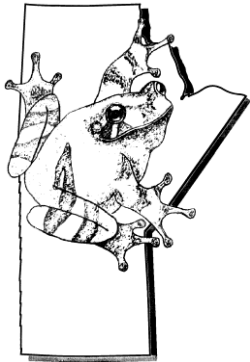


Manitoba Conservation Data Centre Surveys and Stewardship Activities, 2014



Manitoba Conservation Data Centre
Colin Murray and Carla Church
Report No. 2015-01



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Images:

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Cover image: Plains Spadefoot (*Spea bombifrons*) and Great Plains (*Anaxyrus cognatus*) Toad on highway near Lauder Sandhills. Observed during this year's nocturnal toad and frog surveys.

Manitoba Conservation Data Centre
Surveys and Stewardship Activities, 2014

By
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Executive Summary

In 2014, the Manitoba Conservation Data Center (MBCDC) added 538 new occurrences to its biodiversity geospatial database. This represents thousands of species at risk (SAR) observations for 260 plant, 92 animal and 19 invertebrate species. Observations were gathered by MBCDC staff and also submitted to the MBCDC by individuals and other organisations. This information will further enhance our understanding of biodiversity in Manitoba and guide research, development, and educational efforts.

This year MBCDC field surveys targeted 21 species which are listed under the federal Species at Risk Act, assessed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), and listed under Manitoba's Endangered Species and Ecosystems Act, and especially occurring in the mixed-grass prairie and sand hill areas of southwestern Manitoba.

Surveys were conducted for target SAR when species were most likely detectable. In 2014, approximately 41 280 acres (258 quarter sections) were surveyed for non-Lepidoptera SAR.

Approximately 9 440 acres (59 quarter sections) were surveyed for Lepidoptera SAR in 2014. Of this, 8800 acres (55 quarter sections) were surveyed in the southwest Manitoba target area and 640 acres (4 quarter sections) were surveyed in the Interlake.

Thirty-nine bird SAR survey stops were completed at mile road intersections at locations having historic bird SAR observations. Incidental bird SAR observations were also made while performing surveys for other species in other areas.

Ninety-seven mile road segments (156 km), 163 quarter sections, and 47 audio stops were surveyed for Great Plains Toad (GPT), of which four road segments and four quarter sections yielded positive results for GPT and three for the Plains Spadefoot.

A total of 224 Skink cover boards were placed at 14 sites. Four permanent sites were also monitored in 2014 for a total of 288 boards.

Forty-eight potential Mapleleaf mussel sites were visited with 17 surveyed.

Of note this year:

1. Twelve new Hairy Prairie-clover (*Dalea villosa*) sites were found
2. One new Smooth Goosefoot (*Chenopodium subglabrum*) site was found
3. Five new Riddell's Goldenrod (*Solidago Riddellii*) sites were found
4. One new Agalinis (*Agalinis spp.*) site was found
5. Mapleleaf mussel (*Quadrula quadrula*) was not found during fresh water mussel surveys. However, several other native species of mussels were found (see page 33).

Acknowledgements

There have been many helping hands throughout the 2014 field season. Thank you to Chris Friesen and Nicole Firlotte from the Conservation Data Centre for their continued support. A special thanks to Chris for conducting some Small White Lady's-Slipper and Western Ironweed surveys as well as helping out with mussel surveys.

A particular thanks to Allison Krause Danielsen for assisting with several Agalinis, Small white lady's-slipper and toad surveys in the Brandon area and to Diane Sawatzky (University of Manitoba) and Dana Kowalsky for accompanying us on some of our field excursions.

There are many colleagues in Manitoba Conservation and Water Stewardship who provided the support, encouragement and expertise needed for the work CDC does, especially Jim Duncan, Bill Watkins, Ken De Smet, Peggy Westhorpe, and Janet Moore.

Special thanks to Doug Watkinson and his assistants from the Department of Fisheries and Oceans for showing our crew how to properly survey for mussels, identify specimens and lending us equipment for our surveys.

The CDC would like to express gratitude to those who contributed data and expertise on rare species, in particular Christian Artuso (Bird Studies Canada), Doug Collicutt (Nature North), Diana Bizecki Robson (Manitoba Museum), and Pamela Rutherford (University of Brandon). Dr. Richard Westwood at the University of Winnipeg continues to assist by identifying our Lepidoptera specimens which is much appreciated.

Special thanks to all the landowners who granted permission to access their land for rare species surveys.

Organizational partners for this work included the Critical Wildlife Habitat Program, Environment Canada (through the Habitat Stewardship Program for Species at Risk), Manitoba Habitat Heritage Corporation, Nature Conservancy of Canada, NatureServe and NatureServe Canada, and Parks Canada Agency.

Funders

Financial support was gratefully received from Environment Canada's Habitat Stewardship Program for Species at Risk (HSP). Additional funding was received from Nature Conservancy of Canada (NCC) – Manitoba region, to survey several sites in southeastern Manitoba and north of Riding Mountain National Park.

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Introduction to the Manitoba Conservation Data Centre

The Manitoba Conservation Data Centre (MBCDC), established in 1994, is housed in the Wildlife Branch of Manitoba Conservation and Water Stewardship and is part of the NatureServe network. Acting as a warehouse of information on Manitoba's biodiversity, it has developed lists of wild species and plant communities found in Manitoba and assigned each a conservation status rank based on how rare it is in Manitoba (see below for more information on ranks). The MBCDC then collects detailed information on where the rare elements (species or communities) have been observed. Much of this information is collected in the field by staff biologists or partners of the MBCDC. These locations are mapped in a geographic information system (GIS) and the data entered into the accompanying database. The MBCDC uses a scientifically and empirically defined methodology and rigorous standards common to all Conservation Data Centres (CDC) throughout the NatureServe network.

The MBCDC has sought ways to go beyond these core tasks to maximize the use of its information for effective, proactive conservation activities such as habitat securement, protection, and management. Many of these activities are the result of partnerships the MBCDC has formed with conservation organizations, industry, and landowners.

In addition to assisting with government initiatives to protect rare species and communities (e.g. The Protected Areas Initiative), element location information is provided to conservation organizations such as Manitoba Habitat Heritage Corporation and Nature Conservancy of Canada who then use this data to prioritize and target locations for habitat securement and protection. The MBCDC also provides data to industry partners who wish to incorporate rare species information into the early stages of planning and siting developments. In addition, rare species location and management information is made available to landowners and managers so that these habitats can be appropriately managed. Information is also shared with federal partners such as Parks Canada and the Canadian Wildlife Service.

Conservation Status Ranks

The rarity of each species (and plant community) is assessed and assigned a conservation status rank at three geographic scales. The MBCDC works at the provincial (or subnational) level to assign each species an S rank. Through the work of the NatureServe network, species have also been assigned N (national) and G (global) ranks. These ranks range from 1 through 5, or very rare through abundant, respectively. Additional information about conservation status ranks is available on the MBCDC website (www.manitoba.ca/conservation/cdc/consranks) or from NatureServe (www.natureserve.org/).

2014 Surveys and Stewardship Activities

The focus of MBCDC field surveys and stewardship activities in 2014 was on species listed under the federal Species at Risk Act assessed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), and listed under Manitoba's Endangered Species and Ecosystems Act, and especially occurring in the mixed-grass prairie and sand hill areas of southwestern Manitoba.

Target species surveyed for include:

- Rare prairie plants – Small White Lady's-slipper (*Cypripedium candidum*), Western Silvery Aster (*Symphyotrichum sericeum*), Rough Agalinis (*Agalinis aspera*), and Gattinger's Agalinis (*A. gattingeri*)
- Western Ironweed (*Vernonia fasciculata*)
- Rare sand hill plants – Hairy Prairie-clover (*Dalea villosa*), Western Spiderwort (*Tradescantia occidentalis*), and Smooth Goosefoot (*Chenopodium subglabrum*)
- Prairie Skink (*Plestiodon septentrionalis*)
- Great Plains Toad (*Anaxyrus cognatus*)
- Rare prairie butterflies and moths – Verna's Flower Moth (*Schinia verna*), Dakota Skipper (*Hesperia dacotae*), Ottoe Skipper (*Hesperia ottoe*), and Uncas Skipper (*Hesperia uncas*)
- Rare sand hill moths – White Flower Moth (*Schinia bimatrix*), Gold-edged Gem (*Schinia avemensis*), Pale Yellow Dune Moth (*Copablepharon grandis*), and Dusky Dune Moth (*Copablepharon longipenne*)
- Rare birds including Sprague's Pipit (*Anthus spragueii*), Chestnut-collard Longspur (*Calcarius ornatus*), and Loggerhead Shrike (*Lanius ludovicianus excubitorides*)
- Mapleleaf Mussel (*Quadrula quadrula*)

Sites were selected based on:

1. Habitat Suitability: This was assessed informally by examining geospatial data (e.g. satellite imagery, aerial photography, soil type, elevation) and comparing these to the known requirements of the target species.
2. Previously Documented Occurrences: A review and selection of target species occurrences was conducted, including observation dates using the MBCDC's biodiversity geospatial database.

3. Geographic Grouping of Target Species: Other rare species sometimes co-occur with target species within the same geographic area (Friesen 2011). For example: *C. candidum* often co-occurs with *Agalinis* spp. The MBCDC’s biodiversity geospatial database was used to determine where these associated species occur and these locations were then selected for surveying during the target species growing season.

Specific survey methods and results for each species or species group are described below in the relevant section(s).

Sites and Occurrences

Survey sites and occurrences are conceptually different. A survey site is considered a discrete area, usually a quarter section or mile road segment. A species may be known to exist at the site. Occurrences are areas where a species is known to exist or had existed. Its size is based on a biologically meaningful separation distance between observations and so may contain a number of sites. The number of sites and occurrences surveyed for a species are tallied in an attempt to quantify survey effort, results, and revisitation to known locations. In this report, for a given species, sites are discussed and listed in tabular form and occurrences are noted on accompanying maps.

In 2014, 538 new occurrences of 20 plant, 33 animal and 7 invertebrate at-risk species were documented using data collected by and submitted to the MBCDC (Table 1; Appendix 1).

Table 1. Summary of rare and uncommon species occurrences and survey visits documented using data collected by or submitted to the MBCDC for 2014

	No. of Species	New Occurrences Documented	Revised Occurrences	New Visits
Plants	260	37	871	6362
Vertebrates	92	458	934	2936
Invertebrates	19	43	40	171
Total	371	538	1845	9469

Small White Lady's-slipper (*Cypripedium candidum*)

NatureServe: G4 N2 S2

ESA: Endangered

SARA: Threatened

COSEWIC: Threatened



Status and Threats

The Canadian range of Small white lady's-slipper (SWLS; Figure 1) is confined to Manitoba and Ontario, with a historical occurrence in Saskatchewan. It is considered rare in Manitoba with only 19 extant occurrences known provincially (Figure 1 and 2). The three main regions in Manitoba that support this species are the south Interlake around Woodlands and St. Laurent, south of Winnipeg from Kleefeld to the United States border with a concentration near Tolstoi, and the area between Brandon and Wawanesa. Most occurrences have less than 200 stems, while the few larger occurrences each have several thousand.



Much of the habitat that was likely inhabited by this species has been converted to cropland or other land uses since European settlement. While some areas that currently support SWLS are threatened with conversion to other land uses, most occurrences are on land with marginal agricultural or other value. Many occurrences in Manitoba are threatened by shrub encroachment and thatch accumulation. These impede the growth and reproduction of this species as it requires sparse vegetation. Road maintenance and weed management activities threaten those occurrences in roadside ditches (Environment Canada 2014b).



2014 Activities

Forty-six sites were surveyed by MBCDC staff in 2014. See Table 2 and Figure 2 for geographic break down. A total of 38 candidate sites were surveyed and yielded negative results. Of eight known occurrences surveyed in 2014, SWLS increased in some areas while decreased in others. Over 1600 stems were recorded during surveys this year.

Figure 1. Top: Photo of Small White Lady's-slipper. Middle: Provincial distribution. Bottom: International distribution

Table 2. General location of SWLS survey sites and results in 2014

Location Area	Sites				Sites with Stem Numbers / Aerial Extent			
	Total	New Candidates	Newly Discovered	Known to occur	Increase	Decrease	Same	Unknown
Brandon to Wawanesa	8	4	0	4	2	2	0	0
Stockton to Treesbank	4	4	0	0	-	-	-	-
Oak Lake to Lauder	13	13	0	0	-	-	-	-
South Interlake	16	12	0	4	2	1	0	1
Stuartburn Area	5	5	0	0	-	-	-	-
Total	46	38	0	8	2	3	1	1

Of the eight known sites surveyed in the Brandon to Wawanesa area, two sites showed an increase in aerial extent. At one of these known sites, several previously undiscovered plants were found further west than the known occurrence. Two sites showed a decrease: one in numbers and the other in aerial extent. Of these, a decrease at one site was likely due to herbicide drift from an adjacent crop and the decrease at the other site is likely attributable to beaver dams on a creek flooding the pasture where the occurrence is located.

Surveys of candidate sites in the Stockton to Treesbank (4), Oak Lake to Lauder (13), and Stuartburn (5) areas all produced negative results.

Sixteen sites in the south Interlake area were surveyed. Twelve candidate sites were surveyed but no SWLS were found. Of the four sites that were previously known, two sites showed an increase and one site showed a decrease in stem numbers. At the last site, no detailed stem count or aerial extent survey was conducted but plants were found present at the occurrence.

The Interlake trail site was surveyed again this year as it has been since 2010 when shrubs were removed in the fall and subsequent fire treatment before the 2011 growing season to reduce thatch. Table 3 shows plant and stem counts three years before and after the 2010 “base year”. Distinguishing individual plants can be difficult since one plant may send out rhizomes that could then sprout stems some distance from the same plant and so be mistaken as a separate plant. Therefore, ‘total stems’ is more appropriate to document year-to-year population variation (Anderson and Ruby 2014). Table 3 shows an annual reduction in stem numbers to 2010 then a gradual annual increase in total stems (with the exception of 2013). This would seem to indicate that shrub removal followed by fire has had a positive effect on SWLS stem counts.

Table 3. SWLS plant and stem counts before and after shrub clearing and burning.

Year	Plants	Total Stems	Flowering Stems	Non-flowering Stems	Note
2005*	70	275	150	125	
2008	NA	161	52	109	Plant counts not done
2009	12	116	6	110	
2010	1	14	7	7	Base year
2011	5	17	8	9	
2012	19	39	21	18	
2013	14	30	3	27	
2014	18	43	7	36	

*2006 and 2007 surveys were not comparable and so omitted.

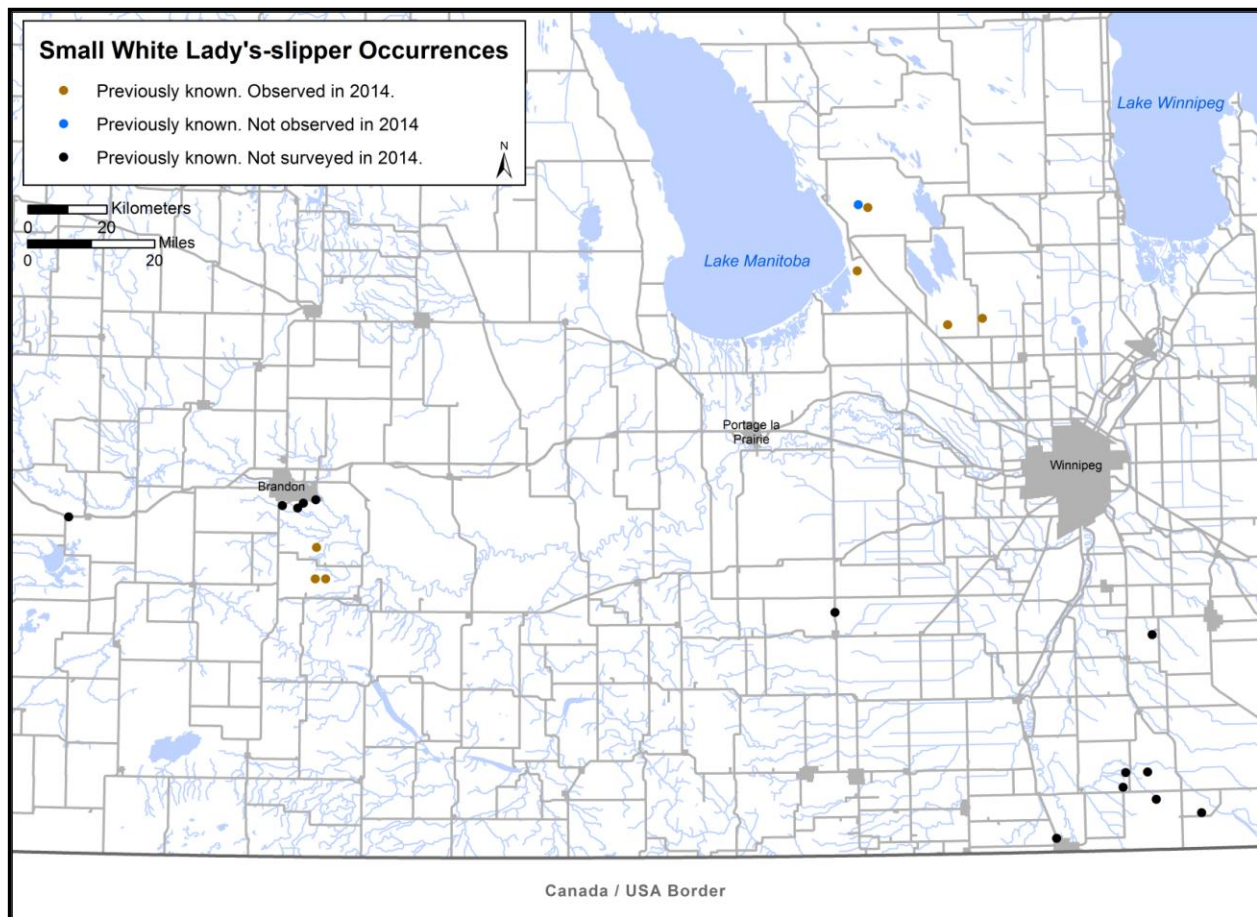


Figure 2. Map of Small white lady's-slipper occurrences in Manitoba 2014.

Riddell's Goldenrod (*Solidago riddellii*)

NatureServe: G5 N3 S2

ESA: Threatened

SARA: Special Concern

COSEWIC: Special Concern

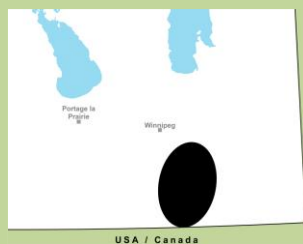


Figure 3. Top: Riddell's Goldenrod (Image from COSEWIC). Middle: Provincial distribution. Bottom: International distribution.

Status and Threats

Riddell's Goldenrod is an aster which grows approximately 40 to 100 centimeters tall (Figure 3). It has a flat topped to rounded flowering head and the leaves of this plant tend to have three longitudinal veins (three nerved). In Manitoba, this species can be found in undisturbed roadside ditches and allowances and in wet prairie habitats.

Its range includes southern Canada (southeastern Manitoba and southwestern Ontario) and the Great Lake states south to Indiana. Manitoba's population primarily occurs in the Tolstoi, Vita, Gardenton area and is part of a disjunct population that extends into southeastern Missouri and the adjacent parts of Arkansas, in central Illinois and in southern and western Minnesota (Figure 3) (COSEWIC 2014; Environment Canada 2014a).

Thirty extant populations in Manitoba and Ontario are known. Habitat loss due to development, agricultural practices and other human activity are having a significant negative impact on population numbers for this species.

2014 Activities

Twelve sites were surveyed for the presence/absence of Riddell's Goldenrod (i.e. detailed stem counts and patch extent mapping were not performed). Of the 12 sites, six were previously known and six were candidate sites.

Riddell's Goldenrod was found at all six known sites. It was also found at 5 candidate sites where detailed stem counts were performed. A total of 500+ Riddell plants were recorded during the surveys.

Table 4. General location of Riddell's Goldenrod survey sites and results in 2014

Location Area	Sites				Historical Comparison (Numbers/Aerial Extent)			
	Total	New Candidates	Newly Discovered	Known to occur	Increase	Decrease	Same	Unknown
Stuartburn Area	12	6	5	6	0	0	0	6

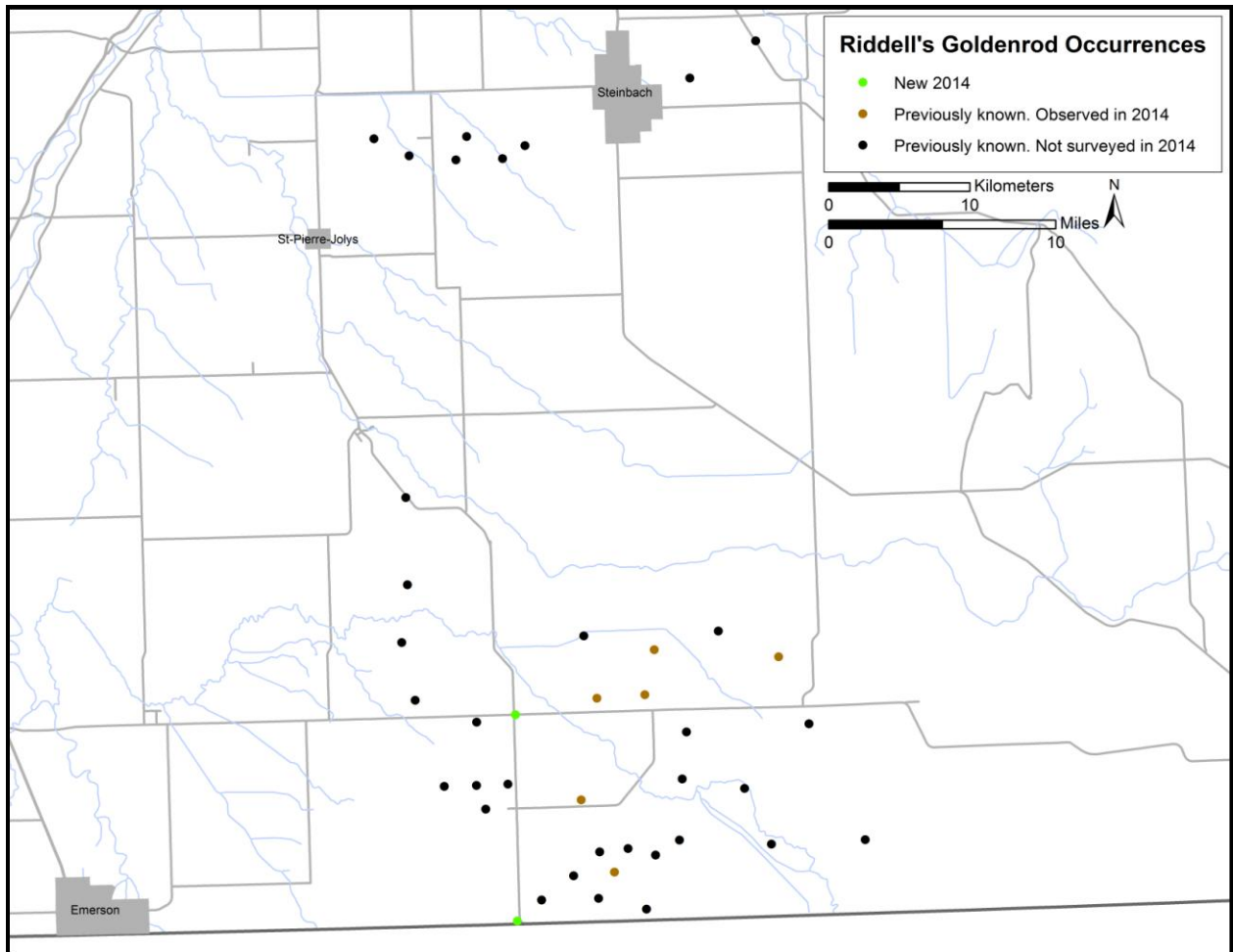


Figure 4. Map of Riddell's Goldenrod occurrences in Manitoba 2014.

Western Silvery Aster (*Symphyotrichum sericeum*)

NatureServe: G5 N2N3 S2S3

ESA: Threatened

SARA: Threatened

COSEWIC: Threatened



Status and Threats

Western Silvery Aster (Figure 5) tends to grow in dry prairie meadows with relatively sparse vegetation on coarse well drained calcareous soils. The international range (Figure 5) of Western Silvery Aster (WSA) extends from Texas to southern Manitoba and only becomes rare at the northern and eastern extent of its range (COSEWIC 1988, COCEWIC 1999, COSEWIC 2012b, Natureserve 2013a). In Canada it is known to occur in smaller populations in southern Ontario and southeastern Manitoba. In Manitoba (Figure 5) this species is considered rare. There are only three local populations (Figure 6): In the Gardenton/Vita area; near Richer; and the largest population located in and around Birds Hill Provincial Park. Threats include gravel extraction, and ditch and road maintenance (COSEWIC 1988, COCEWIC 1999, COSEWIC 2012b).



2014 Activities

Three sites were surveyed for WSA in 2014. See Table 5 and Figure 6 for geographic breakdown. Only one site was previously known which showed a significant increase in number of plants and spatial extent. Over 700 plants were recorded at this site. The two candidate sites had negative results.



Figure 5. Top: Western Silvery Aster. Middle: Provincial distribution. Bottom: International distribution.

Table 5. General location of WSA survey sites and results in 2014

Location Area	Sites				Historical Comparison (Numbers/Aerial Extent)			
	Total	New Candidates	Newly Discovered	Known to occur	Increase	Decrease	Same	Unknown
Richer	3	2	0	1	1	0	0	0

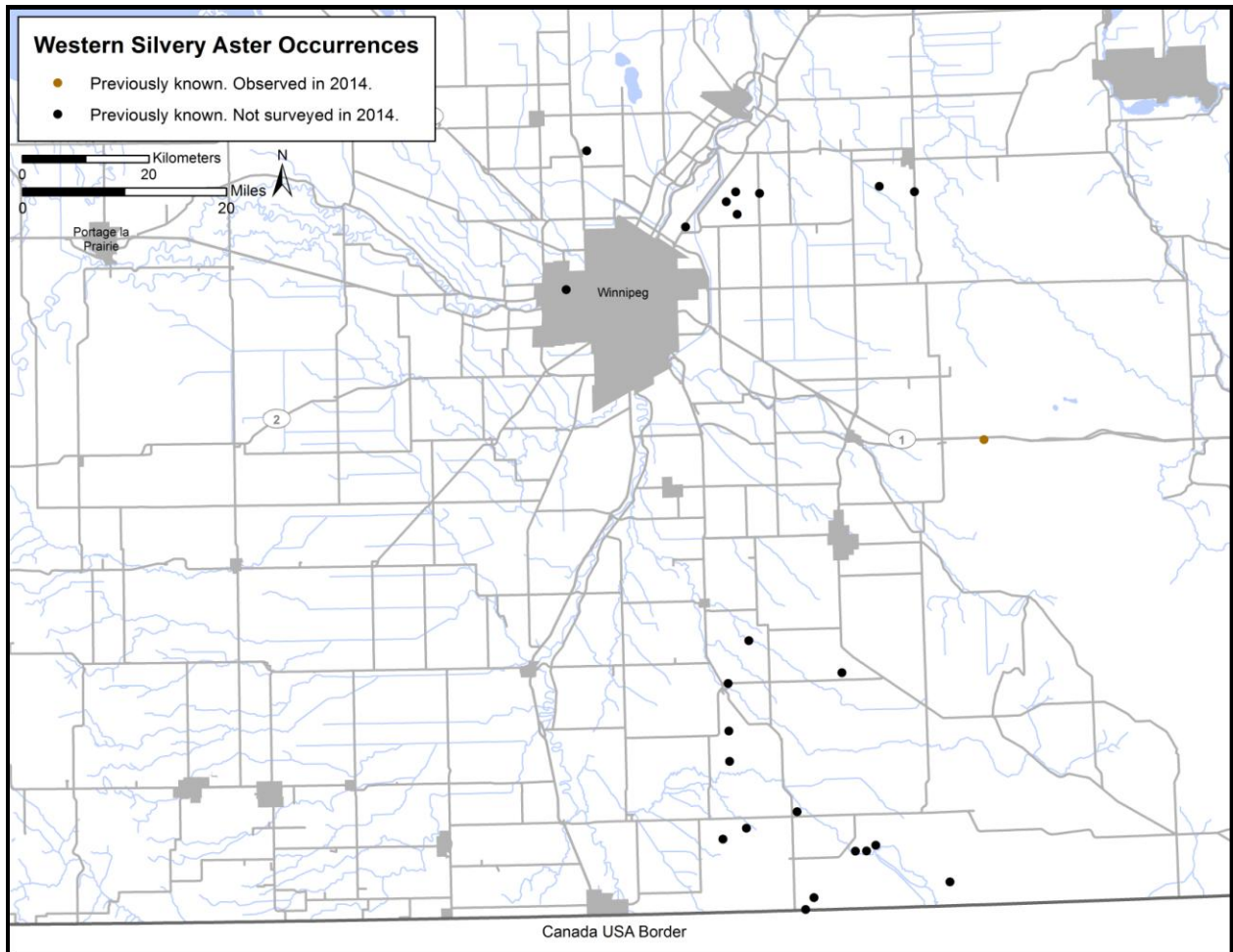


Figure 6. Map of Western Silvery Aster Occurrences in Manitoba 2014.

Agalinis Species (*Agalinis spp.*)

Gattinger’s Agalinis (*Agalinis gattingeri*)

NatureServe: G4 N2 S1	ESA: Endangered	SARA: Endangered	COSEWIC: Endangered
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Rough Agalinis (*Agalinis aspera*)

NatureServe: G5 N1N2 S1S2	ESA: Endangered	SARA: Endangered	COSEWIC: Endangered
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Slender Agalinis (*Agalinis tenuifolia*)

NatureServe: G5 NNR S2S3	ESA: Not Ranked	SARA: Not Ranked	COSEWIC: Not Ranked
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Status and Threats

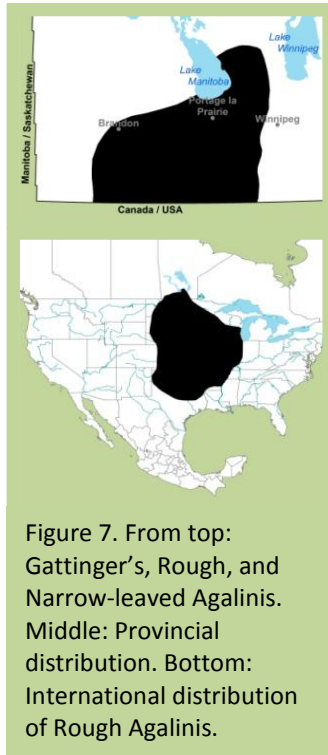
The three *Agalinis* species tend to grow on sparsely vegetated dry prairie meadows on well drained gravelly calcareous soils (Pennell 1928, Friesen and Murray 2010).

In North America, Gattinger’s *Agalinis* (Figure 7) occurs most frequently in the south-central United States (Missouri and Arkansas). Its range extends south to Texas, northwest to Nebraska, east to Kentucky and into Canada in southwestern Ontario and southeastern Manitoba (COSEWIC 2012c, NatureServe 2013b, Pennell 1928). In Manitoba it is considered very rare being known at five locations (Figure 8), all in the south Interlake between Lake Manitoba and Shoal Lakes around St. Laurent and St. Ambroise (MBCDC 2013).

The range of Rough *Agalinis* (Figure 7) extends from Texas north into Manitoba being most concentrated in Iowa and Nebraska (COSEWIC 2006, NatureServe 2013c, Pennell 1928). In Manitoba, Rough *Agalinis* is found near Poplar Point, south of Lake Manitoba, east to near Birds Hill Provincial Park and north through the Interlake to Lundar (Figure 9). It is also known to occur in the area between Brandon and Wawanesa (MBCDC 2013).

In North America, Slender *Agalinis* (Figure 7) is more common than the two other *Agalinis* species and tends to grow on more variable soils. In Manitoba, it is considered uncommon. Distinguishing between these *Agalinis* species can be difficult (MBCDC 2013).

Threats to the *Agalinis* species include gravel extraction, road and ditch maintenance, and habitat loss (COSEWIC 2012c, COSEWIC 2006).



2014 Survey Activities

A total of 30 sites were surveyed for the Agalinis species. See Table 6 and Figures 8 and 9 for geographic breakdown.

Eleven sites were surveyed in the Brandon to Wawanesa area. One known occurrence was observed present but detailed stem counts were not performed. Ten candidate sites were selected which are known Small White Lady-slipper occurrences since Agalinis and Small White Lady-slippers sometimes co-occur. All candidate sites produced negative results.

Thirteen sites were surveyed in the South Interlake area. Of seven known sites, one showed an increase in stem numbers and aerial extent, at four sites no plants were found, and two sites were positive but no detailed stem count or aerial extent surveys were conducted. Of seven candidate sites selected, all produced negative results.

In the Stuartburn area, a total of six sites were surveyed. Of the five candidate sites, only one yielded a positive result. The Agalinis found could not be determined to species since field photos proved inconclusive. A collection wasn't made since there were only six plants at the site. One site where Agalinis was known to occur showed a decrease in stem numbers in 2014.

Table 6. General location of *Agalinis* spp. survey sites and results in 2014

Location Area	Sites				Historical Comparison (Numbers/Aerial Extent)			
	Total	New Candidates	Newly Discovered	Known to occur	Increase	Decrease	Same	Unknown
Brandon to Wawanesa	11	10	0	1	0	0	0	1
South Interlake	13	6	0	7	1	4	0	2
Stuartburn Area	6	5	1	1	0	1	0	0
Total	30	21	1	9	1	5	0	3

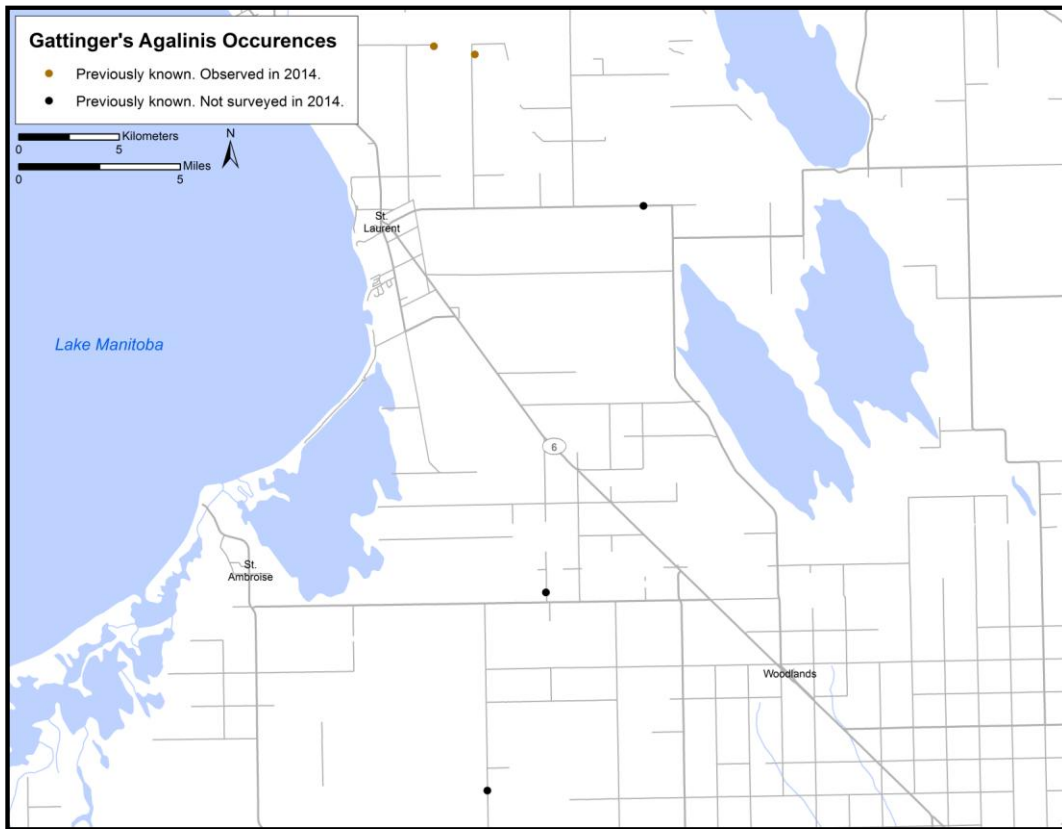


Figure 8. Map of Gattinger's Agalinis Occurrences in Manitoba 2014.

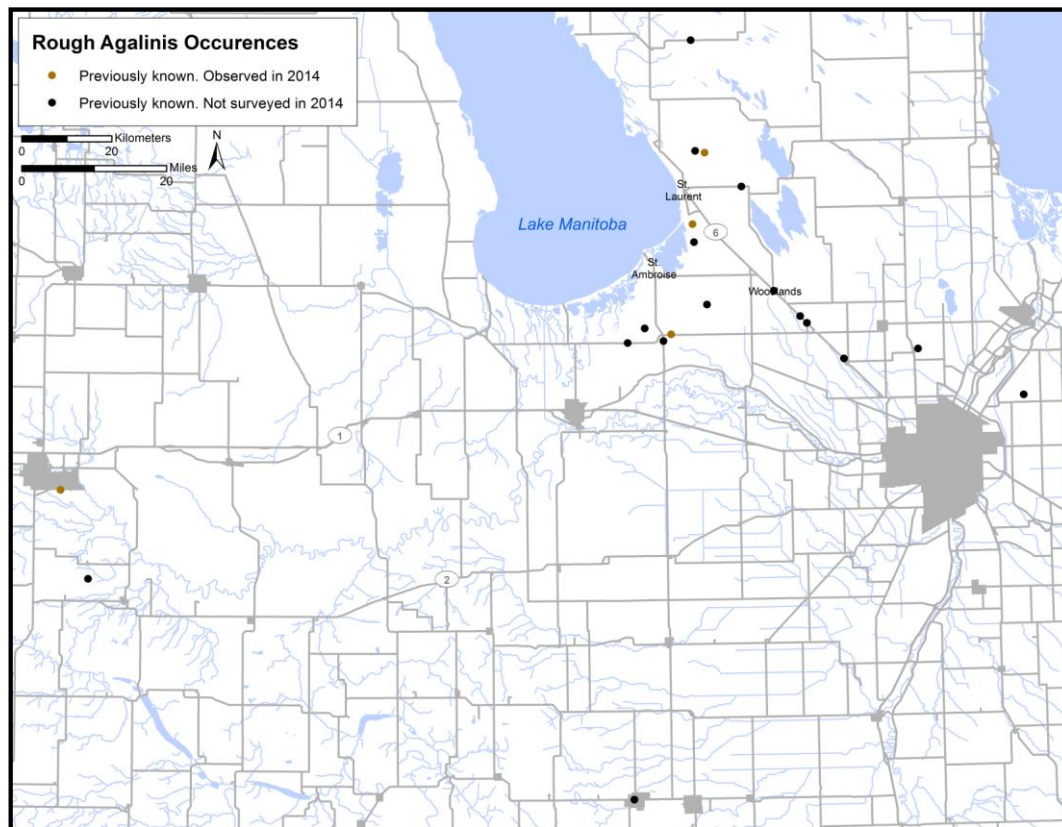


Figure 9. Map of Rough Agalinis Occurrences in Manitoba 2014.

Western Ironweed (*Vernonia fasciculata*)

NatureServe: G5 N1 S1

ESA: Endangered

SARA: No Status

COSEWIC: Endangered



Status and Threats

The known Canadian range of Western Ironweed (Figure 10) is presently confined to a small area in south central Manitoba; it is likely extirpated from Saskatchewan (Enns 2012). As only two extant occurrences are known, one west of Morris and one along the Rat River, it is considered very rare in Manitoba. The Morris occurrence consists of approximately 60 stems in roadside ditches. The Rat River occurrence is large and consists of many thousands of stems along the river from St. Pierre Jolys to the Red River and in a few adjacent roadside drainage ditches.



Given the limited range (both historical and present) of Western Ironweed in Manitoba, the distribution of this species has probably always been limited. However, much of the habitat that was likely inhabited by this species has been converted to cropland or other land uses since European settlement. Because this species occurs on field margins near the Rat River, cultivation and herbicide use threaten plants in some areas. It is unclear how water level regulation via water level control structures might affect Ironweed populations along the Rat River. Occurrences in roadside ditches are susceptible to road maintenance and weed management activities.



2014 Activities

Three known sites were surveyed this year. Only one site showed an increase in aerial extent. Another site showed no change. At one previously known site, ditch maintenance activities which occurred sometime before 2013 survey resulted in the loss of all stems. Although these occurrences may still survive from below ground propagules or seeds, no plants were found in 2013 or 2014.

Figure 10. Top: Photo of Western Ironweed. Middle: Provincial distribution. Bottom: International distribution.

Table 7. General location of *Agalinis* spp. survey sites and results 2014

Location Area	Sites				Historical Comparison (Numbers/Aerial Extent)			
	Total	New Candidates	Newly Discovered	Known to occur	Increase	Decrease	Same	Unknown
Stuartburn Area	3	0	0	3	1	1	1	0

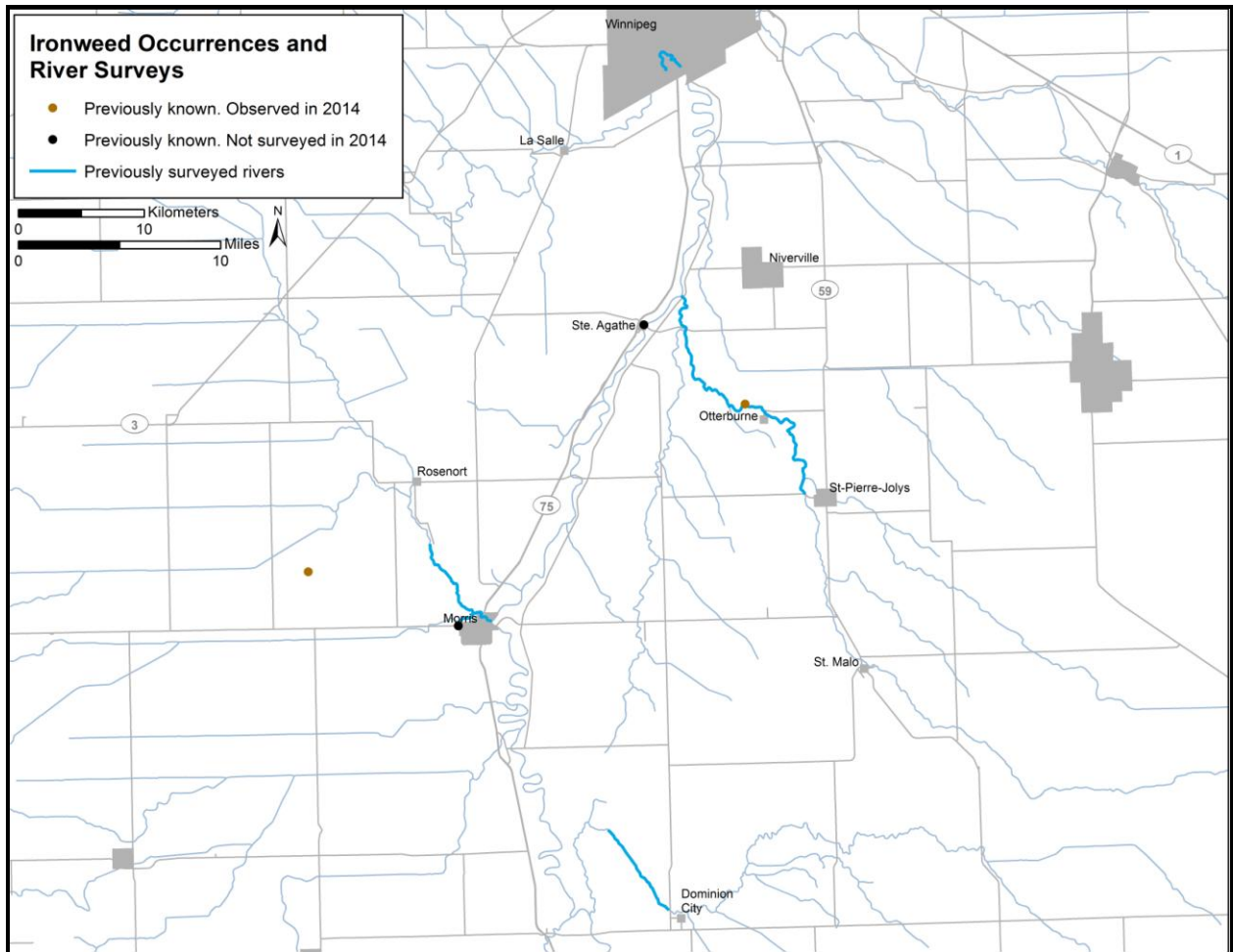


Figure 11. Map of Ironweed Occurrences and river surveys in Manitoba 2014.

Sand hill Plants

Introduction

A total of 52 sites were surveyed by MBCDC staff in 2014 for sand hill species, with a focus on areas south of Spruce Woods Provincial Park (SWPP), the Oak Lake to Lauder area and Neepawa.

Hairy Prairie-clover (*Dalea villosa*)

NatureServe: G5 N2N3 S2S3	ESA: Threatened	SARA: Threatened	COSEWIC: Special Concern
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The Canadian range of Hairy Prairie-clover (HPC; Figure 12) is confined to sand hill complexes in Saskatchewan and Manitoba (Smith 1998, COSEWIC 2011). Sand hills in Manitoba that support this species include those near Portage, Carberry, Lauder, and Neepawa (Figure 11).

2014 Activities

Fifty-two sites were surveyed for HPC this year (Table 8) and over 3 300 plants were recorded.

Three candidate sites in the Stockton to Treesbank area were surveyed with one yielding positive results.

Seventeen sites in the Oak Lake to Lauder area were surveyed. Of the six previously known sites, two showed an increase in stem numbers and aerial extent. One site showed a decrease both in stem numbers and extent. The loss is likely due to a previous herbicide application in the ditch right of way. At three of the previously known existing sites, only presence was determined and so increase or decrease is not known. Of the 11 candidate sites, four were newly discovered.

Surveys conducted in four candidate sites in the SWPP North area had negative results.

Of the twenty-four surveys conducted in the Glenboro-SWPP south area, seven sites were newly discovered and two were previously known. One site near the Glenboro Golf course showed an increase in numbers. The other previously known site did not yield any

positive results and was later determined to be a mapping error. The remaining 15 candidate sites produced negative results.

Three candidate sites and one previously known site were surveyed in the Neepawa area. The previously known site showed a slight increase in stem numbers and aerial extent. No HPC was found at any of the candidate sites.

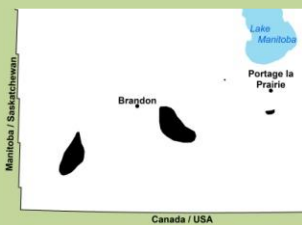


Figure 12. Top: Photo of Hairy-prairie Clover. Middle: Provincial distribution. Bottom: International distribution

Table 8. General location of HPC survey sites and results in 2014

Location Area	Sites				Historical Comparison (Numbers / Aerial Extent)			
	Total	New Candidates	Newly Discovered	Known to occur	Increase	Decrease	Same	Unknown
Stockton to Treesbank	3	3	1	0	-	-	-	-
Oak Lake to Lauder	17	11	4	6	2	1	-	3
Glenboro-SWPP North	4	4	0	0	0	0	0	0
Glenboro-SWPP South	24	22	7	2	1	1	0	0
Neepawa	4	3	0	1	1	0	0	0
Total	52	43	12	9	4	2	0	3

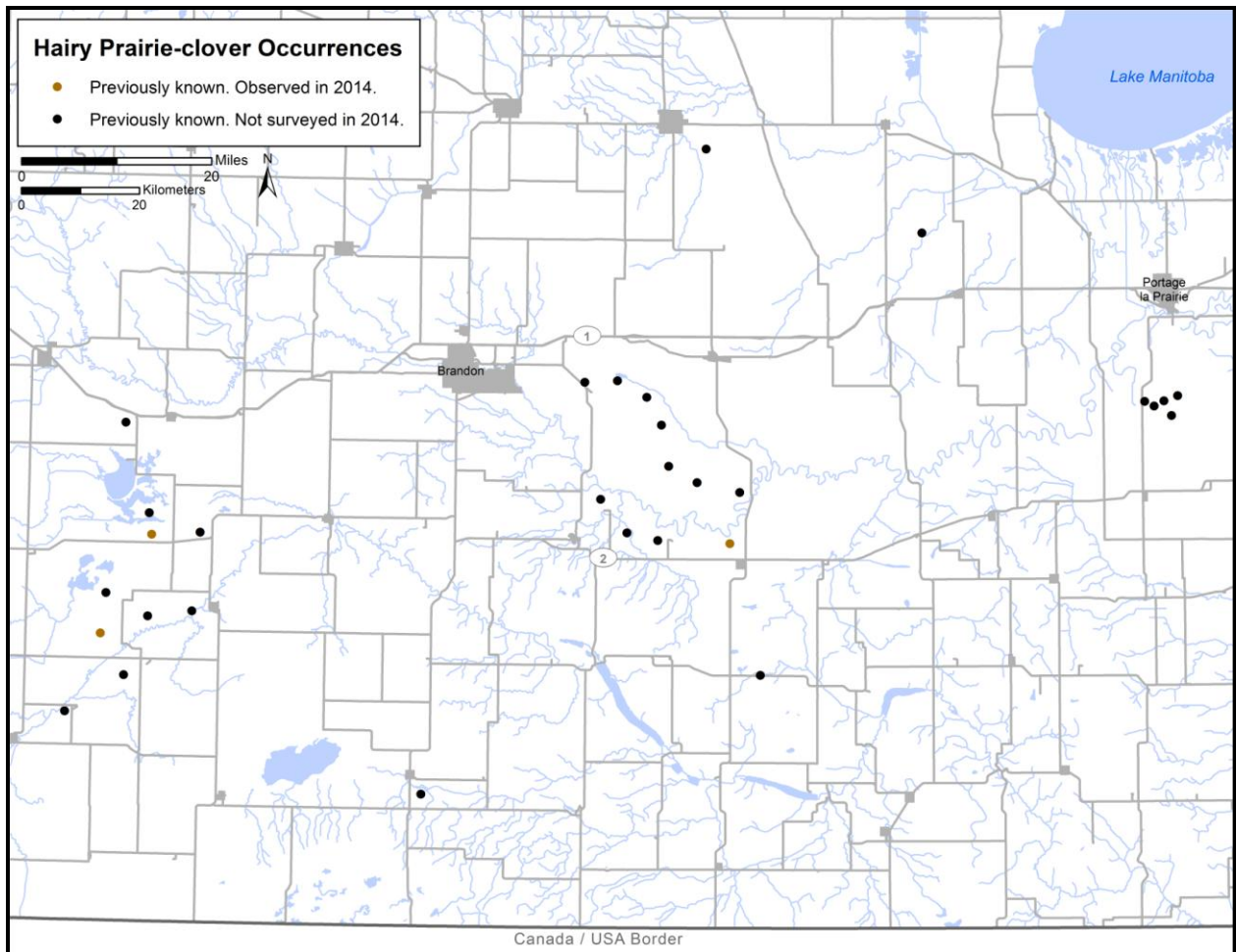
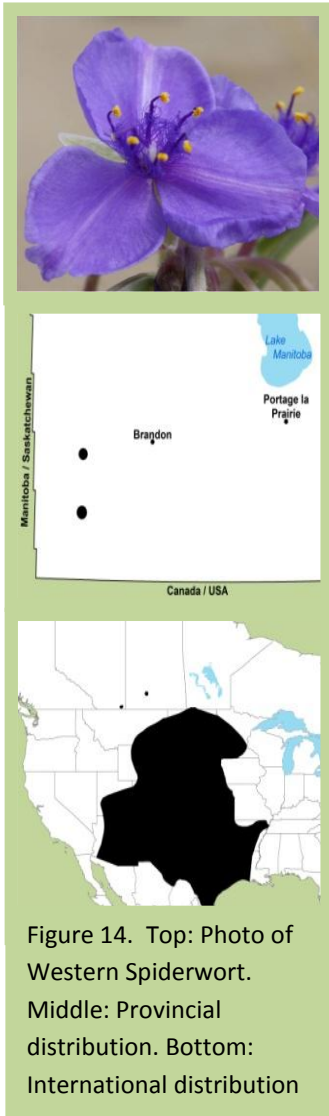


Figure 13. Map of Hairy Prairie-clover occurrences in Manitoba 2014.

Western Spiderwort (*Tradescantia occidentalis*)

NatureServe: G5 N1 S1	ESA: Threatened	SARA: Threatened	COSEWIC: Threatened
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In Canada, Western Spiderwort (Figure 14) occurs in sand hills in Alberta, Saskatchewan and Manitoba (Smith 2002). Only two occurrences of this species are known in Manitoba: one near Lauder and one near Routledge (Figure 15).

Threats include overgrazing and trampling from cattle, although Spiderwort seems tolerant to some grazing and cattle movement and it may be beneficial by reducing other threats of competing species and sand hill stabilization (Environment Canada 2013). Sand extraction is also an identified threat (Environment Canada 2013). Sand hill habitat adjacent to known occurrences has been disturbed or severely damaged by sand quarrying (MBCDC 2014 unpublished data).

Twenty-six candidate sand hill sites were surveyed for Western Spiderwort in 2014 (Table 9). All showed negative results. In a survey of one known site in the Oak Lake to Lauder area, no plants were found. In the other known site, no detailed steam count or aerial extent survey was conducted but plants were found in the area.

Figure 14. Top: Photo of Western Spiderwort. Middle: Provincial distribution. Bottom: International distribution

Table 9. General location of Western Spiderwort survey sites and results in 2014

Location Area	Sites				Historical Comparison (Numbers / Aerial Extent)			
	Total	New Candidates	Newly Discovered	Known to occur	Increase	Decrease	Same	Unknown
Stockton to Treesbank	3	3	0	0	-	-	-	-
Oak Lake to Lauder	14	12	0	2	0	1	0	1
Glenboro-SWPP South	8	8	0	0	-	-	-	-
Neepawa	3	3	0	0	-	-	-	-
Total	28	26	0	2	0	1	0	1

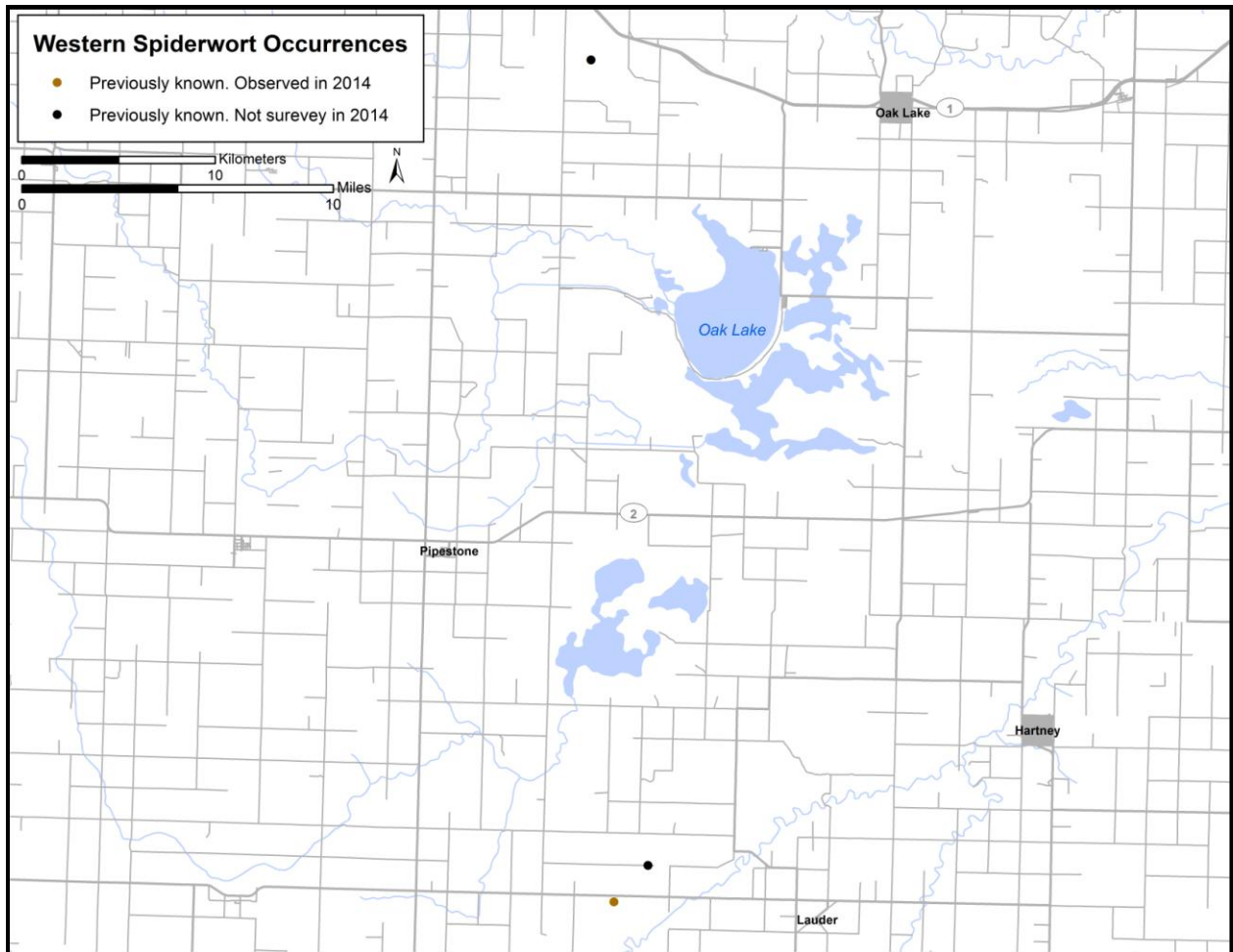


Figure 15. Map of Western Spiderwort occurrences in Manitoba 2014.

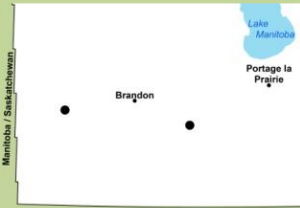
Smooth Goosefoot (*Chenopodium subglabrum*)

NatureServe: G3G4 N3 S1	ESA: Endangered	SARA: Threatened	COSEWIC: Threatened
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Smooth Goosefoot can be difficult to find due to its inconspicuous growth form and ability for its seeds to remain dormant during unfavourable growing conditions.

In Manitoba Smooth Goosefoot (Figure 16) was formally known from only three sites– Routledge, north of Oak Lake, and Spruce Woods Provincial Park (Figure 17). Additional sites can be found in Alberta and Saskatchewan (COSEWIC 2006).



Twenty-eight candidate sites were surveyed this year. Several *Chenopodium* specimens collected were identified as the more common *Chenopodium leptophyllum*. Smooth Goosefoot was found at one candidate site near Oak Lake.

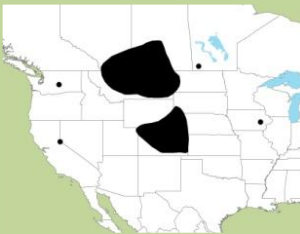


Figure 16. Top: Photo of Smooth Goosefoot. Middle: Provincial distribution. Bottom: International distribution. (Photo © J. Rumancik, Nature Saskatchewan).

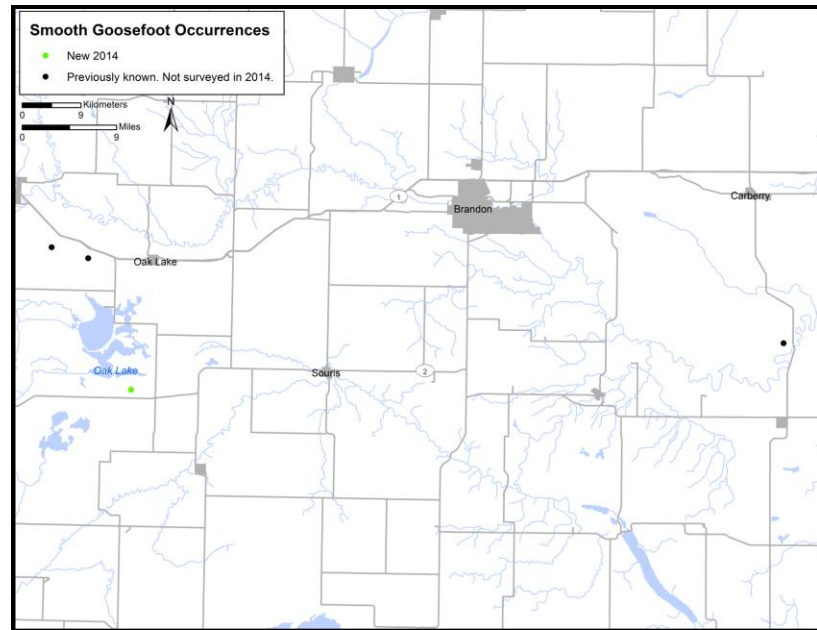


Figure 17. Map of Smooth Goosefoot occurrences in Manitoba 2014.

Table 10. General location of Smooth Goosefoot survey sites and results in 2014

Location Area	Sites				Historical Comparison (Numbers/Aerial Extent)			
	Total	New Candidates	Newly Discovered	Known to occur	Increase	Decrease	Same	Unknown
Stockton to Treesbank	3	3	0	0	-	-	-	-
Oak Lake to Lauder	14	14	1	0	-	-	-	-
Glenboro-SWPP South	8	8	0	0	-	-	-	-
Neepawa	3	3	0	0	-	-	-	-
Total	28	28	1	0	-	-	-	-

Prairie Skink (*Plestiodon septentrionalis*)

NatureServe: G5 N2 S1

ESA: Endangered

SARA: Endangered

COSEWIC: Endangered



Status and Threats

The Canadian range of the Prairie Skink is confined to several parts of southwestern Manitoba (Figure 16). The largest population occurs in and around the Baldhead Sand hills. A much smaller population occurs in the Lauder Sandhills. As of 2013 Prairie Skinks were reported in the Portage Sandhills. The Canadian population is somewhat disjunct from the rest of the species' range – the nearest occurrence is over 100km away in the United States (Figure 16).



The primary threat to this species is habitat loss. The main factors contributing to this loss of habitat are: cultivation of mixed-grass prairie, aspen encroachment resulting from fire suppression, and invasion of mixed-grass prairie by invasive species like Leafy Spurge (*Euphorbia esula*). Sand extraction (C. Murray and C. Church pers. obs.) and ex-urban development are also potential threats (Krause Danielsen et al., 2014). Habitat loss can result in the fragmentation and isolation of populations (COSEWIC 2004). Recovery activities for the Prairie Skink include greater public awareness and participation in long term monitoring, reducing habitat loss and the reducing intentional or unintentional killing of Skinks and other at-risk reptiles (Government of Canada, 2015).



Figure 18. Top: Photo of Prairie Skink. Middle: Provincial distribution. Bottom: International distribution.

2014 Activities

A common Skink monitoring protocol is to layout plywood boards measuring 1 X 2 feet and ½ to 3/8 inch thick (Rutherford 2012, Krause-Danielson 2009, Nature North 2013). Sixteen boards were placed at each site with eight boards being located at two microsites separated by about 20m or less. Pre-existing wood or scrap metal,

found during surveys, and deemed as suitable cover material was incorporated into the surveys.

A total of 224 cover boards were placed at 14 sites in 2014 (Table 7 and Figure 17). Four permanent sites were also monitored in 2014 for a total of 288 boards. Of eight sites in the Spruce Woods area, three were positive (of which two were known sites). In addition, two new observations were made while performing other surveys. No Skinks were observed in the Oak Lake or Lauder areas in previously unsurveyed areas.

Table 11. 2014 MBCDC skink board locations

Location	No. of Boards	No. of Sites	Skinks Observed
Spruce Woods	128	8	Yes
Oak Lake	64	4	No
Lauder	96	6	No
Total	288	18	-

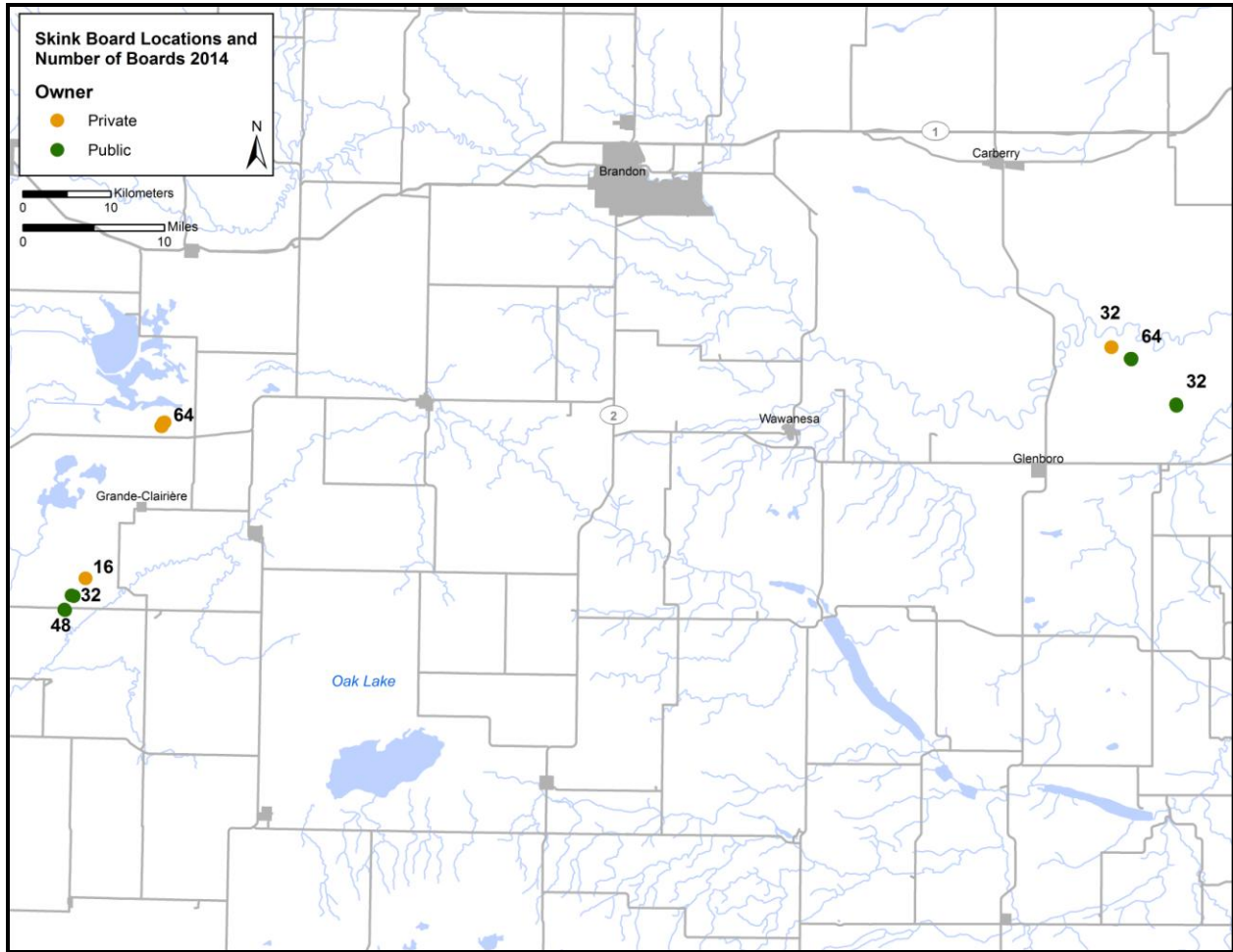


Figure 19. Map of Skink board locations in Manitoba for 2014

Great Plains Toad (*Anaxyrus cognatus*)

NatureServe: G5 N3 S2

ESA: Threatened

SARA: Special Concern

COSEWIC: Special Concern



Status and Threats

The North American range of Great Plains Toads (Figure 20) includes much of the prairie in central portion of the continent, extending into the southern regions of the prairie provinces where it is considered rare to uncommon (COSEWIC 2010; NatureServe 2012). In Manitoba, the range of this species is confined to the extreme southwest corner of the province.



Threats to this species include habitat loss and fragmentation, agricultural herbicide and pesticide use, and road mortality. Habitat loss and fragmentation are due primarily to cultivation, road construction, oil and gas related developments and sand extraction and quarrying.



Survey Methodology

Surveys typically commenced around 2200h and ended between 2400h and 0200h, depending on weather conditions. Survey nights that were cool and/or windy typically ended sooner than those that were warm and/or calm as detection rates were low. Surveys were divided into two types - audio and visual - which can be done at the same time.

Figure 20. Top: Photo of Great Plains Toad. Middle: Provincial distribution. Bottom: International distribution.

Audio surveys were modified from Johnson et al. (1996). They involved a systematic listening stop every two miles at mile road intersections. The engine was turned off and the occupants got out of the vehicle and listened for two minutes. The quarter section(s)

from which the calls originated was determined and noted. The distance between stops was shortened to one mile when calls were heard at a two mile stop or when toads were observed on the road. Sometimes stops were initiated at the location toads were observed on the road. Notes were made regarding suitability of weather to surveying and any audio interference (dogs, wind). Both negative and positive data were recorded.

Visual surveys involved tallying the number of GPT observed every mile section road. Vehicle speed was reduced to about 60km/h when a GPT was first observed. Notes were made on the suitability of weather to surveying. Both negative and positive data was recorded.

In addition, during the audio/visual surveys, other toad, frog and bird species observed were recorded including the provincially uncommon Plains Spadefoot (*Spea bombifrons*) and the federally listed Yellow Rail (*Coturnicops noveboracensis*).

2014 Activities

Toad surveys were conducted on three nights (June 9, 10 and 11). The survey area was in the southwest corner of Manitoba (northwest of Pierson and near Broomhill). The area was chosen in an attempt to fill in previously unsurveyed portions of Manitoba and to better understand the range along the Manitoba / Saskatchewan border.

Forty-seven audio survey stops were performed at mile road intersections (Figure 21) for a total of 163 quarter sections surveyed with 4 stops yielding positive results for Great Plains Toads and many for Boreal Chorus Frogs, Spring Peeper and Wood Frogs. No Yellow Rails were detected.

Ninety-seven mile road segments (156 km) were surveyed (Figure 22) of which four yielded positive results for Great Plains Toad and three for the Plains Spadefoot.

Additionally, outside of this survey, one property yielded a positive GPT result during vegetation surveys. Several other toads were seen crossing a highway in late August possibly in migration.

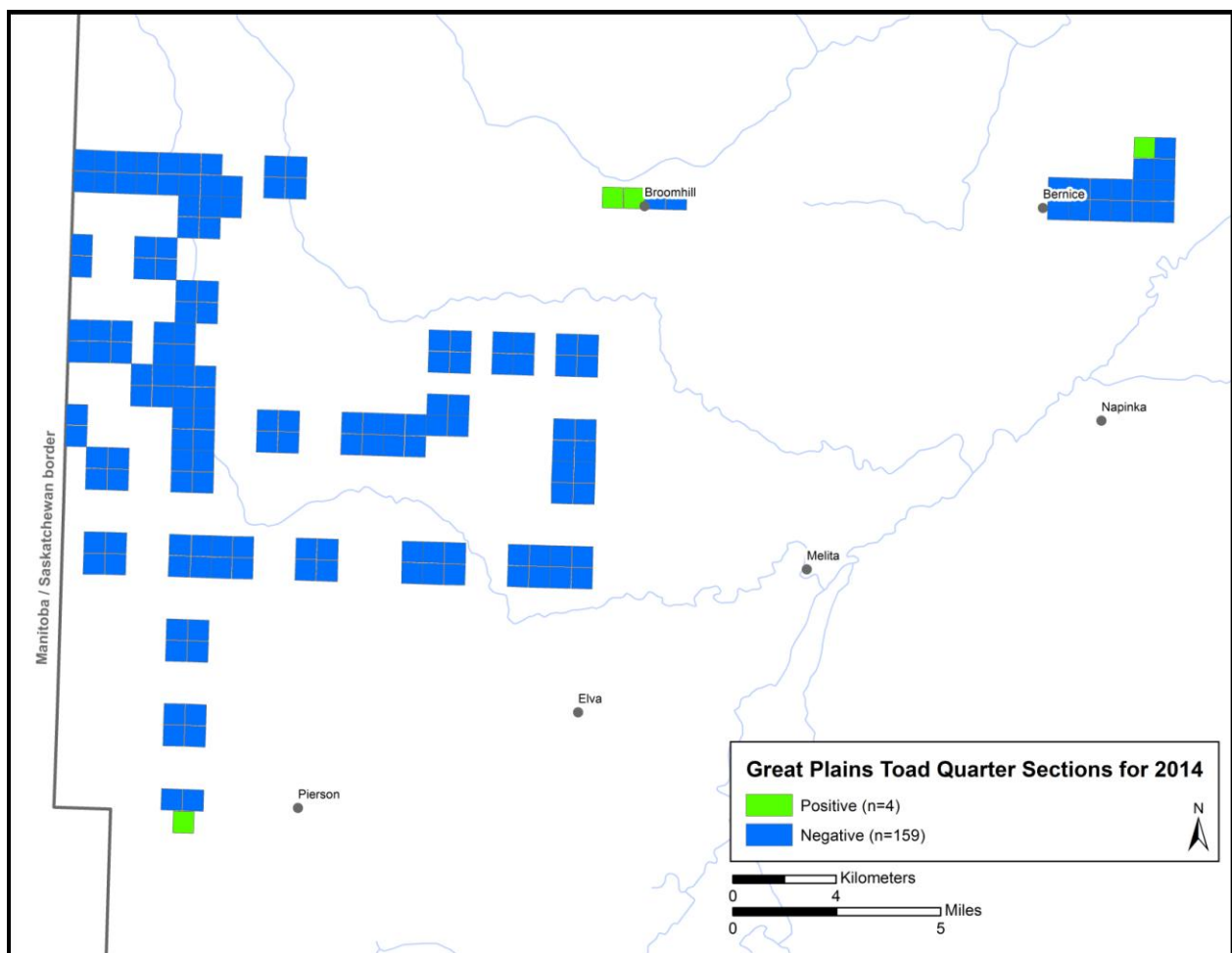


Figure 21. Map of Great Plains Toad quarter section surveys in Manitoba for 2014.

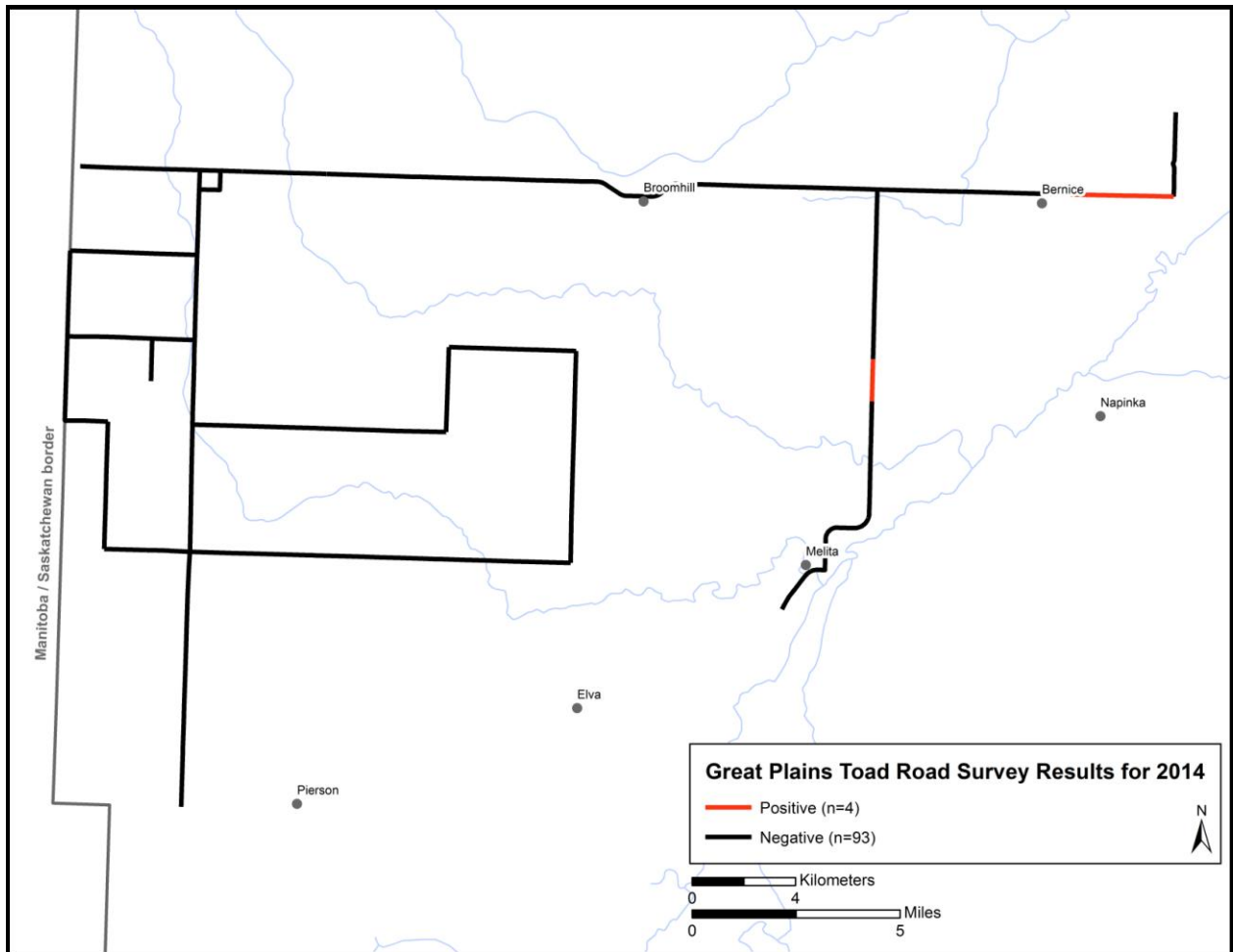


Figure 22. Map of Great Plains Toad road surveys in Manitoba for 2014.

Eastern Tiger Salamander (*Ambystoma tigrinum*)

NatureServe: G5 NU S4S5

ESA: No Status

SARA: Endangered

COSEWIC: Endangered



Figure 23. Top: Photo of Great Plains Toad. Middle: Provincial distribution. Bottom: International distribution. (Photo © D. Collicutt)

Status and Threats

Eastern Tiger Salamander (ETS) (figure 23), formally a sub-species, was elevated to species in 2008. In November 2013, the prairie population of the Eastern Tiger Salamander was designated as Endangered (Boundy, et al., 2008; COSEWIC 2013; Shaffer et al., 1996)

ETS are mole salamanders and among the largest terrestrial salamanders in North America. ETS adults are mainly dark olive to grey or brown with lighter olive to yellow spots on its back and sides. It lacks blotches or bars (COSEWIC 2013). ETS can be confused with a subspecies of the Western Tiger Salamander (*A. mavortium diaboli*) which also occurs in Manitoba. This sub-species is described as yellow or off-white on a dark background and the edges of the blotches are not always sharp (COSEWIC 2012a).

Only six occurrences of ETS are known in Canada (all in Manitoba). ETS is thought to be extirpated from southern Ontario. Threats to habitat include landscape modified for livestock production and other farming uses. The persistence of the Prairie population is uncertain because of the small Canadian range, isolation of populations and the tendency of population numbers to fluctuate widely year to year. Droughts and other severe weather events also pose a threat to ETS. Gravel and quarry operations also threaten ETS

habitat.

Seven sites were surveyed in 2014. ETS egg masses were found at only one known site. At this site it was previously found in two nearby ponds. However, as in 2013, one of the ponds was dry. The remaining 6 candidate sites were negative.

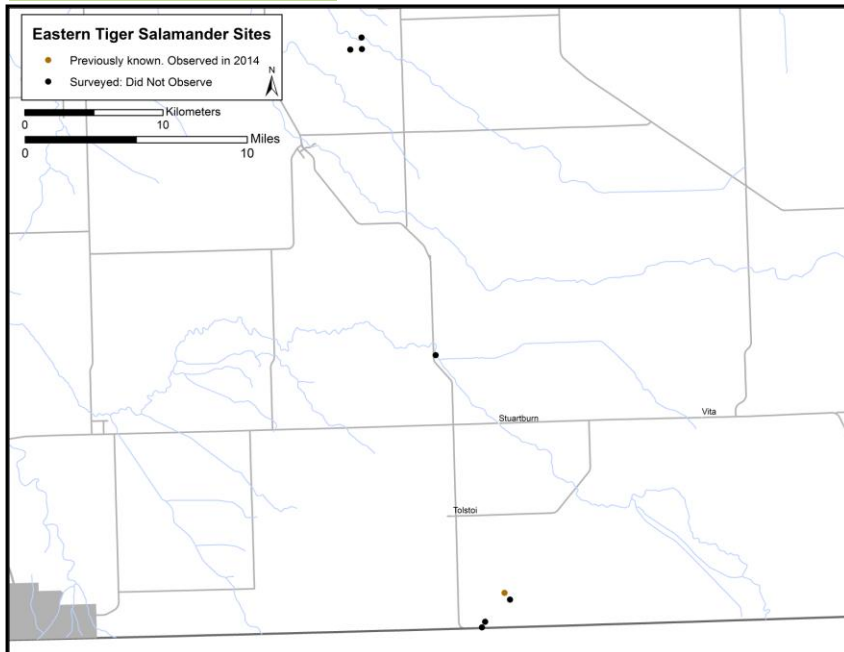


Figure 24. Map of Eastern Tiger Salamander Occurrences 2014.

Prairie Butterflies and Moths

Verna's Flower Moth (*Schinia verna*)

NatureServe: GU N1 S1

ESA: Endangered

SARA: Threatened

COSEWIC: Threatened



Figure 25. Photo of Verna's Flower Moth (©Greg Anweiler).

Verna's Flower Moth (Figure 25) was only described as a distinct species in 1979 (Hardwick 1983) although it was first collected in Alberta in 1929 (COSEWIC 2005b). It has been found in Manitoba, Saskatchewan, and Alberta generally close to the Canada/United States border but may be endemic to Canada (COSEWIC 2005b). In Manitoba it has only been found in sparsely vegetated mixed grass sand prairie south of Spruce Woods Provincial Park.

Verna's Flower Moth is a daytime flier with a relatively early flight period between late May and early June. The host plant for both the adult and larvae are Pussytoes (*Antennaria* spp.) (COSEWIC 2005b; Anweiler 2007).

Fifteen sites were surveyed in 2014 (Figure 34), and consisted of either level or hilly stabilized mixed grass sand prairie in and around Spruce Woods Provincial Park most of which were cattle grazed. One site was where Hardwick had captured the type specimens in 1979. No Verna's Flower Moths were captured or observed despite regularly encountering patches of the Pussytoe host plant in flower.

Ottoe Skipper (*Hesperia ottoe*)

NatureServe: G3G4 N1 S1

ESA: Threatened

SARA: Endangered

COSEWIC: Endangered



Figure 26. Photo of male Ottoe Skipper specimen (©The Manitoba Museum, Winnipeg, MB, used with permission).

Ottoe skippers (Figure 26) are mixed-grass prairie butterflies and, in Canada, are known only from the area around Spruce Woods Provincial Park (SWPP) and CFB Shilo (Klassen *et al.* 1989). The species has not been observed in Manitoba since the late 1980's (COSEWIC 2005). Recent surveys for this species did not result in new records (Westwood & Friesen 2007; Friesen & Murray 2010; Friesen & Murray 2011; Murray 2013).

In 2014, MBCDC staff surveyed 41 sites (Figure 34) located in and around SWPP, the Oak Lake to Lauder area and the Stockton to Treesbank area. Several high quality sites were surveyed at least twice. Skipper specimens were submitted to a taxonomic expert to confirm their identification and results were negative.

Uncas Skipper (*Hesperia uncas*)

NatureServe: G5 N3 S1S2

ESA: Endangered

SARA: no status

COSEWIC: no status



Figure 27. Photo of male Uncas Skipper specimen (©The Manitoba Museum, Winnipeg, MB, used with permission).

Uncas skippers (Figure 27) prefer dry prairie areas and most Manitoba records are from the SWPP and CFB Shilo area, and there are very few records since the late 1970's (Klassen *et al.* 1989).

MBCDC staff surveyed 30 sites (Figure 34) from mid-June to mid-August with several quality sites being surveyed more than once. Sites were located in and around SWPP, the Oak Lake to Lauder area and in the Stockton to Treesbank area. Skipper specimens were submitted to a taxonomic expert to confirm their identification and results were negative.

Dakota Skipper (*Hesperia dacotae*)

NatureServe: G2 N2 S2

ESA: Threatened

SARA: Threatened

COSEWIC: Threatened



Figure 28. Photo of male Dakota Skipper specimen (©The Manitoba Museum, Winnipeg, MB, used with permission).

Dakota skippers (Figure 28) tend to prefer mesic prairies and are found in the south Interlake, south of Oak Lake in the southwest, and in the vicinity of the Tall Grass Prairie Preserve in the southeast (although recent surveys have not found them at this location) (COSEWIC 2003).

Seventeen sites were surveyed for Dakota skippers in 2014 (Figure 34) all located in the Oak Lake to Lauder area. Skipper specimens were submitted to a taxonomic expert to confirm their identification and results were negative.

Sand hill Moths

Gold-edged Gem (*Schinia avemensis*)

NatureServe: G1G3 N1 S1

ESA: Endangered

SARA: Endangered

COSEWIC: Endangered



Figure 29. Photo of Gold-edged Gem (©Paul Goossen).

Gold-edged Gems (Figure 29) are residents of sand dunes and sand blowouts; in Manitoba, they have only been found in the active dunes of Spruce Woods Provincial Park (part of the Baldhead sandhills). Sand hill areas with active and inactive dunes were surveyed for Gold-edged Gems (Figure 34). This species is associated with Prairie Sunflowers (*Helianthus petiolaris*) and adults can be found resting on the flowers of this species (Figure 29) (Belair et al. 2011).

Two exposed sand dune sites were surveyed in 2014 with negative results.

White Flower Moth (*Schinia bimatrix*)

NatureServe: G2G4 N1 S1

ESA: Endangered

SARA: Endangered

COSEWIC: Endangered



Figure 30. Photo of a White Flower Moth (© C. Friesen).

In Canada, White Flower Moths (Figure 30) have only been observed in the active sand dunes of the Baldhead sandhills. White Flower Moths are active during both the day and night (Westwood & Friesen 2009, Belair et al. 2011). Surveys at both times were conducted. Night surveys were done with the use of light traps.

Results from material collected in 2013 show one White Flower Moth was collected during daytime pedestrian surveys in the Spirit Sands and is close to previously documented occurrences. Two other specimens were identified from a night trap set in the peridune area about 10m from the active dune face in open White Spruce forest.

Fourteen sand hill sites were surveyed by MBCDC staff in 2014. Collected specimens were submitted to a taxonomic expert to confirm their identification and results were negative.

Pale Yellow Dune Moth (*Copablepharon grandis*)

NatureServe: G4G5 N2 S1

ESA: Endangered

SARA: Special Concern

COSEWIC: Special Concern



Figure 31. Photo of Pale Yellow Dune Moth (©G.G. Anweiler).

The Canadian range of this species (Figure 31) includes several sandy, sparsely vegetated areas in Alberta, Saskatchewan and Manitoba (COSEWIC 2007a). In Manitoba, the current known range is limited to the open dune area of the Baldhead Sandhills.

In 2013, 13 specimens were identified from night trap material increasing the aerial extent of the occurrence within the Spirit Sand dunes. Additionally, eight moths were collected from three night traps set between 10m and 50m in front of the dune face, placed in open white spruce meadow. This indicates that Pale Yellow Dune Moth may use this habitat type in addition to open exposed sandy areas. Alternatively, the moths may have just been wind blown into

the habitat or attracted by the trap's light.

In 2014, nocturnal light-trap surveys were set at two sites from late-July through mid-August. Moth specimens collected at light traps have been submitted to a taxonomic expert to confirm their identification. Results were negative.

Dusky Dune Moth (*Copablepharon longipenne*)

NatureServe: G4 N1N2 S1

ESA: Endangered

SARA: Endangered

COSEWIC: Endangered



Figure 32. Photo of Dusky Dune Moth (©G.G. Anweiler).

The range of the Dusky Dune Moth (Figure 32) in Canada is similar to that of the Pale Yellow Dune Moth (COSEWIC 2007b). As with the Pale Yellow Dune Moth, the only known occurrence in Manitoba is in the open dune area of the Baldhead Sandhills.

This species is active at night, so light-trap surveys were conducted from late-July through mid-August.

In 2013, no specimens were collected from night trap material despite setting traps in similar habitat to 2012 trap locations (which did trap Dusky Dune Moths). All Dusky Dune Moth specimens from 2012 were collected about a week after the last trap night in 2013 so it is possible that the flight period was missed.

In 2014, all moth specimens collected at light traps were submitted to a taxonomic expert to confirm their identification and results came back negative.

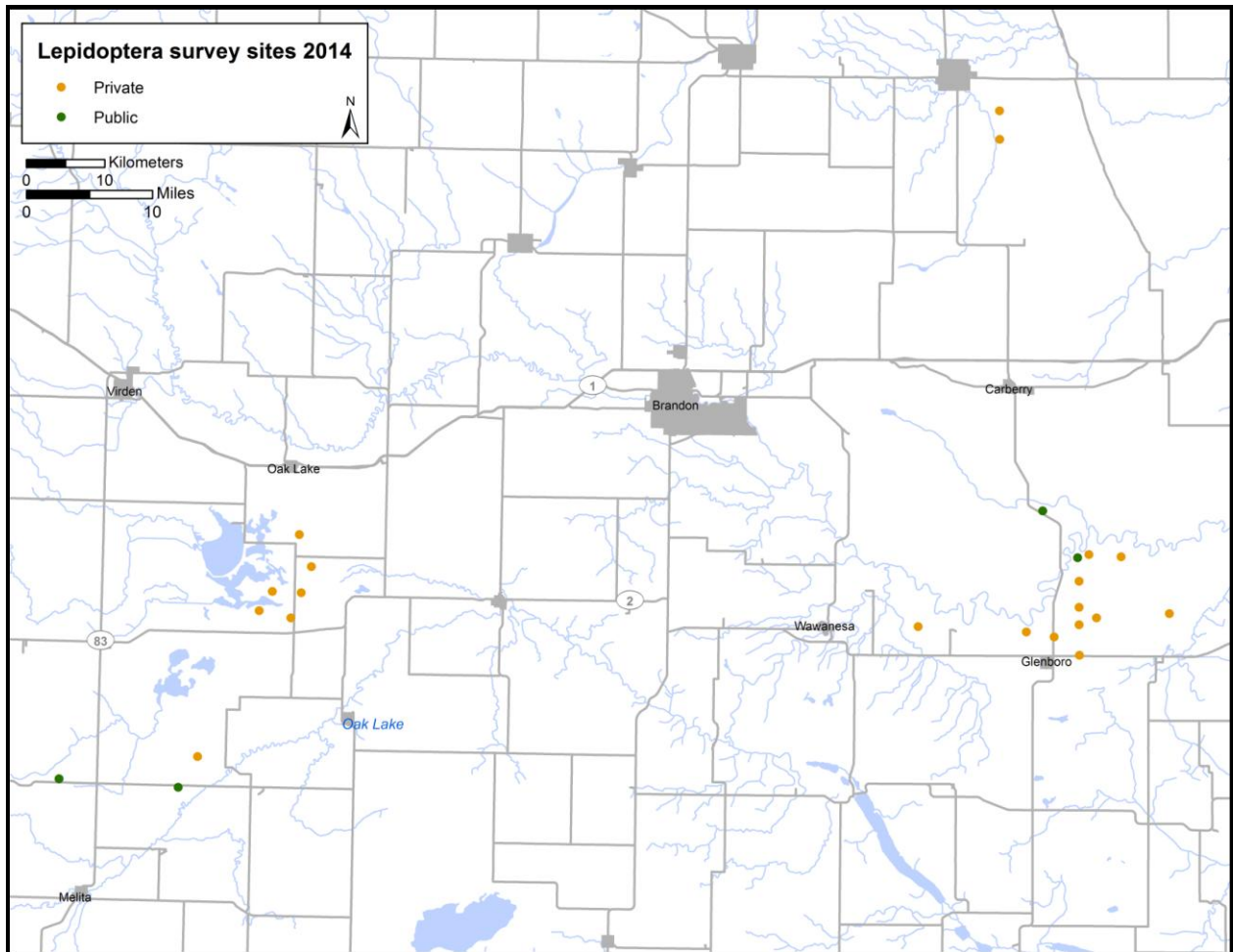


Figure 34. Map of Lepidoptera pedestrian surveys and light trap locations in Manitoba for 2014. Due to map scale one dot may represent multiple survey sites where they are in close proximity. Most sites surveyed more than once.

Species at Risk Bird Surveys

Species at risk bird surveys were performed along and adjacent to Manitoba Highway 345 in the Broomhill area for targeted bird species, in an attempt to update and expand on previously recorded occurrences of Sprague's Pipit, Chestnut-collard Longspur, Loggerhead Shrike (*Lanius ludovicianus excubitorides*) and Baird's Sparrow (*Ammodramus bairdii*) (Figure 34). Thirty-nine stops were made at mile road intersections and birds were identified based on audio and visual cues for a two minute period. Most stops produced negative results for the target bird species despite generating numerous non-target species observations.

In addition, as per previous years, incidental observations of both rare and common bird species were recorded while performing other surveys. Incidental observations of bird species listed under SARA or assessed by as at-risk by COSEWIC included: Barn Swallow (*Hirundo rustica*), Bobolink (*Dolichonyx oryzivorus*), Chestnut-collard Longspur (*Calcarius ornatus*), Common Nighthawk (*Chordeiles minor*), Red-headed Woodpecker (*Melanerpes erythrocephalus*), Sprague's Pipit (*Anthus spragueii*) and Yellow Rail (*Coturnicops noveboracensis*).

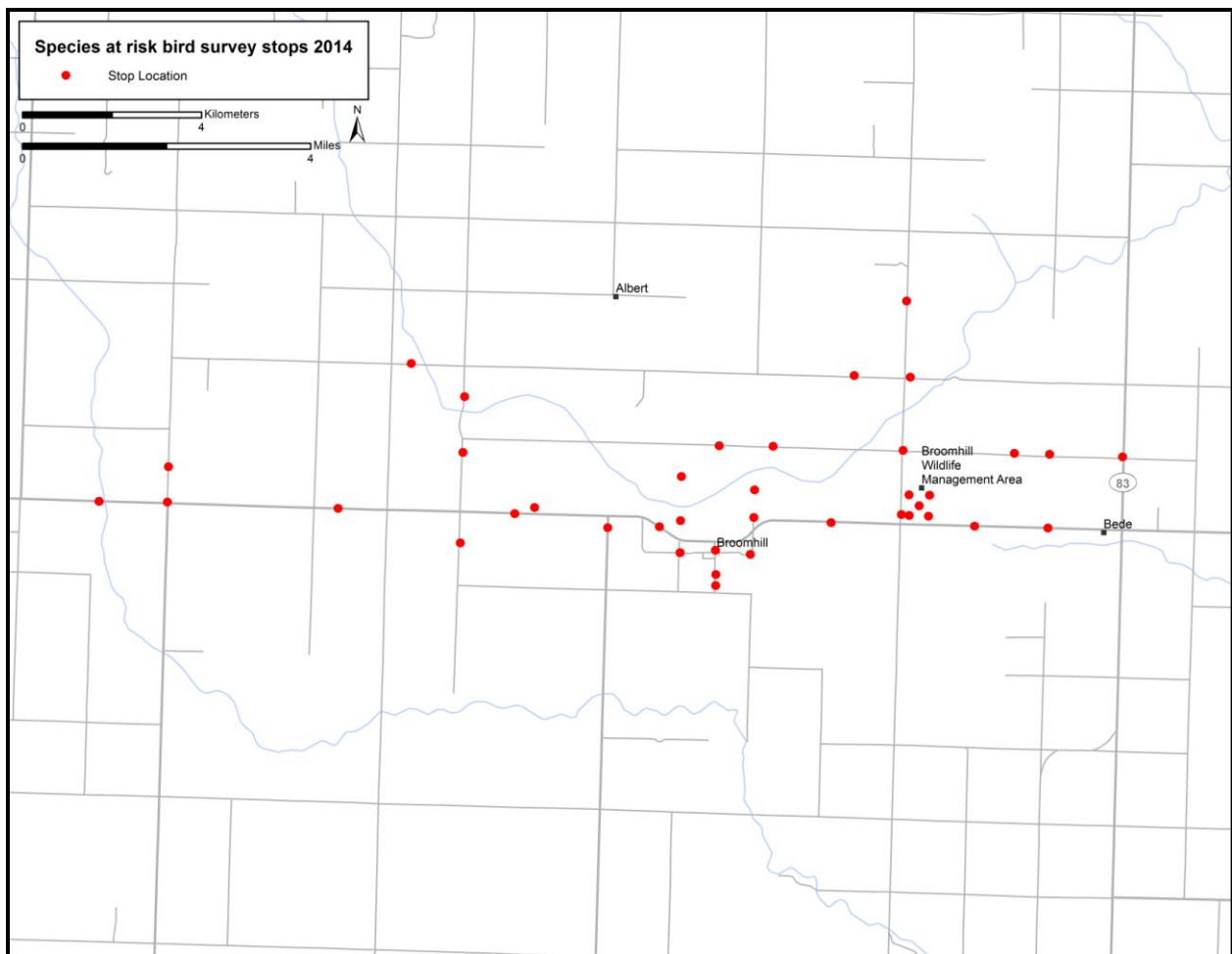


Figure 35. Map of species at risk bird surveys stops for 2014.

Mapleleaf Mussel (*Quadrula quadrula*)

NatureServe: G5 N2N3 S2

ESA: Endangered

SARA: Endangered

COSEWIC: Endangered



Figure 36. Top: Photo of Mapleleaf Mussel. Middle: Provincial distribution. Bottom: International distribution

Status and Threats

The North American range of the Mapleleaf mussel (Figure 36) occurs throughout the Ohio-Mississippi drainage. It ranges from Texas to Alabama in the south, to Minnesota and Pennsylvania in the north. The range includes the Great Lakes drainage in Minnesota and North Dakota. In Canada, the range includes various localities in the St. Lawrence basin. In Manitoba, the Mapleleaf Mussel is thought to be restricted to the Red River and some of its tributaries (i.e. Assiniboine and Roseau rivers among others). One specimen was also found in the Bloodvein River which flows into the east side of Lake Winnipeg (COSEWIC 2006b; NatureServe, 2015).

Threats to this species include habitat loss and degradation. Mapleleaf mussels are affected by industrial and municipal pollution and agricultural runoff. This species is also susceptible to invasive species such as the Zebra and Quagga mussels (COSEWIC 2006b).

Survey Methodology

Site selection criteria were:

1. Within the range of the Channel Cat Fish (*Ictalurus punctatus*) (the mussel's only known host) or
2. Mapleleaf Mussels had been previously documented, or not documented, at the site but not recently surveyed (>10Y) and
3. Site accessible

Most sites were usually started at a bridge where a road crossed a stream with the survey extending at least 100m up and down stream of the starting point. Surveys were designed based on protocol suggested by Metcalf et al. 2000 and Mackie et al. 2008. Surveys were time limited searches which were conducted for 1.5 person hours unless mussels were found at which point the time increased to 4.5 person hours. Search methods included using clam rakes, underwater viewfinders and feeling by hand (i.e. raccooning).

The survey team usually consisted of two or three people.

Surveyors were not restricted to extent or overlap with other member's searches. A mesh bag was attached to the surveyor's hip and mussels (live or dead) were placed in the bag and were kept submerged. At the end of the survey time, all live and dead mussels collected were identified to species, length was measured, and voucher photos taken. Mussels were then returned to their approximate collection location (Metcalf-Smith et. al., 2000).

Of the 48 sites visited, only 17 could be surveyed. The other non-surveyed sites were assessed and water levels were deemed too high to adequately carry out a survey. No Mapleleaf mussels were found at any of the 17 sites although at seven sites, other types of native mussel species were found: Threeridge (*Amblema plicata*) (empty valve only), Wabash Pigtoe (*Fusconaia flava*), White Heelsplitter (*Lasmigona complanata*), Creek Heelsplitter (*Lagmigona compressa*), Plain Pocketbook (*Lampsilis cardium*), Fatmucket (*Lampsilis siliquoidea*) and Giant Floater (*Pyganodon grandis*).

Table 12. General location of Mapleleaf Mussel survey sites and results

Location Area	Sites			
	Sites Visited	Sites Surveyed	Site with mussels found	Sites with Mapleleaf mussels found
Deerhorn-St.Lazare-Miniota	9	3	1	0
Pierson-Melita-Souris	45	9	4	0
Brandon-Treesbank	5	5	2	0
Total	59	17	7	0

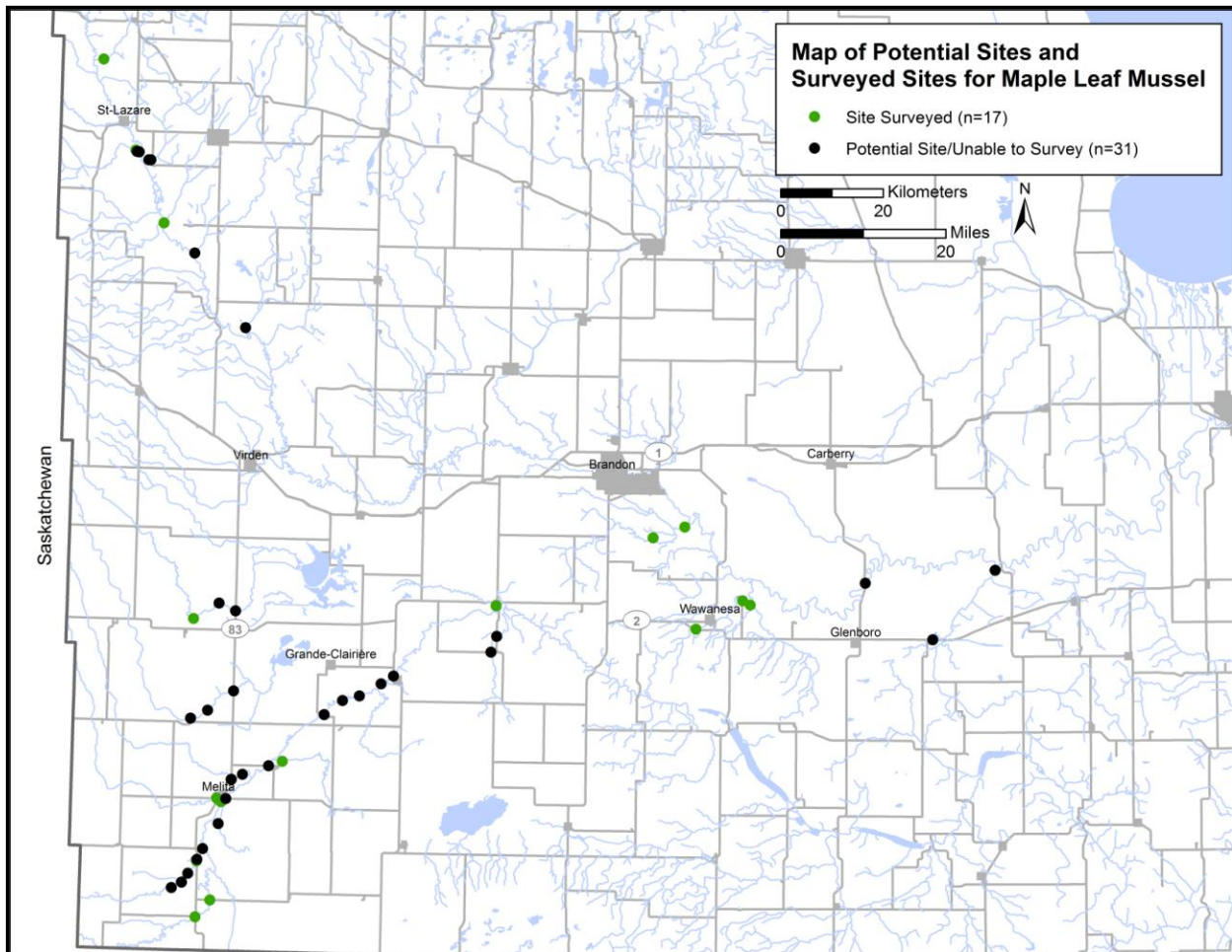


Figure 37. Map of potential and surveyed sites for Maple Leaf Mussel in 2014.

Other Activities

Roundleaf Monkeyflower (*Mimulus glabratus* var. *jamesii*)

NatureServe: G5 N2 S1

ESA: no status

SARA: no status

COSEWIC: no status

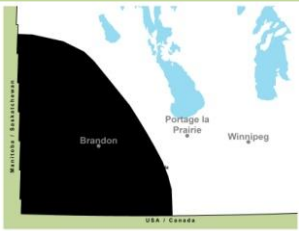


Figure 38. Top: Photo of Roundleaf Monkey Flower. Middle: Provincial distribution. Bottom: International distribution

Roundleaf Monkeyflower is from the Figwort (Scrophulariaceae) family. It is a low branching, mat forming, somewhat succulent perennial with small irregular yellow flowers. It grows in and around cool moving water in mineral springs and seeps in moss in full sun and slightly shaded areas (Figure 38) (Larson 1993). It is found from Michigan to Montana; Manitoba to Texas and Mexico into South America (Larson 1993; Gleason and Cronquist 1991). In Manitoba, Monkeyflower has a very patchy distribution being found in small discrete springs and seeps in and around Spruce Woods Provincial Park, and in the St. Lazare area (Figure 39).

Surveys in Manitoba indicate that it prefers some mineral springs and seeps to others, however the characteristics of the springs it prefers are not fully understood (Reimer and Hamel 2001; Reimer and Hamel 2003a; Reimer and Hamel 2003b). Identified threats are cattle trampling due to using springs for water and changes in groundwater levels from crop irrigation that could affect the springs (Reimer and Hamel 2003a).

In 2014, nine sites were surveyed for Monkey Flower. Four sites were surveyed in the Glenboro-SWPP south area. Two candidate sites yielded negative results. Of the two known sites, numbers and aerial extent were not previously known at one (therefore change is unknown) and no plants were found at the other. Of the five sites in the Shilo area, one was already known and four were newly discovered. The known site showed an increase in both aerial extent and plant numbers.

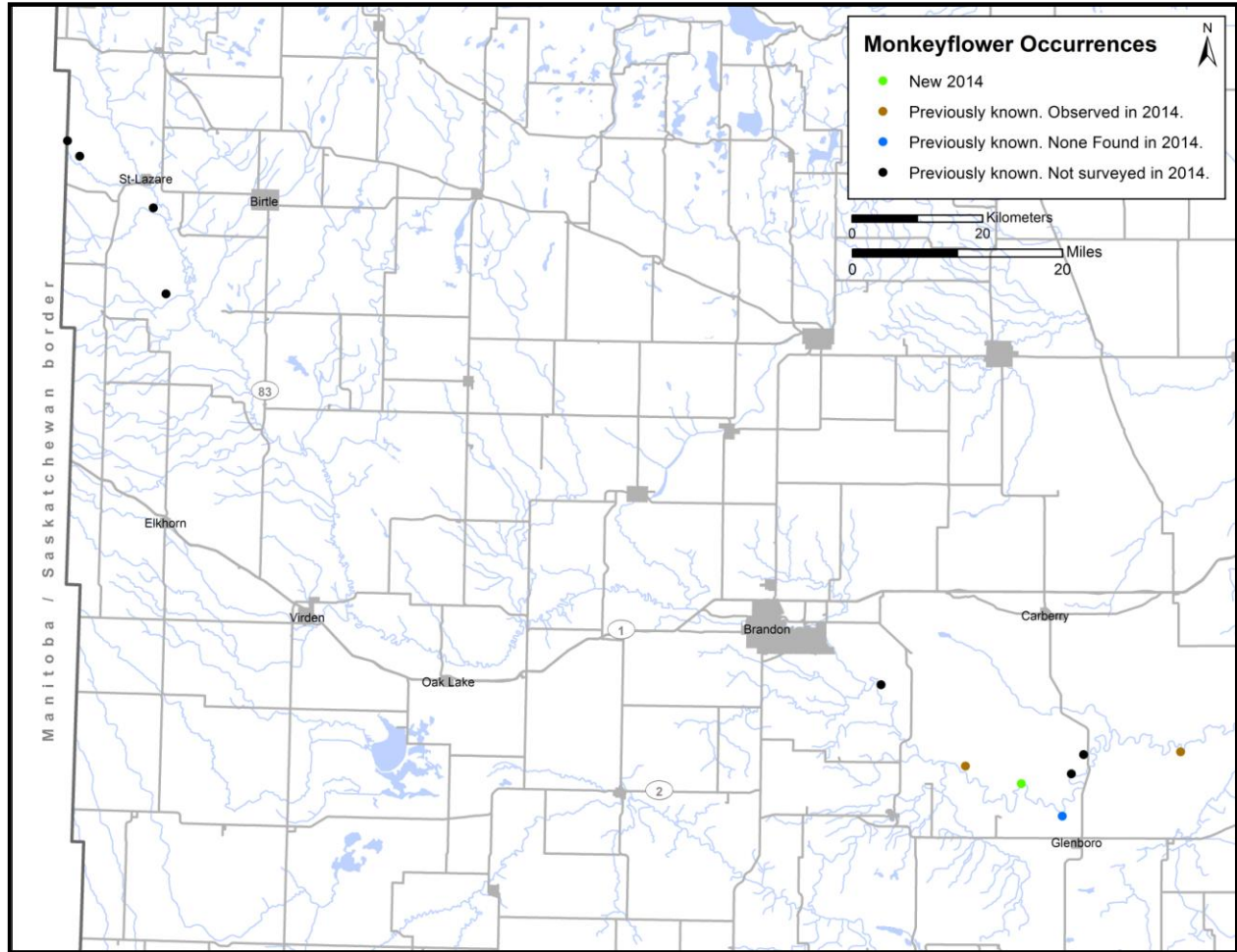


Figure 39. Map of Monkeyflower occurrences for 2014.

Gastonyi’s Cliffbrake (*Pellaea gastonyi*)

NatureServe: G2G3 NNR S1	ESA: no status	SARA: no status	COSEWIC: no status
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Smooth Cliffbrake (*Pellaea glabella*)

NatureServe: G5 N5 S1	ESA: no status	SARA: no status	COSEWIC: no status
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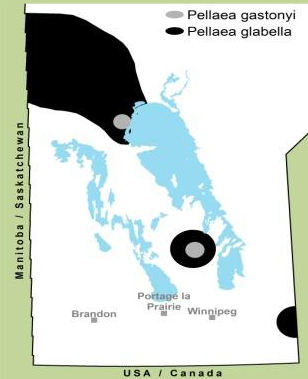


Figure 40. Top: Photo of Gastonyi’s Cliffbrake. Middle top: Photo of Smooth Cliffbrake. Middle bottom: Provincial distribution (grey). Bottom: International distribution.

Gastonyi’s and Smooth Cliffbrake are perennial ferns (Pteridaceae) that grow on limestone/ dolomite cliffs, ledges and boulder erratics in cracks in full sun to partial shade. The fronds (leaves) grow to 25cm long and 6cm wide (Windham 1993), though in Manitoba they tend to be markedly smaller in size (MBCDC unpublished data 2012, 2013). Smooth Cliff Brake is found from Manitoba to Texas and northeast to the eastern sea board and into Quebec. Gastonyi’s Cliff Brake has a much more restricted and scattered distribution found only from Manitoba to British Columbia and a few northern states (Natureserve 2014a; 2014b) (Figure 40).

Identified threats to these species include limestone and aggregate quarries and, especially in the Grand Rapids area, forestry and mining activities.

Gastonyi’s Cliffbrake has a purple to dark brown coloured sparsely hairy rachis compared to Smooth Cliffbrake whose rachis is more straw coloured and hairless (Harms and Leighton 2011; Windham 1993).

In Manitoba they are found in the Interlake alvar and Grand Rapids karst environment. In the Interlake, the cliff and boulder habitat is often adjacent to alvar habitat generally being cattle pasture. In the Grand Rapids Upland region the cliff and boulder habitat is generally associated with glacier till that locally supports Jack Pine and Paper Birch. A Smooth Cliffbrake variety (*P. g. glabella*) was recently discovered in the Whiteshell growing in cracks in granite rock (MBCDC Unpublished data 2012, 2013).

In 2014 MBCDC staff surveyed for both Cliffbrakes in the Hodgson area focusing on exposed limestone/ dolomite cliffs. Three sites were surveyed. One known occurrence of Gastonyi’s and Smooth Cliffbrake showed an increase in both numbers and aerial extent. No Cliffbrake was found at the two candidate sites.

Golden-Eye Lichen (*Teloschistes chrysophthalmus*)

NatureServe: G4G5 N3N4 S3S4

ESA: no status

SARA: no status

COSEWIC: Report in Progress (Apr 2016)



Golden-eye Lichen tends to have a dark orange-green thalrus with conspicuous dark orange apothecia that appear to be on stalks (Figure 41). Cilia located on the apothecia edge look like thorns. This lichen occurs on trees and shrubs and seems to particularly associate with the dead boughs of living White Spruce, and dead or dying shrubs of *Prunus* spp. (Murray and Church pers. obs.)



Golden-eye Lichen ranges from Manitoba south to Texas and Louisiana (Brodo et al. 2001). It occurs as far east as Illinois and as far west as Nebraska and Kansas. In Manitoba, Golden-eye Lichen occurs from just east of and to the northern extent of Lake Winnipeg and west through the northern extent of Lake Manitoba, almost to the Saskatchewan border (Figure 40).

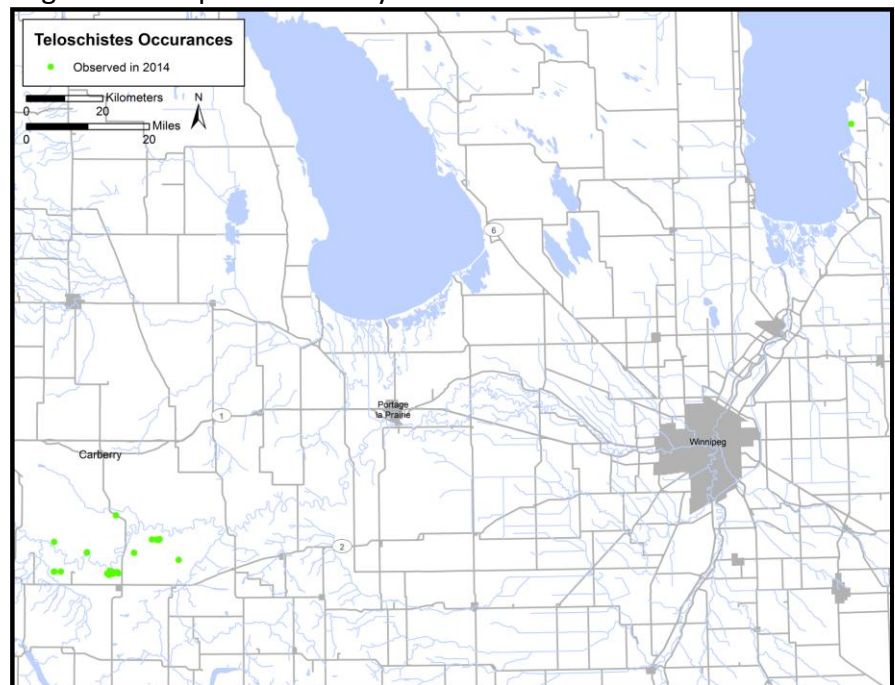


It has been eliminated over parts of its former range, especially in the northeastern United States due to habitat destruction and air pollution (NatureServe, 2015b).

Golden-eye Lichen was found at 18 locations, mainly around Sprucewoods Provincial Park. It was also found opportunistically at one location in the Belair-Victoria Beach area

Figure 41. From top: Photo of Eyed Orangebush Lichen. Middle: Provincial distribution. Bottom: International distribution.

Figure 42. Map of Golden-eye Lichen occurrences for 2014



Manitoba Breeding Bird Atlas Participation

2014 marks the fifth and final year of the Manitoba Breeding Bird Atlas, a five year project to assess the status, distribution, and abundance of bird species in Manitoba (MBBA 2015). Bird observations were generally incidental while performing other survey work. This year 694 observations were submitted to the atlas by the CDC.

Invasive Species

Invasive plants and animals are widely regarded as threats to rare and endangered species. Observations of invasive plants and animals are generally recorded during regular species at risk surveys. This is the third year that observations have been submitted to the Manitoba Invasive Species Council for addition to their provincial wide invasive species tracking database.

In addition, landowners were offered information on invasive species detected on or near their land while conducting regular species at risk surveys. Landowners were also offered the location of any invasives encountered on their property.

Manitoba Herps Atlas

Manitoba Conservation Data Center has been submitting herptofauna records to the Manitoba Herps Atlas since 2011. In 2014, MBCDC submitted 219 records including various snake, frog, toad and skink records obtained while performing regular survey work.

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Appendix 1. Summary of rare and uncommon species occurrences and survey visits documented using data collected by or submitted to the MBCDC for 2014.

Scientific Name	Common Name	Conservation Status	New Occurrences Documented	Updated Occurrences	New Visits
Plants					
<i>Achnatherum hymenoides</i>	Indian Rice Grass	S2		4	
<i>Achnatherum richardsonii</i>	Richardson Needle Grass	S1S2		2	
<i>Adlumia fungosa</i>	Climbing Fumitory	SU		1	
<i>Agalinis aspera</i>	Rough Purple False-foxglove	S1S2	1	10	24
<i>Agalinis gattingeri</i>	Gattinger's Agalinis	S1		5	6
<i>Agalinis tenuifolia</i>	Narrow-leaved Gerardia	S2S3		14	
<i>Agrimonia gryposepala</i>	Common Agrimony	S1S2		2	3
<i>Alisma gramineum</i>	Narrow-leaved Water-plantain	S1		1	
<i>Ambrosia acanthicarpa</i>	Sandbur	S1S2		1	
<i>Amorpha fruticosa</i>	False Indigo	S1S2		3	
<i>Andropogon hallii</i>	Sand Bluestem	S2S3	2	9	30
<i>Anemone americana</i>	Liverleaf	S1		1	4
<i>Arabis lyrata</i>	Lyre-leaved Rock Cress	S2?		1	
<i>Arethusa bulbosa</i>	Arethusa	S2		5	
<i>Arisaema triphyllum</i> ssp. <i>triphyllum</i>	Jack-in-the-pulpit	S2		1	
<i>Aristida purpurea</i> var. <i>longiseta</i>	Red Three-awn	S1		3	
<i>Arnica fulgens</i>	Shining Arnica	S2		6	
<i>Artemisia cana</i>	Silver Sagebrush	S2		1	
<i>Asarum canadense</i>	Wild Ginger	S3S4		10	
<i>Asclepias lanuginosa</i>	Hairy Milkweed	S2		28	21
<i>Asclepias verticillata</i>	Whorled Milkweed	S3		8	
<i>Asclepias viridiflora</i>	Green Milkweed	S3		4	
<i>Astragalus gilviflorus</i>	Cushion Milkvetch	S1		3	
<i>Astragalus neglectus</i>	Milkvetch	S1		3	1
<i>Astragalus pectinatus</i>	Narrow-leaved Milkvetch	S2S3		4	

Scientific Name	Common Name	Conservation Status	New Occurrences Documented	Updated Occurrences	New Visits
<i>Atriplex argentea</i>	Saltbrush	S2		3	
<i>Boltonia asteroides</i> var. <i>recognita</i>	White Boltonia	S2S3		2	
<i>Botrychium campestre</i>	Prairie Moonwort	S1		1	
<i>Botrychium lunaria</i>	Common Moonwort	S3S4		1	
<i>Botrychium multifidum</i>	Leathery Grape-fern	S3		4	
<i>Botrychium oneidense</i>	Blunt-lobed Moonwort	S1		1	
<i>Botrychium simplex</i>	Least Grapefern	S1		1	
<i>Bouteloua curtipendula</i>	Side-oats Grama	S2S3	3	8	10
<i>Brasenia schreberi</i>	Water-shield	S2		2	
<i>Bromus kalmii</i>	Wild Chess	S3?		7	4
<i>Bromus porteri</i>	Porter's Chess	S3?		3	
<i>Buchloe dactyloides</i>	Buffalograss	S1		1	
<i>Calamagrostis montanensis</i>	Plains Reed Grass	S3		4	
<i>Calopogon tuberosus</i>	Swamp-pink	S2	2	4	2
<i>Calystegia spithamea</i>	Low Bindweed	SU		1	
<i>Canadanthus modestus</i>	Large Northern Aster	S2		2	
<i>Cardamine bulbosa</i>	Spring Cress	SH		1	1
<i>Carex arctata</i>	Black Sedge	S1		1	
<i>Carex brevior</i>	Fescue Sedge	S4		2	1
<i>Carex castanea</i>	Chestnut Sedge	S3		2	
<i>Carex communis</i>	Fibrous-rooted Sedge	SNA		1	1
<i>Carex conoidea</i>	Field Sedge	S1		4	1
<i>Carex crawei</i>	Crawe's Sedge	S3S4		2	
<i>Carex cristatella</i>	Crested Sedge	S2		1	
<i>Carex cryptolepis</i>	Northeastern Sedge	S1		1	
<i>Carex douglasii</i>	Douglas Sedge	S3?		1	
<i>Carex echinodes</i>	Quill Sedge	SNR		3	1
<i>Carex emoryi</i>	Emory's Sedge	S2?		2	

Scientific Name	Common Name	Conservation Status	New Occurrences Documented	Updated Occurrences	New Visits
<i>Carex gracillima</i>	Slender Sedge	S3		3	
<i>Carex hallii</i>	Hall's Sedge	S3		1	
<i>Carex hystericina</i>	Porcupine Sedge	S3?		1	
<i>Carex livida</i>	Livid Sedge	S3		2	
<i>Carex merritt-fernaldii</i>	Merritt Fernald's Sedge	S1		3	
<i>Carex parryana</i>	Parry's Sedge	S3?		1	
<i>Carex pauciflora</i>	Few-flowered Sedge	S3		2	
<i>Carex pedunculata</i>	Stalked Sedge	S3?		2	1
<i>Carex prairea</i>	Prairie Sedge	S4?		5	7
<i>Carex projecta</i>	Necklace Sedge	S2?		6	2
<i>Carex rotundata</i>	Roundfruit Sedge	S3?			1
<i>Carex sprengei</i>	Sprengel's Sedge	S4		1	
<i>Carex sterilis</i>	Dioecious Sedge	S2		2	
<i>Carex supina</i> var. <i>spaniocarpa</i>	Weak Sedge	S2?		1	
<i>Carex tetanica</i>	Rigid Sedge	S2		10	1
<i>Carex vesicaria</i>	Blister Sedge	SU		1	1
<i>Carex vulpinoidea</i>	Fox Sedge	S3?		1	
<i>Carex xerantica</i>	White-scaled Sedge	S3?		1	
<i>Caulophyllum thalictroides</i>	Papoose-root	S2	1	1	1
<i>Ceanothus herbaceus</i>	New Jersey Tea	S3		10	
<i>Celtis occidentalis</i>	Hackberry	S1		4	1
<i>Chamaesyce gearyi</i>	Prostrate Spurge	S1		4	
<i>Chelone glabra</i>	Turtlehead	S2S3	1	5	1
<i>Chenopodium subglabrum</i>	Smooth Goosefoot	S1	1	2	1
<i>Chrysosplenium tetrandrum</i>	Northern Golden-carpet	S2S3			1
<i>Circaea lutetiana</i> ssp. <i>canadensis</i>	Large Enchanter's-nightshade	S2		3	2
<i>Cladium mariscoides</i>	Twig Rush	S2		1	
<i>Clematis ligusticifolia</i>	Western Virgin's-bower	S1		2	

Scientific Name	Common Name	Conservation Status	New Occurrences Documented	Updated Occurrences	New Visits
<i>Clematis virginiana</i>	Virgin's-bower	S2		1	
<i>Collinsia parviflora</i>	Blue-eyed Mary	S1		2	
<i>Coreopsis tinctoria</i>	Common Tickseed	SH		1	2
<i>Corispermum americanum</i> var. <i>americanum</i>	American Bugseed	S2S3		12	
<i>Corispermum hookeri</i> var. <i>hookeri</i>	Hooker's Bugseed	S1		1	
<i>Corispermum pallasii</i>	Pallas' Bugseed	SU		1	
<i>Cornus alternifolia</i>	Alternate-leaved Dogwood	S3		1	1
<i>Coryphantha vivipara</i>	Pincushion Cactus	S2		12	54
<i>Cryptotaenia canadensis</i>	Honewort	S2		1	
<i>Cycloloma atriplicifolium</i>	Winged Pigseed	S2		3	
<i>Cymopterus acaulis</i>	Plains Cymopterus	S2S3		5	1
<i>Cyperus erythrorhizos</i>	Red-root Flatsedge	S1		2	
<i>Cyperus houghtonii</i>	Houghton's Umbrella-sedge	S2		4	1
<i>Cyperus schweinitzii</i>	Schweinitz's Flatsedge	S2	2	23	6
<i>Cypripedium arietinum</i>	Ram's Head Lady's-slipper	S2S3		10	
<i>Cypripedium candidum</i>	Small White Lady's-slipper	S2		14	286
<i>Dalea villosa</i> var. <i>villosa</i>	Silky Prairie-clover	S2S3		22	114
<i>Desmodium canadense</i>	Beggar's-lice	S2		4	
<i>Dichanthelium wilcoxianum</i>	Sand Millet	S2		5	
<i>Diphasiastrum tristachyum</i>	Ground-cedar	S3		1	
<i>Drosera anglica</i>	Oblong-leaved Sundew	S3		1	
<i>Drosera linearis</i>	Slender-leaved Sundew	S2		1	
<i>Dryopteris fragrans</i>	Fragrant Shield Fern	S3S4		2	
<i>Dulichium arundinaceum</i>	Three-way Sedge	S2		2	
<i>Elatine americana</i>	mud-purslane	S1		1	
<i>Eleocharis obtusa</i>	Blunt Spike-rush	S1		2	
<i>Elymus hystrix</i>	Bottle-brush Grass	S2		1	

Scientific Name	Common Name	Conservation Status	New Occurrences Documented	Updated Occurrences	New Visits
<i>Elymus hystrix</i> var. <i>hystrix</i>	Bottle-brush Grass	S2		1	
<i>Epigaea repens</i>	Mayflower	S3		1	
<i>Epilobium brachycarpum</i>	Annual Willowherb	S1S2	5		5
<i>Eragrostis hypnoides</i>	Creeping Teal Love Grass	S4		1	
<i>Erigeron caespitosus</i>	Tufted Fleabane	S2		2	
<i>Eriocaulon aquaticum</i>	White-buttons	S1		1	
<i>Eriophorum callitrix</i>	Beautiful Cotton-grass	S2		1	
<i>Eurybia macrophylla</i>	White Wood Aster	S1		1	
<i>Eurybia macrophylla</i> var. 1	White Wood Aster	S1		1	
<i>Festuca hallii</i>	Plains Rough Fescue	S3		9	
<i>Fraxinus nigra</i>	Black Ash	S3		3	
<i>Galium aparine</i>	Cleavers	SU		3	3
<i>Gaultheria procumbens</i>	Teaberry	S3S4		2	
<i>Gentiana puberulenta</i>	Downy Gentian	S2		1	
<i>Gentiana rubricaulis</i>	Closed Gentian	S2S3		1	
<i>Gentianella propinqua</i>	Felwort	S3		1	
<i>Geranium maculatum</i>	Wild Crane's-bill	S1		2	
<i>Glyceria canadensis</i>	Rattlesnake Grass	S1		3	
<i>Goodyera tessellata</i>	Tesselated Rattlesnake Plantain	S2		6	
<i>Gymnocarpium jessoense</i>	Northern Oak Fern	S3S4		1	
<i>Hackelia floribunda</i>	Large Flowered Stickseed	SU		1	1
<i>Helianthus nuttallii</i> ssp. <i>rydbergii</i>	Tuberous-rooted Sunflower	S2		1	
<i>Helianthus pauciflorus</i> ssp. <i>pauciflorus</i>	Stiff Sunflower	SU		2	
<i>Hudsonia tomentosa</i>	False Heather	S3		3	
<i>Huperzia lucidula</i>	Shining Club-moss	S1		1	
<i>Huperzia selago</i>	Mountain Club-moss	S2S3		2	
<i>Hypoxis hirsuta</i>	Yellow Stargrass	S4		12	2

Scientific Name	Common Name	Conservation Status	New Occurrences Documented	Updated Occurrences	New Visits
<i>Juncus interior</i>	Inland Rush	S1		1	
<i>Krascheninnikovia lanata</i>	Winterfat	S2		1	
<i>Krigia biflora</i>	Cynthia	S2		8	1271
<i>Lactuca floridana</i>	Woodland Lettuce	SH		1	1
<i>Leersia oryzoides</i>	Rice Cutgrass	S3?		3	
<i>Lemna turionifera</i>	Duckweed	SU		1	
<i>Leucophysalis grandiflora</i>	Large White-flowered Ground-cherry	S3		6	
<i>Linum sulcatum</i>	Grooved Yellow Flax	S3	3	8	20
<i>Liparis loeselii</i>	Yellow Twayblade	S3S4		3	
<i>Lomatium macrocarpum</i>	Long-fruited Parsley	S3		7	
<i>Lomatium orientale</i>	White-flowered Parsley	S1		3	
<i>Lotus unifoliolatus</i>	Prairie Trefoil	S2S3		1	
<i>Lycopodium clavatum</i> var. <i>clavatum</i>	Running-pine	S2		2	
<i>Lysimachia quadriflora</i>	Whorled Loosestrife	S2		9	73
<i>Malaxis monophyllos</i>	White Adder's-mouth	S2?		3	
<i>Malaxis paludosa</i>	Bog Adder's-mouth	S1		1	
<i>Malaxis unifolia</i>	Green Adder's-mouth	S2?		3	
<i>Megalodonta beckii</i>	Water-marigold	S3		1	
<i>Menispermum canadense</i>	Moonseed	S3	1		1
<i>Mentzelia decapetala</i>	Gumbo-lily	SH		1	1
<i>Mertensia lanceolata</i>	Tall Lungwort	S2		5	
<i>Milium effusum</i> var. <i>cisatlanticum</i>	Millet Grass	S2		1	
<i>Mimulus glabratus</i>	Smooth Monkeyflower	S1	1	8	27
<i>Musineon divaricatum</i>	Leafy Musineon	S2		4	
<i>Myosurus minimus</i> ssp. <i>minimus</i>	Least Mousetail	S1		1	
<i>Myriophyllum alterniflorum</i>	Water-milfoil	S2?		2	
<i>Myriophyllum farwellii</i>	Farwell's Water-milfoil	S1		1	

Scientific Name	Common Name	Conservation Status	New Occurrences Documented	Updated Occurrences	New Visits
<i>Nassella viridula</i>	Green Needle Grass	S3		12	5
<i>Nymphaea odorata</i>	Fragrant Water-lily	S2		2	1
<i>Nymphaea odorata</i> ssp. <i>odorata</i>	Fragrant Water-lily	S2		4	2
<i>Nymphaea odorata</i> ssp. <i>tuberosa</i>	Tubreous White Water-lily	S1		1	
<i>Nymphaea tetragona</i>	Small Water-lily	S2		5	5
<i>Oenothera perennis</i>	Sundrops	S1S2		3	
<i>Onoclea sensibilis</i>	Sensitive Fern	S3S4		9	4
<i>Ophioglossum pusillum</i>	Northern Adder's-tongue	S1		2	
<i>Orobanche ludoviciana</i>	Louisiana Broom-rape	S2		13	2
<i>Osmorhiza claytonii</i>	Wooly or Hairy Sweet Cicely	S2		3	3
<i>Osmorhiza depauperata</i>	Blunt-fruited Sweet Cicely	S2	2	1	14
<i>Osmunda claytoniana</i>	Interrupted Fern	S3		4	2
<i>Ostrya virginiana</i>	Hop-hornbeam	S2		7	2
<i>Oxytropis sericea</i>	Early Yellow Locoweed	S1		9	
<i>Parietaria pensylvanica</i>	American Pellitory	S4		2	1
<i>Pellaea gastonyi</i>	Gastony's Cliffbrake	S1		1	6
<i>Pellaea glabella</i> ssp. <i>glabella</i>	Smooth Cliffbrake	S1?		1	
<i>Pellaea glabella</i> ssp. <i>occidentalis</i>	Western Dwarf Cliffbrake	S2		4	7
<i>Penstemon nitidus</i>	Smooth Blue Beard-tongue	S2		5	5
<i>Penstemon procerus</i>	Slender Beard-tongue	S1?		7	2
<i>Penthorum sedoides</i>	Ditch-stonecrop	S1S2		1	2
<i>Persicaria sagittata</i>	Arrow-leaved Tear-thumb	S3		1	
<i>Phlox hoodii</i>	Moss Pink	S3		2	
<i>Phryma leptostachya</i>	Lopseed	S3		6	5
<i>Physostegia virginiana</i>	False Dragonhead	SU		1	
<i>Pinus resinosa</i>	Red Pine	S2S3		3	
<i>Pinus strobus</i>	Eastern White Pine	S2		3	1
<i>Piptatherum micranthum</i>	Little-seed Rice Grass	S2		2	

Scientific Name	Common Name	Conservation Status	New Occurrences Documented	Updated Occurrences	New Visits
<i>Plagiobothrys scouleri</i> var. <i>scouleri</i>	Scouler's Allocarya	S1		2	
<i>Plantago elongata</i> ssp. <i>elongata</i>	Linear Leaved-plantain	S2		5	4
<i>Plantago maritima</i>	Seaside Plantain	S2		1	1
<i>Platanthera hookeri</i>	Hooker's Orchid	S2	1	8	2
<i>Platanthera lacera</i>	Fringed Orchid	S2		2	2
<i>Platanthera orbiculata</i>	Round-leaved Bog Orchid	S3		9	6
<i>Platanthera praeclara</i>	Western Prairie Fringed Orchid	S1		2	784
<i>Platanthera psycodes</i>	Small Purple-fringed Orchid	S1		2	1
<i>Poa arctica</i>	Arctic Blue Grass	S2?			1
<i>Poa arida</i>	Plains Blue Grass	S4		2	
<i>Poa cusickii</i>	Mutton-grass	S2?		1	1
<i>Poa fendleriana</i>	Mutton Grass	S2		3	1
<i>Pogonia ophioglossoides</i>	Rose Pogonia	S1	1	2	1
<i>Polanisia dodecandra</i> ssp. <i>dodecandra</i>	Clammyweed	S1		4	
<i>Polanisia dodecandra</i> ssp. <i>trachysperma</i>	Clammyweed	S1		3	2
<i>Polygala verticillata</i>	Whorled Milkwort	S2		5	2
<i>Polygala verticillata</i> var. <i>isocycla</i>	Whorled Milkwort	S2		3	4
<i>Polygonum aviculare</i> ssp. <i>boreale</i>	Northern Doorweed	S2S3			1
<i>Polypodium sibiricum</i>	Siberian Polypody	SU	5		5
<i>Populus grandidentata</i>	Large-toothed Aspen	S1S2		10	3
<i>Potamogeton amplifolius</i>	Large-leaved Pondweed	S2?		5	
<i>Potamogeton illinoensis</i>	Illinois Pondweed	S2		1	
<i>Potamogeton robbinsii</i>	Robbin's Pondweed	S2		2	2
<i>Potamogeton spirillus</i>	Fennel-leaved Pondweed	S2		3	1
<i>Potamogeton strictifolius</i>	Straightleaf Pondweed	S3			3

Scientific Name	Common Name	Conservation Status	New Occurrences Documented	Updated Occurrences	New Visits
<i>Potentilla gracilis</i> var. <i>flabelliformis</i>	Graceful Cinquefoil	S1		1	1
<i>Potentilla pensylvanica</i>	Pennsylvania Cinquefoil	SU		1	
<i>Potentilla plattensis</i>	Low Cinquefoil	S2		2	2
<i>Pyrola americana</i>	Round-leaved Pyrola	S2		6	3
<i>Ranunculus cymbalaria</i> var. <i>saximontanus</i>	Seaside Crowfoot	S1S2		1	1
<i>Ranunculus fascicularis</i>	Early Buttercup	S1		1	
<i>Ranunculus hispidus</i> var. <i>caricetorum</i>	Bristly Buttercup	S2		1	2
<i>Rhynchospora alba</i>	White Beakrush	S3?		2	6
<i>Rhynchospora capillacea</i>	Horned Beakrush	S2		1	1
<i>Sagittaria rigida</i>	Sessile-fruited Arrowhead	S2		3	2
<i>Salix reticulata</i>	Net-veined Willow	S3			2
<i>Sanguinaria canadensis</i>	Blood-root	S2		4	2
<i>Saxifraga aizoides</i>	Yellow Mountain Saxifrage	S2			1
<i>Saxifraga hirculus</i>	Yellow Marsh Saxifrage	S2			1
<i>Schedonnardus paniculatus</i>	Tumble-grass	S2		1	1
<i>Scutellaria parvula</i> var. <i>missouriensis</i>	Small Skullcap	S1		1	1
<i>Selaginella densa</i>	Prairie Spike-moss	S3		1	
<i>Selaginella selaginoides</i>	Northern Spike-moss	S4		2	2
<i>Shinnersoseris rostrata</i>	Annual Skeletonweed	S1S2		3	
<i>Sisyrinchium campestre</i>	White-eyed Grass	SU		4	6
<i>Solidago riddellii</i>	Riddell's Goldenrod	S2	2	13	596
<i>Spiranthes magnicamporum</i>	Great Plains Ladies'-tresses	S1S2		8	2561
<i>Sporobolus compositus</i>	Tall Dropseed	S1			1
<i>Sporobolus neglectus</i>	Annual Dropseed	S3?		1	
<i>Symphotrichum sericeum</i>	Western Silvery Aster	S2S3		5	12
<i>Taxus canadensis</i>	Canada Yew	S3		2	5
<i>Teucrium canadense</i>	American Germander	S3S4		2	

Scientific Name	Common Name	Conservation Status	New Occurrences Documented	Updated Occurrences	New Visits
<i>Thalictrum revolutum</i>	Waxleaf Meadow-rue	S1			1
<i>Thalictrum sparsiflorum</i>	Few-flowered Meadow-rue	S2S3		1	2
<i>Thermopsis rhombifolia</i>	Golden Bean	S2		12	10
<i>Torreyochloa pallida</i> var. <i>fernaldii</i>	Pale Manna Grass	S2		3	
<i>Townsendia exscapa</i>	Silky Townsend-daisy	S2		9	1
<i>Tradescantia occidentalis</i>	Western Spiderwort	S1		2	122
<i>Uvularia sessilifolia</i>	Small Bellwort	S2	1	3	2
<i>Vaccinium caespitosum</i>	Dwarf Bilberry	S3		5	3
<i>Verbena bracteata</i>	Bracted Vervain	S3		3	3
<i>Vernonia fasciculata</i> ssp. <i>corymbosa</i>	Western Ironweed	S1		2	16
<i>Veronicastrum virginicum</i>	Culver's-root	S1		8	78
<i>Viola conspersa</i>	Dog Violet	S3?		4	4
<i>Viola selkirkii</i>	Long-spurred Violet	S2			2
<i>Vitis riparia</i>	Riverbank Grape	S3S4	1		3
<i>Wolffia columbiana</i>	Water-meal	S1			1
<i>Woodsia alpina</i>	Northern Woodsia	S1		3	2
<i>Woodsia glabella</i>	Smooth Woodsia	S2		7	6
Total Plants	260		37	871	6362
Vertebrates					
<i>Accipiter cooperii</i>	Cooper's Hawk	S4S5B		9	5
<i>Aechmophorus occidentalis</i>	Western Grebe	S4B		7	7
<i>Ambystoma laterale</i>	Blue-spotted Salamander	S3S4		3	
<i>Ambystoma mavortium</i>	Western Tiger Salamander	S4S5		2	
<i>Ambystoma tigrinum</i>	Eastern Tiger Salamander	S4S5		1	4
<i>Ammodramus bairdii</i>	Baird's Sparrow	S1B		15	32
<i>Ammodramus savannarum</i>	Grasshopper Sparrow	S2B		21	2
<i>Anas rubripes</i>	American Black Duck	S3B	3		5
<i>Anaxyrus cognatus</i>	Great Plains Toad	S2		3	38

Scientific Name	Common Name	Conservation Status	New Occurrences Documented	Updated Occurrences	New Visits
<i>Anthus spragueii</i>	Sprague's Pipit	S2B		23	53
<i>Antrastomus vociferus</i>	Whip-poor-will	S3B	2	11	1
<i>Aquila chrysaetos</i>	Golden Eagle	S1B	1		4
<i>Ardea herodias</i>	Great Blue Heron	S4S5B		7	1
<i>Asio flammeus</i>	Short-eared Owl	S2S3B	4		4
<i>Athene cunicularia</i>	Burrowing Owl	S1B		20	1
<i>Aythya marila</i>	Greater Scaup	S5B		1	2
<i>Bison bison athabasca</i>	Wood Bison	SNA			5
<i>Bubulcus ibis</i>	Cattle Egret	S1S2B		1	
<i>Buteo regalis</i>	Ferruginous Hawk	S1S2B		8	
<i>Butorides virescens</i>	Green Heron	S1B	1		1
<i>Calamospiza melanocorys</i>	Lark Bunting	S1B		5	
<i>Calcarius ornatus</i>	Chestnut-collared Longspur	S1S2B		17	32
<i>Calcarius pictus</i>	Smith's Longspur	S3B	1		1
<i>Cardellina canadensis</i>	Canada Warbler	S4B	10	12	44
<i>Chaetura pelagica</i>	Chimney Swift	S2B		2	
<i>Charadrius melodus</i>	Piping Plover	S1B		1	1
<i>Chelydra serpentina</i>	Common Snapping Turtle	S3	1	43	3
<i>Chlidonias niger</i>	Black Tern	S4B	8	2	9
<i>Chordeiles minor</i>	Common Nighthawk	S3B	13	11	28
<i>Condylura cristata</i>	Star-nosed Mole	S3	1	1	1
<i>Contopus cooperi</i>	Olive-sided Flycatcher	S3S4B		12	112
<i>Contopus virens</i>	Eastern Wood-pewee	S4S5B	203		335
<i>Coregonus zenithicus</i>	Shortjaw Cisco	S3		3	
<i>Coturnicops noveboracensis</i>	Yellow Rail	S3S4B		18	7
<i>Cygnus buccinator</i>	Trumpeter Swan	S1S2B		1	
<i>Delphinapterus leucas</i>	White Whale or Beluga	S2			4
<i>Dendroica pinus</i>	Pine Warbler	S2B		2	

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<i>Dicrostonyx richardsoni</i>	Richardson's Collared Lemming	S3			1
<i>Dolichonyx oryzivorus</i>	Bobolink	S4B	50	70	217
<i>Empidonax traillii</i>	Willow Flycatcher	S2S3B		2	
<i>Eremophila alpestris</i>	Horned Lark	S3B		12	
<i>Eumeces septentrionalis</i>	Northern Prairie Skink	S1		37	25
<i>Euphagus carolinus</i>	Rusty Blackbird	S3S4B	34	1	120
<i>Fundulus diaphanus</i>	Banded Killifish	S1		1	
<i>Geomys bursarius</i>	Plains Pocket Gopher	S3		5	
<i>Heterodon nasicus</i>	Western Hognose Snake	S1S2	1	11	3
<i>Hirundo rustica</i>	Barn Swallow	S4B	3	306	21
<i>Ichthyomyzon castaneus</i>	Chestnut Lamprey	S3S4	1	7	13
<i>Ichthyomyzon fossor</i>	Northern Brook Lamprey	S2	2	2	9
<i>Ichthyomyzon unicuspis</i>	Silver Lamprey	S3	5		10
<i>Ixobrychus exilis</i>	Least Bittern	S2S3B		1	
<i>Lanius ludovicianus excubitorides</i>	Loggerhead Shrike	S2B	4	7	46
<i>Lanius ludovicianus migrans</i>	Loggerhead Shrike	S1B		2	
<i>Larus argentatus</i>	Herring Gull	S5B	4	1	5
<i>Larus delawarensis</i>	Ring-billed Gull	S5B	1	1	1
<i>Liochlorophis vernalis</i>	Smooth Green Snake	S3S4	1	4	1
<i>Lithobates pipiens</i>	Northern Leopard Frog	S4	29	38	307
<i>Lithobates septentrionalis</i>	Mink Frog	S3		12	
<i>Macrhybopsis storeriana</i>	Silver Chub	S3		2	
<i>Margariscus nachtriebi</i>	Pearl Dace	S5		2	
<i>Melanerpes erythrocephalus</i>	Red-headed Woodpecker	S2B		21	20
<i>Mustela frenata</i>	Long-tailed Weasel	S3		2	
<i>Myotis lucifugus</i>	Little Brown Myotis	S2N,S5B			7
<i>Myoxocephalus thompsoni</i>	Deepwater Sculpin	S2S3		1	

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<i>Notropis dorsalis</i>	Bigmouth Shiner	S3		5	
<i>Notropis percobromus</i>	Carmine Shiner	S2		3	1
<i>Odocoileus hemionus</i>	Mule or Black-tailed Deer	S3	2	3	2
<i>Parula americana</i>	Northern Parula	S3B		2	
<i>Pelecanus erythrorhynchos</i>	American White Pelican	S3S4B	1	7	16
<i>Phalacrocorax auritus</i>	Double-crested Cormorant	S5B		6	
<i>Pipilo erythrophthalmus</i>	Eastern Towhee	S4B		1	
<i>Pipilo maculatus</i>	Spotted Towhee	S1S2B		1	
<i>Plegadis chihi</i>	White-faced Ibis	S1B		1	
<i>Podiceps auritus</i>	Horned Grebe	S3B	3	4	3
<i>Rangifer tarandus caribou</i>	Woodland Caribou	S2S3		7	10
<i>Rhodostethia rosea</i>	Ross' Gull	S1B		1	2
<i>Riparia riparia</i>	Bank Swallow	S4B	54	12	74
<i>Sayornis saya</i>	Say's Phoebe	S2S3B		2	
<i>Spea bombifrons</i>	Plains Spadefoot Toad	S2S3		7	3
<i>Spermophilus parryii</i>	Arctic Ground Squirrel	S3			2
<i>Sterna caspia</i>	Caspian Tern	S3S4B	2	3	5
<i>Sterna hirundo</i>	Common Tern	S4S5B	8		9
<i>Storeria occipitomaculata</i>	Northern Redbelly Snake	S3S4		2	
<i>Strix nebulosa</i>	Great Gray Owl	S4B		14	36
<i>Strix varia</i>	Barred Owl	S4B	1	7	1
<i>Thamnophis radix haydenii</i>	Western Plains Garter Snake	S4		1	
<i>Thamnophis sirtalis</i>	Red-sided Garter Snake	S4	2		
<i>Thamnophis sirtalis parietalis</i>	Red-sided Garter Snake	S4		8	9
<i>Thamnophis sirtalis sirtalis</i>	Eastern Garter Snake	S3S4		1	
<i>Tympanuchus phasianellus</i>	Sharp-tailed Grouse	S4			1008
<i>Ursus maritimus</i>	Polar Bear	S2		1	25
<i>Vermivora chrysoptera</i>	Golden-winged Warbler	S3B	2	25	182

Scientific Name	Common Name	Conservation Status	New Occurrences Documented	Updated Occurrences	New Visits
Total Vertebrates	92		458	934	2936
Invertebrates					
Amblema plicata	Threeridge	S3S4	4		6
Copablepharon grandis	Pale Yellow Dune Moth	S1		2	4
Copablepharon longipenne	Dusky Dune Moth	S1		3	2
Danaus plexippus	Monarch	S5B	8	3	13
Erynnis lucilius	Columbine Dusky Wing	S2S3		1	
Erynnis martialis	Mottled Dusky Wing	S2		3	2
Fusconaia flava	Wabash Pigtoe	S3S4	8		11
Hesperia dacotae	Dakota Skipper	S2	1	8	67
Hesperia ottoe	Ottoe Skipper	S1		2	
Hypochlora alba	Sage Grasshopper	SNR		3	
Ligumia recta	Black Sandshell	S3S4	8	2	20
Oarisma powesheik	Powesheik Skipper	S1		2	3
Orconectes immunis	Calico Crayfish	S3		1	
Quadrula quadrula	Mapleleaf Mussel	S2	4	1	6
Schinia avemensis	Golden-edged Gem	S1		1	
Schinia bimatrix	White Flower Moth	S1		1	3
Schinia verna	Verna's Flower Moth	S1			19
Strophitus undulatus	Creeper	S3	10	6	15
Stylurus amnicola	Riverine Clubtail	S3		1	
Total Invertebrates	19		43	40	171
Total	371				