

Central Grasslands Forum



Central Grasslands Research Extension Center
Streeter, North Dakota 58483



Summer 2018

Volume 5, Issue 3

A Walk Through the Pasture

Kevin Sedivec, Interim Director, Central Grasslands Research Extension Center

The spring of 2018 brought heartache and a blessing to the Central Grasslands Research Extension Center. We lost our good friend and co-worker Rodney Schmidt to an ATV accident that happened on his farm.



Rodney Schmidt

Rodney was the most good-hearted, hard-working man who loved his family and the Lord. Rodney was the face of our livestock unit. He loved farming and livestock, but had an indescribable pride for his three sons and wife, Karen.

He will be remembered for many things: his generosity to the center and his neighbors, and his willingness to help others. Whenever we had a new hire – whether permanent or summer seasonal – Rodney would take the person under his wing and make sure the person was comfortable, happy and welcomed to the center.

His love for his family was evident in all that he did. He was a blessing to everyone's life that he touched, even if it was a

moment or many years. Having a man such as Rodney in our (my) life was a privilege. Rodney truly will be missed!

The center has been blessed with ample rain this spring. As of June 13, we have received 6.96 inches of rain, or 183 percent of normal. Our pastures and hay lands are flowing in tall grass, spring flowers are blooming and first-crop alfalfa is down.

Cow-calf pairs have been grazing the research trials since May 23. The yearling heifers are going out to pasture June 20 after being artificially inseminated. The heifers will be going on a new precision agriculture trial June 20. Eighteen of our bulls are in Fargo on a research trial and will return in early July to begin breeding in mid-July.

The center initiated some studies this spring. Last year, we created a large-scale disturbance trial designed to increase plant diversity and reduce Kentucky bluegrass, and determine impacts on livestock performance and production, and pollinator and bird habitat. That trial compared patch-burn grazing using two types of burn programs (spring only, spring and summer) with full-season grazing of cow-calf pairs.

(continued on page 2)



Micayla Lakey



Rick Bohn

IN THIS ISSUE

A WALK THROUGH THE PASTURE: NEWS FROM CGREC	1
PATCH-BURNS AND BUTTERFLIES	3
COUNTY CORNER: PASTURE, RANGE AND FORAGE TOUR ON AUG. 15	5

A Walk Through the Pasture *(continued from page 1)*

This year, we started a grazing strategy study (modified twice-over, rest rotation grazing system) designed to have heavy, moderate, light and no disturbance in the same grazing unit. This system has four pastures with one grazed at 75 percent, one at 50 percent and one at 25 percent degree of disappearance. The fourth pasture is rested for one year.

All treatments are compared to seasonlong grazing (control). All treatments and control are replicated four times. All these trials are conducted with the center and Main Station scientists (Ryan Limb, Torre Hovick and Devan McGranahan). Caley Gasch, an assistant professor of soil health, also has a graduate student studying grazing and fire effects on the soil profile.



Kevin Sedivec, NDSU

Scott Alm, our forage specialist, started two other studies. One looks at the potential forage production and quality of different cover crop mixtures. His second study, which we call a relay study, compares production and quality of alfalfa alone, meadow brome grass alone, big bluestem alone, alfalfa with meadow brome grass or big bluestem, and alfalfa with meadow brome grass and big bluestem. We believe the mixture of a cool-season grass (meadow brome grass) and warm-season grass (big bluestem) will produce more alfalfa/grass tonnage under a two-cut system that is typical of our area.

A precision agriculture project also will start this month. This project will look at impacts of mineral supplementation on grazing heifers. The precision agriculture component includes

placement of RFID (radio-frequency identification) tags to the ears of heifers, with only selected heifers allowed access to the mineral feeders. The tags relay mineral intake data by animal to a computer program that allows real-time data.

The center became crowded once the summer seasonal and graduate students arrived. During the week of May 29, the summer seasonal workers (10 employees) on the statewide pollinator study trained at the center with 27 people working on station property. Seeing new people and having the opportunity to work with students from all over the country always is fun.

Lastly, the 2018 Central Grasslands Research Extension Center's annual field day will be held July 9 starting at 4 p.m. at the center (see page 6). Come enjoy an afternoon with us. We will discuss the issues that lead to the initiation of the studies occurring on the station, show you the research projects and provide results. We will see range studies, forage projects and livestock research, as well as view our new study on pollinators that uses radio telemetry and bumble bees.

In closing, the center has been fortunate to receive May and June rain, indicating a good forage year on the pastures and a normal to above-normal year for hay production. The landscape is green and lush, birds are found on every wetland and throughout the pasture, and butterflies are fluttering about.

Until our next walk through the pasture, let the rainfall be plentiful and enjoy your loved ones. Take time to walk our beautiful North Dakota prairies.



Kevin Sedivec, NDSU

Do Managed Burns in Grasslands Benefit Butterflies?

Brooke Karasch, MS Graduate Student, NDSU Range Science Program

Prescribed fire is a land management technique that can be used to reinstate natural disturbance regimes in the North American Great Plains. Unfortunately, fire is not often used in the northern Great Plains. Researchers, including graduate students, in the [Range Science program](#) at North Dakota State University are studying how this practice affects the local ecosystem, including its impact on pollinators such as butterflies.

Pollinators are in global decline. Because they provide a variety of important ecosystem services, namely pollination of native plants and crops, it is important to understand and try to mitigate the causes of pollinator loss. A number of factors are driving declines, including pesticide overuse, climate change, and habitat degradation. In the North American Great Plains, habitat degradation is an important factor in many species' declines.



Brooke Karasch, NDSU



Aphrodite fritillary (*Speyeria aphrodite*), nectaring on a thistle (*Cirsium* spp.)

Most of the Great Plains are what we might refer to as a “working landscape.” A majority of the native prairies [have been converted](#) to row cropland, and what’s left is often used as grazing land for cattle. Luckily, the Great Plains evolved with large herbivores, and studies have shown that grazing differences between native bison and non-native cattle are minimal (see Allred et al., 2011). However, the Great

Plains also evolved with another disturbance that people aren’t always so fond of: fire.

Grassland obligate species - those that need grasslands for their entire life cycles - depend on the habitat created by the interaction of fire and grazing. One way to reinstate this

interaction is through a system of patch-burn grazing, wherein managers burn one part of a pasture at a time and leave the rest, while also allowing cattle free access to the entire pasture.

The Range Science program at NDSU has begun a study that examines two versions of this system. In the first, we apply one 40-acre prescribed burn to a different patch of the landscape each spring. In the other treatment, we apply one 20-acre prescribed burn in the spring and a second 20-acre burn in late summer to an adjacent patch. We’re conducting this study at NDSU’s Central Grasslands Research Extension Center near Streeter, N.D.

We often use butterflies as an “indicator species,” which can offer a sign of the health of a local ecosystem. A study by researchers at NDSU is examining the impact of land management techniques on butterflies in cattle-grazing grasslands in the Great Plains.

To help determine the success of this type of system as conservation, my study will measure the butterfly community response to patch-burn grazing and season-long grazing. The season-long treatment is meant to mimic more traditional grazing practices and excludes fire. *(continued on page 4)*

Do Managed Burns in Grasslands Benefit Butterflies? *(continued from page 3)*

We predict that the patch-burn grazing system will provide better habitat for butterflies because it will help clear areas of the landscape from woody encroachment and invasive grasses, both of which can crowd out the floral resources on which adult butterflies rely. We have chosen to use butterflies for this study for a few reasons, including their important status as providers of pollination services. Additionally, butterflies can be considered an “indicator species” because of their complex life cycles and relatively short generation times.

Many species also require a variety of habitat variables throughout their lives, which also contributes to their value as indicators. Some species need a single species of food plant for their larvae, as well as a variety of floral nectar resources as adults, and sometimes even deep layers of dead plant material for hibernation in the winter.

In North Dakota, the butterfly flight season is considerably shorter than it might be in more southern locations. We begin our surveys in June and conduct three rounds of surveys by

mid-August. We’re collecting butterfly data via line-transect distance sampling, so we have transects set up in each pasture. We walk each transect three times each summer and count every adult butterfly we see, identifying them to the species level. We also record their distance perpendicular to the transect. All of these data are processed in a [free program called Distance](#), which gives us density estimates for each species in each treatment.

The figure below shows the average number of butterfly species, butterfly detections, flower species, and flower density per transect within each treatment. “PBG1” has one prescribed burn in the spring and “PBG2” has one in the spring and one in late summer. “SLG” is season-long grazing.

Although we have collected only one year of data, overall butterfly density, as well as density of grassland obligate species, appears to be highest in the patch-burn grazing system. This makes sense because the patch-burn grazing system offers more habitat heterogeneity. Because the cattle typically graze the highly nutritious forage found in the most

recently burned patch, the rest of the pasture can accumulate more litter and allow more floral growth.

We still have two summers of data collection left on the project, so we can’t say anything definitively yet. We’re lucky to have a site with such high butterfly diversity (a total of 39 species in the first year!), and we’re hoping to see total numbers of butterflies grow as we continue restoring natural disturbance and greater habitat variability to the area.

Literature Cited

“The role of herbivores in Great Plains conservation: comparative ecology of bison and cattle,” Allred et al., 2011, *Ecosphere*.



County Corner: Pasture, Range and Forage Field Trip Set for Aug. 15

Julianne Racine, Extension Agent, Agriculture and Natural Resources, LaMoure County

NDSU Extension staff in LaMoure and Dickey counties are planning an opportunity for producers to get a hands-on learning experience Aug. 15.

Extension agriculture and natural resources agents Julianne Racine and Breana Kiser will hold a pasture, range and forage field trip that starts at 10 a.m. During this daylong program, producers will visit native pastures and learn about range judging, then see a demonstration on using a range sampling kit and grazing monitor stick to calculate utilization.

Following that, producers will learn how this knowledge can be applied to their operation by creating a situation map using their own land data.

By learning how to inventory the plant life in an area of interest, producers then can determine the percentage of desirable and undesirable vegetation to make appropriate management decisions. Further, grazing lands that are managed properly don't suffer from over- or undergrazing.

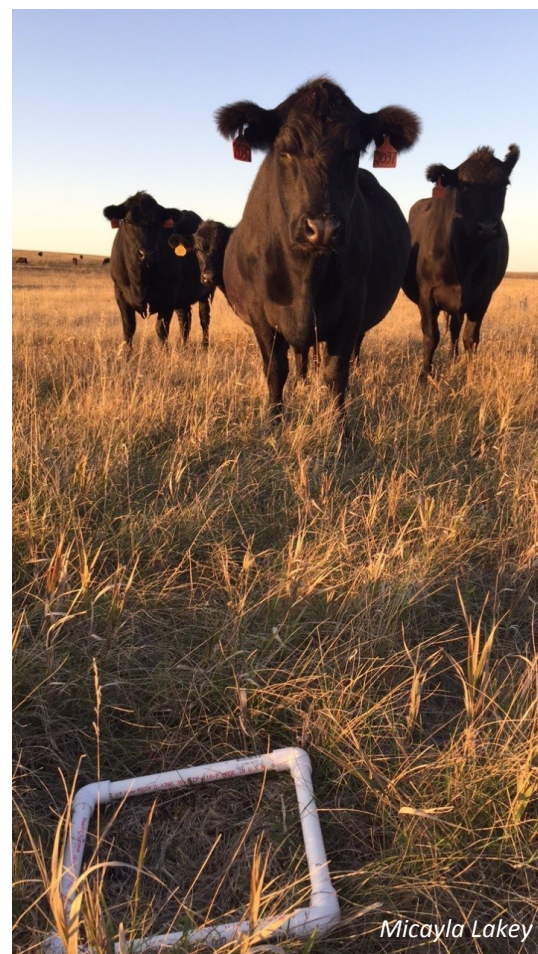
Grazing lands also can be managed and planted to improve soil health and increase desirable forage. With the resources provided at this field day, a producer will be well-equipped to plan a more sustainable, thus profitable, future for the land and livestock.

The cost is \$50 and the field trip is being limited to 10 people so they can have the best opportunity for learning and a more personal experience. The cost includes the NDSU Range Sampling Kit developed by Kevin Sedivec and Miranda Meehan, a grazing monitor stick, NDSU subject publications and lunch.

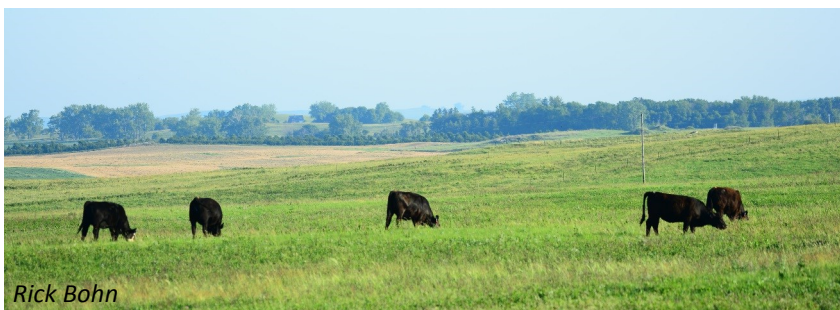
For more information and to register, contact Julianne Racine at 701-883-6085 or julianne.racine@ndsu.edu by Aug. 10.



Fara Brummer



Micayla Lakey



Rick Bohn

North Dakota State University
Central Grasslands Research Extension Center
4824 48th Ave. S.E.
Streeter, ND 58483

Non Profit Org.
U.S. Postage

PAID

Permit 818
Fargo ND



www.ag.ndsu.edu/CentralGrasslandsREC
701-424-3606

Editors: Kevin Sedivec and Janet Patton

NDSU NORTH DAKOTA AGRICULTURAL
EXPERIMENT STATION

NDSU | EXTENSION

July 9, 2018 Program

- **Patch burn grazing study**
 - Assessing the soils, plant community, livestock performance, birds, mammals, pollinators
- **Modified Rest-rotation / Twice-over rotation grazing study**
 - Assessing the soils, plant community, livestock performance, birds, mammals, pollinators
- **Performance of beef cattle managed in two overwintering environments**
 - Bale grazing
 - Interseeding corn with cover crops
- **Assessing heifer development using different mineral strategies on pasture**
- **Forage studies**
 - Alfalfa studies
 - Cover crops
- **Tracking movement patterns of cows and bees**
 - Radio collared bumble bees
 - GPS collared cows

North Dakota State University
**Central Grasslands
Research Extension Center**
4824 48th Ave SE
Streeter, ND 58482

From I-94, go 11 miles south
on HWY 30, then 5 miles west,
½ mile south

Annual Field Day
4:00 – 7:00 pm followed by
Beef Supper

*If any questions or need
directions, contact Sandi
Dewald, 701-424-3606*

*Requests for accommodations
should be made to Sandi by July 5*

NDSU does not discriminate in its programs and activities on the basis of age, color, gender expression/identity, genetic information, marital status, national origin, participation in lawful off-campus activity, physical or mental disability, pregnancy, public assistance status, race, religion, sex, sexual orientation, spousal relationship to current employee, or veteran status, as applicable. Direct inquiries to Vice Provost for Title IX/ADA Coordinator, Old Main 201, NDSU Main Campus, 701-231-7708. This publication will be made available in alternative formats for people with disabilities upon request, (701) 231-7881.