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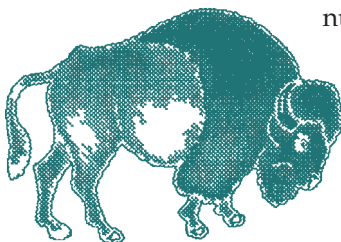
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Planning for Bison Grazing on Native Rangeland

by Kristin Miller, USDA Natural Resources Conservation Service

With the increasing number of bison producers (recent estimates by the National Bison Association put the number between 250,000 and 300,000 in the U.S.), there has been increasing demand and need for technical assistance on rangeland and pasture management. Information in this article is from NRCS Nebraska Range and Pasture Technical Note #12. For the complete Note, which includes a list of references, see www.ne.nrcs.usda.gov, click on Technical Resources, then Grazing Lands, or contact the author at (308)534-2360 ext. 3, kristin.miller@ne.usda.gov.



Bison Breeding and Calving

Bison production is similar to cattle in many ways, but very different in others. This makes understanding bison very important when planning a grazing system that utilizes bison as the primary grazing animal.

The life span of an individual bison is over 20 years, and the cow may calve well into her 20s. Breeding occurs during the rut period, generally between late July and August, although this will vary geographically. The gestation of a bison cow usually lasts 275-280 days and is dependent upon the nutrition availability, cow body condition, and geographic location. The average weight for a bison calf is 40-50 pounds. Bull calves weigh far more than heifer calves and are much harder on the cow to raise. The mother of a bull calf will be less likely to reproduce the following year if she has been nutritionally stressed.

Foraging Ecology of Bison

Rangeland across the Great Plains developed under grazing pressure, primarily from bison. Grasses and sedges were the dominant species, accounting for about 90 to 98% of the forage available. Bison were migratory and would search out areas of desirable grazing forage.

Bison and cattle consume similar forages, but bison will travel greater distances while grazing. Although the use of forbs and browse by bison is limited, bison will consume certain forbs during certain times, and bulls tend to utilize browse more than cows. Bison tend to balance nutrient demands by consuming a diet dominant of grasses (Plumb and Dodd, 1994). Bison also tend to use higher elevations and steeper slopes than cattle.

By being able to consume and digest forages more efficiently than cattle, bison can consume a less amount of feed (of the same quality) than cattle and be able to meet their nutritional needs. During the rut period, bison spend a large amount of time in social activities and less time grazing. Bison require less water than cattle or horses and tend to spend a very short time at the watering locations.

Factors Affecting Nutrient Requirements of Bison

Many in the bison industry have theorized that three bison can be grazed for every two cattle on the same acreage as before, or an increase in stocking rates of 150% (Peden, et.al. 1973).

Because there are no significant differences in intake rates between cattle and bison (see Table 1), the standard for a grazing animal unit (AU) should be used to determine stocking rates of bison. An AU is defined as a 1,000-pound mature cow, with a calf less than three months old, or its equivalent. Therefore, one-tenth of an animal unit is equal to 100 pounds live weight.

Table 1. Intake rates (as a percent of body weight) of bison vs. cattle during the different seasons.

Animal	Summer	Winter
Bison	2.1 to 2.8%	1.4 to 1.8%
Cattle	2.3 to 2.5%	1.9 to 2.1%

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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 50-member Citizens Advisory Council. This newsletter is published quarterly.

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

One of the most important considerations in any industry or enterprise is its workforce. A key ingredient revolves around development of that future workforce. It is in this context that the Center administers two majors within the College of Agricultural Sciences and Natural Resources: Grazing Livestock Systems and the Professional Golf Management program that is under development.

I recently chaired a subcommittee of the Secretary of Agriculture's National Advisory Board on Research, Education, Extension and Economics to review the status of our current and future workforce within the broad category of agriculture. The needs of an agricultural workforce are much broader and more complex today than they were in the past. Significant changes have occurred in both skill levels and occupational categories.

Several factors, such as the retirement of "baby boomers," need for replacement of a vast number of scientists, young people not studying science, math, and engineering as in past years, and the significant time lag that is required to train individuals for the workforce bring the importance of workforce development to the forefront. More students today are opting for a general education as opposed to a science background.

Overall, we are training slightly fewer graduates than will be needed during the next few years for agriculture, but for certain categories within the industry there will be significant shortages. These shortages are being met by hiring individuals with other types of backgrounds. Employers want people who have good communication, analytical and human relations skills because most employers are in a better position to provide technical training than they are other skill sets. In several instances, colleges of agriculture may be giving their students too much in the way of technical information rather than general skills required by employers.

With the changing demographics in our society today, we need to attract more minority individuals into our agricultural workforce. An increasing fraction of the U.S. population and workforce comes from minority groups and people in urban localities who often have little familiarity with agriculture. We are told that 95 percent of the students in our 1890 Land-Grant universities receive some kind of financial aid, yet the USDA has the lowest level of support of all federal agencies for scholarships, fellowships and other forms of student financial aid. Greater efforts must be made to improve this situation.

Students at all levels of education need a better understanding of the wide range of career opportunities available within the broad context of agriculture. Likewise, our colleges of agriculture must be flexible enough to meet the rapidly changing workforce demands. With agriculture now being more consumer driven, changes in demand will create a need for different kinds of workers in all parts of the industry.

There is an ever increasing need for educational institutions to be working with employers in projecting and training for the workforce needs of the future. The existing mechanisms in academic institutions whereby five years may be required to implement new curricula or even as much as twenty years to produce new workers are far too slow to respond to the rapidly changing demands of employers. Both workers and employers need mechanisms to update their training and upgrade their skills because of new technologies and other changes. Since learning is a lifelong endeavor, continuing education, extension and distance learning programs will become increasingly important for both the advancement of workers and retention for employers.

M. A. Massengale

Pooled Sales Add Value to Cull Cows

by Rebekka Martin and Jana Beckman

Kansas Center for Sustainable Agriculture and Alternative Crops, Kansas State University

As traditional small markets have closed, small farmers and ranchers have had to look for innovative ways to market their livestock to larger processors. Alan Jones, a livestock producer in Kansas, hit upon one of those ways when he began helping ranchers in southeast Kansas pool their cull cows for sale to packers. He did this with the help of a producer grant from the North Central Region (NCR) Sustainable Agriculture Research and Education (SARE) program, which allowed him to hire project manager Kim Harris.

The idea for pooled sales of cull cows came to Jones after three local packing houses closed, leaving farmers and ranchers with fewer places to sell their cows. He said selling a load of cattle directly to packers, with lower transportation costs per animal, has resulted in higher profits for the cows; prices for the pooled cows sold on a grade and yield basis to packers have sometimes been \$5.00 per hundredweight higher than sale barn prices.

Jones said many producers in the area have about 30 cows and only need to get rid of a few each year. Once he or Harris receives a call from a producer who has cows to sell, Harris finds other producers to fill the load within a few weeks. Harris then contacts the National Farmers Organization, which finds a packer to take the load. By setting up

loads, the NFO can assure the packer of a set number of cattle on a specific date.

Even though the grant period is over, the program continues to grow. When the project started, Harris would put together a load of eight head. The last load she set up had 18 head, and there were six loads in the first six months of 2002.

The pool is used most during the spring and fall when producers are culling old or open cows or cows with weak calves. During the rest of the year there are fewer cows to pool, but Harris has put together partial loads.

Harris said the southeastern Kansas program has worked well with only word of mouth advertising and her calls to producers to set up loads. Jones said the program works best with a coordinator like Harris to set up loads and make phone calls. He said it would be helpful to have a central pick-up point for the cattle. However, he said the program serves farmers, ranchers and packers well.

Questions about adding value to cull cows can be addressed to Jana Beckman at the Kansas Center for Sustainable Agriculture and Alternative Crops at Kansas State University, 785-532-1440, kcsaac@oznet.ksu.edu.

Editor's Note: This article was adopted from a press release. Martin was an intern and Beckman is the Coordinator of KSAACC.

The Grass Dance

If you had walked into the Christlieb Gallery on the UNL city campus during mid-August to mid-December, you would have seen the wonderful and colorful exhibit titled *Pow Wow Plains: Photographs by Tom Tidball*, produced by the Great Plains Art Collection, a program within the Center for Great Plains Studies (CGPS).

As the CGPS Web site (www.unl.edu/plains/gallery/powwow.html) explains:

The Omaha tribe traces its pow wow to the ancient He'dewachi ceremony — a late-summer harvest celebration closely associated with the cultivation of corn and thanksgiving for the season of abundant hunting and gathering. At some yet undetermined time, the dance traditions of another ancient Omaha warrior society, the Hethu'shka, were introduced into the He'dewachi ceremony. The Hethu'shka society typically met each month; member warriors were readily identified, for they wore only a breechcloth with a long bunch of grass attached at the waist. The grass bundles represented individual war honors. Eventually all Hethu'shka society warriors started to wear the grass regalia without regard to individual war honors. The dance style of these Omaha Hethu'shka society warriors was extremely popular with other

plains tribes, who incorporated this dance into their customs. These tribes continue to identify it as the "Omaha" or "Grass" dance. The first Omaha pow wow celebration dates back to 1804 and is widely considered the oldest pow wow celebration in the United States. The Omaha people celebrated their 198th Omaha Pow Wow in August 2002.

The Grass Dance originated with the Omaha Tribe and has evolved into the most highly competitive form of dancing. It is said the dance started among young men sent out to flatten the prairie grass to form a dance arena. Tying sweetgrass bundles to their belts, they imitated the movement of the tall prairie grass swaying in the wind. Today long strands of yarn, ribbon or fabric represent the grass. (Text accompanying a group of exhibit photographs depicting men's dance styles)

This exhibition was produced by photographer Tom Tidball and Reece Summers, Curator of the Great Plains Art Collection. The text was written by Dennis Smith, Assistant Professor of History and Native Studies at the University of Nebraska at Omaha, and Carrie Wolfe, independent film maker.

UNL Offers Online Course in Turf Diseases

Whether you are a current graduate student, K-12 teacher, lawn care provider, golf course superintendent, extension educator, or work in governmental regulation, if you have knowledge of the basic concepts of plant pathology and are interested in learning more about current and emerging diseases of turf, you will want to explore taking Dr. Gary Yuen's course, Agronomy 830E, Diseases of Turf.

The new online course is being offered March 3, 2003 through May 2, 2003, and can be taken for one college credit or as professional development with or without CEU credit. Access to the World Wide Web and E-mail is required.



Turfgrass diseases will be examined from three perspectives: symptoms on turf, effects on the plants, and the organisms that cause them. In the background are tell-tale symptoms on creeping bentgrass of snow mold, caused by *Typulasp*. The insets show lesions associated with *Bipolaris* leaf spot on tall fescue (left) and spores of one species of *Bipolaris* that can cause the disease (right).

This course will introduce students to the diseases of turf with an emphasis on those diseases occurring on the Great Plains of the U.S. Turf diseases of other parts of the U.S. and the world will be presented as emerging diseases. Specific disease cycles, epidemiology and plant health management strategies will be covered. This is a graduate level course and will be taught with the rigor normally expected of Master's level students.

For more information, see agronomy.unl.edu/distance_ed/spring2003/yuen/course_830e.htm.

Second National Conference on Grazing Lands

The Second National Conference on Grazing Lands will be held December 7-10, 2003 in Nashville, TN. It is being hosted by the Grazing Lands Conservation Initiative (GLCI), the Society for Range Management (SRM), and other sponsoring organizations. The conference objective is "to heighten awareness of the economic and environmental benefits of grazing lands," and its theme is "Harmonize with America's Grazing Lands," in keeping with Nashville's being "Music City, USA."

Target audiences include consumers, conservationists, environmentalists, urban-based resource interests, grazing land managers, landowners and others interested in effective natural resources management.

The conference is designed to provide a forum for discussions and exchange of information, technology transfer, identification of research and program needs, marketing of products, services, and other benefits of grazing. It will endeavor to increase public awareness of the economic benefits and environmental opportunities of grazing lands and create a setting for the exploration of means to address common goals and needs. Farmers and ranchers are particularly encouraged to present. Poster boards will be provided for poster presentations. The conference sponsors are accepting abstracts for oral and poster papers in the following categories:

- The building of partnerships between agricultural, grazing and urban communities.
- Successful "cutting edge" management technologies for grazing practices.
- Economic and public policy implications of grazing.
- The optimizing of grazing land health for environmental and social benefits.

For information on submitting a 400-word or less abstract by the February 1 deadline, see the conference Web site, www.glci.org/2NCGLindex.htm.

CGS Associates

Terry Riordan is the first recipient of the Cyril Bish Professorship in Horticulture. Bish was a long-term extension educator. The award honors Riordan for being a productive scientist and dedicated teacher.

At the Nebraska Extension Fall Conference in October, **Charles Shapiro** received the Chester I. Walters "Extra Mile" Award, and The Nebraska Ranch Practicum team of **Don Adams, Dick Clark, Dillon Feuz, Brent Plugge, Pat Reece, Bud Stolzenburg, and Jerry Volesky** received the Excellence in Team Programming Award.

At the 2002 combined meetings of the American Society of Agronomy, Crop Science Society of America,

and Soil Science Society of America held in Indianapolis in November: **Chuck Francis** received the International Service in Agronomy Award; **Roger Elmore** was named an ASA Fellow; **Stephen Baenziger** began his term as the 2002-2003 CSSA President, **Ken Moore** as CSSA President-Elect, and **Lowell Moser** as ASA President-Elect; outgoing SSA President **John Doran** turned over the gavel; **Roch Gaussoin** was elected CSSA division officer.

In October 2002 **George Pfeiffer** received the Professor of the Month award from the UNL Mortar Board Black Mask Chapter (student academic honors group).

Planning for Bison Grazing on Native Rangeland *(continued from page 1)*

Most mature bison cows weigh about 900 pounds, so a bison is equivalent to 0.9 AU. A bull will vary widely in weight, ranging from 900 to 2000+ pounds. Being able to accurately estimate the weight of the bison is important when determining the amount of forage the animal will consume. Through correct stocking rates and forage use levels, both bison and forage production can be optimized.

Both bison cows and bulls will start a cycle of winter weight loss followed by spring and summer weight gain at about 18 months old. It is not uncommon for bison to lose 10 to 15% of their pre-winter body weight (Sask. Ag and Food). A loss much higher than 15% of body weight may put the bison at risk. This winter weight loss is a result of reduced metabolic rate and is difficult to change. This makes planning for fall weight gains very important. See Table 2 (from Sask. Ag and Food).

Table 2. Winter vs. summer with respect to day length, metabolism, dry matter intake, and body weight.

	Short Daylight Hours	Long Daylight Hours
Metabolism	Slow	Fast
Dry Matter Intake	Low (1.4-1.8% body wt.)	High (2.2-3.0% body wt.)
Body Weight Status	Maintain or Lose Weight	Maintain or Gain Weight

Planning a Grazing System with Bison

Many people who raise bison or work within the industry question how well a rotational grazing system with bison works. Bison are very good at moving and distributing use in very large areas. They will also use rough terrain and travel greater distances to water than will cattle. However, this is usually better accomplished on an extremely large scale. Most pastures in Nebraska are not large enough for even distribution and adequate rest periods between grazing events to occur. Therefore, some type of grazing system is necessary for proper grazing management when utilizing bison.

Many considerations must be taken into account when designing the system or systems to be used. Items to consider before planning a grazing system with bison include time of

rut, time of calving, social groups of the animals involved, areas of the pastures preferred during different times of the year, and other herd behaviors.

Because these factors have a strong influence on how easily the herd will move, along with the disruptions that may cause breeding to stop or abortions of fetus, it may be difficult to plan a rotational system in the same manner that one is planned for cattle. Assistance from the producer in identifying these times and developing solutions to best avoid stress to the animal is important. As with any grazing system, the plan chosen should be dependent on the goals of the producer.

In designing a grazing system, attention should also be given to the type of fencing, location of watering facilities, and the amount of water storage available. Many times, bison have a high respect for any type of fencing. However, if bison in adjoining pastures make up their minds that they want in with the other herd, practically no fence will keep them apart. Interior (or cross) fences should be designed to allow for the herd dynamics to be interrupted the least. Optimum size of pastures will vary depending on the size of the herd, but generally, the larger the pasture can be while meeting the goals of the grazing program, the less stressful it will be to the animals.

Because of the impact of the lead animal in the herd, not only is water storage important when determining locations and sizes of tanks, but so is the amount of drinking area. It is important to have a tank large enough for as many bison as possible to drink from at one time. It is also important to have it low enough to the ground for the calves. Surface drinking area is critical for the watering location because once the lead cow leaves the area, all other bison will follow even if the others did not get to drink.

In summary, additional challenges occur with bison compared to cattle. It is important for those involved in bison production to have a good understanding of the herd dynamics, timing of various life cycles, and the resources that the bison will be grazing.

Info Tufts



National Agriculture Day will celebrate 30 years on March 21, 2003 (see www.agday.org).



The North Central Region Sustainable Agriculture Research and Education (SARE) Program will issue the 2003 Call for Proposals for grants to farmers and ranchers on February 3, with a March 28 deadline. See www.sare.org/nrcsare, or call the NCR SARE office, 402-472-7081.



For the first year of the 2002 Farm Bill implementation, Nebraska was the top state in allocation of dollars into the Wildlife Habitat Incentive Program (WHIP) contracts at \$446,000.



In mid-October UNL agricultural economist Roy Frederick estimated the agricultural cost of the 2002 drought at \$594 million. Of this total, \$172.5 million was due to lost forage on pastures and rangeland. Another \$75 million was because of higher irrigation costs. The remainder was due to losses on traditional crops, including \$104 million for corn and \$197 million for soybeans. Traditionally, a multiplier of 2.0 is used for crop losses, bringing the estimated total effect of the 2002 drought on the Nebraska economy to \$1,187,000,000. And the drought continues...



Three Grazing Livestock Systems students graduated in December, bringing the number of graduates with GLS as their primary or secondary major to six. The interdisciplinary major, now in its fourth year, is coordinated by the Center for Grassland Studies.

Seed Dormancy — the Uncertainty in Native Grass Seeding

Native grasses have survived in nature without any form of cultivation for thousands of years. Their ability to survive and flourish results from several protective mechanisms provided by mother nature. These protective mechanisms, however, may interfere with the speed and or uniformity of their establishment. One of these mechanisms is seed dormancy.

Seed dormancy is basically a physical or genetic characteristic that prevents the seed from germinating. The purpose of dormancy is to allow the seed to germinate and the plant to establish under favorable growing conditions. The proportion of dormant seed in native warm-season grasses depends on physical and genetic factors. Some species, even some varieties within a species, produce more dormant seed than others do.

Age of the seed has been proven to be a factor in affecting the percent of seed dormancy. Newly harvested seed will many times have more dormant seed than seed that has been stored for several months. In fact, for many native warm-season grass species, the actual germination of the seed will increase with age due to the loss of dormancy with time. For example, a seed storage study being conducted at the Manhattan Plant Materials Center has shown that 'Kaw' big bluestem had an initial germination of 63% that increased to 88% after 15 years of proper storage, "Blackwell" switchgrass increased from 85% to 98%, 'Aldous' little bluestem

increased from 70% up to 81%, and 'Osage' Indiangrass increased from 75% to 88%.

Seed dormancy can also be affected by cold, moist conditions. Germination tests performed by seed laboratories have indicated that cold, moist treatments of some of the warm-season native grasses have resulted in improved germination. One example showed a variety of switchgrass not treated with cold, moist conditions had a germination of 15% and 70% dormant seed. Material from the same lot that was subjected to the cold, moist conditions had an 80% germination and 5% dormant seed. This suggests that earlier planting dates may allow Mother Nature to provide the treatments necessary for a higher percentage of the seed to germinate and survive the first growing season.

Seed dormancy does exist in native warm-season grasses, therefore the speed and/or uniformity of establishment is not always predictable. Native grass plantings have in many cases been prematurely judged as failures and destroyed because of a lack of understanding of seed dormancy and the effect on timing of seedling emergence.

Editor's Note: Reprinted from the October 2002 issue of the newsletter published by the Manhattan Plant Materials Center, Plant Materials Program, Natural Resources Conservation Service, USDA. For more information on the Plant Materials Program, see plant-materials.nrcs.usda.gov.

Prairie Pines to Benefit UNL Programs

by Steven Ress, Water Center, UNL

A recently donated parcel of native prairie and forest land northeast of Lincoln will provide both educational and research benefits to UNL.

Prairie Pines, 145 acres of diverse, natural woodlands and grasslands at North 112th and Adams streets, was donated to the University of Nebraska Foundation several years ago by Walt and Virginia Bagley. Last year the Bagleys transferred management of the property to the university's Institute of Agriculture and Natural Resources and School of Natural Resource Sciences.

"One of the prime goals is to partner with others to fully develop uses for it that will benefit UNL students and faculty, as well as citizens of the state," said extension wildlife specialist Ron Johnson, member of a committee studying Prairie Pines management, use and funding issues. "It's a pleasant set of challenges to ponder."

Options under consideration include developing the property as a natural resources education and research center for UNL, other educational institutions, conservation groups and individuals, as well as for UNL classes and research, K-12 school groups, summer classes for teachers, programs for acreage owners, recreational use, historic re-enactments, retreats and organically grown produce, Johnson said.

"We want to partner with as many organizations as

possible that share a common vision of developing this unique resource into the premier educational and research facility it ultimately can be," he said.

A Prairie Pines Endowment Fund to help achieve those goals has been established.

The Prairie Pines committee includes representatives from the Lower Platte South NRD, Nebraska Game and Parks Commission, Nebraska Environmental Trust, Lincoln Parks and Recreation Department and UNL's SNRS, Nebraska Statewide Arboretum, Nebraska Forest Service and Department of Agronomy and Horticulture.

Walt Bagley, a retired UNL research forester, donated Prairie Pines to UNL to protect it from development and to help preserve the natural habitats of the surrounding Stevens Creek watershed for the benefit of UNL and the people of Nebraska.

Prairie Pines was farmland when the Bagleys bought it in 1959. Over the next 40 years they converted much of it into a natural arboretum and environmental refuge. The property now has 70 acres of diverse woodlands and grasslands containing more than 200 species of woody plants; 30 acres of seeded prairie grasses, wildflowers and riparian areas; 10 acres of virgin prairie; two houses, a barn, an arboretum and outbuildings. *(continued on page 8)*

Platte River Trust Begins Study of Birds Breeding in Grasslands

by Felipe Chavez-Ramirez, Platte River Whooping Crane Maintenance Trust

Grasslands are among the most imperiled ecosystems in the world. Grasslands are also one of the least represented ecosystems in protected areas in any country. Originally North America contained extensive and continuous grasslands from Canada to Mexico, including the entire Midwest region west to the Rockies. The avian assemblage that has evolved in association with grasslands represents a unique component of North American biodiversity. As a guild or group, populations of 70% of grassland bird species show negative trends, some as significant as 6% per year. Birds that have experienced less serious decreases, such as forest dwelling neotropical migrants, have received considerably more attention in the scientific and popular literature for many years. Many factors are implicated in the declines of grassland breeding birds, including conversion of native grasslands to agricultural and urban uses, removal of native grazers, and encroachment by woody vegetation. However, the details of these possible relationships are not entirely understood.

The Platte River Trust has the mandate to protect habitats for all migratory birds — particularly those that are threatened or endangered — not only crane species. As grassland breeding species are clearly threatened due to the significant declines in their population numbers, we initiated a project this year to evaluate the distribution and abundance of breeding birds on the Trust's grasslands.

This summer we began a study to evaluate the effect of different management practices on grassland birds. The study is intended to determine the distribution, abundance, and reproductive rates of different species on the Trust's grasslands and meadows. This is important because it will give us the first level of information upon which we may build to develop appropriate management strategies that benefit these birds.

This year's work was intended to serve as a pilot study, to evaluate the possibility of conducting detailed research on the reproductive rates and success of grassland birds. Because of the openness of prairies and grasslands and the secretive nature of grassland birds, trapping birds with mist nets in these environments has been problematic in most places where it has been tried. For this reason, we decided to use this year as a test period. However, our trapping efforts were very successful with dickcissels, grasshopper sparrows, bobolinks, and several other species. We expect to

continue trapping and banding efforts for several years in the future to establish a monitoring program that can detect changes in numbers and species composition overtime.

Most of Nebraska's grassland breeding birds are migratory, spending as little as four months here before heading south in August and September to winter in the southern US, Mexico, and in some cases South America. The



Grasshopper sparrows, which nest in the meadows along the Platte, are being studied as part of the Platte River Trust's research on grassland birds.

nesting period, however, is critical, as population changes are heavily influenced by productivity that occurs at this time of year. Migratory populations pose significant challenges for conservation and management, since many areas and countries must be involved in order to fully protect them. Our study is intended to shed light on the factors that most significantly contribute to the productivity of these species on their Nebraska breeding grounds. By continued monitoring and banding over several years, we also will gain information on mortality of different species during their migration and wintering periods by deter-

mining what proportion of banded birds returns to breed in successive years.

This summer's study was conducted in eight different grasslands, each treated one of four ways: grazed, hayed, or burned within the last 12 months, or rested (no treatment) for at least 24 months. In each meadow, 12 mist nets were set up to capture birds early in the morning, before sunrise. All captured birds were identified to species, aged, banded and then released. In addition, all birds were evaluated for their breeding condition, which over time will provide information about the timing of the breeding period in this area. Aging birds will give us information on the timing of fledging for the different species in different areas, as young of the year are easily differentiated from the adults.

Our initial results showed that birds were most abundant in fields that had been hayed the previous year, followed by fields that were grazed. The fields that were rested had the lowest abundance of birds and the smallest number of species. These results are only preliminary, and we expect to continue our work on breeding grassland birds over the next few years, in order to gain a greater understanding and be able to propose better management for the long-term maintenance of the breeding grassland birds in Nebraska.

Editor's Note: Reprinted with permission from *the Braided River*, #17, 2002, published by the Platte River Trust. Felipe Chavez-Ramirez is the avian ecologist at the Trust.

Prairie Pines to Benefit UNL Programs

(continued from page 6)

Several years ago the Bagleys developed a plan to donate Prairie Pines to the NU Foundation to be used for research and educational purposes by the Institute of Agriculture and Natural Resources and the School of Natural Resource Sciences. In 1992 the Bagleys donated about half the property to the foundation for use by the university. At that time, Walt Bagley volunteered to oversee the site. This fall, the Bagleys made arrangements to donate the remainder of Prairie Pines, except their residence, and the university has assumed daily management of the property.

Individuals or groups that want to get involved or visit Prairie Pines for educational or research purposes should call Kyle Hoagland, director of the School of Natural Resource Sciences, at 472-9873, or Johnson at 472-6823.

Editor's Note: Reprinted from the October 31, 2002 issue of *Scarlet*, a weekly newspaper for UNL employees.

Resources



The *2003 Nebraska Beef Cattle Report* is now available. It contains 32 research articles on a variety of topics related to beef production. To obtain a hard, contact the Center for Grassland Studies. It is also online at www.ianr.unl.edu/pubs/beef/beefrpt.htm site.

Nebraska Wildflowers/Grasses Web site. The Nebraska Statewide Arboretum has added an interactive guide to Nebraska's 280+ wildflowers to its Web site. There is a section devoted to grasses that contains scientific information, illustrations and links to photos. Educators, nature lovers and garden enthusiasts will want to check out arboretum.unl.edu/florasearch.

The primary research objective of the University of Missouri Forage Systems Research Center is the development and evaluation of forage systems for all classes of beef cattle. The Center's Web site, aes.missouri.edu/fsrc/news/index.stm, has newsletters and research articles plus a calendar of educational events.

"Sustaining Earth and Its People: Translating Science into Practice." The 24-minute video released in the fall of 2002 by the American Society of Agronomy, the Crop Science Society of America and the Soil Science Society of America lays out the challenges agriculture and society face in restoring a balance among forces of population, food production, energy and natural resource limitations, economic imbalance and environmental degradation. An excellent educational tool. Available online at www.asa-cssa-sssa.org/plenary01.html.

Potential of U.S. Grazing Lands to Sequester Carbon and Mitigate the Greenhouse Effect. \$93.95 + s&h. Geared primarily for soil and plant scientists and ecologists. Available from U.S. Water News, Inc., 230 Main Street, Halstead, KS 67056, 1-316-835-2222. Order online at www.uswaternews.com/books/bksbycategory/2aSoilSci/po1566705541.html.

Calendar

Contact CGS for more information on these upcoming events:

2003

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|--------------------|---|
| Jun. 20-21: | Brush Creek Ranch Field Day, near O'Neill, NE |
| Jul. 26-30: | Annual Meeting of the Soil and Water Conservation Society, Spokane, WA, www.swcs.org |
| Aug. 11-12 | 3rd Annual Nebraska Grazing Conference, Kearney, NE, www.grassland.unl.edu/grazeconf.htm |
| Nov. 2-6: | ASA-CSSA-SSSA (Agronomy) Annual Meetings, Denver, CO |
| Dec. 7-10: | 2nd Annual National Conference on Grazing Lands, Nashville, TN, www.glci.org/2NCGLindex.htm |

If you have articles, events, resources, CGS Associate News, or other items you would like to submit for inclusion in future issues of this newsletter, please contact the editor, Pam Murray, at the CGS office.

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