



Center for Grassland Studies

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Photo: M. McKendree

Grassland Systems | PGA Golf Management | Beef Systems Initiative

September 2021

Nebraska Grazing Conference Recap by Daren Redfearn, Chair, Nebraska Grazing Conference/Professor, Agronomy & Horticulture/Program Leader, Water & Integrated Cropping Systems Hub, University of Nebraska-Lincoln,

Following a year-and-a-half of uncertainty, the 2021 Nebraska Grazing Conference (NGC) has drawn to a close. The Conference Planning Committee made the decision to hold this conference in-person and not as a virtual conference, while moving to a different venue. The Center for Grassland Studies would like to thank the speakers, exhibitors, and attendees for their time and effort to make the Nebraska Grazing Conference a continued success.

The registration numbers were lower than in previous years. Just prior to this year's conference, it was discovered that several government agencies had not yet lifted travel or participation restrictions for their staff, which limited registration. Additionally, several other meetings cancelled during 2020 were rescheduled and some of those overlapped with the NGC. Despite the challenges, the Nebraska Grazing Conference Advisory Committee did a superb job identifying speakers for a comprehensive learning experience, which included producers, agency representatives, and university faculty from three states.

The pre-conference tour was held on Monday, Aug. 9 at Larsen Land and Livestock, near Lexington, NE. Those who participated in the tour got to listen, see, and discuss topics including conservation practices, grazing management, prescribed burning, and plant identification.

An impressive group of speakers addressed important topics in grasslands conservation, pollinators in grasslands, managing wet meadows, grazing systems, and risk management. A highlight of the conference is the recognition of the Leopold Conservation Award recipients; the 2020 recipients are Ed and Leta Olson from Craig, NE. Finally, a virtual panel discussion on advantages and disadvantages of the potential grassland carbon credits and markets was conducted.

Mark your calendar for Aug. 8—10, 2022 as the conference returns to the Younes Conference Center in Kearney, NE.



Chris Larsen giving presentation during NGC field tour.

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The Center for Grassland Studies is a unit within the University of Nebraska-Lincoln Institute of Agriculture and Natural Resources. It receives guidance from a Policy Advisory Committee and a Citizens Advisory Council.

Note: Opinions expressed in this newsletter are those of the authors and do not necessarily represent the policy of the Center for Grassland Studies, the Institute of Agriculture and Natural Resources, or the University of Nebraska – Lincoln.

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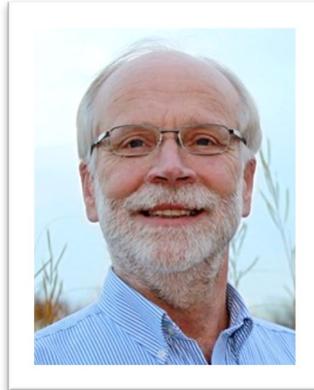
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Director's Column by Walt

Schacht, Interim Director, Center for Grassland Studies

With a full schedule of summer activities behind us, we are already well into the fall semester. Many of the Center's fall activities and programs are new developments while others are continuations of established programs.

Our undergraduate students in the Grassland Systems and PGA Golf Management degree programs returned to campus on Aug. 23. Students are not only back in classes but are re-engaging in student clubs (i.e., Range Management Club, Grazing Livestock Systems Club, and PGM Student Club) after a year of limited club activities because of COVID.

Most of the students had internship experiences during the summer (or longer) on ranches and farms, with state and federal agencies, with agricultural cooperatives/businesses, or in the golf industry. The 11 students in Grazing Livestock Systems who had internships this summer will present overviews of their internships at the Grazing Livestock Systems Internship Symposium on Oct. 8 at the Nebraska East Union.

The focus of the 26th annual Fall Seminar Series is carbon sequestration, global change, and their interaction. The first of weekly presentations in the Fall Seminar Series was given by **Dave Wedin** on Aug. 30. Dave's presentation on "Nebraska Grasslands and Global Change: Key Questions for the Next Decade" set the stage for presentations by the remaining speakers through Dec. 6.

The collaborative adaptive management research at the Barta Brothers Ranch on ranch management trade-offs is in the planning and design stages. Faculty members of the Department of Agronomy and Horticulture, School of Natural Resources, and Extension are working with the directors of CGS and the Center for Resilience in Agricultural Working Landscapes in leading this project. Awards from Nebraska Environmental Trust and USDA SARE have been received to fund the project.

The Center is associated with the recently developed Nebraska Integrated Beef System (NIBS) Hub. The first NIBS Hub workshop is scheduled for Oct. 19 and 20 with the purpose of providing an overview of integrated beef programs (from genetics to societal concerns) and identifying future content and direction.

Cheryl Dunn and **Dan Uden** are leading Grassland Systems faculty in developing a research experience course for the Grassland Ecology and Management curriculum.

A field day is scheduled for the Dalbey Prairie (south of Virginia, NE) on Sept. 29 to communicate the purpose and program plans for this tallgrass prairie.

If you would prefer to receive an electronic copy of this newsletter instead of a print copy, please let us know by emailing mmckendree14@unl.edu. Thank you.

Land Use and Property Taxes

by Jordan Johnson, Assistant Vice President, Commercial State Bank,

Wausa, NE



There are many different variables to consider when making a purchase of a lifetime. No, I am not talking about buying a truck...I am talking about buying land. Land values have increased drastically in recent years and according to the Nebraska Farm Real Estate Report conducted by the University of Nebraska – Lincoln, land values have

increased 6% on average just this past year.

Agricultural land values increased alongside commodity prices that reached record highs around 2010. As crop prices began to decline, property valuations have continued to rise. Heavy property tax burdens, on top of trade uncertainties, natural disasters, and increased input cost threatens farmers' and ranchers' capabilities of making a living. As a result, landowners are forced to make tough economics decisions.

So, let us look at one of the most talked about topics in the Nebraska agriculture sector: property taxes. Nebraska currently ranks 8th nationally for highest property taxes. High property taxes are affecting landowners' decisions on land use for cattle and crop production purposes and conservation.

Cattle Production. The return on cattle hasn't been great in recent years. Current market values on calves make it tough for cattle producers to make a profit and high property taxes don't make it any easier on them. Landowners are left with tough economic decisions on whether it is worth keeping the ground in pasture or look for a better return on investment. That would more than likely involve some sort of monoculture row crop land use. Cattle are an important component of a sustainable biodiverse landscape. Cattle help recycle nutrients and when used correctly can be a valuable tool in building soils. Most importantly they provide a valued nutritional food source.

Conservation. Conservation Reserve Program rental rates are periodically adjusted so that they are competitive with returns from cropping, but they quickly get passed up again by potential income from cropping and other enterprises. And, part of the challenge for conservation-minded landowners is how to deal with the burden of property taxes

when income potential is limited. Can they continue to implement conservation practices on their property, or are they forced to change the land use? Conservation practices play an important role in a biodiverse landscape; building soil, creating habitat for wildlife, and providing recreational opportunities are a few reasons that conservation practices are important and should not be affected by high property taxes.

Most landowners are proud of their investment in their land. That investment might have many different faces, including financial investments, labor, and management. Overall, I believe landowners want to leave their land in as good or better shape for the next generations. But are they going to be hindered by the weight of high property taxes?

Jordan Johnson is a member of the Center for Grassland Studies' Citizens Advisory Council (CAC) for the term 2021-2023. The statewide CAC is appointed by the director of the Center to provide programmatic oversight. The rotating membership represents a balance of diverse constituency served by the Center.

August 2021 Graduates



The Center for Grassland Studies congratulates the following graduates and wishes them much future success.

Grassland Systems (Grassland Ecology & Management Option) and Fisheries & Wildlife Management:

❖ **Jordan Springer** (Lincoln, NE)

PGA Golf Management:

❖ **Ryan Douglas** (Hastings, NE)

❖ **Joseph Sherman** (St. Charles, IL)

❖ **Jack Thompson** (Lincoln, NE)

❖ **Collin Niemann Toner** (Grand Island, NE)

Wildfires are Changing the Future of Nebraska's Woodland-Grassland Complexes

by Amanda Hefner, Conservation Assistant, The Nature Conservancy, Niobrara Valley Preserve, Johnstown, NE

Many range managers are not thinking about forests when they make their management decisions, but Nebraska's grasslands are intimately connected with its woodlands. Nebraska has over a million acres of forest, much of it comprised of bur oak (*Quercus macrocarpa*) and ponderosa pine (*Pinus ponderosa*). These woodlands provide vital ecological services for ranchers and wildlife. We explored how Nebraska woodlands may be affected by historical fire suppression and the resulting increase in high severity wildfire. Our research found that while ponderosa pine failed to regenerate after severe wildfire, bur oaks and tall shrubs were able to regenerate.

Historically, high frequency, low severity, ground and surface fires maintained open savannas of ponderosa pine and bur oak in Nebraska, with low tree density and abundant herbaceous vegetation below. Although stands were dominated by mature trees, sun-loving seedlings were able to germinate and survive patchy, low severity fires, providing a diversity of age classes that would have supported a diversity of wildlife. Unfortunately, colonization and fire suppression over the last century has allowed the shade-tolerant eastern redcedar (*Juniperus virginiana*) to densely overpopulate woodlands and invade surrounding grasslands, while inhibiting oak and pine regeneration in woodlands.

In 2012, the Fairfield Creek wildfire along the Niobrara River in north-central Nebraska provided an opportunity for University of Nebraska-Lincoln students to study the impacts of fire on pine and oak regeneration from 2013-2015. The severe drought of 2012 and the dense understory of eastern redcedar appeared to magnify the effect of the wildfire on bur oak and ponderosa pine woodland. Nearly 100% of the oak, pine, and cedar trees were killed in the 1,654-acre study (Image 1) area. We surveyed 400 randomly located points to monitor cedar and pine seedlings, oak resprouts, and plant cover by functional group (Chart 1).

Across the 400 points, we found only six pine seedlings and 22 cedar seedlings. In contrast, 50% of the oak roots were resprouting in areas of moderate-density forest (moderate fire severity) and 35% of the bur oak roots were resprouting in the areas of high-density forest (high fire severity). Forbs were the most abundant group of herbaceous plants, covering 21.5% of the ground in high-density forest and 23% in medium-density forest, indicating that even areas of severe wildfire provided adequate nutrients for herbaceous regrowth (Chart 1). In areas that had been open grassland and savanna, warm- and cool-season grasses were surprisingly abundant at 10.5% and 26% ground cover, respectively (Chart 1). While areas of high-density forest contained a lot of bare soil and forbs, they also contained 14% large woody shrubs, mostly smooth sumac (*Rhus glabra*). (Continued on Page 5)

Species Abundance	Pre- fire density cover classes				F ratio	Probs > F
	High density forest	Medium density forest	Low density forest	Grassland		
WS Grasses	4%	7%	8%	10.5%	16.72	<.0001
CS Grasses	17%	16%	21.5%	26%	10.77	<.0001
Bare Soil	77%	65%	53.5%	53%	7.60	<.0001
Forbs	21.5%	23%	16%	13%	9.45	<.0001
Lg Wd Shrubs	14%	8%	9%	5%	13.54	<.0001
SmWd Shrubs	2%	2%	3%	3%	7.33	<.0001
Yucca	3%	3%	4%	3%	2.28	0.0788

Chart 1: Average percent cover results at the 400 points classified by pre-fire woodland density.



Image 1: The study area at the Nature Conservancy's Niobrara Valley.

Wildfires (Continued from Page 4)

Our study documented how pine woodlands can transition to open grassland when mismanagement leads to severe wildfire. It also showcased the ability of oak and tall shrubs to regenerate (Image 2), even after moderate and severe wildfire. However, repeated severe wildfires may reduce the diversity of bur oak age classes and affect stand longevity. Nine years after wildfire, the landscape is dominated by warm- and cool-season grasses. Smooth sumac is expanding aggressively from areas of former high-density forest to the surrounding grasslands. And bur oak resprouts are still growing.

Many conservation organizations are now working to thin woodlands and implement more frequent prescribed fires (Image 3). In addition to the economic benefits and biological services they already provide, Nebraska woodlands are likely to be an important component of climate change mitigation and adaptation. As land managers oversee their rangelands, they should consider how woodlands and savannahs are connected to grasslands and contribute to their livestock production.



Image 2: A bur oak sprout in the study area in 2017. Sumac and grasses growing on the steep slopes.



Image 3: Bur oak savanna after mechanical removal of eastern redcedar in 2017. This woodland was burned in fall of 2020 and the herbaceous cover came in well and was grazed in 2021.

Amanda Hefner is a member of the Center for Grassland Studies' Citizens Advisory Council (CAC) for the term 2020-2022. The statewide CAC is appointed by the director of the Center to provide programmatic oversight. The rotating membership represents a balance of diverse constituency served by the Center.

PGA WORKS Scholarship Recipients Announced by PGA Reach



Emily Gustafson, University of Nebraska – Lincoln, PGA Golf Management University Program Class of 2024. Photo B. Goetsch

PGA REACH has awarded scholarships to 10 students through the PGA WORKS Golf Management University Scholarship Program for the 2021-2022 academic school year. These \$8,000 scholarships are designed to improve the recruitment and retention of talented and motivated students from diverse backgrounds, who are pursuing PGA Membership through PGA Golf Management University Programs nationwide.

Emily Gustafson, University of Nebraska-Lincoln (UNL), PGA Golf Management Program received one of the 2021-2022 scholarships. Previous UNL recipients include **Breanna Reynolds** (2020) and **Beth Hildebrandt** (2019).

The PGA WORKS initiative is designed to evolve the demographic composition of the golf industry's workforce and the PGA of America's Membership. *(Continued on Page 7)*

Grazing Livestock Systems Internships Provide Diverse Experience

by Bryan Reiling, Associate Professor, Animal Science Department, University of Nebraska-Lincoln

Upon conclusion of the spring semester, ten students enrolled in Grazing Livestock Systems embarked on a personal journey to gain industry experience, to develop new skills, and to learn about themselves through varied and unique internships.

Three students conducted production-oriented internships that provided a focus on cow/calf production and grazing systems. **Miranda Mueller** (Yutan, NE) and **Katie Steffen** (Beatrice, NE) were both concerned that a lack of cow/calf production experience would hinder their ability to identify a quality learning experience. For Miranda, the perfect internship was working with **Nancy Peterson** at Plum Thicket Farms near Gordon, NE. She checked cows, processed calves, identified rangeland plants, and learned about low-stress cattle handling techniques. Likewise, Katie, working on the Jenkins Ranch between Callaway and Broken Bow, NE with **Jim Jenkins**, learned how to implement rotational grazing techniques, how to gently move cattle on both horseback and with ATVs, and of course that very important skill critical to all ranching operations ... how to build and repair fence! She also gained experience with sheep as this ranch maintains approximately 1,000 ewes.

Brittney Emerson (Whitman, NE) worked alongside **Travis Mulliniks** at the Gudmundsen Sandhills Laboratory. Although this is a research facility, and Brittney was involved in collecting data critical to research trials designed to enhance overall productivity of the cowherd, the cows are simultaneously handled and treated like those on a commercial ranch.

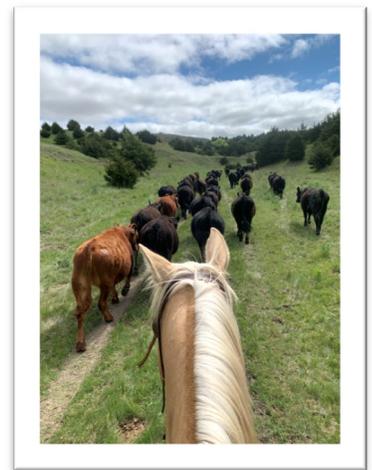
Two other students elected to learn more about the cattle feeding industry. Although cow/calf and stocker operations focus on utilization of grass and forage, most of those cattle will be finished in commercial feed yards. The feedlot is an important component of beef cattle production systems. **Sam Steffen** (Beatrice, NE) worked under the direction of **Brandon Sorenson** at Roberts Cattle Company in Lexington, NE. **Nicole Rolfes** (Blair, NE) worked through a complementary program known as the Nebraska Feedlot Internship Program. Once she completed some basic coursework related to feedlot management, she too was assigned to a commercial feedlot. In both cases, these students learned to manage and feed cattle for optimal gain, to efficiently and safely handle and process cattle, about business management and marketing, and to interact with and supervise people.

Nelson Paul (Paris, KY) has developed an interest in the dairy industry. He participated in an intense four-week educational program associated with the U.S. Dairy Education and Training Consortium near Clovis, New Mexico. This training program brings together students from across the country who have an interest in learning more about the dairy industry. After completing the program, Nelson returned to Kentucky where he, as a special project, developed a detailed business and grazing plan for his own stocker operation.

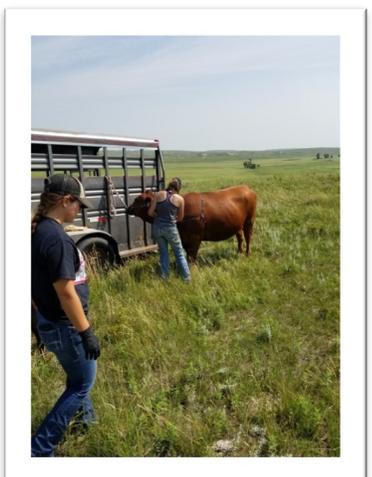
Morgan Rice (Mullen, NE) accepted an internship with the USDA NRCS (Natural Resources Conservation Service) and was also stationed in New Mexico. Throughout the internship planning process, Morgan was interested in learning more about conservation programs and how ranchers might get involved with such programs to help manage forage and soil resources while optimizing ranch productivity. Through this internship, she experienced and learned how the NRCS and ranchers could collaborate to achieve conservation goals. (Continued on Page 7)



Miranda Mueller loading semen into an artificial insemination rod.



Katie Steffen's view of moving cattle while on horseback.



Brittney Emerson collecting diets on the esophageal-fistulated cows.

Internships (Continued from Page 3)

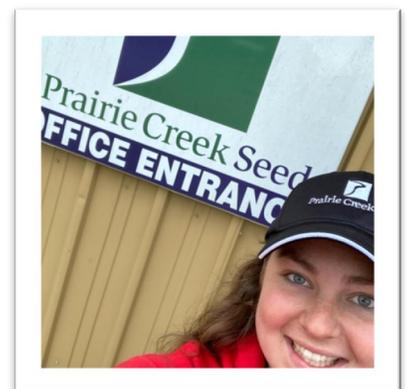
Finally, three other students worked with allied industries in support of grazing livestock production. **Alex Heier** (Kenesaw, NE) worked with Green Cover Seed in Bladen, NE. Much of his responsibility was associated with operations where he learned how to manage multiple orders for multiple customers. In addition, he collected test plot data related to biomass production as well as carbon and nitrogen content of customer's cover crops. Similarly, **Kate Krebs** (Monticello, WI) worked for Prairie Creek Seed in Cascade, IA. Although Kate gained experience with all aspects of the business, her primary responsibility was to plan numerous customer field days and to improve the company's social media outreach. This afforded her the opportunity to interact with producers and to broaden her knowledge and understanding of different cover crop management strategies used by farmers in the Upper Midwest. **Ryley Spatz** (Brainard, NE) worked with the Schuyler Cooperative in Schuyler, NE where he had a multi-faceted internship that provided him an opportunity to learn agronomic and nutritional principles, and to develop customer relations as the Schuyler Cooperative feed sales and agronomy intern.

Although one might envision that internships related to Grazing Livestock Systems would focus on cow/calf production and grazing management, the wide array of internships and learning experiences sought by our students function to emphasize the interconnectivity of agricultural enterprises. More importantly, internships provide an opportunity for students to learn about business principles and to learn about interacting with people including supervisors, co-workers, and customers. Internships allow students to see academic principles in action, to explore areas of potential career interest, and to develop enhanced leadership and communication skills and self-confidence.

Bryan Reiling serves on the Center for Grassland Studies' Grassland Systems Faculty Committee in the role of Grazing Livestock Systems Internship Coordinator. The CGS Grassland Systems degree program provides both a Grazing Livestock Systems Option and a Grassland Ecology and Management Option.



Morgan Rice identifying grasses after rains following NM drought period.



Kate Krebs planned field tours and boosted social media outreach as part of her internship experience.

PGA WORKS (Continued from Page 5)

Scholarship recipients will pursue full-time undergraduate studies at one of the 18 accredited PGA Golf Management Universities during the 2021-2022 academic year, with an ultimate goal of obtaining PGA Membership.

"The PGA WORKS Golf Management University Scholarship enables these highly talented students to earn their college degree, as they follow their dream of becoming a PGA Member," said PGA President Jim Richerson. "The golf industry is experiencing historic growth, which provides a valuable opportunity for these students to pursue a career in the game and business of golf."

Scholarship recipients were selected on the basis of: Academic record, demonstrated leadership and participation in school and community activities, honors and work experience, a statement of goals and aspirations, unique personal or family circumstances, an outside appraisal, demonstrated active participation in the game of golf and playing ability.



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Jim Choquette Receives Lifetime Achievement Award



Pictured L to R: Ron Bolze (NGLC Coordinator) with the Choquette family, Kara, Betty, Jim, J.T., and Kenzie.

During the Aug. 9—11 Nebraska Grazing Conference held in Kearney, NE, Jim Choquette was honored with the 2021 Nebraska Grazing Lands Coalition Lifetime Achievement Award. Jim has served as a mentor to numerous less experienced grazers. In reality, he has served and continues to serve as a mentor for the entire Nebraska grazing community.

Over 25 years ago Jim Choquette transitioned his dryland row crop acres south of Upland, NE to permanent stands of native range. Jim has been on a quest to further subdivide his pastures ever since. With more pastures, grazing periods could be shorter and rest periods could be longer....keys to growing more grass. A diverse mix of warm season perennials like sideoats gramma, big bluestem and indiangrass now dominate the Choquette grazing lands. Jim has also seen the return of native species thought to have disappeared after previous decades of season-long grazing. Jim has practiced the grazing principles of high stock density, short duration and long recovery for most of his grazing career moving cows almost daily while on native range. Weaned calves are strip-grazed on diverse cover crop mixes. An advocate of soil health principles, Jim recognizes that soil health is the basis of human survival.

Congratulations, Jim!