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Range 101: Virtual Fencing a Game Changer for Targeted Grazing

By Sandy Smart

Targeted grazing is a method of using livestock to obtain a certain set of vegetation objectives such as invasive species control, vegetational composition shifts, or wildfire fuel load reduction. Targeted grazing uses a prescription much like prescribed fire to achieve the desired outcome. Controlling stock density, timing, season of use, and using the right livestock species are key components of targeted grazing.

Recently, I attended a webinar sponsored by the Society for Range Management's Targeted Grazing Committee highlighting two livestock producers working in Minnesota using virtual fencing to implement targeted grazing. Allysse Sorensen, Chief Executive Herder and co-owner of The Munch Bunch LLC, received a Sustainable Agriculture Research and Education (SARE) farmer/rancher grant FNC21-1306 "Testing Virtual Fence Technology in an Upper Midwestern Goat Grazing Operation". Allysse uses Nofence, a virtual fence company from Norway, on her goat herd. She described how she used it in Minneapolis to target woody understory species like buckthorn in forests surrounding an urban university campus. Nofence uses cellular service technology to geolocate the virtual fence and the animals. Currently, Nofence is the only product available for sheep and goats. Her presentation was very good and received a lot of practical questions from the participants.

Doug Voss, a beef cattle operator from Paynesville, Minnesota started using a virtual fence system from Vence. Doug described his use of virtual fencing to graze the 30,000+ acre Sherburne National Wildlife Refuge. Virtual fencing allowed Doug to move his herd into difficult areas of the refuge which would not be feasible to graze using traditional electric fencing. His cattle were very effective in grazing the oak-savanna vegetation, keeping the understory vegetation in check.

Both producers described the costs of the two companies' products and the pros and cons. The upfront costs might make getting into virtual fencing a challenge for some producers. Allysee and Doug said that they liked what virtual fencing offered in terms of convenience and knowing exactly where their animals were at all times. The systems are not 100% effective in keeping the animals in their paddock, but it was good enough to work the way they wanted it too. Both said they would never go back to using conventional temporary fencing.

It was clear from the webinar that there was a lot of excitement regarding what this new technology has to offer grazers. Like any new technology, the cost should decrease over time. Some issues of concern which still exists for many were the cybersecurity of the system and who owns these data? Regardless, it appears that virtual fencing can work and has great potential to support targeted grazing.

If you wish to watch the recorded webinar use this link <https://tinyurl.com/4895fvnh>.

Ducks and Grazing: A Grazing Systems Study by Ducks

Unlimited in North Central South Dakota by Randy Meidinger

As grassland resources across the northern prairies continue to decline, it is important to manage what remains as efficiently as possible. The most common practice used to manage grasslands is grazing with livestock. Ranchers and other landowners have varying objectives and options for implementing grazing strategies on lands they manage. To better understand certain aspects of these grazing management options, Ducks Unlimited conducted a study at a 9,500-acre native prairie ranch located on the McPherson-Edmunds County line in north-central SD, during 2009-2011 to evaluate the impact grazing treatments commonly implemented across the region had on duck production and yearling cattle performance.



Photo by Randy Meidinger

Study Design: During each year of the study, 1200 yearling heifers of similar weight were randomly placed into herds prescribed to one of three grazing treatments: a four-pasture once-over rotational grazing system (1X), a four-pasture twice-over rotational grazing system (2X), or single-pasture season-long continuous grazing (SL). Each grazing treatment was represented by multiple replicate herds distributed across the ranch each year with each pasture being about 160 acres in size. A similar number of cattle and acres were impacted by each grazing treatment each year resulting in pastures under any given grazing treatment having equal cumulative grazing pressure over the entire ~140-day grazing season (~3.1 acres available per heifer = 1.15 Animal Unit Months (AUM) per acre). For example, a 160-acre pasture grazed in the season-long scenario contained about 50 heifers for the full grazing season, whereas each of the four pastures sequentially grazed in either of the rotational systems contained about 200 heifers, but only for about ¼ of the full grazing season in each pasture – thus all pastures in the study were grazed at the same overall AUM intensity by the end of the grazing season. Weights were obtained from cattle on-site before each herd was released into predetermined pastures near May 1, and again at the end of the grazing season in mid-September. Average Daily Gain (ADG) was then calculated for each grazing treatment. Duck nests were located with traditional nest searching methods of dragging a 100-foot-long chain between two ATVs across grassland vegetation to flush nesting hens. Each discovered nest was monitored weekly until it hatched or was otherwise terminated. Nest searches were conducted equitably across each of the grazing treatments each year throughout the nest initiation period (~May 1 – ~July 3) with about 21 days elapsing between 3 systematic searches in each pasture. Nest success and nest densities were calculated for each grazing treatment.

Results: Heifers in the 1X-rotation had a three-year-mean ADG of 1.22 pounds, 1.51 pounds in the 2X-rotation, and 1.79 pounds in the SL-continuous grazing scenario. A total of 5,066 duck nests were found over the three-year period, of which 31.3% successfully hatched and 68.7% that did not. Of the unsuccessful nests, 90.0% were destroyed by predators, 5.4% were trampled by cattle,

Ducks and Grazing Continued on Page 5

Elaine Froese and Annual Meeting by Bri Rupp



This year's annual SD Grassland Coalition meeting will feature Elaine Froese, award-winning Author & Certified Coach. She is a Certified Speaking Professional (CSP) and expert for farm and ranch families who want better communication and conflict resolution to secure a successful generational transition. Elaine has a **gift for bringing clarity with workable and practical tools**.

During this event, Elaine will provide

- A workbook for each family unit
- Answers to all your questions, which can be asked anonymously through texts directly to Elaine
- Simple, practical, and actionable tools you can use to talk about tough issues and get traction in your farm or ranch transition

When: December 8th, 2022; 10:00AM – 3:30PM CST

Where: Arrowwood (Cedar Shore) Resort, Oacoma, SD

Cost: FREE to current members or \$35 (*includes a 1-year SDGC membership*)

The annual business meeting will occur from noon-1:30 pm. Updates on activities, treasurers report, and election of new board members are on the agenda.

Find out more and register at <https://sdgrass.org/elaine-froese-event-dec-2022/>.

Small Start - Big Payoffs by Garnet Perman

Daniel Gering is a first generation farmer in Turner County. Gering's grandfather always wanted to farm but due to medical advice regarding a health condition he sold out and started working for the local International Harvester dealer. He eventually bought the business and passed it on to Daniel's father, Brad. Daniel worked at the dealership and also for several area farmers during high school and college including being on a custom harvesting crew. Being a third generation implement dealer was a possibility but the land kept calling him. "Farming is the one thing I never lost interest in," he said.

The obstacles of acquiring land and machinery were considerable but Gering also had advantages. His paternal grandmother owned land he could rent. He had good experience with farm machinery and producers on both sides of the family that could give advice. He finished a geography degree at SDSU in 2013 and decided to pursue his dream of becoming a farmer. He developed a plan and started small, keeping his day job and farming on weekends. His then 89 year old grandmother partnered with him on his first crop in 2014--60 acres of corn and soybeans. He's gradually added acres including purchasing a small farm in 2020. He happened to drive by a land for sale sign with a phone number on it not far from his grandmother's land. He made the call and the owners were delighted to help someone who shared their East Freeman roots grow his business.

Small Start - Big Payoffs Continued on Page 4

Small Start - Big Payoffs Continued by Garnet Perman

The machinery problem was solved by hiring custom work and buying one or two necessary pieces a year. The USDA Beginning Farmer program proved to be a challenge to work through but provided relatively inexpensive financing. Good crop prices and timely rains helped at the beginning. He currently shares some machinery with this dad who bought land after deciding to sell the implement business. Brad jokes that he's the oldest beginning farmer out there.

Daniel farmed conventionally for the first few years but his habit of reading and research, including a membership to the Soil Health Coalition enticed him to implement soil health practices. Gering started his soil health journey by planting cover crops that included radishes, barley and peas. Small grains added diversity to the crop rotation. Three years ago he became one of the first to go fully no-till in an area where plowing to dry out the soil is a common practice. "The no-till drill is one of the best investments I've made," he said.



Garnet Perman's nephew Daniel Gering is a first generation farmer from Turner County, SD

The benefits of regenerative practices are showing up. Keeping live roots in the ground with cover crops has salt spots disappearing. The tilth of the soil has improved. After an unusually dry growing season his corn and soybeans yielded about half of his average but was better than others. "The tilled ground in the area this year yielded noticeably less than the no-till ground, and in some cases considerably so. I am also thankful for diversifying into small grains. The winter wheat crop was a little short of my intended goal, but it was the only crop this year that had no insurance claim." He found out grasshoppers don't like peas as they were the only part of his cover crop mix to survive their appetites.

Some of the sources he's found helpful include Practical Farmers of Iowa YouTube channel which features videos of regenerative/organic farming principles and alternative grazing techniques geared for the Corn Belt. Agricultural Economic Insights podcast series about the Farm Crisis titled "Escaping 1980" was insightful. Gabe Brown and David Montgomery's books offered a crash course on soil health. "He's not for everyone, but I would also recommend the essays of Wendell Berry to anyone who really wants to contemplate what it means to farm and/or exist in a rural society." He recently started a job adjusting crops which provides good learning opportunities as well as needed income.

Livestock is next on Daniel's plan. Like with land and machinery, he plans to start small. The goal is to be a full time producer within the next 10 years.

Garnet Perman is a freelance writer and ranches with her husband, Lyle, near Lowry, SD.

Ducks and Grazing Continued by Randy Meidinger

and 4.7% were unsuccessful for other reasons (weather, abandonment, etc.). Statistically corrected nest density and nest success values for each grazing treatment were: 72 nests per 100 acres and 13.1% for the 1X-rotation, 80 nests per 100 acres and 15.1% for the 2X-rotation, and 76 nests per 100 acres and 13.3% for the SL grazing scenario. A statistically corrected nest success value of about 15% is generally needed to sustain a duck population at its current level.

Discussion: Each 1X-rotational grazing system utilized four pastures during the grazing season, but livestock only impacted about half the allocated acres during the primary nesting season. The acres that had cattle present during the nesting season showed a moderate reduction in duck nest density and success perhaps due to comparably high cattle stocking density (4 times higher than the SL-grazing scenario) for ~35 consecutive days in each pasture. However, pastures with cattle absent in the rotation during the nesting season showed higher nest density and success, that was similar to adjacent pastures with grazing deferred until after the nesting season. ADG for heifers was the lowest in the 1X-rotation at 1.22 lbs/day perhaps in part due to lower digestibility of the more mature and less palatable stand of vegetation available later in the season in the fourth pasture of the rotation.

Each 2X-rotational grazing system utilized four pastures over the grazing season. The higher-density stocking impacted all designated acres during the time cattle were present in each pasture, but the impact was reduced by shorter grazing duration in each pasture for about 2 consecutive weeks on two separate occasions. Nest survival was reduced slightly while cattle were present, but similar to the 1X-rotation, 75% of the acres allocated to the rotation did not contain cattle at any given time during the nesting season. Overall nest densities were also less variable than with the 1X rotation, likely because of the more moderate fluctuations in vegetation height due to grazing. ADG of 1.51 lbs/day was significantly greater than the 1X-rotation, yet significantly lower than the SL-continuous grazing treatment.

The SL-continuous grazing treatment utilized a lower stock density of ~0.32 heifers/ac maintained throughout the grazing season in each assigned pasture compared to the rotational grazing treatments of ~1.28 heifers/ac in each pasture at the time livestock were present. Overall nest success and densities were similar to the 1X-rotation values but steadily declined by season's end likely due to the gradual reduction in vegetation height over the course of the season due to continuous grazing. Cattle performed the best in season-long treatments, with ADG significantly higher than those found for both rotational grazing treatments (1.79 lbs/day).

Ranchers and land managers have a variety of different objectives for grazing native grasslands. Each of the treatments evaluated in this study are useful grazing tools and have their own benefits and potential drawbacks in certain instances. For the duration of this study, a four-pasture-twice-over grazing system seemed to be the least detrimental to duck nest survival and resulted in strong weight gains for livestock, whereas the season-long continuous grazing strategy provided slightly lower nest success and densities but higher livestock weight gains. However, it should be noted that all pastures included in this study were classified as native range in very good to excellent condition regarding plant health and diverse plant community composition.

Past studies have shown that utilizing season-long grazing practices year after year on the same native pastures having high range condition will lead to decreased pasture health, plant diversity and grassland vigor and ultimately lower potential for livestock performance. Although rotational grazing seemed to have a slight negative influence on nest success and density in pastures where cattle were present during the nesting season at higher densities compared to season-long grazing, it appeared as though pastures within the rotation where cattle were not present somewhat buffered this negative influence. Additionally, using rotational grazing practices to manage native grasslands has many positive benefits and can lead to maintained or increased biodiversity, pasture health, and grassland vigor resulting in sustained profitable grazing operations.

Randy Meidinger serves as a regional biologist for Ducks Unlimited in Long Lake, South Dakota.

The Green Side Up by Pete Bauman



**SOUTH DAKOTA STATE
UNIVERSITY EXTENSION**

Enjoying what we work for

Usually in this article I take the time to share various facts and figures on the status of grasslands, education opportunities, or policies. I want to deviate from that this month to simply share a reminder that we need to slow down sometimes and enjoy what we have. I have the privilege of getting to work in the natural resources arena every day. For someone who is an outdoorsman like myself, you'd think this would be a dream come true and it is sometimes. Along with the excitement and challenge of working with landowners who are embarking on a conservation journey comes the ho-hum days of the not-so-fun stuff like paperwork, planning, writing, grants, reports, etc. There are more days like that than there should be in my opinion!

But then comes the fall, and I make it a key point to get out on the land and enjoy this great state. I do this for my own personal physical and mental health and for the benefit of keeping strong relationships with my kids. It's my passion, but I also see it as my duty. My wife struggles with the 'duty' argument, but I'm serious about it. If we, the grassland advocates, don't take advantage of the things our grasslands offer beyond just our work, we leave it to chance that those 'things' will remain. Hunting, fishing, and recreating on and in our grassland communities opens opportunity for discussion, reflection, solitude, and sheer enjoyment. For me, it's the time of year when I get to visit old and new friends on ranches around the state. I walk across the prairies in pursuit of game and so much more! I get to see from a different angle how the whole operation functioned during the year, and I get to take time to look and think about things from a higher perch, as I am often glassing for game animals. I also get the chance to pass on some insight to my kids regarding the game we are pursuing and the habitat they need.

There's no need to make this an extensive essay, but rather a simple reminder that we need to really enjoy these grasslands that God has blessed us with. The work will always be there. And to that 'm outa here. I have a date with a tree stand! Remember, take a kid with you!



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*- News from the SD Section of the Society for Range
Management SD Section Annual Meeting by Emily Helms*

The SD Section of the Society for Range Management held their annual meeting in Cottonwood and Wall on October 12, 2022. This was the first in-person meeting since COVID, and it was great to be back together! Section members gathered in Wall for registration before carpooling out to South Dakota State University's Cottonwood Field Station.

At the field station, Section Vice-President Jamie Brennan introduced SDSU's new precision ranch management program, equipment, and projects. On hand to speak about their research projects included Dr. Hector Menendez, and Master's students James Bolyard and Logan Vandermark. Hector and Jamie showed the group some of their new "toys" – precision feed management systems. The first was a precision feeder system that feeds animals a programmed amount of supplement (cake) everyday using a RFID ear tags. The second used the RFID ear tags to monitor how much hay a cow was eating. Both systems collect and save data so users can determine intake and feed ratios later. The researchers also showed their new "cow burp analyzer" – a system that measures the amount of CO₂ and methane that a cow emits.

SRM Corner Continued on Page 7

SRM Corner Continued by Emily Helms

Next, Logan took us to a nearby pasture, where he demonstrated a virtual fence system. He had set up a fence in the software earlier. He explained how the fence worked with the Vence collars. With this system, cattle wear collars that utilize GPS to determine location in the pasture. The animals are warned by the collar when they are getting too close to the fence with an audible beep, before a short electrical stimulus is emitted – somewhat similar to invisible fence systems used for dogs. The collars can be monitored in a web app or phone app, which helps determine animal location. The software also allows the user to “set up” and “take down” fences or move animals from pasture to pasture.

The last new technology the researchers touched on was their precision scales. These monitor animal weight when animals are drinking. Weights can be monitored throughout the season to determine animal gains and performance.

After the outside tour – in the cold wind – the group went inside to listen to James explain his project working on beaver dam analogs. He had placed a few along the Cottonwood Creek – which runs through the research station. He explained the reasoning behind using beaver dam analogs, as well as some other sites he is working on through his research project as well. Logan took a little more time to explain how the virtual fences worked, and some of the findings from his research. Then Jamie ended the morning explaining some of the results from the precision feeding trials and cattle weight data.

After lunch, the group had their annual business meeting at the Three Amigo’s Restaurant in Wall to elect new officers and talk over the previous year’s events. Officers for 2023 are Jameson (Jamie) Brennan – President, Tyler Swan – First Vice President, Krista Ehlert – Second Vice President, Sandy Smart – Secretary, and Jeff Vander Wilt – Treasurer. Directors will be Jessica Michalski, Mitch Faulkner, and Tom Nadgwick. Out going officers/directors were Carmen Drieling – president, and Tanse Herrmann – director.

After the business meeting, a banquet was held to honor Excellence in Range Management (ERM) winners and hand out other awards. The awards portion of the night was kicked off with Jonathon Neuharth giving his winning presentation from Rangeland Days. He will go on to the International Meeting to compete in the High School Youth Forum. Plaques were handed out for out-going presidents and directors from 2021 (since there was no in-person meeting last year). Matt Odden was the outgoing president, and Matt Stoltenberg was an outgoing director. Emily Helms was awarded the Top Hand Award for her education, outreach, and leadership.

ERM awards were given to four ranches across SD. Area III winner was the Tornow Ranch from Murdo (nominated by Ryan Willert). Area IV winners were Chuck and Koreen Anderson from Lemmon (nominated by the Perkins County Conservation District). Tracy Rosenberg Abbey Grasslands of the Prairie Coteau from Marvin SD won for Area I (nominated by Krecia Leddy). Nickelson Farms of Frederick from Area II (nominated by Derek Barondeau).

The evening ended with the Crazy Auction – where bidders raised over \$1,500 for youth activities.



Tornow Ranch – Area III ERM Winner.
(Photo from Emily Helms)



Chuck and Koreen Anderson – Area IV
ERM Winner (Photo from Emily Helms)



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Calendar of Events

Event	Date	Location	Contact Person	Phone/email
Finding Fairness in Farm & Ranch Transition—Elaine Froese	Dec 7	Norfolk, NE	Angela Redman	negrazinglands@gmail.com
SDGC Annual Meeting	Dec 8	Oacoma, SD	Judge Jessop	605-280-0127
Finding Fairness in Farm & Ranch Transition—Elaine Froese	Dec 8	Oacoma, SD	Judge Jessop	605-280-0127
Finding Fairness in Farm & Ranch Transition—Elaine Froese	Dec 9	Rapid City, SD	Lowell Mesman	Lowell@sdfbf.org
Leopold Award Presentation @	Dec 13	Pierre, SD	Taya Runyan	605-945-2333

Please remit any comments, suggestions, or topics deemed necessary for further review to: Sandy Smart, SDSU Box 2207D, Brookings, SD 57007, alexander.smart@sdstate.edu, (605) 688-4940

