In This Issue. . .

Grain, Grass & Growth

May 2025

Educating the Educators!

Caring For the Green Zones

During the first weekend of May, Inside Education, Alberta's largest environmental and natural resource education charity, toured a group of fourteen teachers across central Alberta on an agriculture-focused excursion. This opportunity gave the teachers insight into the ag topics that are included in school curriculum that they may not have any firsthand knowledge about otherwise. The group of teachers had various backgrounds and taught in schools from across the province. Their tour included learning about native bees with the Alberta Native Bee Council, fertilizer production and uses at the Nutrien Joffre Nitrogen Operations, farm equipment expertise with Rocky Mountain Equipment, seed cleaning technology at the Coronation Seed Cleaning Co-op, riparian health training at the Hadwin Cattle Co., Canadian Forage and Grasslands Association (CFGA) Demo Site by Monitor, watershed conservation with Battle River Watershed Authority, and ended-up at the Altario School Student-Led Farm!

The Hadwin Cattle Co. CFGA Demo Site is a collaboration between CARA, Agroforestry and Woodlot Extension Society of Alberta (AWES), and CFGA intended to demonstrate the benefit of rotational grazing and restricting access to riparian areas. In 2022, hundreds of native shrub and tree species seedlings were planted by the landowners, Consort Beef 4H Club and CARA staff along the tributary of the Monitor Creek that intersect Hadwin's pasture to increase the presence of native vegetation and woody plants that stabilize riparian areas. Funding secured through CFGA's On-Farm Climate Action Fund (OFCAF) allowed the Hadwin's to purchase a Range Ward Power Grazer to electrify fence which excludes cattle from the creek while grazing the pasture. The Power Grazer also allows Hadwin's to improve the grazing management of the pasture by adjusting the forage supply and demand at any given time, improving forage recovery by restricting cattle from areas they've already grazed, and improving forage utilization by intentionally being able to adjust where cattle have access for grazing.

Riparian areas are the green ribbons around streams, creeks, rivers, lakes, and wetlands that separate the open water from the upland. Riparian areas have soils and vegetation that are influenced by the presence of water. To learn more about the functions and benefits of a healthy riparian area, Janna Wowk, Riparian Specialist, led the discussion on how producers can improve the health of their riparian areas and how Riparian

Health Assessments (RHA) are conducted. Janna emphasized to the teachers that most producers in Alberta are some of the best conservationists because they rely on natural resources such as streams and creeks for their ranches and livestock, that producers are familiar with their land, the wildlife that frequent it, and climate trends they experience each year.

What is a healthy riparian area?

Janna explained that healthy riparian areas don't just benefit the landowners, protecting natural surface water will influence the overall watershed and downstream users such as in urban areas. Riparian areas are one of the greatest carbon sinks in Canada, rivalling the bogs and fens of the Boreal Forest. A healthy riparian area that contains a variety of native trees, shrubs, reeds, rushes, and forbs will build a strong root system that anchors the creek banks, creating a distinct streambed and channel. The combination of sturdy streambanks and a diverse root systems help to filter sedimentation and reduce turbidity, creating cleaner water for livestock, wildlife, and people. Having healthy riparian areas are a drought-resistant strategy that will store more water in the banks and channel, often seen as the only green area within pastures at the end of the summer season.

RHA's can be conducted by Riparian Specialists such as those with Cows and Fish or MULTISAR or by producers who understand what type of plant species and physical characteristics they should be looking for. An initial RHA during the growing season or before management changes occur can establish the baseline score for that riparian area, whether it is un-healthy, healthy with problems, or healthy. Follow-up RHA's should be conducted within the same month or season in the following years to be able to determine how management is influencing the riparian area.

How can producers improve riparian areas?

Restricting access to the sensitive riparian areas during spring and summer, while the soil is still saturated, will help to reduce the amount of physical impact such as pugging (the indented hole created from a hoof) and hummocking (the resulting mound of sod that gets pushed up around the pug), that creates uneven and trampled banks where livestock enter the riparian area for water access. Limiting livestock access will also prevent woody species like willows and aspens from being rubbed-on and disappearing from the banks. Restricting grazing along the riparian area will help retain the native plant community, allowing for natural regeneration of beneficial species. Native species within the riparian area that are repeatedly grazed are know as "decreasers" and will decrease with use, eventually dying and leaving bare ground for less desirable species like Canada thistle, Kentucky bluegrass, quackgrass, and dandelions to establish. Producers could restrict livestock access to riparian areas by using portable electric fence or creating a single-wire, high tensile exclusion fences. Additionally, solar or wind-powered offsite-watering system can pump water from creeks and streams into a trough to discourage direct access. Native trees and shrubs could be planted along the banks to help increase the amount of woody vegetation. If additional fencing or watering infrastructure is not feasible, it would be encouraged to not graze pastures with riparian areas until the fall or early winter to help reduce negative impacts. Producers can contact organizations such as CARA, Cows and Fish, ALUS, or local watershed authorities to learn about cost-share programs that reimburse the cost of materials used to protect riparian areas.

Karin Roen, Program Agronomist + Extension Coordinator

Your input matters! Win $100!

Please help CARA determine our impact in the local agricultural community and fine-tune our program to meet future needs of your operation.

CARA has been conducting applied research, demonstration and extension projects within the Special Areas and MD of Acadia since 1979. By sharing your opinion, you will help the CARA Staff and Directors develop a sound plan for the future.

Here is the link to complete the survey on-line or scan the QR code

https://s.surveyplanet.com/dhy8i2lg

If you prefer a paper copy of the survey, please call the CARA office at 403-664-3777

Enter your contact information in the last question of the survey to be entered for a chance to win one of three, $100 prizes!


22nd Annual
SOUTHERN ALBERTA GRAZING SCHOOL FOR WOMEN
July 16 & 17, 2025 - Twin Butte, AB
Grit, Grace and Growth
Topics Included:
Grazing Principles and Practices, Soil Health, Hands On Plant ID, Range & Riparian Health, Species at Risk, Herd Health Impacts, Large Carnivore Mitigation and Coexistence, Ranching Women Talks, And MORE!
Cost: $135.00 (includes all meals)
Details & Registration: https://SAGSW2025.eventbrite.ca
REGISTER BEFORE JULY 7, 2025
SALTS southern alberta land trust society
Alberta
Nature Conservancy Canada
Alberta Prairie Conservation Forum
Alberta Conservation Association
MD of Willow Creek
SOUTHERN ALBERTA GRAZING SCHOOL FOR WOMEN
COWS & FISH
MULTISAR
FOOTHILLS FORAGE AND GRAZING ASSOCIATION
STARLAND COUNTY
CHINOOK APPLIED RESEARCH ASSOCIATION CARA
MD of RANCHLAND NO. 66
COUNTY OF WARNER

Badgers with Benefits

by Nikki Heim via Nature Alberta Magazine

One cool spring morning, while crouching amid a few towered boulders on the edge of an open grassy field, I watched dirt fly and heard ground squirrels squealing. A female badger was on the hunt. She moved back and forth between a ground squirrel-laden field and her burrow on the other side of a gravel township road, which she paused at before each crossing as if checking for traffic. Upon each arrival at her burrow, a pair of smaller striped faces would appear. With two hungry mouths to feed, she was no doubt eager to make a kill. I remained quiet and still because badgers are most sensitive to human disturbance in the spring when rearing their young. With no apparent awareness of my presence, she began to move in my direction. I tucked myself low so as not to alarm her. My whole reason for being here was to observe her movements in her natural state.

I was assisting a graduate student with outfitting badgers with GPS backpacks so he could estimate badger population dynamics and monitor their movements, specifically where their habitat was intersected by roads. Little is known about badger population distribution or abundance across Alberta and the Prairie provinces, but biologists have identified road mortality as the leading threat to badger survival. Additional threats include continued loss of native prairie; habitat conversion for agriculture and urban development; and removal of badgers and their primary prey, ground squirrels, via poison or shooting. With much of our remaining grassland habitats bisected by roads, badgers are often struck by vehicles when moving across the landscape.

Badgers not only travel across roads but are often found burrowing in friable soils typical of roadsides and cut banks, leaving them increasingly vulnerable to passing traffic. Gaining a better understanding of movement patterns within their home ranges might aid in mitigating the number of badgers being struck by vehicles. Being part of this research afforded me a unique opportunity to observe — and grow fond of — these lesser-known carnivores.

Badgers give birth to an average of one to two kits, which disperse from their mothers by May or June. Juvenile female badgers typically disperse up to 52 km from their birthplace, while males disperse farther, up to 110 km. Similarly, home range sizes for individual badgers vary substantially by sex, ranging from as little as 2 km^2 to up to 300 km^2 , depending upon geographic location and prey availability. Badgers mate between July and August, live up to six years in the wild, and are generally solitary.

The badger continued to advance towards me, each step inciting squirrely alarm bells. Within moments, she was standing just in front of me, sniffing the base of the boulder. I watched her nose lift, presumably picking up my scent. She peered through a break between the boulders. She had found me! With obvious surprise, she quickly turned and retreated, nearly as hastily as the panicky ground squirrels she'd been hunting moments before. Still crouched on my perch, I was thrilled. This brief and close interaction did not fit with the fierce or aggressive attitude I had been warned of before taking the job.

Badgers are carnivorous members of the weasel family, or *Mustelidae*. Compared with other weasels, badgers are mid-sized: 60 to 90 cm in total body length including a 13- to 16-cm tail, with females averaging 8.2 kg and males 13.6 kg. But they have learned how to bluff and intimidate much larger species, including canids, felids, and bears. They show off their defensive display when threatened by any species, including humans. While badgers can defend themselves, they prefer to use avoidance strategies. When a threat persists at their burrow entrance, badgers will backfill the entrance with soil, as if closing the door to an unwanted visitor. Of course, they do this as a warning and with a guttural growl that gives the impression they're about to turn and bite. It's not until it is cornered or confronted by a persistent threat that a badger would bite. When asked if badgers are dangerous, I like to suggest refraining from sticking your hand in a burrow should you wish to keep all your fingers. Badgers have very sharp teeth, mainly used for hunting and consuming prey.

Badgers have evolved to dig. Their long, showy claws, more round than sharp, are excellent digging tools that can make quick work of a road cut, open meadow, or pasture, and are highly effective at moving rock and ripping through tree roots. They dig large holes, or burrows, which are an integral part of any badger's life history.

Badgers have flat, oblong bodies, short legs and ears, and loose skin around their necks, allowing them to squeeze into shallow holes and tunnels. Burrows are used for safety, shelter, and resting, for birthing and rearing their young, and for storing food. Badger burrows can have a single entrance or multiple entrances with a series of underground chambers and tunnels, called setts. These extensive networks are used generationally; some are estimated to be over 100 years old.

Badgers are elusive, spending most of their lives underground. When above ground, badgers move about relatively quickly and low to the ground, making them difficult to spot. When met with a human or a wild competitor, badgers quickly retreat to the nearest underground sanctuary, making them even harder to spot. Because they are rarely observed during the day, badgers are often mistakenly assumed to be nocturnal. People living and working in the Alberta foothills and prairies can observe badgers at all times of day; most people, however, will likely never see one, much less have a conversation about them.

For landowners and operators, large badger holes with large soil mounds are sometimes perceived as hazards to machinery, horses, and cattle. To reduce this risk, direct or indirect persecution via shooting or secondary poisoning of their prey is the most common management action. Though badgers pose some known risks, the benefits they may provide are greater and act as a good indicator of range health.

Badgers are generalist predators that hunt everything from bird eggs to reptiles to slightly larger mammals, such as muskrats, but small mammals make up most of their diet. Their preferred prey are rodents, such as ground squirrels and prairie dogs. Badgers are estimated to consume two to three ground squirrels per day and can knock a population of squirrels down by 50% while in the area. A healthy badger can have disproportionate impacts on foraging small mammals. As such, some contend that badgers are keystone predators in grassland systems. For a landowner, the reduction in ground squirrels could mean fewer ground squirrel holes as well as the retention of rangeland vegetation. For example, a few badgers capable of preying on over 300 ground squirrels in a summer season equates to 1 Animal Unit Measure (AUM) of feed for one cow-calf pair.

While a single badger is an effective hunter on its own, their success has been observed to be enhanced alongside a cooperative coyote. These two grassland predators coexist to improve each other's hunting success, further regulating small mammal populations. Badgers and coyotes hunt differently — badgers dig and coyotes pounce. On the hunt, they take advantage of each other's strategies. When a ground squirrel retreats from a badger and exits another hole, the coyote waits, ready to pounce. Conversely, a ground squirrel will retreat from a coyote by fleeing into a nearby burrow, where a badger can quickly dig it up. Coyotes and badgers have been observed travelling together, exhibiting behaviour towards each other that suggests a relationship that may be more than simply tolerance, but perhaps even friendship. With or without the company of a coyote, the badger's ability to regulate small mammal numbers is highly beneficial in supporting healthy grassland systems.

Badger excavations and burrow networks can function as a natural disturbance, enhancing soil structure and composition, increasing water infiltration, soil aeration, nutrient cycling, and organic decomposition rates, as well as supporting vascular plant and soil invertebrate diversity. Badgers will move across the landscape, occupying areas for various periods of time. Vacant burrows become habitat for a wide variety of secondary users, such as western rattlesnakes, Great Basin spadefoot toads, and western tiger salamanders. Recovery strategies for endangered swift fox and burrowing owl also include supporting the presence of badgers.

Researcher Sheri Monk of the organization Snakes on a Plain, in Redcliff, Alberta, recently shared: "I've studied snakes for 20 years, and the more time I spend in snake habitat, the more I see the badger's signature all around and throughout it. Snakes need badgers to secure access to suitable denning opportunities. Many snake hibernacula are in unstable ground, which can collapse. A healthy badger population ensures new potential den entrances are being created. Habitat is dynamic on the prairies, and badgers are the driving force behind that."

Canada's prairie grasslands, home to badgers and many obligate grassland species, are listed as one of the world's most endangered ecosystems, with an estimated 74% already lost. At a time of climatic and ecological uncertainty, retaining healthy populations of species such as badgers may improve grassland resiliency and support habitat for fellow grassland species. Given the long list of beneficial contributions badgers provide, perhaps we can learn a little something from coyotes and explore ways to coexist for our mutual benefit. It's not always easy to do, but it's something I have thought about a lot since that morning when I watched that female badger hunt with utmost persistence to feed her two hungry kits.

From Grass to Cow Pies to Grass

By Manitoba Forage and Grassland Association

When checking cattle on pasture you need two sets of eyes.

One set watching the cattle and the other set watching where you step.

Wherever cattle graze they leave dung patties and depending on the health of your pasture these patties can stick around for a long time (poor health) or a relatively short period (healthy).

When cattle excrete dung onto the soil surface, the failure of the pats to break down can challenge the productivity of the pasture.

Cattle consume forage, any nutrients not digested are returned to the system in the form of dung and urine. The undigested plant material that comprises dung is deposited on the soil surface, smothering plant growth in that area. Pasture fouling through continuous dung deposition that fails to degrade quickly can represent a substantial problem to producers if left unmanaged.

When a dung pat is deposited on a pasture, all of the available forage underneath and approximately 3 square feet around the pat is unused by grazing cattle until the pat is incorporated into the soil.

Dung degradation rates can vary from 50–100 day depending on weather and the season (spring vs. late summer), and up to 3 y in cattle grazing systems with high insecticide use.

It takes an army of organisms feeding on those dung pats and urine spots to consume and mineralize them so they can be utilized by plants.
Without active dung insects the nutrients from the patty will leach out into the surrounding soil, over-fertilizing nearby vegetation and leaving a “green halo” effect. The forage may look green and lush, but it is not very palatable to livestock initially, which can further remove additional grazing surface area. If you take (dung) insects out of the equation, that pie could be there for years,

Initially organisms like dung beetles, flies, earthworms, and nematodes will feed on the raw feces to feed their broods in and under the pasture platters. Ultimately, though, it will be the vast array of soil bacteria, fungi, and actinomycetes consuming these organic resources that are necessary to keep a pasture healthy.

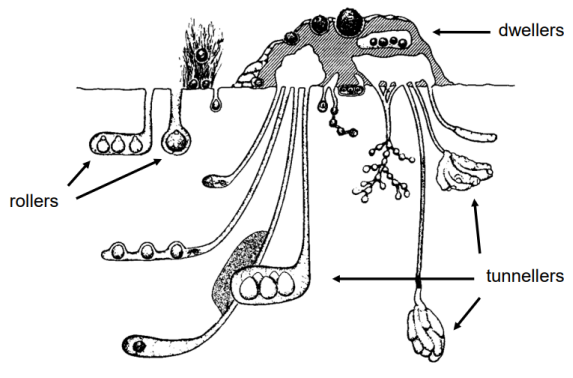

Figure 3. Dung beetles can be grouped into categories of ‘dwellers’, ‘tunnellers’ and ‘rollers’ based on their nesting behaviour. Within each category, different species of beetles may form different types of burrows. Image modified from Doube (1990) and reprinted from Floate (2011).

When insects are present, they dig holes, form tunnels. They physically remove chunks of the dung pat to accelerate the process of dung degradation. These tunnels improve the porosity for water infiltration and aeration. Plant roots can also enter these tunnels and use them as channels.

The presence of dung beetles, which eat and carve out caverns through the drying dung, means that the dung is being processed. Through their tunneling and bioturbation, they allow air to reach the center of the pat causing it to degrade faster (composting) by converting it into forms more accessible to plant roots and microbes

The tunnels also allow access to other insects that can’t burrow to increase their effect on manure degradation or allow predatory beetles or spiders access while searching for prey such as pest maggots (face flies, horn flies and stable flies).

When manure has dung beetles active you start to see other creatures like maggots, earthworms and larvae in the patties. These dung insects not only help break down the manure so that the nutrients are available to bacteria, fungi and plants, they are an important source of food for small mammals and birds.

An ecosystem like this is a sign of a healthy soil.

Spray Water Quality:

Do You Need to Test Your Water Source?

Saskatchewan Ministry of Agriculture

By Rebecca Hort, AAg, Extension Agrologist Intern, Yorkton

April 2025

Where do you get your water for spraying? Is it from a well or dugout? It is important to know if any properties in your spray water will reduce the efficacy of your herbicides. If you are uncertain if your water source is suitable to use for spraying, or if you see issues with your herbicide applications, a water test would be beneficial. Certain components of the water can antagonize specific herbicide components and reduce efficacy. For example:

* Group 1 herbicides like clethodim and sethoxydim are antagonized by bicarbonate content in the water.
* Calcium (Ca), magnesium (Mg) and iron (Fe) will antagonize glyphosate.
* Calcium, magnesium, iron and bicarbonate antagonize 2,4-D amine.
* The activity of weak acid herbicides will be reduced by calcium in the water.

A general water test for spray quality will give an analysis for conductivity, bicarbonate, Ca, Cl, carbonate, F, Fe, Mg, Mn, NO_3, pH, K, Na, SO_4, total alkalinity, total hardness and Total Dissolved Solids (TDS). The components within this list that have certain guidelines for sprayer quality are conductivity, total hardness and bicarbonate concentration.

Collecting a water sample and filling a 1 litre jug Electrical conductivity (EC) should be less than 500 uS/cm; anything over this amount can reduce the herbicide efficacy. The EC value of sloughs and dugouts can range from 200 to 20,000 uS/cm. If you are uncertain where your water source falls in this range, a water test may benefit your farm operation.

The hardness of water is the level of calcium and magnesium present in the water. For glyphosate use to control annual grass weeds, the maximum water hardness should be 350 ppm $CaCO_3$. Maximum water hardness for higher rates of glyphosate for perennial weed control should be less than 700 ppm $CaCO_3$. If your water is too hard, adding ammonium sulphate (AMS) to the spray water as a tank mix with glyphosate can help remove the calcium and magnesium effects.

Bicarbonate issues are typically seen in deeper wells. Concentrations of bicarbonate should be less than 500 ppm; water samples showing more than 500 ppm have a high chance of reducing the activity of Group 1 herbicides (in the "dim" group) such as Achieve or Centurion.

Making sure you choose a source that has clean water is also important for sprayer quality. Water that contains silt or organic matter particles can impact the efficacy of several herbicides such as diquat, glyphosate, bromoxynil and paraquat.

When sending in a sample, fill a one-litre plastic container with a sample representative of your water source. Depending on the source, the composition may vary at different times or places. Several samples or a composite sample may be beneficial.

Water samples for spray or livestock quality can be submitted through the CARA Office at a cost of $40-$45/sample.

CHINOOK APPLIED RESEARCH ASSOCIATION
Box 690, Oyen, Alberta T0J 2J0
Phone: 403-664-3777
Email: cara-dw@telus.net Web: chinookappliedresearch.ca
@CARAresearch Like us on Facebook!

Publication and distribution of this newsletter is supported by Results Driven Agricultural Research and Alberta's Commodity Commissions