NORTH DAKOTA GAME AND FISH DEPARTMENT

Final Report

Amphibian and reptile surveys of southeastern North Dakota.

Project T-44-R-1

April 15, 2014 – June 30, 2016

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Submitted by Greg Link

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State Wildlife Grant Final Report (6/30/16)

Project Title: Amphibian and reptile surveys of southeastern North Dakota.

Species of Conservation Priority: Plains Hog nosed snake (*Heterodon nasicus*), Canadian toad (*Bufo/Anaxyrus hemiophrys*), Smooth Green snake (*Opheodrys vernalis*); Northern Redbelly snake (*Storeria o. occipitomaculata*); Northern Prairie skink (*Plestiodon septentrionalis*), Common Snapping Turtle (*Chelydra serpentina*), Smooth Softshell Turtle (*Apalone mutica*), all other native herpetofauna whose range includes southeastern ND

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Location: The southeastern quarter of North Dakota will be systematically surveyed, including the counties of: Burleigh, Emmons, Kidder, Logan, McIntosh, Stutsman, Barnes, Lamoure, Dickey, Sargent, Ransom, Richland, and Cass. Surveys will focus on State and Federal areas to inventory the herpetofauna species present.

Need: Reptiles and amphibians (herpetofauna) are members of every major ecosystem in North Dakota. The presence of reptile and amphibian populations is essential for proper ecosystem function (Davic and Welsh, 2004). Herpetofauna play crucial roles in: the control of invertebrate and small mammal populations (Fitch, 1949; Gibbons 1988; Beaupre and Douglas, 2009); a food source for many carnivores (Burton and Likens, 1975); indicators of ecosystem health (Cederholm *et al.*, 1999; Gibbons and Stangel, 1999; Jenkins, 2007; Beaupre and Douglas, 2009), contribute to the biodiversity in North Dakota.

Recent research suggests both reptiles and amphibians are experiencing global population declines (Gibbons *et al.*, 2000). Estimates suggest that 48% of amphibian species and 52% of reptile species in the United States are listed as being of conservation concern by various agencies (Mitchell *et al.*, 1999). Population declines in these species are ostensibly from the same suite of factors as other taxa: habitat loss and degradation, invasive species, environmental pollution, disease, and global climate change (Gibbons and Stangel, 1999; Ryan *et al*., 2002). These global declines call for the establishment of long-term monitoring programs to track population trends and distributions (Marsh and Goicochea, 2003). In addition, a crucial link between land management and ecosystem conservation is the availability of distributional data on species within those ecosystems (Riedle and Hackler, 2006). Species distributions and community composition is the first step in understanding and conserving habitat and healthy ecosystems.

Due to the cryptic nature and small stature of herpetofauna species, very little is known about their ecology and life history. This dearth of information combined with a negative public perception makes reptiles and amphibians vulnerable taxa in a region that is undergoing rapid anthropogenic disturbance and expansion. In North Dakota, there are currently 11 species of herpetofauna listed as *Species of Conservation Priority* (4-Level I, 3-Level II, and 4-Level III), of which 8 are likely found in the southeastern part of the state.

Most of the current understanding of herpetofauna distributions in North Dakota is derived from relatively old records, with a majority of them coming prior to 1970 (Wheeler 1947, 1966). More recent records have focused on amphibian populations (Bowers, 1998) or small-scale surveys and chance encounter (Bowers, 1998; Casper, 1996; Hoberg, 1996; Jundt, 1997, 2000). The most recent update to herpetofauna distributions summarized a majority of the previous literature, reviewed state collections, and updated some county records (Jundt, 2000), but to date there has been no large-scale, intensive survey of herpetofauna distributions in North Dakota that I could find.

The first step in assessing the threats to herpetofauna and developing management and conservation plans is to inventory the species found throughout the state and determine their range and distribution. With increased habitat conversion/loss, degradation, and fragmentation; it is crucial to not only determine the inventory of herpetofauna in North Dakota, but also to obtain baseline information on range, habitat use, and population sizes. These updated distributions can be compared to previous work and help determine population and range trends over the last 10-15 years within the state.

Objectives: The primary objective of this project is to obtain baseline presence/absence, distribution, and community composition data for herpetofauna in the southeastern quarter of North Dakota. Information gained from this study can be applied directly to conservation and management practices and informs future survey efforts to better understand the range and distribution of this species within North Dakota. Our specific objectives are to:

1. Confirm the presence/absence of herpetofauna species in southeastern North Dakota.
2. Document species composition and relative abundances in southeastern North Dakota
3. Obtain baseline information on the habitat types and ecosystems each herpetofauna species occupies.
4. Design, implement, and evaluate herpetofauna survey and inventory methods for future use.

5. Conduct MAXENT habitat modeling at both the regional and state-wide scales for reptile and amphibian species with adequate capture records.

Progress to Date: During the summer of 2014, we surveyed 15 sites in the 13 southeastern counties of North Dakota. Each of the 13 counties had at least one site sampled, with Richland County having three sites sampled in the first year. Sites were surveyed for 7 consecutive days, with site selection starting in the east and moving westward throughout the summer. Surveys began on the 30th of May and continued until the 9th of September. The first year of surveys yielded 735 capture records totally approximately 2815 individuals captured/sited, representing 17 reptile and amphibian species.

During the summer of 2015, we surveyed 16 sites in 12 southeastern counties of North Dakota. Logan County was not sampled in 2015 as a result in the county only having a single WMA large enough. In addition to the 12 counties sampled during 2014, Bottineau County in north-central North Dakota was also sampled in 2015. The single site surveyed in Bottineau county was done in conjunction with the Becoming an Outdoors Woman event hosted by North Dakota Game and Fish (NDGF) at Lake Metigoshe state park. This site was not surveyed the same as the other sites, but the data is still included in our report. The data for Bottineau are not complete, therefore only summary data will be provided. Three of those 16 sites were repeated samplings of sites from the 2014 surveys to compare results and survey methods between years. The other thirteen sites were new sites.

Surveys in 2015 were conducted from the 22nd of June until the 27th of August. The second year of surveys yielded 516 capture records totally approximately 1027 individual animals. The captures or positive identifications spanned a total of 18 species of reptiles and amphibian. We did not find or encounter any Woodhouse's toad (*Anaxyrus woodhousii*) or American toads (*Anaxyrus americanus*) in 2015, but we did find Eastern Yellowbelly racers (*Coluber constrictor flaviventris*), Bullsnakes (*Pituophis catenifer sayi*), and Prairie rattlesnakes (*Crotalus viridis viridis*) which were not encountered in 2014.

During the early part of 2016 (May 5th – June 15th), additional visual transect surveys were conducted by the PI and field technician. Surveys in 2016 were limited to two sites, Brewer Lake and Mirror Pool WMA. Brewer Lake was surveyed again due to the smaller number of man-hours put in at that site in 2015 due to the weather. There was an additional 32 man-hours put in at Brewer Lake, but no additional trapping was done. Mirror Pool WMA was sampled again to validate that all herpetofauna diversity had been captured in the previous two sampling events at that site. There was an additional 25 man-hours put in at Mirror Pool in addition to 1008 trap hours.

Sites were sampled for 7 consecutive days in most cases, but survey methods were altered to reduce the travel time and distance each week. Sites were visually surveyed for only a few days during the 7 sampling days, but those visual surveys lasted longer in 2015 (~ 8 hours) than during the 2014 surveys (~4 hours each day for 5 days). Traps were in place for 7 consecutive days in each of the survey years. During the 2015 survey period we changed protocol so that visual surveys were conducted only every other day at each of the paired sites each week. This change resulted in a decrease in the time traveling each day and total miles driven during the sampling process.

Determination of absent species and new county records were determined using distributions according to herpnet.net represented by Table 1 (Christopher Smith and Jeff LeClare, accessed 4/2015). The reason for using those distributions versus those listed in Wheeler (1947, 1966) or

Jundt (2000) is because they are the most up-to-date and previous records were examined to determine correct identification. Many of the previous records were misidentified (Pers. Comm. Christopher Smith and Jeff LeClare), for example many of the American toad (*Anaxyrus americanus)* records from Wheeler (1966), were actually Canadian toads (*Anaxyrus hemiophrys*). Use of the most current and rigorously checked herpetofauna distributions provides the most conservative estimate of species distributions and therefore does not emphasize missing species but rather 'new' country records. Table 1 does not have any information on Bottineau County as it was initially not in the study area and the herpnet.net site was no longer available after data was collected in that county. For consistency sake, we chose not to include expected species or new country records for Bottineau County.

For each site the reported man-hours only include time spent checking traps or doing visual encounter surveys. Time spent processing specimens or setting up traps was not counted toward the total man-hours spent at each sample location. Only species that were captured or could have a 100% correct identification from a visual encounter were recorded. Those individuals who were not captured and/or could not be identified with 100% certainty were not included in our records. The most common example of this were garter snakes located on gravel roads but that evaded capture. Due to our inability to differentiate the two garter snake species from a distance, those observations were not recorded.

The principal investigator, field technician, Kyle McLean from NDSU, Christopher Smith from MN DNR, and Jeff LeClare from MN DNR were all consulted on differentiating Tiger salamander captures. Tiger salamander species never exhibited 100% classification agreement between *Ambystoma tigrinum* and *Ambystoma mavortium melanostitum*, therefore all records for Tiger salamanders were listed as *Ambystoma sp.* but these species need further, future clarification.

1. **CONFIRM THE PRESENCE/ABSENCE OF HERPETOFAUNA SPECIES IN SOUTHEASTERN NORTH DAKOTA.**

Table 2 summarizes the species captured in 2014 for each of the sampled counties. In total, we captured 17 species of reptiles and amphibians. The bottom rows of Table 2 are the total species captured for each county, the species that were absent but expected given the distributions from herpnet.net, and the number of species detected that were 'new' county records according to herpnet.net. Table 3 summarizes the species captured during the 2015 and 2016 surveys. Once again the table's bottom three rows include total number of species detected, the number of species expected by were absent, and any 'new' county records. Any new county records listed in Table 3 are records that were new according to not only herpnet.net, but also the 2014 survey data.

Table 4 summarizes all three yeas of the survey data. In the summary table, we combined the results for all survey time periods, including missing species and new county records for each county. County herpetofauna diversity ranged from 3 species on the low side (Logan) to 12 species (Barnes County).

Survey results suggested 40 separate County species were not detected. This was determined by summing up the number of species expected but not captured in each of the 13 counties in the original proposal. The number of missing species ranged from 0 to 7 (LaMoure and Logan Counties had 0 missing species, while Burleigh County was missing 7).

In contrast to the missing species, our surveys resulted in 30 separate new county records (using Table 1 as a guide). These 30 new county records were again calculated by summing all of the individual county records across both survey years. New county records ranged from 0 (Richland and Stutsman Counties) to 5 (Sargent County).

CASS COUNTY:

Cass County was sampled from May 30th – June 6th, 2014. Hamilton Wells Wildlife Management Area (WMA) was selected as the sample site. A total of 42.84 man-hours were put in at this site. Six species were captured, including the Northern Leopard frog (*Lithobates pipiens*), Canadian toad (*Anaxyrus hemiophrys*), Common Snapping turtle (*Chelydra serpentine*), Western Painted turtle (*Chrysemys picta belli*), Northern Prairie skink (*Plestiodon septentrionalis*), and the Plains Garter snake (*Thamnophis radix*).

Hamilton Wells WMA was resampled in 2015, from August 11th – 19th, 2015. A total of 31.91 man-hours were put during this resampling event. The resampling event resulted in a total of eight species. The second year of sampling added the Great Plains toad, Boreal Chorus frogs (*Pseudacris maculata*), and the Cope's Gray Treefrog (*Hyla chrysoscelis*). The Common Snapping turtle was the only species detected in 2014 that was not found again in 2015.

Brewer Lake WMA and Recreational Area was surveyed in 2015. This site was surveyed from July 13th to July 19th, 2015. Due to a series of storms and inclement weather during this sampling period, there were only 25.4 man-hours put in at this site in 2015. Additional surveys were conducted from May 5th – June 15th, 2016 to bring the updated man-hours total to 57.4. Brewer Lake 2015 results suggest this site was not a very diverse site, as only a total of 6 species were found, each with only a single or few individuals. Surveys recorded Canadian toads, Northern Leopard frogs, Great Plains toads, Western Painted turtles, a single Northern Prairie skink, and a single Wood frog (*Lithobates sylvatica*).The additional surveys/man-hours logged in 2016 resulted in the addition of two species (Boreal Chorus frogs and Plains Garter snakes). Both these species were found in good numbers (5 *Thamnophis radix* and over 15 *Pseudacris maculate*), but were located in areas of the WMA that were not previously searched in 2015. The regions of the WMA that were visually searched and trapped in 2015 did not turn up any additional species.

RICHLAND COUNTY:

Richland County's first site was sampled June 9th – 15th, 2014 while the second two sites were sampled later in the year from August 28th – September 9th, 2014. All three sites were within the Sheyenne National Grasslands. Man-hours at each site were 35.5, 34.5, and 34.5 hours respectively. In total, ten species were captured and identified, including the Cope's Gray Treefrog (*Hyla chrysoscelis*), Boreal Chorus frog (*Pseudacris maculate*), Wood frog

(*Lithobates sylvatica*), Northern Leopard frog, Canadian toad, Tiger salamander species (*Ambystoma sp.*), Northern Prairie skink, Eastern Garter snake (*Thamnophis sirtalis*), Plains Garter snake, and the Plains Hog-nosed snake (*Heterodon nasicus*).

Hankinson Hills was sampled in Richland County in 2015, from June 29th to July 5th. Due to the high density and distribution of livestock, Hankinson Hills' sampling was extremely limited. A total of 28 man-hours was put in at this site. A total of 4 species were recorded, including Boreal Chorus frogs, Plains Garter snakes, Western Hognose (*Heterodon nasicus*), and Northern Prairie skinks. Once again captures were few and far between, with only 3 Plains Garter snakes, 2 Northern Prairie skinks, and a single Western Hognose recorded. Chorus frogs were heard frequently and many tadpoles were recorded, but no adult Boreal Chorus frogs were ever seen or captured.

BARNES COUNTY:

Clausen Springs WMA in Barnes County was sampled from June 19th – June 25th, 2014 with a total of 42.25 man-hours logged. The six species recorded included the Boreal Chorus frog, Northern Leopard frog, Common Snapping turtle, Western Painted turtle, Plains Garter snake, and the Smooth Green snake (*Opheodrys vernalis*).

Koldok WMA in Barnes County was sampled from July 13th – 19th, 2015. A total of 28.48 man-hours was put in at this site. The reduced man-hours was once again due to a period of heavy storms that rendered some of the roads impassable. Koldok WMA also had a high proportion of its area covered in vegetation that was extremely dense and tall, which limited our ability to locate and capture any herpetofauna. Vegetation around the water bodies was also thick enough to impede movement and was at least waist to shoulder high. These areas of tall, dense vegetation make visual surveys difficult to impossible. Surveys resulted in the capture of a total of 7 species. Species recorded included a single Canadian toad, many Great Plains toads, numerous Northern Leopard frogs and tadpoles, two Western Painted turtles, two Smooth Green snakes and a single paedomorphic Tiger salamander.

RANSOM COUNTY:

Mirror Pool WMA in Ransom County was sampled from June 9th – 15th, 2014. This site was sampled concurrently with the first site in Richland County. A total of 35.5 man-hours were put in at this site. A total of nine species were positively identified at this site, including the Cope's Gray Treefrog, Boreal Chorus frog, Northern Leopard frog, Canadian toad, Common Snapping turtle, Western Painted turtle, Northern Prairie skink, Eastern Garter snake, and the Plains Garter snake.

Mirror Pool WMA was resampled in 2015, from June 29th to July 5th. The resampling resulted in a total of 10 species recorded. All but one of the previously recorded 9 species were once again captured. The Northern Prairie skink was not found in 2015 after initially being detected in 2014. In addition to the original eight species (Cope's Gray, Boreal Chorus, Northern Leopard, Canadian toad, Common Snapping turtle, Western Painted turtle, Plains

Garter snake, and Eastern Garter snake), we also recorded Tiger salamander larva and several adult Wood frogs. Even though we recorded more species the second year of sampling, total number of captures at this site were dramatically reduced. A total of 29.94 man-hours were put in at Mirror Pool during the 2015 sampling period.

Fort Ransom WMA was also sampled in Ransom County in 2015. This site had 35 man-hours put in from August 24th to August 30th. We recorded a total of 7 species on Fort Ransom WMA. We recorded a single Boreal Chorus frog, 4 Plains Garter snakes, a single Cope's Gray Treefrog, many Northern Leopard frogs, 8 Western Painted turtles, and a single Common Snapping turtle.

SARGENT COUNTY:

2014 surveys captured ten species in Sargent County. The sampling site was Tewaukon WMA, which was sampled from July 1st – July 7th, 2014. We put in a total of 47 man-hours at this site. Species recorded included the Boreal Chorus frog, Northern Leopard frog, American toad (*Anaxyrus americanus*), Canadian toad, Great Plains toad (*Anaxyrus cognatus*), Tiger salamander species, Western Painted turtle, Northern Prairie skink, Northern Redbelly snake (*Storeria occipitomaculata*), and the Plains Garter snake.

Mezaros WMA in Sargent County was surveyed in 2015 from August 17th to August 23rd. A total of 34.57 man-hours were logged at this site. Capture records consisted primarily of Canadian toads and Northern Leopard frogs, but we captured a total of 6 species. In addition to the two most abundant species (Canadian toads and Leopard frogs), we also captured a single Boreal Chorus frog, 6 Plains Garter snakes, a single adult Western Painted turtle, and 6 adult Tiger salamanders.

STUTSMAN COUNTY:

Arrowwood National Wildlife Refuge in Stutsman County was sampled from July 10th – July 17th, 2014. A total of 46.66 man-hours were put in at this site. We documented eight species of reptiles and amphibians at this site. The recorded species included the Wood frog, Boreal Chorus frog, Northern Leopard frog, Great Plains toad, Western Painted turtle, Northern Redbelly snake, Plains Garter snake, and the Smooth Green snake.

Stutsman County was surveyed in 2015 at Chase Lake WMA. Chase Lake WMA was surveyed from June 22nd to June 27th. Surveys resulted in only 3 species recorded in the 32.3 man-hours that were put in at the site. Traps and visual surveys resulted in 5 adult Northern Leopard frogs along with over 100 Leopard frog tadpoles, 5 Smooth Green snakes, and 3 Plains Garter snakes.

LAMOURE COUNTY:

We recorded five species at Cottonwood Creek WMA in LaMoure County. We logged 38.84 man-hours at this site. We documented Boreal Chorus frogs, Northern Leopard frogs, Western Painted turtles, Northern Redbelly snakes, and Plains Garter snakes. This site was sampled from July 30th – August 6th, 2014.

Seth Gordon WMA was sampled from July 20th to July 26th, 2015. The 41.38 man-hours resulted in the capture of 5 species. Most of the captures consisted of Canadian toads (35) or Northern Leopard frogs (85), but we also recorded 6 Boreal Chorus frogs, 2 Plains Garter snakes, and a single adult Tiger salamander found on the road.

DICKEY COUNTY:

Dickey County only had four species of reptile and amphibians recorded during the first year of surveys. We sampled Johnson's Gulch from July 23rd – July 29th, 2014. A combination of inclement weather and mechanical issues (breakdown and damage of the field vehicle) limited man-hours at this site to 33.66. We documented Boreal Chorus frogs, Northern Leopard frogs, Plains Garter snakes, and Smooth Green snakes.

The 2015 survey of Dickey County took place at Hyatt Slough WMA from July 27th to August 2nd. We recorded 7 confirmed Canadian toads, 4 Boreal Chorus frogs, 3 Plains Garter snakes, 3 confirmed Great Plains toads, 41 Northern Leopard frogs, 5 Western Painted turtles, and 3 adult Tiger salamanders. We recorded total of 7 species at Hyatt Slough, but there were a large number of small toads (toadlets – young of year) that we could not positively identify to any species.

The reason we left these toadlets (15 in total) marked as unknown was that we found one DOR (dead on road) toad that appeared it could have possibly been an American toad in addition to the confirmed capture of Canadian and Great Plains toads. With 3 possible toad species present (2 confirmed), we felt it best to not speculate on the identity of these toadlets. There has been very little work done on differentiating juvenile Canadian and American toads, and to our knowledge no published research. We are fairly certain that these toadlets were NOT Great Plains toads, but due to the difficulty in determining if the DOR toad was an American toad or not, it makes distinguishing between American and Canadian toadlets impossible.

KIDDER COUNTY:

Kidder County was sampled from July 10th – July 18th, 2014. The survey site was Dawson WMA, at which we logged 37.66 man-hours. We recorded five species including Boreal Chorus frogs, Northern Leopard frogs, Tiger salamander species, Plains Garter snakes, and Smooth Green snakes.

We surveyed Horsehead Lake WMA in June 2015. The site was surveyed from June 22nd to June 27th for a total of 32.34 man-hours. We only recorded a total of 4 species during the survey period. We captured 7 Plains Garter snakes, 23 Northern Leopard frogs (and ~120 tadpoles), a single Northern Redbelly snake, and a single Western Hognose snake. We also found a shed hognose skin that we could positively identify 100%, but if was found close to the capture of the actual hognose on the next visit so it was most likely the shed of the animal we captured. The hognose was a large female that was gravid (pregnant).

LOGAN COUNTY:

Logan County yielded the least number of recorded species, with only 3 species being documented. We surveyed Logan County WMA from July 30th – August 6th, 2014. Due to limited amount of suitable and/or reachable habitat, less man-hours were put in at this site. We logged 27.66 man-hours, but covered all the searchable habitat multiple times. Logan County WMA is mostly aquatic habitat and a large portion of the terrestrial habitat included an area of PLOTS land which was actively being hayed. The majority of the terrestrial habitat in the WMA was a large, thick patch of thistle (most likely Flodman thistle, *Cirsium flodmanii*).

Northern Leopard frogs were so dense that it was impossible to obtain an accurate count. We recorded densities of 3 - 4 individuals per square meter close to the water's edge. Those densities slowly declined, with a density of 1 frog per 2.5 square meters at a distance of 30 meters from the shoreline. Aside from Northern Leopard frogs, we also documented Western Painted turtles and Plains Garter snakes. Even with only three species recorded, two of these species are county records according to herpnet.net.

Logan County was not resampled in 2015. Since Logan County only has a single WMA and it was small and presented several barriers to proper surveying, we chose not to resample this site. We did request a permit to survey Beaver Lake State Park in the county, but never received our permit. Future work in Logan County, whether on private or public land would increase or knowledge of the herpetofauna in this area.

MCINTOSH COUNTY:

Camp Lake WMA in McIntosh County was sampled from July 22nd – July 28th, 2014. We logged 29.37man-hours, once again due to inclement weather and mechanical issues during the survey period (poor roads resulted in damage to the field vehicle). Once again even though we had reduced man-hours, we feel we conducted visual encounter surveys over a majority of the terrestrial habitat since Camp Lake is largely made up of aquatic habitat and dense cattail beds. We documented four species including Northern Leopard frogs, Tiger salamander species, Western Painted turtles, and Plains Garter snakes.

Lehr WMA was surveyed in 2015 from July 6th to July 11th. The WMA had a large portion that was water and an ongoing avian research project. These two areas only yielded a single capture, even with a large number of aquatic traps in place. We found one Plains Garter snake swimming just off the shore of the north side of the lake. Most of the area where the avian research was conducted had tall, dense vegetation that made visual encounters nearly impossible. Even so, the drift fences set up in that area only yielded a handful of small mammal captures and no reptiles or amphibians. We captured 2 additional

Plains Garter snakes on the edge of a corn field and missed one additional unidentified Garter snake.

BURLEIGH AND EMMONS COUNTIES:

The Oahe WMA was sampled from August 10th – August 16th, 2014. We surveyed two sites within this WMA, one in Burleigh County and one in Emmons County. We also conducted road surveys in various other locations in Emmons County along with several hours of visual encounter surveys on private land closer to Linton. In total we logged 36.9 man-hours in Burleigh County and 47.48 man-hours in Emmons County. We documented 4 species in Burleigh County, including Boreal Chorus frogs, Northern Leopard frogs, Woodhouse's toads (*Anaxyrus woodhousii*), and Western Painted turtles. We captured seven species in Emmons Country, including Boreal Chorus frogs, Northern Leopard frogs, Canadian toads, Woodhouse's toads, Western Painted turtles, Plains Garter snakes, and Smooth Green snakes.

McKenzie Slough WMA in Burleigh County was surveyed from June 22nd to June 27th, 2015. This site was searched for 21.2 man-hours, with an additional 6 hours of audio surveys done at night. Even though this site consisted mostly of aquatic habitats, we managed to place multiple drift fences and terrestrial traps in addition to a greater number of aquatic traps than usual. We also visually searched as much of the habitat as we could, but we were limited by the vast expanses of aquatic habitat and tall, dense vegetation in other areas. None of the terrestrial or aquatic traps yielded a single capture. This site was very unproductive and even though there seemed to be adequate habitat, we were unable to capture or see any living individuals.

The only species records obtained from McKenzie Slough were auditory, meaning that we heard two species of amphibians calling, but never located a single individual. We heard Boreal Chorus frogs in several locations at various times of the day, but could not locate the individuals calling. Chorus frogs were calling both in the WMA and the area surrounding the WMA. We heard a single Cope's Gray Treefrog calling on the first day while we were setting up traps. Burleigh County is quite a ways out of the normal range of this species, but both the PI (myself) and the field technician heard the call and agreed on the identity. We heard this call the first day and then never again, but the frog called multiple times that first day. Follow-up surveys should be conducted to see if an isolated population of this species has been established.

Emmons County was sampled from July 5th to July 11th, 2015. We surveyed Hague WMA in addition to returning to the private land located west of Linton (along with road cruising in between the two sites). The private land was sampled again in October (10/10/15) by the PI, following up on a lead for a Prairie Rattlesnake den site. We put in 35.7 man-hours in July and the PI put in an additional 8 hours in the field in October.

Hague WMA consisted of a large body of water and a large area that had recently been burned. Neither of these two areas produced any captures even with the large number of man-hours and aquatic traps. The only species recorded in the WMA came from the smaller, unburned areas and in the ditches on the roads surrounding the WMA. We only captured a single species in Hague WMA, a single Plains Garter snake that was located on the first day in the unburned area next to the drift fence. We missed two other garter snakes in the same general area during the rest of the week. The other species found near the WMA were Boreal Chorus frogs that were calling in the ditches and wet fields surrounding the WMA.

Searches of the private land west of Linton in July resulted in the capture of two large Bullsnakes on Highway 13 (one dead, one alive), a single Western Painted turtle found in a roadside wetland, and an Eastern Yellowbelly racer that we failed to capture in the pasture. When the PI returned in October, he recorded 13 Prairie rattlesnakes and another juvenile Eastern Yellowbelly racer. All but two of the rattlesnakes were found at what the PI believes is an established den site that has a breeding population of rattlesnakes that utilize that site to overwinter.

BOTTINEAU COUNTY:

Lake Metigoshe State Park was surveyed in 2015 as part of the Becoming an Outdoors Woman Summer workshop hosted by NDGF. This site was surveyed from August 6th to August 9th. The survey duration was not the usual 7 days, but with a large number of participants working on the trap line and visual encounter surveys on 8/9/15, there were still 33.3 man-hours plus an additional 6 hours of road cruising. We recorded 4 species of reptile and amphibians. There was an abundance of Wood frogs, such that any wooded area would produce multiple captures, totaling well over 500 individuals. Northern Leopard frogs were also abundant with over 50 captures in the limited time put in. We also recorded 17 Western Painted turtles, 3 Plains Garters snakes, and a single Boreal Chorus frog.

SUMMARY:

Looking at the 13 counties as a whole, our surveys were able to confirm the presence of 21 herpetofauna species in southeastern North Dakota. Those 21 species represent all of the species we expected to find (with any confidence) in this region. Given our inability to differentiate larval tiger salamanders and have any professional agreement on many adults, the total number of species recorded could be as high as 23 (*Ambystoma mavortium, Ambystoma mavortium diaboli,* and *Ambystoma tigrinum*).

There are an additional four species that we should have theoretically found in our study area. The Plains Spadefoot toad (*Spea bombifrons*) is not technically listed as being present in the study area, but other regional herpetologists (Christopher Smith and Jeff LeClare) suggest it would not be surprising to find that species in SE North Dakota. The False Map turtle (*Graptemys pseduogeographica*), Smooth Softshell turtle (*Apalone mutica*) and the Spiny Softshell turtle (*Apalone spinifera*) are all thought to be located within the study region, but most likely occur in small numbers in only a few locations in the Missouri river and its tributaries and our current sampling method was most likely not appropriate for capturing those species and only one of our study sites was within their suspected range.

The only other documented North Dakota herpetofauna species are the Northern Sagebrush lizard (*Sceloporus graciosus*) and the Mountain Short-horned lizard (*Phrynosoma hernandesi*). Neither of those two species is thought to occur in the eastern half of the state and therefore not expected to be located during the surveys.

While our surveys confirmed the presence of all of the expected herpetofauna, we do not believe there is enough evidence to suggest that all of the 21 species have healthy populations. Numerous species were only located at one or a few sites and in small numbers. In the subsequent objectives and Summary of our findings we will expand on some of the evidence that supports the idea that not all of the 21 documented species are found over a large range and/or in large populations.

2. DOCUMENT SPECIES COMPOSITION AND RELATIVE ABUNDANCES IN SOUTHEASTERN NORTH DAKOTA.

Early in the survey process it became apparent that several common species occurred in such high numbers that marking individuals and collecting all data points on each individual would consume too many man-hours. Since the main objective of this study was to document presence/absence of species, priority was given to conducting an increased number of visual encounter surveys rather than processing (collecting data and marking) hundreds to thousands of individuals from each species. Of the individuals we did collect data on, marked individuals were rarely recaptured. The mark-recapture methods employed during our surveys were not sufficient as a stand-alone method for estimating relative abundance.

While we do not have enough information to infer population size/abundance, we do have enough information to provide insights into which species were locally common and which were rare/less abundant (locally). The Northern Leopard frog was the only species found in all 14 counties, it was also by far the most abundant species encountered (both in the various trap methods and in visual encounters). Of the 1251 capture records, 450 of those were of Northern Leopard frogs; of the 3842 individuals recorded, over 2400 of them were Northern Leopard frogs or tadpoles.

At several of the sites in each year, Northern Leopard frogs were so abundant in areas that the ground seemed to move as we approached. It was not uncommon to find/see several hundred individuals at a time in these sites. Description of the leopard frog densities at Logan County WMA have already been stated, but further evidence of the abundance of leopard frogs at that site was demonstrated by several occasions where a single pitfall or light trap would contain 50 - >250 individuals. Our first day at Camp Lake WMA, we encountered at least 500 newly metamorphosed young-of-the-year Northern Leopard frogs as we were setting up aquatic traps.

Northern Leopard frogs were not always found in high densities, as some sites and times of year yielded fewer capture record, our results suggest that this species is the most abundant/common herpetofauna species in North Dakota. Our results support the previous findings from a landscape genetics study on North Dakota populations (Mushet *et al.,* 2013). The eastern half of North Dakota appears to have at least a steady population of Northern Leopard frogs that while varying temporally and spatially, can be found at extremely high densities in some localities.

Canadian toads were the second most common species. Of the 14 counties sampled, Canadian toads were found in 8 of them. Of the 1251 capture records, Canadian toads made up 152 entries, comprising roughly 458 individuals. The numbers of individuals is most likely vastly underestimated. During the portion of the summer when Canadian toads were metamorphing and dispersing from their breeding habitats, it was common to see hundreds on the dirt/gravel roads during the early morning hours. Given their small size, camouflage, and other roadway traffic it was difficult to obtain accurate estimates of how many were on the road at times. There were also several sites where newly metamorphosed toads could not be identified with a large degree of certainty, but given the infrequency of which we captured the other toad species, these toadlets were most likely Canadian toads.

Several additional species were not widespread or found at a large number of sites, but were locally abundant in at least a couple sites. Larval tiger salamanders were abundant in several of the aquatic trap areas in Tewaukon WMA and Dawson WMA. There were no sites with a large number of adult captures, but given the adult ecology that is not surprising. Great Plains toads were common in the parking lot of Arrowwood NWR and roads near Koldok WMA. There was an increase in the number of sites and individuals found in 2015 when compared to 2014.

Woodhouse's toads were quite common in Oahe WMA during the sampling period, most of the captured individuals were young-of-the-year. Oahe WMA in Burleigh and Emmons Counties were the only two sites we captured/recorded Woodhouse's toads though, so while abundant in this area, they appear to have a very restricted distribution in the study area. Historically, Woodhouse's toads had a wider distribution in North Dakota (Wheeler 1947, 1966; Jundt 2000). NDSU's museum collection contains a single specimen collected near Valley City (Barnes Co.) in June 1961, so we have confirmation that the historic distributions were greater than our current study suggests.

Several species were represented by only a handful of captures and our results suggest these species may be rare or have limited ranges. Plains Hog-nosed snakes were only found in Richland and Kidder Counties, with a single individual captured in three of the four sites. Hog-nosed snakes are notoriously hard to detect (Harper *et al.*, 2010) and recent research has turned up some very interested life history and ecology trends (Harper *et al.*, 2010, Hoaglund and Smith, 2012). The limited number of captures of this species may indicate small populations, or inadequate capture methodology. Both previous research (Wheeler 1996; Jundt 2000) and NDSU's museum record suggest we should have captured Hog-nosed snakes in additional locations.

American toads were only captured at Tewaukon WMA and only three individuals were recorded, and one of those was found dead in a funnel trap. We did not record a single American toad in 2015, we did find a DOR that may have been an American toad, but identification of the carcass could not be confirmed. The failure to capture any confirmed American toads outside of a single site in Sargent County is concerning. American toads were commonly found in Cass, Ransom, and Richland Counties as recently as 2001 and 2003 (Jim Grier, Unpublished Data; Matthew Smith, Pers. Obs.).

Other notable rare encounters include: Northern Prairie skinks were found in 5 counties, but typically only 1 – 2 individuals at each site. Northern Redbelly snakes were only captured in 4 locations for a total of 6 individuals and 3 of those were at a single spot in Arrowwood NWR. Eastern Garter snakes were only found in two locations in 2014, and only one location in 2015 (which was the resampling of Mirror Pool).

3. **Obtain baseline information on the habitat types and ecosystems each herpetofauna species occupies.**

All of the capture data is provided in Appendix A, below we will quickly examine the most frequent habitat selected by each of the species we documented. More detailed habitat modeling/analysis will be done using MAXENT models in Objective #5. Habitat type of each of our capture records were compared to examine the most frequent habitat that a particular species was captured in. A couple of points of caution about these data: First, we have excluded larva amphibians from the analysis since they were always caught in traps in aquatic settings since they are obligate aquatics. Second, the most frequent habitat may be due to selection by the individual, but most certainly also is influenced by our ability to detect and capture individuals in those habitats.

Adult and metamorphosed Northern Leopard frogs totaled 2410 recorded individuals over the course of the two years. Figure 1 below shows the percentage of captures that occurred in several habitat types. Edge habitat was defined as any transition between two habitat types, with the exception of wetland edge which was lumped into the Wetlands category. Shore and riparian are listed separately, the distinction between the two categories is that shore is comprised of any area within 1.5 meters of an open water body (pond, lake, river, etc.), riparian is any area greater than 1.5 meters from an open water body, but no farther than 5 meters. Wetlands are considered as a separate habitat type. Northern Leopard frogs not surprisingly were most commonly found near bodies of water, but this result is most likely driven by the young-of-the-year or newly metamorphosed individuals that were emerging from the water. Adult Leopard frogs were most commonly associated with roads and prairie habitat.

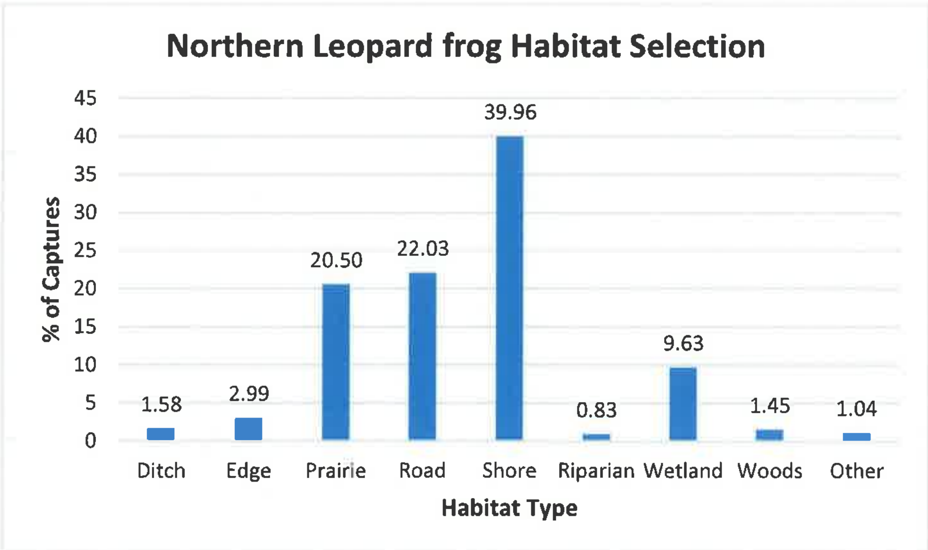

Figure 1: The percentage of Northern Leopard frog captures by habitat type. Only non-larval frogs are considered here.

Adult Canadian toads made up 238 of the individual captures. Similar habitat types to the Northern Leopard frog were used, in addition to a few other. We did not considered larval amphibians in this analysis (excluded tadpoles). As Figure 2 shows, Canadian toads were most commonly associated with wetlands and wetland edge, with over half of the captures coming in close proximity to a wetland. The second most common habitat were roads, which were primarily gravel roads as we did not often stop on paved roads due to safety issues associated with increased speed and traffic. The high number of road captures was primarily due to newly metamorphosed toadlets that were leaving their breeding habitat. We condensed the number of individuals to 1 for each road observation, as often there were hundreds of emerging toadlets at a single location that would have skewed the data.

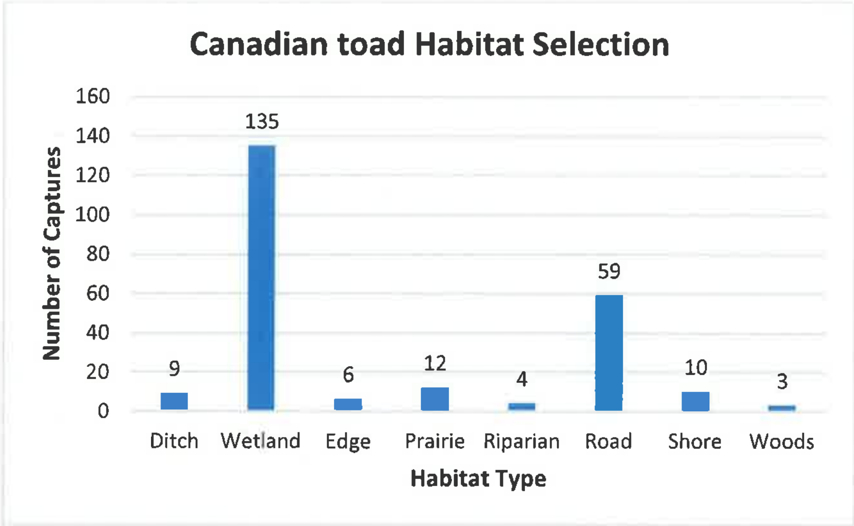

Figure 2: The number of adult and juvenile (non-larval) Canadian toad captures by habitat type during both years of the herpetofauna surveys.

Boreal Chorus frogs comprised 124 of our captures. Once again we did not consider larval (tadpoles) in the habitat comparisons. Chorus frogs overwhelmingly preferred prairie habitat, with 73 of the 124 individuals captured in prairie habitat. We did not distinguish between prairie type (tall-grass, short-grass, mixed-grass, etc.). The next most common habitat types were roadside ditches (again gravel roads) and wetlands and wetland edge. Figure 3 shows a breakdown of the habitat types that Chorus frogs were captured in.

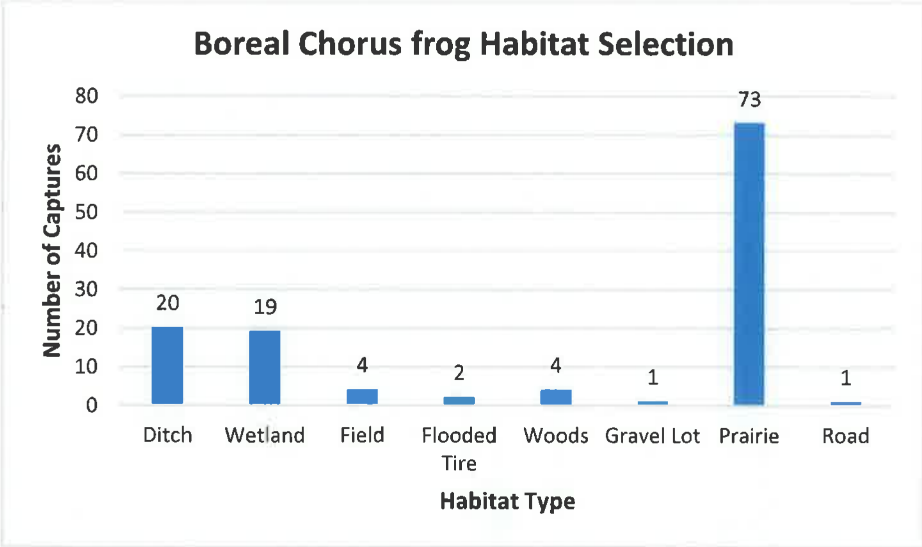

Figure 3: The number of non-larval Boreal Chorus frogs captured by habitat type during the 2014 and 2015 survey seasons.

Great Plains toads were not overly common, but we did capture 75 individuals. There were twice that number of unknown toadlets that were most likely Great Plains toads, but once again without 100% certainty on identification there were left out of the analysis. The non-larval toads were almost always associated with gravel roads. See Figure 4 for the habitat breakdown, but with only 4 habitat types utilized, the number of captures on roadways is quite shocking.

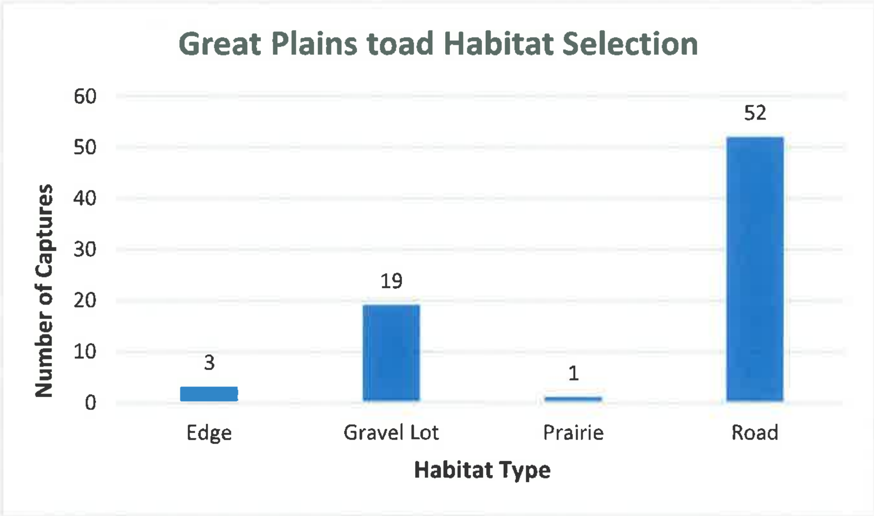

Figure 4: The number of non-larval Great Plains toad captures by habitat type.

Plains Garter snakes were most commonly associated with gravel roads. Of the 119 individuals captured, 50 of them were captured on a road. Prairie habitat was the next most utilized habitat. These data may be skewed by the fact that Garter snakes in tall, dense vegetation were difficult to capture and with two similar species those observations had to be excluded from the data. Figure 5 shows the breakdown of habitat type and the number of captures in each. The 'Other' habitat type included such habitats as corn fields (2), gravel pits (1), lakes (1; actually in the water), a dugout pond (1), and a few 'Edge' observations (4).

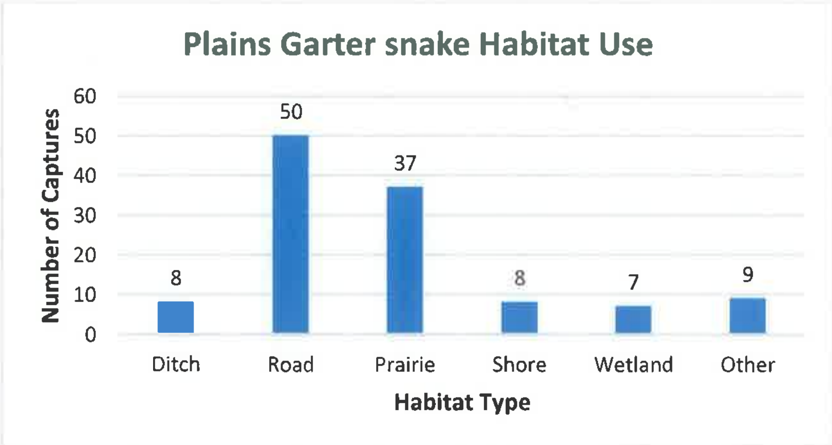

Figure 5: Number of captures by habitat type for Plains Garter snakes.

Western Painted turtles were most often associated with water, as expected, but there was a single capture record of a turtle captured in a prairie (Figure 6). Wetlands were the most common type of water habitat utilized by Painted turtles. Pond and lake habitats yielded more captures than those water habitats characterized by moving water (rivers, creeks, streams, etc.), which is supported by previous research (Anderson *et al.,* 2002).

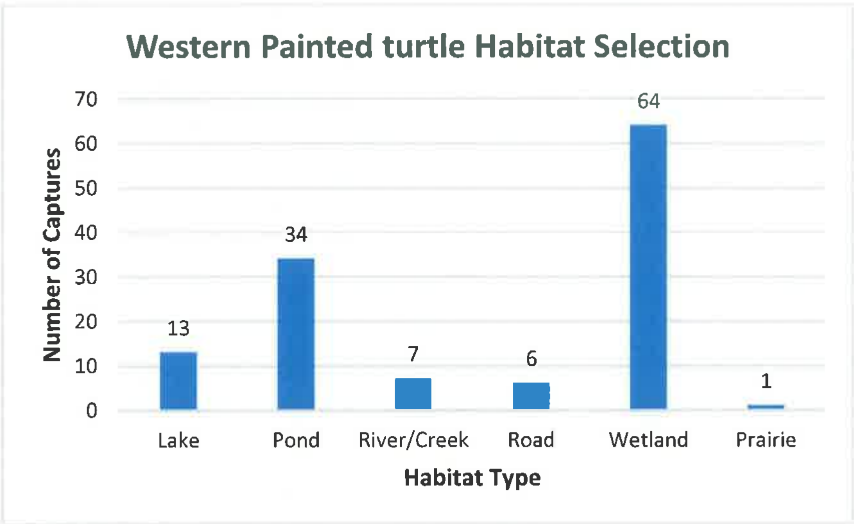

Figure 6: Habitat types and the number of Western Painted turtles captured in each during the 2014-2015 survey periods.

Those species with a limited number individuals were analyzed, but due to the limited sample size we will present the data in paragraph form rather than graphically to save space. Northern Prairie skinks were most often found in prairies, with 6 of 16 captures occurring there. Other habitats that yielded skink captures were edge and ditch habitat (3), tree rows (3), lake shore (1), and a single capture in what is best categorized as oak savanna habitat.

Smooth Green snakes were most often captured in prairie habitat, with 11 of the 25 captures occurring in prairie habitat. In many cases, Smooth Green snakes were most common in areas where other snakes were less abundant or absent. As an example, in Arrowwood NWR, while Plains Garter snakes were found along roads in near water bodies the prairie habitats in which we encountered Smooth Green snakes did not yield a single Garter snake capture. As similar pattern was noted in Chase Lake WMA, with Smooth Green snakes captured in the prairies of the WMA and Plains Garter snakes captured on the roads surrounding the WMA. These may just be a correlation, but future work may want to look at the associations and interactions within herpetofauna communities. Smooth Green snakes were also captured in old gravel pits (6), along roads (4), and edge/ditch habitat (4).

Adult Tiger salamanders were most often captured near water, with ponds (8) and wetlands (5) making up 13 of 23 total captures. The next most common habitat were roads, as 7 individuals were captured during road cruising events, typically during or following a rain event. The only other habitat utilized by adult salamanders was edge/ditch habitat (3 captures).

Wood frogs were most often captured in wooded or forested areas, with 25 of 30 capture records coming in that habitat type. The small number of captures is further biased by the fact that the majority of these captures can from Lake Metigoshe State Park during a single sampling event. Other habitats were we found Wood frogs include ponds (1), oak savanna (1), wetlands (1), wet meadows (2), and a gravel parking lot at night (2). While only 30 capture records were utilized, keep in mind that those records in Lake Metigoshe State Park often consisted of many individuals as newly metamorphosed Wood frogs were often found in large groups during the sampling period. Use of the actual number of individuals found at Lake Metigoshe would further skew the results towards wooded areas.

Like the Wood frogs, Woodhouse's toad habitat data is skewed by the fact that they were only ever captured in Oahe WMA in Burleigh and Emmons counties. Of the 82 individuals captures, the majority (37) were captured along the shore of the Missouri River. Prairie, especially the sandy prairie of the Oahe WMA river valley was also utilized by Woodhouse's toads (21 captures). Toads were also captured in ditches (18), roadways (4), and riparian areas off of the river (2). It is important to note that since all of the captures were in a small area, soil type may be heavily influencing the results.

The Eastern Garter snake was most commonly associated with wet meadow habitat with 5 of the 12 captures. The low-lying area between the wetlands in Mirror Pool WMA yielded the most captures. This habitat is thick with *Equisetum* species and the soil is soft and moist. This area yielded a majority of captures in each of the 3 years it was sampled. Four individuals were captured off of gravel roads and only 3 of the 12 were associated with prairie habitat.

Cope's Gray Treefrogs were most commonly associated with wetland habitat (4 of 11 captures). The captures in wetland habitat occurred during the peak mating season each year for this species. Outside of the mating season, treefrogs were most commonly found in the other habitats. Roads and prairie habitat yielded 3 and 2 captures respectively. Wooded and oak savanna habitats each had a single capture as well.

Common Snapping turtles were associated with water in all but two captures (8 total captures). The two other captures were on roads, with one adult found on the road and one hatchling found in a flooded tire rut on a gravel road. Three captures were in habitats that would be classified as wetlands, 2 in rivers, and a single capture in a lake.

Only 6 Northern Redbelly snakes were captured. Half of those captures were in a single gravel pit in Arrowwood NWR. The other three were captured in ditch (1), riparian (1), and roadway (1) habitat. The three captures in the gravel pit were all gravid/pregnant females, which were most likely using the gravel pit as a gestational area until giving birth.

The two Eastern Yellowbelly races that were seen were both found on private property. One was found cruising around on a hilltop pasture/prairie while the second was a juvenile found in a mammal burrow in a rock outcrop later in the fall (October). A subsequent visit to this site for an unrelated research project did turn up 3 additional individuals that were found at or near suspected Prairie Rattlesnake hibernacula.

The two Bullsnakes captured in 2015 were both found on the same paved road (Highway 13 just outside of Linton) and were located within 10 meters of each other. The first one was found alive (we barely missed running it over around dusk). The other was DOR, having just recently been hit. Additional searches in this area may provide insights into habitat selection of this species in the eastern portion of its North Dakota range.

We only captured 3 American toads during the survey period. All three of these were found in 2014 at a single site. All three were found close to roads, either in or just north of Tewaukon WMA. Two were captured in traps in a roadside ditch where we had set up a drift fence. The third was found on a paved road at night next to the local cemetery. The fact that no other sites produced a definitive American toad capture (or their calls) is a troublesome observation. American toad range and populations may be in the decline in the state. Once again, previous fieldwork by myself and Dr. James Grier found that American toads were quite common in areas of the Sheyenne National Grasslands and other natural areas in Cass, Ransom, and Richland Counties.

All four Plains Hog-nosed snakes found were closely associated with roads. Two were captured crossing a dirt or prairie road and the other two were found in ditches next to gravel roads. This is a disturbing pattern as we know very little about this species in North Dakota and of the 14 Plains Hog-nosed snakes that the PI as either personally captured or been given location data on during his time in ND, all 14 have been within 10 meters of a road. After sampling was complete in 2015, the PI did find a DOR large, adult male only 15 meters from the previous capture in an area of Sheyenne National Grasslands in Richland County in 2014. This species' close association with roads may be an artifact of its ability to remain hidden in other habitat, but it may also actively select habitat near gravel roads. Further work should be done to determine if roads influence the life history of this species and its population dynamics.

4. **Design, implement, and evaluate herpetofauna survey and inventory methods for future use.**

Subjective evaluation of the first field season resulted in several planned changes for the 2015 field season. First, varied drift fence configurations were not as effective as straight-line set up. All drift fence configuration in the second year were a single 30 meter (100 foot) straight-line configuration. Second, cover boards did not result in a single capture record for any species during 2014, therefore cover boards were not used during the second year of surveys. Light traps (pitfall traps underneath a white sheet with a spotlight) were added to the methods and resulted in a good number of amphibian captures, so they will be utilized again in 2015. Funnel traps only resulted in a few captures of the snake species they are designed for, so we used a different funnel trap design in 2015 (Pers. Comm. Jeff LeClare).

Lastly, checking and setting trap arrays was very time consuming and visual encounters were one of the most common means of capture, therefore we set up fewer trap arrays in 2015 and also changed up the visual survey methods. During the first year of surveys we spent 3 – 4 hours per day at each sampling site (during a given week we sampled 2 – 3 sites). During the second year, we only visited one site per day and spent 7 – 8 hours checking traps and doing visual survey. This resulted in less miles driven (11,268 in 2014 vs. 10,023 in 2015) and a more efficient visual sampling of each study site.

Both years of data were combined to look at the number of capture records associated with each trapping/capture method. For this summary, we only looked at capture records, not the number of individuals. Aquatic traps were quite effective and often had many individuals within a single trap. Some records for pitfall traps were also skewed by having numerous individuals in a single trap (>250 leopard frogs in a single pitfall). We therefore use the number of captures not the number of individuals to determine what are the most effective methods.

Figure 7 below shows that the majority of capture events came from Visual Survey methods (walking or driving) with 860 of the 1251 records coming from visual methods. That being said, for aquatic species all of the aquatic trapping methods seemed effective and would be more productive than visual surveys. The use of nets or seines may decrease the amount of time spent and increase the capture rate over some of the aquatic traps we used, but we did not use these methods. Auditory records only made up 28 events, but this was most likely due to the surveys starting towards the end of amphibian mating season. Listening for frog and toad calls has been a proven methods for determining community composition of frog and toad species (Stevens and Paszkowski, 2004).

The drift fences and associated traps (pitfalls and funnel traps) seemed rather unproductive during the surveys, but did result in 168 capture events. The silt drift fences did not stand the test of time and had to be often replaced during the course of a single field season. If drift fences and associated traps (pitfall and funnel) are to be considered in future endeavors, they should utilize rolled aluminum or tin and be used in longer term studies at a smaller number of study sites. A cost-benefit analysis is difficult, but the best way to determine herpetofauna diversity may to employ a large number of people over a short period of time for an intense series of visual searches and a select number of trapping methods. Only cover boards and pipe refuge traps yielded no captures, but all other methods were effective to varying extents.

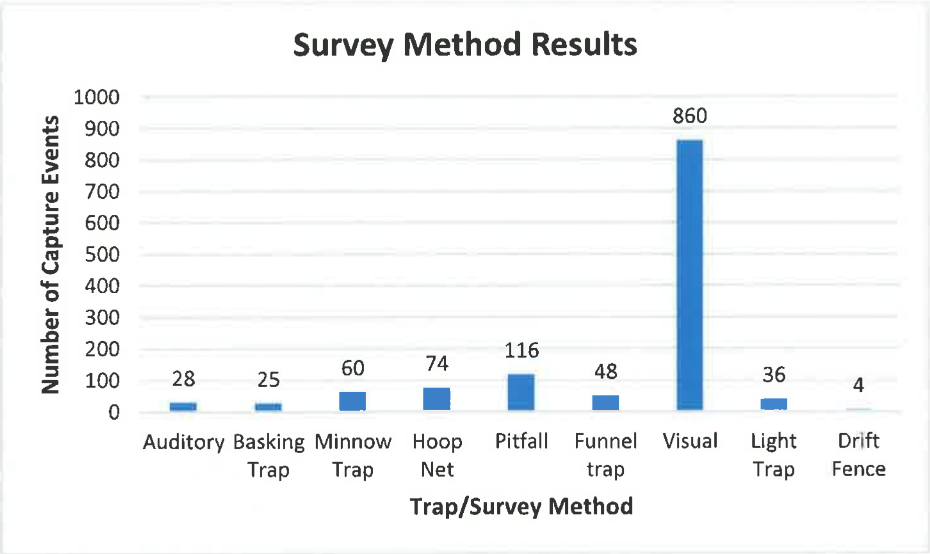

Figure 7: A breakdown of how each trapping/survey method performed. There was a total of 1251 separate capture events and this graph shows how many each method was responsible for.

Overall, our recommendation on future survey method depends on the objectives of the project. Terrestrial trap methods were associated with increased time and labor expenditures and produced fewer capture events given those increases when compared to visual encounter surveys. Long-term surveys at fewer sites would still benefit from drift fences and their associated terrestrial traps. The use of rolled aluminum, longer fence arrays, and increased pitfall and funnel traps work well for estimating terrestrial herpetofauna diversity. The current project covered too large of an area, surveys were only 7 days long, and too many sites were sampled to fully benefit from the terrestrial trapping methods. We recommend that longer term sampling in a handful of locations would not only produce useful data on population trends and herpetofauna community, but would be ideal for the implementation of terrestrial trap methods that may allow a small number of individuals to obtain a large number of captures and to fully quantify biodiversity in those sites.

Aquatic trapping methods were effective, but needed the extended time period to better represent the diversity. If a project wanted to quantify aquatic herpetofauna diversity a combination of sound/audio traps (recording devices) and intense periods of seining would most likely produce the best results for the least effort and lowest cost. Again this recommendation is subjective to the extent of the study area and goals of the project. Amphibian call surveys are very effective in detecting breeding anurans (Stevens and Paszkowski, 2004), but are only viable during the mating season(s) and would not be effective for species that do not call (turtles, salamanders, etc.).

Visual survey methods were the most productive and while labor is not cheap, we recommend hiring larger crews to do intensive sampling at future sites to better quantify herpetofauna diversity. Increased labor costs would likely be mostly offset by decreased equipment costs and if crews stayed on site for several days in a row, the decrease mileage would yet again save on project cost. In addition, visual surveys (along with most trapping methods) are most effective during the beginning and end of the active season. Herpetofauna exhibit much more movement and occur in higher densities toward the beginning and end of the active season. Early in the active season, mating and dispersal form overwintering sites results in increased activity and higher densities. Late in the active season, young of the year and movement towards overwintering sites also results in a higher number of captures. Intense visual sampling during the spring and fall may be the most effective way to quantify herpetofauna diversity in North Dakota. Limiting sampling to these time periods also reduces the overall survey costs as field technicians could be employed for shorter time periods.

Given the goals of this project, we feel the methods employed adequately estimated herpetofauna diversity in the study area. The two sites we resampled in 2014 and 2015 showed similar patterns and suggest while we may have missed species in a single sampling period, we did not miss a large portion of the species (resampling events resulted in a total of 1 – 2 new species). In addition, the added hours put in at Brewer Lake WMA and Mirror Pool WMA in 2016 supported the trend we saw in 2015. Resampling sites can result in the addition of 1 – 2 species, as in the case of Brewer Lake, but one additional resampling likely captures all of the herpetofauna diversity (no additional species found at Mirror Pool in 2016). The number of man-hours or sampling intensity during the initial sampling event also factors into the likelihood of finding additional species on subsequent sampling events.

We pooled data from all three years to investigate herpetofauna diversity and test for any significant relationships to methodology or region. We also summarized species richness, species diversity, and community distinctiveness. Table 5 summarizes the total number of individuals captured at each site across all three years of the study. These data were used to calculate all subsequent measures of diversity and richness.

Next each site had species richness (# of species) and species diversity calculated. Species diversity was quantified using the Simpson Reciprocal Index (1/D) (Hill, 1973; McCune and Grace, 2002; Gibbs *et al.,* 2008). The Simpson's Reciprocal Index (1/D) reflects not only the number of species present, but also the relative distribution of individuals among species, it reflects how 'balanced' or 'even' communities are in terms of how individuals are distributed across herpetofaunal communities (Gibbs *et al.*2008). Values for Simpson's Reciprocal Index range from 1 to the number so species present (species richness). Higher values indicate greater diversity or evenness. Table 6 summarizes the species richness and species diversity for each site.

Mirror Pool WMA had the highest species richness of any one site, with 11 species. Barnes County was the most diverse County, but Mirror Pool in Ransom County was the most diverse site. Comparing the species richness and species diversity values, several things stand out. McKenzie Slough, Hague WMA, and Lehr WMA all had diversity values that equaled richness values. In all three cases, only a single species was found at these sites and therefore diversity values will always equal richness values. Mirror Pool had a relatively low diversity value, this was due to the fact that even though Mirror Pool had 11 species, over 80% of the captured individuals were Canadian toads, while most other species were found in much lower abundances. This pattern was seen in many of the sites with higher species richness. Those communities were dominated by one or two abundant species (typically Canadian toads or Northern Leopard frogs) with all other species occurring in fewer numbers.

Next we used the Jaccard coefficient of community similarity to compare herpetofauna communities between all possible pairs of study sites (McCune and Grace, 2002). This similarity coefficient compares the total number of shared species (present in both sites) to the total number of species among sites. Values of 1 indicate the two sites have identical species composition, while values less than 1 indicate the percentage of shared species. Table 7 shows the matrix of all pairwise site comparisons. We used a cut-off of 70% similarity to consider sites as significantly similar. Only 4 comparisons yielded similarities higher than 0.7, those are highlighted in Table 7. The noteworthy similarities were Clausen Springs WMA with Fort Ransom WMA, Logan Co. WMA with Cottonwood Creek WMA, Meszaros Slough with Hyatt Slough, and Koldok WMA with Hyatt Slough.

Next we used the pair-wise similarity comparisons along with geographic distance to determine if community similarity was due to geographic proximity. We used a Mantel Test (McCune and Grace, 2002) to test for a significant correlation between the Similarity matrix and a matrix of geographic distances. Geographic distance between each pair-wise set of study sites was determined using the Geographic Distance Matrix Generator version 1.2.3 (http://biodiversityinformatics.amnh.org/open_source/gdmg/). The Mantel test was not significant ($P = 0.102$) with a correlation of -0.161. These results suggest that herpetofauna community similarity is not due to close proximity of sites, but is most likely influenced by some other factor.

We used species richness data as the dependent variable to examine some possible relationships in herpetofauna species richness throughout the study area. A series of linear regressions were performed to investigate the relationship between species richness and latitude, longitude, number of man-hours, and study site size. Man-hours and study site size (in acres) were $\log_{10}$ transformed to meet the assumptions of normality. Man-hours only included the hours reported for visual surveys and data collection, it did not include trap hours. Each independent variable was regressed against species richness individually using JMP (Ver. 12.1.0). For all of these regressions we excluded the Lake Metigoshe site as it skewed our distributions and violated regression assumptions. Biologically it was excluded because it was not sampled in the same manner as all the other study sites and was not included in the original proposal.

There was no significant relationship between species richness and latitude ($F_{1, 23}$ = 0.6329, P= 0.4344). The relationship between species richness and study site size (in acres) was also not significant ($F_{1, 23}$ = 2.6766, P = 0.1154). There was a significant relationship between species richness and longitude as well as with man-hours. The regression between species richness and longitude had an adjusted R^2 value of 0.32 and was significant ($F_{1, 23}$ = 12.3, P = 0.0019). The regression suggests a pattern of increased herpetofauna diversity in the eastern portion of the study site with a decrease in species richness as you move westward. Figure 8 shows the regression plot and the relationship between species richness and longitude.

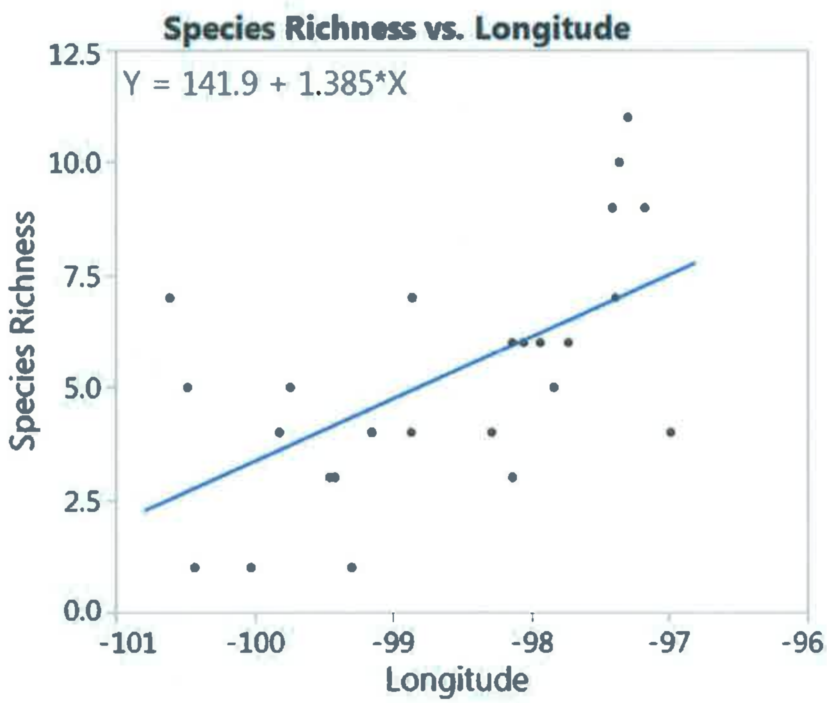

Figure 8. Graph of the regression between species richness and longitude.

The regression between species richness and man-hours (log-transformed) was also significant ($F_{1, 23}$= 11.16, P = 0.0028). While this significant relationship is intuitive, these results may suggest that our methodology may have influenced estimates of species richness. These concerns are most likely not warranted as there was a relationship between man-hours and longitude. For example, Mirror Pool was the site with the highest species richness and highest man-hours. Sites that were resampled or allowed for the highest number of man-hours were those closest to Fargo. Species richness also happens to be highest in the eastern portion of the study site, so the significance of this regression has to be considered carefully.

5. **Conduct MAXENT habitat modeling at both the regional and state-wide scales for reptile and amphibian species with adequate capture records.**

We developed predictive models of regional and state-wide distributions some of the more common herpetofauna species using a maximum entropy method (Maxent; Phillips *et al.*, 2006; Phillips and Dudik, 2008). We utilized the program Maxent to create ecological niche models with presence-only locational data from the first two years of our surveys (Elith *et al.*, 2010). Maxent has been shown to perform well with small samples sizes (Wisz *et al.*, 2008) and has great potential for identifying distributions and habitat selection of wildlife (Baldwin, 2009; Forero-Medina *et al.*, 2012). Of the 21 herpetofauna species recorded during our study, only 8 species were included in the habitat modeling. Although Maxent performs well with small sample sizes, only these 8 species had adequate capture records to produce useful results (Pearson *et al.*, 2007; Elith *et al.*, 2011).

Ecological niche models require inputs of locations where each species is present along with ecological, environmental, and geographical data layers. These data layers are typically from raster datasets commonly used with ArcGIS. We used 19 'BioClim' variables that describe monthly precipitation and temperature as part of our eco-geographical variables (http://www.worldclim.org). In addition to the weather variables, we included altitude and the 2011 National Land Cover that described "vegetational and artificial constructions covering the land surface" (http://www.nd.gov/gis/data-portal.html). The national land cover data was divided into 15 land classes. In total, 21 variables were chosen to start the model creation process. All landscape variables we high-resolution (30 second arc or 1 km^2).

Altitude and the 19 BioClim variables were tested for correlations prior to starting the model selection process. Correlations were tested with ENMTools (Ver 1.4.4) for multicollinearity (Warren *et al.*, 2010). For variables that were highly correlated ($R^2 \geq 0.75$), the less ecologically relevant variable was removed. A subset of ten biologically meaningful variables were selected from the original twenty variables due to correlations. The ten variables that entered into the model selection process were Annual Mean Temperature, Mean Diurnal Range, Temperature Seasonality, Minimum Temperature of Coldest Month, Temperature Annual Range, Annual Precipitation, Precipitation of Wettest Month, Precipitation of Driest Month, and Precipitation Seasonality.

Maxent was allowed to select background pseudo-absence locations from the same counties that the surveys took place. This provides Maxent with a pseudo-absence file that has the same bias as the presence locations (Young *et al.,* 2011). For state-wide niche models, we included a bias file to represent sampling effort to reduce the sampling bias (Philips *et al.,* 2009; Young *et al.,* 2011). Our bias file tells Maxent that only counties with presence locations were sampled.

For each species, we partitioned each set of location data into test and training data (75% and 25% respectively). We also ran jackknife validations to minimize the bias of small sample size and to evaluate the importance of each predictor (Forero-Medina *et al.*, 2012). Models were run using the default Maxent settings, except that the number of iterations was set at 5000 instead of the default 500. To evaluate model complexity and reduce over-fitting, we ran each model using different regularization betamultiplier values (1 – 12). These regularization values affect the fitting model and can be thought of as a smoothing parameter (Young *et al*., 2011; Radosavljevic and Anderson, 2014). This resulted in 12 models for each species. To find the best model (most parsimonious) we used AIC scores produced from ENMTools (Ver. 1.1.4) to choose the regularization multiplier that was best (Warren *et al.*, 2010; Radosavljevic and Anderson, 2014).

All Maxent models were evaluated for fit based on the Area Under the Curve (AUC) of the Receiver Operating Characteristics/Curve (Fielding and Bell, 1997). AUC measures the model's likelihood of correctly distinguishing between presence and random locations. An AUC value of 0.5 indicates that the performance of the model is no better than random, versus a value of 1.0 which indicates perfect model performance/fitting (Young *et al*., 2011). We deemed our model's performance as good if both the training and testing AUC were above 0.7 (Elith *et al*., 2006; Elith *et al*., 2011). We ran 50 model replications and used the average of them in our final distribution model (Barnhart and Gillam, 2014). All models were run in the RAW form for use in ENMTools, but final models were run in the Logistic form for better interpretation.

All models were run using only independent presence locations. Deletion of duplicate records greatly reduced the number of location records for each species, but standard Maxent practice recommends removing duplicate records that fall into the same map pixel as a means of spatial filtering (Phillips and Dudik, 2008). Given the design of this survey project, many records were deleted as multiple individuals caught in traps or found at the same location were reduced to a single record. The use of only independent/separate presence locations help eliminate overfitting and spatial autocorrelation of our ecological niche model (Radosavljevic and Anderson, 2014), but did limit the number of species we could incorporate and/or the extent to which we could map species distributions.

Tiger salamanders presence data consisted of 100 records, but the majority of those records were identical. Larval salamanders captured in minnow traps were the most common record during our surveys. This produced multiple captures at a single location, elimination of duplicate records resulted in only 14 unique presence locations. Due to the limited number of independent locations, we were only able to run 14 replicates for the Tiger salamander (only 14 random splits of the data were possible) (Phillips *et al.*, 2006).

Model selection suggested that a regularization multiplier of 7 was the best model for Tiger salamanders. Averaged AUC of the replicate models was below the cutoff of 0.7 (average test AUC was 0.647, with a standard deviation of 0.187). Figure 9 below shows the probability of finding Tiger salamanders in the 13 county study region. This figure shows that a majority of the SE portion of North Dakota has slightly over a 50% chance of having Tiger salamanders present. There is a barely discernible drop in the probability towards the middle of this region, illustrated by a slightly lighter hue in the central and western portions than in the east. The probability distribution for this region is fairly homogenous which makes it difficult to interpret. Replicate max, min, and median show a similar pattern with probabilities ranging from 0.38 to 0.69, but little to no variation in any of the distributions. Small sample sizes most likely make this model inappropriate for much interpretation.

The eco-geographical variables that were most important in this model were Precipitation Seasonality (88.8%) and Temperature Annual Range (8.9%). Land cover type did not significantly contribute to the final model, and could have been removed without affecting model performance. Due to the small number of independent locations and the failure of our models to meet the minimum AUC, we did not model Tiger salamander distribution at the state-wide spatial scale.

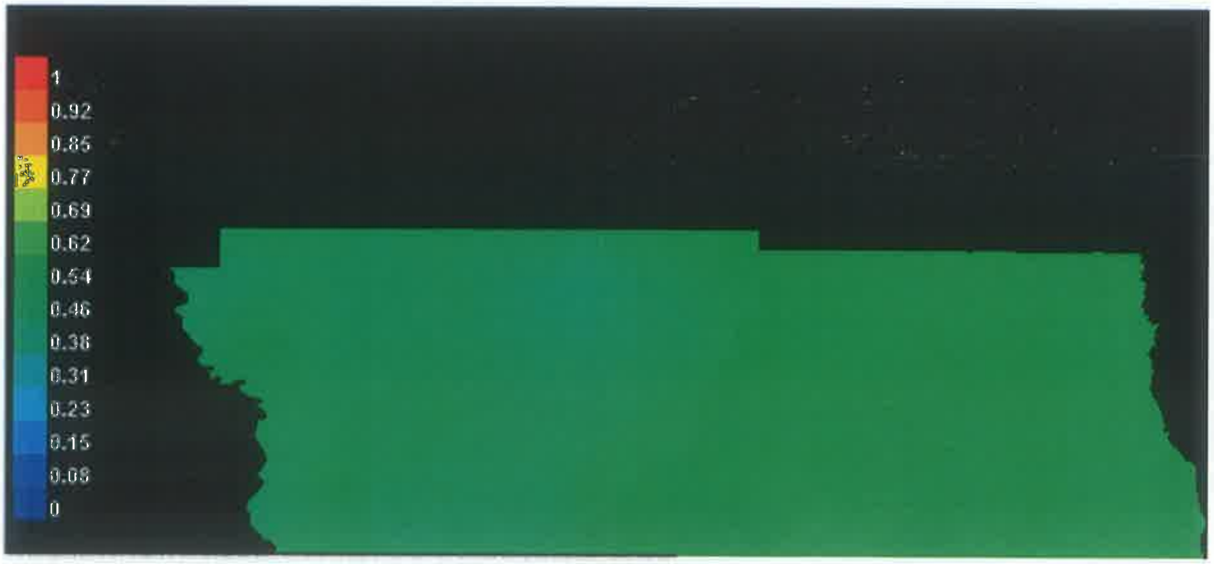

Figure 9. The graphical depiction of the species distribution models for Tiger salamanders (*Ambystoma tigrinum*) in the 13 counties in southeastern North Dakota. Areas of high probability are shown in red, while blue represents areas of low probability.

Canadian toad species distribution models were based on 49 independent presence locations (237 total data points with duplicates removed). Again sample size was greatly diminished by removing duplicate points. Model selection suggested that a regularization multiplier value of 2 should be used with Canadian toads. The 49 replicates run using these presence data produced an average AUC value of 0.88 (SD = 0.172), suggesting our model had good performance. The environmental variables with the highest contribution to the model were Mean Temperature of Wettest Quarter (21.3%), Temperature Annual Range (26.5%), and Annual Mean Temperature (24.9%). Land cover contributed very little to the final model (5.4%).

Figure 10 shows the species distribution model for Canadian toads in the 13 southeastern counties of North Dakota. As the niche model suggests, Canadian toads have a highly variable likelihood of being found in the study region. Areas in Barnes, Cass, Sargent, and Dickey Counties appear to be more favorable/likely habitats for Canadian toads than the majority of the study area. Figure 10 also suggests that riparian/wetland areas are more likely to support Canadian toad populations as area around rivers and in portions of the prairie pothole region see an increase in likelihood of toad presence.

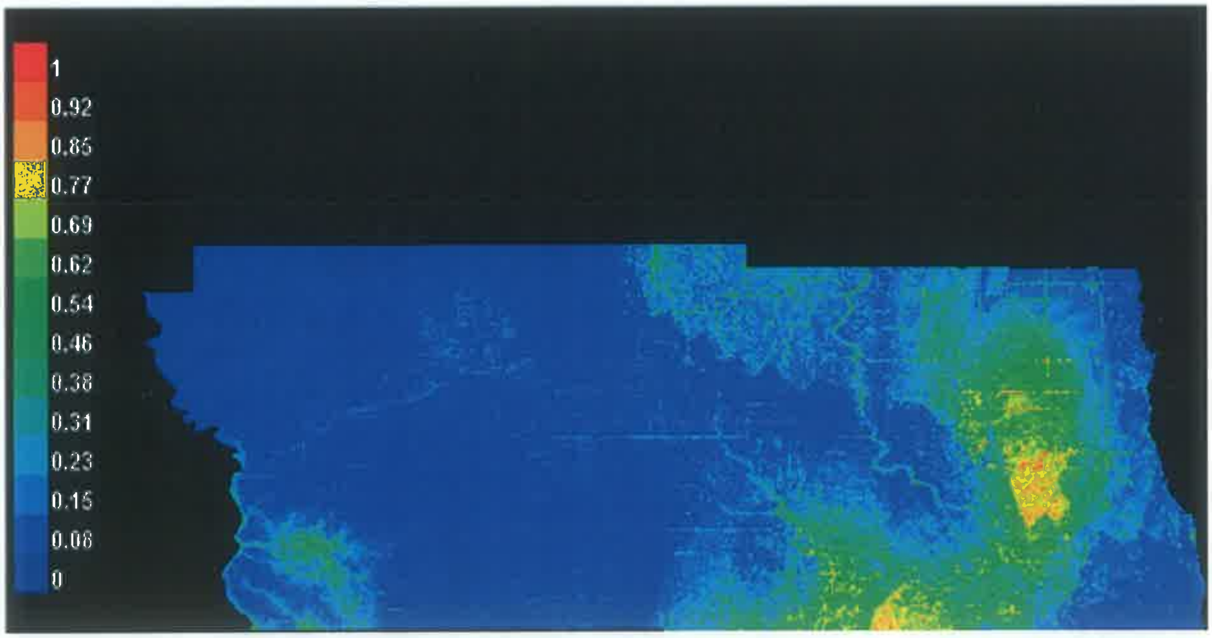

Figure 10. Predicted probability of Canadian toad occurrence in the 13 southeastern counties in North Dakota according to our species distribution model (SDM) generated in Maxent with 49 independent presence locations. Areas of high probability are shown in red, while blue represents areas of low probability.

Great Plains toad models were based on 22 independent presence locations reduced from 66 capture records. Model selection suggested the best model used a regularization multiplier of 1. The 21 replicates of the data set produced an average AUC value of 0.90 (SD = 0.087), suggesting the high performance of our model. Once again Mean Temperature of Wettest Quarter (61.9%) and Temperature Annual Range (37.8%) were the largest contributors to our model. Land cover type did not contribute much to our final model and results were similar if excluded.

Figure 11 shows the species distribution model for the Great Plains toad. We see a pattern slightly similar to the Canadian toad. The Great Plains toad has a very low probability of occurrence in the western half of our study area, except for a small region around the border of Emmons, Logan, and McIntosh Counties. In the eastern half of the study region, Great Plains toad are more likely to be found in the more northern counties (Cass, Barnes, and Stutsman), then the more southern counties (Richland, Dickey, and Sargent).

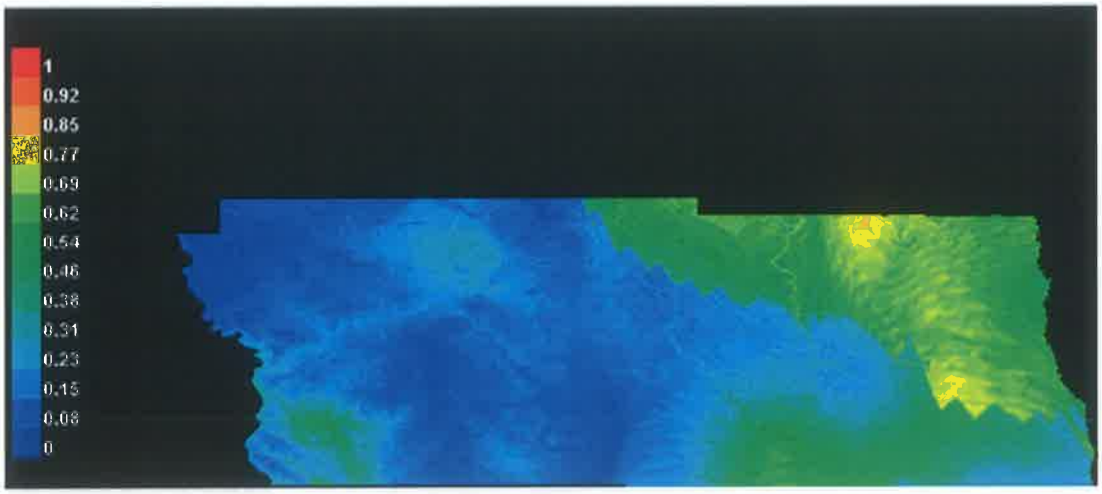

Figure 11. Species distribution map for the Great Plains toad based the 22 independent presence locations for our survey data. Colors represent the probability of the toads occurring in the 13 counties of southeastern North Dakota. Areas of high probability are shown in red, while blue represents areas of low probability.

Northern Leopard frog distribution model was compiled using 108 independent location records from the total of 662 individual capture records. Model selection suggested using a regularization multiplier of 1 for this species. The 50 replicates had an average AUC value of 0.884 (SD = 0.113) indicating good model performance. Unlike previous models in this report, land cover type was relatively important in predicting Northern Leopard frog presence (7.6% - permutation importance). Northern Leopard frogs were more negatively associated with hay/pasture and cultivated crop land cover and positively associated with deciduous forest and woody wetlands habitat. The most important variable in the model was

Mean Diurnal Range (31.8%), then Temperature Annual Range (17.3%), and Minimum Temperature of Coldest Month (12.2%), followed by Annual Precipitation (10.9%).

Figure 12 below shows the species distribution prediction map for the Northern Leopard frog. The results of our species distribution model for this species were somewhat surprising given how many individuals were captured/recorded during our surveys, but the large number of duplicate deletions and the spacing of our sampling may help explain some of the large regions with low probability of Northern Leopard frog presence. Once again we see that a large portion of the southeastern counties of North Dakota are predicted to be unsuitable for Leopard frogs, most likely due to the large amount of cultivated crops. There are several "hotspots" spread throughout the study region, most commonly associated with our sampling sites and water bodies (namely wetlands in the prairie pothole region). While there are large regions with low probability of Northern Leopard frogs, there are areas in almost all 13 counties with increased likelihood of Leopard frog presence. Increased sampling, both in record number and sampling distribution would improve not only this, but all species models.

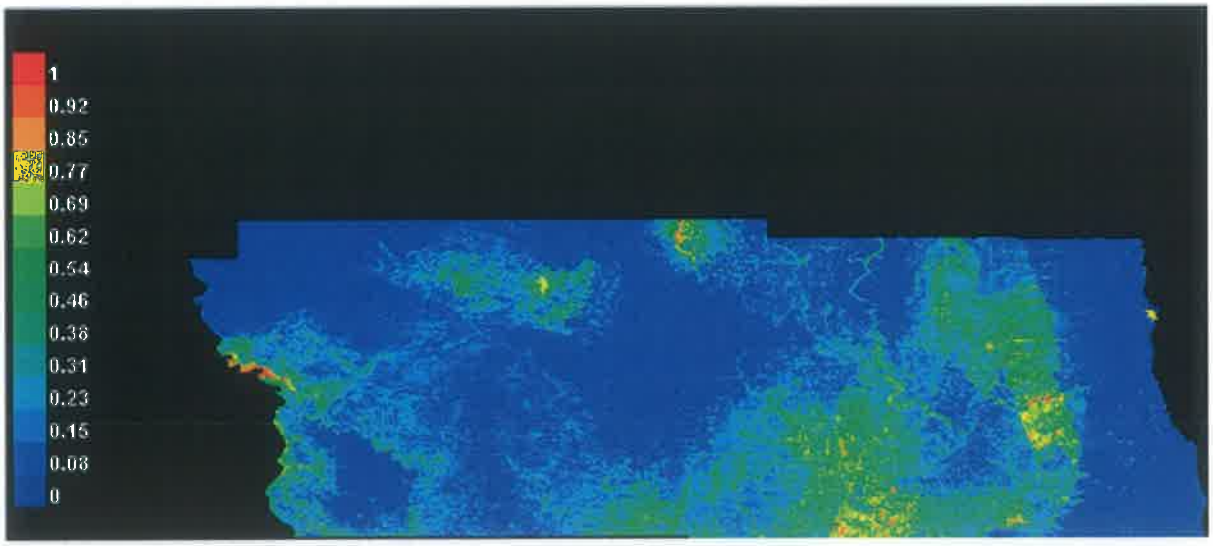

Figure 12. Species distribution map for the Northern Leopard frog based the 108 independent presence locations from our survey data. Colors represent the probability of the species occurring in the 13 counties of southeastern North Dakota. Areas of high probability are shown in red, while blue represents areas of low probability.

Plains Garter snake species distribution models were created using 70 independent presence locations from our original 115 capture records. Model selection methods suggested the use of a regularization multiplier of 3 for this species. The average AUC value for the 50 replications was 0.785 (SD = 0.21), indicating our model showed improved performance over random predictions. Jackknife tests suggested the Annual Precipitation was the most influential variable in our model, followed by Temperature Annual Range, Minimum Temperature of Coldest Month, and Land Cover type. Plains Garter snakes were least associated with cultivated crops and most highly associated with deciduous forest according to our model.

Figure 13 shows the probability map for the Plains Garter snake in our study region. Unlike the Northern Leopard frog, the Plains Garter snake does not display as dramatic as a drop off across the study site, but there are definitive regions of increased likelihood. Areas in north Stutsman County, eastern LaMoure and McIntosh Counties, western Ransom and Sargent Counties, and portions of Barnes and Cass counties all show increased likelihood of snake presence. The primary reason for the difference between the distribution model for Garter snakes and Leopard frogs may be due to the high number of road captures of Garter snakes. These gravel roads between agricultural fields may have influenced our model, while relatively few Leopard frogs were captured on roads and/or near agricultural fields.

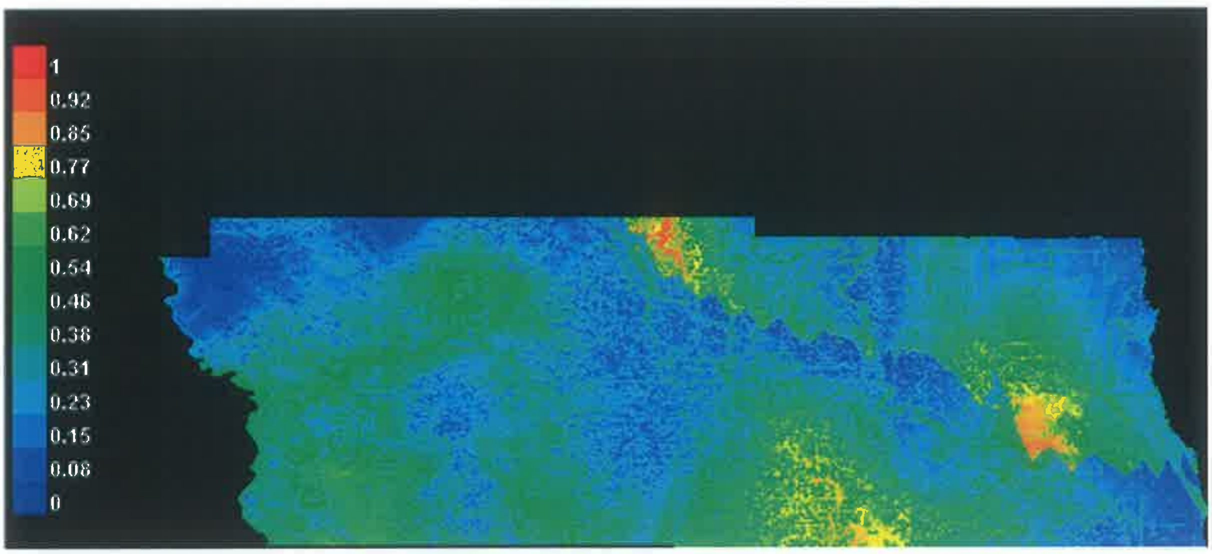

Figure 13. Species distribution map for the Plains Garter snake based the 70 independent presence locations from our survey data. Colors represent the probability of the species occurring in the 13 counties of southeastern North Dakota. Areas of high probability are shown in red, while blue represents areas of low probability.

Species distribution models for the Smooth Green snake were based on only 16 independent location records, resulting in only 15 replicates being run. Regardless of the small sample size, the model had an average AUC value of 0.813 (SD = 0.118) and performed much better than our previous species models with similar sample sizes. Model selection suggested the use of 4 as a regularization multiplier for the Smooth Green snake. Land Cover type was the only variable that significantly contributed to the model, suggesting the model may not be appropriate for use or interpretation. Once again cultivated crop showed the lowest probability of Smooth Green snake presence (average ~ 0.22), while most other land cover types averaged around 0.55. Herbaceous land cover was the most likely to have Smooth Green snakes present, approaching 0.6 (60% likelihood), but all the values were still below the 0.7 likelihood cutoff.

Figure 14 depicts the likelihood map for Smooth Green snakes. As evident in the likelihood of each land cover type, the likelihood map for Smooth Green snakes shows very low probability throughout much of the study region. This again is likely due to small sample sizes (as with Tiger salamanders) and this model usefulness in making management decisions is probably quite low.

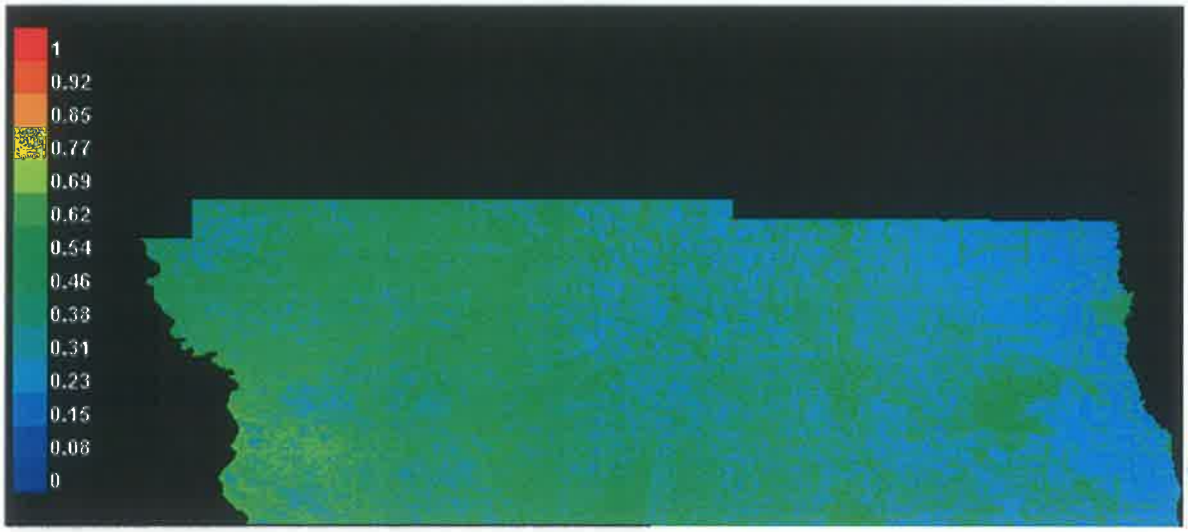

Figure 14. Species distribution map for the Smooth Green snake based the 16 independent presence locations from our survey data. Colors represent the probability of the species occurring in the 13 counties of southeastern North Dakota. Areas of high probability are shown in red, while blue represents areas of low probability.

We used 26 independent presence locations to build species distribution models for the Western Painted turtle. Model selected suggested using a regularization multiplier of 6 for this species. Sample size restricted us to 26 replicates. Species distribution models had an average AUC value of 0.818 (SD = 0.189) for this species. Land Cover types was the most influential variable for this model, followed by Annual Mean Temperature, Precipitation Seasonality, and Temperature Annual Range. Not surprisingly Western Painted turtles had the highest probability of being associated with Open Water (0.67) and the least likelihood of being found in cultivated cropland. All other land cover types, except for herbaceous (0.45), demonstrated similar mean probabilities (~ 0.6).

Figure 15 shows the species distribution map for the Western Painted turtle. This species shows a much different pattern of presence probability than the previous species, exhibiting much smaller "hotspot" areas with increased probability of presence. This is most likely due to the high association with open water than the other species. Most of the areas with increased likelihood seem to be concentrated in LaMoure, Dickey, Ransom, and Sargent

Counties. There also appears to be a large portion of Stutsman, Kidder, Burleigh, Logan, and McIntosh Counties that have few to no areas that show any probability of occurrence over 50% (random).

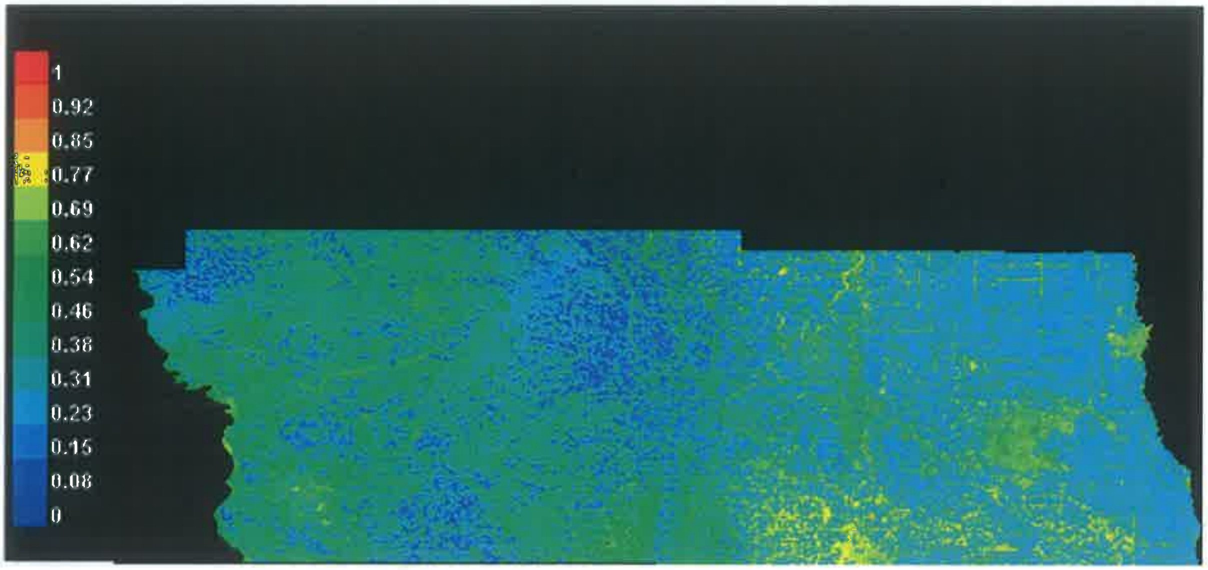

Figure 15. Species distribution map for the Western Painted turtle based the 26 independent presence locations from our survey data. Colors represent the probability of the species occurring in the 13 counties of southeastern North Dakota. Areas of high probability are shown in red, while blue represents areas of low probability.

Boreal Chorus frog species distribution map/model was constructed using 35 independent presence locations from our survey data. Chorus frogs were most common in the Oahe WMA, but since many were captured in the same trap, those records were greatly reduced. Model selection selected 5 as a regularization multiplier value. The 35 replicates for this species yielded an average AUC value of 0.770 (SD = 0.232), showing slightly improved performance. Annual Mean Temperature most heavily influenced the model, followed by Mean Temperature of Wettest Quarter, Temperature Annual Range, and Precipitation Seasonality. Land Cover type slightly influenced the model (AUC gain of 0.07), with deciduous forests (0.59) having the highest probability of Chorus frog presence and cultivated crops having the lowest (0.39).

Figure 16 shows the distribution map for Boreal Chorus frogs. The map shows a dramatic decline in the probability of Chorus frog presence in the middle of the study area, with the southwestern and southeastern corners of the study area showing the highest probability of Chorus frog presence. There is a general trend for an increase in the probability of occurrence as you move south within the study region. The apparent unsuitability of much of the central region of our study area could suggest a lack of gene flow between Boreal Chorus frog populations as you move east to west.

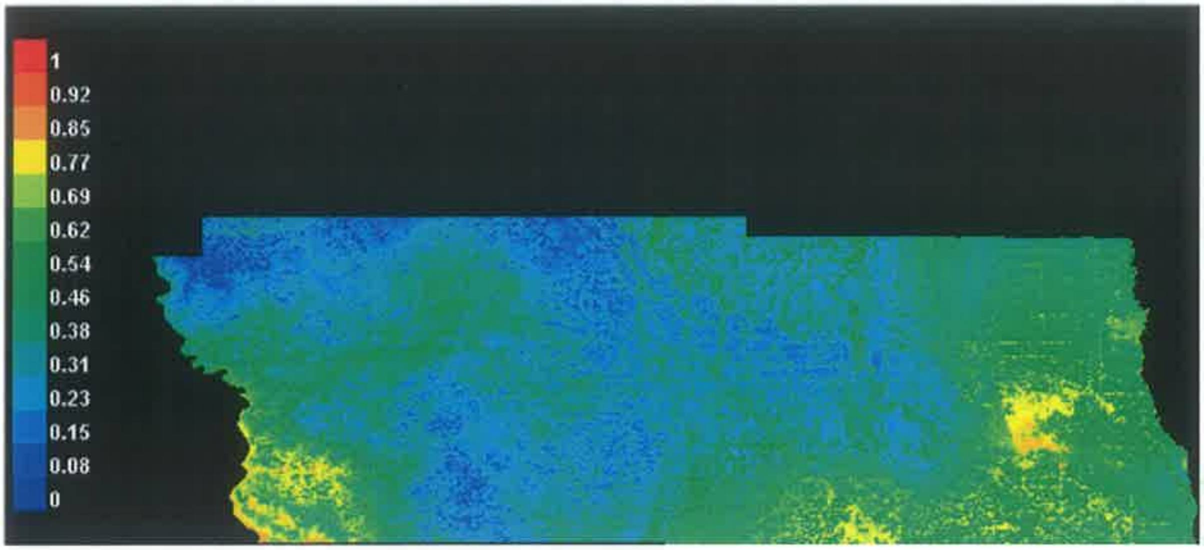

Figure 16. Species distribution map for the Boreal Chorus frog based the 35 independent presence locations from our survey data. Colors represent the probability of the species occurring in the 13 counties of southeastern North Dakota. Areas of high probability are shown in red, while blue represents areas of low probability.

Due to the limited sample sizes for independent presence locations on most species, we only created state-wide species distribution models for the two most common species. Northern Leopard frogs (108 locations) and Plains Garter snakes (70 locations) were the only two species with sample sizes adequate enough to generate models that performed better than random (AUC > 0.5) and to meet our AUC cutoff of 0.7. Increased/expanded sampling and the incorporation of other North Dakota herpetofauna location data in the future would allow for more adequate species distribution models to be created. For the state-wide models, we followed the same procedure as the study region, with the addition of adding a bias file. The bias file included the 13 counties surveyed and was added to reduce the sampling bias (Phillips *et al.*, 2006).

The state-wide species distribution model for the Northern Leopard frog had an average AUC value of 0.884 (SD = 0.113). The state-wide model's performance was similar to the regional-scale model from above. The most influential variable in the model was Annual Precipitation, followed by Temperature Annual Range, Mean Diurnal Range, Temperature Seasonality, and Minimum Temperature of Coldest Month. Land Cover type only had a minor influence on the model, with the pattern mirroring those reflected in the regional model.

Figure 17 below depicts the probability projections of the state-wide species distribution model for the Northern Leopard frog. If you compare Figure 17 to Figure 12 you will see that the probability within the 13 counties that were surveyed is quite similar between the two models. The state-wide model suggests that a larger area in the northwestern corner of the state has the highest probability of Northern Leopard frog populations. This area not only has a larger amount of area with a high likelihood of having Northern Leopard frogs, but also exhibits the highest likelihood in the entire state. The species distribution map also suggest that there is an area of unsuitable habitat between the eastern and western population, which corresponds to the genetic patterning found in a recent population genetics study of this species (Fisher, 2015). The congruence between the state-wide species distribution model and the recent population genetic work suggests that lack of suitable habitat may be driving genetic differentiation within the state for this so-called common species.

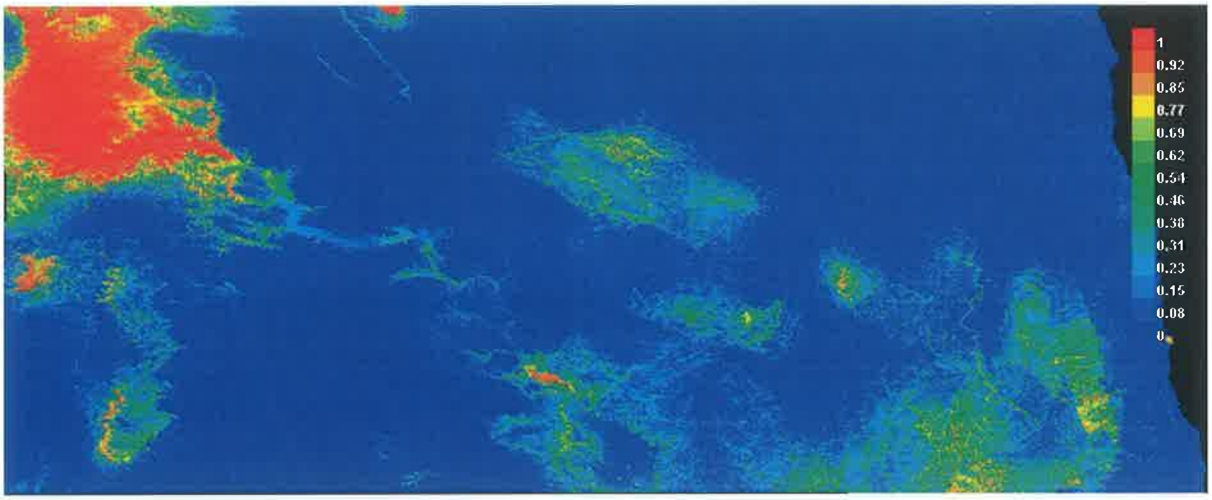

Figure 17. Species distribution map for the Northern Leopard frog across the entire state of North Dakota. Colors represent the probability of the species occurrence. Areas of high probability are shown in red, while blue represents areas of low probability.

Species distribution models for the Plains Garter snake on the state-wide spatial scale averaged an AUC value of 0.785 (SD = 0.21). The most influential variables on the state-wide model were Annual Precipitation, Annual Mean Temperature, and Temperature Annual Range. Land Cover performed better than only a handful of other variables, but Plains Garter snakes were most likely to be associated with deciduous forests and least likely to be found in cultivated fields.

Figure 18 shows the state-wide species distribution model. Plains Garter snakes appear to be most likely to be limited in their distribution to the eastern portion of the state. The western and extreme northern regions of the state have limited to no likelihood of Plains Garter snake occurrence. This model's prediction fits with what the PI has experienced in the field, as Plains Garter snakes are rarely found in the western portion of the state (PI's searching is limited to the SW portion), giving slightly more merit to the model.

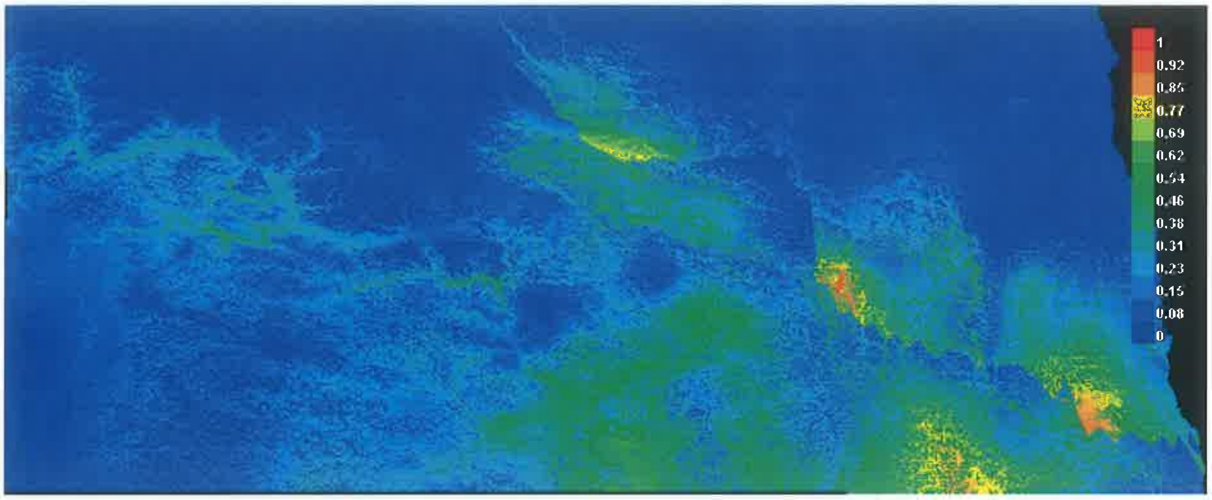

Figure 18. Species distribution map for the Plains Garter snake across the entire state of North Dakota. Colors represent the probability of the species occurrence. Areas of high probability are shown in red, while blue represents areas of low probability.

For all of the reported species distribution models, a few precautions should be taken when interpreting the maps and outcomes. First, these models were built from relatively small sample sizes which may skew the results (Hernandez *et al.*, 2006; Pearson *et al.*, 2007; Wisz *et al.*, 2008; Kumar and Stohlgren, 2009).. Small sample sizes combined with a rather heterogeneous sampling effort (by design), almost certainly influences these models and makes them tentative distributions at best. We utilized several methods in order to prevent overfitting and improve the performance of the models (Phillips and Dudik, 2008; Radosavljevic and Anderson, 2014), but without larger sample sizes to test our models, their utility in accurately predicting habitat may be limited.

Second, all of the eco-geographical variables utilized in the construction of these models were at the 30 arc-second resolution, which translates to approximately 1 square kilometer for each cell. That cell size is most likely inappropriate for small, ectothermic animals not known for their large home ranges or extensive movements. The other assumption is that the climatic and land cover variables are biologically relevant to the modeled species. We selected variables we felt would be biologically relevant, but other habitat characteristics or microhabitat variables may more strongly influence herpetofauna distributions. Maxent models have shown to perform better for species with limited geographic ranges or limited environmental tolerances (Hernandez *et al.*, 2006) and since we modeled the most common species, our models may not perform as well with the given sample sizes and variables.

Future work on these species should focus on modeling habitat use on a finer scale to determine which habitat characteristic most influence species presence. Future endeavors should also work to increase sample size for all herpetofauna species. The PI plans to combine the current data with future sampling efforts and data from a Citizen Science program (HerpMapper) to obtain better resolution on the possible species distributions for North Dakota herpetofauna. The current Maxent models provide a good starting point for the 8 species we analyzed, but additional work will need to be conducted to obtain a better understanding of the available habitat for these species.

Summary and Future Considerations:

Over the course of two and a half summers, intensive efforts were put in to the thorough sampling of 26 study sites in the counties in southeastern North Dakota. The PI and field technicians logged over 1000 man-hours and over 21,500 trap hours. This study represents the most exhaustive effort, which we could find, to catalog the presence and absence of herpetofauna in any region of North Dakota since Wheeler's original work (1947, 1966). In efforts to fulfill the five main objectives of this study, several prevalent issues/conclusion came to light. In the following paragraphs, we will summarize our findings for each objective and provide future considerations regarding the herpetofauna of North Dakota.

1. **Confirm the presence/absence of herpetofauna species in SE North Dakota & 2. Document species composition and relative abundances in southeastern North Dakota.**

Surveys were able to confirm the presence of 21 herpetofauna species within the study region. The presence of these 21 species confirms that all species expected to occur within the study region, are indeed currently present in at least one study site. The other four herpetofauna species that could occur in the study site (see above) are most likely restricted to areas that were not surveyed during the course of this study.

While our surveys confirmed the presence of all expected herpetofauna, we do not believe there is enough evidence to suggest that all of the 21 species have healthy/stable populations. Numerous species were only located at one or a few sites and in small numbers. These rare/uncommon species include: Northern Red-Bellied snake, Plains Hog-nosed snake, Common/Eastern Garter snake, Woodhouse's toad, and Northern Prairie skinks. Prairie rattlesnakes, Bullsnakes, and Racers were also found in limited numbers and/or sites, but given their suspected distribution there is less cause for concern for these species.

The most notable species rarity was the American toad (*Anaxyrus americanus*). With only 3 confirmed records during the study, a species that was once common in portions of the study site (Pers. Obs.) appears to have experienced a dramatic decline. Dr. James Grier and I led many herpetology field trips (together and separately) to portions of Cass, Ransom, Richland, and Sargent counties during the years spanning 1999 – 2005. Sites within those counties routinely turned up American toads, including sites that were surveyed during this study. None of those original sites had American toads during this project, suggesting that in at least portions of its range in North Dakota, there has been a decline. There are many possible reasons for this decline: habitat loss (breeding or active season), predation, or climate change. American toads have also been known to hybridize with Canadian and other toad species (Green and Pustowka, 1997), which adds the possibility that American toads are a victim to genetic swamping (Roberts *et al.*, 2010).

Eastern Garter snake capture records were also surprisingly low. These snakes were common on the above mentioned field trips, but were not found in as many sites or in as high of numbers as expected. The lower density is concerning, as this species is typically associated with a more limited habitat than Plains Garter snakes. The lack of capture records in the central and western portion of the study area are not as surprising. The PI and others have long expected that this species has more of an inverted "U" shaped distribution within the state, rather than the state-wide distribution often reported.

3. **Obtain baseline information on the habitat types and ecosystems each herpetofauna species occupies.**

Species habitat use and/or preference were determined by examining the proportion of captures in different habitat types. While each species' habitat preference is outlined above, there were some general patterns that emerged. The utilization of gravel/dirt roads, ditches, and 'edge'/transition habitat was common among many species. The use of ditches and gravel roads is concerning in regards of increased mortality, but these habitats obviously offer some sort of habitat characteristics that some species prefer (for at least portions of the active season). Habitat traits like increased temperature, substrate types, high density of small mammal burrows, etc. may offer excellent sites for gestation, thermoregulation, and/or meal digestion of some snake species. The decreased vegetation density may offer improved prey capture rates for lizards and amphibians (and perhaps snakes).

The high number of captures at edge/transition habitat may be due to one of two reasons. First, those transition areas are more search 'friendly' allowing researchers the better spot and/or capture herpetofauna. Second, herpetofauna truly prefer to inhabit the margins of different habitat types to gain the benefits of multiple habitat characteristics in a relatively small home range. We believe more work needs to be done on this aspect, as if these transition areas are truly preferred the current management strategies in WMAs may be hindering/limiting herpetofauna populations. Current WMA management practices appear to be based on benefits to game species, meaning the practices of burning, haying, feed plots, etc. are done on relatively large patches/scales. These large patches reduce edge and transition area. While this may benefit some species, if herpetofauna truly prefer edge/transition then the amount of area available to them is also reduced.

4. **Design, implement, and evaluate herpetofauna survey and inventory methods for future use.**

We have outlined which trap/survey method worked best for each of the 21 species we recorded. Overall the 'best' method for each species is likely subject to timeline, budget, and the goal of the project/question of interest. Visual transect surveys provided a majority of the terrestrial captures and little to no special equipment is needed for them. The cost of labor is high and typically increases over time, but the most thorough/efficient survey methods for terrestrial herpetofauna would be to hire larger crews of field technicians to do intensive visual searchers during the spring and fall portions of the active season. Summer months tend to limit herpetofauna activity due to temperature constraints and surveys during these months would be less cost effective.

Anurans (frogs and toads) and aquatic species are best surveyed using aquatic trapping methods. Audio loggers/traps (FrogLogger) are expensive but would be most efficient and cost effective in the long run for Anuran species. Aquatic trapping or seining of aquatic habitats during terrestrial searchers should be sufficient to accurately assess aquatic herpetofauna diversity.

Depending on the question of interest and duration of survey, different methods could be employed. For short term surveys such as this project, a decrease in traps and an increase in man-power would most likely be the best tactic. For long-term surveys to investigate population dynamics, the use of more traps and less man-power would most likely be most efficient and effective. Of the methods utilized during this study, cover boards and pipe refugia traps were least effective. Funnel traps were only moderately effective, but a change in design may remedy those issues. Drift fences (with pitfalls) and aquatic traps were the most effective traps during our survey. The inclusion of light traps in the middle of the study proved to be effective. Light traps were made up of a solar-powered spot light that was aimed at a small white bed-sheet that was anchored into the ground using fence-posts. At the bottom of the sheet, we put a 5-gallon pit fall trap into the ground. These traps were hit or miss, but especially after periods of rain proved effective for capturing amphibians.

5. **Conduct MAXENT habitat modeling at both the regional and state-wide scales for reptile and amphibian species with adequate capture records.**

Maxent model summaries were expanded upon above, but overall provide a good baseline for survey expectations. Although not part of the original proposal, the species distribution models provide useful information for the handful of species that had enough capture records. Again more work needs to be done with these models and with the species that did not have enough presence locations to model, but they will provide baseline data for future work. While these models need to be interpreted/applied cautiously, the trend of decreased likelihood of occurrence in habitats liked cultivated crops and pasture/hay habitat emphasize the importance of state-owned areas like WMAs in maintaining healthy wildlife populations. Increased agriculture and changes in agricultural methods in a state that is roughly 91% privately owned could have dramatic impacts on not only herpetofauna, but all wildlife.

Future Work:

Given the results of this study, we recommend continued research on the herpetofauna of North Dakota. We believe there is evidence to support the hypothesis that North Dakota herpetofauna is on the decline, at least some species, and that more research needs to be done in order to determine the magnitude of that decline. Below we will list and rank what we feel are the most pertinent research questions North Dakota herpetofauna currently are in need of:

1. Species-specific population and habitat use studies.
    a. American toads, Eastern Garter snakes, Plains hog-nosed snakes, and amphibians in general are the species of biggest concern. These rare captures and/or recorded distribution reductions may indicate serious population declines. It may be that North Dakota is at risk of losing one or more of these species, at least temporarily, if more work is not done. Local extinctions and extirpations may be coupled with inability of these species to disperse in a landscape composed primarily of unsuitable habitat. Little to no work has been done on the majority of these species, especially in our region.

    b. Amphibians in particular are on the decline throughout much of the world-wide range and face a host of conservation issues. Since amphibians are an environmental indicator species, continued work on these taxa may benefit other wildlife in the long-term. While some amphibian species were found to be numerous in spots, the overall lack of amphibian diversity in any one location suggests there may be problems. Given the expected amphibian distributions, we expected to find more amphibian species at each site than we typically found. This may be due to temporal sampling issues or may illustrate real conservation issues.

2. Expanded herpetofauna surveys:
    a. Now that herpetofauna distributions have been assessed for ¼ of the state, we suggest sampling other regions of the state. These expanded surveys would help generate better species distribution models, elucidate key habitat characteristics, and provide additional information on population trends and conservation status.

3. Long-term herpetofauna surveys
    a. Given our project only spanned 2.5 years and we only sampled a few sites repeatedly, it is difficult to conclusively make any statement on herpetofauna population trends. We believe that long-term (5 – 10 years) surveys at a handful of selected sites would provide information on population dynamics, genetics, habitat use and life history, along with provide further insight into the conservation status of herpetofauna species. We recommend that a mix of 3- 6 sites be chosen to set up long-term surveys utilizing some of the methods outlined in this project.

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Table 1. The suspected herpetofauna composition of each of the 13 counties in our study. Reptile and amphibian species' distributions were inferred from the most recent distribution maps maintained by Jeff LeClare on the website herpnet.net. Each of ND's herpetofauna species is listed, with an 'X' indicating it has been documented in that county previous to our study.

	County												
Species	**Cass**	**Richland**	**Barnes**	**Ransom**	**Sargent**	**Stutsman**	**LaMoure**	**Dickey**	**Kidder**	**Logan**	**McIntosh**	**Burleigh**	**Emmons**
Hyla chrysoscelis	X	X		X		X							
Pseudacris maculata	X	X		X	X	X		X	X		X	X	
Lithobates sylvatica	X	X	X	X		X			X				
Lithobates pipiens	X	X	X	X	X	X	X	X	X			X	X
Spea bombifrons													
Anaxyrus americanus													
Anaxyrus hemiophrys	X	X	X			X		X	X			X	
Anaxyrus woodhousii	X	X	X		X	X							X
Anaxyrus cognatus	X	X	X	X	X	X	X	X	X		X		
Ambystoma sp.	X	X	X	X	X	X	X	X	X			X	X
Necturus maculosus				X									
Chelydra serpentina		X		X		X							X
Graptemys pseduogeographica													X
Chrysemys picta belli	X	X		X		X	X		X			X	X
Apalone mutica													X
Apalone spinifera												X	
Sceloporus graciosus													
Phrynosoma hernandesi													
Plestiodon septentrionalis	X	X	X	X	X								
Storeria occipitomaculata		X		X		X							
Thamnophis sirtalis		X		X								X	
Thamnophis radix	X	X	X	X		X		X		X		X	X
Heterodon nasicus		X	X	X	X	X			X			X	X
Coluber constrictor flaviventris													
Opheodrys vernalis			X			X	X					X	
Pituophis catenifer sayi												X	
Crotalus viridis													X

Table 2. Encountered species during the 2014 survey period for each of the 13 North Dakota counties. If a species was captured during the study period, an 'X' is indicated in each county we have a capture record for. The last three rows summarize the total number of species recorded in each county, the number of species expect according to Table 1 that were not recorded, and finally the number of species that would indicated a new county record for each county.

Common Name	Species	Cass	Richland	Barnes	Ransom	Sargent	Stutsman	LaMoure	Dickey	Kidder	Logan	McIntosh	Burleigh	Emmons
Cope's Gray Treefrog	*Hyla chrysoscelis*		X		X									
Boreal Chorus Frog	*Pseudacris maculata*		X	X	X	X	X	X	X	X			X	X
Wood Frog	*Lithobates sylvatica*		X				X							
Northern Leopard Frog	*Lithobates pipiens*	X	X	X	X	X	X	X	X	X	X	X	X	X
American Toad	*Anaxyrus americanus*					X								
Canadian Toad	*Anaxyrus hemiophrys*	X	X		X	X								X
Woodhouse's Toad	*Anaxyrus woodhousii*												X	X
Great Plains Toad	*Anaxyrus cognatus*					X	X							
Tiger Salamander	*Ambystoma sp.*		X			X				X		X		
Common Snapping Turtle	*Chelydra serpentina*	X		X	X									
Western Painted Turtle	*Chrysemys picta belli*	X		X	X	X	X	X			X	X	X	X
Northern Prairie Skink	*Plestiodon septentrionalis*	X	X		X	X								
Northern Redbelly Snake	*Storeria occipitomaculata*					X	X	X						
Eastern Garter Snake	*Thamnophis sirtalis*		X		X									
Plains Garter Snake	*Thamnophis radix*	X	X	X	X	X	X	X	X	X	X	X		X
Western Hognose Snake	*Heterodon nasicus*		X											
Smooth Green Snake	*Opheodrys vernalis*			X			X		X	X				X
Total Species Captured		6	10	6	9	10	8	5	4	5	3	4	4	7
Species expected but not captured		6	4	7	6	2	6	3	3	3	0	2	8	6
New county record		1	0	3	1	5	0	3	1	2	2	4	1	2

Table 3. Encountered species during the 2015 survey period for each of the 13 North Dakota counties. If a species was captured during the study period, an 'X' is indicated in each county we have a capture record for. The last three rows summarize the total number of species recorded in each county, the number of species expect according to Table 1 that were not recorded, and finally the number of species that would indicated a new county record for each county.

Common Name	Species	Bottineau	Cass	Richland	Barnes	Ransom	Sargent	Stutsman	LaMoure	Dickey	Kidder	McIntosh	Burleigh	Emmons
Cope's Gray Treefrog	*Hyla chrysoscelis*					X							X	
Boreal Chorus Frog	*Pseudacris maculata*	X	X	X	X	X	X		X	X			X	X
Wood Frog	*Lithobates sylvatica*	X	X			X								
Northern Leopard Frog	*Lithobates pipiens*	X	X		X	X	X	X	X	X	X			
American Toad	*Anaxyrus americanus*													
Canadian Toad	*Anaxyrus hemiophrys*		X		X	X	X		X	X				
Woodhouse's Toad	*Anaxyrus woodhousii*													
Great Plains Toad	*Anaxyrus cognatus*		X		X					X				
Tiger Salamander	*Ambystoma sp.*				X	X	X		X	X				
Common Snapping Turtle	*Chelydra serpentina*					X								
Western Painted Turtle	*Chrysemys picta belli*	X	X		X	X	X			X				X
Northern Prairie Skink	*Plestiodon septentrionalis*		X	X										
Northern Redbelly Snake	*Storeria occipitomaculata*										X			
Eastern Garter Snake	*Thamnophis sirtalis*					X								
Plains Garter Snake	*Thamnophis radix*	X	X	X		X	X	X	X	X	X	X		X
Western Hognose Snake	*Heterodon nasicus*			X							X			
Smooth Green Snake	*Opheodrys vernalis*				X	X		X						
Eastern Yellowbelly Racer	*Coluber constrictor flaviventris*													X
Bullsnake	*Pituophis catenifer sayi*													X
Prairie Rattlesnake	*Crotalus viridis*													X
Total Species Captured		5	8	4	7	11	6	3	5	7	4	1	2	6
Species expected but not captured		N/A	3	11	4	4	4	11	3	0	5	4	10	7
New county record		N/A	0	0	0	0	0	0	1	1	1	0	1	2

Table 4. Encountered species during the course of the project for each of the 14 North Dakota counties. If a species was captured during the study period, an 'X' is indicated in each county we have a capture record for. The last three rows summarize the total number of species recorded in each county, the number of species expect according to Table 1 that were not recorded, and finally the number of species that would indicated a new county record for each county.

Common Name	Species	Bottineau	Cass	Richland	Barnes	Ransom	Sargent	Stutsman	LaMoure	Dickey	Kidder	McIntosh	Burleigh	Emmons	Logan
Cope's Gray Treefrog	*Hyla chrysoscelis*			X		X							X		
Boreal Chorus Frog	*Pseudacris maculata*	X	X	X	X	X	X	X	X	X	X		X	X	
Wood Frog	*Lithobates sylvatica*	X	X	X		X	X	X							
Northern Leopard Frog	*Lithobates pipiens*	X	X	X	X	X	X	X	X	X	X	X	X	X	X
American Toad	*Anaxyrus americanus*														
Canadian Toad	*Anaxyrus hemiophrys*		X	X	X	X	X		X	X				X	
Woodhouse's Toad	*Anaxyrus woodhousii*												X	X	
Great Plains Toad	*Anaxyrus cognatus*		X		X		X	X		X					
Tiger Salamander	*Ambystoma sp.*			X	X	X	X		X	X	X	X			
Common Snapping Turtle	*Chelydra serpentina*		X		X	X									
Western Painted Turtle	*Chrysemys picta belli*	X	X		X	X	X	X	X	X		X	X	X	X
Northern Prairie Skink	*Plestiodon septentrionalis*		X	X		X	X			X					
Northern Redbelly Snake	*Storeria occipitomaculata*						X	X	X		X				
Eastern Garter Snake	*Thamnophis sirtalis*			X		X									
Plains Garter Snake	*Thamnophis radix*	X	X	X	X	X	X	X	X	X	X	X		X	X
Western Hognose Snake	*Heterodon nasicus*			X							X				
Smooth Green Snake	*Opheodrys vernalis*				X	X		X			X			X	
Eastern Yellowbelly Racer	*Coluber constrictor flaviventris*													X	
Bullsnake	*Pituophis catenifer sayi*													X	
Prairie Rattlesnake	*Crotalus viridis viridis*													X	
Total Species Captured		5	9	10	9	12	10	8	7	8	7	4	5	10	3
Species expected but not captured		N/A	2	5	2	3	3	5	2	0	4	2	7	5	0
New county record		N/A	1	0	3	1	5	0	4	2	3	4	2	3	2

Table 5. Total number of encountered individuals during the course of the project for each of the 14 North Dakota counties. Totals are given for each species and each site as well.

Species/Site	Arrowwood NWR	Lake Metigoshe	Brewer Lake	Camp Lake	Chase Lake	Clausen Springs	Cottonwood Creak	Dawson WMA	Fort Ransom WMA	Hague WMA	Hamilton Wells*	Hankinson Hills	Horsehead Lake	Hyatt Slough	Johnson's Gulch	Linton PL	Koldok WMA	Lehr WMA	Logan Co. WMA	McKenzie Slough	Mezaros Slough	Mirror Pool WMA*	Oahe WMA	Seth Gordon WMA	Sheyenne NG	Tewalkon WMA	TOTALS
Hyla chrysoscelis									1		4									1		4			4		**14**
Pseudacris maculata	1		15			1		1			2				1							1	59		30	2	**113**
Lithobates sylvatica	2	100	1																			3			3		**109**
Lithobates pipiens	7	41	15	778	5	14	77	8	157		28		144	41	208	10	11		636		129	13	150	81	11	240	**2804**
Spea bombifrons																											**0**
Anaxyrous americanus																										3	**3**
Anaxyrous hemophrys			5								24			7			1				119	224	2	34	19	28	**463**
Anaxyrous woodhousii																							82				**82**
Anaxyrous cognatus	20		1								17			3			23									10	**74**
Ambystoma sp.				1				8						3			1				6	4			13	59	**95**
Necturus maculosus																											**0**
Chelydra serpentina						2			1													4					**7**
Graptemys pseudogeographica																											**0**
Chrysemys picta belli		17	2	38		5	4		8			2		5		1	2		1		1	7	11			20	**124**
Apalone mutica																											**0**
Sceloporus graciosus																											**0**
Phrynosoma hernandesi																											**0**
Plestiodon septentrionalis			1								4	2										2				2	**11**
Storeria occipitomaculata	3						1						1													1	**6**
Thamnophis sirtalis																						9			3		**12**
Thamnophis radix	13	3	5	6	3	6	9	3	4	1	11	3	7	3	3			3	4		6	5	5	2	10	9	**124**
Heterodon nasicus												1	2												2		**5**
Coluber constrictor flaviventris																2											**2**
Opheodrys vernalis	7				5	1		5	1						3		2						1				**25**
Pituophis catenifer sayi																2											**2**
Crotalus viridis viridis																13											**13**
TOTALS	**53**	**161**	**45**	**823**	**13**	**29**	**91**	**25**	**172**	**1**	**90**	**8**	**154**	**62**	**215**	**28**	**40**	**3**	**641**	**1**	**261**	**276**	**310**	**117**	**95**	**374**	4088

Table 6. Species richness and species diversity for each of the sampled sites. Data from all three years was used to quantify both richness and diversity. Species diversity was calculated using the Simpson's Reciprocal Index.

Site	Species Richness	Species Diversity (1/D)
Arrowwood NWR	7	4.125
Lake Metigoshe	4	2.164
Brewer Lake	8	4.003
Camp Lake	4	1.116
Chase Lake	3	2.864
Clausen Springs	6	3.198
Cottonwood Creak	4	1.374
Dawson WMA	5	3.834
Fort Ransom WMA	6	1.196
Hague WMA	1	1.000
Hamilton Wells*	7	4.485
Hankinson Hills	4	3.556
Horsehead Lake	4	1.141
Hyatt Slough	6	2.157
Johnson's Gulch	4	1.068
Linton PL	5	2.820
Koldok WMA	6	2.424
Lehr WMA	1	1.000
Logan Co. WMA	3	1.016
McKenzie Slough	1	1.000
Mezaros Slough	5	2.206
Mirror Pool WMA*	11	1.507
Oahe WMA	7	2.925
Seth Gordon WMA	3	1.773
Sheyenne NG	9	5.343
Tewaikon WMA	10	2.239

Table 7. Matrix of all pair-wise site comparisons using Jaccard's coefficient of similarity. All comparisons greater to or equal to 0.7 are highlighted and considered to be noteworthy.

	Arrowwood NWR	Lake Metigoshe	Brewer Lake	Camp Lake	Chase Lake	Clausen Springs	Cottonwood Creak	Dawson WMA	Fort Ransom WMA	Hague WMA	Hamilton Wells*	Hankinson Hills	Horsehead Lake	Hyatt Slough	Johnson's Gulch	Linton PL	Koldok WMA	Lehr WMA	Logan Co. WMA	McKenzie Slough	Mezaros Slough	Mirror Pool WMA*	Oahe WMA	Seth Gordon WMA	Sheyenne NG	Tewaikon WMA
Arrowwood NWR	1																									
Lake Metigoshe	0.375	1																								
Brewer Lake	0.500	0.500	1																							
Camp Lake	0.222	0.600	0.333	1																						
Chase Lake	0.429	0.600	0.222	0.400	1																					
Clausen Springs	0.444	0.429	0.400	0.429	0.500	1																				
Cottonwood Creak	0.375	0.600	0.333	0.600	0.400	0.429	1																			
Dawson WMA	0.500	0.286	0.200	0.500	0.600	0.571	0.286	1																		
Fort Ransom WMA	0.300	0.429	0.273	0.429	0.500	*0.714*	0.429	0.375	1																	
Hague WMA	0.143	0.250	0.125	0.250	0.333	0.167	0.250	0.200	0.167	1																
Hamilton Wells*	0.400	0.222	0.600	0.222	0.250	0.300	0.222	0.333	0.300	0.143	1															
Hankinson Hills	0.100	0.333	0.333	0.333	0.167	0.250	0.333	0.125	0.250	0.250	0.222	1														
Horsehead Lake	0.375	0.333	0.222	0.333	0.400	0.250	0.600	0.286	0.250	0.250	0.222	0.333	1													
Hyatt Slough	0.300	0.429	0.556	0.667	0.286	0.333	0.429	0.375	0.333	0.167	0.444	0.250	0.250	1												
Johnson's Gulch	0.571	0.333	0.333	0.333	0.750	0.667	0.333	0.800	0.429	0.250	0.375	0.143	0.333	0.250	1											
Linton PL	0.091	0.286	0.182	0.286	0.143	0.222	0.286	0.111	0.222	0.000	0.091	0.125	0.125	0.222	0.125	1										
Koldok WMA	0.300	0.250	0.400	0.429	0.286	0.333	0.250	0.250	0.333	0.000	0.300	0.111	0.111	**0.714**	0.250	0.222	1									
Lehr WMA	0.143	0.250	0.125	0.250	0.333	0.167	0.250	0.200	0.167	1.000	0.143	0.250	0.250	0.167	0.250	0.000	0.000	1								
Logan Co. WMA	0.250	0.750	0.375	0.750	0.500	0.500	*0.750*	0.333	0.500	0.333	0.250	0.400	0.400	0.500	0.400	0.333	0.286	0.333	1							
McKenzie Slough	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.167	0.000	0.143	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1						
Mezaros Slough	0.200	0.500	0.444	0.800	0.333	0.375	0.500	0.429	0.375	0.200	0.333	0.286	0.286	*0.833*	0.286	0.250	0.571	0.200	0.600	0.000	1					
Mirror Pool WMA*	0.286	0.364	0.583	0.364	0.167	0.417	0.250	0.333	0.417	0.091	0.500	0.250	0.154	0.417	0.250	0.143	0.308	0.091	0.273	0.091	0.455	1				
Oahe WMA	0.400	0.375	0.500	0.375	0.429	0.625	0.375	0.375	0.400	0.143	0.400	0.222	0.222	0.444	0.571	0.200	0.444	0.143	0.429	0.000	0.500	0.308	1			
Seth Gordon WMA	0.250	0.400	0.375	0.400	0.500	0.286	0.400	0.333	0.286	0.333	0.429	0.167	0.400	0.500	0.400	0.143	0.286	0.333	0.500	0.000	0.600	0.273	0.429	1		
Sheyenne NG	0.333	0.300	0.417	0.300	0.200	0.250	0.182	0.333	0.250	0.111	0.455	0.182	0.300	0.364	0.300	0.077	0.250	0.111	0.200	0.111	0.400	0.667	0.333	0.333	1	
Tewaikon WMA	0.417	0.273	0.636	0.400	0.182	0.333	0.400	0.364	0.214	0.100	0.545	0.273	0.273	0.600	0.273	0.154	0.364	0.100	0.300	0.000	0.500	0.500	0.417	0.300	0.357	1

APPENDIX A: Capture records and species data from 2014 and 2015 surveys.

County	Site	Species (common)	Trap Type	Habitat	[redacted]
Barnes	Clausen Springs	Snapping turtle	HN	Lake	[redacted]
Barnes	Clausen Springs	Snapping turtle	VE	Road	
Barnes	Clausen Springs	Western Painted turtle	VE	Road	
Barnes	Clausen Springs	Western Painted turtle	VE	Stream	
Barnes	Clausen Springs	Western Painted turtle	VE	Lake	
Barnes	Clausen Springs	Western Painted turtle	VE	Lake	
Barnes	Clausen Springs	Western Painted turtle	VE	Lake	
Barnes	Clausen Springs	Northern Leopard frog	VE	Stream bank	
Barnes	Clausen Springs	Northern Leopard frog	VE	Stream bank	
Barnes	Clausen Springs	Northern Leopard frog	VE	Stream bank	
Barnes	Clausen Springs	Northern Leopard frog	VE	Stream bank	
Barnes	Clausen Springs	Northern Leopard frog	VE	Wetland	
Barnes	Clausen Springs	Northern Leopard frog	VE	Stream	
Barnes	Clausen Springs	Northern Leopard frog	VE	Stream bank	
Barnes	Clausen Springs	Northern Leopard frog	VE	Stream bank	
Barnes	Clausen Springs	Northern Leopard frog	VE	Wetland	
Barnes	Clausen Springs	Northern Leopard frog	VE	Wetland	
Barnes	Clausen Springs	Northern Leopard frog	VE	Wetland	
Barnes	Clausen Springs	Northern Leopard frog	VE	Wetland	
Barnes	Clausen Springs	Northern Leopard frog	VE	Tree row	
Barnes	Clausen Springs	Northern Leopard frog	VE	Wetland	
Barnes	Clausen Springs	Smooth Green snake	VE	Road	
Barnes	Clausen Springs	Boreal Chorus frog	Audio	Ditch wetland	
Barnes	Clausen Springs	Plains garter snake	VE	Road - DOR	
Barnes	Clausen Springs	Plains garter snake	VE	Road - DOR	
Barnes	Clausen Springs	Plains garter snake	VE	Ditch	
Barnes	Clausen Springs	Plains garter snake	VE	Road - DOR	
Barnes	Clausen Springs	Plains garter snake	VE	Prairie	
Barnes	Clausen Springs	Plains garter snake	VE	Road	
Barnes	Koldok	Canadian toad	VE	Road	
Barnes	Koldok	Chorus frog	VE	Ditch	
Barnes	Koldok	Chorus frog	VE	Ditch	
Barnes	Koldok	Great plains toad	VE	Road	

Barnes	Koldok	Great plains toad	VE	Road	[redacted]
Barnes	Koldok	Great plains toad	VE	Road	
Barnes	Koldok	Great plains toad	VE	Road	
Barnes	Koldok	Great plains toad	VE	Road	
Barnes	Koldok	Great plains toad	VE	Road	
Barnes	Koldok	Great plains toad	VE	Road	
Barnes	Koldok	Great plains toad	VE	Road	
Barnes	Koldok	Great plains toad	VE	Road	
Barnes	Koldok	Great plains toad	VE	Road	
Barnes	Koldok	Great plains toad	VE	Road	
Barnes	Koldok	Great plains toad	VE	Road	
Barnes	Koldok	Great plains toad	VE	Road	
Barnes	Koldok	Great plains toad	VE	Road	
Barnes	Koldok	Great plains toad	VE	Road	
Barnes	Koldok	Great plains toad	VE	Road	
Barnes	Koldok	Great plains toad	VE	Road	
Barnes	Koldok	Great plains toad	VE	Road	
Barnes	Koldok	Great plains toad	VE	Prairie road	
Barnes	Koldok	Great plains toad	VE	Road	
Barnes	Koldok	Great plains toad	VE	Road	
Barnes	Koldok	Great plains toad	VE	Road	
Barnes	Koldok	Great plains toad	VE	Road	
Barnes	Koldok	Leopard frog	VE	Wetland edge	
Barnes	Koldok	Leopard frog (5)	VE	Prairie	
Barnes	Koldok	Leopard frog tadpoles (5)	MT	Wetland	
Barnes	Koldok	Painted turtle	HN	Wetland	
Barnes	Koldok	Painted turtle	HN	Wetland	
Barnes	Koldok	Smooth green	VE	Ditch	
Barnes	Koldok	Smooth green	VE	Prairie	
Barnes	Koldok	Tiger salamander	HN	Wetland	
Bottineau	BOW	Chorus frog	PF	Prairie	
Bottineau	BOW	Garter radix	VE	DOR	
Bottineau	BOW	Garter radix	VE	DOR	
Bottineau	BOW	Garter radix	VE	Road	
Bottineau	BOW	Leopard frog	VE	Trail	
Bottineau	BOW	Leopard frog (20)	VE	Lake shore	

Bottineau	BOW	Leopard frog (20)	VE	Lake shore	[redacted]
Bottineau	BOW	Painted turtle	BT	Wetland	
Bottineau	BOW	Painted turtle	HN	Wetland	
Bottineau	BOW	Painted turtle	BT	Wetland	
Bottineau	BOW	Painted turtle	BT	Wetland	
Bottineau	BOW	Painted turtle	HN	Wetland	
Bottineau	BOW	Painted turtle	HN	Wetland	
Bottineau	BOW	Painted turtle	HN	Wetland	
Bottineau	BOW	Painted turtle	HN	Wetland	
Bottineau	BOW	Painted turtle	HN	Wetland	
Bottineau	BOW	Painted turtle	HN	Wetland	
Bottineau	BOW	Painted turtle	HN	Wetland	
Bottineau	BOW	Painted turtle	HN	Wetland	
Bottineau	BOW	Painted turtle	HN	Wetland	
Bottineau	BOW	Painted turtle	HN	Wetland	
Bottineau	BOW	Painted turtle	HN	Wetland	
Bottineau	BOW	Painted turtle	HN	Wetland	
Bottineau	BOW	Painted turtle	HN	Wetland	
Bottineau	BOW	Wood frog	VE	Forest edge	
Bottineau	BOW	Wood frog	VE	Forest edge	
Bottineau	BOW	Wood frog	VE	Forest edge	
Bottineau	BOW	Wood frog	VE	Forest edge	
Bottineau	BOW	Wood frog	VE	Forest edge	
Bottineau	BOW	Wood frog	VE	Forest edge	
Bottineau	BOW	Wood frog	VE	Forest edge	
Bottineau	BOW	Wood frog	VE	Forest edge	
Bottineau	BOW	Wood frog	VE	Forest edge	
Bottineau	BOW	Wood frog	VE	Forest edge	
Bottineau	BOW	Wood frog	VE	Forest edge	
Bottineau	BOW	Wood frog	VE	Forest edge	
Bottineau	BOW	Wood frog	VE	Forest edge	
Bottineau	BOW	Wood frog	VE	Forest edge	
Bottineau	BOW	Wood frog	VE	Forest edge	
Bottineau	BOW	Wood frog	VE	Forest edge	
Bottineau	BOW	Wood frog (5)	VE	Forest	
Burleigh	McKenzie	Chorus frog	AU	Ditch	

Burleigh	McKenzie	Chorus frog	AU	Ditch	[redacted]
Burleigh	McKenzie	Chorus frog	AU	Ditch	
Burleigh	McKenzie slough	Chorus frog	AU	Wetland	
Burleigh	McKenzie slough	Gray Treefrog	AU	Wetland	
Burleigh	Oahe WMA	Woodhouse's toad	VE	River bank	
Burleigh	Oahe WMA	Woodhouse's toad	VE	River bank	
Burleigh	Oahe WMA	Woodhouse's toad	VE	River bank	
Burleigh	Oahe WMA	Woodhouse's toad	LT	Sandy prairie	
Burleigh	Oahe WMA	Woodhouse's Toad (3)	LT	Sandy prairie	
Burleigh	Oahe WMA	Woodhouse's Toad	LT	Sandy prairie	
Burleigh	Oahe WMA	Woodhouse's toad	LT	Sandy prairie	
Burleigh	Oahe WMA	Woodhouse's toad	LT	Sandy prairie	
Burleigh	Oahe WMA	Woodhouse's toad	VE	River Shore	
Burleigh	Oahe WMA	Woodhouse's Toad (25)	VE	River shore	
Burleigh	Oahe WMA	Woodhouse's toad	PF	Sandy edge	
Burleigh	Oahe WMA	Woodhouse's toad	PF	Sandy edge	
Burleigh	Oahe WMA	Woodhouse's toad	FT	Riparian	
Burleigh	Oahe WMA	Woodhouse's toad (5)	PF	Sandy prairie	
Burleigh	Oahe WMA	Woodhouse's toad	FT	Sandy prairie	
Burleigh	Oahe WMA	Woodhouse's Toad (3)	PF	Sandy prairie	
Burleigh	Oahe WMA	Woodhouse's toad (2)	PF	Sandy prairie	
Burleigh	Oahe WMA	Woodhouse's toad	VE	River bank	
Burleigh	Oahe WMA	Woodhouse's toad	VE	Sandy edge	
Burleigh	Oahe WMA	Woodhouse's toad	VE	Riparian	
Burleigh	Oahe WMA	Woodhouse's toad	VE	River shore	
Burleigh	Oahe WMA	Woodhouse's toad	VE	River shore	
Burleigh	Oahe WMA	Woodhouse's toad	VE	River shore	
Burleigh	Oahe WMA	Woodhouse's toad	VE	River shore	
Burleigh	Oahe WMA	Woodhouse's toad	VE	River bank	
Burleigh	Oahe WMA	Woodhouse's toad	VE	River bank	
Burleigh	Oahe WMA	Western Painted turtle	HN	River	
Burleigh	Oahe WMA	Western Painted turtle	VE	River	
Burleigh	Oahe WMA	Western Painted turtle	VE	River	
Burleigh	Oahe WMA	Western Painted turtle	VE	River	
Burleigh	Oahe WMA	Northern Leopard frog (3)	VE	River bank	
Burleigh	Oahe WMA	Northern Leopard frog (10)	VE	River shore	

Burleigh	Oahe WMA	Northern Leopard frog (10)	VE	River shore	[redacted]
Burleigh	Oahe WMA	Northern Leopard frog	PF	Sandy edge	
Burleigh	Oahe WMA	Northern Leopard frog (2)	PF	Riparian	
Burleigh	Oahe WMA	Northern Leopard frog	PF	Riparian	
Burleigh	Oahe WMA	Northern Leopard frog (4)	FT	Sandy prairie	
Burleigh	Oahe WMA	Northern Leopard frog (2)	FT	Prairie	
Burleigh	Oahe WMA	Northern Leopard frog	PF	Prairie	
Burleigh	Oahe WMA	Northern Leopard frog (6)	PF	Prairie	
Burleigh	Oahe WMA	Northern Leopard frog	PF	Prairie	
Burleigh	Oahe WMA	Northern Leopard frog	FT	Prairie	
Burleigh	Oahe WMA	Northern Leopard frog	FT	Prairie	
Burleigh	Oahe WMA	Northern Leopard frog	VE	Woods	
Burleigh	Oahe WMA	Northern Leopard frog (8)	VE	Mixed prairie	
Burleigh	Oahe WMA	Northern Leopard frog	VE	Woods	
Burleigh	Oahe WMA	Northern Leopard frog	VE	Prairie	
Burleigh	Oahe WMA	Northern Leopard frog	VE	Road	
Burleigh	Oahe WMA	Northern Leopard frog	VE	Prairie	
Burleigh	Oahe WMA	Northern Leopard frog	VE	Riparian	
Burleigh	Oahe WMA	Northern Leopard frog	VE	Prairie	
Burleigh	Oahe WMA	Northern Leopard frog (7)	VE	River bank	
Burleigh	Oahe WMA	Northern Leopard frog (40)	VE	River shore	
Burleigh	Oahe WMA	Northern Leopard frog	VE	River shore	
Burleigh	Oahe WMA	Northern Leopard frog (5)	VE	Riparian	
Burleigh	Oahe WMA	Northern Leopard frog (5)	VE	River shore	
Burleigh	Oahe WMA	Northern Leopard frog (10)	VE	Riparian	
Burleigh	Oahe WMA	Boreal Chorus frog	PF	Sandy prairie	
Burleigh	Oahe WMA	Boreal Chorus frog	PF	Sandy prairie	
Burleigh	Oahe WMA	Boreal Chorus frog	PF	Prairie	
Burleigh	Oahe WMA	Boreal Chorus frog	PF	Prairie	
Burleigh	Oahe WMA	Boreal Chorus frog	PF	Prairie	
Burleigh	Oahe WMA	Plains garter snake	DOR	Road	
Cass	Brewer lake	Canadian toad	VE	Forest edge	
Cass	Brewer lake	Canadian toad	DOR	Gravel road	
Cass	Brewer lake	Great plains toad	VE	Gravel road	
Cass	Brewer lake	Leopard frog	VE	Gravel road	
Cass	Brewer lake	Leopard frog	VE	Gravel road	

Cass	Brewer lake	Leopard frog	VE	Mowed grass	[redacted]
Cass	Brewer lake	Leopard frog	VE	Mowed grass	
Cass	Brewer lake	Leopard frog (5)	VE	Wood edge	
Cass	Brewer lake	Painted turtle	HN	Lake	
Cass	Brewer lake	Paints turtle	HN	Lake	
Cass	Brewer lake	Prairie skink	VE	Lake shore/ rocks	
Cass	Brewer lake	Wood frog	FT	Wood edge	
Cass	Hamilton wells	Canadian toad	VE	River bank	
Cass	Hamilton wells	Canadian toad	VE	River bank	
Cass	Hamilton wells	Canadian toad	VE	River bank	
Cass	Hamilton wells	Canadian toad	VE	River bank	
Cass	Hamilton wells	Canadian toad	VE	River bank	
Cass	Hamilton wells	Canadian toad	VE	River bank	
Cass	Hamilton wells	Canadian toad	VE	River bank	
Cass	Hamilton wells	Canadian toad	VE	Road	
Cass	Hamilton wells	Canadian toad	VE	Prairie	
Cass	Hamilton wells	Canadian toad	VE	Prairie	
Cass	Hamilton wells	Canadian toad	VE	Road	
Cass	Hamilton wells	Canadian toad	VE	Road	
Cass	Hamilton wells	Canadian toad	VE	Road	
Cass	Hamilton wells	Canadian toad	VE	Road	
Cass	Hamilton wells	Canadian toad (3)	VE	Road	
Cass	Hamilton wells	Chorus Frog	PF	Prairie	
Cass	Hamilton wells	Chorus Frog	PF	Prairie	
Cass	Hamilton wells	Garter radix	VE	Road	
Cass	Hamilton wells	Garter radix	VE	Road	
Cass	Hamilton wells	Gray Treefrog	VE	Road	
Cass	Hamilton wells	Gray Treefrog	VE	Road	
Cass	Hamilton wells	Gray Treefrog	FT	Prairie	
Cass	Hamilton wells	Gray Treefrog	VE	Prairie	
Cass	Hamilton wells	Great Plains Toad	VE	Road/field edge	
Cass	Hamilton wells	Great Plains Toad	VE	Road	
Cass	Hamilton wells	Great Plains Toad	VE	Road	
Cass	Hamilton wells	Great Plains Toad	VE	Road	
Cass	Hamilton wells	Great Plains Toad	VE	Road	
Cass	Hamilton wells	Great Plains Toad	VE	Prairie	

Cass	Hamilton wells	Great Plains Toad	VE	Road	[redacted]
Cass	Hamilton wells	Great Plains Toad	VE	Road	
Cass	Hamilton wells	Great Plains Toad	VE	Road	
Cass	Hamilton wells	Great Plains Toad	VE	Road	
Cass	Hamilton wells	Great Plains Toad	VE	Road	
Cass	Hamilton wells	Great Plains Toad	VE	Road	
Cass	Hamilton wells	Great Plains Toad	VE	Road	
Cass	Hamilton wells	Great Plains Toad	VE	Road	
Cass	Hamilton wells	Great Plains Toad	VE	Road	
Cass	Hamilton wells	Great Plains Toad	VE	Road	
Cass	Hamilton wells	Great Plains Toad	VE	Road	
Cass	Hamilton wells	Great Plains Toad (10)	VE	Road	
Cass	Hamilton wells	Leopard frog	VE	Prairie	
Cass	Hamilton wells	Leopard frog	VE	Road	
Cass	Hamilton wells	Leopard frog	VE	Road	
Cass	Hamilton wells	Leopard frog	VE	Prairie	
Cass	Hamilton wells	Leopard frog	VE	Prairie	
Cass	Hamilton wells	Leopard frog	VE	Road	
Cass	Hamilton wells	Leopard frog	VE	Road/field edge	
Cass	Hamilton wells	Leopard frog	VE	Road	
Cass	Hamilton wells	Leopard frog	VE	Prairie	
Cass	Hamilton wells	Leopard frog	FT	Prairie	
Cass	Hamilton wells	Leopard frog	VE	Prairie	
Cass	Hamilton wells	Leopard frog (2)	VE	Road	
Cass	Hamilton wells	Painted turtle	VE	Pond	
Cass	Hamilton wells	Prairie skink	VE	Prairie	
Cass	Hamilton wells	Unknown garter	VE	Road	
Cass	Hamilton wells	Unknown toadlet	VE	Road	
Cass	Hamilton Wells WMA	Canadian toad	VE	Riparian	
Cass	Hamilton Wells WMA	Canadian toad	VE	Roadside wetland	
Cass	Hamilton Wells WMA	Canadian toad	Audio	Wet ditch	
Cass	Hamilton Wells WMA	Canadian toad	VE	Riparian	
Cass	Hamilton Wells WMA	Canadian toad	VE	Riparian	
Cass	Hamilton Wells WMA	Canadian toad	VE	Riparian	
Cass	Hamilton Wells WMA	Snapping turtle	HN	Maple river	
Cass	Hamilton Wells WMA	Western Painted turtle	VE	Roadside wetland	

Cass	Hamilton Wells WMA	Northern Leopard frog	VE	Roadside wetland	[redacted]
Cass	Hamilton Wells WMA	Northern Leopard frog	VE	Prairie	
Cass	Hamilton Wells WMA	Northern Leopard frog	VE	Prairie	
Cass	Hamilton Wells WMA	Northern Leopard frog	VE	Prairie	
Cass	Hamilton Wells WMA	Northern Leopard frog	VE	Prairie	
Cass	Hamilton Wells WMA	Northern Leopard frog	VE	Prairie	
Cass	Hamilton Wells WMA	Northern Leopard frog	VE	Prairie	
Cass	Hamilton Wells WMA	Northern Leopard frog	VE	Prairie	
Cass	Hamilton Wells WMA	Northern Leopard frog	VE	Riverbank	
Cass	Hamilton Wells WMA	Northern Leopard frog	VE	Prairie	
Cass	Hamilton Wells WMA	Northern Leopard frog	VE	Prairie	
Cass	Hamilton Wells WMA	Northern Leopard frog	VE	Prairie	
Cass	Hamilton Wells WMA	Northern Leopard frog	VE	Road	
Cass	Hamilton Wells WMA	Northern Leopard frog	VE	Prairie	
Cass	Hamilton Wells WMA	Northern Leopard frog	VE	Edge/ditch	
Cass	Hamilton Wells WMA	Northern Prairie Skink	VE	Prairie/weed tarp	
Cass	Hamilton Wells WMA	Northern Prairie Skink	VE	Prairie/weed tarp	
Cass	Hamilton Wells WMA	Northern Prairie Skink	VE	Prairie/weed tarp	
Cass	Hamilton Wells WMA	Boreal Chorus frog	VE	Roadside wetland	
Cass	Hamilton Wells WMA	Boreal Chorus frog	Audio	Wet ditch	
Cass	Hamilton Wells WMA	Plains garter snake	VE	Prairie	
Cass	Hamilton Wells WMA	Plains garter snake	FT	Prairie	
Cass	Hamilton Wells WMA	Plains garter snake	VE	Prairie	
Cass	Hamilton Wells WMA	Plains garter snake	VE	Prairie	
Cass	Hamilton Wells WMA	Plains garter snake	VE	Prairie	
Cass	Hamilton Wells WMA	Plains garter snake	VE	Prairie	
Cass	Hamilton Wells WMA	Plains garter snake	VE	Prairie	
Cass	Hamilton Wells WMA	Plains garter snake	VE	Prairie	
Cass	Hamilton Wells WMA	Plains garter snake	VE	Road	
Dickey	Hyatt slough	Canadian toad	VE	Field edge	
Dickey	Hyatt slough	Canadian toad	VE	Wetland edge	
Dickey	Hyatt slough	Canadian toad	VE	Prairie	
Dickey	Hyatt slough	Canadian toad	VE	Prairie	
Dickey	Hyatt slough	Canadian toad	VE	Wetland	
Dickey	Hyatt slough	Canadian toad	VE	Field	
Dickey	Hyatt slough	Canadian toad	VE	Wetland edge	

Dickey	Hyatt slough	Chorus frog	VE	Flooded tire	[redacted]
Dickey	Hyatt slough	Chorus frog	VE	Flooded tire	[redacted]
Dickey	Hyatt slough	Chorus frog	LT	Field edge	[redacted]
Dickey	Hyatt slough	Chorus frog	LT	Field edge	[redacted]
Dickey	Hyatt slough	Garter radix	VE	Prairie	[redacted]
Dickey	Hyatt slough	Garter radix	VE	Road	[redacted]
Dickey	Hyatt slough	Garter radix	VE	DOR	[redacted]
Dickey	Hyatt slough	Great plains toad	LT	Field edge	[redacted]
Dickey	Hyatt slough	Great plains toad	LT	Field edge	[redacted]
Dickey	Hyatt slough	Great plains toad	LT	Field edge	[redacted]
Dickey	Hyatt slough	Leopard frog	VE	Ditch	[redacted]
Dickey	Hyatt slough	Leopard frog	VE	Flooded tire	[redacted]
Dickey	Hyatt slough	Leopard frog	VE	Flooded tire	[redacted]
Dickey	Hyatt slough	Leopard frog	VE	Ditch	[redacted]
Dickey	Hyatt slough	Leopard frog	VE	Prairie	[redacted]
Dickey	Hyatt slough	Leopard frog	VE	Prairie	[redacted]
Dickey	Hyatt slough	Leopard frog	VE	Prairie	[redacted]
Dickey	Hyatt slough	Leopard frog	VE	Prairie	[redacted]
Dickey	Hyatt slough	Leopard frog	VE	Prairie	[redacted]
Dickey	Hyatt slough	Leopard frog	VE	Mowed ditch	[redacted]
Dickey	Hyatt slough	Leopard frog	VE	Field edge	[redacted]
Dickey	Hyatt slough	Leopard frog	VE	Field edge	[redacted]
Dickey	Hyatt slough	Leopard frog	VE	Mowed grass	[redacted]
Dickey	Hyatt slough	Leopard frog	VE	Road	[redacted]
Dickey	Hyatt slough	Leopard frog	VE	Road	[redacted]
Dickey	Hyatt slough	Leopard frog	VE	Prairie	[redacted]
Dickey	Hyatt slough	Leopard frog	VE	Prairie	[redacted]
Dickey	Hyatt slough	Leopard frog	VE	Prairie	[redacted]
Dickey	Hyatt slough	Leopard frog	VE	Prairie	[redacted]
Dickey	Hyatt slough	Leopard frog	VE	Prairie	[redacted]
Dickey	Hyatt slough	Leopard frog	VE	Prairie	[redacted]
Dickey	Hyatt slough	Leopard frog (20)	VE	Prairie	[redacted]
Dickey	Hyatt slough	Painted turtle	BT	Wetland	[redacted]
Dickey	Hyatt slough	Painted turtle	HN	Wetland	[redacted]
Dickey	Hyatt slough	Painted turtle	BT	Wetland	[redacted]
Dickey	Hyatt slough	Painted turtle	HN	Wetland	[redacted]

Dickey	Hyatt slough	Painted turtle	HN	Wetland	[redacted]
Dickey	Hyatt slough	Tiger salamander	LT	Field edge	
Dickey	Hyatt slough	Tiger salamander	LT	Field edge	
Dickey	Hyatt slough	Tiger salamander	VE	Field edge	
Dickey	Hyatt slough	Unknown garter	VE	Road	
Dickey	Hyatt slough	Unknown garter	VE	Road	
Dickey	Hyatt slough	Unknown garter	VE	Prairie	
Dickey	Hyatt slough	Unknown toadlet	VE	Road	
Dickey	Hyatt slough	Unknown toadlet	VE	Wetland edge	
Dickey	Hyatt slough	Unknown toadlet	VE	Wetland edge	
Dickey	Hyatt slough	Unknown toadlet	VE	Wetland edge	
Dickey	Hyatt slough	Unknown toadlet	VE	Field edge	
Dickey	Hyatt slough	Unknown toadlet	VE	Field edge	
Dickey	Hyatt slough	Unknown toadlet	VE	Field edge	
Dickey	Hyatt slough	Unknown toadlet	LT	Field edge	
Dickey	Hyatt slough	Unknown toadlet	LT	Field edge	
Dickey	Hyatt slough	Unknown toadlet	LT	Field edge	
Dickey	Hyatt slough	Unknown toadlet	VE	Mowed ditch	
Dickey	Hyatt slough	Unknown toadlet	LT	Field edge	
Dickey	Johnson's Gulch	Leopard frog tadpole	MT	Creek	
Dickey	Johnson's Gulch	Northern Leopard frog	FT	Prairie	
Dickey	Johnson's Gulch	Northern Leopard frog	VE	Prairie	
Dickey	Johnson's Gulch	Northern Leopard frog (25)	VE	Wetland edge	
Dickey	Johnson's Gulch	Northern Leopard frog	VE	Prairie	
Dickey	Johnson's Gulch	Northern Leopard frog (20)	VE	Prairie creek	
Dickey	Johnson's Gulch	Northern Leopard frog	VE	Prairie	
Dickey	Johnson's Gulch	Northern Leopard frog	VE	Road	
Dickey	Johnson's Gulch	Northern Leopard frog	VE	Road	
Dickey	Johnson's Gulch	Northern Leopard frog	VE	Road	
Dickey	Johnson's Gulch	Northern Leopard frog	VE	Road	
Dickey	Johnson's Gulch	Northern Leopard frog	VE	Road	
Dickey	Johnson's Gulch	Northern Leopard frog	VE	Road	
Dickey	Johnson's Gulch	Northern Leopard frog	VE	Road	
Dickey	Johnson's Gulch	Northern Leopard frog	VE	Prairie	
Dickey	Johnson's Gulch	Northern Leopard frog (40)	VE	Pond	
Dickey	Johnson's Gulch	Northern Leopard frog	VE	Edge of woods	

Dickey	Johnson's Gulch	Northern Leopard frog (3)	VE	Wooded creek	[redacted]
Dickey	Johnson's Gulch	Northern Leopard frog	VE	Prairie	
Dickey	Johnson's Gulch	Northern Leopard frog	VE	Woods	
Dickey	Johnson's Gulch	Northern Leopard frog	VE	Prairie	
Dickey	Johnson's Gulch	Northern Leopard frog	VE	Woods	
Dickey	Johnson's Gulch	Northern Leopard frog (2)	VE	Woods	
Dickey	Johnson's Gulch	Northern Leopard frog (>100)	VE	Road	
Dickey	Johnson's Gulch	Smooth Green snake	VE	Road	
Dickey	Johnson's Gulch	Smooth Green snake	VE	Prairie	
Dickey	Johnson's Gulch	Smooth Green snake	VE	Prairie	
Dickey	Johnson's Gulch	Boreal Chorus frog	LT	Prairie	
Dickey	Johnson's Gulch	Plains garter snake	VE	Prairie	
Dickey	Johnson's Gulch	Plains garter snake	VE	Road	
Dickey	Johnson's Gulch	Plains garter snake	VE	Road	
Emmons	Hague WMA	Chorus frog	AU	Field -wet area	
Emmons	Hague WMA	Chorus frog	AU	Field -wet area	
Emmons	Hague WMA	Garter radix	VE	Prairie	
Emmons	Kaiser's	Bullsnake	VE	Road	
Emmons	Kaiser's	Bullsnake	DOR	Road	
Emmons	Kaiser's	Painted turtle	VE	Wetland	
Emmons	Kaiser's	Racer	VE	Prairie	
Emmons	Oahe WMA	Canadian toad	VE	Ditch	
Emmons	Oahe WMA	Canadian toad	VE	Field edge	
Emmons	Oahe WMA	Woodhouse's toad	VE	Ditch	
Emmons	Oahe WMA	Woodhouse's toad (2)	PF	Ditch	
Emmons	Oahe WMA	Woodhouse's toad	FT	Ditch	
Emmons	Oahe WMA	Woodhouse's toad	VE	Ditch	
Emmons	Oahe WMA	Woodhouse's toad	PF	Ditch	
Emmons	Oahe WMA	Woodhouse's toad	DE	Ditch	
Emmons	Oahe WMA	Woodhouse's toad	VE	Ditch	
Emmons	Oahe WMA	Woodhouse's toad	PF	Ditch	
Emmons	Oahe WMA	Woodhouse's toad	PF	Ditch	
Emmons	Oahe WMA	Woodhouse's toad	FT	Ditch	
Emmons	Oahe WMA	Woodhouse's toad	FT	Ditch	
Emmons	Oahe WMA	Woodhouse's toad	PF	Ditch	
Emmons	Oahe WMA	Woodhouse's toad	PF	Ditch	

Emmons	Oahe WMA	Woodhouse's toad	PF	Ditch	[redacted]
Emmons	Oahe WMA	Woodhouse's toad	FT	Ditch	
Emmons	Oahe WMA	Woodhouse's toad	PF	Ditch	
Emmons	Oahe WMA	Woodhouse's toad	PF	Ditch	
Emmons	Oahe WMA	Woodhouse's toad	DOR	Road	
Emmons	Oahe WMA	Woodhouse's toad	VE	Road	
Emmons	Oahe WMA	Woodhouse's toad	VE	Road	
Emmons	Oahe WMA	Woodhouse's toad	VE	Road	
Emmons	Oahe WMA	Woodhouse's toad	VE	River bank	
Emmons	Oahe WMA	Western Painted turtle	HN	Wetland	
Emmons	Oahe WMA	Western Painted turtle	HN	Wetland	
Emmons	Oahe WMA	Western Painted turtle	HN	Wetland	
Emmons	Oahe WMA	Western Painted turtle	HN	Wetland	
Emmons	Oahe WMA	Western Painted turtle	HN	Wetland	
Emmons	Oahe WMA	Western Painted turtle	HN	Wetland	
Emmons	Oahe WMA	Western Painted turtle	BT	Wetland	
Emmons	Oahe WMA	Northern Leopard frog (15)	VE	Wetland	
Emmons	Oahe WMA	Northern Leopard frog	VE	Road	
Emmons	Oahe WMA	Northern Leopard frog (10)	VE	Grassy Dike	
Emmons	Oahe WMA	Northern Leopard frog (15)	VE	Wetland	
Emmons	Oahe WMA	Northern Leopard frog	VE	Prairie	
Emmons	Oahe WMA	Northern Leopard frog	VE	Road	
Emmons	Oahe WMA	Northern Leopard frog	VE	Road	
Emmons	Oahe WMA	Northern Leopard frog	VE	Prairie	
Emmons	Oahe WMA	Northern Leopard frog	VE	Creek shore	
Emmons	Oahe WMA	Smooth Green snake	VE	DOR	
Emmons	Oahe WMA	Boreal Chorus frog	LT	Prairie	
Emmons	Oahe WMA	Boreal Chorus frog (2)	LT	Prairie	
Emmons	Oahe WMA	Boreal Chorus frog	PF	Prairie	
Emmons	Oahe WMA	Boreal Chorus frog (8)	PF	Ditch	
Emmons	Oahe WMA	Boreal Chorus frog	PF	Ditch	
Emmons	Oahe WMA	Boreal Chorus frog (3)	PF	Prairie	
Emmons	Oahe WMA	Boreal Chorus frog (5)	PF	Prairie	
Emmons	Oahe WMA	Boreal Chorus frog	PF	Prairie	
Emmons	Oahe WMA	Boreal Chorus frog (14)	PF	Prairie	
Emmons	Oahe WMA	Boreal chorus frog	PF	Prairie	

Emmons	Oahe WMA	Boreal Chorus frog	PF	Prairie	[redacted]
Emmons	Oahe WMA	Boreal Chorus frog	PF	Prairie	
Emmons	Oahe WMA	Boreal Chorus frog	PF	Prairie	
Emmons	Oahe WMA	Boreal Chorus frog	PF	Prairie	
Emmons	Oahe WMA	Boreal Chorus frog	PF	Prairie	
Emmons	Oahe WMA	Boreal Chorus frog	PF	Prairie	
Emmons	Oahe WMA	Boreal Chorus frog	PF	Prairie	
Emmons	Oahe WMA	Boreal Chorus frog	PF	Prairie	
Emmons	Oahe WMA	Boreal Chorus frog	PF	Prairie	
Emmons	Oahe WMA	Boreal Chorus frog	PF	Prairie	
Emmons	Oahe WMA	Boreal Chorus frog	PF	Prairie	
Emmons	Oahe WMA	Boreal Chorus frog	PF	Prairie	
Emmons	Oahe WMA	Boreal Chorus frog	PF	Prairie	
Emmons	Oahe WMA	Boreal Chorus frog	PF	Prairie	
Emmons	Oahe WMA	Boreal Chorus frog	PF	Prairie	
Emmons	Oahe WMA	Boreal Chorus frog	PF	Prairie	
Emmons	Oahe WMA	Boreal Chorus frog	VE	Forest edge	
Emmons	Oahe WMA	Plains garter snake	VE	Prairie	
Emmons	Oahe WMA	Plains garter snake	VE	Wetland	
Emmons	Oahe WMA	Plains garter snake	DOR	Road	
Emmons	Oahe WMA	Plains garter snake	VE	Road	
Kidder	Dawson WMA	Blotched Tiger salamander	MT	Pond	
Kidder	Dawson WMA	Blotched Tiger salamander	MT	Pond	
Kidder	Dawson WMA	Blotched Tiger salamander	MT	Pond	
Kidder	Dawson WMA	Blotched Tiger salamander	MT	Pond	
Kidder	Dawson WMA	Blotched Tiger salamander	MT	Pond	
Kidder	Dawson WMA	Blotched Tiger salamander	VE	Pond	
Kidder	Dawson WMA	Blotched Tiger salamander	VE	Pond	
Kidder	Dawson WMA	Blotched Tiger salamander	VE	Pond	
Kidder	Dawson WMA	Northern Leopard frog	VE	Pond	
Kidder	Dawson WMA	Northern Leopard frog	VE	Road	
Kidder	Dawson WMA	Northern Leopard frog	VE	Prairie	
Kidder	Dawson WMA	Northern Leopard frog	VE	Shore of pond	
Kidder	Dawson WMA	Northern Leopard frog	VE	Muddy dugout	
Kidder	Dawson WMA	Northern Leopard frog	VE	Prairie	
Kidder	Dawson WMA	Northern Leopard frog	VE	Prairie	

Kidder	Dawson WMA	Northern Leopard frog	VE	Prairie	[redacted]
Kidder	Dawson WMA	Smooth Green snake	VE	Prairie road	
Kidder	Dawson WMA	Smooth Green snake	VE	Prairie	
Kidder	Dawson WMA	Smooth Green snake	VE	Prairie	
Kidder	Dawson WMA	Smooth Green snake	VE	Forest edge	
Kidder	Dawson WMA	Smooth Green snake	VE	Prairie road	
Kidder	Dawson WMA	Boreal Chorus frog	VE	Prairie road	
Kidder	Dawson WMA	Plains garter snake	VE	Prairie	
Kidder	Dawson WMA	Plains garter snake	VE	Prairie	
Kidder	Dawson WMA	Plains garter snake	VE	Road - DOR	
Kidder	Horse head Lake	Garter radix	DOR	Road	
Kidder	Horse head Lake	Garter radix	VE	Ditch	
Kidder	Horse head lake	Garter radix	PF	Prairie	
Kidder	Horse head lake	Garter radix	VE	Ditch	
Kidder	Horse head lake	Garter radix	VE	Ditch	
Kidder	Horse head lake	Garter radix	VE	Ditch	
Kidder	Horse head Lake	Hog nose	VE	Ditch	
Kidder	Horse head lake	Hog nose	VE	Ditch	
Kidder	Horse head Lake	Leopard frog	VE	Wetland edge	
Kidder	Horse head Lake	Leopard frog	VE	Wetland edge	
Kidder	Horse head Lake	Leopard frog	VE	Wetland edge	
Kidder	Horse head Lake	Leopard frog	VE	Wetland edge	
Kidder	Horse head Lake	Leopard frog	VE	Prairie	
Kidder	Horse head Lake	Leopard frog	VE	Prairie	
Kidder	Horse head Lake	Leopard frog	VE	Prairie	
Kidder	Horse head Lake	Leopard frog	VE	Prairie	
Kidder	Horse head Lake	Leopard frog	VE	Prairie	
Kidder	Horse head Lake	Leopard frog	VE	Prairie	
Kidder	Horse head Lake	Leopard frog	VE	Prairie	
Kidder	Horse head Lake	Leopard frog	VE	Prairie	
Kidder	Horse head Lake	Leopard frog	VE	Prairie	
Kidder	Horse head Lake	Leopard frog	VE	Prairie	
Kidder	Horse head Lake	Leopard frog	VE	Prairie	
Kidder	Horse head Lake	Leopard frog	VE	Prairie	
Kidder	Horse head Lake	Leopard frog	VE	Prairie	
Kidder	Horse head Lake	Leopard frog	FT	Prairie	

Kidder	Horse head lake	Leopard frog	VE	Road	[redacted]
Kidder	Horse head lake	Leopard frog	VE	Prairie wetlands	
Kidder	Horse head lake	Leopard frog	VE	Prairie	
Kidder	Horse head lake	Leopard frog	VE	Ditch	
Kidder	Horse head lake	Leopard frog	VE	Ditch	
Kidder	Horse head lake	Leopard frog	VE	Ditch	
Kidder	Horse head lake	Leopard frog tadpoles (20)	MT	Wetland	
Kidder	Horse head lake	Leopard frog tadpoles (20)	MT	Wetland	
Kidder	Horse head Lake	Leopard frog tadpoles (30)	MT	Wetland	
Kidder	Horse head Lake	Leopard frog tadpoles (50)	MT	Wetland	
Kidder	Horse head Lake	Garter Radix	PF	Prairie	
Kidder	Horse head lake	Red belly	VE	Ditch	
LaMoure	Cottonwood Creek	Western Painted turtle	HN	River	
LaMoure	Cottonwood Creek	Western Painted turtle	HN	Lake	
LaMoure	Cottonwood Creek	Western Painted turtle	HN	Lake	
LaMoure	Cottonwood Creek	Western Painted turtle	HN	Lake	
LaMoure	Cottonwood Creek	Northern Leopard frog (4)	FT	Prairie	
LaMoure	Cottonwood Creek	Northern Leopard frog	PF	Prairie	
LaMoure	Cottonwood Creek	Northern Leopard frog (3)	VE	Beach	
LaMoure	Cottonwood Creek	Northern Leopard frog (5)	VE	Lake shore	
LaMoure	Cottonwood Creek	Northern Leopard frog (10)	VE	Road	
LaMoure	Cottonwood Creek	Northern Leopard frog	VE	Ditch	
LaMoure	Cottonwood Creek	Northern Leopard frog	VE	Edge of woods	
LaMoure	Cottonwood Creek	Northern Leopard frog	VE	Ditch	
LaMoure	Cottonwood Creek	Northern Leopard frog	VE	Ditch	
LaMoure	Cottonwood Creek	Northern Leopard frog	VE	Ditch	
LaMoure	Cottonwood Creek	Northern Leopard frog	VE	Ditch	
LaMoure	Cottonwood Creek	Northern Leopard frog	VE	Ditch	
LaMoure	Cottonwood Creek	Northern Leopard frog	VE	Prairie	
LaMoure	Cottonwood Creek	Northern Leopard frog	VE	Prairie	
LaMoure	Cottonwood Creek	Northern Leopard frog	VE	Prairie	
LaMoure	Cottonwood Creek	Northern Leopard frog	VE	Prairie	
LaMoure	Cottonwood Creek	Northern Leopard frog	VE	Prairie	
LaMoure	Cottonwood Creek	Northern Leopard frog	VE	Prairie	
LaMoure	Cottonwood Creek	Northern Leopard frog	VE	Edge of woods	
LaMoure	Cottonwood Creek	Northern Leopard frog (2)	VE	Prairie	

LaMoure	Cottonwood Creek	Northern Leopard frog (3)	VE	Lake shore	[redacted]
LaMoure	Cottonwood Creek	Northern Leopard frog (27)	VE	Lake shore	
LaMoure	Cottonwood Creek	Northern Leopard frog (4)	VE	Prairie	
LaMoure	Cottonwood Creek	Northern Leopard frog	VE	Edge of woods	
LaMoure	Cottonwood Creek	Northern Leopard frog (3)	VE	Road	
LaMoure	Cottonwood Creek	Boreal Chorus frog	LT	Ditch wetland	
LaMoure	Cottonwood Creek	Redbelly snake	VE	Riparian	
LaMoure	Cottonwood Creek	Plains garter snake	VE	Prairie	
LaMoure	Cottonwood Creek	Plains garter snake	VE	Road	
LaMoure	Cottonwood Creek	Plains garter snake	VE	Beach	
LaMoure	Cottonwood Creek	Plains garter snake	VE	Beach	
LaMoure	Cottonwood Creek	Plains garter snake	VE	Ditch	
LaMoure	Cottonwood Creek	Plains garter snake	VE	Prairie	
LaMoure	Cottonwood Creek	Plains garter snake	VE	Prairie	
LaMoure	Cottonwood Creek	Plains garter snake	VE	Prairie	
LaMoure	Cottonwood Creek	Plains garter snake	VE	Prairie	
Lamoure	Seth Gordon	Canadian toad	VE	Wetland edge	
Lamoure	Seth Gordon	Canadian toad	VE	Wetland edge	
Lamoure	Seth Gordon	Canadian toad	VE	Wetland edge	
Lamoure	Seth Gordon	Canadian toad	VE	Wetland edge	
Lamoure	Seth Gordon	Canadian toad	VE	Wetland edge	
Lamoure	Seth Gordon	Canadian toad	VE	Wetland edge	
Lamoure	Seth Gordon	Canadian toad	VE	Wetland edge	
Lamoure	Seth Gordon	Canadian toad	VE	Wetland edge	
Lamoure	Seth Gordon	Canadian toad	VE	Wetland edge	
Lamoure	Seth Gordon	Canadian toad	VE	Wetland edge	
Lamoure	Seth Gordon	Canadian toad	VE	Wetland edge	
Lamoure	Seth Gordon	Canadian toad	VE	Road	
Lamoure	Seth Gordon	Canadian toad	VE	Road	
Lamoure	Seth Gordon	Canadian toad	VE	Road	
Lamoure	Seth Gordon	Canadian toad	VE	Road	
Lamoure	Seth Gordon	Canadian toad	VE	Road	
Lamoure	Seth Gordon	Canadian toad	VE	Wetland edge	
Lamoure	Seth Gordon	Canadian toad	VE	Wetland	
Lamoure	Seth Gordon	Canadian toad	VE	Wetland	
Lamoure	Seth Gordon	Canadian toad	VE	Wetland	

Lamoure	Seth Gordon	Canadian toad	VE	Wetland	[redacted]
Lamoure	Seth Gordon	Canadian toad	VE	Road	
Lamoure	Seth Gordon	Canadian toad	LT	Wetland edge	
Lamoure	Seth Gordon	Canadian toad	VE	Wetland	
Lamoure	Seth Gordon	Canadian toad	VE	Wetland	
Lamoure	Seth Gordon	Canadian toad	VE	Road	
Lamoure	Seth Gordon	Canadian toad	VE	Road	
Lamoure	Seth Gordon	Canadian toad	PF	Wetland edge	
Lamoure	Seth Gordon	Canadian toad	VE	Road	
Lamoure	Seth Gordon	Canadian toad (5)	VE	Road	
Lamoure	Seth Gordon	Chorus frog	VE	Ditch	
Lamoure	Seth Gordon	Chorus frog	VE	Ditch	
Lamoure	Seth Gordon	Chorus frog	VE	Ditch	
Lamoure	Seth Gordon	Chorus frog	VE	Ditch	
Lamoure	Seth Gordon	Chorus frog	VE	Wetland edge	
Lamoure	Seth Gordon	Chorus frog	VE	Ditch	
Lamoure	Seth Gordon	Garter radix	VE	Road	
Lamoure	Seth Gordon	Garter radix	VE	Road	
Lamoure	Seth Gordon	Leopard frog	VE	Wetland edge	
Lamoure	Seth Gordon	Leopard frog	VE	Wetland edge	
Lamoure	Seth Gordon	Leopard frog	VE	Wetland edge	
Lamoure	Seth Gordon	Leopard frog	VE	Wetland edge	
Lamoure	Seth Gordon	Leopard frog	VE	Cornfield edge	
Lamoure	Seth Gordon	Leopard frog	VE	Woods	
Lamoure	Seth Gordon	Leopard frog	VE	Prairie	
Lamoure	Seth Gordon	Leopard frog	VE	Prairie	
Lamoure	Seth Gordon	Leopard frog	VE	Wetland edge	
Lamoure	Seth Gordon	Leopard frog	VE	Wetland edge	
Lamoure	Seth Gordon	Leopard frog	VE	Wetland	
Lamoure	Seth Gordon	Leopard frog	VE	Prairie	
Lamoure	Seth Gordon	Leopard frog	VE	Prairie	
Lamoure	Seth Gordon	Leopard frog	VE	Prairie	
Lamoure	Seth Gordon	Leopard frog	VE	Field edge	
Lamoure	Seth Gordon	Leopard frog	VE	Woods	
Lamoure	Seth Gordon	Leopard frog	VE	Wetland	
Lamoure	Seth Gordon	Leopard frog	FT	Wetland edge	

Lamoure	Seth Gordon	Leopard frog	FT	Wetland edge	[redacted]
Lamoure	Seth Gordon	Leopard frog	FT	Wetland edge	[redacted]
Lamoure	Seth Gordon	Leopard frog	FT	Wetland edge	[redacted]
Lamoure	Seth Gordon	Leopard frog	FT	Wetland edge	[redacted]
Lamoure	Seth Gordon	Leopard frog	FT	Wetland edge	[redacted]
Lamoure	Seth Gordon	Leopard frog	FT	Wetland edge	[redacted]
Lamoure	Seth Gordon	Leopard frog	FT	Wetland edge	[redacted]
Lamoure	Seth Gordon	Leopard frog	FT	Wetland edge	[redacted]
Lamoure	Seth Gordon	Leopard frog (10)	VE	Wetland edge	[redacted]
Lamoure	Seth Gordon	Leopard frog (10)	FT	Wetland edge	[redacted]
Lamoure	Seth Gordon	Leopard frog (20)	FT	Wetland edge	[redacted]
Lamoure	Seth Gordon	Leopard frog (5)	VE	Wetland edge	[redacted]
Lamoure	Seth Gordon	Leopard frog (5)	VE	Prairie	[redacted]
Lamoure	Seth Gordon	Leopard frog (5)	VE	Prairie	[redacted]
Lamoure	Seth Gordon	Tiger Salamander	DOR	Road	[redacted]
Lamoure	Seth Gordon	Unknown toadlet	VE	Road	[redacted]
Logan	Logan Co. WMA	Western Painted turtle	VE	Lake	[redacted]
Logan	Logan Co. WMA	Northern Leopard frog (5)	MT	Lake	[redacted]
Logan	Logan Co. WMA	Northern Leopard frog (4)	MT	Lake	[redacted]
Logan	Logan Co. WMA	Northern Leopard frog	MT	Lake	[redacted]
Logan	Logan Co. WMA	Northern Leopard frog (36)	LT	Edge	[redacted]
Logan	Logan Co. WMA	Northern Leopard frog	LT	Edge	[redacted]
Logan	Logan Co. WMA	Northern Leopard frog	LT	Edge	[redacted]
Logan	Logan Co. WMA	Northern Leopard frog	LT	Edge	[redacted]
Logan	Logan Co. WMA	Northern Leopard frog	LT	Edge	[redacted]
Logan	Logan Co. WMA	Northern Leopard frog	LT	Edge	[redacted]
Logan	Logan Co. WMA	Northern Leopard frog	LT	Edge	[redacted]
Logan	Logan Co. WMA	Northern Leopard frog	LT	Edge	[redacted]
Logan	Logan Co. WMA	Northern Leopard frog	LT	Edge	[redacted]
Logan	Logan Co. WMA	Northern Leopard frog (2)	LT	Edge	[redacted]
Logan	Logan Co. WMA	Northern Leopard frog (9)	LT	Edge	[redacted]
Logan	Logan Co. WMA	Northern Leopard frog (255)	PF	Prairie	[redacted]
Logan	Logan Co. WMA	Northern Leopard frog	PF	Prairie	[redacted]
Logan	Logan Co. WMA	Northern Leopard frog	PF	Prairie	[redacted]
Logan	Logan Co. WMA	Northern Leopard frog	PF	Prairie	[redacted]
Logan	Logan Co. WMA	Northern Leopard frog	PF	Prairie	[redacted]

Logan	Logan Co. WMA	Northern Leopard frog	PF	Prairie	[redacted]
Logan	Logan Co. WMA	Northern Leopard frog	PF	Prairie	
Logan	Logan Co. WMA	Northern Leopard frog	PF	Prairie	
Logan	Logan Co. WMA	Northern Leopard frog	PF	Prairie	
Logan	Logan Co. WMA	Northern Leopard frog	PF	Prairie	
Logan	Logan Co. WMA	Northern Leopard frog (30)	PF	Prairie	
Logan	Logan Co. WMA	Northern Leopard frog (>200)	VE	Lake shore	
Logan	Logan Co. WMA	Northern Leopard frog (>50)	VE	Lake shore	
Logan	Logan Co. WMA	Northern Leopard frog (10)	VE	Prairie	
Logan	Logan Co. WMA	Northern Leopard frog	VE	Ditch	
Logan	Logan Co. WMA	Northern Leopard frog	VE	Prairie	
Logan	Logan Co. WMA	Northern Leopard frog (15)	VE	Wetland edge	
Logan	Logan Co. WMA	Plains garter snake	VE	Prairie	
Logan	Logan Co. WMA	Plains garter snake	VE	Prairie	
Logan	Logan Co. WMA	Plains garter snake	VE	Prairie	
Logan	Logan Co. WMA	Plains garter snake	VE	Road	
McIntosh	Camp Lake WMA	Tiger Salamander larva	MT	Pond	
McIntosh	Camp Lake WMA	Western Painted turtle	HN	Lake	
McIntosh	Camp Lake WMA	Western Painted turtle	HN	Pond	
McIntosh	Camp Lake WMA	Western Painted turtle	HN	Pond	
McIntosh	Camp Lake WMA	Western Painted turtle	HN	Pond	
McIntosh	Camp Lake WMA	Western Painted turtle	HN	Pond	
McIntosh	Camp Lake WMA	Western Painted turtle	HN	Pond	
McIntosh	Camp Lake WMA	Western Painted turtle	HN	Pond	
McIntosh	Camp Lake WMA	Western Painted turtle	HN	Pond	
McIntosh	Camp Lake WMA	Western Painted turtle	HN	Pond	
McIntosh	Camp Lake WMA	Western Painted turtle	HN	Pond	
McIntosh	Camp Lake WMA	Western Painted turtle	HN	Pond	
McIntosh	Camp Lake WMA	Western Painted turtle	HN	Pond	
McIntosh	Camp Lake WMA	Western Painted turtle	HN	Pond	
McIntosh	Camp Lake WMA	Western Painted turtle	HN	Pond	
McIntosh	Camp Lake WMA	Western Painted turtle	HN	Pond	
McIntosh	Camp Lake WMA	Western Painted turtle	HN	Pond	
McIntosh	Camp Lake WMA	Western Painted turtle	HN	Pond	
McIntosh	Camp Lake WMA	Western Painted turtle	HN	Pond	
McIntosh	Camp Lake WMA	Western Painted turtle	HN	Pond	

McIntosh	Camp Lake WMA	Western Painted turtle	HN	Pond	[redacted]
McIntosh	Camp Lake WMA	Western Painted turtle	HN	Pond	
McIntosh	Camp Lake WMA	Western Painted turtle	HN	Pond	
McIntosh	Camp Lake WMA	Western Painted turtle	HN	Pond	
McIntosh	Camp Lake WMA	Western Painted turtle	HN	Pond	
McIntosh	Camp Lake WMA	Western Painted turtle	HN	Pond	
McIntosh	Camp Lake WMA	Western Painted turtle	HN	Pond	
McIntosh	Camp Lake WMA	Western Painted turtle	HN	Pond	
McIntosh	Camp Lake WMA	Western Painted turtle	HN	Pond	
McIntosh	Camp Lake WMA	Western Painted turtle	BT	Lake	
McIntosh	Camp Lake WMA	Western Painted turtle	BT	Lake	
McIntosh	Camp Lake WMA	Western Painted turtle	BT	Lake	
McIntosh	Camp Lake WMA	Western Painted turtle	BT	Pond	
McIntosh	Camp Lake WMA	Western Painted turtle	BT	Pond	
McIntosh	Camp Lake WMA	Western Painted turtle	BT	Pond	
McIntosh	Camp Lake WMA	Western Painted turtle	VE	Road	
McIntosh	Camp Lake WMA	Western Painted turtle	VE	Pond	
McIntosh	Camp Lake WMA	Western Painted turtle	VE	Pond	
McIntosh	Camp Lake WMA	Western Painted turtle	VE	Pond	
McIntosh	Camp Lake WMA	Northern Leopard frog (>500)	VE	Lake shore	
McIntosh	Camp Lake WMA	Leopard frog tadpoles (15)	MT	Pond	
McIntosh	Camp Lake WMA	Leopard frog tadpoles (15)	MT	Pond	
McIntosh	Camp Lake WMA	Leopard frog tadpoles (5)	MT	Lake	
McIntosh	Camp Lake WMA	Northern Leopard frog	LT	Prairie	
McIntosh	Camp Lake WMA	Northern Leopard frog	VE	Ditch	
McIntosh	Camp Lake WMA	Northern Leopard frog	VE	Lake shore	
McIntosh	Camp Lake WMA	Northern Leopard frog (45)	VE	Lake shore	
McIntosh	Camp Lake WMA	Northern Leopard frog (10)	VE	Road	
McIntosh	Camp Lake WMA	Northern Leopard frog (50)	VE	Road	
McIntosh	Camp Lake WMA	Northern Leopard frog (>100)	VE	Road	
McIntosh	Camp Lake WMA	Northern Leopard frog (>35)	VE	Road	
McIntosh	Camp Lake WMA	Plains garter snake	VE	Lake shore	
McIntosh	Camp Lake WMA	Plains garter snake	VE	Road	
McIntosh	Camp Lake WMA	Plains garter snake	VE	Lake shore	
McIntosh	Camp Lake WMA	Plains garter snake	VE	Road	
McIntosh	Camp Lake WMA	Plains garter snake	VE	Road	

McIntosh	Camp Lake WMA	Plains garter snake	VE	Road	[redacted]
McIntosh	Lehr	Garter radix	VE	Crop field - corn	
McIntosh	Lehr	Garter radix	VE	Lake	
McIntosh	Lehr	Garter radix	VE	Crop field - corn	
McIntosh	Lehr	Unknown garter (radix)	VE	Prairie	
Ransom	Fort Ransom	Chorus Frog	VE	Woods	
Ransom	Fort Ransom	Garter radix	VE	DOR	
Ransom	Fort Ransom	Garter radix	VE	Ditch	
Ransom	Fort Ransom	Garter radix	VE	Wetland edge	
Ransom	Fort Ransom	Garter radix	VE	Wetland edge	
Ransom	Fort Ransom	Gray Treefrog	VE	Road	
Ransom	Fort Ransom	Leopard frog	VE	Wetland	
Ransom	Fort Ransom	Leopard frog	VE	Prairie	
Ransom	Fort Ransom	Leopard frog	VE	Prairie	
Ransom	Fort Ransom	Leopard frog	VE	Woods	
Ransom	Fort Ransom	Leopard frog	VE	Woods	
Ransom	Fort Ransom	Leopard frog	VE	Woods	
Ransom	Fort Ransom	Leopard frog	VE	Woods	
Ransom	Fort Ransom	Leopard frog	VE	Woods	
Ransom	Fort Ransom	Leopard frog	VE	Stream	
Ransom	Fort Ransom	Leopard frog	VE	Woods	
Ransom	Fort Ransom	Leopard frog	VE	Stream	
Ransom	Fort Ransom	Leopard frog	VE	Road	
Ransom	Fort Ransom	Leopard frog	VE	Woods	
Ransom	Fort Ransom	Leopard frog	VE	Prairie	
Ransom	Fort Ransom	Leopard frog	VE	Ditch	
Ransom	Fort Ransom	Leopard frog	VE	Prairie	
Ransom	Fort Ransom	Leopard frog	VE	Prairie	
Ransom	Fort Ransom	Leopard frog	VE	Prairie	
Ransom	Fort Ransom	Leopard frog (10)	VE	Wetland edge	
Ransom	Fort Ransom	Leopard frog (17)	VE	Road	
Ransom	Fort Ransom	Leopard frog (2)	VE	Woods	
Ransom	Fort Ransom	Leopard frog (2)	VE	Wetland	
Ransom	Fort Ransom	Leopard frog (2)	VE	Ditch	
Ransom	Fort Ransom	Leopard frog (20)	VE	Wetland edge	
Ransom	Fort Ransom	Leopard frog (3)	VE	Woods	

Ransom	Fort Ransom	Leopard frog (3)	VE	Woods	[redacted]
Ransom	Fort Ransom	Leopard frog (33)	VE	Road	
Ransom	Fort Ransom	Leopard frog (38)	VE	Road	
Ransom	Fort Ransom	Leopard frog (5)	VE	Woods	
Ransom	Fort Ransom	Leopard frog (7)	VE	Road	
Ransom	Fort Ransom	Painted turtle (2)	VE	Wetland	
Ransom	Fort Ransom	Painted turtle (6)	VE	Wetland	
Ransom	Fort Ransom	Smooth green	VE	Wood edge	
Ransom	Fort Ransom	Snapping turtle	VE	Stream	
Ransom	Fort Ransom	Unknown garter	VE	Wetland edge	
Ransom	Fort Ransom	Unknown garter	VE	Road	
Ransom	Mirror pool	Canadian toad	VE	Road	
Ransom	Mirror pool	Canadian toad	VE	Road	
Ransom	Mirror pool	Canadian toad	VE	Road	
Ransom	Mirror pool	Canadian toad	VE	Road	
Ransom	Mirror pool	Canadian toad	VE	Road	
Ransom	Mirror pool	Canadian toad	VE	Road	
Ransom	Mirror pool	Canadian toad	VE	Road	
Ransom	Mirror pool	Canadian toad	VE	Road	
Ransom	Mirror pool	Canadian toad	VE	Road	
Ransom	Mirror pool	Canadian toad	VE	Road	
Ransom	Mirror pool	Canadian toad	VE	Road	
Ransom	Mirror pool	Canadian toad	VE	Road	
Ransom	Mirror pool	Canadian toad	VE	Woods	
Ransom	Mirror pool	Canadian toad	VE	Woods	
Ransom	Mirror pool	Canadian toad	VE	Road	
Ransom	Mirror pool	Canadian toad	VE	Road	
Ransom	Mirror pool	Canadian toad	VE	Road	
Ransom	Mirror pool	Canadian toad	VE	Road	
Ransom	Mirror pool	Canadian toad	LT	Ditch	
Ransom	Mirror pool	Canadian toad	LT	Ditch	
Ransom	Mirror pool	Canadian toad	VE	Prairie wetlands	
Ransom	Mirror pool	Canadian toads (200)	VE	Road	
Ransom	Mirror pool	Chorus frog	AU	Ditch	
Ransom	Mirror pool	Chorus frog tadpoles (2)	VE	Prairie wetlands	
Ransom	Mirror pool	Garter radix	VE	Road	

Ransom	Mirror pool	Garter sirtalis	FT	Prairie	[redacted]
Ransom	Mirror pool	Gray Treefrog tadpoles (3)	VE	Prairie wetlands	
Ransom	Mirror pool	Leopard frog	VE	Bog	
Ransom	Mirror pool	Leopard frog	VE	Woods	
Ransom	Mirror pool	Leopard frog	VE	Woods	
Ransom	Mirror pool	Leopard frog	VE	Prairie wetlands	
Ransom	Mirror pool	Leopard frog tadpole	MT	Prairie wetlands	
Ransom	Mirror pool	Leopard frog tadpoles (3)	MT	Prairie wetlands	
Ransom	Mirror pool	Painted turtle	BT	Wetland	
Ransom	Mirror pool	Snapping turtle	VE	Road	
Ransom	Mirror pool	Tiger salamander larva	MT	Prairie wetlands	
Ransom	Mirror pool	Tiger salamander larva (3)	MT	Prairie wetlands	
Ransom	Mirror pool	Unknown toad let	VE	Woods	
Ransom	Mirror pool	Wood frog	VE	Woods	
Ransom	Mirror pool	Wood frog	VE	Woods	
Ransom	Mirror pool	Wood frog	VE	Woods	
Ransom	Mirror Pool WMA	Canadian toad	VE	Wetland	
Ransom	Mirror Pool WMA	Canadian toad	VE	Road	
Ransom	Mirror Pool WMA	Canadian toad	VE	Wooded area	
Ransom	Mirror Pool WMA	Snapping turtle	HN	Wetland	
Ransom	Mirror Pool WMA	Snapping turtle	HN	Wetland	
Ransom	Mirror Pool WMA	Snapping turtle	HN	Wetland	
Ransom	Mirror Pool WMA	Western Painted turtle	HN	Wetland	
Ransom	Mirror Pool WMA	Western Painted turtle	HN	Wetland	
Ransom	Mirror Pool WMA	Western Painted turtle	HN	Wetland	
Ransom	Mirror Pool WMA	Western Painted turtle	VE	Wetland	
Ransom	Mirror Pool WMA	Western Painted turtle	VE	Wetland	
Ransom	Mirror Pool WMA	Western Painted turtle	VE	Wetland	
Ransom	Mirror Pool WMA	Cope's Gray Treefrog	Audio	Wetland	
Ransom	Mirror Pool WMA	Northern Leopard frog	VE	Dugout pond	
Ransom	Mirror Pool WMA	Northern Leopard frog	VE	Bog	
Ransom	Mirror Pool WMA	Northern leopard frog	VE	Wetland	
Ransom	Mirror Pool WMA	Northern Leopard frog	VE	Riparian	
Ransom	Mirror Pool WMA	Northern Prairie Skink	PF	Prairie	
Ransom	Mirror Pool WMA	Northern Prairie Skink	VE	Prairie	
Ransom	Mirror Pool WMA	Boreal Chorus frog	Audio	Wet meadow	

Ransom	Mirror Pool WMA	Plains garter snake	VE	Road - DOR	[redacted]
Ransom	Mirror Pool WMA	Plains garter snake	VE	Road - DOR	
Ransom	Mirror Pool WMA	Plains garter snake	VE	Prairie	
Ransom	Mirror Pool WMA	Plains garter snake	VE	Prairie	
Ransom	Mirror Pool WMA	Eastern garter snake	VE	Prairie	
Ransom	Mirror Pool WMA	Eastern garter snake	VE	Bog	
Ransom	Mirror Pool WMA	Eastern garter snake	VE	Bog	
Ransom	Mirror Pool WMA	Eastern garter snake	VE	Bog	
Ransom	Mirror Pool WMA	Eastern garter snake	VE	Bog	
Ransom	Mirror Pool WMA	Eastern garter snake	VE	Bog	
Ransom	Mirror Pool WMA	Eastern garter snake	VE	Road - DOR	
Ransom	Mirror Pool WMA	Eastern garter snake	VE	Road - DOR	
Richland	Hankinson hills	Chorus frog tadpoles (2)	VE	Ditch wetland	
Richland	Hankinson hills	Chorus frogs	AU	Wet prairie	
Richland	Hankinson hills	Garter radix	VE	Prairie	
Richland	Hankinson hills	Garter radix	VE	Prairie	
Richland	Hankinson hills	Garter radix	FT	Prairie	
Richland	Hankinson hills	Hog nose	VE	Prairie road	
Richland	Hankinson hills	Northern prairie skink	VE	Prairie	
Richland	Hankinson hills	Northern prairie skink	VE	Prairie	
Richland	Hankinson hills	Unknown tadpoles (100)	VE	Prairie wetlands	
Richland	Sheyenne National Grassland	Blotched tiger salamander larva (11)	MT	Dugout pond	
Richland	Sheyenne National Grassland	Blotched Tiger Salamander Larva (2)	MT	Dugout pond	
Richland	Sheyenne National Grassland	Canadian toad	FT	Wetland edge	
Richland	Sheyenne National Grassland	Canadian toad	PF	Wetland edge	
Richland	Sheyenne National Grassland	Canadian toad	PF	Wetland edge	
Richland	Sheyenne National Grassland	Canadian toad	PF	Wetland edge	
Richland	Sheyenne National Grassland	Canadian toad	FT	Wetland edge	
Richland	Sheyenne National Grassland	Canadian toad	PF	Wetland edge	

Richland	Sheyenne National Grassland	Canadian toad	FT	Wetland edge	[redacted]
Richland	Sheyenne National Grassland	Canadian toad	PF	Prairie	
Richland	Sheyenne National Grassland	Canadian toad	FT	Prairie	
Richland	Sheyenne National Grassland	Canadian toad	VE	Prairie	
Richland	Sheyenne National Grassland	Canadian toad	FT	Prairie	
Richland	Sheyenne National Grassland	Canadian toad	VE	Road	
Richland	Sheyenne National Grassland	Canadian toad	Audio	Ditch wetland	
Richland	Sheyenne National Grassland	Canadian toad	Audio	Ditch wetland	
Richland	Sheyenne National Grassland	Canadian toad	Audio	Ditch wetland	
Richland	Sheyenne National Grassland	Canadian toad	Audio	Ditch wetland	
Richland	Sheyenne National Grassland	Canadian toad	Audio	Ditch wetland	
Richland	Sheyenne National Grassland	Canadian toad	Audio	Ditch wetland	
Richland	Sheyenne National Grassland	Canadian toad	VE	Road	
Richland	Sheyenne National Grassland	Western hognose snake	VE	Road	
Richland	Sheyenne National Grassland	Western hognose snake	VE	Ditch	
Richland	Sheyenne National Grassland	Cope's Gray Treefrog	Audio	Ditch wetland	
Richland	Sheyenne National Grassland	Cope's Gray Treefrog	VE	Woods	
Richland	Sheyenne National Grassland	Cope's Gray Treefrog	Audio	Ditch wetland	
Richland	Sheyenne National Grassland	Cope's Gray Treefrog	VE	Oak savanna	

Richland	Sheyenne National Grassland	Northern Leopard frog	PF	Wetland edge	[redacted]
Richland	Sheyenne National Grassland	Northern Leopard frog	FT	Wetland edge	
Richland	Sheyenne National Grassland	Northern Leopard frog	FT	Wetland edge	
Richland	Sheyenne National Grassland	Northern Leopard frog	FT	Prairie	
Richland	Sheyenne National Grassland	Northern Leopard frog	VE	Prairie	
Richland	Sheyenne National Grassland	Northern Leopard frog	VE	Prairie	
Richland	Sheyenne National Grassland	Northern Leopard frog	VE	Pasture	
Richland	Sheyenne National Grassland	Northern Leopard frog	Audio	Ditch wetland	
Richland	Sheyenne National Grassland	Northern Leopard frog	VE	Prairie	
Richland	Sheyenne National Grassland	Northern Leopard frog	VE	Prairie	
Richland	Sheyenne National Grassland	Northern Leopard frog	VE	Pasture	
Richland	Sheyenne National Grassland	Wood frog	VE	Dugout pond	
Richland	Sheyenne National Grassland	Wood Frog	PF	Wetland edge	
Richland	Sheyenne National Grassland	Wood frog	VE	Oak savanna	
Richland	Sheyenne National Grassland	Northern Prairie Skink	VE	Forest edge	
Richland	Sheyenne National Grassland	Northern Prairie Skink	VE	Oak savanna	
Richland	Sheyenne National Grassland	Boreal Chorus frog	PF	Forest edge	
Richland	Sheyenne National Grassland	Boreal Chorus frog	PF	Wetland edge	
Richland	Sheyenne National Grassland	Boreal Chorus frog	PF	Wetland edge	

Richland	Sheyenne National Grassland	Boreal Chorus frog	PF	Wetland edge	[redacted]
Richland	Sheyenne National Grassland	Boreal Chorus frog	PF	Wetland edge	
Richland	Sheyenne National Grassland	Boreal Chorus frog	PF	Wetland edge	
Richland	Sheyenne National Grassland	Boreal Chorus frog	PF	Wetland edge	
Richland	Sheyenne National Grassland	Boreal Chorus frog	PF	Prairie	
Richland	Sheyenne National Grassland	Boreal Chorus frog	PF	Prairie	
Richland	Sheyenne National Grassland	Boreal Chorus frog	PF	Prairie	
Richland	Sheyenne National Grassland	Boreal Chorus frog	PF	Prairie	
Richland	Sheyenne National Grassland	Boreal Chorus frog	PF	Prairie	
Richland	Sheyenne National Grassland	Boreal Chorus frog	PF	Prairie	
Richland	Sheyenne National Grassland	Boreal Chorus frog	PF	Prairie	
Richland	Sheyenne National Grassland	Boreal Chorus frog	PF	Prairie	
Richland	Sheyenne National Grassland	Boreal Chorus frog	PF	Prairie	
Richland	Sheyenne National Grassland	Boreal Chorus frog	PF	Prairie	
Richland	Sheyenne National Grassland	Boreal Chorus frog	PF	Prairie	
Richland	Sheyenne National Grassland	Boreal Chorus frog	PF	Prairie	
Richland	Sheyenne National Grassland	Boreal Chorus frog	PF	Prairie	
Richland	Sheyenne National Grassland	Boreal Chorus frog	PF	Prairie	
Richland	Sheyenne National Grassland	Boreal Chorus frog	PF	Prairie	

Richland	Sheyenne National Grassland	Boreal Chorus frog	PF	Prairie	[redacted]
Richland	Sheyenne National Grassland	Boreal Chorus frog	PF	Prairie	[redacted]
Richland	Sheyenne National Grassland	Boreal Chorus frog	PF	Prairie	[redacted]
Richland	Sheyenne National Grassland	Boreal Chorus frog	Audio	Wet meadow	[redacted]
Richland	Sheyenne National Grassland	Boreal Chorus frog	Audio	Ditch wetland	[redacted]
Richland	Sheyenne National Grassland	Boreal Chorus frog	Audio	Ditch wetland	[redacted]
Richland	Sheyenne National Grassland	Boreal Chorus frog	Audio	Ditch wetland	[redacted]
Richland	Sheyenne National Grassland	Boreal Chorus frog	PF	Forest edge	[redacted]
Richland	Sheyenne National Grassland	Plains garter snake	MT	Dugout pond	[redacted]
Richland	Sheyenne National Grassland	Plains garter snake	VE	Prairie	[redacted]
Richland	Sheyenne National Grassland	Plains garter snake	VE	Woodland edge	[redacted]
Richland	Sheyenne National Grassland	Plains garter snake	VE	Prairie	[redacted]
Richland	Sheyenne National Grassland	Plains garter snake	VE	Prairie	[redacted]
Richland	Sheyenne National Grassland	Plains garter snake	VE	Prairie	[redacted]
Richland	Sheyenne National Grassland	Plains garter snake	VE	Road -DOR	[redacted]
Richland	Sheyenne National Grassland	Plains garter snake	VE	Prairie	[redacted]
Richland	Sheyenne National Grassland	Plains garter snake	VE	Prairie	[redacted]
Richland	Sheyenne National Grassland	Plains garter snake	VE	Road - DOR	[redacted]
Richland	Sheyenne National Grassland	Eastern garter snake	VE	Road - DOR	[redacted]

Richland	Sheyenne National Grassland	Eastern garter snake	VE	Road - DOR	[redacted]
Richland	Sheyenne National Grassland	Eastern garter snake	VE	Prairie	
Sargent	Mezaros	Canadian toad	VE	Wetland edge	
Sargent	Mezaros	Canadian toad	VE	Wetland edge	
Sargent	Mezaros	Canadian toad	VE	Road	
Sargent	Mezaros	Canadian toad	VE	Road	
Sargent	Mezaros	Canadian toad	VE	Road	
Sargent	Mezaros	Canadian toad	VE	Road	
Sargent	Mezaros	Canadian toad	VE	Road	
Sargent	Mezaros	Canadian toad	VE	Prairie wetland	
Sargent	Mezaros	Canadian toad	VE	Road	
Sargent	Mezaros	Canadian toad (11)	VE	Pond bank	
Sargent	Mezaros	Canadian toad (20)	VE	Wetland edge	
Sargent	Mezaros	Canadian toad (3)	VE	Road	
Sargent	Mezaros	Canadian toad (4)	VE	Wetland edge	
Sargent	Mezaros	Canadian toad (50)	VE	Wetland edge	
Sargent	Mezaros	Canadian toad (8)	VE	Wetland edge	
Sargent	Mezaros	Canadian toad (9)	VE	Wetland edge	
Sargent	Mezaros	Canadian toad(4)	VE	Road	
Sargent	Mezaros	Chorus Frog	LT1	Prairie	
Sargent	Mezaros	Garter radix	VE	Wetland edge	
Sargent	Mezaros	Garter radix	VE	Wetland edge	
Sargent	Mezaros	Garter radix	VE	Wetland edge	
Sargent	Mezaros	Garter radix	VE	Wetland edge	
Sargent	Mezaros	Garter radix	VE	Road	
Sargent	Mezaros	Garter radix	VE	Prairie	
Sargent	Mezaros	Leopard frog	VE	Road	
Sargent	Mezaros	Leopard frog	VE	Road	
Sargent	Mezaros	Leopard frog	VE	Wetland edge	
Sargent	Mezaros	Leopard frog	VE	Wetland edge	
Sargent	Mezaros	Leopard frog	VE	Wetland edge	
Sargent	Mezaros	Leopard frog	VE	Road	
Sargent	Mezaros	Leopard frog	VE	Road	
Sargent	Mezaros	Leopard frog	VE	Road	

Sargent	Mezaros	Leopard frog	VE	Road	[redacted]
Sargent	Mezaros	Leopard frog	VE	Road	
Sargent	Mezaros	Leopard frog	VE	Road	
Sargent	Mezaros	Leopard frog	VE	Road	
Sargent	Mezaros	Leopard frog	VE	Road	
Sargent	Mezaros	Leopard frog	VE	Road	
Sargent	Mezaros	Leopard frog	VE	Wetland edge	
Sargent	Mezaros	Leopard frog	VE	Wetland edge	
Sargent	Mezaros	Leopard frog	VE	Prairie	
Sargent	Mezaros	Leopard frog	VE	Prairie	
Sargent	Mezaros	Leopard frog	VE	Prairie	
Sargent	Mezaros	Leopard frog	VE	Prairie	
Sargent	Mezaros	Leopard frog (10)	VE	Prairie	
Sargent	Mezaros	Leopard frog (10)	VE	Prairie	
Sargent	Mezaros	Leopard frog (15)	VE	Road	
Sargent	Mezaros	Leopard frog (22)	VE	Road	
Sargent	Mezaros	Leopard frog (25)	VE	Road	
Sargent	Mezaros	Leopard frog (4)	VE	Prairie	
Sargent	Mezaros	Leopard frog (5)	VE	Road	
Sargent	Mezaros	Leopard frog (5)	VE	Prairie	
Sargent	Mezaros	Leopard frog (6)	VE	Road	
Sargent	Mezaros	Leopard frog(7)	VE	Road	
Sargent	Mezaros	Painted turtle	VE	Road	
Sargent	Mezaros	Tiger salamander	VE	Road	
Sargent	Mezaros	Tiger salamander	VE	Road	
Sargent	Mezaros	Tiger salamander	VE	Road	
Sargent	Mezaros	Tiger salamander	VE	Road	
Sargent	Mezaros	Tiger salamander	VE	Road	
Sargent	Mezaros	Tiger salamander	VE	Road	
Sargent	Mezaros	Unknown toadlet	VE	Pond bank	
Sargent	Mezaros	Unknown toadlet	VE	Pond bank	
Sargent	Mezaros	Unknown toadlet	VE	Pond bank	
Sargent	Mezaros	Unknown toadlet	VE	Pond bank	
Sargent	Mezaros	Unknown toadlet	VE	Pond bank	
Sargent	Mezaros	Unknown toadlet	VE	Pond bank	
Sargent	Mezaros	Unknown toadlet	VE	Pond bank	

Sargent	Mezaros	Unknown toadlet	VE	Pond bank	[redacted]
Sargent	Mezaros	Unknown toadlet	VE	Pond bank	
Sargent	Mezaros	Unknown toadlet	VE	Pond bank	
Sargent	Mezaros	Unknown toadlet	VE	Pond bank	
Sargent	Mezaros	Unknown toadlet	VE	Pond bank	
Sargent	Mezaros	Unknown toadlet	VE	Pond bank	
Sargent	Mezaros	Unknown toadlet	VE	Pond bank	
Sargent	Mezaros	Unknown toadlet	VE	Wetland edge	
Sargent	Mezaros	Unknown toadlet	VE	Pond bank	
Sargent	Mezaros	Unknown toadlet (50)	VE	Pond bank	
Sargent	Tewaukon WMA	Blotched Tiger Salamander larva	MT	Wetland	
Sargent	Tewaukon WMA	Blotched Tiger Salamander larva	MT	Wetland	
Sargent	Tewaukon WMA	Blotched Tiger salamander larva	MT	Wetland	
Sargent	Tewaukon WMA	Blotched tiger salamander larva	MT	Wetland	
Sargent	Tewaukon WMA	Blotched Tiger Salamander larva (2)	MT	Wetland	
Sargent	Tewaukon WMA	Blotched Tiger Salamander larva (4)	MT	Wetland	
Sargent	Tewaukon WMA	Blotched Tiger salamander larva	MT	Wetland	
Sargent	Tewaukon WMA	Blotched Tiger salamander (5)	MT	Wetland	
Sargent	Tewaukon WMA	Blotched Tiger Salamander larva (4)	MT	Wetland	
Sargent	Tewaukon WMA	Blotched tiger salamander larva (4)	MT	Wetland	
Sargent	Tewaukon WMA	Blotched tiger salamander larva (6)	MT	Wetland	
Sargent	Tewaukon WMA	Blotched Tiger salamander	MT	Wetland	
Sargent	Tewaukon WMA	Blotched Tiger Salamander larva (6)	MT	Wetland	
Sargent	Tewaukon WMA	Blotched Tiger Salamander Larva (5)	MT	Wetland	
Sargent	Tewaukon WMA	Blotched tiger salamander larva (7)	MT	Wetland	
Sargent	Tewaukon WMA	Blotched Tiger Salamander	MT	Wetland	
Sargent	Tewaukon WMA	Blotched Tiger salamander	MT	Wetland	
Sargent	Tewaukon WMA	Blotched Tiger Salamander larva (3)	MT	Wetland	

Sargent	Tewaukon WMA	Blotched Tiger Salamander Larva (2)	MT	Wetland	[redacted]
Sargent	Tewaukon WMA	Blotched Tiger salamander larva	MT	Wetland	
Sargent	Tewaukon WMA	Blotched tiger salamander larva (6)	MT	Wetland	
Sargent	Tewaukon WMA	American toad	FT	Ditch	
Sargent	Tewaukon WMA	American toad	PF	Ditch	
Sargent	Tewaukon WMA	American toad	VE	Road	
Sargent	Tewaukon WMA	Great Plains Toad	VE	Road	
Sargent	Tewaukon WMA	Canadian toad	VE	Lake shore	
Sargent	Tewaukon WMA	Canadian toad	PF	Ditch	
Sargent	Tewaukon WMA	Canadian toad	VE	Ditch	
Sargent	Tewaukon WMA	Canadian toad	VE	Ditch	
Sargent	Tewaukon WMA	Canadian toad	VE	lake shore	
Sargent	Tewaukon WMA	Canadian toad	VE	Wetland	
Sargent	Tewaukon WMA	Canadian toad	PF	Edge	
Sargent	Tewaukon WMA	Canadian toad	PF	Prairie	
Sargent	Tewaukon WMA	Canadian toad	PF	Ditch	
Sargent	Tewaukon WMA	Canadian toad	PF	Ditch	
Sargent	Tewaukon WMA	Canadian toad	PF	Ditch	
Sargent	Tewaukon WMA	Canadian toad	PF	Edge/ditch	
Sargent	Tewaukon WMA	Canadian toad	VE	Road	
Sargent	Tewaukon WMA	Canadian toad	VE	Road	
Sargent	Tewaukon WMA	Canadian toad	VE	Road	
Sargent	Tewaukon WMA	Canadian toad	VE	Road	
Sargent	Tewaukon WMA	Canadian toad	VE	Road	
Sargent	Tewaukon WMA	Canadian toad	VE	Road	
Sargent	Tewaukon WMA	Canadian toad	VE	Road	
Sargent	Tewaukon WMA	Canadian toad	VE	Road	
Sargent	Tewaukon WMA	Canadian toad	VE	Road	
Sargent	Tewaukon WMA	Canadian toad	VE	Road	
Sargent	Tewaukon WMA	Canadian toad	VE	Road	
Sargent	Tewaukon WMA	Canadian toad	VE	Roadside	
Sargent	Tewaukon WMA	Canadian toad	VE	Roadside	
Sargent	Tewaukon WMA	Canadian toad	VE	Prairie	
Sargent	Tewaukon WMA	Canadian toad	VE	Prairie	

Sargent	Tewaukon WMA	Canadian toad	VE	Prairie	[redacted]
Sargent	Tewaukon WMA	Western Painted turtle	HN	Wetland	
Sargent	Tewaukon WMA	Western Painted turtle	HN	Wetland	
Sargent	Tewaukon WMA	Western Painted turtle	HN	Wetland	
Sargent	Tewaukon WMA	Western Painted turtle	HN	Wetland	
Sargent	Tewaukon WMA	Western Painted turtle	BT	Wetland	
Sargent	Tewaukon WMA	Western Painted turtle	BT	Wetland	
Sargent	Tewaukon WMA	Western Painted turtle	BT	Wetland	
Sargent	Tewaukon WMA	Western Painted turtle	BT	Wetland	
Sargent	Tewaukon WMA	Western Painted turtle	BT	Wetland	
Sargent	Tewaukon WMA	Western Painted turtle	BT	Wetland	
Sargent	Tewaukon WMA	Western Painted turtle	BT	Wetland	
Sargent	Tewaukon WMA	Western Painted turtle	BT	Wetland	
Sargent	Tewaukon WMA	Western Painted turtle	BT	Wetland	
Sargent	Tewaukon WMA	Western Painted turtle	BT	Wetland	
Sargent	Tewaukon WMA	Western Painted turtle	BT	Wetland	
Sargent	Tewaukon WMA	Western Painted turtle	BT	Wetland	
Sargent	Tewaukon WMA	Western Painted turtle	VE	Road	
Sargent	Tewaukon WMA	Western Painted turtle	VE	Road	
Sargent	Tewaukon WMA	Western Painted turtle	VE	Road	
Sargent	Tewaukon WMA	Western Painted turtle	VE	Prairie	
Sargent	Tewaukon WMA	Northern Leopard frog	PF	Ditch	
Sargent	Tewaukon WMA	Northern Leopard frog	PF	Ditch	
Sargent	Tewaukon WMA	Northern Leopard frog	PF	Ditch	
Sargent	Tewaukon WMA	Northern Leopard frog	PF	Ditch	
Sargent	Tewaukon WMA	Northern Leopard frog	FT	Ditch	
Sargent	Tewaukon WMA	Northern Leopard frog	FT	Ditch	
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Ditch	
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Ditch	
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Edge/ditch	
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Ditch	
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Ditch	
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Ditch	
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Ditch	
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Ditch	
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Ditch	

Sargent	Tewaukon WMA	Northern Leopard frog	VE	Ditch	[redacted]
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Ditch	
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Ditch	
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Edge/ditch	
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Wet prairie	
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Edge/ditch	
Sargent	Tewaukon WMA	Northern Leopard frog	PF	Ditch	
Sargent	Tewaukon WMA	Northern Leopard frog	PF	Ditch	
Sargent	Tewaukon WMA	Northern Leopard frog	FT	Edge/ditch	
Sargent	Tewaukon WMA	Northern Leopard frog	FT	Ditch	
Sargent	Tewaukon WMA	Northern Leopard frog	FT	Ditch	
Sargent	Tewaukon WMA	Northern Leopard frog	FT	Edge/ditch	
Sargent	Tewaukon WMA	Northern Leopard frog	FT	Wet prairie	
Sargent	Tewaukon WMA	Leopard frog tadpoles (15)	MT	Wetland	
Sargent	Tewaukon WMA	Leopard frog tadpoles (17)	MT	Wetland	
Sargent	Tewaukon WMA	Leopard frog tadpoles (11)	MT	Wetland	
Sargent	Tewaukon WMA	Leopard Frog tadpole	MT	Wetland	
Sargent	Tewaukon WMA	Northern Leopard frog (37)	MT	Wetland	
Sargent	Tewaukon WMA	Leopard frog tadpoles (10)	MT	Wetland	
Sargent	Tewaukon WMA	Leopard frog tadpoles (11)	MT	Wetland	
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Prairie	
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Prairie	
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Prairie	
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Wetland	
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Prairie	
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Prairie	
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Prairie	
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Prairie	
Sargent	Tewaukon WMA	Leopard frog tadpoles (25)	MT	Wetland	
Sargent	Tewaukon WMA	Leopard frog tadpoles (9)	MT	Wetland	
Sargent	Tewaukon WMA	Leopard frog tadpoles (3)	MT	Wetland	
Sargent	Tewaukon WMA	Leopard frog tadpoles (20)	MT	Wetland	
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Wetland	
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Road	
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Road	
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Road	

Sargent	Tewaukon WMA	Northern Leopard frog	VE	Road	[redacted]
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Road	
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Road	
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Road	
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Road	
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Road	
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Road	
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Road	
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Road	
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Road	
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Road	
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Road	
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Road	
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Road	
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Wet prairie	
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Wet prairie	
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Bog	
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Wet prairie	
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Wet prairie	
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Wetland	
Sargent	Tewaukon WMA	Leopard frog tadpole (3)	MT	Wetland	
Sargent	Tewaukon WMA	Leopard frog tadpoles (4)	MT	Wetland	
Sargent	Tewaukon WMA	Leopard frog tadpoles (2)	MT	Wetland	
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Wet prairie	
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Wetland	
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Wet prairie	
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Prairie	
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Prairie	
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Field edge	
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Field edge	
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Field edge	
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Prairie	
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Prairie	
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Prairie	
Sargent	Tewaukon WMA	Northern Leopard frog	VE	Wetland	
Sargent	Tewaukon WMA	Northern Prairie Skink	PF	Ditch	

Sargent	Tewaukon WMA	Northern Prairie Skink	FT	Edge/ditch	[redacted]
Sargent	Tewaukon WMA	Boreal Chorus frog	DF	Wet prairie	
Sargent	Tewaukon WMA	Boreal Chorus frog	Audio	Wetland	
Sargent	Tewaukon WMA	Redbelly snake	VE	Road	
Sargent	Tewaukon WMA	Plains garter snake	FT	Edge/ditch	
Sargent	Tewaukon WMA	Plains garter snake	VE	Road - DOR	
Sargent	Tewaukon WMA	Plains garter snake	VE	Road	
Sargent	Tewaukon WMA	Plains garter snake	VE	Road - DOR	
Sargent	Tewaukon WMA	Plains garter snake	VE	Road	
Sargent	Tewaukon WMA	Plains garter snake	VE	Road	
Sargent	Tewaukon WMA	Plains garter snake	VE	Road	
Sargent	Tewaukon WMA	Plains garter snake	VE	Road -DOR	
Sargent	Tewaukon WMA	Plains garter snake	VE	Road	
Stutsman	Arrowwood NWR	Great Plains Toad	VE	Parking lot	
Stutsman	Arrowwood NWR	Great Plains Toad	VE	Parking lot	
Stutsman	Arrowwood NWR	Great Plains Toad	VE	Parking lot	
Stutsman	Arrowwood NWR	Great Plains Toad	VE	Parking lot	
Stutsman	Arrowwood NWR	Great Plains Toad	VE	Parking lot	
Stutsman	Arrowwood NWR	Great Plains Toad	VE	Parking lot	
Stutsman	Arrowwood NWR	Great Plains Toad	VE	Parking lot	
Stutsman	Arrowwood NWR	Great Plains Toad	VE	Parking lot	
Stutsman	Arrowwood NWR	Great Plains Toad	VE	Parking lot	
Stutsman	Arrowwood NWR	Great Plains Toad	VE	Parking lot	
Stutsman	Arrowwood NWR	Great Plains Toad	VE	Parking lot	
Stutsman	Arrowwood NWR	Great Plains Toad	VE	Parking lot	
Stutsman	Arrowwood NWR	Great Plains Toad	VE	Parking lot	
Stutsman	Arrowwood NWR	Great Plains Toad	VE	Parking lot	
Stutsman	Arrowwood NWR	Great Plains Toad	VE	Parking lot	
Stutsman	Arrowwood NWR	Great Plains Toad	VE	Parking lot	
Stutsman	Arrowwood NWR	Great Plains Toad	VE	Parking lot	
Stutsman	Arrowwood NWR	Great Plains Toad	VE	Gravel pit	
Stutsman	Arrowwood NWR	Great Plains Toad	VE	Gravel Lot	
Stutsman	Arrowwood NWR	Great Plains Toad	VE	Road	
Stutsman	Arrowwood NWR	Western Painted turtle	HN	River	
Stutsman	Arrowwood NWR	Northern Leopard frog	VE	Lake shore	
Stutsman	Arrowwood NWR	Northern Leopard frog	VE	Lake shore	

Stutsman	Arrowwood NWR	Northern Leopard frog	VE	Road	[redacted]
Stutsman	Arrowwood NWR	Northern Leopard frog	VE	Gravel pit	
Stutsman	Arrowwood NWR	Northern Leopard frog	VE	Gravel pit	
Stutsman	Arrowwood NWR	Northern Leopard frog	VE	Prairie	
Stutsman	Arrowwood NWR	Northern Leopard frog	VE	River bank	
Stutsman	Arrowwood NWR	Wood frog	VE	Gravel Lot	
Stutsman	Arrowwood NWR	Wood frog	VE	Gravel Lot	
Stutsman	Arrowwood NWR	Smooth Green snake	VE	Prairie	
Stutsman	Arrowwood NWR	Smooth Green snake	VE	Gravel pit	
Stutsman	Arrowwood NWR	Smooth Green snake	VE	Gravel pit	
Stutsman	Arrowwood NWR	Smooth Green snake	VE	Gravel pit	
Stutsman	Arrowwood NWR	Smooth Green snake	VE	Gravel pit	
Stutsman	Arrowwood NWR	Smooth Green snake	VE	Gravel pit	
Stutsman	Arrowwood NWR	Smooth Green snake	VE	Gravel pit	
Stutsman	Arrowwood NWR	Boreal Chorus frog	VE	Parking lot	
Stutsman	Arrowwood NWR	Redbelly snake	VE	Gravel pit	
Stutsman	Arrowwood NWR	Redbelly snake	VE	Gravel pit	
Stutsman	Arrowwood NWR	Redbelly snake	VE	Gravel pit	
Stutsman	Arrowwood NWR	Plains garter snake	VE	Road -DOR	
Stutsman	Arrowwood NWR	Plains garter snake	VE	Road	
Stutsman	Arrowwood NWR	Plains garter snake	VE	Road - DOR	
Stutsman	Arrowwood NWR	Plains garter snake	VE	Gravel pit	
Stutsman	Arrowwood NWR	Plains garter snake	VE	Road - DOR	
Stutsman	Arrowwood NWR	Plains garter snake	VE	Road - DOR	
Stutsman	Arrowwood NWR	Plains garter snake	VE	Rock bed - river edge	
Stutsman	Arrowwood NWR	Plains garter snake	VE	Rock bed - river edge	
Stutsman	Arrowwood NWR	Plains garter snake	VE	Rock bed - river edge	
Stutsman	Arrowwood NWR	Plains garter snake	VE	Road	
Stutsman	Arrowwood NWR	Plains garter snake	VE	Road - DOR	
Stutsman	Arrowwood NWR	Plains garter snake	VE	Road - DOR	
Stutsman	Arrowwood NWR	Plains garter snake	VE	Roadside	
Stutsman	Chase lake	Leopard frog	VE	Lake shore	
Stutsman	Chase lake	Leopard frog	VE	Prairie	

Stutsman	Chase lake	Leopard frog	VE	Prairie wetlands	[redacted]
Stutsman	Chase lake	Smooth green	VE	Prairie	
Stutsman	Chase lake	Smooth green	VE	prairie	
Stutsman	Chase lake	Smooth green	VE	Prairie	
Stutsman	Chase lake	Garter radix	VE	Road	
Stutsman	Chase lake	Garter radix	DOR	Road	
Stutsman	Chase lake	Garter radix	DOR	Prairie road	
Stutsman	Chase lake	Leopard frog	VE	Prairie	
Stutsman	Chase lake	Leopard frog	VE	Wetland	
Stutsman	Chase lake	Smooth green	DF	Prairie	
Stutsman	Chase lake	Smooth green	DF	Prairie	
Stutsman	Chase lake	Tadpoles (leopard)	VE	Wetland	