

**Herpetofaunal Surveys of Several State Controlled Areas
in Southeast South Dakota with an Emphasis on Searching
for the Lined Snake (*Tropidoclonion lineatum*)**

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**Amphibian and Reptile Surveys of Southeast
South Dakota With an Emphasis on the
State-Endangered Lined Snake
(*Tropidoclonion lineatum*)**

May 2002 – June 2003



The Lined Snake (*Tropidoclonion lineatum*)

Final Report
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INTRODUCTION

The primary purpose of this project was to try and further understand the distribution of the Lined Snake (*Tropidoclonion lineatum*) in South Dakota. South Dakota represents the northern limit of this snake's range in North America. Peripheral populations are often subject to extreme fluctuations in population size and composition because of minimally available and less-than-optimal habitat conditions. The results of this survey work will hopefully help delineate Lined Snake habitat and identify the necessary landscape features to help current populations thrive. A secondary objective of the survey was to gain a better understanding of herpetofaunal species compositions and abundances in southeastern South Dakota by annotating when, where, and how often additional reptile and amphibian species were encountered. Particular attention was given to species with a state heritage ranking of S1 or S2.

Based on museum specimens, the Lined Snake is known from two counties in South Dakota – Union and Minnehaha. Both locations are adjacent to the Big Sioux River, which continues to meander through Lincoln County along the state border with Iowa. Riparian habitat has likely provided a corridor for movement between these two regions. In addition, the only known location for the Lined Snake in Minnesota is in Rock County, adjacent to Minnehaha County South Dakota. The Lined Snake is likely to occur in suitable habitat all along the Big Sioux River south of Sioux Falls, both west and east of the state line.

In addition to the Lined Snake, at least 12 other species of amphibians and reptiles besides the Lined Snake with a state heritage ranking of S1, S2, or S3 occur in southeast South Dakota (Ballinger et al., 2000). Since searching for Lined Snakes will inevitably uncover other species, all amphibian and reptile encounters were recorded.

METHODS AND MATERIALS

Searches for Lined Snakes and other herpetofauna were conducted primarily at State-owned areas (Parks, Recreation Areas, Game Production Areas, etc.) in southeast South Dakota. On some occasions, private land was accessed, and roadside areas within the legal right-of-way were investigated.

Three primary methods were incorporated into the Lined Snake survey. The first was a standard search-and-seize routine in which potential habitat was investigated for the presence of snakes. Existing cover objects such as stones, logs, and discarded human objects such as boards, corrugated metal, and other flat-surfaced materials were turned to uncover potentially hiding snakes.

The second method augmented the first method by providing additional cover objects for snakes to use. Artificial cover boards in the form of corrugated metal and wood boards were placed in strategic locations such as south-facing grassland hillsides and along woodland edges. These cover objects served as attractive hide spots for snakes as well as lizards and some amphibians throughout the active season.

Finally, during the evenings, road surveys were conducted for Lined Snakes and other reptiles or amphibians that may be basking on or crossing roads. This is an effective way to find herpetofauna during extreme hot summer months.

Locations of all Lined Snakes as well as other rare species were recorded using GPS technology and marked on digital topographic maps. Whenever possible, photographs were taken for species verification. In some instances, specimens representing range extensions or county records were returned for museum preparation.

RESULTS AND DISCUSSION

Throughout the duration of the survey, 13 public use areas were searched as well as several private properties and roadside areas (Figure 1). Amphibians and reptiles representing 18 different species were found. Of these, eight species have a state heritage status of either S1, S2, or S3, two are listed as state-threatened, and one is state-endangered. A complete table of all species and locations is located in the Appendix of this report. The following paragraphs will present individual species accounts.

Species Accounts

Lined Snake (*Tropidoclonian lineatum*): Since the Lined Snake was the species of primary concern for this survey, all survey sites were selected for their potential to harbor this species. According to Ballinger et al. (2000), the Lined Snake occurs on prairie or grassland hillsides as well as in woodland areas. From my own experience in southeast Nebraska, I have found that Lined Snakes are primarily open grassland residents. Therefore surveys were conducted primarily on state-owned areas that display grassland habitat features. In the 12-13 months of sampling, Lined Snakes were found at only three locations: Palisades Park SRA, Beaver Creek Nature Area, and a road cut composed of a Sioux quartzite outcrop located on State Highway 42 in Minnehaha County, just west of the Big Sioux River on the north side of the road.

The specimen from Palisades Park SRA was a road-killed specimen that was flattened almost beyond recognition and could only be positively identified by the presence of keeled lateral scales and the double row of half-moon shaped spots on the ventral scales. The surrounding habitat features included a wooded quartzite outcrop with numerous crevices located on one side of the road, and an open grassy field on the other. The grassland was composed primarily of smooth brome (*Bromus inermis*) but still held a strong native component. Two specimens were found at the Beaver Creek Nature Area where they both were taking cover under the same artificial cover board (Figure 2). The board was located within a grassland adjacent to Beaver Creek. The specimen from the quartzite road cut was located under a discarded sheet of plastic and was accompanied by four red-sided garter snakes (*Thamnophis sirtalis*). It quickly took cover in a small crevice and could not be captured or photographed.

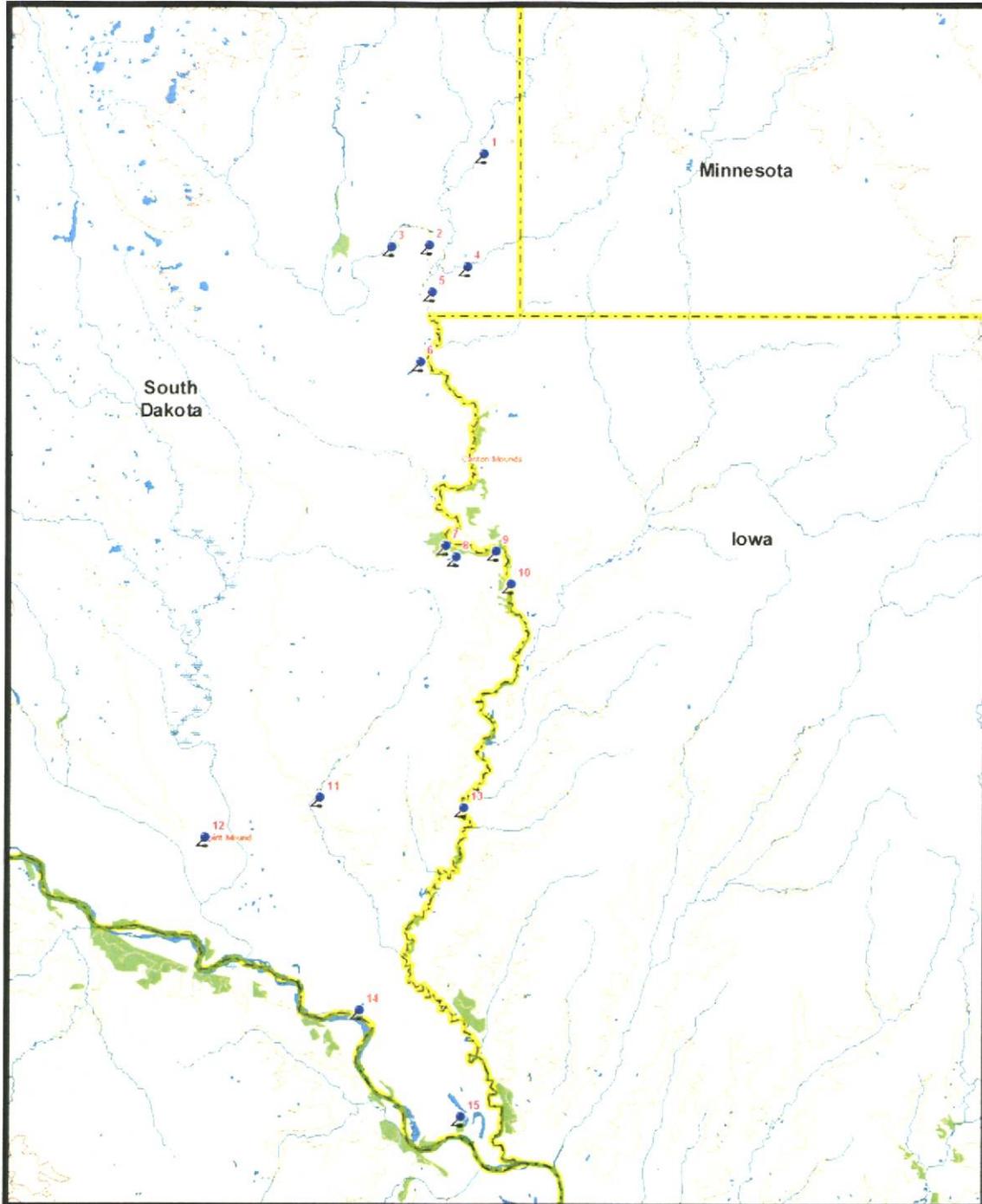


Figure 1. Sites where herpetofaunal searches were conducted from May 2002 – June 2003. 1 = Palisades Park SRA; 2 = Big Sioux SRA; 3 = Cactus Hills Winter Sports Complex; 4 = Beaver Creek Nature Area; 5 = Sioux Quartzite Road Cut; 6 = Lake Alvin SRA; 7 = Newton Hills SP; 8 = Lake Lakota (Newton Hills SP); 9 = Fairview GPA; 10 = Oak Ridge GPA; 11 = Union Grove SP; 12 = Spirit Mound; 13 = Private Property; 14 = Elk Point Sand Dunes; 15 = Adams Homestead and Nature Area.

Subsequent searches at the same road cut were unsuccessful for Lined Snakes but were quite successful for other species, including two that are considered first time occurrences for Minnehaha County (See species accounts for *Thamnophis radix* and *Eumeces septentrionalis* below).

All of these occurrences are well within the expected range of the Lined Snake in South Dakota. Although the Palisades Park specimen is farther north than previous known records, it is similar in latitude to Blue Mounds State Park in Minnesota, which is the only known site for Lined Snakes in Minnesota and only 17 miles from Palisades Park, so it is quite reasonable to expect this species to occur at Palisades Park. Similarly, Lined Snakes have been found in the vicinity of the Beaver Creek Nature Area (Doug Backlund, SDGFP, personal communication) and their occurrence within the boundaries of the Park are not unexpected. Both of these locations (Palisades Park and Beaver Creek) are relatively pristine natural areas with fairly large grassland associations. The road cut, however, is adjacent to an old field on the north end and a four-lane highway to the south (Figure 3). According to Collins (1993), Lined Snakes in Kansas are fairly tolerant of degraded habitat conditions and are common in old fields as well as in suburban settings. Thus it is not unexpected that lined snakes would exist



Figure 2. Two Lined Snakes that were found beneath a cover board at the Beaver Creek Nature Area on 20 May 2003.



Figure 3. A Sioux quartzite outcrop located on Hwy 42 east of Sioux Falls and just west of the Big Sioux River. This outcrop produced a number of herpetofaunal species and is also important as a winter hibernaculum for several species.

in such close proximity to a highway. In addition, a pasture immediately southwest of this road cut appears to be in relatively good condition and has a fairly large rock outcrop associated with it. This land could easily provide source animals for multiple species that might occupy the road cut at various times. Figure 4 depicts a map showing all locations where Lined Snakes were uncovered.

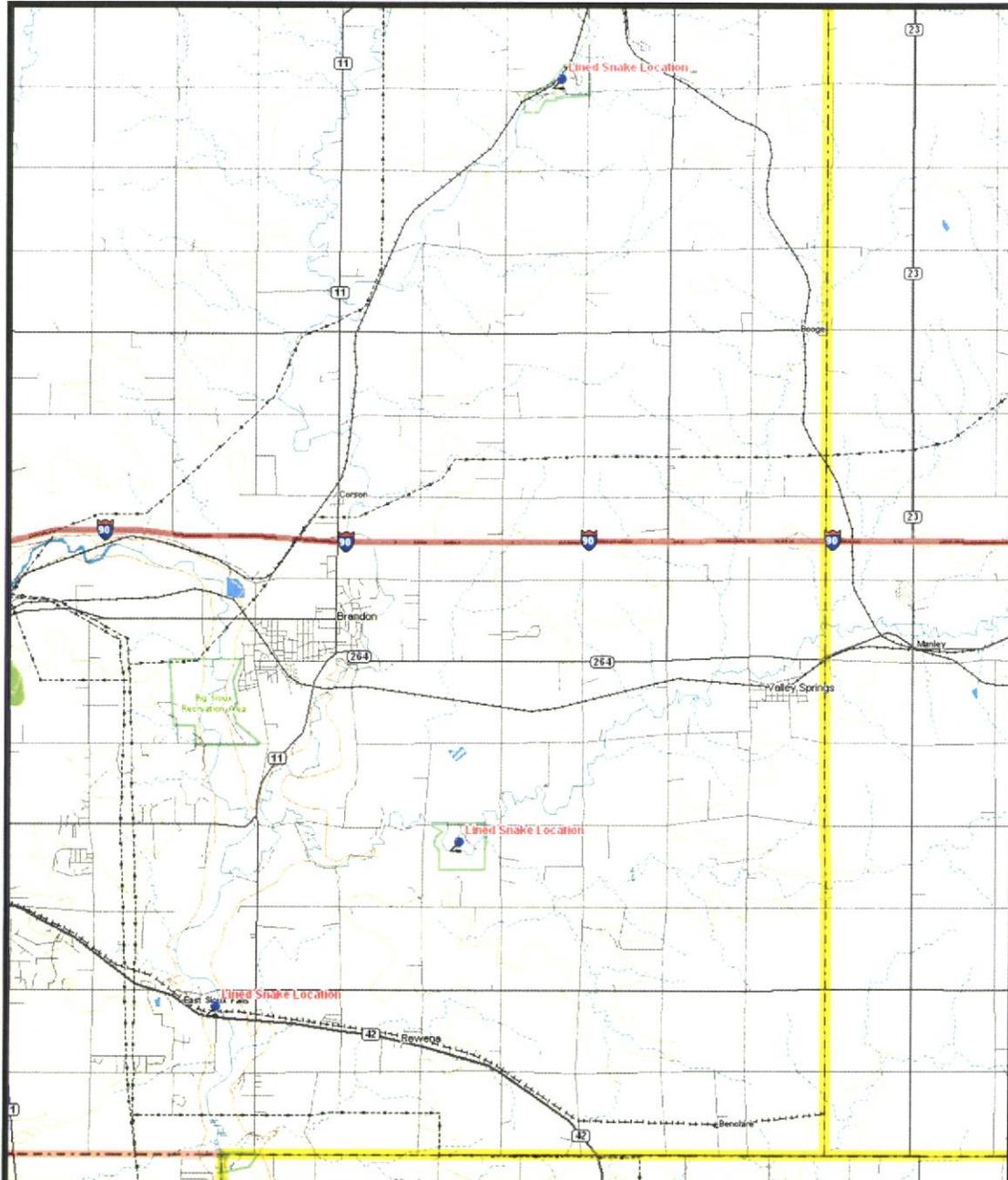


Figure 4. Locations where Lined Snakes were found in 2002 and 2003.

Northern Cricket Frog (*Acris crepitans*): The Northern Cricket Frog has a rank of S1 in South Dakota and their populations are believed to be declining. In Minnesota this species has apparently been extirpated, however reasons for local extinctions cannot be explained at this time. During this survey, Northern Cricket Frogs were encountered at three locations: Adams Homestead and Nature Center, Elk Point Sand Dunes and Lake Lakota (Figure 5). Calls were heard from a small backwater wetland area at Elk Point in May 2002, and tadpoles were captured and positively identified as *Acris crepitans*. Northern Cricket Frogs are known from this area, however the verification of an extant and reproductive population has significant importance. The Lake Lakota Cricket Frogs (Figure 6) are also significant. Although no positive proof of reproductive success was uncovered, male frogs were heard calling in May and June of 2002.



Figure 5. Locations for Northern Cricket Frogs from 2002-2003 surveys.



Figure 6. A Northern Cricket Frog from Lake Lakota in Lincoln County.

Cope's Gray Treefrog (*Hyla chrysoscelis*): Although specimens of the Cope's Gray Treefrog were not obtained, calls were heard at four separate locations in southeast South Dakota: Beaver Creek Nature Area, Elk Point Sand Dunes, Adams Homestead and Nature Area, and a backwater wetland area off of the Missouri River approximately 13 miles south of Dante in Charles Mix County. Multiple and consistent calls were heard at all of these sites except for Beaver Creek, where only a single specimen was heard calling on one day in June 2003. Records exist for *Hyla chrysoscelis* along the Missouri River in Bon Homme County east of the Charles Mix County location, however this location extends their range in South Dakota by approximately 16 miles and represents the first encounter with Cope's Gray Treefrog in this county. Additionally, surveys currently being conducted in Nebraska and South Dakota along the Missouri and Niobrara Rivers have uncovered additional populations of Cope's Gray Treefrogs, and the recent capture of a specimen by Doug Backlund (SDGFP, personal communication) from below the Oahe Dam in Stanley County suggest that these populations likely occur all along the Missouri at least as far north as the Oahe Dam. These frogs are also known from southern Union and Clay Counties, so the Elk Point and Adams records are not unusual. Along the eastern border of South Dakota, however, a large gap exists in their distribution between Union and Roberts Counties. Given that *H. chrysoscelis* has been found in both of these counties, it is not surprising to have them appear in areas in between these two sites, such as the Beaver Creek Nature Area, especially since the Big Sioux River can easily act as a migratory corridor. I would recommend a concentrated call survey as well as an attempt to obtain specimens from selected areas along the Big Sioux from Grant County south through Lincoln County. Figures 6a-6c show the locations of *Hyla chrysoscelis* found during these survey efforts.



Figure 6a. Location of Cope's Gray Treefrogs in Charles Mix County found in May 2003.



Figure 6b. Location of a single Cope's Gray Treefrog calling at the Beaver Creek Nature Center in May 2003.

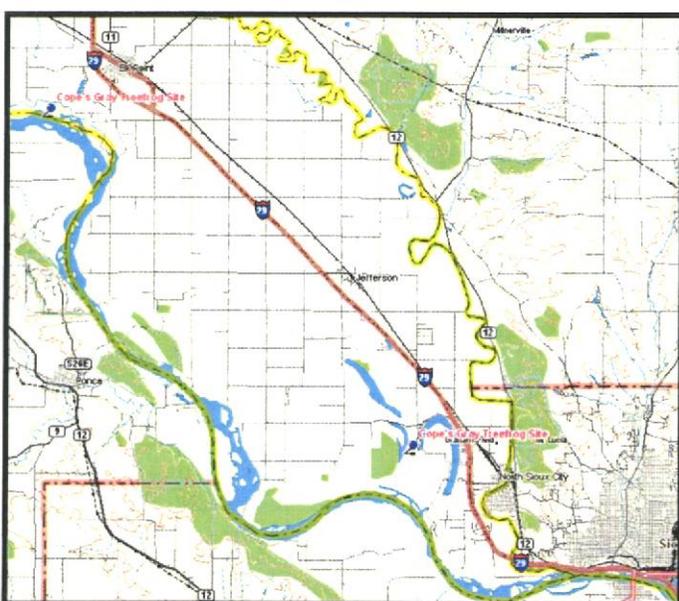


Figure 6c. Locations of Cope's Gray Treefrog populations in southern Union County.

Western Chorus Frog (*Pseudacris triseriata*): This species is not a heritage species for South Dakota and is fairly common throughout most of the state. It was either heard calling or was sighted at four locations: Adams Homestead and Nature Area, Lake Lakota, Lake Alvin, and the Elk Point Sand Dunes. Given that these are all sites where this species is expected to occur, no other information is presented.

Bullfrog (*Rana catesbeiana*): Although Bullfrogs are not considered a heritage species, their presence in South Dakota is still of some importance due to their potential predation of rare native species. The bullfrog is known to occur in several of the southern tier counties along the Nebraska border. During the course of this survey, Bullfrogs were heard calling at two locations: Adams Homestead and Nature Area, and a backwater wetland area off of the Missouri River approximately 13 miles south of Dante in Charles Mix County (Figure 7). Both of these occurrences represent county records for their respective counties (Charles Mix and Union). Several individuals were heard calling at the Charles Mix site in June 2003, while only two frogs were heard calling at Adams from Mud Lake during June of 2002. Since records exist for several other Missouri River counties in southeast South Dakota, the Bullfrog can be expected to occur in backwater areas and sloughs all along the Missouri River downstream of the Fort Randall Dam.

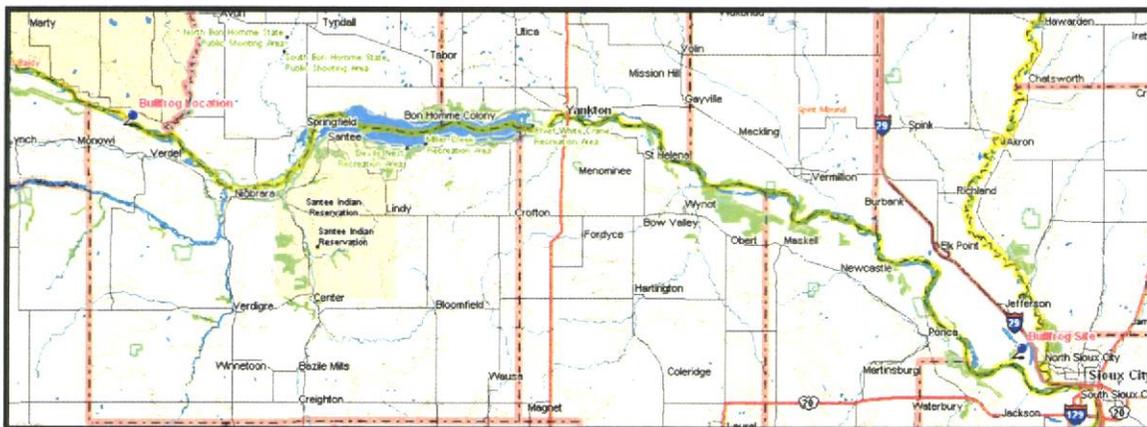


Figure 7. Locations of Bullfrogs found in southeast South Dakota during 2002-2003.

Northern Leopard Frog (*Rana pipiens*): The Northern Leopard has a fairly wide distribution in South Dakota and can be expected to occur in any region that has permanent water. During this survey, Northern Leopard Frogs were found at Adams Homestead and Nature Area, Elk Point Sand Dunes, Beaver Creek Nature Area, Lake Lakota, and a backwater wetland area off of the Missouri River approximately 13 miles south of Dante in Charles Mix County. Evidence of breeding activity was found at all of these sites as well, either in the form of calling males or the presence of larval animals. The Northern Leopard Frog is not a heritage species.

American Toad (*Bufo americanus*): American Toads were found at the Adams Homestead and Nature Area as well as at Lake Lakota. The only specimens found were metamorphs that had recently emerged onto terrestrial habitats (Figure 8), and in both cases they were found along side metamorphs of Woodhouse's Toads (*Bufo woodhousii*). The American Toad occurs in most of the counties along the eastern border of South Dakota and although there are no records from the extreme southeastern tip of South Dakota, there is no reason not to expect them there. American Toads are not a heritage species.



Figure 8. A recently metamorphosed American Toad from Adams Homestead and Nature Center.

Woodhouse's Toad (*Bufo woodhousii*): Metamorphs of Woodhouse's Toad were found on the banks of Lake Lakota as well as Mud Lake at the Adams Homestead and Nature Area along with young American Toads. Adult specimens were also heard calling and were sighted at the Elk Point Sand Dunes. Woodhouse's Toads are common and broadly distributed along the southern half of South Dakota and are expected to be found on all of the survey areas. They are not a South Dakota heritage species.

Common Snapping Turtle (*Chelydra serpentina*): Snapping turtles were only found at one of the survey areas – Adams Homestead and Nature Area – where specimens were encountered on multiple occasions (Figure 9). Although museum records exist for only a few specimens (Ballinger et al., 2000), they are believed to be widely distributed in South Dakota. An additional specimen was encountered as a road kill on Highway 34 southwest of Egan in Moody County. It was too large and in too late of a stage of decay to be salvaged as a museum record, however this road kill represents a count record for Moody County. They have been found in Minnesota at Pipestone National Monument, which is only 18 miles due east of this location. This specimen most likely emerged from Squaw Creek, which is only a few meters from where the turtle was found.



Figure 9. An adult Common Snapping Turtle found crossing the entrance road to Adams Homestead and Nature Center.

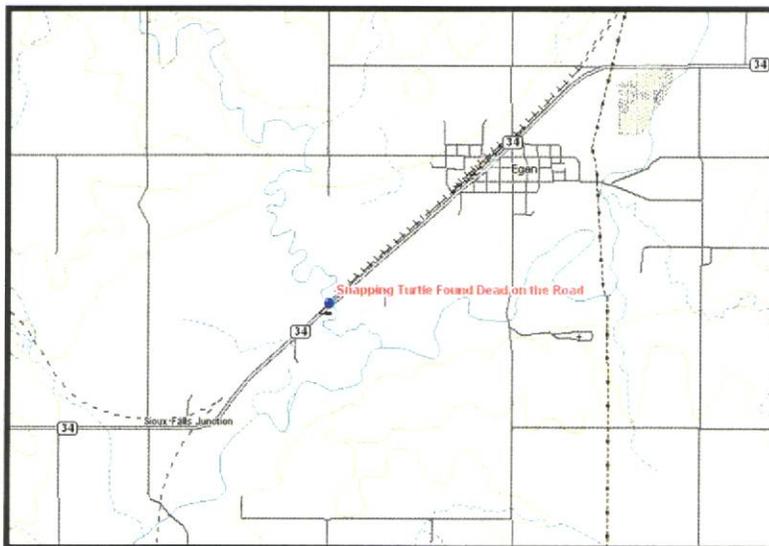


Figure 10. Map depicting the location of a Common Snapping Turtle killed on the road.

Painted Turtle (*Chrysemys picta*): Painted Turtles were found at Adams Homestead and Nature Area, Elk Point Sand Dunes, Lake Lakota, and Beaver Creek Nature Area. This species is common wherever permanent water sources are located and is not a heritage species.

False Map Turtle (*Graptemys pseudogeographica*): False Map Turtles were seen at two locations during this survey (Figure 11). At the Elk Point Sand Dunes and at a backwater wetland area 13 miles south of Dante in Charles Mix County adjacent to the Missouri River, the turtles were seen basking on emergent logs during May and June of 2002 and 2003. Since the False Map Turtle is considered a threatened species in South Dakota, these sightings are considered significant. The Elk Point sightings are close to known populations and are not unexpected. The Charles Mix County sightings, although not county records, are the first to be found along the Missouri River in this county and fill a gap between records from extreme southeastern Gregory County and extreme southeastern Bon Homme County. This species most likely occurs in all sloughs and backwater areas along the Missouri River from the Fort Randall Dam to the

southeastern corner of the state. False Map Turtles are classified as an S3 species in South Dakota. Figure 12 shows a False Map Turtle from Charles Mix County.

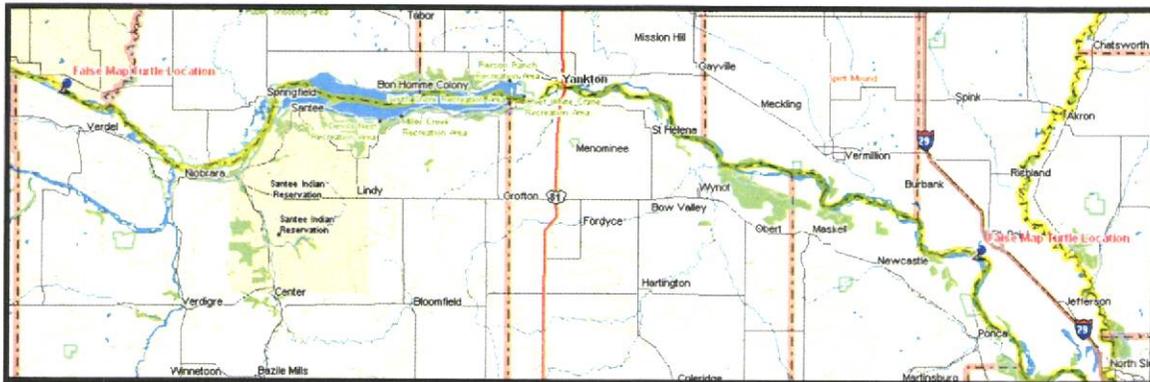


Figure 11. Locations for False Map Turtles in 2002-2003.



Figure 12. An adult male False Map Turtle from Charles Mix County.

Six-lined Racerunner (*Cnemidophorus sexlineatus*): A single Six-lined Racerunner was seen but not captured at the Elk Point Sand Dunes. It was located in sparsely vegetated habitat with a sandy substrate that surrounded a backwater pond adjacent to the Missouri River at the Elk Point location (Figure 13). Although it could not be captured, the iridescent green and blue markings clearly identified it as a *C. sexlineatus*. Six-lined Racerunners in South Dakota are known only from the southwestern counties that border Nebraska, so it seems unusual and significant that this lizard would appear in the extreme southeastern corner of the state. It is known in northeastern Nebraska but only from extreme northeastern Knox County, which is a straight-line distance of approximately 42 miles. The habitat, however, is consistent with habitat features for *C. sexlineatus* in southeastern Nebraska and southwestern Iowa, where they also occur along the Missouri River. Additional searches should be conducted at this site in the future, perhaps with the help of drift fences and funnel or pit-fall traps, to obtain a voucher specimen. Six-lined Racerunners are classified as an S2 species in South Dakota.

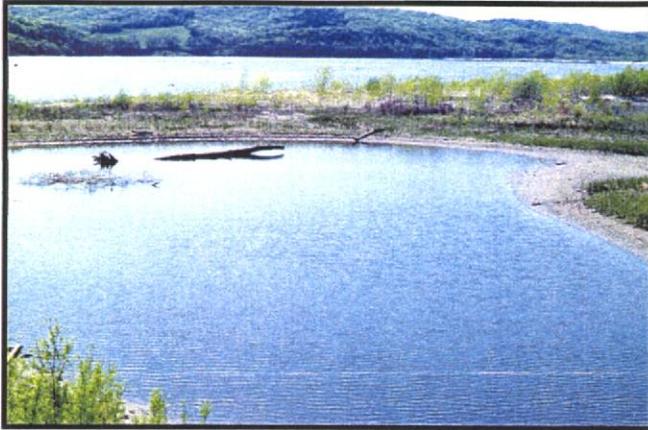


Figure 13. Habitat at the Elk Point Sand Dunes where a single Six-lined Racerunner was observed in May 2002.

Northern Prairie Skink (*Eumeces septentrionalis*): Northern Prairie Skinks were found at three locations: Lake Lakota and the Oak Ridge Game Production Area in Lincoln County, and a Sioux quartzite outcrop located on State Highway 42 just west of the Big Sioux River on the north side of the road in Minnehaha County (Figure 14). The Lake Lakota skinks were seen in tall grass adjacent to the beach parking lot. At Oak Ridge GPA, they were found beneath artificial cover objects (corrugated metal). The specimen found at the Hwy 42 road cut was a gravid female, and she was beneath a sheet of roofing paper with three red-sided garter snakes (*Thamnophis sirtalis*). These sightings qualify as county records for this species in Lincoln and Minnehaha counties. A specimen was captured from the Minnehaha County site and will be prepared for deposition in the University Of Nebraska's Vertebrate Museum collection. The Northern Prairie Skink has no official heritage ranking in South Dakota.

Ringneck Snake (*Diadophis punctatus*): Ringneck Snakes were not found at any of the state-owned properties, however two specimens – including a gravid female – were found beneath the boards of an abandoned barn on private property in Union County, just across the border from Chatsworth, IA (Figure 15). The ringneck snake is ranked as an S2 species in South Dakota. Since these specimens did not represent significant range extensions or county records, they were photographed (Figure 16) and released.

Western Fox Snake (*Elaphe vulpina*): The Western Fox Snake was one of the most commonly encountered snakes throughout the duration of this survey. It was found at seven of the survey locations and was found in numerous locations on roads as I traveled between sites. The survey sites where it was found are: Palisades Park SRA, the Sioux Quartzite outcrop on highway 42, Newton Hills State Park, Lake Lakota, Lake Alvin, Union Grove State Park, and Adams Homestead and Nature Center, where it extremely common (Jody Moats, SDGFP naturalist, personal communication). These distribution localities are within the expected range of the Western Fox Snake in South Dakota. The Fox Snake is categorized as an S2 species under South Dakota's Natural Heritage Program. Figure 17 depicts two specimens found dead on the road in Minnehaha County.

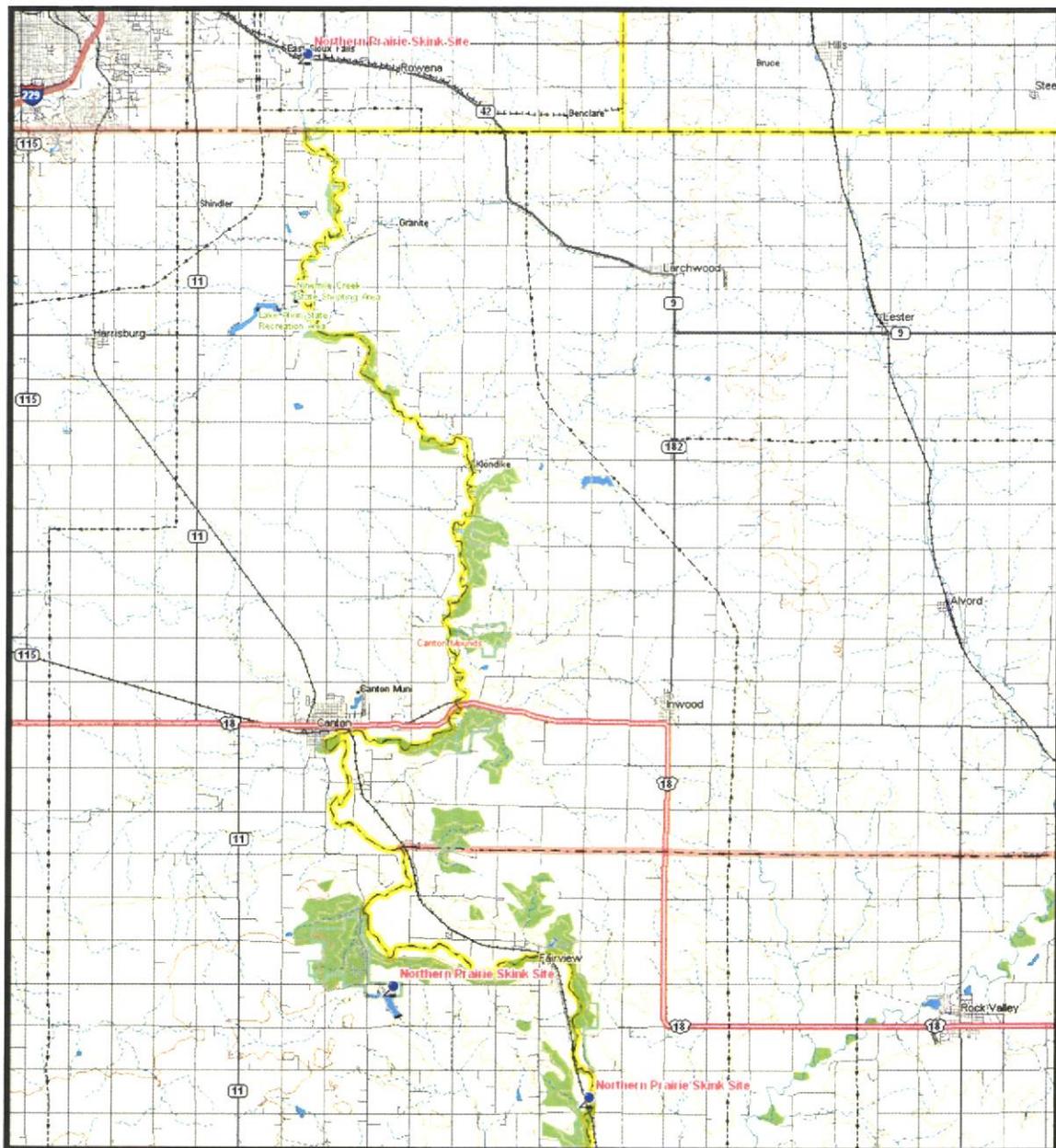


Figure 14. Locations for Northern Prairie Skinks in Minnehaha and Lincoln Counties.

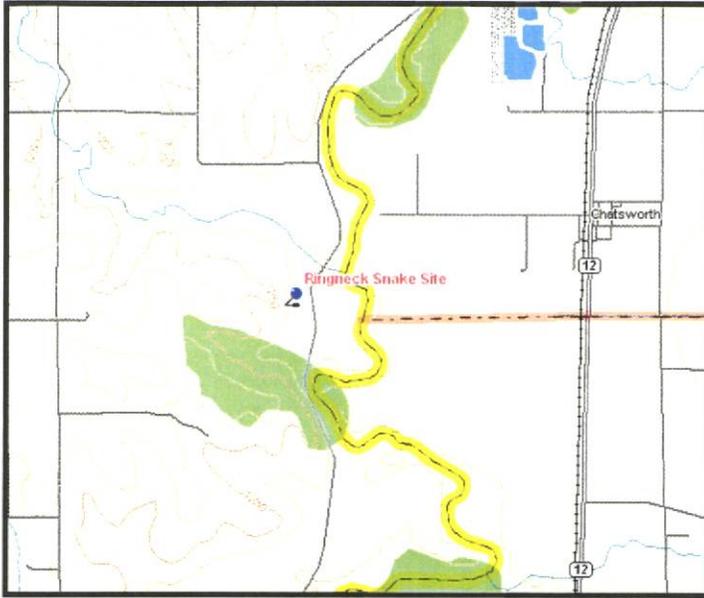


Figure 15. Location for two Ringneck Snakes found on private property in Union County.



Figure 16. A Ringneck Snake from Union County.



Figure 17. Two dead Western Fox Snakes found dead on the same road in Minnehaha County.

Eastern Hognose Snake (*Heterodon platirhinos*): The Eastern Hognose Snake was only found at Adams Homestead and Nature Area however there were several other areas where the habitat conditions were suitable and it is expected to occur. At the Adams location, several specimens were found dead on the road leading to the nature center on various dates. One living specimen was found near a backwater area at the south end of the park (Figures 18 and 19). Another specimen was brought into the nature center by a local resident who found it in her front yard (Jody Moats, SDGFP Naturalist, personal communication). At least three other survey locations – Beaver Creek Nature Area, Oak Ridge Game Production Area, and Elk Point Sand Dunes possess the sandy soil habitat conditions that are favorable for Eastern Hognose Snakes. Although this species was not found at these locations, given that it is a state threatened species I would recommend additional surveys for them – especially at Beaver Creek and Oak Ridge due to the significant range extensions they would represent.

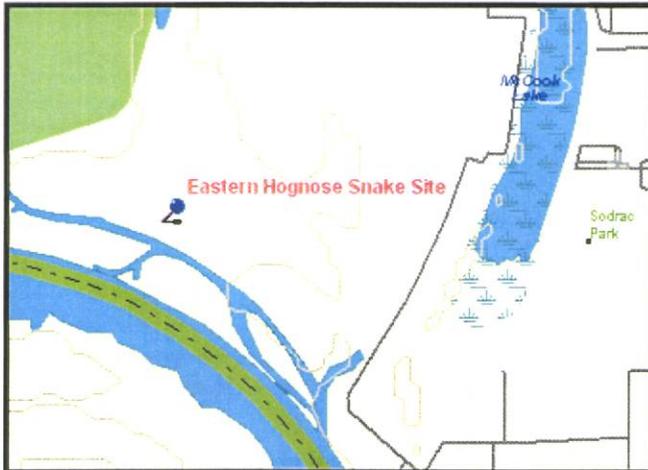


Figure 18. Location for Eastern Hognose Snakes at the south end of the Adams Homestead and Nature Area property.



Figure 19. An Eastern Hognose Snake from Adams Homestead and Nature Area.

Plains Garter Snake (*Thamnophis radix*): The Plains Garter Snake has a statewide distribution in South Dakota and was found to be the most abundant snake at the Adams Homestead and Nature Area. Specimens were found at nearly all other survey sites as well as on numerous roads throughout Union and Lincoln Counties. Two specimens were found at the quartzite outcrop on highway 42 in Minnehaha County, and these represent county records for this species. A specimen was collected and will be prepared for deposition in the University of Nebraska Vertebrate Museum collection.

Common Garter Snake (*Thamnophis sirtalis*): Common, or Red-sided Garter Snakes were found at Lake Lakota, Lake Alvin, Adams Homestead and Nature Area, Oak Ridge GPA, and the quartzite outcrop on Highway 42. At the Adams Homestead they were predominantly residents of the deciduous woodlands that bordered the flood plain (Figure 20) and were rarely found using the same habitat as the Plains Garter Snake, which used grassland habitat. At the other sites, however, they were found sympatrically with *Thamnophis radix* and on one occasion, both species were found beneath the same cover object (Figure 21). Neither of these two garter snakes has been afforded any natural heritage rank.



Figure 20. A Red-sided Garter Snake coiled on a downed log in its natural habitat at Adams Homestead and Nature Area.

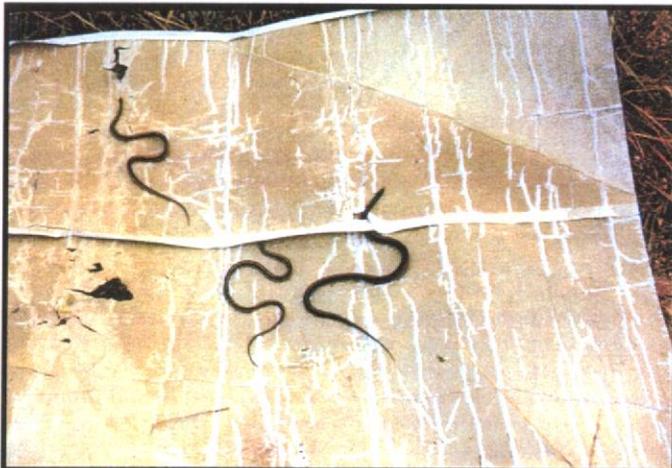


Figure 21. Two Red-sided Garter Snakes (leftmost snakes) and one Plains Garter Snake found under the same cover object.

CONCLUSION

As a result of this survey, previously unknown populations of Lined Snakes and other amphibian and reptile species were uncovered. Southeastern South Dakota harbors more species of herpetofauna than any other area in the state and should be considered a priority region for future inventory and monitoring activity. It is also rapidly expanding as a suburban environment, which may ultimately place many species of amphibians and reptiles in peril. The state endangered Lined Snake appears to have a greater distribution than expected, and also appears to be able to survive within the limits of suburbia. However this should not imply that it might thrive under such conditions. The natural areas in southeast South Dakota that possess high amphibian and reptile diversity should be managed with these taxa in mind.

To gain a better understanding of Lined Snake populations, I would recommend that in the state-owned areas where the species exists, a more intense survey as well as a population study be conducted to ascertain their local distribution at these sites as well as to approximate the number of individuals in each population. This snake still has a severely limited distribution in South Dakota and I would not recommend downgrading its status until further inventories have been conducted, especially on private lands.

As far as other herpetofaunal species are concerned, as a very minimal effort, I would recommend that park personnel at state-owned areas maintain a standardized log of positively-identified species as well as descriptions of species that cannot be identified, including road killed individuals. Additionally, amphibian call surveys should be conducted at some of these parks at a minimum of three times per season. Interested personnel can be trained on the identification of amphibians and reptiles with very little effort. Both of these monitoring efforts will provide valuable information regarding species occurrence trends in southeast South Dakota that will help future conservation efforts. While the phenomenon of amphibian declines is well known, reptiles are also experiencing declines and habitat fragmentation, the results of which may not be understood for many years. Implementing an inventory and monitoring program at state-owned areas should require very little effort but will provide a vast amount of valuable data.

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- Collins, Joseph T. 1993. *Amphibians and Reptiles in Kansas*. Third Edition, Revised. University of Kansas Museum of Natural History. 397pp.

APPENDIX

Total Species Records for Southeast South Dakota Amphibian and Reptile Surveys: May 2002 - June 2003

<u>Species</u>	<u># Observed</u>	<u>Location</u>	<u>Date</u>	<u>Latitude</u>	<u>Longitude</u>
Lined Snake (<i>Tropidoclonion lineatum</i>)	1	Palisades Park	6/9/2003	43° 41.345'	96° 30.864'
"	1	Hwy 42 Outcrop	9/29/2002	43° 31.470'	96° 35.988'
"	2	Beaver Creek Nature Area	6/2/2003	43° 33.355'	96° 32.623'
Northern Cricket Frog (<i>Acris crepitans</i>)	10	+Adams Nature Area	7/3/2002	42° 32.411'	96° 31.879'
"	100	+Elk Point	5/21/2002	42° 40.040'	96° 46.745'
"	10	+Lake Lakota	6/12/2002	43° 12.633'	96° 33.514'
"	2	Lake Lakota	6/12/2002	43° 12.595'	96° 33.442'
Cope's Gray Treefrog (<i>Hyla chrysoscelis</i>)	1	Beaver Creek Nature Area	6/16/2003	43° 33.244'	96° 32.439'
"	5	Elk Point	5/21/2002	42° 40.040'	96° 46.745'
"	3	Elk Point	5/30/2003	42° 40.040'	96° 46.745'
"	6	Backwater Area near Dante, SD	6/13/2003	42° 51.808'	98° 13.798'
"	2	Adams Nature Area	7/3/2002	42° 32.411'	96° 31.879'
Western Chorus Frog (<i>Pseudacris triseriata</i>)	20	+Adams Nature Area	5/16/2002	42° 32.254'	96° 32.126'
"	50	+Lake Lakota	5/16/2002	43° 12.595'	96° 33.442'
"	50	+Lake Alvin	5/21/2002	43° 26.465'	96° 36.938'
"	50	+Elk Point	5/21/2002	42° 40.040'	96° 46.745'
Bullfrog (<i>Rana catesbeiana</i>)	1	Adams Nature Area	6/12/2002	42° 32.254'	96° 32.126'
"	1	Adams Nature Area	6/12/2002	42° 31.967'	96° 32.146'
"	3	Backwater Area near Dante, SD	6/13/2003	42° 51.808'	98° 13.798'
Northern Leopard Frog (<i>Rana pipiens</i>)	2	Adams Nature Area	7/3/2002	42° 32.411'	96° 31.879'
"	8	Elk Point	5/21/2002	42° 40.040'	96° 46.745'
"	3	Elk Point	6/12/2003	42° 40.040'	96° 46.745'
"	2	Beaver Creek Nature Area	6/12/2002	43° 33.308'	96° 32.740'
"	10	+Lake Lakota	6/12/2002	43° 12.595'	96° 33.442'
"	1	Backwater Area near Dante, SD	6/13/2003	42° 51.808'	98° 13.798'
American Toad (<i>Bufo americanus</i>)	3	Adams Nature Area	7/3/2002	42° 32.296'	96° 31.903'
"	4	Lake Lakota	7/3/2002	43° 12.648'	96° 33.534'
"	5	Lake Lakota	7/3/2002	43° 12.595'	96° 33.442'
Woodhouse's Toad (<i>Bufo woodhousii</i>)	30	+Adams Nature Area	7/3/2002	42° 32.296'	96° 31.903'
"	1	Elk Point	5/30/2002	42° 40.040'	96° 46.745'
"	10	+Elk Point	7/3/2002	42° 40.040'	96° 46.745'

Common Snapping Turtle (<i>Chelydra serpentina</i>)	1Hwy 34 Moody County	6/21/200243° 59.309' 96° 40.152'
"	1Adams Nature Area	6/9/200343° 32.330' 96° 31.808'
Painted Turtle (<i>Chrysemys picta</i>)	1Beaver Creek Nature Area	6/2/200343° 33.305' 96° 32.508'
"	3Adams Nature Area	6/13/200242° 32.253' 96° 31.973'
"	1Lake Lakota	6/12/200343° 12.641' 96° 33.391'
"	5Elk Point	5/21/200242° 40.040' 96° 46.745'
"	9Elk Point	5/21/200342° 39.816' 96° 41.917'
"	4Elk Point	5/21/200242° 39.816' 96° 41.917'
False Map Turtle (<i>Graptemys pseudogeographica</i>)	3Backwater Area near Dante, SD	6/13/200342° 51.808' 98° 13.798'
"	1Elk Point	5/21/200242° 40.040' 96° 46.745'
Six-lined Racerunner (<i>Cnemidophorus sexlineatus</i>)	1Lake Lakota	7/3/200243° 12.664' 96° 33.534'
Northern Prairie Skink (<i>Eumeces septentrionalis</i>)	2Oak Ridge GPA	5/21/200243° 10.459' 96° 28.099'
"	1Hwy 42 Outcrop	6/16/200343° 31.470' 96° 35.988'
Ringneck Snake (<i>Diadophis punctatus</i>)	2Private Property, Union County	6/21/200242° 54.624' 96° 32.698'
Western Fox Snake (<i>Elaphe vulpina</i>)	1Palisades Park	6/9/200343° 41.340' 96° 30.840'
"	1Palisades Park	6/9/200343° 41.419' 96° 30.938'
"	2Hwy 42 Outcrop	9/29/200243° 31.470' 96° 35.988'
"	1Newton Hills	6/22/200243° 13.233' 96° 34.678'
"	1Lake Lakota	6/12/200243° 12.838' 96° 33.478'
"	1Lake Alvin	6/12/200243° 26.575' 96° 37.016'
"	1Lake Alvin	7/3/200243° 23.267' 96° 32.037'
"	1Union Grove	6/22/200242° 55.415' 96° 46.518'
"	1Adams Nature Area	5/16/200242° 32.382' 96° 31.859'
"	1Adams Nature Area	5/16/200242° 32.377' 96° 31.791'
Eastern Hognose Snake (<i>Heterodon platirhinos</i>)	1Adams Nature Area	7/3/200242° 31.346' 96° 32.152'
Plains Garter Snake (<i>Thamnophis radix</i>)	2Adams Nature Area	5/16/200242° 32.382' 96° 61.859'
"	1Adams Nature Area	6/12/200242° 32.346' 96° 31.820'
"	1Adams Nature Area	9/18/200242° 32.377' 96° 31.791'
"	3Adams Nature Area	5/30/200342° 32.399' 96° 31.763'
"	1Hwy 42 Outcrop	9/29/200243° 31.470' 96° 35.988'
"	2Hwy 42 Outcrop	6/12/200343° 31.470' 96° 35.988'
"	1Hwy 42 Outcrop	6/19/200343° 31.470' 96° 35.988'
"	1Lake Lakota	7/3/200243° 12.646' 96° 33.492'
"	2Lake Alvin	7/3/200243° 26.578' 96° 37.045'
"	1Lake Alvin	6/12/200343° 26.580' 96° 36.971'
Common Garter Snake (<i>Thamnophis sirtalis</i>)	1Lake Lakota	7/3/200243° 12.595' 96° 33.442'

"	"	1Lake Lakota	7/3/200243° 12.603' 96° 33.423'
"	"	1Lake Alvin	6/12/200243° 26.575' 96° 37.016'
"	"	3Lake Alvin	5/30/200343° 26.581' 96° 37.000'
"	"	1Lake Alvin	7/3/200243° 12.603' 96° 33.423'
"	"	1Adams Nature Area	6/13/200242° 32.367' 96° 31.802'
"	"	1Adams Nature Area	6/13/200242° 32.409' 96° 31.858'
"	"	3Hwy 42 Outcrop	9/29/200243° 31.470' 96° 35.988'
"	"	1Hwy 42 Outcrop	10/3/200243° 31.470' 96° 35.988'
"	"	4Hwy 42 Outcrop	6/12/200343° 31.470' 96° 35.988'
"	"	2Hwy 42 Outcrop	6/19/200343° 31.470' 96° 35.988'
"	"	2Oak Ridge GPA	5/21/200243° 10.459' 96° 28.099'