



Grassroots

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Rangeland Heterogeneity for Livestock and Wildlife by Steve Fairburn

What is heterogeneity as it relates to ranching and wildlife? Heterogeneity of rangeland can be defined by the diversity of vegetation in a certain area. Those areas that have more species of plants are said to be more heterogeneous. Looking at heterogeneity in this way, it can be an indication of rangeland productivity and stability. Rotating livestock and varying the timing of grazing are important factors that influence the diversity of rangeland vegetation.

Another way of looking at heterogeneity of rangeland is with respect to vegetative structure. Vegetative structure is the height and density of the plants in a certain area. Grassland birds often key in more on vegetative structure than to individual plant species. And different species of grassland birds require different heights and densities of the grasses. Some require dense stands of taller grasses, while others need very short grasses with a lot of bare ground. Most grassland bird species require a vegetative structure that is somewhere in between. A properly implemented rotational grazing system will provide a number of different vegetative structures at any point in time. There will be the pastures that are currently being grazed and those most recently grazed that have relatively short structure. There will also be pastures that have yet to be grazed with taller grasses and, given the right precipitation events, there will be various stages of regrowth in those pastures that have been previously grazed. Another way to achieve structural vegetative heterogeneity is to lightly stock a large pasture for the entire growing season. In this case there will be places that get grazed very heavily and others that are rarely ever reached by livestock. This is neither the most efficient way to graze nor is it the best for the long term health and productivity of the rangeland. Mob grazing and fire can also be used to increase heterogeneity. These techniques provide more disturbance and another vegetative structure (nearly bare ground) that a standard rotational grazing system does not. However, neither of these methods have gained widespread acceptance in South Dakota.

Implementing a rotational grazing system can help improve the rangeland heterogeneity both for rangeland health and productivity and for grassland wildlife habitat. In fact, well managed rangeland has all of the things that grassland nesting birds need to successfully reproduce. The things that livestock need in order to thrive (grass and water) provide these birds with everything that they need to be successful. Additionally, ranch management decisions that focus on long term rangeland sustainability benefit most of the bird species that make their home in the native grasslands.



Purple coneflower

The Prairie Farm: bringing back grass by Cody Zilverburg



Carter Johnson, Co-Founder of EcoSun Prairie Farm

While native grass and CRP lands are being rapidly converted to annual crop production to take advantage of high grain prices, the EcoSun Prairie Farm is bucking that trend. This not-for-profit organization was founded in 2007 and began restoring prime farmland *back* to prairie plants in 2008 while keeping it in agricultural production. The Prairie Farm is located on a section of land in Moody county, a few miles northwest of Colman. It is both demonstration and experiment, seeking innovative ways to make a profit from restoring grassland. So far, the farm has generated revenue through production of native plant seed, hay, and ‘prairie-raised’ beef. Future revenue sources might include fee hunting, eco-tourism, and carbon credits.

In the first production year, we established fields of switchgrass for seed production on 59 ac that had been in a corn-soybean rotation. We also planted a 40 ac field to a mixture of native warm season grasses (including big bluestem, indiangrass, little bluestem, and switchgrass) and forbs (including coneflower, Echinacea, smooth oxeye, prairie clover, Canada milkvetch, and black-eyed susan). The same year, we renovated about 60 ac of CRP by planting it to the grasses mentioned above. In the following years, we converted another 200 ac of farmland to prairie plants, including a 115 ac field seeded to a high diversity (25 species) mixture of warm- and cool-season grasses, as well as native forbs.

We strive to balance conservation and profitability goals. One of our strategies has been to restore wetlands that had previously been drained by ditches; we planted some of these wetlands to prairie cordgrass, a native grass that produces impressive tonnage in areas that are temporarily flooded in the spring. The wetlands provide habitat for wildlife during much of the year, increase the overall species diversity on the farm, and generate revenue.

Switchgrass fields have produced harvestable seed yields every year since their second growing season. We usually hay the mixed species fields in the fall, in order to allow the plants to translocate nutrients back to their roots before harvesting. A small number of acres are designated for an early summer harvest of moderate quality hay each year, with those acres rotating around the farm so that the same area isn’t harvested in consecutive years.

In 2011, the farm started grazing 75 head of yearling cull heifers from the Mortenson ranch near Hayes. The fattest heifers are butchered and the beef is marketed under the farm’s EcoSun brand at select grocery stores and restaurants in Brookings and Sioux Falls, and sold directly to individuals in bundles and quarters.

We have observed many grassland birds, including bobolinks, grasshopper sparrows, and upland sandpipers return to the farm. We have also observed a population explosion of chorus frogs and spring peepers in restored wetlands, in addition to an abundance of pheasants and waterfowl. There’s no doubt the restoration has benefitted wildlife and soils, but from the beginning, the biggest question has been the profitability. An economist at the USDA-ARS is currently analyzing the past five years and we look forward to seeing his report. Stay tuned for the results, and stop by for a visit the next time you’re in our area or visit our website <http://www.ecosunprairiefarms.org>.

New Board Member Spotlight - Bill Slovek



Bill Slovek

I grew up on the ranch we are living on. I graduated from Philip High School and Black Hills State. The ranch is located 23 miles northwest of Philip or 32 miles northeast of Wall. My wife Pennie is the art teacher at Philip. We have three children. Belinda Mitchell and her husband Brandon and their son Bryler farm and ranch northeast of Kadoka. Belinda works at the Kadoka bank. Brock works for Morton Building in Sioux Falls. Bo works on the ranch full time.

We have a cow/calf, yearling and seed stock operation. The cows are about 10% registered angus. The rest are angus based with some Simmental and/or Gelbvieh influence. I have always been impressed with crossbred vigor. We have an annual production sale the first Tuesday in April at Philip Livestock Auction. We sell 2 year old and yearling bulls and 2 year old heifers with AI sired calves at side. All the calves that don't make cows or bulls are sent to a custom feedlot and marketed as fat cattle. The younger calves are ran over as yearlings when grass is available. We are slowly backing up our calving season to get more in sink with mother nature, (or maybe cause I'm getting older). We have the ranch split into 67 pastures so we can do a lot rotational grazing. We also try to use pastures at different times of the year each year whenever possible. There are about 25 miles of pipeline and 90 tire tanks distributed thru out the ranch.

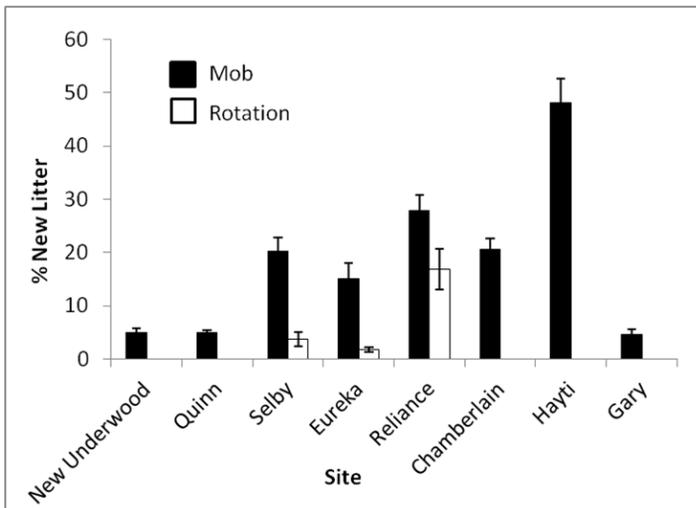
I have went to the Ranching for Profit School, the Dick Diven's Low Cost Producer School, SDGC grazing school and several other of SDGC's educational seminars. It was an honor to be asked to be a director on the SDGC board. I always tell people if you aren't part of the solution you are part of the problem. If you are serious about doing a good job of raising and harvesting grass the SDGC membership is the best investment you can make.

SDSU Range Research Spotlight by Sandy Smart

SDSU range, soil, and weed scientists are starting their second year of the mob grazing research project. We have 9 producer sites across South Dakota and 4 in Nebraska. Last year we collected baseline soil data. Soil organic



Mob grazing study sites in South Dakota



matter ranged from 3-7% across the state. Harvest efficiency was higher with mob grazing and trampling new litter. Sites further west in mixed-grass prairie and stricken by drought did not add much new litter compared to eastern sites. For questions contact Sandy Smart.

Where are we Really at with Drought? by Pete Bauman

As an Extension Range and Pasture Specialist, most of my time has been spent dealing with the production side of the industry, especially grazing systems. When you talk grazing, most folks want to talk drought. They also want to talk about drought...and sometimes drought.

If you've been paying attention the picture for northeast South Dakota has a glimmer of hope. That hope still requires above average precipitation in order to build back adequate sub-soil moisture, but at least we've had some snow/rain to start the process. Precipitation at or below normal will still cause a moisture deficit, so we have to be careful. Our friends in the southwestern portion of the state may not fare so well without a serious change in precipitation patterns.

I can't stress enough the need to practice caution during spring turnout onto your native pastures. We went into the winter with some of the worst range conditions we've seen in a while, and recovery will not be immediate. Even with adequate moisture, there is a time lag in soil water profile recovery, and thus a time lag in plant recovery. I've been encouraging producers to identify a pasture that can be 'sacrificed' if necessary. Preferably a lower quality cool season grass pasture dominated by brome or blue grass where you can feed hay or silage in if necessary.

Nature can trick us. With this late snow, there is no doubt we'll see some spring green up. But, if we have a dry spring, green can turn to brown fairly quickly. If we have a good wet spring, you will still need to give your native pastures a bit of time for those plants to put on leaves and roots. Don't set your pasture back even further by immediately harvesting your growth. Take half / leave half should always be in the back of your mind...even if the halves are smaller due to drought. Finally, if you can make the adjustments to allow some long-term rest on a portion of your pastures, that recovery time can be critical to long-term health. With the high pasture prices we are seeing, you may think you cannot afford to not utilize every inch of grass available. However, if you've spent a substantial amount of cash for pasture purchase or rent...think about protecting that asset. If you abuse it, you'll end up paying for it again in the long run with lower productivity, higher cost of weed control, etc. If you are a pasture landlord, you should protect your asset (the grass), which may mean re-negotiating your leases so as

to strike a fair balance with your renters. If you charge full price...you can bet your renter will feel pressure to take all the grass he or she can. Work together to make a fair plan.

Here at Extension, we are continuing to host the 'Drought Mitigation on the Ranch' webinar series in cooperation with the University of Nebraska and the Drought Mitigation Center. So far, we've had 2 excellent sessions that have emphasized the need for planning and setting dates for making crucial decisions in relation to herd management and feed supplies. We've also heard directly from ranchers who have successfully implemented drought plans.

The next three webinars are coming up the last Wednesdays of the month....on March 27, April 24, and May 29. They will be hosted at the regional centers at 10 am on those days. On March

27, we'll hear from our own SDGC Board member Bill Slovek on drought challenges and opportunities in one of our hardest-hit regions of the state. Please join us. Email me with questions at

peter.bauman@sdstate.edu or call the Watertown office at 886-5140.



Dust blowing across Highway 14 in spring of 2003

Producer Spotlight - Charlie Totton by Garnet Perman



Charlie Totton explaining his mob grazing system at a tour last July to SDSU and UNL researchers working on a joint South Dakota-Nebraska mob grazing project on 13 producer sites.

Charlie Totton and his wife, Tanya, operate a Black Angus cow/calf and breeding stock operation in the Chamberlain area. Intensive grazing during the growing season was a natural next step in their range management program. Their goal was to increase grass production in such a way that they improve their grass at the same time. They specifically hope to encourage more big bluestem in their predominantly western wheat pastures.

Starting in 2009, Totton divided a 640 acre section into 80 acre pastures, each with access to water. The paddocks are 1/2 mile long and 1/4 mile wide. He uses electric poly wire to section off each strip, starting with the one closest to the water. Each day's grazing covers about 4 acres with 200 cows, or 50 cow days/acre. He and Tanya spend 30 to 60 minutes every morning moving the fence from the beginning of July until Labor Day.

Only 1/2 of the section is grazed during the summer. Yearling heifers flash graze the same ground the following spring,

adding another 10 cow days/ acre. Translated into animal units, they utilize 1/2 acre per AUM. The other half rests, allowing the grasses to grow and reseed. The rested grass is then used for winter grazing.

After four years, Totton estimates that grass production has nearly doubled. They haven't increased the stocking rate, but have used the extra grass to extend their grazing season deep into the winter. "It's an idiot proof system," said Totton. "You don't need a PhD in Range Science to do it."

They feed hay during the March and April calving season. The extra winter grass allows Totton to bale up crop residue, producing a good drought cushion. Even with only 11 inches of rain in 2012, they didn't need to destock. Totton hopes the current weather patterns bring enough moisture to get through this year without destocking, too. Their yearling heifers offer an extra drought cushion. If it's dry when they start AI at the beginning of June, they can be sold rather than breeding them for later sale.

By feeding only two months of the year, he's also cut the time and energy used to cut and bale hay. Totton figures that moving cattle daily is still less time consuming than putting up more hay. They keep a winter's worth of hay on hand, just in case.

Some results of the intensive grazing program surprised them. One surprise was the wide variety of plants that cattle will eat. The herd even ate their way through an entire draw full of poison ivy. Totton also learned to be careful about what he hated. Flash grazing was supposed to control what they thought was an overabundance of Kentucky bluegrass. Then he discovered that it often stays green under the dead grasses, providing decent winter grazing.

The down side of intensive management is the daily chore of moving the fence. Totton can stretch grazing to two days, but that's it. The other is the need for more water development.

"Increasing grass is a slow process," said Totton. He feels that intensive grazing produces a faster response than his previous management practices did.

Biological Monitoring Workshop by Land EKG and SDSU Extension

SDSU Extension will be sponsoring a biological monitoring workshop July 30-31 near New Underwood, SD. The workshop will be led by Charlie Orchard of Land EKG. A limited number of tuition vouchers will be available through June. Contact Sandy Smart for more information.

The Eastern Third by Rick Smith



Rick sharing with SDSU Range students

Sandy asked that I relate some of the issues that Eastern SD grazers face in comparison to the rest of SD. Probably the first challenge is that it becomes very hard to justify the best land be used for grazing. In fact I would guess that nearly all the best land that is still in pasture form (native or planted) is owned by the producer using it. It is interesting to observe how well a best land pasture can produce with good grazing management. 80-90 cow pair-days of grazing per acre without nitrogen fertilizer is certainly possible in a simple rotational grazing program. 45# of actual Nitrogen can boost that to 125 cow-pair days but definitely requires some dedicated labor and organization to manage the rotation. I still believe we can do better than that if we really get the system figured out. At \$200/ac or more cash rent the opportunity cost of best land can run from \$1.80-\$2.50 per cow day grazing and one has to really love the cows or the land to make those numbers justifiable. On the other hand, if your land was purchased more than 10 years ago and you can generate \$2.00 per day gross revenue (ie.\$730 calf) from your cow and hold your expenses to \$1.00/day, then that works out. Unfortunately, I hear of producers pegging their cost at \$3/day and wonder what kind of kool-aid they drink.

The majority of SD's Eastern third pastures are not on good land, some not even on fair land. The pastures left often contain either a gravel pit, a huge wetland or spring flooded lowland, steep 30-40% slope creek banks, rocks as large as a pre-weaned calf and may be isolated from good roads. Fencing often is done only by the cattle owner, as the across the fence owner has no livestock, just a tempting cornfield that has been planted close enough to the fence that the ears hang through the wires. Electric power fencing reigns and thank goodness for the improvement to continuous solar power systems. Moving cattle is rarely done by walking to the next pasture, so cows get pretty adept at loading onto stock trailers. Each year more water pipelines are replacing the dugout ponds for dependable water sources.

The isolation of these pastures is both a positive and negative for rotational grazing. Some producers choose to use a low stocking rate and let cows continuous graze all summer. Others stock heavy and then completely haul herd to next pasture down the road a few miles. And still others will divide whatever size pasture it is and rotational graze. In many cases the goal is to find a summer place for cows until the Fall/Winter crop residue grazing can begin.

Fall/early winter grazing can be the cheapest and most profitable grazing time for cow herds in Eastern SD. Grazing your own cover crops can lower daily feed costs to the expense of seed and planting, something like \$25-\$40/ac or \$1/day/cow. Last year my daily strip grazing cornstalks maintained high enough protein and energy for May calving dry cows, cost me only the time to go check on them. With snow always a threat to stop winter grazing up here in the Coteau Hills, most producers have to plan on baling up cornstalks, soybean stubble or small grain straw. Even though this processing of residue raises feed costs it is nothing compared to being caught without feed in a tough winter. The emergence of large dairies dependent on purchasing all their feed needs makes any hay purchases nearly cost prohibitive for local beef operations. Availability of Distiller's Grain with minimal transportation makes these lower quality harvested crop residues into complete rations.

Some of our Eastern pastures face added challenges to being a good steward. Flowing creeks and rivers through pastures, need special management to prevent impacting water quality of any downstream water user. Temperatures and insect activities peak in July and August, which in turn causes cattle to be drawn into these flowing waters for relief. Not only do we see E.Coli levels go off the chart, but the water becomes the transportation for nearly all cattle diseases and viruses. In short what your upstream neighbor has you will have, and yours will pass to everyone downstream. Utilizing these pastures early in the season or late will avoid the cross contamination and reduce the impairment to water heading toward Sioux Falls. A good thing to avoid!

SDSU Range Club Competes at SRM Annual Meeting in Oklahoma City by Sandy Smart

The SDSU Range Club, faculty, and graduate students from the Department of Natural Resource Management participated in the 66th Annual Meeting for the Society for Range Management in Oklahoma City, OK Feb 2-7. Undergraduate students participated in the Undergraduate Range Management Exam (URME), a 2 hour comprehensive exam covering the full range of disciplines encountered in the rangeland ecology degree. The team placed 11th out of 24 teams in the URME. Students also took part in the famous Plant ID competition. Here the students must identify and correctly spell the scientific name of up to 200 plants found in North America. The Plant ID team placed 5th out of 25 teams in the competition. The coach of the URME team was Dr. Lora Perkins and the coach of the Plant ID team was Dr. Gary Larson.

Numerous oral and poster presentations were made by faculty and graduate students. Topics included research on mob grazing, grassland birds response to managed heterogeneity, and rooting characteristics of yellow flowered alfalfa.

Next year's meeting will be held in Orlando, FL Feb 7-15, 2014.



2013 Range Club, Plant Identification and Undergraduate Range Management Exam Team

Back row: Andrew Krcil (RC, PI, URME), Dr. Lora Perkins (URME Coach), Sophie Strubbe (RC, URME), Nicole Schwebach (RC, URME), Cody Young (RC, URME), Patrick Pesicka (RC, URME), Brant Douville (RC, URME), Morgan Myers (RC, ID, URME), Jared Brown (RC, URME), Hunter Henderson (RC, URME), Dr. Gary Larson (ID Coach)
Front row: Melisa Kafka (RC, URME), Kelsey Duchenaux (RC, URME), Cady Olson (RC, URME), Emily Helms (RC, ID, URME), Helen Lauth (RC, ID, URME), and Dr. Sandy Smart (RC Advisor)

RC = Range Club, ID = Range Plant Identification, URME = Undergraduate Range Management Exam



Sandy Smart
Box 2170, ASC 219, SDSU
Brookings, SD 57007

Calendar of Events

Event	Date	Location	Contact Person	Phone
Range Camp	June 4-6	Sturgis	Dave Ollila	605-394-1722
Bird Tour	June 14-15	Montrose	Judge Jessop	605-280-0127
Rangeland Days	June 25-26	Kadoka	Mayola Horst	605-837-2292 Ext 3
			Shelia Trask	605-859-2186 Ext 3
Land EKG Workshop	July 30-31	New Underwood	Sandy Smart	605-688-4017
SD Grazing School	Sep 10-12	Chamberlain	Judge Jessop	605-280-0127

Please remit any comments, suggestions, or topics deemed necessary for further review to: Sandy Smart, SDSU Box 2170, Brookings, SD 57007, alexander.smart@sdsu.edu, (605) 688-4017