



Grassroots

VOLUME 19 ISSUES

SEPTEMBER 2017

BOARD OF DIRECTORS

James Faulstich,
Chair

Dan Rasmussen,
Vice Chair

Larry Wagner, Sec-
retary/Treasure

Jim Kopriva

Doug Sieck

Bart Carmichael

Pat Guptill

Mike McKernan

Brett Nix

INSIDE THIS ISSUE:

**Range 101:
Drought Recovery** 2

**Saving the
Grasslands Ac-
cording to Pat
Guptill** 3-4

**Diversified
Grassland Plant-
ings** 5

**Pheasants: Bad
News Now** 6
What?

**Russian Olive in
South Dakota** 7

Range 101: Drought Recovery by Sandy Smart

Drought causes a dramatic reduction in current year forage production, requiring specific actions to balance the feed demands of your herd. Those actions were discussed in the previous issue and are best planned in advance so as not to catch you off guard. Similarly, drought recovery also must be planned in order to provide the proper rest of pastures as they begin the healing process. Typically, in the Northern Great Plains late summer or early autumn rains bring much needed relief to pastures hit hard with early spring and summer drought. The “greening up” of grass is a welcome sight and speaks to the resilience of our grassland system. However, these plants are not in an ideal situation as the growing season is quickly coming to an end. Plants are photoperiod sensitive and day length is diminishing in the late summer and early fall. This shortening of the day length period signals perennial plants to begin the critical carbohydrate storage process and bud formation for next year’s shoots. Grazing off the grass in late summer or early fall will interrupt this critical process and further compound already drought-stressed plants.

In 2004, I initiated a fall clipping study to see if I could replicate this process near Brookings. I set up plots that I clipped to a height of 2 inches and 6 inches on September 1, October 1, and November 1 in addition to a non-clipped control. The pasture was mostly smooth brome grass and Kentucky bluegrass. Then in the following spring (late May), I measured the growth in each plot. I repeated the same study for three years, each time on a new set of plots (see Table below).

	Fall clipping treatment		
Year	No clipping	Clip to 6 inch height	Clip to 2 inch height
	Spring growth in late May (lbs/acre)		
2005	1160	997	867
2006	2680	2201	2330
2007	3371	2245	2472

Although Brookings did not experience drought conditions from 2004-2007 during my study, I was able to demonstrate the process of fall forage removal on subsequent spring growth. The average spring growth from the fall-clipped plots was 80%, 84%, and 70% compared with the non-clipped plots, in 2005, 2006, and 2007, respectively. So, even though these plants weren’t experiencing drought, the process of fall forage

Range 101: Drought Actions Continued by Sandy Smart

removal from a cool-season plant community did negatively impact the following spring's growth. Now imagine the impact on plants that are already drought stressed. The take home message is that your drought plan should also include a drought recovery plan such that you can afford to not graze fall regrowth from drought stricken pastures.

Another useful tool to aid in drought recovery is the Grazing Index (modified after Charlie Orchard, Land EKG). The idea is to score each pasture from the four categories and add up their scores. After each pasture is given a score at the end of the season, you plan the next year's rotation in such a way that a pasture's negative score is offset by a positive score.

The example provided is of a four-pasture once-over rotation. The pastures have 80% cool-season and 20% warm-season grasses.

Year 1 had normal precipitation, Year 2 was a drought, and Year 3 outlook suggests normal precipitation. I have scored the pastures based on interpreting the Grazing Index. I grazed all the pastures at a moderate stocking rate so A = 0 and D = 0 under normal rainfall and -1 during drought. The task is to plan out the next year's schedule so that you offset the negative scores from Year 2. If you reduce the stocking rate and graze lightly, A = 1. If you switch up the season of use, you can see that it can be either positive or negative. Hopefully you see that this tool is helpful in the planning process for drought recovery.

Grazing index

A) Intensity / End residual

Use level	% Utilized	Value
Rest/Light	<40%	+1
Moderate	40-55%	0
Heavy	>55-65%	-1

B) Rest opportunity (before or after use)

Days	Rest Period	Value
_____	All Season	+2
_____	Most Season	+1
_____	Half Season	0
_____	Part Season	-1
_____	Little/None	-2

C) Season of Grazing

Growth	Dates	Value
Spring dormancy (before green up)		+1/0
P1 Initial	_____	0
P2 Veg.	_____	-1
P3 Green/heads	_____	0
P3+ Curing	_____	+1
P3+ Seed ripe	_____	+1
Fall dormancy (after killing frost)		+1

D) Growing Season Precipitation

Above avg.	+1
Average	0
Below avg.	-1

A+B+C+D

Total Score

Four pasture once-over rotation (Grazing season is May 15- Nov 15)

Year 1

A = 0 B = 1 C = -1 D = 0	0	grazed May 15 – June 30
A = 0 B = 0 C = 0 D = 0	0	grazed July 1 – Aug 15
A = 0 B = 1 C = 1 D = 0	2	grazed Aug 16 – Sep 30
A = 0 B = 2 C = 1 D = 0	3	grazed Oct 1 – Nov 15

Year 2

A = 0 B = 2 C = 1 D = -1	2	grazed Oct 1 – Nov 15
A = 0 B = 1 C = -1 D = -1	-1	grazed May 15 – June 30
A = 0 B = 0 C = 0 D = -1	-1	grazed July 1 – Aug 15
A = 0 B = 1 C = -1 D = -1	-1	grazed Aug 16 – Sep 30

Year 3

A = _____ B = _____ C = _____ D = _____	_____	grazed _____ – _____
A = _____ B = _____ C = _____ D = _____	_____	grazed _____ – _____

Year 4

A = _____ B = _____ C = _____ D = _____	_____	grazed _____ – _____
A = _____ B = _____ C = _____ D = _____	_____	grazed _____ – _____

Plain and Simple: Saving the Grasslands According to Pat Guptill by Kate Rasmussen

Grass crunched under our feet as we picked up the electric fence keeping Pat Guptill's heifers from the next small paddock. The lack of rain all summer left the pasture short and crispy. Other than having to sell a chunk of his herd, the drought didn't seem to weigh on Pat or his cattle. "Even though the grass looks rough, they're doing really well on what's there," Pat said as he stopped to survey the fleshy critters nibbling on the heat-stunted grass. The cattle looked more like they'd been grazing green meadows than parched grassland.

Pat's ranch sits outside of Quinn, South Dakota on what used to be swaths of farmland. When Pat and his wife, Mary Lou, arrived on the place in the 80's, about 60% of it was unproductive bare ground. The two farmed it for a few years before deciding to plant everything back to grass. Going back to grass was Pat's first step in bringing back a small part of the Great Plains: "Make the land into a monoculture and it get's sick," Pat said as he pulled the temporary fence posts, "If you encourage diversity, you give the land the opportunity to take care of itself."

Aldo Leopold, American author and private lands conservationist, wrote in an unpublished manuscript: "What more delightful avocation than to take a piece of land and by cautious experimentation to prove how it works. What more substantial service to conservation than to practice it on ones own land?" In the spirit of Leopold, Pat wasn't content with the soil and animal health he saw in his pastures. He noticed the season long grazing system left some plants over used and others under used. "When you put cattle in a large pasture for long durations, they eat down all the good stuff first and their stuck spending the rest of the time on low quality feed." Using small paddocks for a short period of time became his solution to the dramatic swings in feed quality, giving the cattle a more even mix of forage.

We walked along, pulling up fence posts while his daughter, Josie, rolled up poly wire. He watched the heifer's file into their new paddock like this might be his favorite part of the job. The herd of 90 head would stay in their four-acre paddock for about a day before moving onto the next one. "On a good year, we would have about 360 head on three and a half acres for a day. The key to high stock density grazing is knowing how much forage you have to start out with so you leave plenty behind and then giving what's left plenty of time to recover," he explained. His goal is to leave 1,000 pounds of forage on each acre, or a blanket of plant matter as Pat calls it, to hold onto moisture and protect the soil.

One of his biggest hurdles with the high intensity, short duration grazing system is water. His current solution is to run PE pipe, an above ground black plastic pipe, from wells to moveable water tanks. Pat and I jumped in his pick up and met Josie next to a tank that needed to be drained and moved.

Pat fired up the tractor near by so Josie and I could fasten the tank to the bucket of the tractor with log chains. We hooked the chains to the lip of the tank on opposite ends and gave Pat a thumbs up. He raised it off the ground a few feet before killing the engine to answer his phone.



Pat Guptill during the 2017 drought (Photo: K. Rasmussen).

Plain and Simple: Saving the Grasslands According to Pat Guptill by Kate Rasmussen



Pat and Josie setting up the portable water tank (Photo: K. Rasmussen).

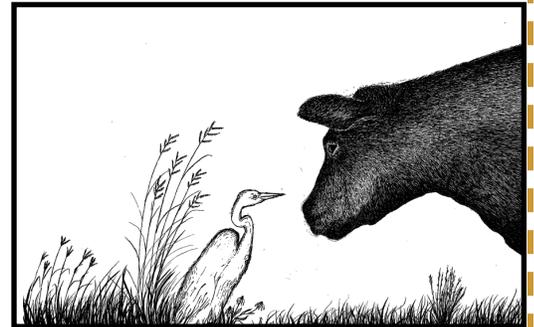
“YES!” He yelled, pumping his fist in the air. Whoever was on the other line gave him a grin that lasted through the unglamorous job of shuffling water tanks around in the heat of the day.

“He’s got a new granddaughter today,” Josie said with a smile, answering my question before I asked it.

Later, Pat told me (still grinning) as we headed back to the house for lunch, he’d just sold the last of his haying equipment. Several years ago, he clipped and weighed samples from his hay ground and grazed pasture to see how they stacked up against each. He found the pasture sample four times more productive than the hay ground. While this wouldn’t necessarily be true for a drought year, rotational grazing has allowed Pat to stockpile feed

in his pastures when rains are few and far between. By “letting them graze the land a little and then taking a step back,” the grass plants are able to build up a mass of roots that help the plants and the cattle through drought years. Another motivation for letting the cattle harvest the hay themselves was the time issue: “When we were haying I didn’t get to watch my kids grow up in the summer months.”

When we walked in the house for lunch, Pat handed me a Guptill family photo album before braving the 102-degree air to grill a few steaks. I opened it to the middle and landed on a snapshot of a heifer nose to nose with an egret next to a photo of Mary Lou and their five kids. A long-winded ranch mission statement was taped on the front cover of the album, but a person would only need to flip through the slick pages to know what it boiled down to: the balance of wildlife, cattle, and family.



Before leaving, I asked Pat what his favorite part about being on the Grassland Coalition was. He thought for a moment and said, “The biggest thing I like about SDGC is that it’s not government run, there’s no money chain. It’s all volunteer work by conservation minded producers who have had to make it in the Ag business.”

Kate Rasmussen is a freelance writer and ranch hand based near Belvidere, SD.

Diversified Grassland Plantings by Sandy Smart

We've seen tremendous change in land management philosophy from our state and federal agency partners over the last 30+ years. Recently I took a group of students to visit with the US Fish and Wildlife Service from the Madison Wetland District about the management of their Waterfowl Production Areas (WPAs). My range class is quite unique in that it is required of all the majors within the Natural Resource Management Department at SDSU. Wildlife and Fisheries, Ecology and Environmental Science, Natural Resource Law Enforcement, and Rangeland Ecology and Management majors all get to interact and learn along side each other. It gives me great pleasure to indoctrinate these young minds about principles of grazing management.

The WPA we visited was just west of Volga, SD and consisted of nearly 1500 acres of land planted back to grassland. A lot of the land has lakes and wetlands imbedded in them which is why it makes ideal habitat for waterfowl. The USFWS has changed their philosophy, to not only manage for ducks, but consider all species important from butterflies to song birds. One of their main tasks is to enforce the Endangered Species Act of 1973. Some folks might be intimidated by this, but I see it as a blessing because they are taking a holistic view about land management for all wildlife, not just the ones we like to hunt.

Because of this shift in focus, WPAs are being converted from simple grass mixes like the one pictured here to complex mixes of forbs and grasses. Brian Schultz, law enforcement officer with the USFWS said "we used to plant grass mixes (4 warm-season and 4 cool-season) and used fire and grazing to maintain them". Their arch nemesis is smooth bromegrass and Kentucky bluegrass. Typically they like to graze hard for a month or two in the spring to knock back the introduced cool-season invaders. Now they have shifted to a lighter stocking rate and longer grazing period to get a more heterogeneous use that creates patches of short, mid-, and tall vegetation rather than it all being tall.

The second site we visited was a more recent grassland restoration where they planted over 60 species of forbs, and cool-season and warm-season grasses. Instead of using a drill as in the past, they broadcasted the seed on top of snow. This method works really well with varying degrees of smooth and fluffy seed. The most difficult issue comes with managing noxious weeds like Canada thistle. Since the mixture contains lots of diverse forbs, herbicides are not an option.

The benefit of these grasslands was seen and heard as we listened to a chorus of buzzing insects along with this monarch butterfly pictured here!



Brian Schultz, USFWS Madison Wetland District talking to a group of SDSU students about WPA management (Photo: S. Smart).



Monarch butterfly enjoying a variety of flowers to feed on in the high diversity grassland mixture WPA west of Volga, SD (Photo: S. Smart).

Pheasants: Bad News, Now What? by Garnet Perman

The annual SD Game Fish and Parks pheasant brood survey contained plenty of bad news for pheasant hunters. Weather events can drastically affect the pheasant population from year to year and with 80% of the state experiencing some degree of drought throughout the nesting/brooding season, bird numbers were predictably lower. Tougher winter conditions from December through February dealt the north central area of the state a double whammy. The total statewide pheasants per mile count was down 45% from last year with every area seeing a decrease. One number that could impact next year's population is that only 4.9 chicks per mile were observed, the lowest count since the survey first started in 1949. Tom Zinter, a biologist from the Mound City area said, "Fortunately, pheasants can rebound in a hurry."

Of more concern is the long term downward trend in the pheasant population which is more dependent on habitat. All areas of the state have seen a downward population trend over the past 10 years. Pheasants need nesting/brooding habitat, winter cover and winter food in order to thrive. A decrease in any one of the three within a landscape can hinder survival. Nesting/brooding habitat is currently the most limiting of the three in SD. Grasslands provide the bulk of nesting habitat in the state with small grains also contributing, especially in the wheat growing areas. A minimum of 40 acres is needed for successful nesting and brooding. Eighty to 160 acres is ideal. According to last year's SD GF&P report, if the trend continues, the amount of prime pheasant habitat could be half of the 2007 acreage by 2020.

So what can land managers do to mitigate the current downhill slide? Various groups such as SD Natural Resources Conservation Service; Game, Fish and Parks; US Fish and Wildlife; Pheasants Forever; etc. provide information, incentives and even some financial help for conservation efforts. Habitat Pays (habitat.sd.gov) is a website that consolidates information about all the different conservation programs in one place. It also lists advisors for different areas of the state that can help a land manager choose the types of practices that fit his situation the best. Releasing raised hens is an option, albeit an expensive one. Travis Runia, upland biologist for SD GF&P said studies show that for every 100 hens, raised hens will raise three broods where wild birds will raise 30.

As with the honey bee, the decline in population is the product of many factors. Government policy and agricultural markets and practices all figure into how conservation practices are implemented. Promoting conservation and the need for it to those decision makers takes a simple phone call or e-mail. Other unknown factors may be in play as well. Minnesota saw a 26% reduction in their pheasant population this past year with no weather events to blame. Nicole Davros, a research biologist with the MN Dept. of Natural Resources was quoted in the St. Paul Pioneer Press ... "we may be at the point where good weather no longer helps us." Little research has been done on how agricultural chemicals affect pheasant survival. According to Runia, a study is currently underway at SDSU exploring how the coating on seed corn affects pheasants. Zinter said, "The next decade will be telling."

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

Russian Olive in South Dakota

by Peter Price and Lora Perkins

Russian olive (*Elaeagnus angustifolia*) trees were first introduced to North America from Europe and Western Asia in the 19th century, and were planted extensively during the 20th century for the purposes of controlling wind and erosion. In the latter part of the 20th century, concern grew over Russian olive's ability to spread outside of the original plantings. Several states have classified it as a noxious weed, prohibited new plantings, and devoted significant resources to eradication measures.

In South Dakota, Russian olive is still planted and the potential of Russian olive to become invasive is largely unknown. The most serious invasions of Russian olive in North America have occurred from New Mexico to Alberta along rivers and streams. These riparian zones historically had native cottonwood and willow 'gallery forests', the linear corridors of tree cover found along watercourses in otherwise treeless areas. These treed corridors help to control erosion, mitigate flooding, and provide critical habitat for wildlife.

In the areas of the West where Russian olive behaves like an invasive plant, it has filled in the understory of the native cottonwood-willow forest, blocking the openings that these native trees need to establish new seedlings. As the canopies of native trees reach the end of their lifespans and die, dense stands of Russian olive may be all that remains. This process is exacerbated by the presence of dams, which control the flow regimes of rivers and limit the disturbance which historically made space for new cottonwood and willow seedlings to establish. The timing of seed release from these native trees typically coincides with the retreat of spring floodwaters, and the seeds are only viable for a few weeks – making for a narrow window of opportunity for the native trees to germinate. Russian olive seeds, by contrast, are viable for up to 3 years and can germinate and establish on undisturbed sites already thick with vegetation.

Like most Western states, South Dakota has many watercourses lined with native cottonwood-willow forests, which provide critical habitat for wildlife. Russian olive's value for wildlife is disputed, but most studies have found diminished habitat quality in areas dominated by Russian olive compared to those dominated by native species. While South Dakota has so far been spared from Russian olive invasion to the extent seen elsewhere, it can be found spreading from plantings occasionally throughout the state. The question of whether Russian olive is currently expanding its range in South Dakota, or can be expected to cause disruptions to native habitat like those seen further west remains unanswered. Our research at SDSU seeks to answer these questions using remote sensing technology and field studies in areas where Russian olive is spreading.



Mature Russian Olive on SDSU Campus in Brookings, SD.



Young Russian Olive in Riparian Zone—Rapid Creek, SD.



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

Calendar of Events

Event	Date	Location	Contact Person	Phone
Pasture Walks	Various	Various Locations	Randy Holmquist	605-730-0550
SD SRM annual meeting	Oct 3-4	Wall	Tanse Herrmann	605-374-4952 ext. 3
NRCS State Technical Meeting	Sep 27	Huron	Kathy Irving	605-352-1205
Winter Road Show	Dec 11-15	Various Locations	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@sdstate.edu, (605) 688-4017