

THE ST. LAZARE AREA OF MANITOBA: A BIODIVERSITY HOTSPOT¹

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Introduction

The area between St. Lazare, Manitoba and the Saskatchewan border represents one of Manitoba's largest intact native prairie landscapes. The uplands and river valleys in this region in turn support a number of species that are considered provincially rare in Manitoba. While White and Johnson (1980) reported seven provincially rare plant species from St. Lazare, current information is unavailable because few recent botanical surveys have focussed on this area. In 2002, staff of the Manitoba Conservation Data Centre (CDC) attempted to update rare plant records from St. Lazare, and search for new occurrences of rare flora and rare grassland birds encountered incidentally. Comprehensive, up-to-date information is critical to assessing the status of rare species and identifying population trends and possible threats to these species and their habitats. Effective landscape-scale conservation planning and conservation-minded land management also hinge on the quality of available biodiversity data.

Methods

Site description

The study focussed on upland native habitat northwest and southwest of St. Lazare, Manitoba, as well as within the Qu'Appelle River Valley immediately west of the town (Figure 1). The study area is bounded on the west by the Manitoba/Saskatchewan border and on the east by the Assiniboine River. The Qu'Appelle River runs through the middle from west to east. The study area is an example of a grassland community within the Aspen Parkland ecoregion.

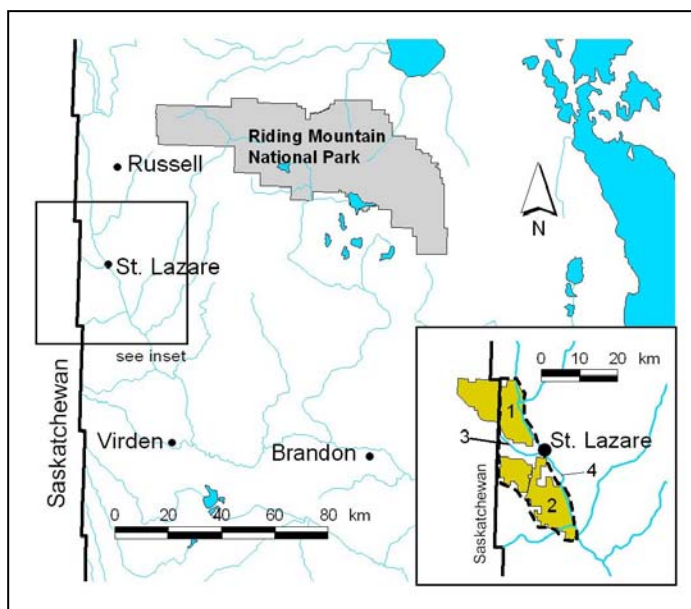


Figure 1. A portion of southwestern Manitoba showing the location of St. Lazare. Within the inset image, '1' corresponds to the Spy Hill-Ellice Community Pasture, '2' to the Ellice-Archie Community Pasture, '3' to the Qu'Appelle River, and '4' to the Assiniboine River. The approximate bounds of the study area are indicated by the dashed line.

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The south side of the Qu'Appelle River Valley, near the town of St. Lazare, is dominated by Aspen (*Populus tremuloides*) woodland, but the north side is characterised by grassland. Deltaic sand deposits mark its junction with the Assiniboine River. In places this sand has been reworked by wind into dunes that have since become partially to fully vegetated. Large Prairie Farm Rehabilitation Administration (PFRA) community pastures dominate the uplands on both sides of the Qu'Appelle River Valley, with Ellice-Archie (152.6 km²) to the south and the border-straddling Spy Hill-Ellice (159.7 km², 84 km² of which is within Manitoba) to the north. The pastures are flat, open grasslands with occasional stands of Aspen. Creeks and gullies wind through the area, and these are often lined with trees such as Paper Birch (*Betula papyrifera*), Bur Oak (*Quercus macrocarpa*), Balsam Poplar (*Populus balsamifera*) and Aspen.

Soils in the community pastures are mostly of the Marringhurst association, characterised by sandy loam, with moderate to excessive drainage (Ehrlich et al. 1956). These soils are susceptible to drought and wind erosion. Typical vegetation on this soil association includes Blue Grama (*Bouteloua gracilis*),

Porcupine Grass (*Hesperostipa spartea*), June Grass (*Koeleria macrantha*), Spear Grass (*Hesperostipa spartea*), Prairie Sagewort (*Artemisia ludoviciana*), Low Goldenrod (*Solidago missouriensis*), Creeping Juniper (*Juniperus horizontalis*), and Three-flowered Avens (*Geum triflorum*) (Mansell and Moore 1999).

The two community pastures, and the Qu'Appelle River Valley between them, represent an island of native habitat within an area largely converted to cultivation (Figure 2).

Survey methodology

Surveys concentrated on four distinct habitats: the sandhill area within the Qu'Appelle River Valley near its confluence with the Assiniboine River; the untreed prairie on the south-facing slope of the Qu'Appelle River Valley; the open sandy prairie dominating the

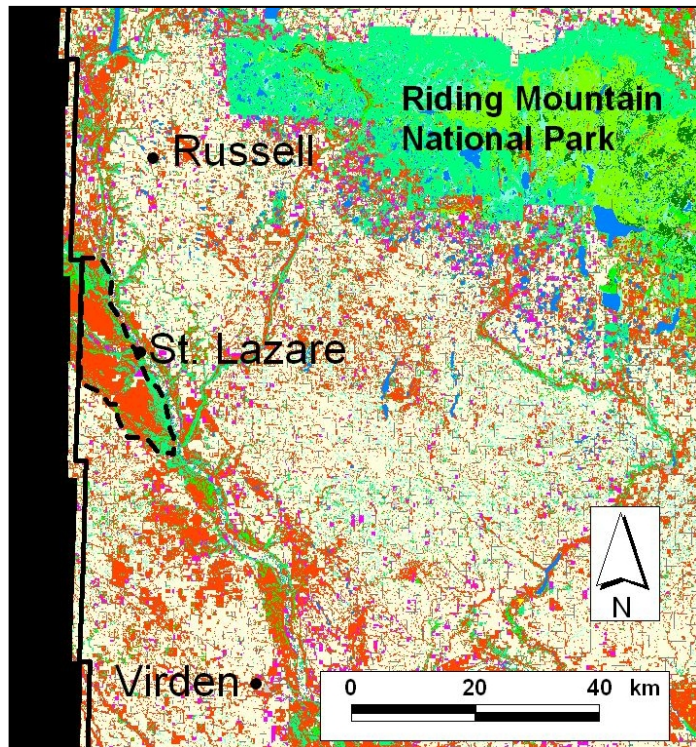


Figure 2. A Landsat satellite image of a portion of southwestern Manitoba. Colours represent the differing reflectance of various habitat types. Red indicates grassland, green is forested areas, blue is water, and beige is cultivated lands. The grasslands and forested areas near St. Lazare represent an island of native habitat within a region dominated by cultivated lands. The approximate bounds of the study area are indicated by the dashed line.

uplands immediately north and south of the valley; and freshwater springs on the upper slopes of the Assiniboine and Qu'Appelle Rivers and their tributaries.

The authors conducted surveys on May 27 to 28, June 17 to 20, and August 12 to 13, 2002. Study sites were accessed by truck or on foot. The locations of rare species and other organisms of interest were recorded with a Garmin GPS unit. Additional information recorded at each site included patch size, abundance, habitat, associated species, slope, aspect, and condition. Where populations were sufficiently large, voucher specimens of selected species were collected and deposited in the University of Manitoba Herbarium (WIN). Plant scientific nomenclature follows Kartesz (1999).

Observations of Sprague's Pipit were recorded on an opportunistic basis. Song and behaviour were used to identify this species, a standard identification practice for this cryptic bird (Ken De Smet, Manitoba Conservation, pers. comm.). All occurrences of rare organisms were mapped in the Manitoba CDC database using the Biotics 3.1 GIS application.

Results

Four rare species (Low Townsendia (*Townsendia exscapa*), Indian Rice Grass (*Achnatherum hymenoides*), Waxleaf Beardtongue (*Penstemon nitidus*) and Sand Bluestem (*Andropogon hallii*)) were found in the sand deposits at the junction of the Qu'Appelle and Assiniboine Rivers. This community was dominated by Plains Wormwood (*Artemisia campestris*), Sand Grass (*Calamovilfa longifolia*), Sand Dropseed (*Sporobolus cryptandrus*), Holboell's Rock-cress (*Arabis holboellii*), and Creeping Juniper. Smooth Brome (*Bromus inermis*) and Alfalfa (*Medicago sativa*) dominated roadsides at this site. Open sand at a sand extraction site supported Waxleaf Beardtongue and Sandmat (*Chamaesyce serpyllifolia*).

One rare species (Sand Bluestem) and one uncommon species (Yellow Umbrella-plant (*Eriogonum flavum*)) were observed in grasslands on the south-facing valley slope above the Qu'Appelle River. Sand Bluestem and Sand Grass dominated these sites. In contrast, other portions of the south-facing slope were characterised by woodland species, especially Bur Oak, Chokecherry (*Prunus virginiana*), Aspen, and False Solomon's-seal (*Maianthemum stellatum*).

Four rare species (Waxleaf Beardtongue, Slender Beardtongue (*Penstemon procerus*), Early Yellow Locoweed (*Oxytropis sericea*) and Sprague's Pipit) and two uncommon species (Large-fruited Parsley (*Lomatium macrocarpum*) and Moss Pink (*Phlox hoodii*)) occurred in the open sandy prairie of the uplands. This community was dominated by Creeping Juniper, Big Bluestem (*Andropogon gerardii*), Little Bluestem (*Schizachyrium scoparium*), Blue Grama, *Stipa* species, bare sandy soil, and mosses and lichens. Aspen copses were occasional.

One rare species (Roundleaf Monkey-flower (*Mimulus glabratus*)) was observed in freshwater springs. Vegetation around springs was normally characterised by a canopy of

Balsam Poplar and other deciduous trees, a dense shrub canopy, and a mossy understory through which cold springwater flowed.

Rare and uncommon species

Surveyors recorded 40 occurrences of eleven provincially rare or uncommon species (Table 1). These species can be sorted into two groups. The first, comprised of western grassland species that reach the northeastern limit of their range in southwestern Manitoba, are considered provincially rare in Manitoba but are common in the heart of their range to the west and south. One of these species, Early Yellow Locoweed, is known in Manitoba only from the St. Lazare area. The second group of rare species are considered rare across Canada, as well as in Manitoba.

Table 1. Rare and uncommon species encountered in the St. Lazare area. More details about each species can be found in the text.

Latin Name	Common Name	G Rank*	N Rank*	S Rank*
<i>Achnatherum hymenoides</i>	Indian Rice Grass	G5	NNR	S2
<i>Andropogon hallii</i>	Sand Bluestem	G4	N1	S2
<i>Anthus spragueii</i>	Sprague's Pipit	G4	N4	S2S3B
<i>Eriogonum flavum</i>	Yellow Umbrella-plant	G5	N5	S3
<i>Lomatium macrocarpum</i>	Long-fruited Parsley	G5	NNR	S3?
<i>Mimulus glabratus</i>	Roundleaf Monkey-flower	G5	N2	S1
<i>Oxytropis sericea</i>	Early Yellow Locoweed	G5	NNR	S1
<i>Penstemon nitidus</i>	Waxleaf Beardtongue	G5	NNR	S2
<i>Penstemon procerus</i>	Slender Beardtongue	G5	NNR	S1S2
<i>Phlox hoodii</i>	Moss Pink	G5	NNR	S3S4
<i>Townsendia exscapa</i>	Low Townsendia	G5	NNR	S2

* G Rank = Global Conservation Status Rank, N Rank= National Conservation Status Rank, S Rank = Subnational (Manitoba) Conservation Status Rank. Ranks roughly correspond to: 1=very rare, 2=rare, 3=uncommon, 4=apparently secure, 5=secure. NR=not ranked, B=breeding. Full definitions can be viewed at <http://web2.gov.mb.ca/conservation/cdc/info.php>

Group 1: Prairie species reaching the edge of their range in southwestern Manitoba

Early Yellow Locoweed was found on open prairie in May and June in upland areas both north and south of the Qu'Appelle River Valley. It was easiest to identify in May when the showy light yellow flowers were evident and the stems of the surrounding grasses were not elongated. CDC surveys in 2002 confirmed the continued presence of the species in Manitoba; the species was first recorded near St. Lazare by Macoun & Herriot in 1906 (Scoggan 1957). This species is at the northeastern limit of its range in Manitoba but is considered secure in Saskatchewan.

Low Townsendia was found at 2 locations, both within the Qu'Appelle River Valley on sparsely vegetated sandhills. This species is also known from other sandhill areas in southwestern Manitoba.

Indian Rice Grass was found in open sand near the confluence of the Qu'Appelle and Assiniboine Rivers. It is also known from other sandhill areas in southwestern Manitoba.

Waxleaf Beardtongue was observed flowering in June at three prairie areas of the Qu'Appelle River Valley and the uplands north of the river (Figure 3). Outside of the St. Lazare area, this species has been recorded at only two other Manitoba locations.



Figure 3. Waxleaf Beardtongue in upland habitat north of the Qu'Appelle River Valley. The Valley can be seen in the background,

Slender Beardtongue was observed in mid-June at five locations in the uplands south of the Qu'Appelle River. The CDC database contains records for previous collections from near Pierson, Viriden, Miniota and Reston, but none more recent than 1950.

Large-fruited Parsley was observed flowering in May and fruiting in June. CDC surveys located two occurrences in the uplands south of the Qu'Appelle River (Figure 4). This species is known from a number of widely separated locations in south-central and southwestern Manitoba.

Yellow Umbrella-plant was observed at a single location in prairie on the south-facing slope of the Qu'Appelle River Valley west of St. Lazare. This provincially uncommon species is also known from a number of other locations in southwest Manitoba.

Moss Pink was observed twice, at the top of a slope overlooking the Assiniboine River and on a gentle slope within open prairie. The provincial conservation status of Moss Pink is uncertain; it has been assigned a conservation rank of S3S4 (uncommon to apparently secure). The species occurs in dry prairies in southwestern Manitoba.

Group 2: Nationally rare species

Roundleaf Monkey-flower was found in August in springs and seepy slopes at three locations. This species is a freshwater spring-obligate and is rare in every Canadian province where it occurs. The Manitoba Endangered Species Advisory Committee recommended a status of Threatened for Roundleaf Monkey-flower in February 2003. The status of Roundleaf Monkey-flower in Manitoba and its presence in the St. Lazare area have been previously documented in *Blue Jay* (Hamel et al. 2002, Hamel & Reimer 2002).



Figure 4. Large-fruited Parsley habitat in the uplands southwest of St. Lazare.

Sand Bluestem was observed only in the sandhills that occur near the confluence of the Qu'Appelle and Assiniboine Rivers, and on the south-facing slope of the Qu'Appelle River Valley. The species is a relatively common member of the flora of sandhill areas in southwestern Manitoba.

Sprague's Pipits were observed in the open prairies of uplands both north and south of the Qu'Appelle River Valley. Listening stops made in appropriate habitat revealed pipits at 72% of stops ($n=19$ observations). This species is protected under Canada's *Endangered Species Act* as a Threatened species.

Discussion

With its abundance of native grassland and associated habitats, and concentration of provincially and nationally rare species (Figure 5), the St. Lazare area represents an excellent opportunity for conservation. In 1987, Rowe estimated that 80% of the Aspen Parkland was under cultivation, with most remnants fragmented into patches less than 1000 hectares in size.

Cultivation continues to be a threat to the prairies, with 4.7 million hectares of marginal land cultivated annually (Agriculture and Agri-food Canada 1997). Other threats to the region include resource extraction, especially sand and gravel, potash, and petroleum.

The PFRA has been managing the Spy Hill-Ellice Community Pasture since 1941, and the Ellice-Archie Community Pasture since 1940.

Management strategies in the community pastures include grazing and controlled burns (John Istace, PFRA, pers. comm.). Most rare prairie plants in the community pastures are adapted to both burning and grazing, and have

an excellent chance of persisting under the current management strategy.

Surveyed areas of the Qu'Appelle River Valley's south-facing slope appear to be only lightly grazed, and exhibit little evidence of disturbance. As some aspen encroachment was observed, consideration of the use of prescribed fire may be warranted.

Freshwater springs containing Roundleaf Monkey-flower were accessible to livestock, and extensive trampling of spring vegetation was observed at one location. The installation of fencing and an off-site watering system would likely reduce the impact of livestock on spring communities.

The sandhills near the confluence of the Assiniboine and Qu'Appelle Rivers support a unique assemblage of provincially rare species. Portions of this area are used for sand extraction, and ATV tracks indicate that this area is also used for recreation. Further protection of this area, through conservation-minded management and/or conservation easements, would help ensure the long-term suitability of rare species habitat.

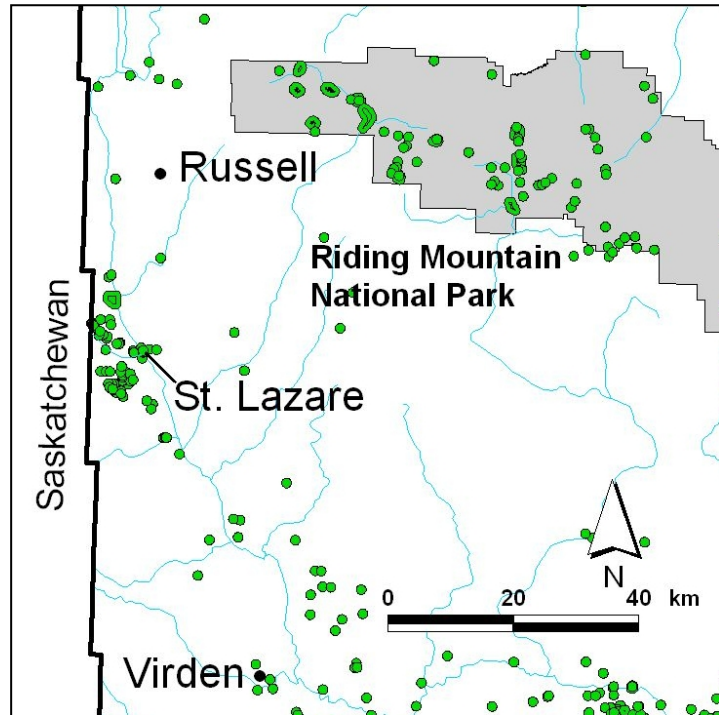


Figure 5. Provincially rare and uncommon species occurrences (green circles and polygons) in west-central Manitoba, as recorded in the Manitoba Conservation Data Centre database. Occurrences are concentrated in the St. Lazare area.

The concentration of rare and uncommon species in the St. Lazare area is indicative of a large, intact and connected landscape that is being managed in a manner that promotes the maintenance of biodiversity. The contribution of the area to Manitoba's overall biological diversity is significant, and warrants the reinforcement and expansion of current habitat stewardship activities.

Acknowledgements

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