



# The Shortgrass Prairie Review

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## Black-footed ferret reintroduction

See article on page 9

Photograph courtesy of David Showalter

## Inside This Issue

It's a New Day ... If You Make It So	2
Guest Editorial	3
Wildlife Habitat Stewardship Act	4
Black-footed Ferret Reintroduction	5
A Day Trip to Pawnee Buttes	6
New Board Member	7
Strings Fundraiser	7
Prairies Make Good Scents	8
Photo Gallery	10
How You Can Help	11

PRAIRIE PRESERVATION  
*Alliance*

Dedicated to the preservation  
and restoration of the  
shortgrass prairie throughout  
its range

# It's a New Day . . . If You Make It So

A woman contacted the office recently to inquire about land. It seems she received an inheritance and was interested in investing in a property dedicated to prairie conservation. We told her we would be happy to work with her, but there was no such program in place at the present time.

Not long after that, a representative from a construction company contacted us. His company was submitting a proposal to the Colorado Department of Transportation (CDOT) and needed our help. Prairie wildlife inhabited many acres of the CDOT right-of-way, and a condition of the Request for Proposal required that the animals living on the right of way be moved before construction could begin. We met with people from the construction company and CDOT. None of them knew what could be done to satisfy the requirement. CDOT jointly owns thousands of acres of shortgrass prairie in eastern Colorado, but current law makes it difficult to use it to save wildlife in the path of new and wider roadways.

A few months ago, a woman called to say that she owned acreage on the eastern plains and would like some prairie dogs on the property in order to create a functional prairie ecosystem. It was easy to find prairie dogs that needed new homes, but it proved impossible to receive the necessary permissions to bring the prairie dogs to her property. The Colorado Division of Wildlife must approve the release site and get approval from neighboring property owners before they will allow the transfer. In addition, county commissioners must approve the request to move prairie dogs into their county.

I'm sure you can see the similarities in these stories. As stated by CDOT and the national Wildlife Federation, the shortgrass prairie is one of the most endangered ecosystems worldwide. However, current conditions make it difficult if not impossible to change the situation.

Recent events appear to be working against any efforts arising from the conservation community. Oil and gas wells pepper the prairie, bringing disturbance and destruction. Alternative energy programs such as wind farms threaten the safety of raptors and bats, and shortgrass vegetation suffers with the appearance of heavy equipment. The Colorado Wildlife Commission is the rulemaking body for the Division of Wildlife, whose mission is to "perpetuate the wildlife resources of the state and provide people the opportunity to enjoy them". In November, the Commission passed a regulation that rescinded black-tailed prairie dog protections. It is now

legal to shoot all three species of prairie dogs in Colorado from mid-June to March 1. Regulations also make it legal to blow them up with a device that ignites oxygen and propane in their burrows.

Have you read enough? Are you ready for some good news? Read on ...

Coloradoans have the right and the responsibility to protest these assaults! Pick up the phone or pick up a pen and tell you Representatives, your Senators, your Congressmen, and your Governor that you have had enough! Tell them you want protections for the grasslands and the species that inhabit them. Tell them that cities and counties are destroying the prairie for the sake of a profit and the Division of Wildlife is powerless to stop them.

Contact Governor Ritter and ask him to sign House Bill 1298, the Colorado Wildlife Habitat Stewardship Act of 2007, into law.

Tell your Representatives about yourself and ask them to call you. Explain how important it is to you that the cities and counties along the Front Range conserve remnants of the prairie—our historical heritage.

Contact Governor Ritter and thank him for appointing conservationists and landowners on the oil and gas task force. Ask him to continue to explore alternative forms of energy, but with particular care for the plants and animals that make those areas their homes.

Judy Enderle  
President



*Contact Governor Ritter and ask him to sign House Bill 1298, the Colorado Wildlife Habitat Stewardship Act of 2007, into law.*

## How to Contact Your Legislators

**Bill Ritter, Governor**  
136 State Capitol,  
Denver, CO 80203-1792  
303) 866-2471  
[governor.ritter@state.co.us](mailto:governor.ritter@state.co.us)

Find your Senators and Representatives at  
<http://votesmart.org/index.htm>.

# Guest Editorial

## WIND FARMS AND WILDLIFE

by

Ken Strom, Director of Bird Conservation  
Audubon Colorado

A magnificent escarpment, commonly called the Chalk Bluffs, extends for miles along the northern edge of a portion of the Pawnee National Grassland in Weld County. The tableland that forms the top of the bluffs is mostly on private land, where a massive wind farm is being constructed, which will extend across 32,000 acres of short-grass prairie ranchland, reaching nearly to the Wyoming border.

While the Cedar Creek Wind Farm will produce clean, renewable energy, it is important to be aware that wind energy is not automatically benign environmentally, especially in terms of its impacts on wildlife and habitats. It all depends on where it's located.

Seen from the air, a wind farm fragments the prairie landscape much as an oil field does, with individual pads for each turbine (windmill), connected by roads for maintenance and requiring a network of transmission lines to carry the electricity. And while people tend to be aware of the threat to birds and bats of fatal collisions with the rotating blades, there are even greater threats to wildlife from the loss of habitat that is much greater than the actual footprint of the turbines themselves.

Prairie nesting birds tend to avoid tall structures such as windmills, presumably because they can serve as perches for birds of prey, which increases their effectiveness at catching animals within sight of the perch. One study documented significantly reduced songbird densities within 180 meters of wind turbines. Another study of Greater Sage-Grouse leks (courtship grounds) determined that they were 8 times less

active within 4 ½ miles of transmission lines than were more distant leks. Consequently, a project the size of Cedar Creek, with at least 274 turbines planned, can effectively eliminate thousands of acres of otherwise high-quality habitat.

The good news is that the worst wildlife impacts of wind farms can be avoided by careful siting of the farms and of individual turbines to avoid sensitive habitats. But this requires careful planning, which is largely voluntary under current Colorado law. In the case of Cedar Creek, a handful of turbines will do most of the serious damage of the wind farm because they are being placed too close (within ½-mile) to the edge of the escarpment above the Pawnee, which supports one of the greatest concentrations of nesting hawks and eagles in the shortgrass prairie. If wind energy development is going to succeed in this country without becoming a major battleground for wildlife survival, we need to develop standards for proper siting of wind facilities and mechanisms for adequate public input during the planning process.



Wind Farm in California Central Valley

# Wildlife Habitat Stewardship Act

## OIL AND GAS WELLS ON THE RISE

by  
Judy Enderle

Colorado is experiencing an unprecedented energy development boom, with over 29,000 active oil and gas wells in the state. In many cases, this growth is occurring without real consideration of the effects to wildlife and wildlife habitat. Sadly, much of this development takes place across our already-beleaguered prairie landscape.

The Colorado Wildlife Habitat Stewardship Act of 2007 (Colorado House Bill 1298), sponsored by Representative Dan Gibbs (D – Silverthorne) and Senator Lois Tochtrop (D – Thornton) recommends practical, common sense solutions to balance oil and gas development with the need to protect important plant and wildlife species and their habitat.

Industry can do a better job. Some in the industry are working with communities to institute better management practices, such as directional drilling to decrease the density of well pads, roads and other infrastructure that accompanies development and is detrimental to wildlife and wildlife habitat. We applaud the companies who use these methods. However, not all companies are applying these practices. House Bill 1298 directs that wherever practicable, these technologies and management practices must be applied.

Over the last 30 years the economy of Colorado has diversified greatly. Our state now relies on outdoor recreation such as wildlife viewing as a substantial portion of the state's budget. In 2001, 1,600,000 residents and visitors enjoyed watching and photographing wildlife in Colorado. These activities brought \$624,402,000 to Colorado's economy (data courtesy of U.S. Fish &

Wildlife Service 2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation).

Drilling tens of thousands of new wells across Colorado over the next few decades without implementing better practices, like those found in the Colorado Wildlife and Habitat Stewardship Act of 2007, will result in extensive and irreversible damage to the shortgrass prairie.

Prairie Preservation Alliance joined with 66 conservation, sportsmen, and recreation groups to support the "Wildlife Management Guidelines for Oil and Gas Development" for minimizing the disturbance of oil and gas development on wildlife habitats. By the close of the legislative session, the bill was passed by both the House and Senate. Now it awaits the Governor's signature to turn it into law. We urge you to contact Governor Ritter and ask his support for HB1298 because it supports Colorado's precious resources.

For more information contact:

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judy@prairiepreservationalliance.org  
TJ Brown, Colorado Environmental Coalition, 303.405.6706,  
tj@cecenviro.org



Oil well pads and infrastructure on Colorado's western slope

# Black-footed Ferret Reintroduction

## SUCCESSFUL FERRET RELEASE NEAR CRAIG

by  
Jim Werder

In October of 2006, Prairie Preservation Alliance was fortunate to participate in a black-footed ferret release. The release area was on BLM land west of Craig, Colorado. Members of the Colorado Division of Wildlife, U.S. Fish and Wildlife Service and BLM participated in the release. The release area is 52,000 acres with 19,000 with prairie dogs, which are the primary source of food for the black-footed ferret.

Six ferrets were released on this day. Release numbers are determined by the age, sex, and maturity of individual animals. Ferrets are placed in pet porters, along with a 2-foot length of vinyl tubing in which the ferrets hide for protection. Since they spend a large portion of their lives in prairie dogs burrows, they look for the comfort and protection of small enclosed spaces when possible.

PPA members were allowed to select burrows and release "their" ferrets into it. We opened the doors of our pet porters and removed the tubes with the ferrets inside. We inserted one end of the tubing into the burrow and waited for the ferret to enter it. The ferrets reappeared after a few seconds and hissed and chattered for 10 minutes before re-entering the burrows. Ferrets have evolved with prairie dogs for millions of years and sound so much like their major food source that at times it seemed as if it were prairie dogs who were scolding us for handling them.

It was a memorable evening. Just knowing that we played a small part in the reintroduction of an animal thought to be extinct in the recent past was awe inspiring. The agencies responsible for bring the species back from the edge of extinction are to be congratulated and supported.

Today, 25 years after the species' rediscovery, about 500 black-footed ferrets are living in the wild in six U.S. states and one state in Mexico. Another 350 survive in captivity. "Ferret recovery has been a huge success story," says Mike Lockhart, the U.S. Fish and Wildlife Service biologist who coordinates the recovery program at the National Black-footed Ferret Conservation Center near Fort Collins, Colorado.

The black-footed ferret was listed as endangered in 1967, and by the mid 1970's biologists thought the species was extinct. In 1981 a small population was found on a ranch near Meeteetse, Wyoming. In 1985 outbreaks of canine distemper and sylvatic plague killed all but 18 ferrets. These survivors were trapped and moved to a captive breeding program.

*"Ferret recovery has been a huge success story", says Mike Lockhart, the U.S. Fish and Wildlife Service biologist who coordinates the recovery program.*

The captive breeding program at the Ferret Conservation Center produced the first two litters of kits in 1987. Between 1987 and 1997 approximately 2,200 ferrets were born. The success of this program allowed the captive colony to be divided among six North American zoos,. This action was taken to prevent the extinction of the species should a disaster occur at the Ferret Conservation Center.

In August, volunteers are recruited to count ferrets in the wild. If you would be interested in participating in the important program, contact [www.prairiepreservationalliance.org](http://www.prairiepreservationalliance.org) or 303.638,4672 for more information.



"Winston" during his release near Craig

# A Day Trip to Pawnee Buttes

## EVEN CITY SLICKERS WILL ENJOY THIS TRIP

by  
Kerry McNabb

I decided to chuck my city slicker ways for a day and head for those god forsaken plains, where there is nary a sound except the sage brush tumbling, tumbling away. Having weathered the stresses of driving up to Fort Collins from Denver, my destination lay 30 miles east of the city, I had to deal with giant SUV's and drivers who wanted to ram my little car off the road at breakneck speed. With a great sigh of relief I wiped the sweat off my brow and took the exit to Ault. Immediately I felt my pulse go down as things became slower paced, just a few little farming towns to drive through.

After I drove through Ault it got even quieter, with only large tracts of prairie on each side of the road - stretching out for miles. Oh, the unsung beauty of the prairie! A few trucks lumbered past but not much else as I approached the Pawnee Buttes National Grasslands. The preserve consists of 193,000 acres and was made famous by James Michener's book, "Centennial", which took place at this location. I took the dirt road exit to the preserve and popped my Singing Cowboys CD in and listened to Slim Whitman yodel and Gene Autry crone away, feeling kinda like an ol gunslinger heading out into the badlands for a shoot-em-up sans my trusty horse.

As far as I could see were prairie dog towns. The prairie dogs were barking their amazing barks—one of the most advanced communication systems studied in the animal world. In one study, prairie dogs were able to recognize a man with a yellow shirt, carrying a gun, after seeing him six months earlier. The animals voiced the same warning "bark" both times.

I watched them do their little signature arching leaps into the air, another sign of communication, signifying that a predator has just left the area. It was heartening to see all these critters and prairie landscape preserved, especially since the prairie ecosystem is becoming one of the world's

most endangered landscaped. Not just the Brazilian rainforest, it is happening in our own backyard folks.

I drove through the dusty ghost town of Keota, a town that warrants a stop, but was anxious to get the buttes. I didn't know what to expect.. I mean it is beautiful in its own quiet way, but I didn't drive all the way out here just to see flat prairie, Like most city slickers, I have a problem with instant gratification. A few miles after the ghost town I approached the buttes, and lo and behold I was the only one there!

Where else do you find a parking lot where you are the only visitor?

They were very beautiful with 2 buttes rising spectacularly above the unending expanse of land. Wow! At the trailhead I took the 2 mile loop hike that circles around the buttes and it was so quiet, it was unbelievable. Half way around the loop I stopped for a break, and just sat there for a long time saying nothing, soaking in the beauty of the vistas stretching out to nowhere on the horizon. The sound of the lonesome wind was my only companion. Is that the name of a cowboy tune? Hey, maybe I have a future as the next Gene Autry!

Next time I would like to go back in the spring when the peregrine falcons are nesting so I could squeeze in a little birding time. The Pawnee Buttes are recognized internationally for their birds of prey and the buttes are off limits to climbers because of the nesting birds. The trail is closed during nesting season. More people but more birds, sounds like a fair trade off.

At the end of the day, I packed up and reluctantly headed back to the crazy city.

But, it sure was good to have a few hours of pure quiet and beauty, and feed my desire and need to salve my introverted ways. How often does one get to be truly alone with nature? This sure fit the bill.

Will definitely head back there soon.

### *Pawnee Raptors Under Siege*

*Because of a regulation change by the Colorado Wildlife Commission, the Forest Service now allows recreational shooting of black-tailed prairie dogs on the Pawnee. Shooters are taking full advantage of the new policy, felling trees that provide nesting sites for raptors, decimating prairie dog towns, and leaving TONS of lead in their wake.*

*A recent survey found that visitors, researchers, and even other shooters feel unsafe because of the amount of gunfire on the Pawnee.*

*Without nesting sights and a food source, Pawnee raptors are under siege.*

*Contact the Forest Service and urge them to ban shooting on the Pawnee, returning the grasslands to a peaceful and safe area for visitors and wildlife.*

*Please call Beth Humphrey at the Forest Service : 970-346-5004 or [ehumphrey@fs.fed.us](mailto:ehumphrey@fs.fed.us)*

## New Board Member

## Strings Fundraiser



Leslie Johnson joined PPA's board in 2006. We feel honored to have such a passionate supporter of the prairie on our board and would like to introduce her to you.

Her passion for prairie wildlife and her tireless drive is an inspiration to us all!

After moving to Highlands Ranch three years ago, Leslie became involved with Highlands Ranch Metro Districts, the company responsible for maintaining the parks and open space areas within Highlands Ranch. After doing her homework, she found that prairie wildlife was being removed by Metro Districts in an attempt to create areas that they felt were more appealing to homeowners.

Since the wildlife was one of the main reasons she moved to the area. She founded a grassroots citizen's group called Douglas County Citizens for Wildlife to expose the inhumane practices and work for reform. Audubon and the Sierra Club have joined her to effect change.

We are sure successes will follow because of her efforts.

Leslie is a graduate of Arizona State University and received an MS from the University of Colorado. She owns Gifts from Colorado, LLC, a growing business that uses only Colorado products. Leslie is also involved in a new organization, Advocates for Sustainable Communities, a group in south Denver metro area promoting recycling, clean energy and protection of wildlife corridors. Leslie is married and has two children.

Please join us in extending a warm welcome to Leslie.

PPA's Second Annual Strings Fundraiser was a success. The more than \$2,800 profit was a substantial increase over last year. The money generated by this event was a combination of silent auction bids and a portion of Strings' profit for the evening.

We thank Strings Restaurant for their menu that included vegan and vegetarian selections. The menu and the complimentary appetizers were created especially for this event. The assistance of Strings Event Planner Lea Tucker assured that the evening ran smoothly.

In addition, we thank everyone who bid on the silent auction items before enjoying their dinner at Strings. Finally, we thank the generous individuals and organizations who donated items for the auction. Please show your appreciation by patronizing the following businesses as often as possible.

### A Special Thank You

**Jerry Rea Photography**, Taos, NM  
**David Showalter**, Rocky Mt. Arsenal Staff  
Photographer  
**Vicki Grice**, local artist  
Photos by Belille  
**Linda Mahoney**, Natural Science  
Illustrator  
**Ken Keefover-Ring**, Photography  
**Ace Hardware**  
**Vitamin Cottage**  
**Cherry Creek Athletic Club**  
**Gifts from Colorado**  
**Ananda Wick Massage**  
**Dog Day at the Spa**  
**Black-footed Ferret Conservation  
Program**  
**PC's Pantry**  
**Ute Skrip**, Interior Design Consultant  
**Cruelty Free World**  
**David Beumee**, Earth Alchemy Pottery  
**Karen Norbeck**, Zoe Designs



# Prairies Make Good Scents

## BEE BALM, A PRAIRIE NATIVE

by  
Ken Keefover-Ring

When most people think of the plants found on the prairie, they usually think just of grasses. However, prairies are filled with many other plant species, including some in the mint family, known botanically as the Lamiaceae. This family is well known to us through species such as thyme, lavender, and rosemary. While all of these familiar mints are native to the Mediterranean, the North American prairie has its own mints.

One such species is *Monarda fistulosa*, commonly known as wild bergamot, horse mint, or bee balm. Bee

balm is easily identified by its large spherical head of dark pink to purple flowers, which are apparent beginning in mid-summer and sometimes last until the end of September. Like other mints, bee balm produces small volatile chemicals called monoterpenes in tiny sacs (trichomes) located on leaves and flower petals. Upon rubbing bee balm leaves, these trichomes are broken

and almost immediately the scent of escaping monoterpenes is detected. Also known as essential oils, monoterpenes have been used by humans for thousands of years as fragrances and flavors. Plants however, use them for a variety of functions, including: suppression of plant competitors, repelling herbivores, or attracting pollinators and seed dispersers. In addition, many labiate species contain individuals with distinct chemical phenotypes, called chemotypes, which are controlled by simple genetics. Plants of a particular chemotype often produce one monoterpene that dominates their total essential oil composition. This means that individuals of the same species can have very different smells, tastes, and interactions with other organisms, such as herbivores and pollinators.

*M. fistulosa* is known to have three chemotypes, with individual plants containing either geraniol, carvacrol, or thymol, as their main monoterpene. Geraniol has a sweet, floral smell, whereas carvacrol and thymol remind one of thyme or oregano, both of which contain these chemicals. I have been characterizing the chemotype variation of *M. fistulosa* over the landscape and trying to understand how these patterns arose and how they are maintained. I have sampled and measured the essential oils of *Monarda fistulosa* populations on the prairies (and foothills) from southern Colorado to southern Manitoba in Canada. I have discovered that two of the known chemotypes, carvacrol and thymol, occur throughout most of the plant's range, in pure and mixed populations. Geraniol plants are limited to a small area in southern Manitoba. This chemotype is thought to have

arisen relatively recently due to some sudden mutation.

Additionally, in one population in southern Colorado, I have found a previously unknown chemotype for this species with essential oil composed almost entirely of the monoterpene linalol, the chemical that give lavender its characteristic smell.

The first step to understanding chemical polymorphism in *M. fistulosa* was to map chemotype patterns of populations.

The methodology I used was simple. Using historic herbarium records, information from locals and by just driving around, I located about 100 populations of bee balm throughout the states of Colorado, Wyoming, the Dakotas and Manitoba. At each site I randomly collected a single leaf from an average of 20 plants, soaked them in pure ethanol for one week to extract the monoterpenes and then analyzed the solution by gas chromatography, a technique that allows separation, identification, and quantification of monoterpenes.



*Bee on Bee Balm*  
Ken Keefover-Ring

Continued on Page 9

# Prairie Scents continued

Chemical analyses revealed variation ranging from populations comprising only single chemotypes, to those with various mixtures. So, what factors are responsible for these patterns? One explanation may be temperature. In Boulder County, where many of the populations analyzed occur, it appears that populations high in thymol plants are found at higher elevations or in colder areas, such as deep canyons. These micro site differences may be important in *M. fistulosa*, since in Colorado it has a large geographical range over most of the state with diverse habitats from prairies to high mountain meadows. Also, the idea that plants of a particular chemotype are excluded from an area due to temperature has been shown for common thyme (*Thymus vulgaris*) in the south of France. In the case of thyme, certain chemotypes were absent from the floor of an enclosed basin that regularly experienced much colder temperatures than the surrounding uplands. To unravel this question in *M. fistulosa*, I am currently monitoring the temperature, humidity and other abiotic parameters at sites with different chemotype compositions.

Another factor that may shape the chemotype composition of populations is herbivory. At a few sites, I have found plants being fed upon by a small tortoise beetle (*Physonota unipunctata* Coleoptera: Chrysomelidae) that specializes only on *M. fistulosa*. The larvae of this beetle have a curious defense mechanism; they accumulate their feces on two projections on the rear end of their bodies, which they curl upward, holding the “fecal shield” over their bodies. Since their diet consists exclusively of *M. fistulosa*, the fecal shield is rich in plant monoterpenes, adding a chemical dimension to their defense strategy. While the beetle larvae will readily feed on both chemotypes, my preliminary data show that when fed only carvacrol foliage they end up as significantly smaller adults than those who were given only thymol foliage. Thus, in populations where these

*Bee balm produces small volatile chemicals called monoterpenes. Monoterpenes—or essential oils— have been used by humans for thousands of years as fragrances and flavors. Plants however, use them for a variety of functions, including: suppression of plant competitors, repelling herbivores, or attracting pollinators and seed dispersers.*

herbivores feed, thymol plants may experience more damage and reproduce less than carvacrol plants.

Another interesting find along my chemical odyssey was the discovery of what appears to be a new chemotype of *M. fistulosa*. On a lonely stretch of highway west of Trinidad, Colorado, I spotted an isolated roadside population. Initially, the plant leaves I collected all seemed to have the familiar smell of carvacrol or thymol chemotypes, found at many other sites. Suddenly, the scent of one plant was completely different from any other I had previously encountered. Upon returning to my laboratory, I immediately started my gas chromatograph and eagerly watched the monitor as the sample ran. The results showed one main peak, which was the monoterpene linalol. While linalol has been identified in a closely related species, *M. didyma*, no one has ever reported this compound in *M. fistulosa*. As grandiose as it may sound, I felt I was witnessing an evolutionary event, where a new mutant phenotype had appeared, and if it had some heritable advantage over the resident chemotypes, the linalol chemotype may increase. Then again the

plant may get mowed by the road maintenance crew before setting seed, a fate for which its new mutation would be useless.

So, prairies are more than just grasses. Other plants, such as *Monarda fistulosa*, are important components of these ecosystems. In addition, the different chemotypes of bee balm and their interesting distributions demonstrates the genetic diversity of prairie species, which in this case is only evident to your nose. So, the next time you are hiking on the prairie and encounter bee balm, don't forget to stop and give it a sniff. You may not find a new chemotype, but you will sample just a little of the rich plant diversity that prairies have to offer.



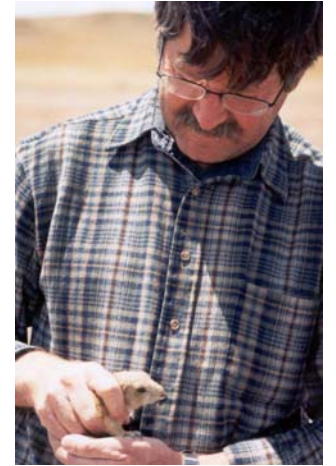
*Coneflower, courtesy of Ruth Baranowski*



# Photo Gallery



Seth Magle, dispersal research



Dr. Jack Cully, plague research



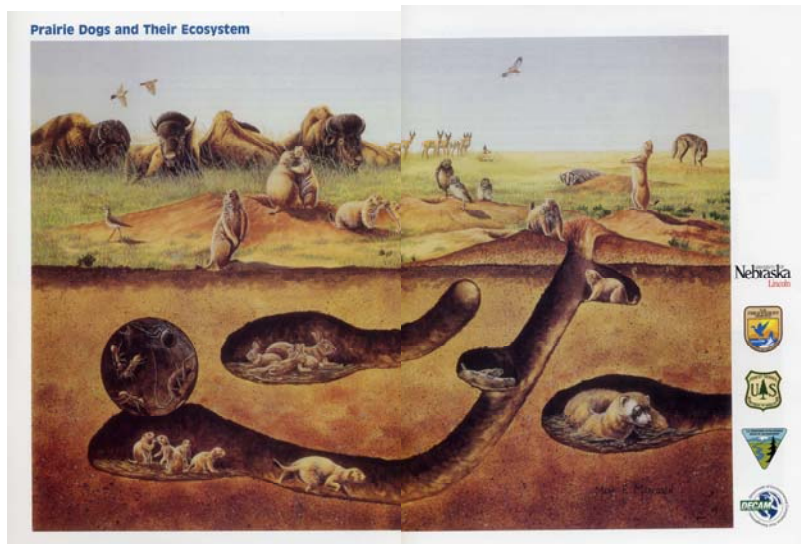
Photograph courtesy of Ruth Baranowski



Photograph courtesy of Nancy Stocker



New Vista High School Volunteers





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www.prairiepreservationalliance.org

**Another Way You  
Can Help**

**Talk to your employer and ask if they have a matching grants program. In some cases you can double your donation by becoming involved with corporate programs. PPA will be happy to provide any information needed.**



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