so understanding the factors motivating dispersal movements may aid in release site selection for ongoing grouse translocations in western Montana.

Notes:

EVALUATING THE EFFECT OF SENSORY MISINFORMATION ON MESOCARNIVORE FORAGING ACTIVITY

L. B. JOHNSON*, Dept. of Animal and Range Sciences, Montana State Univ., Bozeman, MT 59717,
L. B. MCNEW, Dept. of Animal and Range Sciences, Montana State Univ., Bozeman, MT 59717.

Interest is growing in nonlethal methods of predator management for the benefit of ground-nesting birds. One avenue is the manipulation of predator foraging habits using misleading sensory information (e.g., sense of smell). To assess the utility of this technique for reducing prairie grouse predation, we evaluated the response of mesocarnivores (e.g., badgers and coyotes) to repeated exposure to galliform odors in a northern mixed-grass prairie ecosystem in north-central Montana, during May–July 2024. We quantified the response of mesocarnivores to a blend of chicken and turkey preen-oil mixed compared to a popular commercial coyote trapping lure (O'Gorman's brand). Odor treatments were monitored using motion-activated camera-traps at ~380 sites (~190 sites per odor type), for a total of 3,237 trap-days. We hypothesized that bird odors would be as attractive to predators as commercial lures, and that mesocarnivores would become habituated to the odors, showing decreasing interest during the study period. We found that the mesocarnivore response was similar between odor treatments and did not wane during the study. The frequency of mesocarnivore interactions may have been too low to influence behavior. Overall, the response to treatments and lack of habituation suggest that preen-oil is a viable attractant, but this style of predator manipulation may not be effective in this ecosystem.

Notes:

EVALUATING THE EFFECTIVENESS OF CLOSED HUNTING ZONES ON PRAIRIE GROUSE POPULATIONS

DANIEL T. HIGHFIELD, Department of Biology, University of North Dakota, Grand Forks, North Dakota 58202-9019
ETHAN J. HALSTEAD, Department of Biology, University of North Dakota, Grand Forks, North Dakota 58202-9019
CAILEY D. ISAACSON, Department of Biology, University of North Dakota, Grand Forks, North Dakota 58202-9019
ASHLYN E. D. HERRON, Department of Biology, University of North Dakota, Grand Forks, North Dakota 58202-9019
JESSE L. KOLAR, North Dakota Game and Fish Department, Dickinson, North Dakota 58601
SUSAN N. ELLIS-FELEGE, Department of Biology, University of North Dakota, Grand Forks, North Dakota 58202-9019

Hunting seasons and bag limits can be adjusted to meet population goals. As a result of declining greater prairie-chicken (*Tympanuchus cupido*, GRPC) numbers in Grand Forks County, ND, the North Dakota Game and Fish Department closed harvest of all prairie grouse in a portion of the GRPC breeding area in 2009. Due to the continued decline of GRPC, the Sharp-tailed grouse (*Tympanuchus phasianellus,* STGR) season re-opened in 2024, providing an opportunity to evaluate impacts of harvest on grouse populations. We used annual lek surveys of a block recently reopened to hunting, contrasted with one that remained open to evaluate changes in total counts of displaying males and average lek size. We assessed how differing harvest strategies may shape STGR population outcomes. Preliminary evidence suggests current habitat conditions on the protected block may increasingly favor STGR, a species known for greater ecological flexibility than GRPC. Our findings challenge the assumption that harvest closures alone are sufficient for prairie-chicken recovery and such actions may inadvertently support STGR expansion. Understanding what drives STGR success under differing management strategies is critical for informing future conservation strategies in mixed-species prairie landscapes.

Notes:

EVALUATING NEST TO LEK DISTANCES AMONG CRP AND NON-CRP LANDSCAPES IN NEBRASKA AND KANSAS

R. SUCHARSKI, M. AGEE, Kansas Cooperative Fish and Wildlife Research Unit, Kansas State University
S.A. SONSTHAGEN, U.S. Geological Survey, Nebraska Cooperative Fish and Wildlife Research Unit, University of Nebraska-Lincoln
D.S. SULLINS*, D.A. HAUKOS, U.S. Geological Survey, Kansas Cooperative Fish and Wildlife Research Unit, Kansas State University

Restoration of grasslands in the Great Plains has largely revolved around private landowner enrollment in the Conservation Reserve Program (CRP). To date, the CRP has documented broadscale conservation impacts including converting 4.18 million acres of cropland back to grassland in Kansas and Nebraska. Landscapes that include CRP differ from remnant large intact grasslands where CRP and cropland are lacking. We evaluated how reproductive habitat may vary among landscapes based on distances of nests from leks and other landscape criteria. We fitted 160 female Greater Prairie-Chickens with GPS transmitters and monitored them through reproduction. We estimated distance from nest to capture lek for 25 leks and 155 nests among 3 CRP (Hill City, KS, Bloomfield, NE, and Palisade, NE) and 2 non-CRP (Flint Hills, KS, and Sandhills, NE) study sites. Overall, distance from nest to capture lek was 1.6 km (SD = 0.94 km) among all study sites not including birds that may have dispersed. Distances from nest to lek did not differ among CRP and non-CRP study sites suggesting that Greater Prairie-Chicken space use at the population level may be rigid among landscapes or may be driven by other factors.

Notes:

LEK SITE SELECTION FOR GREATER PRAIRIE CHICKENS AND SHARP TAILED GROUSE IN THE NEBRASKA SANDHILLS

Tristan L. Murphy, School of Biological Sciences, University of Nebraska-Lincoln, Lincoln, NE 68588
Chad E. Brassil, School of Biological Sciences, University of Nebraska-Lincoln, Lincoln, NE 68588
Mark P. Vrtiska, School of Natural Resources, University of Nebraska-Lincoln, Lincoln, NE 68583

The Greater-Prairie Chicken (*Tympanuchus cupido pinnatus*; GRPC) and Sharp-Tailed Grouse (*Tympanuchus phasianellus jamesi*; STGR) are two grouse subspecies found in the Nebraska Sandhills. Once common throughout much of the upper Midwest, both species face threats from habitat fragmentation and loss. The Nebraska Sandhills are one of the few areas where both species distributions overlap and allows for a unique study design. Both GRPC and STGR engage in lekking, which is a courtship ritual consisting of males conducting elaborate dancing displays and vocalization. Leks are the center of breeding habitat and are central to the life cycle for both species. My project objectives are to understand how vegetative communities, vegetative structure, and topography determine GRPC and STGR lekking and non-lekking habitat through small-scale landscape level vegetative analysis, camera studies, and GIS analysis. My study will also evaluate how historical land management has affected the number of leks present each spring for a variety of management methods. Findings from my study may aid in increasing the total number of available habitats and increase the effectiveness of habitat management and restoration.

Notes:

A NOVEL APPROACH TO MONITORING MIXED SPECIES PRAIRIE GROUSE LEKS USING ACOUSTIC RECORDING UNITS

ETHAN J. HALSTEAD*, Department of Biology, University of North Dakota, Grand Forks, ND 58202-9019
ASHLYN E. D. HERRON, Department of Biology, University of North Dakota, Grand Forks, ND 58202-9019
CAILEY D. ISAACSON, Department of Biology, University of North Dakota, Grand Forks, ND 58202-9019
JESSE L. KOLAR, North Dakota Game and Fish Department, Dickinson, ND 58601
SUSAN N. ELLIS-FELEGE Department of Biology, University of North Dakota, Grand Forks, ND 58202-9019

Population trends of prairie grouse are determined visually using lek surveys by ground observers. Dense vegetation, land accessibility, and identification of hybrids are all challenges of this method. As a result, alternative methods to understand hybrid presence have been proposed. The goal of this study was to 1) evaluate the effectiveness of passive acoustic monitoring to detect pure sharp-tailed grouse (*Tympanuchus phasianellus*), greater prairie-chicken (*Tympanuchus cupido*), and their hybrids on mixed-species leks and 2) determine if acoustic recorders detect species or hybrids that were undetected by ground observers. We deployed acoustic recording units (ARUs) across ten leks in Grand Forks County, North Dakota. To record vocalizations during peak activity periods, units recorded audio from 6:15 AM to 8:30 AM daily from April 4-30, 2025. Ground observers visited each lek at least three times during the same period using traditional roadside surveys. Detection patterns from the ARUs using BirdNET and Kaleidoscope Pro will be contrasted with ground observations to explore monitoring efficacy. To our knowledge, we are the first to evaluate hybrid presence of these species using ARUs. We anticipate that our results will assist in the evaluation of a monitoring technique for prairie grouse where mixed-species leks occur.

Notes:

WHY DID THE PRAIRIE CHICKEN CROSS THE ROAD? GENOMICS AND SPECIES DISTRIBUTION OF FRAGMENTED POPULATIONS OF TYMPANUCHUS CUPIDO IN THE CENTRAL GREAT PLAINS

K.A. TRAVIS, Kansas Cooperative Fish and Wildlife Research Unit, Kansas State University
Z.B. WHALEY, Nebraska Cooperative Fish and Wildlife Research Unit, University of Nebraska-Lincoln
S.A. SONSTHAGEN*, U.S. Geological Survey, Nebraska Cooperative Fish and Wildlife Research Unit
D.S. SULLINS, D.A. HAUKOS, U.S. Geological Survey, Kansas Cooperative Fish and Wildlife Research Unit

Over the past century, Greater Prairie-Chickens have declined precipitously due to loss of tallgrass prairie. Isolation of populations increases genetic and demographic risks for long-term viability, making information about connectivity among fragmented areas important for management of this species. We aim to integrate species distribution modeling with population genetic analyses to evaluate habitat connectivity within the core of the Greater-Prairie Chicken range. Across five sites in Kansas and Nebraska, we collected 293 DNA samples and deployed GPS transmitters on 160 Greater Prairie-Chicken hens. In conjunction with lek surveys, Greater Prairie-Chicken locations will be used to construct species distribution models across both states. We will apply genomic approaches to indirectly measure dispersal among sampled sites at multiple temporal scales. We hypothesize that areas of intact grassland will correspond with higher predicted probabilities of suitability for this species and sampled sites will exhibit genetic differentiation that is correlated with geographic distance. Information about direct and indirect estimates of dispersal and predicted species distribution will inform conservation efforts on how landscape features influence connectivity in an increasingly fragmented prairie.

Notes:

State Reports

Manitoba

2025 Sharp-tailed Grouse Lek Monitoring Program- Manitoba Summary Report

Jillian St. George- Game Bird Biologist, Wildlife Branch, Natural Resources & Indigenous Futures

Introduction

Sharp-tailed grouse (*Tympanuchus phasianellus*) are an upland gamebird in Manitoba that occupy a large range, from the prairies into northern sites outside of the boreal shield (Artuso et al., 2018). Leks have been identified in four of the wildlife regions in Manitoba (Eastern, Central, Western, and Northwestern). There are no recorded leks in the Northeastern wildlife region, however they are known to occur in this region. During spring, males gather in a small area called a lek or dancing ground, where they defend small territories and together perform their dance display to attract females. Being Manitoba's only lekking breeding bird, it allows observers to watch dancing males interact with each other and visiting females. These lek surveys have been conducted since 2013 throughout Manitoba, however, sharp-tailed grouse have been monitored in Manitoba since the 1950s. The monitoring has consisted of spring counts of birds using the lekking sites. Information collected on individual leks is useful for understanding factors that influence occupancy (e.g., habitat change). These sharp-tailed lek surveys are a citizen science-based program. With data being collected by landowners, volunteers, and biologist. Results from these surveys can provide us an understanding of local and provincial population dynamics. The following report is a summary of the 2025 lek monitoring program in Manitoba.

Methods

Leks were surveyed between April 14 and May 21, 2025. This period is considered to cover the peak of lek activity (Connelly et al., 2020). Surveys took place 30 minutes before sunrise to two hours after sunrise. Surveys were not conducted during inclement weather, or if winds were greater than 25 km/hr. The surveyor would conduct two-minute points counts to listen for grouse, either from the road, or if access was permitted, on the land itself. Leks were surveyed from one to three times, and surveyors were encouraged to perform a passive count (number of birds observed on lek from distance) and a flush count (number of birds that depart the lek when disturbed). If a count was not achieved on the first flush, observers would conduct a second flush 20 minutes later, but no more than two flushes were conducted in a morning. If no birds were found at the coordinates provided, observers performed a visual and auditory search within a half mile of the location provided to find a satellite lek. NOTE: Not all datasheets have been submitted for the 2025 season. Therefore, results may change slightly as we receive more data.

Results

A total of 56 observers surveyed 124 different leks in 2025 (Figure 1). There was relatively good coverage across the Manitoba range for this species with an inevitable bias towards clumps of

leks due to observer location. The majority of leks were counted on private land (95 of 124, 77%). This was a four per cent increase in the proportion of leks counted on private land compared to 2024 (66 of 90 leks were on private land). Twenty-nine leks (23%) were monitored on crown lands, including Wildlife Management Areas (WMA), community pastures, provincial parks, and federal crown land (Figure 1).

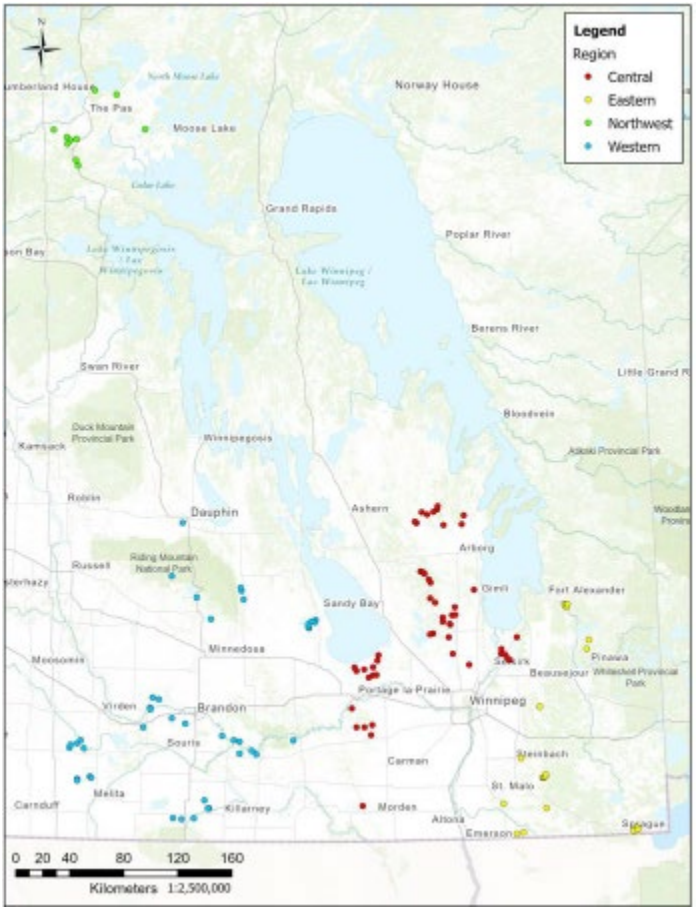


Figure 1. Distribution of monitored sharp-tailed grouse (*Tympanuchus phasianellus*) leks during the 2025 survey period by wildlife region in Manitoba. NOTE: Not all datasheets have been submitted for the 2025 season. Therefore, results may change slightly as we receive more data.

The wildlife region with the most leks surveyed was the Central Region (52 leks monitored) and the lowest coverage was in the Northwest Region (10 leks monitored) (Table 1). In total 89 leks were active (>1 bird counted throughout the survey period). Of the active leks monitored, 22 per cent were new lek sites. Of the leks monitored in 2025, eight leks were recorded as inactive since there have been no sharp-tailed grouse recorded in those areas in a three-year period (Table 1).

Table 1. Summary of sharp-tailed grouse (*Tympanuchus phasianellus*) leks in Manitoba during the 2025 survey period. A lek is considered active when >1 bird was found on at least one survey. NOTE: Not all datasheets have been submitted for the 2025 season. Therefore, results may change slightly as we receive more data.

Region	Total Leks Monitored	Active Leks Monitored	New Active Leks	Leks with Zero Birds	Inactive Monitored Leks
Central	52	44	9	8	1
Western	42	32	8	10	0
Eastern	20	7	0	13	7
Northwestern	10	6	3	4	0
All Leks	124	89	20	35	8

The total number of sharp-tailed grouse counted in 2025 was 1321. The largest lek found was during the first visit in western Manitoba (45 birds flushed). The mean of birds counted per lek was computed using the highest number of birds counted per occupied lek throughout the survey period (one to three surveys). Of the 89 active leks through the province the average number of birds per active lek was 14.84 ± 0.89 (Table 2). Lek occupancy rates were quite different for each wildlife region, with a difference of 50 per cent between the region with the highest occupancy rate (Central) and the region with the lowest occupancy rate (Eastern). This difference is potentially due to the Eastern Region having a higher number of unoccupied and inactive leks monitored this year compared to the other regions. The occupancy rate of all leks in Manitoba was 72 per cent (Table 2). Figure 2 shows the mean number of birds per active lek from 2013 to 2025. The mean estimates vary across years, however, the population trends are remaining stable.

Table 2. Summary of sharp-tailed grouse (*Tympanuchus phasianellus*) in Manitoba during the 2025 survey period. A lek is considered active when >1 bird was found on at least one survey. Mean birds/active lek is the mean ± standard error. NOTE: Not all datasheets have been submitted for the 2025 season. Therefore, results may change slightly as we receive more data.

Region	Total Birds Counted	Max Birds /Lek	Mean Birds /Active Lek	Occupancy Rate
Central	647	30	14.70 ± 1.10	84.62
Western	523	45	16.34 ± 1.80	76.19
Eastern	71	32	10.14 ± 1.71	35.00
Northwestern	80	26	13.33 ± 2.99	60.00
All Leks	1321	40	14.84 ± 0.89	71.77

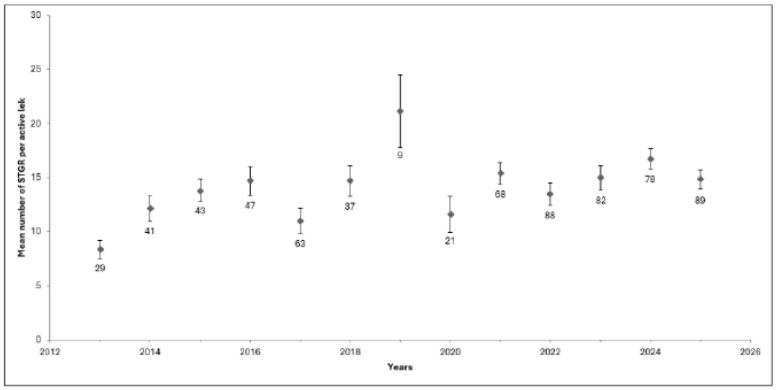


Figure 2. Mean number of sharp-tailed grouse (*Tympanuchus phasianellus*) per active lek from 2013-2025. Error bars are the standard error, and numbers below are the number of active leks that were monitored. NOTE: Not all datasheets have been submitted for the 2025 season. Therefore, results may change slightly as we receive more data.

Discussion

Sharp-tailed grouse remain widespread within the different wildlife regions of Manitoba. Majority of leks surveyed were historic lek sites, with eight being found to be inactive in 2025. The proportion of leks on private lands did increase in 2025, partly due to some leks not being counted on crown lands and volunteers finding several new leks on private land. When incorporating past survey results from the last 13 years, the population seems to be remaining stable with a slight increase. The variations between years could be due to productivity, sampling effort (staff and volunteer availability and/or experience), seasonal effects, and/or habitat changes.

Minnesota

2025 MINNESOTA SHARP-TAILED GROUSE SURVEY

Charlotte Roy
Forest Wildlife Populations and Research Group
Minnesota Department of Natural Resources
Grand Rapids, Minnesota

SUMMARY OF FINDINGS

The Minnesota DNR coordinates sharp-tailed grouse (*Tympanuchus phasianellus*) surveys each spring with the help of wildlife staff and cooperating biologists in the Northwest (NW) and East-Central (EC) survey regions. In 2025, sharp-tailed grouse surveys were conducted between 18 March and 11 May, with 2,027 birds (males and birds of unknown sex) observed at 169 leks. Additionally, 8 birds were observed at 1 lek in Southwest Minnesota. The mean numbers of sharp-tailed grouse/lek were 11.9 (9.4 – 14.6) in the EC survey region, 12.0 (10.6 – 13.4) in the NW region, and 12.0 (10.8 – 13.3) statewide (EC and NW combined). Comparisons between leks observed in both 2024 and 2025 indicated fewer birds were observed in the NW region ($t = 4.8$, $P < 0.001$) and statewide ($t = 4.8$, $P < 0.001$) this year, but similar numbers of birds/lek were observed in the EC region ($t = 0.8$, $P = 0.46$) as last year. Thus, the statewide decline can be explained primarily by the decline in the NW region. However, the number of leks in the EC region remains low (n = 25) compared to the 70 leks counted as recently as 2010. Small populations are vulnerable to stochastic events like catastrophic storms, extreme flooding, and disease outbreaks, and the population in the EC region remains small.

Table 1. Sharp-tailed grouse / lek (≥2 males) at leks observed during spring surveys each year in the Northwest and East Central regions in Minnesota.

	Statewide			Northwest[a]			East Central[a]		
Year	Mean	95% CI[b]	*n*[c]	Mean	95% CI[b]	*n*[c]	Mean	95% CI[b]	*n*[c]
2004	11.2	10.1 – 12.3	183	12.7	11.3 – 14.2	116	8.5	7.2 – 9.9	67
2005	11.3	10.2 – 12.5	161	13.1	11.5 – 14.7	95	8.8	7.3 – 10.2	66
2006	9.2	8.3 – 10.1	161	9.8	8.7 – 11.1	97	8.2	6.9 – 9.7	64
2007	11.6	10.5 – 12.8	188	12.7	11.3 – 14.1	128	9.4	8.0 – 11.0	60
2008	12.4	11.2 – 13.7	192	13.6	12.0 – 15.3	122	10.4	8.7 – 12.3	70
2009	13.6	12.2 – 15.1	199	15.2	13.4 – 17.0	137	10.0	8.5 – 11.7	62
2010	10.7	9.8 – 11.7	202	11.7	10.5 – 12.9	132	8.9	7.5 –10.5	70
2011	10.2	9.5 – 11.1	216	11.2	10.2 – 12.2	156	7.8	6.7 – 8.9	60
2012	9.2	8.2 – 10.3	153	10.7	9.3 – 12.3	100	6.3	5.4 – 7.3	53
2013	9.2	8.2 – 10.2	139	10.5	9.3 – 11.7	107	4.8	3.8 – 5.9	32
2014	9.8	8.8 – 10.9	181	10.9	9.8 – 12.1	144	5.4	4.5 – 6.4	37
2015	9.8	8.9 – 10.7	206	10.8	9.9 – 11.9	167	5.3	4.4 – 6.4	39
2016	9.5	8.6 – 10.5	182	10.2	9.2 – 11.4	152	6.0	4.9 – 7.3	30
2017	9.7	8.7 – 10.8	181	10.4	9.2 – 11.8	141	7.2	5.8 – 8.6	40
2018	9.3	8.4 – 10.3	161[d]	9.8	8.8 – 10.9	130	7.3	5.4 – 9.6	30
2019	10.2	9.1 – 11.4	152	11.0	9.7 – 12.3	122	7.2	5.4 – 9.5	30
2020	NA[e]	NA	NA	NA	NA	NA	NA	NA	NA
2021	10.8	9.7 – 11.9	150[d]	11.3	10.1 – 12.5	131	7.3	5.1 – 9.8	18
2022	12.2	11.0 – 13.4	163	12.5	11.2 – 13.9	142	9.8	7.0 – 13.0	21
2023	11.5	10.4 – 12.7	154	12.4	11.1 – 13.8	123	8.0	6.3 – 9.9	31
2024	15.3	13.9 – 16.9	184	15.9	14.3 – 17.6	159	11.8	8.4 – 15.4	25
2025	12.0	10.8 – 13.3	169	12.0	10.6 – 13.4	144	11.9	9.4 – 14.6	25

[a] Survey regions; see Figure 1.
[b] 95% CI = 95% confidence interval
[c] *n* = number of leks in the sample.
[d] One lek was located just south of the NW region in Clearwater County.
[e] No data were collected in 2020 due to the Governor's Stay at Home Order during the COVID-19 pandemic.

Table 2. Difference in the number of sharp-tailed grouse / lek observed during spring surveys of the same lek in consecutive years in Minnesota.

	Statewide			Northwest[a]			East Central[a]		
Comparison[b]	Mean	95% CI[c]	*n*[d]	Mean	95% CI[c]	*n*[d]	Mean	95% CI[c]	*n*[d]
2004 – 2005	-1.3	-2.2 – -0.3	186	-2.1	-3.5 – -0.8	112	0.0	-1.0 – 1.1	74
2005 – 2006	-2.5	-3.7 – -1.3	126	-3.6	-5.3 – -1.9	70	-1.1	-2.6 – 0.6	56
2006 – 2007	2.6	1.5 – 3.8	152	3.3	1.7 – 5.1	99	1.2	0.1 – 2.3	53
2007 – 2008	0.4	-0.8 – 1.5	166	0.0	-1.6 – 1.6	115	1.2	0.1 – 2.5	51
2008 – 2009	0.9	-0.4 – 2.3	181	1.8	-0.1 – 3.8	120	-0.8	-2.1 – 0.6	61
2009 – 2010	-0.6	-1.8 – 0.6	179	-0.8	-2.6 – 1.0	118	-0.1	-1.2 – 1.0	61
2010 – 2011	-1.7	-2.7 – -0.8	183	-1.8	-3.1 – -0.5	124	-1.5	-2.8 – -0.3	59
2011 – 2012	-2.0	-2.9 – -1.1	170	-1.7	-2.9 – -0.4	112	-2.4	-3.3 – -1.6	58
2012 – 2013	-0.8	-2.0 – 0.4	140	0.4	-1.3 – 2.3	88	-2.9	-4.2 – -1.8	52
2013 – 2014	1.4	0.1 – 2.7	121	1.6	-0.3 – 3.5	79	1.1	-0.1 – 2.3	42
2014 – 2015	-0.2	-1.4 – 0.9	141	-0.3	-1.9 – 1.3	102	-0.1	-1.1 – 1.1	39
2015 – 2016	-1.3	-2.3 – -0.2	167	-1.6	-2.9 – -0.2	129	-0.2	-1.3 – 0.9	38
2016 – 2017	-0.3	-1.5 – 0.9	166	-0.3	-1.8 – 1.2	128	-0.2	-1.2 – 0.8	38
2017 – 2018	-2.2	-3.3 – -1.1	159[e]	-2.4	-3.9 – -0.4	123	-1.4	-2.8 – 0.2	36
2018 – 2019	-0.3	-1.5 – 1.0	132	0.0	-1.5 – 1.6	101	-1.4	-3.0 – 0.1	31
2019 – 2020[f]	NA	NA	NA	NA	NA	NA	NA	NA	NA
2019 – 2021[g]	-0.7	-2.2 – 0.7	124	-0.5	-2.3 – 1.3	96	-1.6	-2.9 – -0.3	28
2021 – 2022	1.6	0.2 – 3.0	122	1.3	-0.3 – 3.0	96	2.7	0.5 – 5.0	26
2022 – 2023	0.7	-1.6 – 1.7	127	0.19	-1.7 – 2.1	106	-0.5	-3.4 – 1.9	21
2023 – 2024	4.6	2.7 – 6.6	147	5.3	3.1 – 7.8	115	1.8	-0.7 – 4.0	32
2024 – 2025	-3.9	-5.5 – -2.3	181	-4.4	-6.2 – -2.6	152	-1.0	-3.5 – 1.5	29

[a] Survey regions; see Figure 1.
[b] Consecutive years for which comparable leks were compared.
[c] 95% CI = 95% confidence interval
[d] *n* = number of leks in the sample. Here, a lek can have a 0 count in 1 of the 2 years and still be considered.
[e] One lek was located just south of the NW region in Clearwater County.
[f] No data were collected in 2020 due to the Governor's Stay at Home Order during the COVID-19 pandemic.
[g] Comparisons were made between 2019 and 2021 because the survey was not conducted in 2020.

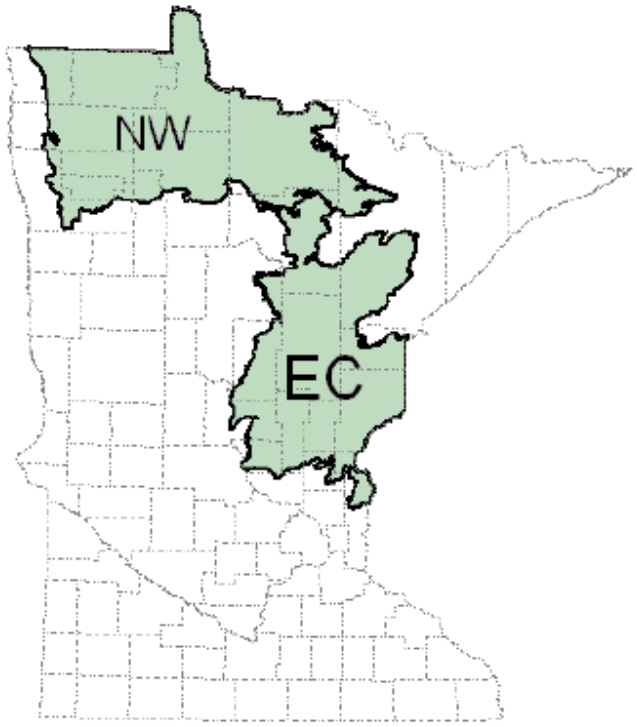


Figure 1. Survey regions for **sharp-tailed grouse** in Minnesota. Northwest (NW) and East Central (EC) survey regions are depicted relative to county boundaries (dashed lines) and influenced by Ecological Classification System Subsection boundaries.

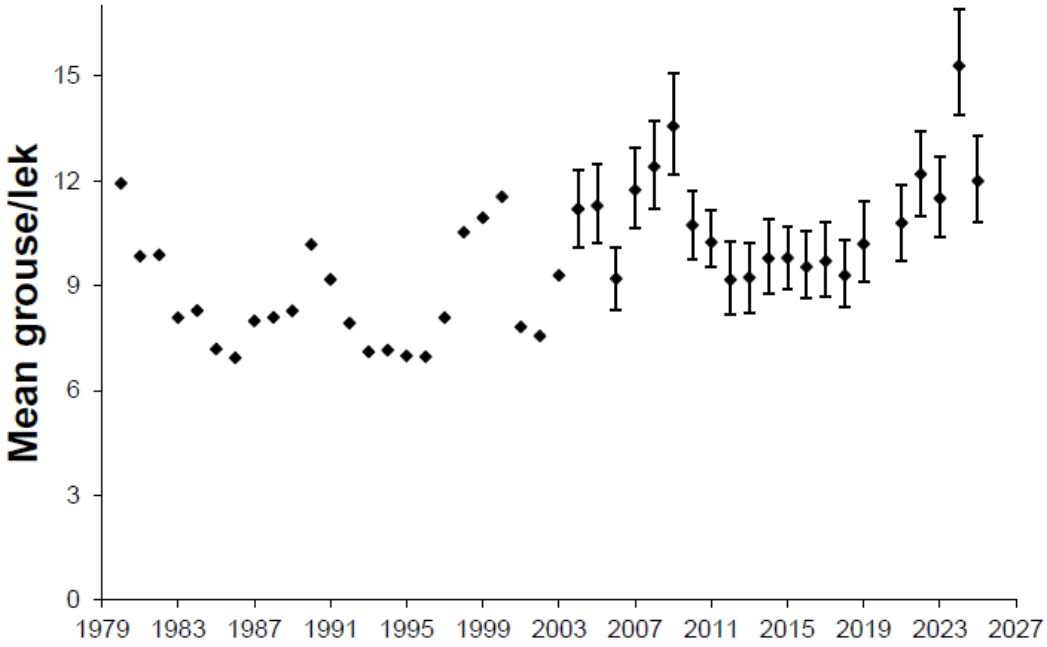


Figure 2. **Sharp-tailed grouse** counted in spring lek surveys statewide in Minnesota during 1980–2025. Bootstrap (95%) confidence intervals are provided for recent years. Annual means are not connected by lines because the same leks were not surveyed every year. No data were collected in 2020 due to the Governor's Stay at Home Order during the COVID-19 pandemic.

2025 MINNESOTA PRAIRIE-CHICKEN POPULATION SURVEY

Charlotte Roy
Forest Wildlife Populations and Research Group
Minnesota Department of Natural Resources
Grand Rapids, Minnesota

SUMMARY OF FINDINGS

Greater prairie-chickens (*Tympanuchus cupido pinnatus*) were surveyed in all 17 survey blocks during the spring of 2025. Observers located 41 booming grounds and counted 460 males and birds of unknown sex in the survey blocks. When areas outside the survey blocks are included, observers located 102 booming grounds, 955 male prairie-chickens, and 56 birds of unknown sex. Estimated densities of 0.06 (0.04–0.08) booming grounds/km2 and 11.2 (9.1–13.4) males/booming ground within the survey blocks were similar to densities during recent years and during the 10 years preceding modern hunting seasons (i.e., 1993–2002), but lower than the peak in booming grounds/km2 in 2007 when Conservation Reserve Program (CRP) enrollments were also the highest.

Table 1. Minimum abundance of prairie-chickens within and outside hunting permit areas in Minnesota during spring 2025. Lek and bird counts are not comparable among permit areas or years.

Permit Area	Area (km²)	Leks	Males	Unknown[a]
803A	1,411	8	75	0
804A	435	0	0	0
805A	267	14	160	0
806A	747	7	61	3
807A	440	16	152	1
808A	417	15	170	0
809A	744	12	127	0
810A	505	8	49	19
811A	706	5	21	5
812A	914	6	30	14
813A	925	4	47	0
PA subtotal	7,511	95	892	42
Outside PAs[b]	NA[c]	7	63	14
Grand total	NA[c]	102	955	56

[a] Unknown = prairie-chickens for which sex was unknown, but which were probably males.
[b] Counts done outside permit areas (PA).
[c] NA = not applicable because the area outside permit areas was not defined.

Table 2. Prairie-chicken counts within survey blocks in Minnesota during spring 2025 and change in counts compared to 2024.

			2025		Change from 2024[a]	
Range[b]	Survey Block	Area (km²)	Booming grounds	Males[c]	Booming grounds	Males[c]
Core	Polk 1	41.2	1	18	-1	-3
	Polk 2	42.0	4	47	-1	-12
	Norman 1	42.0	2	24	0	-12
	Norman 2	42.2	1	15	-2	-7
	Norman 3	41.0	3	42	-3	-24
	Clay 1	46.0	5	76	-3	-11
	Clay 2	41.0	2	31	0	-14
	Clay 3	42.0	6	54	-2	0
	Clay 4	39.0	2	17	1	5
	Wilkin 1	40.0	2	30	1	24
	Core subtotal	415.0	28	354	-10	-54
Periphery	Mahnomen	41.7	2	44	0	11
	Becker 1	41.4	5	30	0	-9
	Becker 2	41.7	1	5	1	NA
	Wilkin 2	41.7	1	2	0	0
	Wilkin 3	42.0	2	15	2	NA
	Otter Tail 1	41.0	1	3	0	-4
	Otter Tail 2	40.7	1	7	0	-6
	Periphery subtotal	290.6	13	106	3	12
Grand total		705.5	41	460	-7	-42

[a] The 2024 count was subtracted from the 2025 count, so positive values indicate increases.
[b] Survey blocks were categorized as within the core or periphery of the Minnesota prairie-chicken range based upon bird densities and geographic location.
[c] Includes birds recorded as being of unknown sex but excludes lone males.

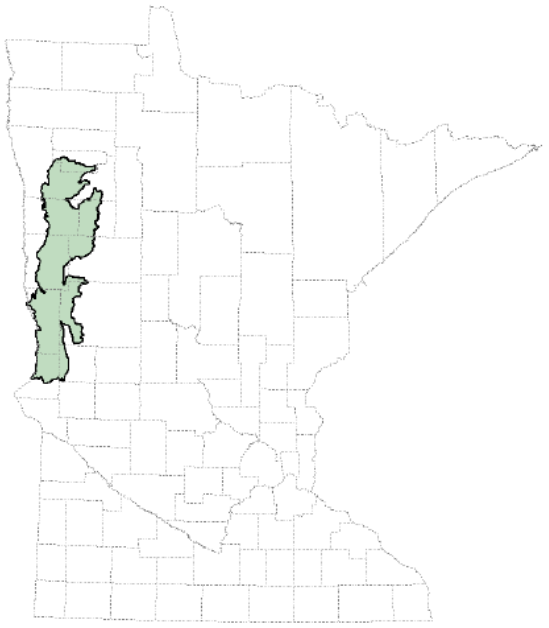


Figure 1. Primary greater prairie-chicken range in Minnesota (shaded area) relative to county boundaries. The range boundary was based on Ecological Classification System Land Type Associations and excludes some areas known to be occupied by prairie-chickens.

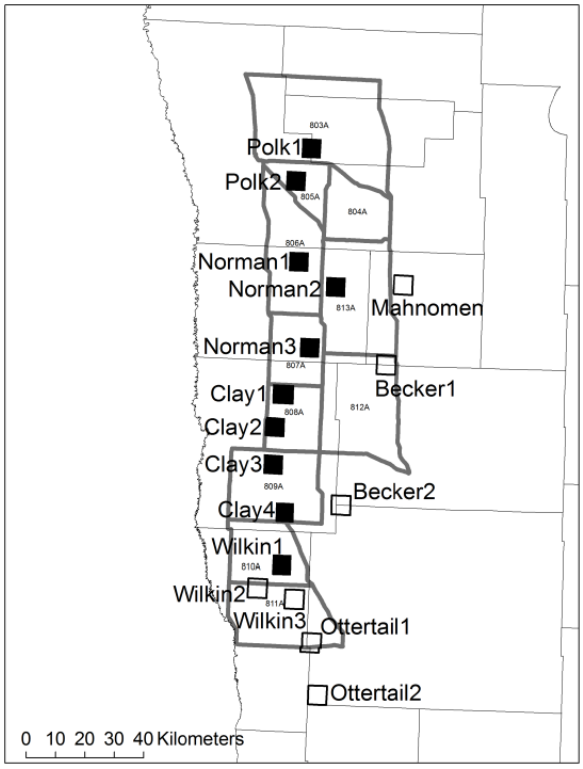


Figure 2. Prairie-chicken lek survey blocks (41 km2, labeled squares) and hunting permit areas (thick grey lines) in western Minnesota. Survey blocks were either in the core (black) or periphery (white) of the range with a threshold of 1.0 male/km2 in 2010 and were named after their respective counties (thin black lines). Permit areas were revised in 2013 to eliminate 801A and 802A, modify 803A, and add 812A and 813A. See previous reports for former permit area boundaries.

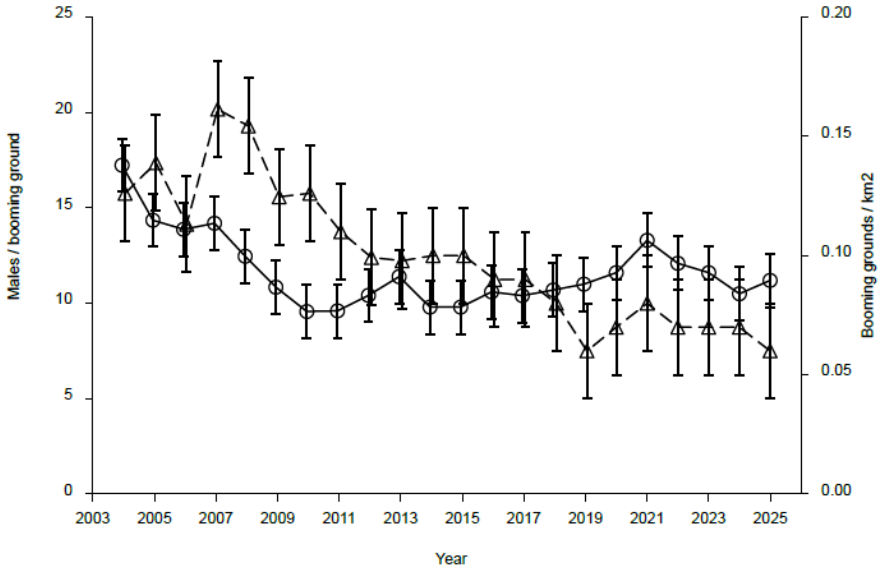


Figure 3. Mean prairie-chicken males/booming ground (circles connected by solid line) and booming grounds/km2 (triangles connected by dashed line) in survey blocks in Minnesota with 95% confidence intervals. Lek data submitted after the report is written in previous years is included in revised values when the report is written each year.

2024 MINNESOTA PRAIRIE-CHICKEN HARVEST SURVEY

Charlotte Roy
Forest Wildlife Populations and Research Group
Minnesota Department of Natural Resources
Grand Rapids, Minnesota
13 December 2024

SUMMARY OF FINDINGS

The Minnesota DNR conducts a postcard survey of greater prairie-chicken (*Tympanuchus cupido pinnatus*) hunters each year to estimate hunter numbers and harvest and to evaluate hunter success and satisfaction. In 2024, 98 hunters were estimated to have gone afield and harvested 89 prairie-chickens and 42 sharp-tailed grouse (*Tympanuchus phasianellus*) during prairie-chicken hunts. Hunter success (0.55) was similar to recent years. Satisfaction (3.6 on a scale of 1-5) also was similar to recent years and consistent with improvement following changes to the permit areas and season in 2013 (i.e., longer length and earlier dates). Notably, in 2024, the number of applicants (463) for the prairie-chicken lottery remained high after a recent peak in applicants in 2023, with 106 applicants applying for the first time in 2024.

Table 1. Prairie-chicken hunt lottery applicants, winners, and hunting permit purchasers in Minnesota during 2024.

Permit area	Permits available	No. of applicants	Lottery winners		Permit purchasers[a]		Surplus purchasers[c]
			No.[b]	Proportion	No.	Proportion	
803A	8	34	8	0.24	6	0.75	0
804A	10	19	10	0.53	7	0.70	0
805A	10	61	10	0.16	10	1.00	0
806A	12	29	12	0.41	6	0.50	0
807A	20	120	20	0.17	18	0.90	0
808A	20	79	20	0.25	19	0.95	0
809A	15	40	15	0.38	13	0.87	0
810A	15	53	15	0.28	14	0.93	0
811A	5	5	5	1.0	3	0.60	0
812A	5	21	6	0.29	5	0.83	0
813A	5	2	2	1.0	1	0.50	0
All	125	463	123	0.27	102	0.83	0

[a] Lottery winners who purchased a hunting permit.
[b] The number of permits may exceed the quota when the last applicant selected in the lottery belongs to a hunting party.
[c] Number of people purchasing a surplus permit after the lottery because the permit quota was not met during the lottery. Surplus permits were not available in 2024.

Table 2. Prairie-chicken harvest in Minnesota during 2024.

Permit area	No. of hunters[a]		Birds harvested		Birds per harvester[b]	Success rate[c]
	Self-reported	Estimated	Self-reported	Estimated		
803A	6	6	2	2	2.0	0.17
804A	7	7	1	1	1.0	0.14
805A	8	10	8	10	1.7	0.60
806A	4	6	3	5	1.7	0.50
807A	13	17	14	18	1.5	0.71
808A	14	19	20	27	1.8	0.79
809A	8	12	13	19	1.7	0.92
810A	11	14	4	5	1.7	0.21
811A	1	1	0	0	NA	0.00
812A	3	5	1	2	1	0.4
813A	1	1	0	0	NA	0.00
All	76	98	66	89	1.6	0.55

[a] Permit purchasers who hunted.
[b] Estimated number of birds harvested per successful hunter.
[c] Proportion of estimated hunters harvesting ≥1 prairie-chicken.

Table 3. Summary of prairie-chicken hunting in Minnesota during 2003–2024.

Year	Permits available	Applicants	Hunters[a]	Birds harvested	Success rate[b]	Hunter satisfaction[c]
2003	100	853	92	130	0.75	4.4
2004	101	759	87	58	0.45	3.6
2005	110	500	86	94	0.63	4.0
2006	182	512	149	109	0.49	3.6
2007[d]	187	519		122	0.53	
2008	186	535	137	133	0.58	3.9
2009	186	512	143	118	0.52	3.4
2010	186	421	136	78[e]	0.32	3.0
2011	186	264	138	103	0.45	3.4
2012	186	298	158	86	0.39	3.4
2013	126	277	93[f]	96[f]	0.60[f]	3.7[f]
2014	126	305	102	95	0.54	3.7
2015	126	271	112	103	0.55	3.6
2016	126	304	111	102	0.58	3.8
2017	125	317	97	86[f]	0.55[f]	4.0[f]
2018	125	303	104	82[f]	0.51[f]	3.9[f]
2019	125	354	100	64[f]	0.37[f]	3.8[f]
2020	125	366	105	112[f]	0.62[f]	4.0[f]
2021	125	435	111	110[f]	0.49[f]	4.0
2022	125	436	109	111	0.60	3.9
2023	125	495	101	96	0.59	3.9
2024	125	463	98	89	0.55	3.6

[a] Estimated number who went hunting, not permit purchasers.

[b] Proportion of hunters harvesting ≥1 prairie-chicken.

[c] Mean on a scale of 1–5.

[d] A hunter survey was not conducted during 2007; results are from the Electronic Licensing System, which documented 150 permit purchasers.

[e] One hunter reported harvesting 10 prairie-chickens in 2010.

[f] Assumed that non-respondents were represented by respondents in the second mailing in 2013, 2017, 2018, 2019, 2020, 2021, 2022, 2023, and 2024.

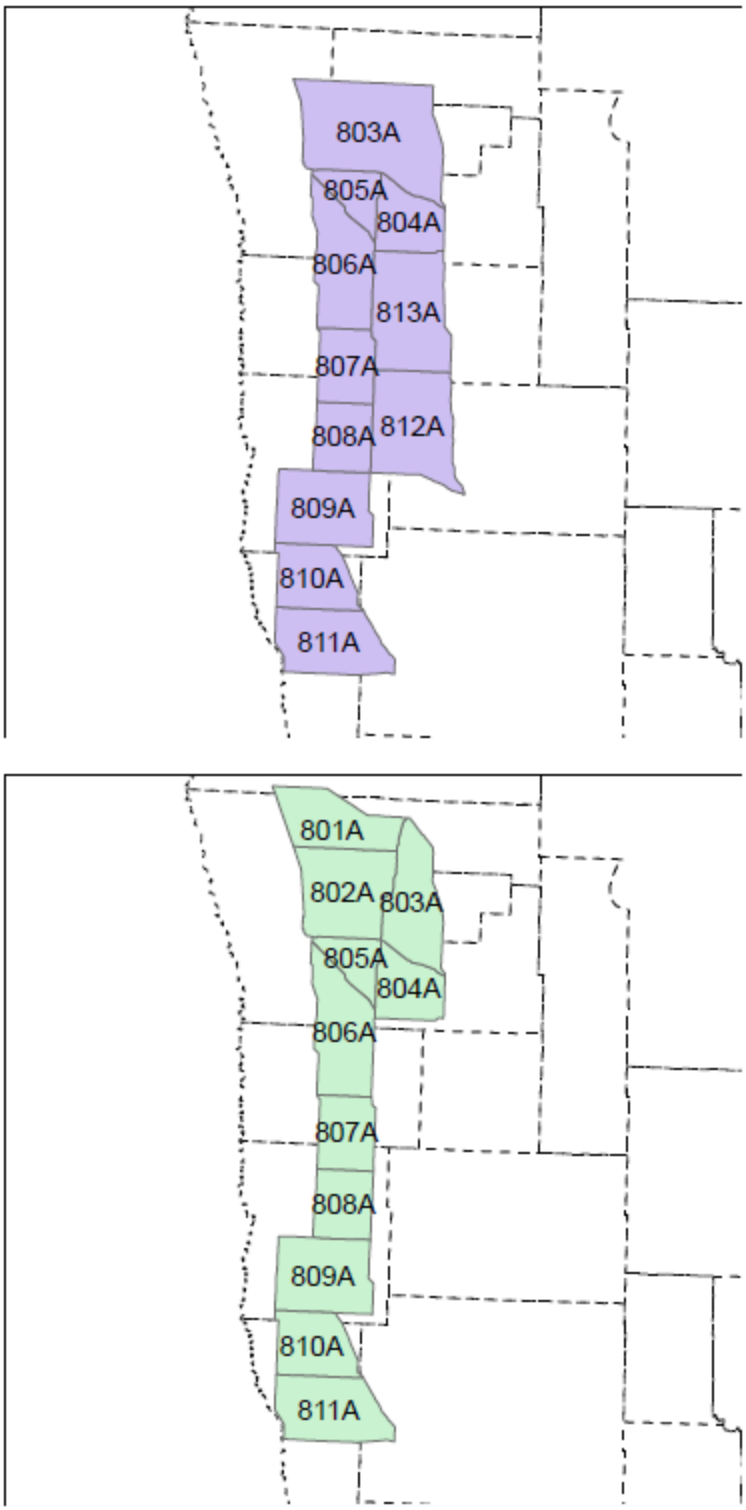


Figure 1. Prairie-chicken hunting permit area boundaries in northwestern Minnesota since 2013 (top) compared to during 2006–2012 (bottom). County boundaries are indicated by dashed lines. Permit areas 812A and 813A were added, 801A was eliminated, and 802A and portions of 803A were combined into a revised permit area 803A.

Nebraska

2024-25 Prairie Grouse Hunter Cooperator Survey

Bryan O'Connor, Nebraska Game and Parks Commission

During the 2024-25 season, 427 wing envelopes were turned between the west (409) and east (18) grouse zones, containing 1,046 wings. In the west zone, of the 678 sharp-tail wings, 65% were juvenile, whereas 60% of the 290 prairie-chicken wings were juvenile. Overall hunting success was 1.28 grouse per hunter-day, which was higher than in 2023-24, 0.94 grouse per hunter-day (Table 1). In the east zone no sharp-tail grouse were harvested. There were 36 prairie-chicken wings, 39% were juveniles. Hunter success was 1.00 grouse per hunter-day, which was similar to 2023-24, 1.06 grouse per hunter-day (Table 2). Harvest in both zones primarily occurred during September and October and declined monthly thereafter (Figure 1).

Table 1. Results of the 2024-25 Grouse Hunter Cooperator Survey west zone.

West Zone			
Month	Sharptails (% juvenile)	Prairie Chicken (% juvenile)	Grouse/ Hunter-day
September	413 (69)	218 (67)	1.39
October	180 (56)	48 (48)	1 08
November	22 (68)	7 (14)	0.71
December	26 (62)	10 (30)	0.90
January	17 (59)	6 (0)	1.21
Totals*	678 (65)	290 (60)	1.28

* Totals include some wings where month of harvest was not reported.

Table 2. Results of the 2024-25 Grouse Hunter Cooperator Survey east zone.

East Zone		
Month	Prairie Chicken (% juvenile)	Grouse/ Hunter-day
September	32 (41)	1.14
October	4 (25)	0.57
November	0 (0)	N/A
December	0 (0)	N/A
January	0 (0)	N/A
Totals	36 (39)	1.00

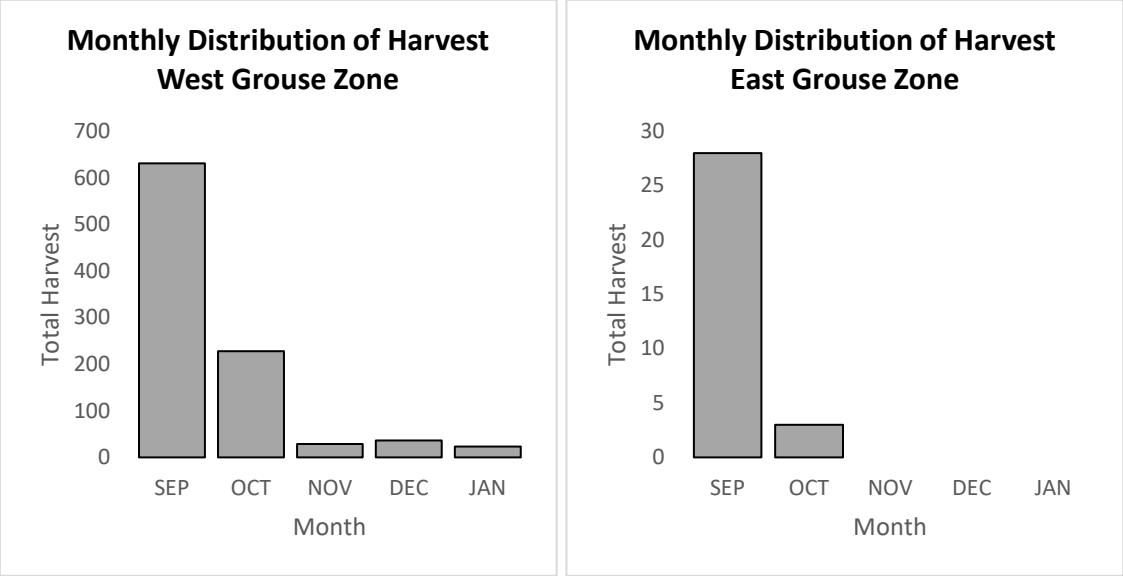


Figure 1. Monthly distribution of grouse harvest during the 2024-25 season.

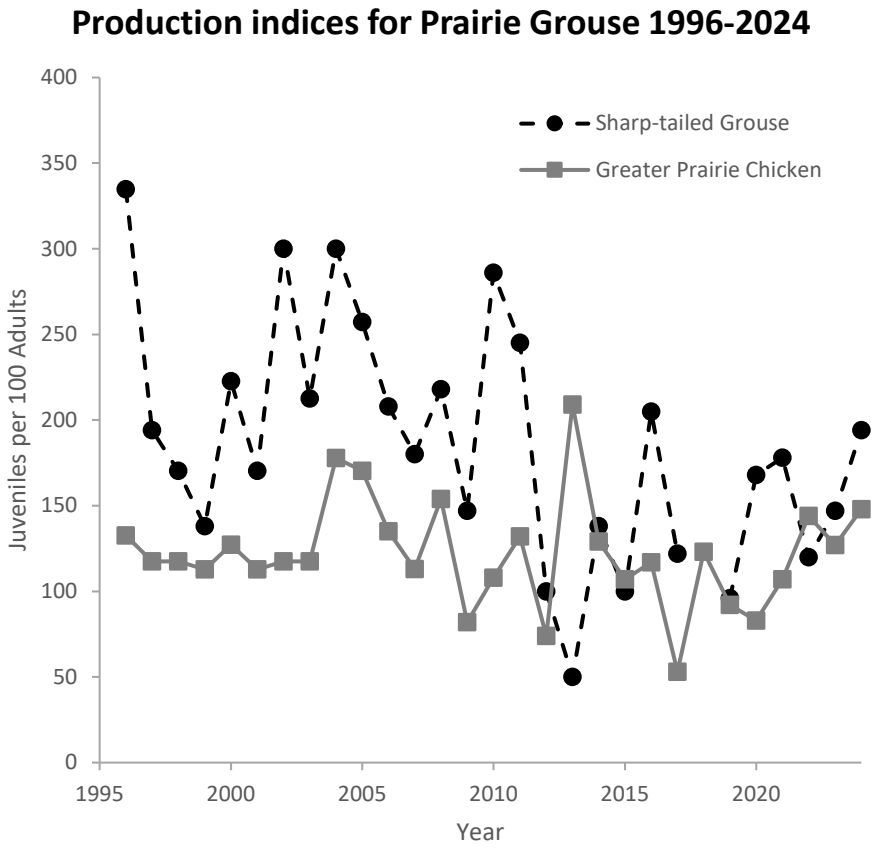


Figure 2. Production indices for prairie grouse harvested by hunter-cooperators in the Grouse Hunter Cooperator Survey, 1996-2024 (East and West Zones combined).

Statewide Prairie Grouse Monitoring Effort

The NGPC collaborated with the Rainwater Basin Joint Venture in a 3-year study to determine how various landscape and environmental factor influence prairie grouse populations across the state. Ground-based surveys were conducted each spring within randomly-selected, square-mile sections following protocol developed by Runia et al. (2021) and sampling effort was stratified across 4 ecoregions and by percent (%) grass/tree cover. From 2020-2022, a total of 659 sections were surveyed by NGPC staff, partners, and volunteers. Greater prairie-chickens and sharp-tailed grouse occurred in 133 (20.2%) and 90 (13.7%) of the sections surveyed, respectively.

Spatial modeling was used to predict prairie grouse occupancy and abundance across Nebraska (Figures 3 & 4), describe habitat preferences and associated thresholds, and estimate population sizes (Table 3). These models were used to predict population responses to future land-use and environmental changes (Table 3), and will aid in the prioritization of future conservation delivery efforts (Figure 6).

Table 3. Current and future greater prairie-chicken (GRPC) and sharp-tailed grouse (STGR) population estimates and uncertainty (95% CI) for Nebraska, USA. Subject-level predictions from generalized linear mixed-effects models were derived by spatially applying the model to 2020 environmental conditions with year and ecoregion intercept offsets, and future estimates were derived by applying the model (ceteris paribus) to estimates of future woody encroachment (2050).

		2020 Conditions			2050 Woody Encroachment		
Model	Year	Estimate	CI (2.5%)	CI (97.5%)	Estimate	CI (2.5%)	CI (97.5%)
GRPC	2020	175,164	137,256	225,134	128,093	110,119	165,185
GRPC	2021	208,153	164,965	264,502	151,096	119,256	192,883
GRPC	2022	117,354	97,145	142,620	85,429	70,085	104,867
STGR	2020	72,529	53,216	100,586	59,763	44,090	82,593
STGR	2021	90,397	67,896	122,128	73,100	55,041	98,678
STRG	2021	53,690	41,977	69,611	43,347	33,642	56,745

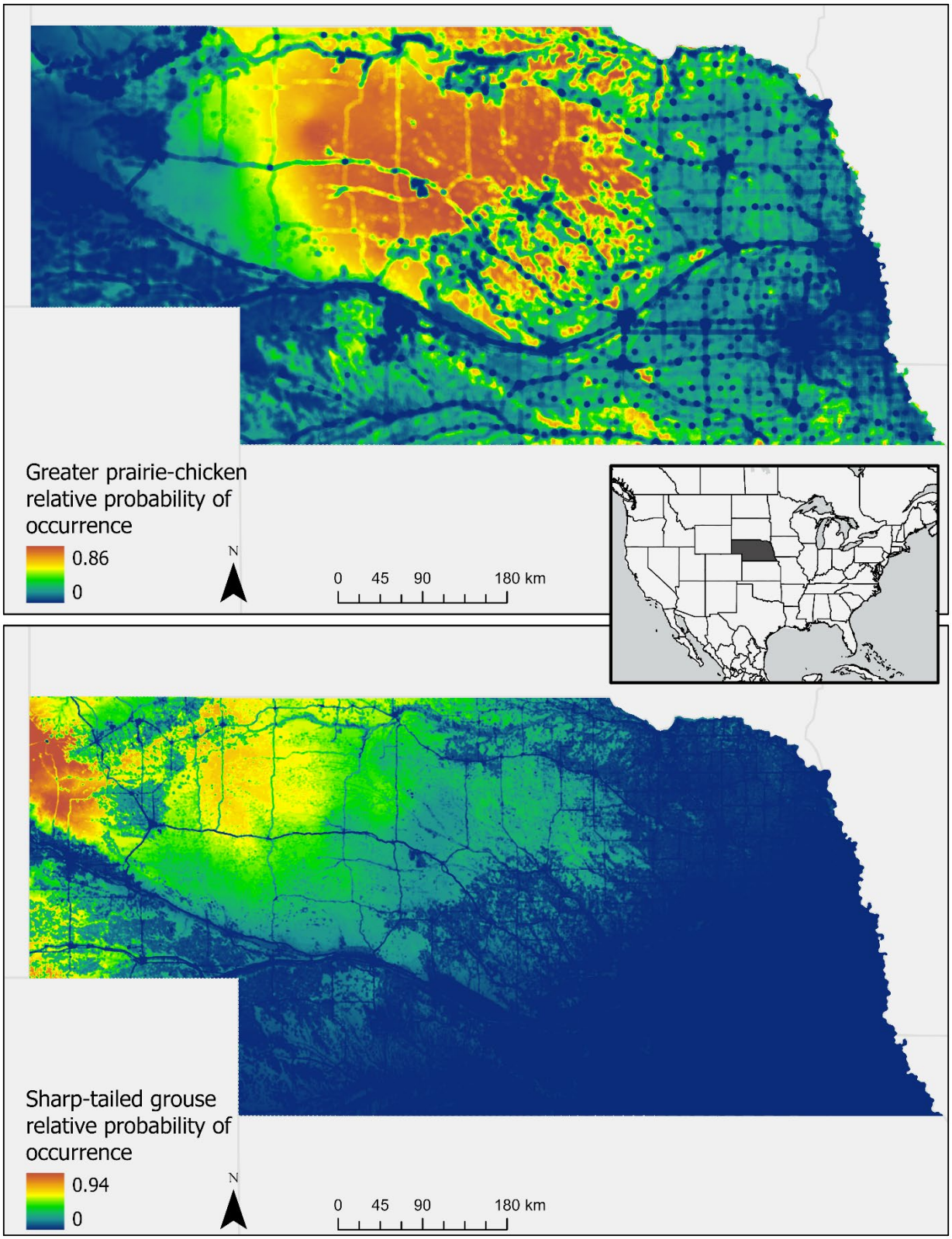


Figure 3. Predicted relative probability of occurrence.

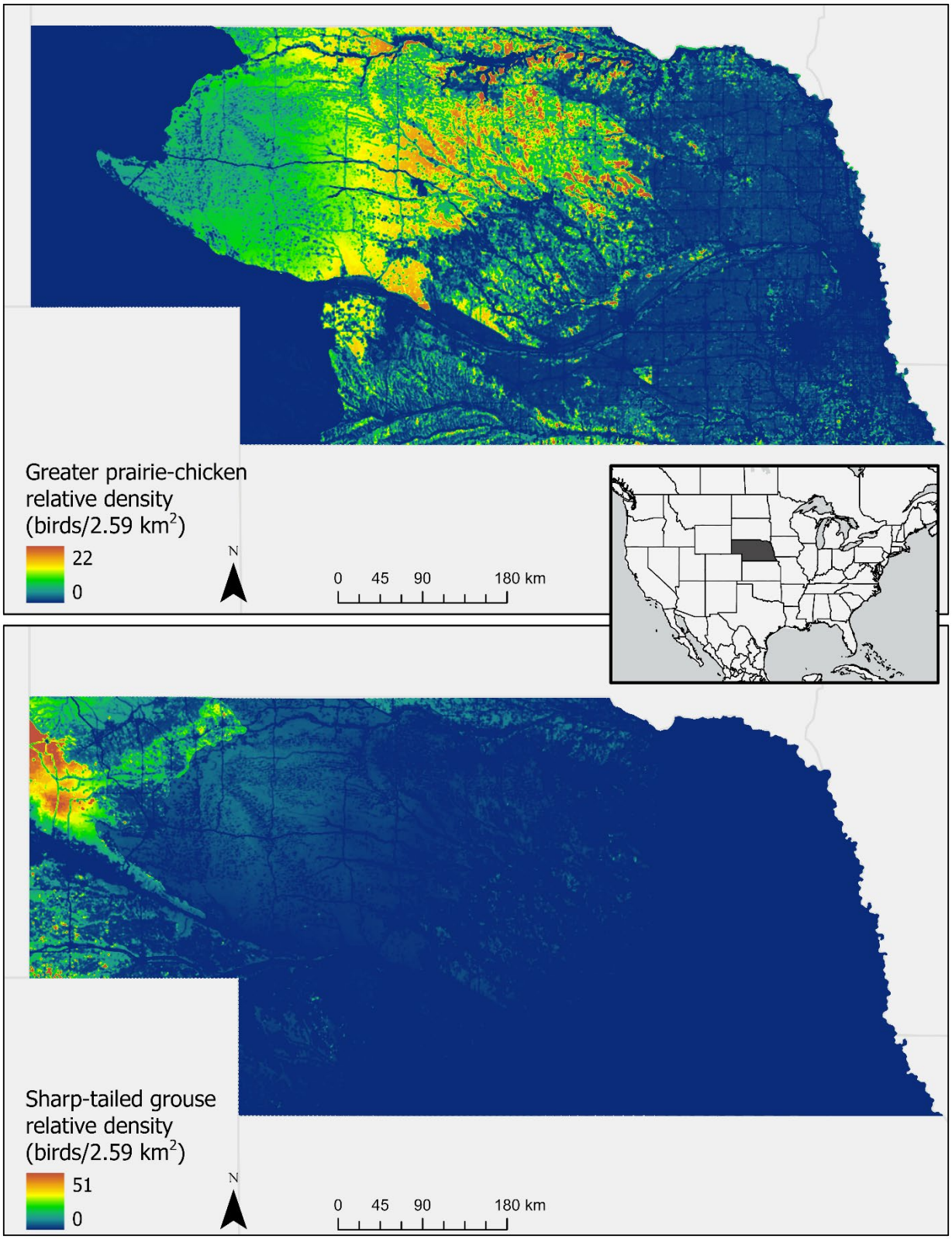


Figure 4. Predicted relative abundance.

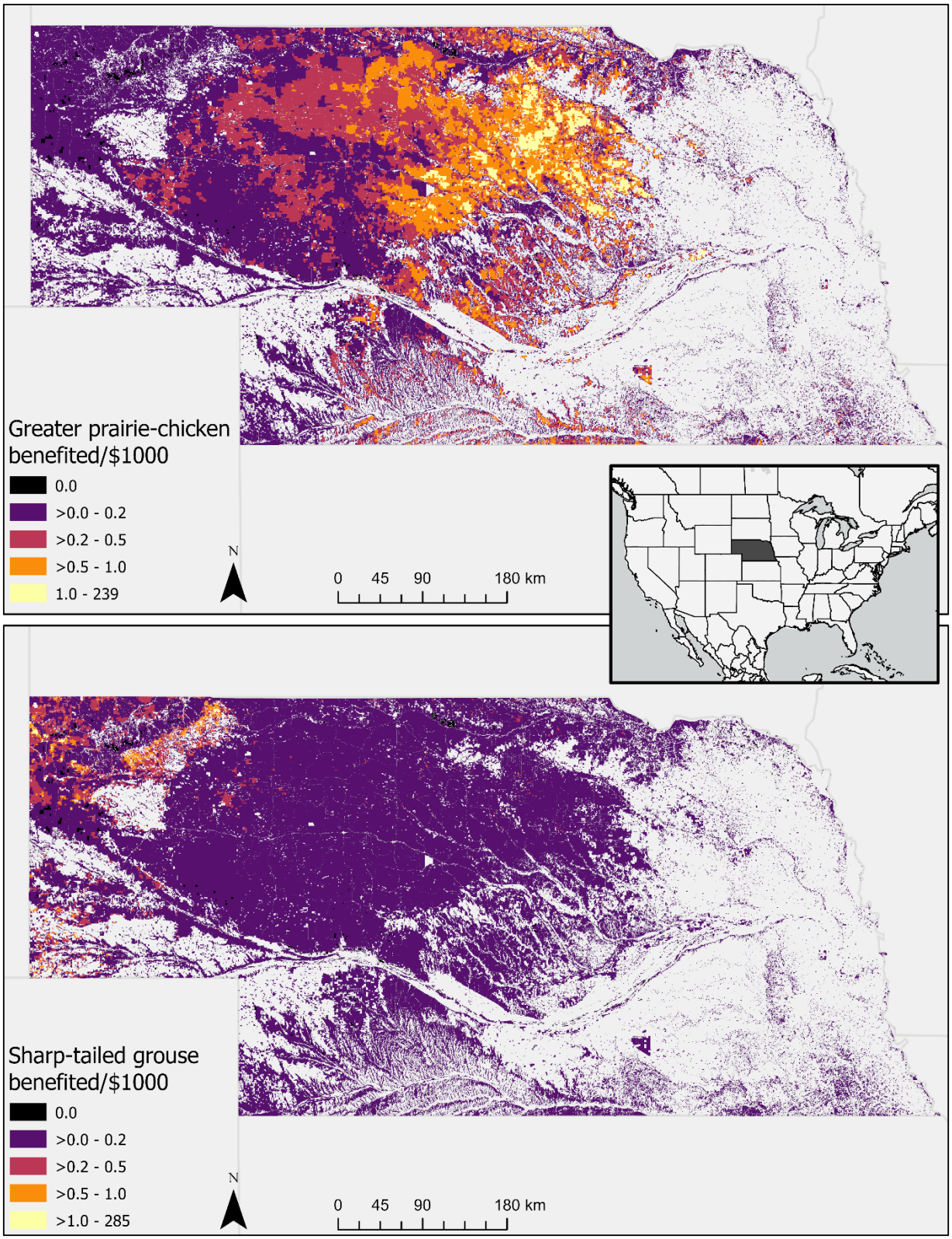


Figure 5. Predicted return on investment. ROI based on change of grouse population per habitat improvement dollars spent based on 2021 EQIP rates.

North Dakota

2025 Sharp-tailed Grouse Census

Jesse Kolar, North Dakota Game and Fish Department

RESULTS

This spring, from mid-March through April, observers surveyed 25 census blocks, each roughly 36 square miles. This survey provides an index of sharp-tailed grouse measured as the number of males counted each year on established dancing grounds (leks). Survey protocols instruct staff to locate all dancing grounds within each survey block; therefore, it is an attempt at a complete census of sharp-tailed grouse males within each survey block.

The sharp-tailed grouse index (weighted average by area surveyed) for 2025 was down 13% statewide from 2024. The decline was consistent in majority of the state: Southwest (-8%), the Prairie Potholes (-18%) and Drift Prairie (-16%); however, we did see a slight increase in Grand Forks County (10%; Grand Forks County is the only remaining survey block in the Red River Valley; much of the prime farmland in the Red River is no longer suitable for sharp-tailed grouse.) Observers counted 3,994 male sharptail on all blocks in 2025 compared to 4,409 in 2024 (total only includes blocks and leks that were counted both years). The density of male grouse counted on all census blocks in 2025 (4.0 males/mi^2) remains slightly below the 20-year average (4.4 males/mi^2; Figure 1) and is near the 10-year average (4.1 males/mi^2). Table 1 shows the change in individual census blocks across the state. Note, Sheyenne National Grasslands, counted by the US Forest Service, is not included in summaries because their survey block is much larger than other census blocks and has inconsistent effort dependent on staffing. On the SNG, observers counted 312 sharptail males vs. 113 in 2024 and 297 in 2023.

DISCUSSION

Sharptail declines in 2025 should be viewed in context with strong increases in 2024, following good reproduction in 2023. The numbers in the SW and Prairie Pothole region remain above the 10-year averages and have rebounded to double what they were during the trough in 2018. Although reproductive rates of hens during our 2024 late summer roadside counts were low (1.36 juveniles per adult), once again, we observed a high count for broods per 100 miles (2.4 broods)—the highest consecutive years since 2015-16. Historically sharptail populations were highest in the SW corner of ND, but the Prairie Pothole region had been at similar or higher densities since the 2017-2018 drought years. The strong rebounds in the southwest last year, helped the southwest remain slightly higher than the prairie potholes for the spring of 2025 (see Figure 3 for trends by district).

Although the winter of 2024-25 was considered mild, we experienced a sustained deep freeze in late February through early March. Subsequently, we had warmer than average weather for much of April and early spring. Much of the state remains behind our normal annual precipitation, but we did experience a 4-day soaking rain event in mid-May, which was followed by warm weather and rapidly growing new nesting cover. The cold rainy weather should have been early enough in the nesting period that we don't expect it will have strong negative impacts on nesting, and the vegetation growth following the rain should make up for any early

incubation losses. Much of the reproductive success will depend on weather trends from mid-June through July as chicks are hatching.

Despite short-term population pulses, the long-term outlook for prairie grouse remains poor due to grassland conversion to row crops. Although sharp-tailed grouse are an adaptable grouse species, they nest almost exclusively in native prairies, grazed pastures or planted hay fields. Early haying could have potential short-term effects in planted hay fields, but grassland conversion is the most concerning long-term threat.

2025 Greater Prairie-chicken Surveys

RESULTS

Observers only counted 5 male prairie chickens (9 in 2024) at Grand Forks County on 3 mixed leks this spring (there are no remaining pure prairie chicken booming grounds in the Grand Forks population). Jodie Provost counted 4 (vs.8 in 2024, 4 in 2023) prairie chickens on 1 pure booming ground and 1 mixed ground surrounding the SNG and the USFS counted 7 male prairie chickens (vs. 15 in 2024, 18 in 2023, 38 in 2022). The Sheyenne National Grasslands total was 11 males in 2025 (vs. 23 in 2024).

DISCUSSION

Greater prairie-chickens have declined in the Grand Forks population since 2006 (peaked at 337 males counted), and after the reintroduction "experiment" we have learned that we have enough habitat for a chicken population that would require re-stocking, CRP-scaled grass plantings and potentially removals of sharp-tailed grouse. In 2021 we documented a much higher rate of hybrids (sharptail X prairie chicken) than were previously documented or expected. Because hybrids appear darker than sharptail at a distance, it is possible they had been mis-classified as prairie chickens on mixed leks previously. NDGF does not plan to continue bolstering prairie chickens through translocation without large-scale habitat projects, nor if sharp-tailed grouse continue to overtake the area (see Figure 5, from John Toepfer, 2018). Sharp-tailed grouse are more tolerant of fragmented and shrubby landscapes than prairie chickens, and the increase in sharptail/decrease in prairie chickens is likely driven by less acreage of tallgrass prairie and increasing shrublands.

The prairie chicken population on and around the SNG has held on, despite small numbers, for the past 10 years. Although there is enough acreage on and around the SNG for a small prairie chicken population, the area is managed for multiple uses, which does not result in large blocks of grasslands free from woody encroachment. The US Forest Service has recently implemented management practices to begin reducing woody cover (Russian Olive, Siberian Elm, quaking aspen and willow species) on the Sheyenne National Grasslands, and we support continued management to conserve the largest remaining block of tallgrass prairie in North Dakota. Prairie chickens are a specialized species requiring predominantly tallgrass prairie habitats, and

although they occupy areas with fragmentation and woody encroachment, the long-term trend of those populations is usually downward.

2025 Sage-grouse Surveys

The sage-grouse lek census in North Dakota was originated in 1951, and the current ground census lek protocols were established by the early 1960's. All currently located sage-grouse leks have been known since 1980.

We completed translocating sage-grouse to North Dakota from south-central Wyoming in 2020, so any sage-grouse counted in 2022 could include offspring from translocated sage-grouse. No leg bands or antennae were observed on any of the males counted, so they are not likely males translocated from Wyoming.

RESULTS

We were not able to find any male sage-grouse in 2025. Moreover, we discovered that 7 of the 11 males counted in 2024 were likely mis-identified sharp-tailed grouse (near a historic sage-grouse lek but counted from over a mile away due to lack of access). One hen was observed on one of the last remaining leks from 2023.

Figure 4 shows the total counts for sage-grouse since they were first surveyed in the mid-1960's. The trend may be artificially stable through the 1970's because additional leks were still being found until 1980.

DISCUSSION

Our population has been trending downward since 2000, with only 4 years showing noticeable increases. The last peak in the population was in 2000, when observers counted 283 males on 17 leks. Both South Dakota and eastern Montana sage-grouse populations have also declined, with many of the leks just across the Montana border also blinking out in the past 5 years, despite rebounding trends of other upland species in the same areas (i.e. favorable conditions for reproduction and winter survival).

Sage-grouse are a species adapted to big sagebrush (*Artemesia tridentata*), which has seen large-scale removals since the 1960's for irrigated hay, row crops and grazing. Sage-grouse are not tolerant of fragmented landscapes, and there are few (if any?) remaining areas in North Dakota that are not fragmented at the ~4-mile scale, where sage-grouse seem to thrive.

We should not have expected declines this year after observing increases in sharptail, partridge, pheasant and ruffed grouse in 2024. However, small populations are especially fragile due to low mate availability, poor fertility (due to lack of mates), susceptibility of localized groups to extirpation, and high cost of each mortality to the population. So, despite good vegetative cover for nesting in 2024 and a mild 2024-25 winter, our remaining sage-grouse did not fare well.

Table 1. Data from sharp-tailed grouse census areas in North Dakota, 2024-2025.

District	Census Block	Square Miles	Male Sharptail Counted* 2024 Total	2024 /mi2	2025 Total	2025 /mi2	Raw Change	Weighted Trend**
1 - Southwest	Billings	37	365	9.9	297	8.0	-19%	-19%
	Cross Ranch	12	123	10.3	97	8.1	-21%	-21%
	Fort Clark	36	108	3.0	92	2.6	-15%	-15%
	Gorham	20	71	3.6	78	3.9	10%	10%
	Arroda	31	78	2.5	39	1.3	-50%	-50%
	Knife River	40	NA	NA	NA	NA	NA	NA
	Lake Ilo	35	NA	NA	NA	NA	NA	NA
	Mercer	26	157	6.0	158	6.1	1%	1%
	Morton	49	499	10.2	450	9.2	-10%	-10%
	Slope	36	420	11.7	425	11.8	1%	1%
	Stanton	29	58	2.0	75	2.6	29%	29%
	Subtotal:	**351**	**1,756**	**6.4**	**1,711**	**6.2**	**-3%**	**-8%**
2 - Prairie Potholes	Burleigh	36	178	4.9	161	4.5	-10%	-10%
	Chase Lake	36	223	6.2	207	5.8	-7%	-7%
	Davis Ranch	24	95	4.0	126	5.3	33%	33%
	Emmons	36	156	4.3	135	3.8	-13%	-13%
	Long Lake	30	NA	NA	NA	NA	NA	NA
	Lostwood	36	NA	NA	NA	NA	NA	NA
	McLean (Koenig)	24	115	4.8	105	4.4	-9%	-9%
	McWard	35	304	8.7	197	5.6	-35%	-35%
	Mountrail (Belden)	35	275	7.9	189	5.4	-31%	-31%
	Sheridan (Pryor Mtns)	36	275	7.6	191	5.3	-31%	-31%
	Streeter	31	110	3.5	103	3.3	-6%	-6%
	WPA's	24	NA	NA	NA	NA	NA	NA
	Subtotal:	**383**	**1,621**	**5.5**	**1,311**	**4.5**	**-19%**	**-18%**
3 - Drift Prairie	Arrowwood	19	NA	NA	NA	NA	NA	NA
	J. Clark Salyer	42	NA	NA	NA	NA	NA	NA
	Johnson's Gulch	18	109	6.1	117	6.5	7%	7%
	Lonetree (E)	47	220	4.7	238	5.1	8%	8%
	Lonetree (W)	32	101	3.2	76	2.4	-25%	-25%
	McHenry	38	85	2.2	39	1.0	-54%	-54%
	Sheyenne	70	133	1.9	160	2.3	*20%*	20%
	Upper Souris	26	NA	NA	NA	NA	NA	NA
	Subtotal:	**222**	**515**	**2.5**	**470**	**2.3**	**-9%**	**-16%**
4 - Grand Forks	Grand Forks	48	132	2.8	182	3.8	38%	38%
	Bry	82	385	4.7	320	3.9	-17%	-17%
	Subtotal:	**130**	**517**	**4.0**	**502**	**3.9**	**-3%**	**10%**
Statewide Total:		**1,004**	**4,409**	**4.4**	**3,994**	**4.0**	**-9%**	**-13%**

*Only includes males from leks that were counted both years

**District and Statewide summaries only include blocks with similar survey effort for both years

Table 2. Five-year summary of ruffed grouse drumming routes in the Turtle Mountains and Pembina Hills, 2021-2025. (Note: Pembina Hills survey routes were inaccessible in 2023, but comparisons can be made to previous years).

District	Route	Area	2021			2022			2023			2024			2025			% Change 2022-2023
			Sum Max drums	Stops	Drums/s top	Sum Max drums	Stops	Drums/s top	Sum Max drums	Stops	Drums/s top	Sum Max drums	Stops	Drums/s top	Sum Max drums	Stops	Drums/s top	
1 Turtle Mountains	1	Highway 43 East	5	15	0.33	7	15	0.47	11	15	0.73	18	15	1.20	13	15	0.87	-28%
	2	San Haven NE	3	14	0.21	2	14	0.14	10	14	0.71	10	14	0.71	2	14	0.14	-80%
	3	Dunseith North	6	12	0.50	5	12	0.42	9	12	0.75	38	12	3.17	7	12	0.58	-82%
	4	Willow Lake	3	11	0.27	7	11	0.64	9	11	0.82	11	11	1.00	11	11	1.00	0%
	5	Highway 43 West	11	14	0.79	15	14	1.07	17	15	1.13	13	15	0.87	18	15	1.20	38%
	6	Metigoshe	5	15	0.33	6	15	0.40	9	15	0.60	17	15	1.13	21	15	1.40	24%
	7	Thompson Lake	10	16	0.63	23	16	1.44	10	16	0.63	14	16	0.88	12	16	0.75	-14%
	8	Wakopa WMA	3	16	0.19	5	16	0.31	17	16	1.06	12	16	0.75	18	16	1.13	50%
Subtotal			46	113	0.41	70	113	0.62	92	114	0.81	133	114	1.17	102	114	0.89	**-23%**
2 Pembina Hills	4	JV Wessels WMA	26	12	2.17	17	9	1.89	NA	NA	NA	44	12	3.67	28	12	2.33	-36%
	5	Pembina Gorge	NA	10	NA	NA	10	NA	NA	NA	NA	2	13	0.15	28	13	2.15	1300%
	6	Concrete	26	14	1.86	NA	14	NA	NA	NA	NA	24	14	1.71	NA	14	NA	NA
	7	Olga-Vang	0	13	0.00	3	8	0.38	NA	NA	NA	NA	NA	NA	9	12	0.75	NA
Subtotal			52	26	2.00	20	17	1.18	0	0	NA	70	39	1.79	65	37	1.76	**-2%**
Statewide Total			**98**	**139**	**0.71**	**90**	**130**	**0.69**	***92***	***114***	***0.81***	***203***	***153***	***1.33***	***167***	***151***	***1.11***	**-17%**

[1] Highest number of drums heard on a stop/Total number of stops on route = Number of drums per best stop per route.

[2] Formula = # of drums/# of stops = # drums per stop.

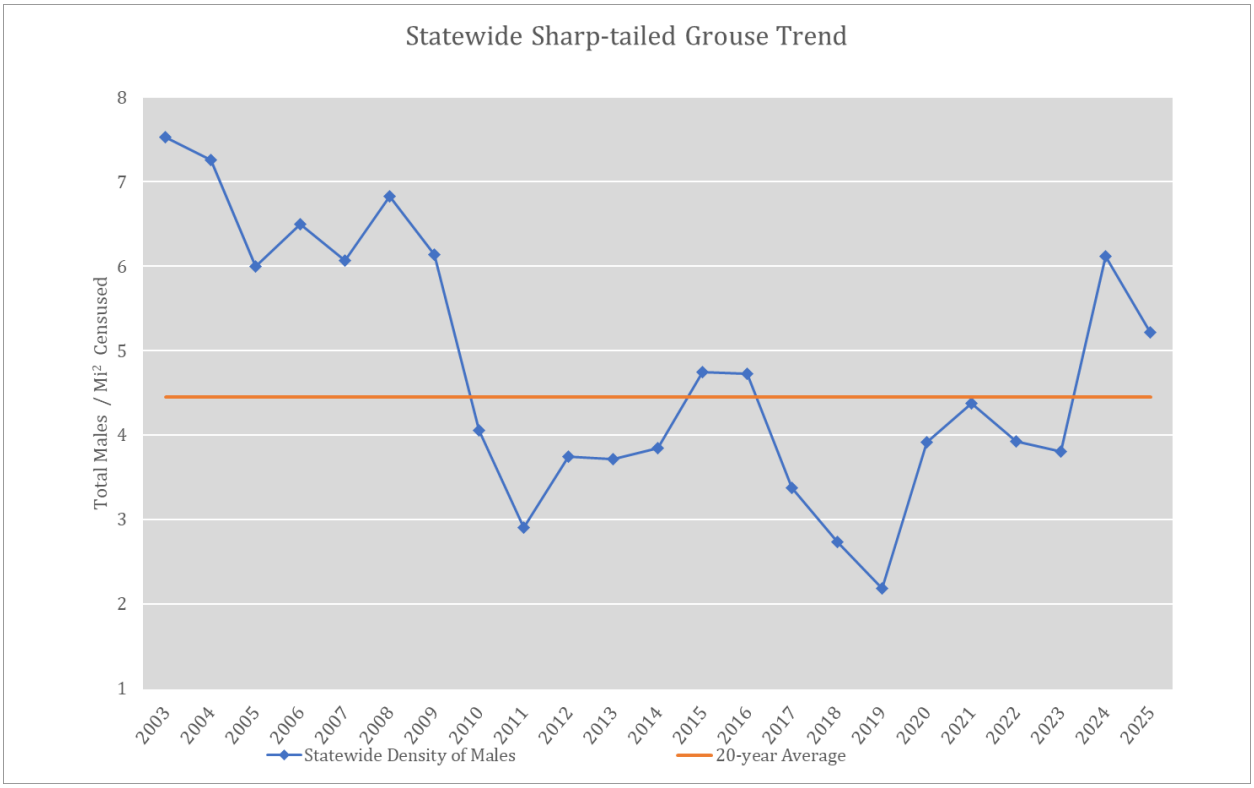


Figure 1. Plot of male sharp-tailed grouse density (high counts of all leks counted per square mile censused) for 2003-2025.

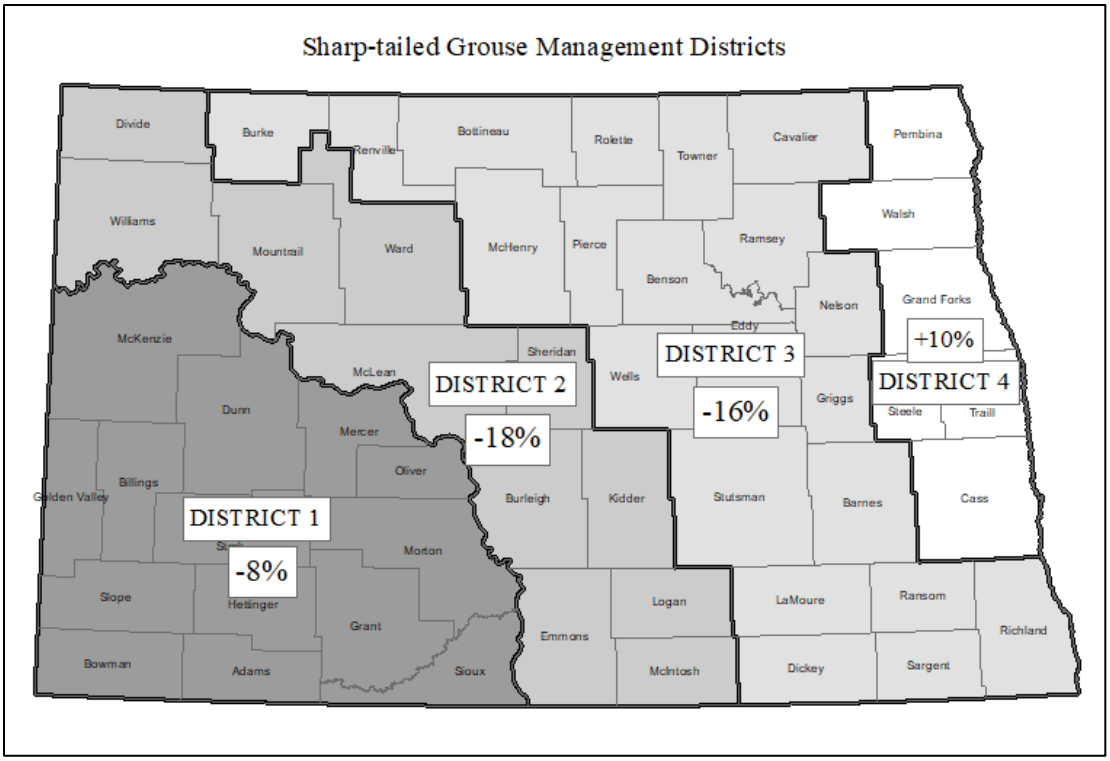


Figure 2. Percent change of male sharp-tail grouse counted in each of the North Dakota prairie grouse management districts, 2024 to 2025.

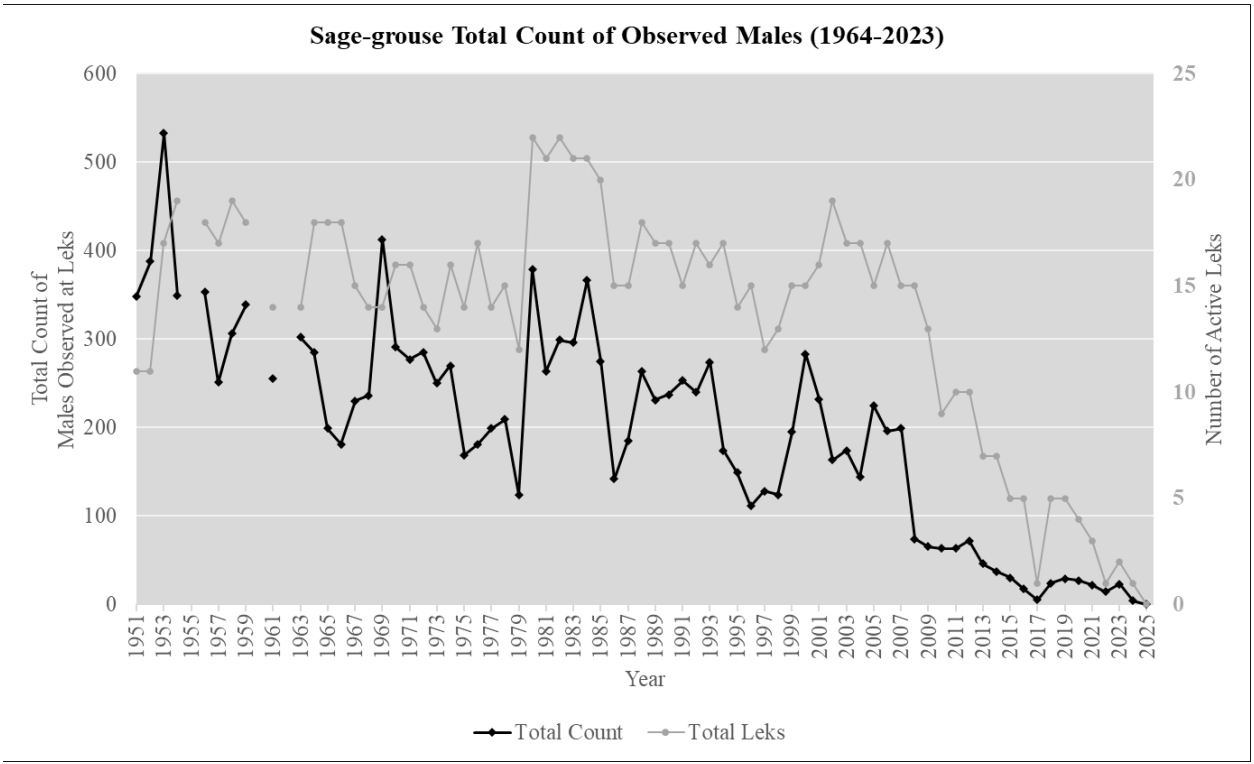


Figure 4. Plot of total count of male sage-grouse males and number of known active leks in southwestern North Dakota, 1964-2025.

Washington

2025 Sharp-tail grouse update

Michael Schroeder, Washington Department of Fish and Wildlife

Declining populations and distribution of Columbian sharp-tailed grouse (*Tympanuchus phasianellus columbianus*) in Washington have resulted in serious concerns for their long-term conservation status and their up-listing to state endangered in 2018. The overall population was estimated to be 656 associated with 33 active leks in 8 isolated populations in 2025. This was a decrease in the population of 5% from the previous year. Overall, grouse habitat has been dramatically impacted by a succession of wildfires in 2012, 2015, 2020, and 2021 with 7 of the 8 populations impacted. The population is estimated to be 31% lower than it was prior to the largest wildfires in 2020. We examined the impact of wildfires by comparing attendance at leks in the three springs before wildfires with attendance at leks in the three springs after wildfires. During the 6-year period, attendance declined 67% inside fire perimeters and increased 15% outside perimeters. Multiple sharp-tailed grouse translocations have been conducted by WDFW and partners between 1998 and 2025. A total of 720 Columbian sharp-tailed grouse have been translocated to 6 of 8 populations in Washington State to improve their genetic and demographic health. Genetic assessments of populations before and after translocations have shown that translocations have increased heterogeneity. In all release sites, translocations appear to have reversed the population declines and averted extirpation in the short term, though it is hard to assess long term success due to the impact of wildfires and other habitat degradations. Habitat conservation efforts such as grassland and riparian restoration, general CRP and SAFE, and habitat acquisition are ongoing in all populations.

Wisconsin

2025 Wisconsin Greater Prairie-Chicken Management Program Updates

Lesa Kardash, Wisconsin Department of Natural Resources

The Wisconsin Department of Natural Resources (WDNR) completed the Wisconsin Greater Prairie-chicken (GRPC) management plan for 2022-2032 in June 2022. The WDNR narrowed the focus of the plan in central Wisconsin to three state-managed properties and corridors between those properties (“core area”). The primary goal focuses on increasing acres of grassland habitat managed annually and reclaiming grassland habitat on the three core properties. WDNR managers are working towards achieving this goal by implementing priority habitat management actions including increasing woody vegetation control, conservation grazing, and prescribed fire. WDNR and partners are collaborating to achieve secondary goals of increasing acreage enrolled in private land programs and permanent grassland protection through acquisitions and easements within the core area.

Surveys for GRPC in 2025 were conducted in central Wisconsin from 21 March through 17 April. A total of 38 booming grounds were detected and surveyors counted a mean of 271 (range 236-307) males on those booming grounds (Table 1, 2). During peak breeding activity, each booming

ground was observed an average of 2.5 different days (range: 1-5 days). Across all surveys, average lek attendance was 7.1 (95% C.I: 5.6-8.6males per booming ground.
In 2024, the WDNR developed a GRPC and Sharp-tailed grouse observation survey application for smartphones. The information collected will help identify changes in the range and production of both species. The surveys are designed to collect opportunistic observations throughout the year, particularly in late spring and summer during the brood-rearing period, and do not replace the WDNR's long-standing lek surveys.

Table 1. Number of male Greater Prairie-Chickens* in central Wisconsin, 2018-2025**.

Area	2018	2019	2021	2022	2023	2024	2025
Buena Vista	135 (113-158)	113 (105-123)	168 (154-180)	208 (195-223)	175 (156-196)	210 (163-246)	216 (187-245)
Leola	19 (10-26)	25 (21-30)	20 (19-20)	10 (10-10)	23 (22-23)	17 (16-18)	15 (13-16)
Paul J. Olson	71 (61-81)	55 (46-65)	59 (57-62)	63 (45-77)	65 (56-71)	61 (54-66)	40 (36-46)
Mead	18 (14-21)	12 (11-12)	4 (3-4)	0 (0-0)	1 (1-1)	0 (0-0)	0 (0-0)***
Totals**	**243 (198-286)**	**205 (183-230)**	**251 (233-266)**	**281 (250-310)**	**264 (235-291)**	**288 (233-330)**	**271 (236-307)**

* Mean (Low count – high count)
** No surveys were conducted in 2020 due to COVID-19 policies.
*** Unknown number of males heard in one location on one day, no visual confirmation
[1] Includes Clark and Taylor Counties

Table 2. Number of Greater Prairie-Chicken booming grounds in central Wisconsin, 2018-2025*.

Area	2018	2019	2021	2022	2023	2024	2025
Buena Vista	17	18	19	20	17	23	27
Leola	4	5	3	2	4	3	3
Paul J. Olson	12	14	13	12	12	11	8
Mead	4	2	1	0	0	0	**
Totals	**37**	**39**	**36**	**34**	**33**	**37**	**38**

* No surveys were conducted in 2020 due to COVID-19 policies.
** Unknown number of males heard in one location on one day, no visual confirmation.

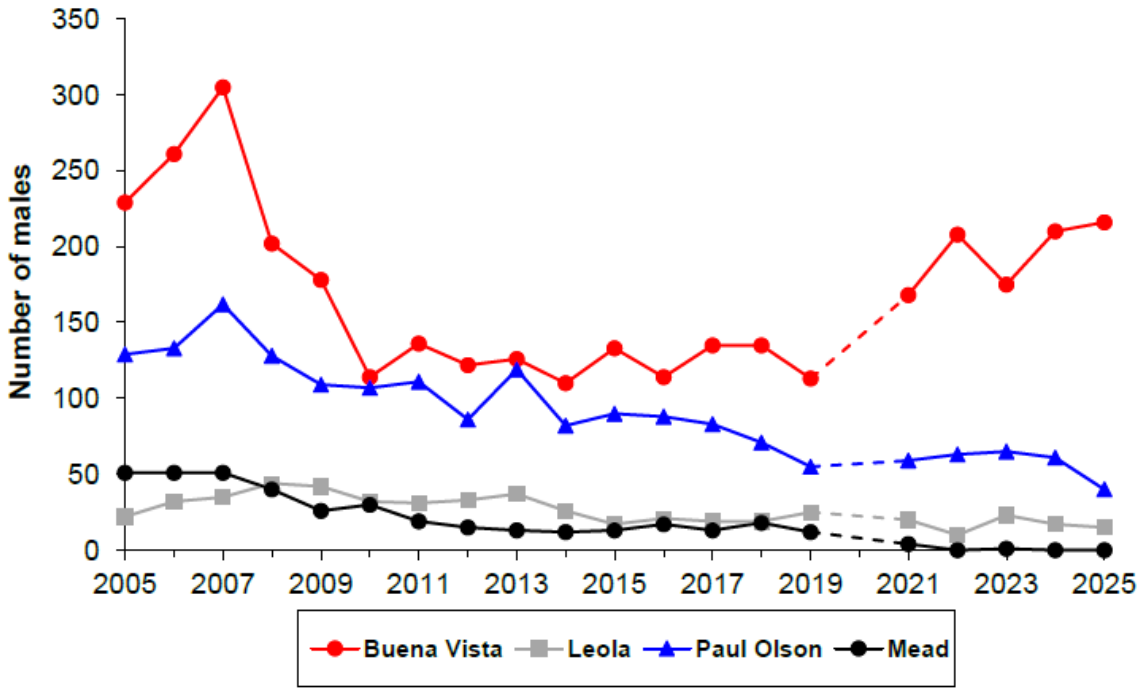


Figure 1. Mean number of male Greater Prairie-Chickens counted on booming grounds on each of four major wildlife areas in central Wisconsin, 2005–2025. No surveys were conducted in 2020 due to policies associated with the COVID-19 pandemic (indicated by the dashed line). Prior to 2007, counts may be reported as mean or maximum number of prairie-chickens observed. Caution is advised on the use of these data for any reason other than a population index. Great variation likely exists in data throughout this period resulting from variation in protocol techniques and observers.

2025 Wisconsin Sharp-Tailed Grouse Survey

Robert Hanson, Wisconsin Department of Natural Resources

Sharp-tailed grouse (*Tympanuchus phasianellus*) surveys are conducted each year in April and May. Surveys are conducted on 3 different property types: DNR managed properties, non-managed properties, and private lands. In 2025, there was a 7% increase in the number of males observed statewide compared to 2024. The 275 males counted in 2025 indicates a fourth year in a row of increase over the low in 2021 of 132 males. Nearly all the birds in Wisconsin are now on various managed public lands working collaboratively to restore landscape level pine barrens habitat. On private lands surveyed, no grouse were detected in 2025, and a private lands habitat initiative is underway.

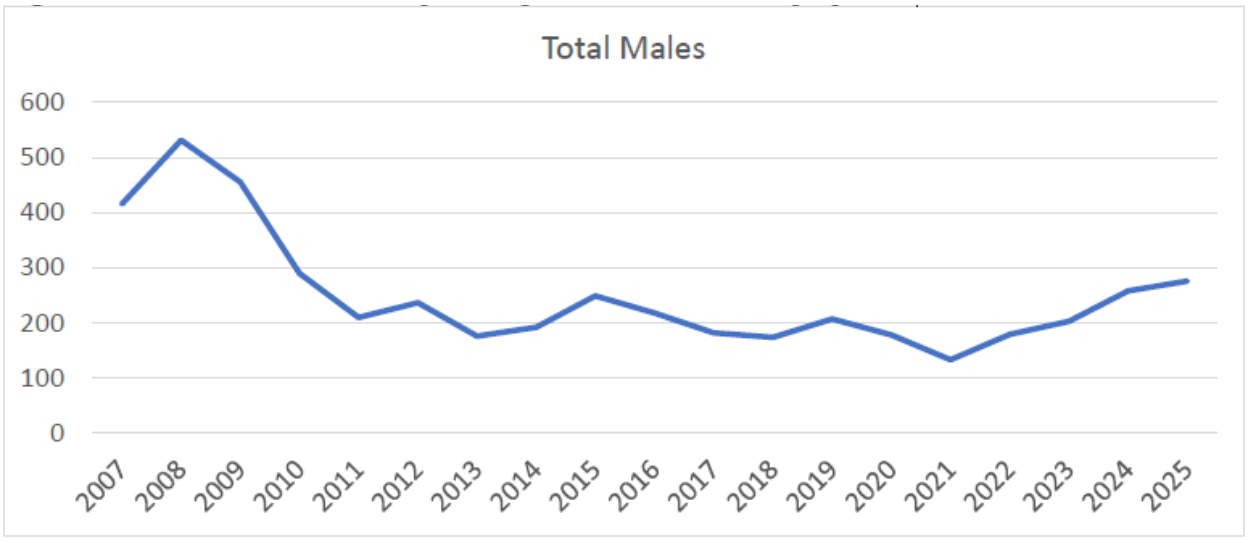


Figure 1. The number of male sharp-tailed grouse observed on all properties.

The Wisconsin Sharp-tailed Grouse Plan 2024 calls for a new harvest quota setting system. In 2025 the Wisconsin Sharp-tailed Grouse Advisory Committee worked to set metrics for quota setting considerations. The approved metrics consider lek surveys, habitat quality and quantity, spring nesting success, and winter survivability. Unit 10 or the Crex Meadows sub-population exceeded the metrics, and the advisory committee recommended a limited quota season. A total of 24 permits were made available for unit 10. Applications were due August 1 with 790 people applying for this special opportunity. The bird population response at Crex Meadows Wildlife Area from 19 males in 2021 to 119 males in 2025 has been concurrent with intense habitat management efforts and exceptional spring nesting conditions.

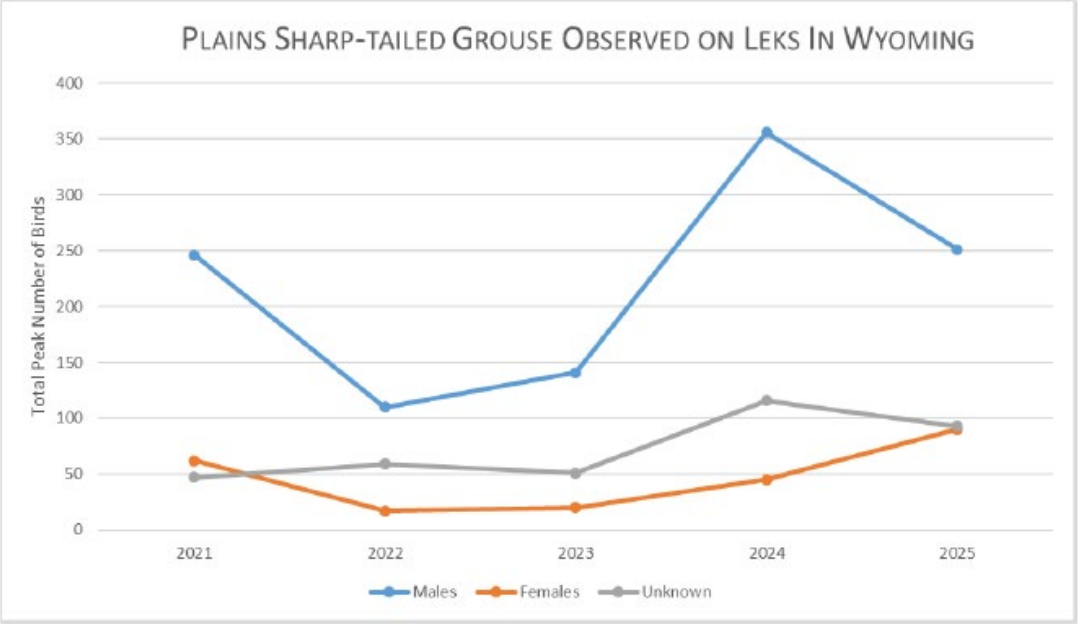
Table 1. The number of male sharp-tailed grouse observed on all properties.

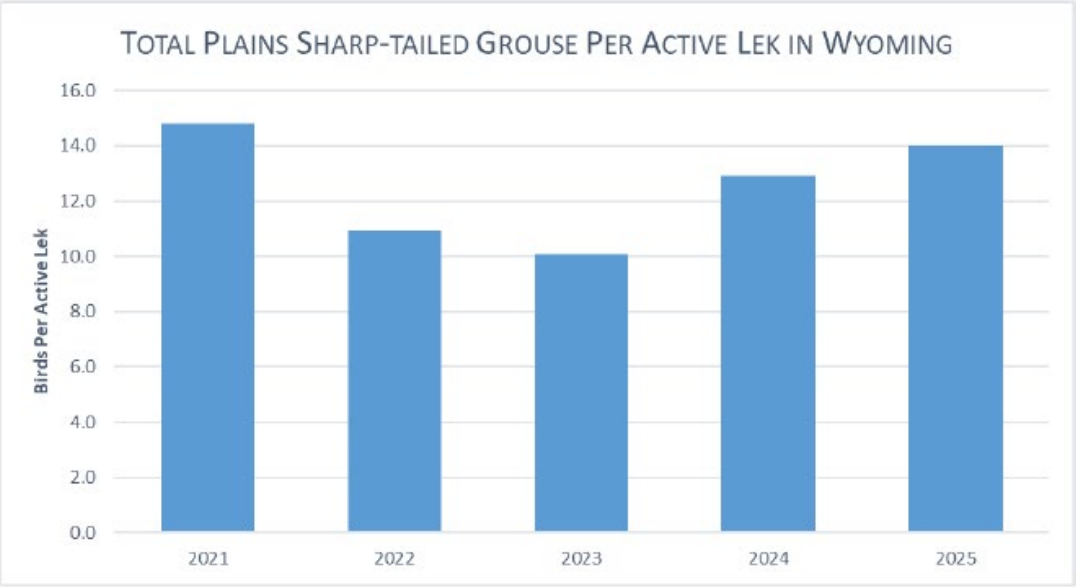
SHARP-TAILED GROUSE LEK SURVEY RESULTS													
Number of Males Observed													
Unit #	Ownership	Managed Property	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
10	DNR/WM	Crex Meadows W.A.	5	16	25	22	17	25	25	19	68	76	102	119
8	Leased from DFC	Douglas County W.A.	23	31	24	14	23	25	13	8	6	18	29	29
20	DNR/WM	Kimberly Clark W.A.	3	4	6	0	0	0		0	0	0	0	0
3	National Forest	Moquah Barrens W.M.A.	4	3	2	10	15	23	22	7	3	3	2	8
8	DNR/WM	Namekagon Barrens W.A.	56	81	62	47	44	53	56	57	66	65	90	82
8	Forest Easement	Five Mile Barrens, Brule River LLC										2	1	0
8	Douglas Co Forest	Five Mile Barrens, DFC											2	2
24	DNR/WM	Pershing W.A.	5	3	3	1	0	0		1	0	0	0	0
30	National Forest	Riley Lake W.M.A.	19	27	16	21	6	24	12	7	6	12	14	14
	DNR/WM	Wood County W.A.	na	na	na	na	na	na		na	na	na	na	na
		Dike Seventeen	na	na	na	na	na	na		na	na	na	na	na
2	Bayfield Co Forest	Barnes Barrens Mgmt Area *	10	19	31	23	12	11		4	15	19	13	17
		Total	**125**	**184**	**169**	**138**	**117**	**161**	**128**	**103**	**164**	**195**	**253**	**271**
		% Change		47%	-8%	-18%	-15%	38%	-20%	-20%	59%	19%	30%	7%
		Non-managed properties	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**
		unit 2	53	42	25	24	33	18	23	8	4	0	0	0
		unit 9	1	13	13	13	18	27	26	20	10	7	4	4
		Total	**54**	**55**	**38**	**37**	**51**	**45**	**49**	**28**	**14**	**7**	**4**	**4**
		% change		2%	-31%	-3%	38%	-12%	9%	-43%	-50%	-50%	-43%	0%
		Private Lands surveys	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**
		Rusk County - GMUs 19, 24, 25	12	9	10	6	5	0		1	0	0	0	0
		Total	**12**	**9**	**10**	**6**	**5**	**0**						
		% change		-25%	11%	-40%	-17%	-100%						
		Total grouse observed from all the properties												
			2014	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**
		Total Grouse Observed	191	248	217	181	173	206	177	132	178	202	257	275
		% Change		30%	-13%	-17%	-4%	19%	-14%	-25%	35%	13%	27%	7%

Wyoming

2025 Wyoming Plains Sharp-tailed Grouse Monitoring
Nyssa Whitford, Wyoming Game and Fish Department

Plains Sharp-tailed grouse observations were conducted between March 23 and May 10th, 2025, with 434 birds observed on 31 leks, or 14 birds per active lek. In 2024, there were less birds per active lek but more birds observed overall with 517 birds observed on 40 leks, or 12.9 birds per active lek. In 2025, Plains Sharp-tailed grouse range in eastern Wyoming experienced dry conditions and this likely contributed to the recent population decline. Population trends for the last 5 years remain relatively steady.





Business Meeting

2022 Minutes

Yogo Inn, October 6, 2022

1. Lance McNew (PGTC Chair) opened the 2022 Business Meeting 5:15pm.
2. Old business
    a. Approval of the minutes of the last business meeting – impossible because they either were not recorded or lost.
    b. Suggested that every Chair henceforth appoint a Secretary (allowable by Bylaws) to ensure that happens, and are uploaded to the new PGTC website.
3. New business
    a. 2022 PGTC Financial Report
        i. Registration and sponsorships covered costs of conference
        ii. Final costs won't be available for a couple weeks
        iii. NAGP paid bus costs and cash bar costs from PGTC account
        iv. MSU paid everything else
    b. Proposal to amend Bylaws to resolve uncertainty/ambiguity about the number of Hamerstrom Awards that can be presented at each meeting.
        i. Small language change to Article 9, section 2
        ii. Addition of a new Article 9 called Hammerstrom Award
        iii. Grammatical edits to species descriptions (Article 1, Section 1)
        iv. Circulated to the PGTC list August 25 (>30 day review by PGTC)
        v. Must be passed by 2/3 majority
        vi. Call for motion to pass the Bylaws as amended (and second)
            1. Passed unanimously
            2. Amended bylaws will be uploaded to the website
    c. Timing of the next PGTC conference
        i. The conference has traditionally been held in odd-numbered years, 1-year Covid delay this time
        ii. Voted to restore an odd-numbered year rotation
        iii. Discussion to hold a virtual conference remotely or as part of TWS conference in 2023
        iv. Voted to authorize the next PGTC Chair to appoint a committee to explore a 2023 virtual conference
    d. Location and host of the next PGTC conference
        i. Two nominations: Texas and Nebraska
        ii. Simple majority vote
            1. Texas: 14 votes
            2. Nebaska: 16 votes
        iii. Motion for holding the next conference in Nebraska in 2025

iv. Seconded
v. Discussion to modify motion to add Texas bid for 2027
vi. Motion amended to Nebraska 2025, Texas 2027.
vii. Vote called
    1. Yes: 29
    2. No: 1
viii. Motion approved, John Laux will serve as new PGTC Chair 2022-2025.

4. Call for other business – none
5. Meeting adjourned at 5:40pm

2022 Financial Statement

Income			
Early registrations ($150)	49	$7,350.00	
Regular registrations ($225)	33	$7,425.00	
Student early registrations ($100)	8	$800.00	
Student registrations ($150)	11	$1,375.00	
Vendors ($200)	2	$400.00	
Extra banquet ticket ($50)	5	$250.00	
Big Sky Upland Bird Assocation		$500.00	
Prairie Pothole JV		$1,000.00	
Northern Great Plains JV		$500.00	
NAGP		$500.00	
Subtotal		**$20,100.00**	
Expenses			
Yogo Inn Conference Costs		$6,454.95	
SWAG		$5,464.00	
Catering (bagged lunches, social/poster event)		$3,366.40	
Bus rentals		$6,300.00	* Paid by NAGP directly
Truck fuel		$215.76	
Porta-toilet rental		$166.18	
Plaques		$20.00	
Printing fees		$143.10	
Misc supplies (water, ice, poster boards, name badges)		$217.48	
Banquet cash bar (set-up/service fees)		$538.50	* Paid by NAGP directly
Social / Poster event cash bar fee		$160.00	* Paid by NAGP directly
Banquet speaker		$416.34	
Credit card fees		$472.64	
Hotel room for Admin		$414.40	
Subtotal		**$24,349.75**	
Administrative Costs (MSU rate is 6%)		$1,460.99	
Total expenditures		**$25,810.74**	
Balance		-$5,710.74	
Amount paid by NAGP directly		$6,998.50	
Remainder returned to NAGP		$1,287.77	

Notes

Notes