

Introduction



Dr. Dave Wedin, Director Center for Grassland Studies

Welcome to the 24th annual Nebraska Grazing Conference and thanks to all the speakers, sponsors and exhibitors that make this gathering possible. Our themes this year are Grassland Soil Health and Rangeland Wildlife. Wildlife and soils are two important legacies of our native grasslands in Nebraska. Recently, I was looking at the original General Land Office survey notes for land in Nuckolls County between the Republican River and the Kansas border. This was the historic home of a recent University of Nebraska donor and I wanted to share something about their land's history. For each 36 square mile township, the survey crew chief wrote a brief summary after walking and measuring each section line. Here's is the crew chief's summary on July 8, 1859:

"The land in this township is worthless – it contains neither timber or stone. The several branches (streams) in the township afford excellent water for the numerous herds of Buffalo and devouring wolves that now occupy undisturbed this godforsaken country".

Wow! A lot has changed in the seven generations (175 years) since that was written. The grazing lands of Nebraska were unappreciated. Pioneers ignored them as they walked the Oregon trail to better land, and presumably better soil, in California, Oregon and other points west. They were wrong about the productivity of Great Plains rangelands and the resilience of their soils. Wildlife like bison were thought to be abundant, free and expendable. By the end of the 1870's, that had all changed. Nebraska land was being homesteaded and plowed, and our large wildlife such as bison, elk, pronghorn and mule deer were practically extinct.

Which brings us to today and two of my favorite words: legacy and stewardship. Many family ranches date back five generations to 1900; we know healthy grassland soils are key to this legacy. Our Soil Health field trip and afternoon session are sponsored by the Nebraska Soil Health School, which launched in 2023 with funding from USDA's Natural Resources Conservation Service (NRCS) and hard work from half a dozen University of Nebraska faculty and staff. Our meeting also has the sponsorship of Ward Laboratories Inc. Ward Labs was started in Kearney in 1983 by Dr. Ray Ward. I look forward to the reflections of Ray Ward, our keynote speaker Tuesday evening, on two generations (50 years) spent advocating stewardship of healthy soils.

On Wednesday, our theme shifts to wildlife, particularly large game species, in our working grazing lands. Stewardship of these species is shared by private landowners and public agencies such as the Nebraska Game and Parks Commission (NGPC). Our first speaker, Dr. Larkin Powell, shares a unique perspective comparing Namibia, the US, Great Britain, and other nations. Our wildlife, even on private land, are owned by the public. In Namibia, the wildlife belongs to the landowner, creating alternative management strategies and financial incentives for stewardship. I am not advocating this approach, but it makes one reflect on the system we have. We have several speakers from NGPC discussing the status of wildlife and funding opportunities to support the stewardship of wildlife on working grazing lands.

The Iroquois people emphasized the principle of the Seventh Generation for their society and their land. Our Nebraska grasslands have changed dramatically over the last 175 years and will continue to change over the next 175 years. Our challenge is to steward Nebraska's grasslands over the next seven generations.

Conference Schedule

Tuesday, August 6, Field Tour

Wood River, NE

<https://grassland.unl.edu/nebraska-grazing-conference-registration>

9:00—11:30 am Field Tour Theme: Rangeland Soil Health

Platte River Prairies (The Nature Conservancy) 13650 S Platte River Dr, Wood River, NE 68883

Field Tour Leaders: Chris Helzer (TNC), Patrick Freeze (Ward Labs), Greg Pec (UNK), UNL Soils & Range Faculty & Students, UNL & NRCS Soil Health Specialists

Tuesday, August 6, Conference

Younes Conference Center, Kearney, NE

11:45am Registration Opens

12:00 pm Lunch— Sack lunch provided at registration

1:00 pm Welcome and Remarks: Soil Health and Grasslands

Jerry Volesky, Chair, Nebraska Grazing Conference & Dave Wedin, Director Center for Grassland Studies

Soil Health and Grasslands Session

1:10 pm 2024 Leopold Conservation Award Recipient

Trumler Ranch, Chris and Jenifer Trumler, Rockville, NE

1:30 pm Soil Health and Rangeland : Key to Productivity and Quality

Jerry Hatfield, USDA/ARS (retired), Soil and Water Conservation Society (Board)

2:10 pm Soil Health Measurement and the Carbon Market

Bijesh Maharjan & Shannon Sand, UNL

3:15 pm BREAK

3:40 pm Grass Roots Ecology & the Stability of the Nebraska Sandhills

Dave Wedin, UNL Director Center for Grassland Studies

4:30 pm Rainfall Simulator Demonstration (outside)

Riley Hackbart, USDA-NRCS

5:30 pm Social/ Exhibits

6:15 pm Banquet

7:00 pm Keynote Speaker: Reflections on a Career in Soils

Dr. Ray Ward, Ward Laboratories (includes Q&A with Audience)

8:00 pm Adjourn

Conference Schedule

Wednesday, August 7

Younes Conference Center, Kearney, NE

7:30 am **Registration Opens**

Public Wildlife & Private Rangelands Session

8:00 am **Welcome and Remarks**

8:10 am **Opportunities and Incentives for Wildlife Conservation on Private Lands**

Larkin Powell, Director, School of Natural Resources, UNL

9:00 am **State & Federal Programs for Conservation in Working Grasslands**

Jenny Prenosil, Agriculture Program Manager, Nebraska Game & Parks Commission

9:45 am **BREAK**

10:15 am **History & Status of Large Game Species in Nebraska Grasslands**

Luke Meduna, Big Game Program Manager, Nebraska Game & Parks Commission

10:45 am **History & Status of Upland Game Birds in Nebraska Grasslands**

John Carroll, Professor, School of Natural Resources, UNL

11:00 am **Supporting Hunter Access on Private Rangelands**

Adam Kester, Open Fields & Waters Manager, Nebraska Game & Parks Commission

11:30 am **Entrepreneurial Approaches to Wildlife on Private Rangelands**

Panel Discussion

12:00 pm **Closing Comments**

Conference Schedule

Nebraska Grazing Conference Advisory Committee

Tyrell Anderson, Turner Enterprises, Inc., Oshkosh, NE

Ben Beckman, Nebraska Extension, Hartington, NE

Melody Benjamin, Nebraska Cattlemen, Lakeside, NE

Leah Peterson, Nebraska Grazinglands Coalition, Weisert, NE

Julie Elliott, USDA NRCS, Holyoke, CO

Chris Helzer, The Nature Conservancy, Aurora, NE

Shelly Kelly, Sandhills Task Force, Broken Bow, NE

Adam Kester, Nebraska Game & Parks Commission, Grand Island, NE

Dana Larsen, Broken Heart Livestock, Thedford, NE

Rob Mitchell, USDA ARS Wheat, Sorghum & Forage Research Unit, Lincoln, NE

Jeff Nichols, USDA Natural Resources Conservation Service, North Platte, NE

Brent Plugge, Nebraska Extension, Kearney, NE

Daren Redfearn, University of Nebraska-Lincoln, Lincoln, NE

Mitch Stephenson, Nebraska Extension, Scottsbluff, NE

Jerry Volesky, Center for Grassland Studies, University of Nebraska-Lincoln, Lincoln, NE

Troy Walz, Nebraska Extension, Broken Bow, NE

Jenny Prenosil, Nebraska Game & Parks Commission, Norfolk, NE

- Coordinated by **Jerry Volesky**, Chair, Nebraska Grazing Conference; **Dave Wedin**, Director Center for Grassland Studies; and **Ashley Branting**, Center for Grassland Studies.
- Co-hosted by the Center for Grassland Studies, University of Nebraska-Lincoln, 203 Keim Hall, Lincoln, NE 68583-0953, (402) 472-4101, grassland@unl.edu, and the Department of Agronomy & Horticulture, University of Nebraska-Lincoln, 202 Keim Hall, Lincoln, NE 68583-0915, (402) 472-2811, agrohort@unl.edu, and our co-sponsors.
- Proceedings edited by **Ashley Branting**, Center for Grassland Studies.
- Cover Picture by **Ethan Freeze** and Cover Edit by **Ashley Branting**, Center for Grassland Studies.

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Nebraska Grazing Lands Coalition, 301 E 7th St #1, Chadron, NE 69337, (402) 321-0067, www.nebraskagrazinglands.org



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NE 68508, www.NIFA.org



The Nature Conservancy, 1007 Leavenworth Street, Omaha, NE 68102,
www.Nature.org/en-us/

Speaker Biography



Dr. Jerry Volesky, Nebraska Extension North Platte, NE

Jerry Volesky is Associate Director of the Center for Grassland Studies and a Professor and Range and Forage Specialist with the University of Nebraska-Lincoln West Central Research and Extension and Education Center located in North Platte. He has been with UNL for 28 years. His responsibilities include conducting grazing management and forage systems research on native range and seeded pasturelands in central and western Nebraska. Extension responsibilities include development and delivery of range and forage management programming for both adult and youth clientele in Nebraska.



Dr. Dave Wedin, Director Center for Grassland Studies, UNL School of Natural Resources

David Wedin has been a faculty member in University of Nebraska's School of Natural Resources and a cooperating faculty with the Center for Grassland Studies since 1998. He became Director of the Center for Grassland Studies in July 2023. With roots in Iowa and Minnesota, he has studied grassland ecology and conservation since his time at St. Olaf College in the 1970's. He began conducting prescribed fires while working for the Minnesota Nature Conservancy in 1983. Dave's PhD research focused on the interactions of grasses with soil carbon and nitrogen cycling, particularly the destabilizing effect of atmospheric nitrogen pollution on high-diversity prairies. Dave's responsibilities at UNL include research, teaching and management at University of Nebraska's

Nine-Mile Prairie and Dalbey Prairie.

Speaker Biography

Chris and Jenifer Trumler, Trumler Ranch, Rockville, NE



Chris Trumler is a 2nd generation rancher from Rockville, Nebraska. He and his wife, Jenifer were married in 1997. He began his ranching career in 1994, after graduating from UNL, with a degree in Animal Science. Today the ranch is operated by Chris, Jenifer, and two of their sons, Treven (18) and Brogan (15). They also have three other sons who now live in Lincoln. Bill is an RN, Reed is an engineer for Kawasaki and Tate is in his second year of vet school at UNL. Their ranch consists of a summer-calving cow herd,

running yearlings on grass, and irrigated and dryland alfalfa, corn, milo, and soybeans. He also worked for three years for Nebraska Game and Parks as a Conservative Technician, at Sherman Reservoir. He has worked for the USDA as a full and part-time beef grader for the past fifteen years. He is a member of Pheasant's Forever and Ducks Unlimited.

Jerry Hatfield, USDA-ARS, Ames, IA



Jerry L. Hatfield is the retired Director of the USDA-ARS National Laboratory for Agriculture and the Environment in Ames, Iowa and Kansas native having grown up on a farm south of Wamego. He retired in 2020 and has been active in helping producers understand the value of soil health to improve crop production in both grain and forage crops. Recently, he has been directed involved with producers to understand the orle of biological amendments on rangeland systems in the Midwest. He has been engaged in speaking engagements across the United States on soil health and regenerative agriculture to help promote an awareness of the value of soil health. His research focused on the interactions among the components of the soil-plant-atmosphere continuum and their linkage to air, water, and soil quality. A platform for his research utilizes the genetics x environment x management concept as a framework to work

with producers to demonstrate how they can increase their production efficiency, increase soil health, and develop resilience to weather and climate variation as the foundation for food security. His current activities focus on helping producers understand the dynamics of soil health and how it impacts production, profit, sustainability, and environmental quality. He received his BS from Kansas State University in Agronomy (1971), his MS from the University of Kentucky in Agronomy (1972) and PhD from Iowa State University in Agricultural Climatology with a Statistics minor (1975). He lives in Ames, Iowa during the summer and Gilbert, Arizona during the winter.

Speaker Biography



Dr. Bijesh Maharjan

Panhandle Research and Extension Center, University Nebraska– Lincoln

Associate Professor of Soil Science and Agronomy at the University of Nebraska Panhandle Research and Extension Center in Scottsbluff, NE. He received his undergraduate degree from Moscow State University, master's in environmental engineering from the University of North Dakota, and Ph.D. in Soil Science from the University of Minnesota. He leads research and extension programs focused on soil and water conservation, soil productivity, and precision nutrient management in irrigated, limited-irrigation, and dryland crop and forage production systems in the Nebraska Panhandle. He is an associate editor of the *Journal of Environmental Quality* and *Agronomy Journal*. He is a member of the American Society of Agronomy, the Soil Science Society of America, the Crop Science Society of America, the International Society

of Precision Agriculture, the American Geophysical Union, and the Soil and Water Conservation Society. Dr. Maharjan authored/co-authored over 50 peer-reviewed scientific articles. His recent work on soil health, soil conservation, and water quality is noteworthy. Recently, his team coined and proposed two impactful concepts – Soil Health Gap and Soil Health Cycle- to promote science-based soil conservation and overall soil health management.



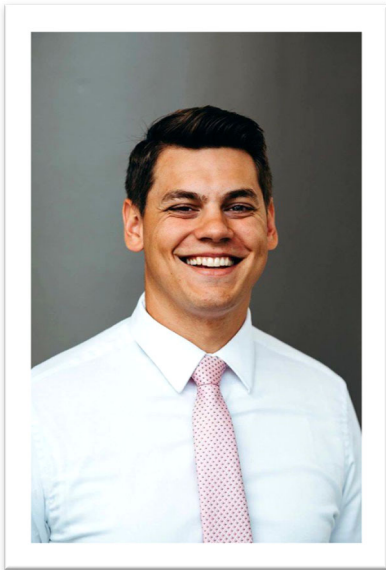
Shannon Sand

Nebraska Extension, Lincoln, NE

Shannon Sand joined the University of Nebraska Lincoln Center for Ag Profitability in March 2023. Prior to that she was at the University of Hawaii as an agricultural finance and business extension agent from 2013-2023. Her responsibilities included all commodities, and she served statewide helping producers with risk management, business planning, expansion, finance, and risk management. Her previous work since 2013 has been for various land grant universities focusing on agricultural economics in extension. She has done many programs focusing on different risk management techniques and focusing on different areas of risk management

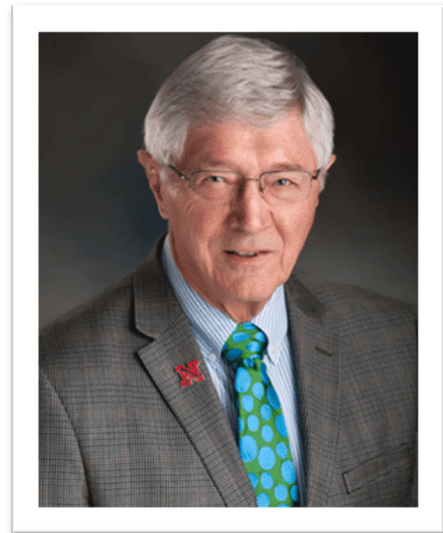
to help increase producers long term sustainability. Shannon comes from a farming/ranching background as a fourth-generation farm kid. She has an B.S. in Ag. Business Management and Marketing, M.S in Food and Resource Economics from the University of Florida, a M.S in Ag Economics from Oklahoma State University and M.Ag. from Auburn University.

Speaker Biography



Riley Hackbart, Soil Scientist USDA-NRCS Lincoln, NE

Riley Hackbart serves as a Resource Soil Scientist for the USDA-NRCS at the State Office in Lincoln, NE. He earned his undergraduate degree in Environmental Restoration Science with a focus on soil science from the University of Nebraska-Lincoln. Although he has officially held his current position for less than a year, Riley has been performing its duties for the past four years. His responsibilities include conducting outreach to schools, organizations, farmers, ranchers, and educators about the effects of management practices on soil properties and their interaction with water. Additionally, he provides technical soil support for the field office, including wetland delineation, soil descriptions, and soil sampling for soil health assessments. Riley also assists the MLRA staff with soil descriptions and sampling for their various Dynamic Soil Properties projects. Riley resides in Lincoln, NE, with his wife, who is expecting their first child.



Dr. Ray Ward, Ward Laboratories Inc, Kearney, NE

Dr. Ray Ward is president and co-owner of Ward Laboratories, Inc. He is a certified Professional Agronomist (CPAg), certified Soil Scientist (CPSS), and certified crop advisor (CCA) with a PhD in Soil Fertility, South Dakota State University 1972. He has BS and MS degrees from University of Nebraska 1959 and 1961.

Before founding Ward Laboratories, Inc in Kearney he served as lab division manager of Servi-Tech, Inc in Dodge City, KS; Associate Professor at Oklahoma State University; and Assistant Professor and Instructor at South Dakota State University. He holds numerous memberships in scientific and honorary academic societies and organizations. Ray has received many awards including the Soil Science Industry Award and Soil Science Professional Service Award from Soil Science Society of America in 2005 and 2007, respectively. He received the J. Benton Jones, Jr. Award that was presented to him at the 12th International Symposium on Soil and Plant Analysis, Chania, Greece, June 9, 2011. He received the Henry Beachell Distinguished Alumni Award from the Nebraska Ag Alumni 2016. He received the 2019 No-Till Innovator Award from No-Till Farmer. He received the 2022 Silver Eagle Award from Nebraska Farm Bureau, December 2022. His goals for agriculture and agronomy are to help production agriculture use its resources as efficiently as possible, to provide information and data for developing soil health for the best use of soil and water resources while maintaining environmental quality, to be involved in “value-added” agriculture and to provide accurate laboratory data for managing productions enterprises.

Speaker Biography



***Dr. Patrick Freeze, Ward Laboratories Inc,
Director of Research & Development, Kearney, NE***

Patrick Freeze serves as the Director of Research and Development - Soil/Soil Health Testing at Ward Laboratories (Kearney, NE), where he specializes in soil and plant testing methods, research, education, and grower support. He is also a monthly contributor to *Acres USA Magazine*, which focuses on ecological agriculture and sustainable practices. Previously with Matrix Sciences in central Washington, he devised soil, soil health, and plant tissue testing methods for large consulting groups. During his doctoral studies in Soil Chemistry at Washington State University, he explored ways to reduce heavy metal risks in orchard soils and received advanced training in soil carbon testing techniques in Italy, courtesy of a USDA NIFA Needs Fellowship. As a U.S. Fulbright scholar, he investigated minimizing cadmium uptake in contaminated Thai rice paddies for one year. Patrick earned a B.S. in Environmental Science from the University of Nevada – Reno, with a focus on forest soil science, environmental quality and policy, and green chemistry.



***Chris Helzer, The Nature Conservancy
Aurora, NE***

Chris Helzer is the Director of Science for The Nature Conservancy in Nebraska. He has spent his 20-year career managing and restoring grasslands in the state, both for work and for his family. His current role focuses on evaluating various management strategies, including grazing, prescribed fire, and invasive species control in order to share successful techniques with landowners and other land managers. Chris writes a blog, *The Prairie Ecologist*, and authored a book entitled, *The Ecology and Management of Prairies in the Central United States*. He is also a frequent contributor to *NEBRASKAland Magazine*. Chris lives and works in Aurora, Nebraska. Helzer holds a bachelor of science degree in forestry, fishery and wildlife, and his master's in landscape ecology, both from the University of Nebraska-Lincoln.

Speaker Biography



***Dr. Gregory J. Pec, Plant & Soil Ecology,
University of Nebraska-Kearney, NE***

Greg Pec is an Associate Professor of Biology and an ecologist focusing on plant-soil interactions at the University of Nebraska at Kearney (UNK). He is also the curator of mycological collections at the NEBK herbarium at UNK, a member of the Center for Root & Rhizobiome Innovation at the University of Nebraska-Lincoln, committee member for soil education and outreach at the Soil Science Society of America, and an advisory group member for the microbial technical working group at the National Ecological Observatory Network.

His research examines such areas as soil biodiversity and ecosystem functioning, plant-microbe symbioses, soil health and plant productivity, as well as the role of land use and management practices on soil carbon sequestration.



***Dr. Larkin Powell, Director School of Natural Resources,
University of Nebraska– Lincoln, NE***

Larkin Powell is Director for the School of Natural Resources at the University of Nebraska-Lincoln. As professor of conservation biology and animal ecology in the School, Larkin taught undergraduate and graduate courses on wildlife management and research, and his research program focused on landscape dynamics, animal demography and movements, and decisions made by private landowners in the Great Plains and throughout the world. He is a Fellow of the Wildlife Society, and the author of 7 books including Great Plains Birds (University of Nebraska Press).



***Jenny Prenosil, Program Manager,
Nebraska Game and Parks Commission,
Lincoln, NE***

Jenny Prenosil is the Agriculture Program Manager for the Nebraska Game and Parks Commission based out of Lincoln Nebraska. She has spent nearly a decade working within private lands programs and with private landowners across Nebraska's various landscapes. In her current role, Jenny manages agreements, works with partner agencies, and assists with programs related to private lands conservation throughout Nebraska. Jenny

holds a bachelor of science degree in wildlife biology and a master's degree in biology, both from the University of Nebraska – Kearney.

In a state like Nebraska, where nearly 97% of the state is privately owned and related to agriculture production, working with private landowners is critical to accomplish conservation on the landscape. Private lands programs are as diverse as the landscapes throughout Nebraska and have evolved over time. Focusing on state and federal programs, the following presentation is going to briefly cover the vast options available within Nebraska.



***Luke Meduna, Big Game Program Manager, Nebraska
Game and Parks Commission, Lincoln, NE***

Luke Meduna is the Big Game Program Manager for the Nebraska Game and Parks Commission and has been in his current role for 5 years, which oversees season setting, harvest, research and surveys for deer, elk, pronghorn and turkeys. Previous roles focused on public land habitat management, wildlife surveys, wildlife research across western Nebraska and western South Dakota. Luke is a native Nebraskan, growing up near Wilcox and has called Crawford, Alliance, North Platte and Rapid City, SD home during his 20 year career, currently lives in Lincoln with his wife and 4 children.



***Adam Kester, Open Fields & Water Manager,
Nebraska Game & Parks Commission,
North Platte, NE***

Adam Kester is the Access Program Manager for the Nebraska Game and Parks Commission and has been assisting landowners and hunters for 13 years. A native of Northeast Nebraska, Adam was raised in a small ag community and developed an early interest in wildlife and hunting while working with the family cow/calf operation.

After receiving a bachelor's degree in Wildlife Ecology & Management from the University of Nebraska-Lincoln, he has dedicated himself to private lands conservation by holding a variety of State and partner positions. In his current role, he leads efforts to develop the Nebraska Elk Hunter Access Program, a novel and exciting initiative to connect landowners to hunters, along with the Nebraska

Community Access Program and Open Fields and Waters Program.



***Dr. John Carroll, Professor,
School of Natural Resources, University
Nebraska-Lincoln, NE***

John is a professor of wildlife ecology in the School of Natural Resources at the University of Nebraska. Previously he was director of SNR, professor at the University of Georgia, research scientist at the Game and Wildlife Conservation Trust in the UK, and PennWest University. His research interests are mainly in conservation and management of gamebirds with numerous publications on northern bobwhites and ring-necked pheasants. John is also co-chair of the IUCN/SSC Galliformes Specialist

Group and is the president of the National Association of University Fish and Wildlife Programs.