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Invasive Old World Bluestems Spread Across the Great Plains

By Ron Klataske, Audubon of Kansas

They are stealth invasive plants. Few people see them coming, or recognize them when they first colonize an area. Most residents are not alarmed until these plants metastasize and are spreading in place and leapfrogging along roadways and into native grasslands. They are grasses from other continents (primarily Eurasia), and as grasses, they are not initially conspicuous within established grasslands.

The two invaders that worry many of us most as they spread across Kansas and begin to establish a toehold along the southern edge of Nebraska are Caucasian bluestem (*Bothriochloa bladhii*) and Yellow bluestem (*B. ischaemum*). Collectively they are often referred to as “Old World Bluestems” (OWBs), including various cultivars of yellow bluestem (Turkestan bluestem and King Ranch bluestem).

Although these grasses are less palatable to cattle than our native warm-season grasses as they mature, and are often bypassed by grazers if there is any native forage available, they have been planted in many southern states. Initially this was because they are so easy to establish. OWBs are aggressive and prolific seed producers. Like so many non-native plants, they were incorporated into experimental “trials,” selected as cultivars and promoted. After being approved for planting in Conservation Reserve Program (CRP) fields and other areas in Oklahoma and Texas, they escaped to blanket native grasslands. Extensive landscapes that were previously native grasslands have now been completely transformed to near monocultures of OWBs.

Solid stands of OWBs have inferior value as habitat for most

wildlife. Native grasslands with native legumes and forbs offer far superior nesting, brood-rearing and year-round habitat for quail, prairie grouse and grassland songbirds. Dense stands of OWBs

inhibit movement of upland game bird chicks, and are relatively devoid of invertebrate foods. The hispid cotton rat (*Sigmodon hispidus*) is one of the few animals that seem to thrive in the dense cover of OWBs—providing a benefit in some instances to hawks, owls and other predators. However, there are generally no ecologically redeeming values of OWBs in Great Plains landscapes. Native grasses

are more beneficial in almost every respect and much easier to manage.

With only a few exceptions, OWBs were not approved for CRP plantings in Kansas. However, test plantings were conducted at USDA Plant Materials Centers near Woodward, Oklahoma, in Texas and near Manhattan, Kansas. The Agricultural Research Center at Hays, Kansas established plots. Their progeny remain in the surrounding areas, especially in the Hays area. Throughout Kansas, however, the main portal for introduction and spread of OWBs seems to be along state highways, followed by county roadsides. It is also commonly seen on areas previously disturbed by construction activities, such as flood control levees and embankments on dams. OWBs easily establish and thrive more readily on disturbed sites than do native grasses.

The seed sources of these beachheads for OWBs are seldom documented. It is generally speculated that it is from contaminated native grass seed coming from southern sources, from



A May view of an OWB-infested roadside following a spring burn, showing erosion; and the same roadside in September illustrating the overwhelming elimination of other plants.

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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.



Martin A. Massengale CGS Director
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FROM THE DIRECTOR

I participated in two meetings recently that involved presentations and discussions on grasslands and grazing livestock systems. In December I attended the 6th National Conference on Grazing Lands in Grapevine, TX, sponsored by the National Grazing Lands Coalition (NatGLC). On January 7 the Center for Grassland Studies sponsored a workshop involving research and extension workers from the University of Nebraska, research scientists and other professionals from the USDA Agricultural Research Service (ARS) and the Natural Resources Conservation Service (NRCS), and beef cattle producers.

The NatGLC was formed by a group of individuals and organizations cooperating with each other to sustain and improve the nation's grazing lands – both private and public. The group includes grassland managers, scientists, conservationists and livestock producers that are interested in all aspects of our grazing lands. This association grew out of voluntary action on the part of those people who own, manage or have a significant interest in grazing lands and livestock operations. The coalition handles its programs primarily through local, state and national organizations that emphasize quality management practices and science-based technical assistance. In order to emphasize the importance of grazing lands and encourage their recognition and support, NatGLC sponsors a national conference every three years. Some of the subjects covered at the December conference included management and productivity of grasslands, grazing intensity, annual forages, cover crops, soil health, pollinator health, sustainability, economics, and transition of grasslands from one generation to the next. Presentations were made by livestock producers, grassland managers, research and extension professionals and company representatives. There were so many concurrent sessions occurring that it was impossible to attend several important sessions.

The January on-campus workshop regarding beef systems was the second of its kind, the first being held at the same time and place in 2015. See the article in this newsletter for details of the workshop.

Nebraska is one of the leading states in beef cattle production. As a state, we have a wealth of resources underpinning this industry. Our overall climate, geography, soil, water, feed supplies, infrastructure, management expertise, previous experience, research and extension support and human interest all favor cattle production, and all of these factors are important throughout the life cycle of the animal. There have been many changes to the beef production system over the years requiring effective research and extension programs directed toward specific problems; however, there is an urgent need to coordinate and correlate these data into a production model using a systems approach. This approach will help to identify the problems, voids and areas needing more attention.

The University of Nebraska has recently increased emphasis on a team approach with the hiring of research and extension professionals to fine tune the beef cattle production system in our state. This team includes an animal scientist, a forage agronomist, and an agricultural economist, with a fourth person (a veterinarian) to be added later. We believe their coordinated research and extension work will help improve production practices and grow Nebraska's beef industry.

By the year 2050, we are told that we need to produce from 70 to 100 percent more food than we do today to feed the growing population. The goal of our production systems approach is to optimize the use of our natural resources and management skills to feed the world's population and ensure a sustainable food supply. To accomplish this goal in beef production, it will require a multidisciplinary approach to balance all of the competing interests.

M. A. Massengale

Invasive Old World Bluestems Spread Across the Great Plains *(continued from page 1)*

contaminated mulch used at construction sites, and then often followed by movement facilitated by roadside mowing and other maintenance equipment. Transportation of hay harvested from OWB-infested areas is another potential mechanism for spreading OWBs far and wide.

Once firmly established, OWBs are very difficult to control, and it can be equally difficult to restore native grasses and forbs to the site. OWBs are allelopathic. Allelopathy is a natural mechanism where one plant produces chemicals that inhibit the growth of other plants. Studies at Oklahoma State University have determined that OWBs change the chemical composition and biota of soils in ways that reduce germination of a wide range of native seeds and inhibit the growth—and survival—of seedlings. Even leachate, water flowing through OWB leaves and litter, have this impact.

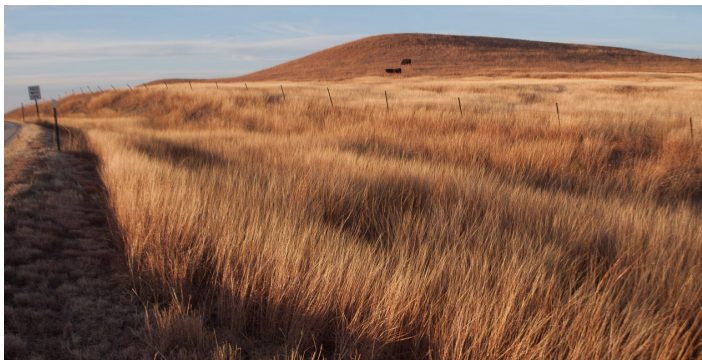
Control is particularly difficult because there are presently no herbicide application methods that are sufficiently selective at

eliminating OWBs without killing most of the native vegetation. Glyphosate and imazapyr are being used in field studies conducted at Kansas State University. Some applications of imazapyr have shown promise at controlling OWBs without totally eliminating all of the native warm-season grasses in plots. However, one application will not solve the problem. To prevent extensive collateral damage to native vegetation, and extensive costs associated with control and site restoration, the process of early detection and eradication of Old World Bluestems is extremely important. If they become widespread in the Nebraska Sandhills, one can imagine that the cost of control would be astronomical for ranchers.

Caucasian and yellow bluestems are both listed as “priority invasive plants” on the Nebraska Invasive Species Program website. The plants listed are defined as “non-native plant species that currently pose a threat to Nebraska’s native plant communities.” However, OWBs have not yet been classified as “noxious” weeds. If classified as noxious weeds, contaminated seed and hay would be controlled. Agencies and other land managers would be required to prevent establishment along roadsides and in other locations, provide eradication, and reduce further propagation or dissemination of such weeds in the state.

Although it is impractical, if not impossible, and too expensive to eradicate and substantially control OWBs in Oklahoma and Texas, Nebraska can conceivably implement control measures that will prevent these invasive grasses from becoming widespread in the state. Likewise, it may not be too late for Kansas to stop these stealth invaders.

Editor’s Note: Ron Klataske is the Executive Director of Audubon of Kansas. He is also a long-standing member of our Center for Grassland Studies Citizens Advisory Committee.



Old World Bluestem (light colored) along a county road in northern Kansas. Note that it is taking over adjacent tallgrass prairie rangeland. This expanding mat of OWB has eliminated all other plants in the roadside and beyond.

Nebraska PGA Golf Management Program Launches Online Newsletter

What is the PGA Golf Management (PGM) program up to these days? Find out by reading the inaugural issue of the program’s online newsletter that was published in March, <http://newsroom.unl.edu/announce/unlpga>.



PGA
Golf Management

Turf Field Day to be on UNL’s East Campus

On July 20, 2016, the annual Nebraska Turfgrass Research Field Day will be held for the first time on the East Campus of the University of Nebraska-Lincoln. Come see the latest in turfgrass research, learn about new cultivars and practices, and test the latest equipment. The schedule for the day-long event

and registration information will be available at the Nebraska Turfgrass Association website, www.nebraskaturfgrass.com.



Nebraska Turfgrass Association

Research and Education Priorities Identified at January Beef Systems Workshop

While the weather and illness caused a few no-shows, 77 people from UNL, USDA, the Nebraska Department of Agriculture and the beef industry throughout the state gathered in Lincoln on Jan. 7, 2016, to identify high priority areas for future research and educational programming in beef production systems. The workshop was a follow-up to a similar one held in January 2015.

"After the 2015 beef systems workshop, the question asked by the participants as well as Institute of Agriculture and Natural Resources (IANR) administrators was: where do we go from here?" said Martin Massengale, Director of the UNL Center for Grassland Studies, which hosted the workshop both years. "It is important that we have collaboration among people from UNL research and extension, USDA's Agricultural Research Service and Natural Resources and Conservation Service, and beef producers. They all play essential roles in identifying the critical issues that need to be addressed in order to ensure sustained success of the beef industry in Nebraska and the region."

After opening comments by Massengale and IANR Associate Vice Chancellor Ron Yoder, Jim Robb, Director and Senior Agricultural Economist for the Livestock Marketing Information Center in Denver, CO, set the stage for the day's activities. Robb discussed the fundamental market situation and outlook for beef cattle and corn on a global basis. Animal scientist Jim MacDonald and range scientist Walter Schacht reviewed new and existing UNL research in various aspects of beef production systems for Nebraska to help the workshop participants identify what is known and the gaps that remain. Innovative producers Fred Bruning and Dave Hamilton each shared how his operation has adapted to the changing production and market environments, and discussed what they saw as current challenges and opportunities for increased profitability and expansion of beef enterprises.

In two separate sets of table discussions – one focused on perennial grassland systems and one on integrated crop/livestock systems – participants were asked to answer: What does Nebraska provide that has made it a leader in the beef cattle industry and that is critical to continued growth of the beef industry in this state? What are the gaps in knowledge, tools, models, and education/communication programs that limit forage and animal production in beef systems?

Each of the nine tables had a moderator and a recorder. After each discussion session, the recorder reported that table's prioritized list of issues. Animal scientist and professor emeritus Terry Klopfenstein helped the group identify over-arching themes from the table reports. All of this was summarized in a report that is available at the Center for Grassland Studies website. Below is the essence of the report.

The base of beef production in western and much of central Nebraska is perennial grasslands, including the Sandhills and mixed and shortgrass prairie. Forage plants and grain crops can be critical components of beef systems in this area but grazinglands provide the majority of the feed resource for cattle production. The priorities identified by the tables can be grouped into four broad areas: 1. increasing production efficiency; 2. communicating and adopting new strategies and systems coming from research and technological advances; 3. addressing human dimension issues –

land transfer, communicating with the consumers, developing and maintaining a management and labor pool, etc.; 4. understanding business planning and production economics.

1. **Production efficiency.** A common priority discussed at the tables centered on increasing efficiency of both forage and beef production. With limited land and feed resources, there was agreement that there are two principal possibilities for sustaining (or growing) beef cattle numbers in Nebraska: a) increase forage plant production on croplands and/or grazinglands, and b) increase harvest efficiency of forage plants, especially on grazinglands. Most tables concluded that there is a lack of knowledge and adoption of management strategies that optimize the harvest of forage on grazinglands. Priority listings indicated that harvest efficiency could be improved by using grazing strategies and systems that take into account forage quality, palatability, season of growth, drought, forage and land type, supplemental feeding, invasive species control, integration of cover crops, subirrigated meadows, and crop residue use. Priorities in the production efficiency area included improved cattle genetics and management practices that ensure more efficient use of potential feedstuffs.

2. **Knowledge transfer.** Lack of adoption of proven management strategies and technologies by producers was the most commonly identified factor that limits beef cattle production. Producers' tendency of staying with traditional methods and systems was commonly mentioned. Increasing the effectiveness of communication and knowledge transfer through Extension and other consulting channels was seen as essential to increase beef production. Including producers in the process of disseminating information also was viewed as important.

3. **Human dimension.** The human dimension included concerns about the efficient transfer of land ownership and management from the current generation to the next, maintaining and even growing a competent labor pool, bridging the producer-to-consumer gap, and further developing the producer relationship with government agencies (e.g., NRCS) and their conservation programs. Temporal continuity of goals, expertise, and management was viewed as necessary for sustaining beef production systems.

4. **Economics.** A sound base in production economics and business management is required to sustain any industry or individual operation. The lack of effective economic analysis of the components of beef systems at the producer, researcher, and educator level was seen as a weakness. Along with this, enterprise diversity at the operation (farm/ranch) and industry level was emphasized as an important priority.

In eastern and parts of central Nebraska, beef production is not the driving force of most agricultural operations, which creates a different production environment and set of limitations/gaps in beef production than identified for the perennial grassland systems in western and parts of central Nebraska. Most tables reported that there are significant challenges in integrating beef production into mostly crop-dominated operations. The advantages of such integration are not obvious to operators, and the knowledge of how to successfully achieve the integration is lacking in many cases. There was general agreement among the tables that the

integration of crop/livestock production systems is realistic in terms of management and justifiable economically. Many tables stated that further research and development of educational programs in production systems are needed to provide producers with the required knowledge. The principal priority areas emerging from this discussion session were: 1. identify the production, management, and potential use of feed resources in crop-dominated operations and areas; 2. realize efficient integration of the feed resources in integrated crop/livestock production systems; 3. identify types of livestock and crop enterprises best suited for the integrated systems; 4. communicate the crop/livestock production systems to land owners; 5. development of expertise in forage and cattle production in managers and workers; 6. business economics.

1. **Feed resources.** Types of feed resources and systems in eastern Nebraska are diverse. The production and use-potential of these feedstuffs and systems must be investigated and documented. These feedstuffs include cover crop forages and perennial forages, forage crops, hayland, pasture, crop residues, and ethanol co-products, and this diversity of complementary feeds/forages results in numerous alternative feeding systems. Along with this priority, further development of infrastructure (i.e., livestock water and fencing) for increased production and use of forages was seen as important.

2. **Integration of feed resources.** Most tables reported that the integration of these feedstuffs into high-return systems is largely an unknown for many crop farmers. Lack of knowledge specific to production and use of feed resources in crop/livestock operations was identified as a major limitation. Many tables pointed out that the cattle production environment in cropland-dominated areas is much different than that in perennial grasslands.

3. **Cattle enterprise identification.** The type of cattle enterprises (e.g., cow-calf or stocker operations) is affected by perennial pasture availability, pasture size, timing of other priority activities (e.g., planting), types of available forages and

supplemental feeds, and confinement options. Research needs to be done on how the production environment in integrated crop/livestock systems affects decisions concerning type of cattle enterprise.

4. **Knowledge transfer.** As with perennial grassland systems, transfer of information and recommendations to producers is required. Again, UNL Extension, staff of federal agencies, and private consultants were identified as critical in communicating this knowledge and assisting in the development of partnerships between cattle and crop producers.

5. **Expertise in animal husbandry and beef systems.** Discussions at most tables included a concern that crop producers and the labor pool in eastern Nebraska no longer have knowledge of animal husbandry. This knowledge gap was proposed to be addressed through a dedicated educational effort through Extension and private consultants.

6. **Economics.** The economic component of integrated crop/livestock systems was seen as very important. Economic justification is needed to convince producers to integrate cattle production into their cropping systems, especially if they are not convinced of the advantages of doing so. Economic comparisons of production of different feed/forage types and cropping rotations are critical in developing potential new systems.

While UNL faculty members from various departments have worked together for many years on beef systems research and education, the addition of faculty in the last two years hired specifically to focus on systems work in the beef production area has provided impetus to form a more formal and cohesive group that will use the outcomes of the above workshop to guide future programs.



Jim Robb, Director and Senior Agricultural Economist for the Livestock Marketing Information Center, set the stage for workshop discussions with an overview of the global beef and corn markets.



Each of the nine table groups listed and ranked top issues needing to be addressed to sustain and even increase Nebraska's success in beef production.



Banker and farmer Frank Bruning (left) from Bruning, NE and rancher Dave Hamilton from Thedford, NE each provided a producer's perspective at the beef systems workshop.



UNL faculty Jim MacDonald (left) and Walter Schacht gave summaries of past research on resource utilization for beef production systems.

Can Prairie-chickens Share the Prairie with Wind Turbines?

By Larkin A. Powell and Mary Bomberger Brown, School of Natural Resources, UNL

Nebraska's Sandhills region covers almost one-fourth of the state. The Sandhills is one of the largest remaining areas of contiguous grassland in North America. The grass-covered dunes provide space for cattle ranching and for grassland birds. As many Nebraskans know, the Sandhills—with its wide, open spaces—is one of the windiest locations in North America. Wind energy companies have built a number of wind turbine farms during the past several years in Nebraska, and more facilities are under construction or being planned. Biologists have begun to wonder if prairie-chickens and other grassland birds can share the prairie with wind turbines.

The greater prairie-chicken is an iconic species of the northern Great Plains. Hunters are able to enjoy pursuit of prairie-chickens in Nebraska because we have stable populations, especially in the Sandhills. Biologists generally believe that when large tracts of open grasslands are available to them, prairie-chickens will be healthy and their populations secure. If those open grasslands are fragmented into smaller patches or sprout wind farms, how might prairie-chickens respond?

Wind turbines are known to pose a significant collision risk for flying bats and migrating birds, but prairie-chickens do not fly high enough to collide with the rotating blades. However, biologists in the western United States have found that greater sage-grouse responded negatively to wind turbines and the associated transmission line structures. Might prairie-chickens respond in the same way? Might the towering structures threaten prairie-chickens? Might prairie-chickens avoid nesting near the turbines? Might prairie-chickens change their behavior near the turbines? During the past four years, we have led a research team to answer these questions.

Male prairie-chickens gather at booming grounds, or leks, during March and April to display for females. Males make a variety of booming, cackling, whooping and whining vocalizations as they strut and display in competition with other males to gain the attention of females. Prairie-chicken leks have graced the prairie since time immemorial—surely the sight and sound of leks were a welcome sign of spring to Native Americans and homesteaders after a long, cold winter.

Life is complex, and such is the case for the relationship between prairie-chickens and wind turbines. Is it possible that wind turbines might be a positive feature on the landscape? We know that hawks and eagles avoid wind turbines, and these avian predators attack prairie-chickens. Might living near a wind turbine be a good thing if you're a prairie-chicken, or do prairie-chickens view the turbines as trees, which prairie-chickens generally avoid because of the risk of avian predators perched hidden in the foliage? Of course, it is possible that the low-frequency noise produced by spinning wind turbine blades could interfere with the messages contained in the vocalizations produced by male prairie-chickens on their leks in the spring. Might males change their vocalizations to compensate?

Our research team collected data near a 36-turbine facility south of Ainsworth in Brown County, NE during 2013 and 2014. We captured prairie-chickens and attached radio-collars and satellite tracking devices to them so we could follow them during

the nesting season. Our research assistants marked nest locations, as well as the areas used by female prairie-chickens to raise their broods. We recorded males' vocalizations at leks near wind turbines as well as leks far from wind turbines. We also performed surveys for mammal and avian predators near and far from the turbines.

Are prairie-chickens successfully sharing the prairie with wind turbines? Our initial results suggest that the birds are able to cope with the wind turbines at the Ainsworth wind energy facility. The number of female prairie-chickens visiting leks near the facility was not affected by the presence of a turbine. Females did not avoid turbines when selecting nest sites or locations to raise their broods, but they were wary of roads, which included the roads used to service wind turbines. This tell us that prairie-chickens apparently do need larger tracts of grassland without roads.

Male prairie-chickens displaying on the leks showed some responses to the turbines. Males that were closer to turbines spent more time in breeding behaviors on leks than males farther from the turbines. Why? Our surveys demonstrated that fewer avian predators were seen near wind turbines. It is possible that males who feel less threatened by avian predators feel free to spend more time strutting for the females and less time watching their backs for predators.

In addition to males strutting differently near turbines, it appears they also vocalize somewhat differently. Near turbines, males produce shorter "boom" and "whoop" vocalizations with more energy. This is similar to a person "raising their voice" to be heard in a crowded room. They also raise the frequency of their "boom" vocalizations. This is similar to a person singing in a tenor voice rather than bass. Since male prairie-chickens use their boom and whoop vocalizations to advertise their "prowess" and lek locations to females for mating purposes, might changing their vocalizations influence the decisions females make about which leks (and which males) to visit?

Hopefully, prairie-chickens will remain a fixture of the prairies of Nebraska. Nebraskans can list prairie-chickens and migrating Sandhill cranes and waterfowl as unique species of wildlife in our state. And, these species are present because habitat is available for their use in Nebraska. Of course, new energy sources are also important. We must continue to investigate the potential effects of human disturbances on prairie-chickens and the other wildlife who share Nebraska with us. By working together, we can find ways to make sure there is enough room on the prairie for all of us.

A male prairie-chicken displays near a sound recorder used to collect data on vocalizations during 2013-2014 near Ainsworth, NE. Photo by Cara Whalen.



Plans Firming Up for 2016 Nebraska Grazing Conference

Anyone who has been part of a committee to plan an annual event knows that planning the next event starts right after the previous event concludes. And so it is with the Nebraska Grazing Conference that began in 2001. The 16th annual conference will be held August 9-10, 2016 at the Ramada Inn in Kearney. The planning committee began its work in September last year, and while the program was not finalized as this newsletter went to press, we can tell you that many speakers from multiple states will address the following topic areas: grazing with annual forages and cover crops; making production and economic decisions for larger operations; directions of the beef industry from a forage/grazing perspective; management strategies for periods of drought; cattle handling and holistic herding; providing opportunities for young people to enter farming/ranching; habitat management using fire and grazing, and the effects these methods have on grassland birds and small mammals.

Registration for the conference will be done online. Anyone not able to register online will be able to call 402-472-5636 during business hours and have someone take their information over the phone. The deadline to receive pre-registration rates is August 1, which means if paying by check rather than credit card, payment must be postmarked by August 1. The full two-day pre-registration fee of \$80 covers lunch both days, the evening banquet,

break refreshments, and the conference proceedings. One-day registrations are also available. Registration fee will be waived for students who will still be in high school this fall and who pre-register by the August 1 deadline, compliments of the UNL College of Agricultural Sciences and Natural Resources. Reduced registration fees apply for other full-time students. Higher fees apply to registrations after August 1, which includes walk-ins.

Participants of any of the previous Nebraska Grazing Conferences as well as all Nebraska extension educators will receive a brochure in the mail in June. Others may contact the CGS office to be placed on the brochure mailing list. Program, registration and other details will be available on the conference website, nebraskagrazingconference.unl.edu. This event is a collaborative effort with many co-sponsors. Contact the Center for Grassland Studies, one of the underwriting sponsors, with questions.



Prairie Peeping

"Many of you are aware of the large tourism industry in the northeast states called 'leaf peeping,' built around the fall tree leaves turning color. A few years ago we began talking about 'prairie peeping' season. The amazing turn of color in the fall prairies deserves as much attention as the leaves! As autumn brings cooler temperatures, the vibrant greens of summer turn into glowing oranges and even reds depending on the time of day. When the rays of a stunning fall sunset hit the prairie grasses just right, they glow – it truly makes your heart leap to see it."

-Marian Langan, Executive Director, Audubon Nebraska

Those attending the October 23, 2015, CGS Citizens Advisory Committee meeting at Spring Creek Prairie near Denton, NE got to experience what Marian Langan described in the Winter 2015 issue of *The Prairie Sage*. Those arriving early were treated to a pre-meeting tour, and conditions (slightly damp, overcast) were just right in late morning to make the prairie colors pop! Those not able to go on the tour were still able to enjoy the setting, as the meeting took place in a room enclosed by windows that overlook the prairie. Thanks to Kevin Poague and other staff at the Spring Creek Prairie Audubon Center for hosting our meeting!



Early arrivers to the fall CGS Citizens Advisory Committee gathering got to "prairie peep" during the pre-meeting tour of Spring Creek Prairie.



This critter that we encountered on our tour was more interested in eating the grasses at Spring Creek Prairie than enjoying their vibrant colors!



2016 Nebraska Range Short Course

The Nebraska Range Short Course is scheduled for June 20 to 24, 2016 on the campus of Chadron State College. The short course is sponsored by UNL, Chadron State College, and the Nebraska Section, Society for Range Management. It is designed to provide individuals who have an interest in range management, natural resources or agriculture an opportunity to increase their knowledge in the field of range management. It will provide underlying principles of range management for efficient, sustainable use of range land for multiple purposes including livestock grazing and wildlife habitat.

The week-long course taught through a series of classroom and field sessions focuses on underlying principles of range management for efficient, sustainable use of rangeland for multiple purposes. Course topics include: evolution of vegetation and ranching on the Great Plains; geology and hydrology of

the Northern Great Plains; range plant physiology, growth, and structure; determining ecological site and condition; habitat management for wildlife; and balancing forage supply and demand.

The short course can be taken for credit through UNL or Chadron State College. Sixteen Continuing Education credits are available for the SRM "Certified Professional in Rangeland Management" program.

Applications are due May 20, and enrollment is limited to 50 participants. The registration fee of \$325 includes educational materials, transportation associated with field trips during the week, and breaks. Food and lodging can be arranged with Chadron State College.

For more information, see the website, <http://agronomy.unl.edu/nebraska-range-short-course-2016>, or contact the coordinator, Walt Schacht, wschacht@unl.edu, 402-472-0205.



Agricultural producers, land managers, consultants, government personnel and students learn about subirrigated meadows from rancher Bruce Troester during one of the Nebraska Range Short Course field sessions.

CGS Associates

The Nebraska Agribusiness Club gave two 2015 awards at a recent banquet. **Chris Calkins** received the Public Service to Agriculture Honorees Award, which honors individuals who have made significant contributions to Nebraska agriculture and Nebraska agribusiness, and **Tiffany Heng-Moss** received the New Horizon Award, which recognizes individuals 40 years of age and younger who are upcoming leaders in the agricultural industry.