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Viewing the Year from Atop Spirit Mound

By James Heisinger

It was another busy and exciting year at Spirit Mound. Vehicle counts gave an estimate of over 15,000 visitors (vehicles counted multiplied by 2.34). Among the things that made for such a wonderful year at the Mound were international visitors, such as the lone Chinese bicyclist following the Lewis and Clark Trail, out of state and local visitors such as the Prairie Dog Radio Club, and our members.

Volunteers were busy and made wonderful contributions. Board member Dianne Blankenship, for example, hand collected pounds of forb seeds from the beautiful loess hills prairies maintained by Bill and Doty Zales, for planting on the Mound. Last summer, Cheryl and Bill Johnson came to our assistance with a riding mower just as the tall annuals flopped over the trail making it nearly impassable. In 2012 the Johnsons received the Volunteer of the Year Award given by the South Dakota Division of Parks and Recreation. They are volunteer caretakers at Union Grove State Park.

The difficulty of excluding exotic species and encouraging diverse native species in prairie restoration is evident in Eric Vander Stouwe's article on prairie reconstruction as he describes on-going efforts to restore six acres dominated by smooth brome. His expertise and personal hands-on attack is greatly appreciated. You can follow the results by reading signs posted along the trail. We'll have a succession of signs updating trail hikers on the progress of the six-acre restoration. We hope you'll enjoy the experiment.

Two Master of Arts candidates completed ecological studies at the mound. Laura Winkler, South Dakota State University, studied ant diversity and its relationship to plant diversity. Alice Millikin, University of South Dakota, completed her fieldwork comparing current plant diversity to that found in the summers of 2003 and 2004. Her results will help us evaluate and guide our restoration efforts. Thanks to your membership dues, both scholars received financial support from the Trust, and the Trust supported other Spirit Mound projects.

Ants as indicators of restoration success in Southeastern South Dakota

By Laura B. Winkler

For the past two years I've been doing research on prairie restorations and remnants in Southeastern South Dakota in order to determine whether ants could be used as bio-indicators of restoration progress and ultimately of success in prairie restorations.

During the summer of 2013, Spirit Mound was added to my research project studying the effect of age of restoration on ant communities. Spirit Mound was used as a control in order to determine what ant species are found on remnants in Clay, Brookings, Minnehaha, Moody, and Lake Counties. Previous studies have shown that as a restored area ages, the invertebrate community, especially that of the ant species, changes and becomes more similar to the community composition of undisturbed sites.

In this study I examined ant populations in various

ages of restored grasslands and compared them to prairie remnants in the same region. Two different trap types (pitfall and ramp) were used to determine the ant communities on four age classes of prairie restorations in southeastern South Dakota. These were compared to the populations found on prairie remnants in the same region. Diversity was very noticeable among the oldest restorations and remnants, but was not as varied among the younger restorations. This tells us that we may be able to use ants as indicators during re-vegetation efforts on aging restorations.

Of all twelve locations sampled for this study, Spirit Mound had the highest number of ant species (7 to 18 species were collected on all sites). Spirit Mound is the site farthest south in the five county area. Eighteen

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Ants as indicators continued . . .

species of ant were collected from the Spirit Mound location, with two species found nowhere else in this study, *Nylanderia parvulva* Mayr and *Phiedole pilifera* Roger. Some of the most common ants that can be seen at Spirit Mound include *Lasius neoniger* Emery, *Lasius alienus* Foerster, *Formica montana* Wheeler and *Formica obscuripes* Forel. The first two species are common along the walk way and trail. Small and amber-colored, they build small, crater-like mounds. The second two species (*Formica montana* and *Formica obscuripes*) are mound-building ants; these ants build the large mounds in the prairie. The *Formica obscuripes* are also known as "Thatching ants." These red and black ants form large colonies and place small, precisely cut pieces of grass on the outside of their mound, creating what appears to be "thatch;" hence, their common name.



Thatched Mound
Photo by Mark Wetmore

Formica montana, tend to build their nests in low lying areas in the vicinity of water or marshy ground. They however, can be found higher up on well-drained ground as well. In mesic (moist) prairies, ants build either conspicuous conical domes using the tall grass stems as support, or occupy natural hummocks.

An interpretive sign on the spur trail along the creek placed by the Spirit Mound Trust explains the nature of ant mounds to visitors. Further information on all ant species found at Spirit Mound will be published in a pamphlet in the upcoming year.



Visit the website
www.spiritmound.com

Prairie Dogs on the Mound!

By Mark Wetmore

The Yankton and Vermillion area Prairie Dog Amateur Radio Club (PDARC) held their 2013 field day at Spirit Mound June 21-23, under the guidance of PDARC vice president Ed Gray (W0SD). With special permission from the SD Parks Division, members set up field headquarters, campers and a 48-foot radio tower near the parking lot. They held a family picnic Saturday evening.

Similar field day contests are held the same weekend each year by amateur radio clubs across the nation. They score points based upon the types and number of their radio contacts. This year PDARC scored 4,986 points, which was greater than any other club in the Dakotas. More details are on their web site at pdarc.org/.

Ray Monfore (K0YKN) PDARC's president, is the late Larry Monfore's brother. Larry helped found the Spirit Mound Trust and worked hard to keep the concept of saving the mound in the public eye for many years. Board member Dianne Blankenship's husband, Bill (W0B), is also a PDARC member.

The location was successful for them and they may return to the Mound next year. The club gave the Trust \$100 in appreciation of the Mound and its preservation. Thanks Prairie Dogs!



Assembling the radio tower
Photo by Ed Gray

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Dianne Blankenship, Brian Hazlett, Nancy Carlsen,
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The Prairie Reconstruction Process from a Manager's Perspective

By Eric Vander Stouwe,

District Park Supervisor, South Dakota State Parks

Reconstruction of a prairie community involves starting from a point where no native remnant exists and taking management actions to return the area to native prairie. Prairie reconstruction efforts emphasize reestablishing as many historically appropriate species as possible on a site.

The first task of any prairie reconstruction project is preparing the site for seeding. My most recent project was converting an area of smooth brome grass to native prairie at Spirit Mound, a 6-acre plot north of the bridge along the hiking trail. Due to existing invasive, non-native vegetation, this site needed additional preparation to attain a suitable condition for planting. In order to reduce the competition of smooth brome on future plantings, the area was treated with glyphosate this past spring. A few weeks later, the Vermillion Fire Department conducted a prescription burn to further eradicate the smooth brome and remove the residual layer for an improved soil surface. A follow-up glyphosate treatment was again applied in late summer to eliminate any remaining brome. As with most native seeding projects, no tillage was implemented to avoid exposing any dormant weed seeds lying below.

One of the most challenging aspects of any prairie planting is determining the origin of the seed and developing the seed mixture. The seeds' genetic make-up should resemble that of the prairie that thrived prior to European influence on the landscape. For plantings in our geographical area, seed sources should be "local native" and have a certifiable genetic origin within 200 miles of the seeding project. The best sources of seed are from virgin native prairie in the immediate area; however, attaining permission and enough seed for large plantings is difficult, and sometimes impractical, due to budget and source site constraints. For the 6-acre plot at Spirit Mound, we used a highly diverse seed mixture of 8 native grass and over 32 forb species which came from local native seed sources collected by hand and purchased from seed producers.

Planting dates are crucial to establishing a successful prairie. There are many pros and cons between spring and fall planting. Most native plantings, including the Spirit Mound 6-acre plot, occur in the late fall. During dormant fall planting, the seed over-winters as it would in nature, and comes up in spring on its own schedule when conditions are right. When they are planted in fall, most wildflowers exhibit higher germination rates as the seeds need to be cold-stratified to break dormancy. In comparison, spring planting provides an opportunity to control weeds or other undesirable species through tillage or herbicides prior to planting. Additionally, spring plantings generally allow better germination of warm season grasses.

Prairie establishment is often messy for the first few growing seasons. Many prairie plants that are characteristic

of a mature, tall-grass prairie are slow to establish themselves. Prairie plants are perennials. Although perennial seeds will germinate the first year, the young seedlings' root growth will be two to three times their growth above ground, and they may not flower until the second or third year. While this lack of visual growth can be frustrating, keep in mind that their strong root system enables prairie perennials to be nearly maintenance-free at maturity. During the first three growing seasons, inexperienced observers will need to be encouraged that a great prairie will result in time, with good management.

Post planting mowing helps give plants an equal start. The 6-acre plot at Spirit Mound will be maintained at a mowing height of 6" + for the first few months until weed pressure subsides, usually in late August or early September. Mowing weeds and other vegetation to reduce shading is beneficial and should be done at a height above the grass seedlings. It is also critical that clippings not smother the prairie seedlings. Annual mowing may be necessary the first three years for establishing new prairie and may be helpful for maintaining existing prairies. At Spirit Mound there are a number of other prairie areas where smooth brome and other undesirable species are out-competing the native species. Management plans include mowing these areas to offset competition and promote native species.

Fire stimulates growth and development. The prairie without fire quickly becomes unstable and may gradually change to woodland. In most cases, it changes to invasive, cool-season smooth brome or Kentucky bluegrass. Following the third growing season of the Spirit Mound 6-acre plot, management plans include a late spring prescription burn to stimulate prairie plants and reduce cool-season competitors. The growing points of most prairie plants, which are warm-season, are below the soil surface in early spring; so they are protected from fire. When targeting smooth brome, the best time to burn or mow is late May during its boot stage (flower heads still enclosed within the sheath).

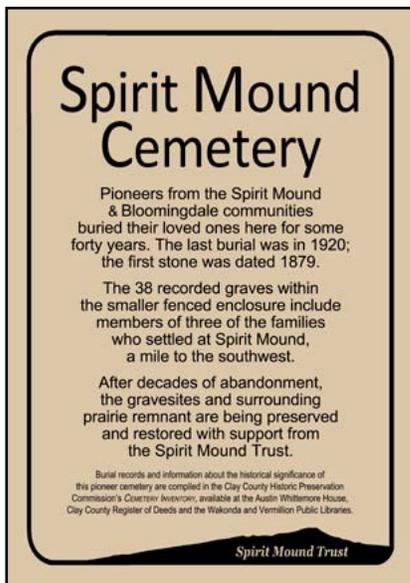
Prairie landscapes need regular disturbance. During pre-European settlement, fire, grazing by large herbivores and drought were disturbances that maintained the prairie. Today's prairie management goals include similar disturbances, such as prescription burning, mowing, grazing and removing invasive species. These management activities allow for stable or increasing native plant diversity, condition and cover, decrease the diversity and cover of invasive species, stabilize or decrease cover of invasive woody vegetation and support diverse populations of native birds and insects.

Prairie management methods are ever changing, and there is really no rule of thumb as all prairies are different. Our Nation's native prairies are arguably our most endangered ecosystem. Efforts to protect these gems and establish new prairie are ever so important today, and I hope you will support this mission.

Cemetery View

By Nancy Carlsen

This past year has seen a continuation of efforts to reclaim, preserve and restore Spirit Mound Cemetery, a mile northeast of the Mound. In 2012, the cemetery's perimeters were defined, the legal description of the deeded land was surveyed and new boundary fence was built on the south and east, with contributions from the Trust, which also contributed to this year's accomplishments at the cemetery. They include the installation of a sign at the cemetery entry gate on 463rd Avenue (the north-south gravel road adjoining the cemetery to the west). The sign incorporates the Spirit Mound Trust image and other particulars used in signs erected by the Trust at Spirit Mound.



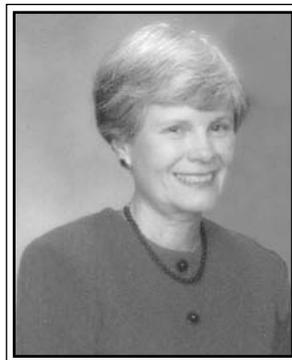
The Trust appreciates Mark Tipton's efforts to save the sole tree at the cemetery, a Scotch Pine. We are also grateful to Marvin Walz who mowed the burial enclosure and path a number of times to improve access to the cemetery. We also thank Jonah Wonnenberg and his goat Spartacus for their work in removing leafy spurge from the cemetery grounds during mid-May and mid August of the past year.



Ruth Piersol Neer Memorial

By Nancy Carlsen

Spirit Mound was on her horizon growing up, and she kept the place in her heart throughout her life. Ruth Piersol Neer was born August 23, 1919, to Roy and Mary Nelson Piersol, the third of seven sisters and a brother. She grew up on a farm just southwest of Spirit Mound and attended the one-room Spirit Mound schoolhouse across the road west of the Mound until high school in Vermillion. Ruth remembered Spirit Mound with great affection to the end of her days. When she passed away May 3, 2013, at the age of 93, in her longtime home in Fresno, California, her obituary suggested, "Remembrances may to be made to Spirit Mound Trust."



Ruth Piersol Neer

And people did remember her. The Trust extends sincere gratitude for the contributions made in her name. The memorial fund will remain open, in case others would like to remember Ruth in this way.

Best Quote 25 Years Ago

Larry Monfore, founder of Lewis and Clark/ Spirit Mound, was interviewed for an article published in South Dakota Magazine's November/December 1988 issue. The following quote from the interview was selected for magazine's final issue of 2012 as best quote 25 years ago:

"There is heavy agricultural use on that land. I understand why it's the way it is. It's used because of the nature of the people who have lived here—people with farming backgrounds. If we don't preserve it, pretty soon it's going to be gone and it will be just another level spot in South Dakota."

Let us celebrate the vision of Larry Monfore and the accomplishments of Spirit Mound Trust. What a great difference we have seen over the past quarter century as through our efforts, much of the beauty and diversity of Spirit Mound has been preserved and restored!

The Duncan Point Found at Mound

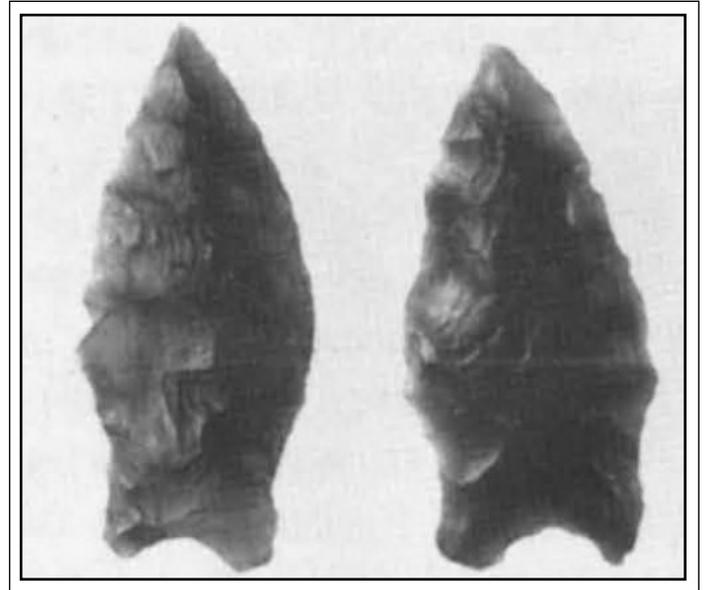
By William Ranney

In July 2001, the University of South Dakota's Archaeology Laboratory conducted a cultural resource survey of the Spirit Mound Prairie as part of the regulatory process required prior to acquisition of this property for the Spirit Mound Restoration Project. Five persons from the Archaeology Lab who conducted this survey for South Dakota's Department of Game Fish and Parks were assisted by other ARCHLAB staff and by field school students from the University of South Hampton, Great Britain.

Archaeologists define a site according to the extent of artifacts and features (which may be building foundations or prehistoric fire hearths). The cultural resource survey recorded five archaeological components on the 320 acres that comprise the Spirit Mound Prairie.

The five archaeological sites on the Spirit Mound Prairie consist of two prehistoric sites and three historic sites. On one of the prehistoric sites, two flakes of chipped stone were found south of Spirit Mound Creek. On the other site, west of Spirit Mound, there was evidence of a prehistoric Native American camp site consisting of a re-worked projectile point, a chipped stone tool fragment, seven pieces of chipped stone debris and a burnt bone fragment, likely associated with the other prehistoric material. The projectile point that was found west of Spirit Mound falls into the Middle to Late Archaic period, about 2500 B.C. to 850 B.C., and is known as a Duncan point.

Atlatls or spear throwers were used to thrust projectile points such as the Duncan point. This Duncan point had been broken sometime after its manufacture. Rather than being discarded, it had been re-worked. It may have been used as a dart point, but quite often re-worked points are utilized as knives or hide-scraping tools. Typical Duncan points that have been found in Nebraska are shown here (Meyers and Gunderson 1977).



Duncan Points

Regrettably, the point found at Spirit Mound was not available for this article. The 2001 survey revealed what is commonly found at other sites of this nature: that prominent features in the landscape more often than not attract humans in all time periods.

Source:

Meyers, Thomas P. and Harvey L. Gunderson, 1977: "Some Important Projectile Point Types from Nebraska." Programs Information: Nebraska State Museum. Paper 10.

Editor's note: William Ranney, M.A., directed the 2001 cultural resource survey for ARCHLAB, with the assistance of Wade Haakenson, Damita Hiemstra, Jason Kruse and Terri Bruce. Other ARCHLAB staff (Brian Molyneaux, Ph.D., and Stephanie Spars, M.A.) provided specialized assistance, and the 2001 USD Archaeological Field School class, supervised by Lawrence Bradley, Ph.D., provided help with the reconnaissance survey of lands between the disturbed areas.

Best Lewis and Clark Website

By Mark Wetmore

Discovering Lewis & Clark (lewis-clark.org) is a comprehensive website with an enormous amount of information, including a series of aerial photos of the Lewis & Clark trail, with a great image of the Mound before restoration began. Unfortunately the photos are down now for a site upgrade, but will be available again in March 2014.

Started by Dr. Joe Mussulman of Missoula,

Montana in 1998 and expanded by the work of more than 50 other scholars and specialists, the site is dedicated to, among others, the late Dr. V. Strode Hinds, a prominent Lewis and Clark historian from Sioux City. It is currently maintained by the Lewis and Clark Fort Mandan Foundation.

Dr. Mussulman is currently analyzing all the Lewis and Clark journal entries that mention insects. He has asked Laura Winkler to help.

Spirit Mound Trust

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ADDRESS SERVICE REQUESTED

Support the Mound

Spirit Mound Trust membership is \$10 per year. Additional donations are welcome, and all are tax deductible. Your support helps to develop a better, more diverse historic prairie and fund other programs to make the Mound a more interesting place to visit.

Our address is P.O. Box 603, Vermillion, SD 57069. Please join us:

Name _____

Address _____

Telephone _____

Email address _____

Amount enclosed: _____



Also, a few of the 1" x 2" enamel Spirit Mound pins are still available for \$5 and the Ron Backer print *Lewis & Clark on Spirit Mound* for \$100, both post paid.