

Newsletter of the Native Plant Society of Saskatchewan



R O O T S

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Thermopsis rhombifolia

Goldenbean | Buffalobean

Photo credit: Chet Neufeld

Weed Watch: *Chorispora tenella* By Hilary Pinchbeck, NPSS Project Coordinator



Chorispora tenella or Purple Mustard is a new weed to Saskatchewan that originated in Europe. The species is currently found in the Western states, Alberta, and British Columbia. Purple Mustard is an annual and flowering occurs from mid-spring to mid-summer. This species is a prolific seed producer and spreads quickly by seed. *Chorispora tenella* is a troublesome weed in arid climates and especially in agricultural or disturbed sites. There is evidence that it can reduce yields in grain fields, and when dairy cattle eat the plant, it can give their milk a bad taste and odour.

In late spring of 2021, Purple Mustard was discovered in Val Marie, Saskatchewan. The plant was found within the rodeo corral in town which meant that it was most likely brought in with livestock. With the help of Michael Skinner, the NPSS was able to gather volunteers from the area to eradicate the plant. Over a few hours, eight volunteers were able to manually pull and collect the species, roots and all, in garbage bags. Twenty large garbage bags were filled with pulled plants, and the species was disposed of in a local landfill after a period of solarization to sterilize any potential seed. The site will be continued to be monitored in 2022 and any plants found will be promptly removed and discarded appropriately. This work is being done through the NPSS' South of the Divide Invasive Alien Species Strategy*.

Leaf samples from the specimens found in Val Marie were mailed to Dr. Kathryn Turner at Idaho State University. Dr. Turner's lab is tracking the evolution of plant invasion, specifically Purple Mustard over the course of 100 years in North

America. To do this they are using techniques that are used on ancient DNA to study long extinct organisms to study evolution. From studying these herbarium specimens her lab is trying to answer two questions 1) are invasive species 'invasive' before introduction? And 2) do introduced species evolve (to be more invasive) after introduction? Her work has not been published quite yet, but we are excited to be following along!

**This project was undertaken with the financial support of Environment and Climate Change Canada.*



Roots is a quarterly publication of the Native Plant Society of Saskatchewan (NPSS) and is one of the benefits of membership. Members are invited to submit articles, news, views, photographs and comments. Views expressed by the authors are not necessarily those of the NPSS.

Deadlines: Submission Publication

Winter Issue: November 1 December 15

Spring Issue: February 1 March 15

Summer Issue: May 1 June 15

Fall Issue: August 1 September 15

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Membership Dues (Year End November 30th).

Individual \$30 Family \$45 Student \$15

Non-profit \$100 Corporate \$200

Life \$500 Please contact the NPSS office for info about the lifetime membership instalment payment option.

Get your photo on the cover of... ROOTS! Submit your Saskatchewan native plant photos for future cover consideration to: info@npss.sk.ca



**Native Plant Society
of Saskatchewan**

Summer Field Tours

The Native Plant Society of Saskatchewan is once again gearing up for our exciting field tours. Each of these field tours will offer something unique and give participants a chance to see and do things that they might not otherwise be able to on their own. What they have in common though, is that they are geared for all ages and experience levels, and that they will be interesting and fun!

Grasslands National Park

July 9-10, 2022

9 am – 5 pm (July 9) | 9 am – 3 pm (July 10)

July 9, 2022

Join the Native Plant Society of Saskatchewan for a tour of Grasslands National Park's prairie restoration sites. We will visit several different restored grassland areas, each varying in age (back to 2000), site characteristics, and approach. A tour of Parks Canada's seed cleaning and storage facility is also included. The tour leader for the day will be Heather Facette from Parks Canada, who recently spoke about their restoration projects at our most recent annual general meeting.

July 10, 2022

On day two of the tour, NPSS Project Coordinator and local botanist Hilary Pinchbeck will lead participants on a hike up 70 Mile Butte, a local landmark. The prairie floral diversity is incredible in this area, and you're sure to see provincially rare plants. Upon closer inspection, you might even find a short-horned lizard hiding under a plant. The views from the top of the



Grasslands National Park. Photo by Chet Neufeld.

butte are sublime, and on a clear day you can see into Montana.

Meet at the Parks Canada Visitor Centre in Val Marie each day and bring a bag lunch. This tour is only open to Native Plant Society of Saskatchewan members, but memberships can be purchased prior to the tour on our website. Please e-mail info@npss.sk.ca to register so that we know how many people to expect and can contact you if the event is cancelled due to weather.



Duck Mountain Provincial Park

July 29, 2022

9 am – 4 pm

Explore the beautiful boreal forest and participate in citizen science as we search for Golden-eye Lichen (*Teloschistes chrysophthalmus*), a species at risk in Canada (Special Concern) and one that was recently found in Saskatchewan for the first time. Scientists are still trying to determine its range in the province, and we will be helping them by searching parts of Duck Mountain Provincial Park, a likely spot for it. Of course, we'll be looking at all of the wonderful wildflowers too and have a good chance of spotting some of the many orchid species that grow in the park. Later, we'll take a short drive to the Little Boggy Creek Fen Trail. This short trail and boardwalk go through a calcareous fen, one of the rarest ecosystems in Saskatchewan. This fen is home to many plant species that grow nowhere else except in calcareous fens, including some carnivorous plants. It truly is a unique experience! Since this trip is scheduled for a Friday, it's a great opportunity to stay for the weekend and explore everything else the park has to offer. The tour leader for the day will be Chet Neufeld.

Meet at the Duck Mountain Visitor Reception Centre and bring a bag lunch. Please e-mail info@npss.sk.ca to register so that we know how many people to expect and can contact you if the event is cancelled due to weather.

Duck Mountain Provincial Park.
Photo by Chet Neufeld.

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Summer Field Tours *Continued from page 3*

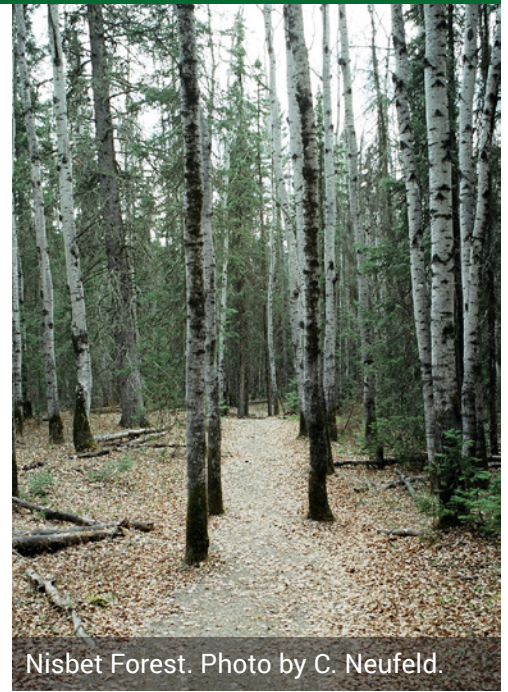
Nisbet Forest

August 20, 2022

10 am – 4 pm

Discover the Nisbet Forest, one of Saskatchewan's "island forests", as we look for late season wildflowers. Just an hour north of Saskatoon, this mixed wood forest is an anomaly, popping up out of the prairie. It is a year-round destination, with groomed cross country ski trails in the winter that turn into summer hiking trails. While there are many different trails of varying lengths and difficulties, we will hike the classic Eb's Trail, an easy 4.3 km loop that will show us a good diversity of plant life. If there is any time left at the end, we may also explore another short trail depending on what the group decides to do. The tour leader for the day will be Chet Neufeld.

Meet at the south entrance for Eb's Trails (signed) on the west side of highway 11 and bring a bag lunch. The trail is 17 km north of the town of Duck Lake and is on Google Maps if you need to navigate to the site with your smartphone. Please e-mail info@npss.sk.ca to register so that we know how many people to expect and can contact you if the event is cancelled due to weather.



Nisbet Forest. Photo by C. Neufeld.

Rose Creek Ranch Conservation Grazing Project

The Rose Creek Ranch Conservation Grazing Project is a collaborative project aimed at supporting species at risk recovery on the Rose Creek Ranch by reducing the threat of invasive alien species, primarily Leafy Spurge (*Euphorbia esula*).

Invasive alien species have been identified as threats to multiple species at risk in the South of the Divide area. Rose Creek Ranch lies in the South of the Divide region near Eastend, SK and encompasses 2,266 hectares (5,600 acres) of native prairie with high biodiversity, providing varied habitat for a multitude of species including species at risk. Baird's Sparrow (Special Concern), Sprague's Pipit (Threatened, invasive alien species identified as a high threat), and Northern Leopard Frog (Special Concern) have

all been sighted on the ranch in the last two years. Furthermore, the ranch owners are good environmental stewards and want to manage the land in an environmentally ethical manner. However, Leafy Spurge has established and quickly spread within the ranch, now encompassing 486 hectares (1,200 acres). The Leafy Spurge has invaded sensitive habitats such as riparian areas, making conventional treatments such as herbicide application impossible. Cattle, such as those on the Rose Creek Ranch, avoid eating Leafy



One of the Leafy Spurge sites on the ranch in June, prior to goat grazing. Photo by Hilary Pinchbeck.



The same Leafy Spurge site in September, after goat grazing. Photo by Hilary Pinchbeck.

Spurge, but research¹ has shown that up to an 80% stem reduction can be achieved by grazing Leafy Spurge with small ungulates.

In the summer of 2021, the Native Plant Society of Saskatchewan received funding to assist in conservation efforts on the ranch. In early June we headed out to the property to survey for Leafy Spurge and 12 sites were chosen based on where goats would be grazing later in the season. For each site, a transect was established in each cardinal direction from a chosen point and a one metre by one metre quadrat was dropped at the center, 5 metres and 10 metres in each direction. For each quadrat the stems of Leafy Spurge were counted, the height of the plants was measured, the amount of litter was determined, and the total cover of live material was recorded. Some of the sites were grazed twice throughout the season, while other sites were not specifically targeted but were grazed by goats at least once throughout the season. Twelve rangeland health assessments were completed for the Leafy Spurge sites, and twelve rangeland health assessments were completed in other native prairie areas on the property which did not contain Leafy Spurge. In addition, twelve riparian health assessments were completed along the stream on the property in which 6 contained Leafy Spurge and 6 sites did not.

In September, the sites with Leafy Spurge were resampled to assess the effectiveness of goat grazing on controlling Leafy Spurge. It was visually apparent how much the goats had reduced the cover of Leafy Spurge across the areas that were grazed. After analysis, it was found that the number of stems in each quadrat had decreased across all sites.

While hiking through the property, a handful of provincially rare species were recorded, including *Danthonia unispicata* (Few-

flowered Oatgrass; S3), *Eremogone congesta* var. *lithophila* (Rocky-round Sandwort; S3), *Oenothera caespitosa* ssp. *caespitosa* (Gumbo Evening Primrose; S3), *Festuca hallii* (Plains Rough Fescue; S3), *Sedum lanceolatum* (Lance-leaved Stonecrop; S3), *Paronychia sessiliflora* (Low Whitlowwort; S3), and *Pseudoroegneria spicata* (Bluebunch Wheatgrass; S2). Northern Leopard Frogs were also found along the stream on the property.

As with any invasive alien species project, a once and done approach is sure to end in failure, and the Leafy Spurge that was grazed in 2021 will rebound this year and will spread if left unchecked. Also, a Leafy Spurge seedbank has established over the years which will need to be exhausted. Due to the ongoing need for conservation grazing on the site and the exceptional results from 2021, the Native Plant Society of Saskatchewan has been granted an additional \$66,000 by Environment and Climate Change Canada. Work has already begun on the site, and we have already completed the pre-grazing surveys on Leafy Spurge populations; the goats will be released shortly. It is our hope that we will be able to replicate the successes of last year and sustain the momentum needed to eventually eradicate Leafy Spurge from the ranch and recover the habitat that was lost.

This project was undertaken with the financial support of Environment and Climate Change Canada. Thanks also to the Frenchman Wood River Weed Management Area and the South of the Divide Conservation Action Plan.

1. Samuel, Luke, W. et al. Effects of Multi-species Grazing on Leafy Spurge (*Euphorbia esula* L.) Infested Rangeland Using Short Rotational Grazing (A Four-Year Summary). 2002. North Dakota State University. Fargo, ND.

Rare Plants and Ranchers - Summarizing Last Year's Accomplishments

By Hilary Pinchbeck, Project Coordinator

The 2021 field season started in July with the Rare Plants and Ranchers project. There were five properties surveyed last summer; the habitats consisted of mostly active sand dunes surrounded by native prairie. There was one new property added to the project which included 3,840 acres of land located near Mortlach, Saskatchewan.

During the first two weeks of July the first property surveyed was near Maple Creek, Saskatchewan. The first week, our Executive Director, Chet Neufeld, came out to assist me in completing vegetation transects. These transects monitor rare plant habitat and assess the property through range land health assessments and riparian health assessments on nearby bodies of water. Together we located the federally listed species at risk Smooth Goosefoot (*Chenopodium subglabrum*; S3) on multiple dunes across the property. We also located the following

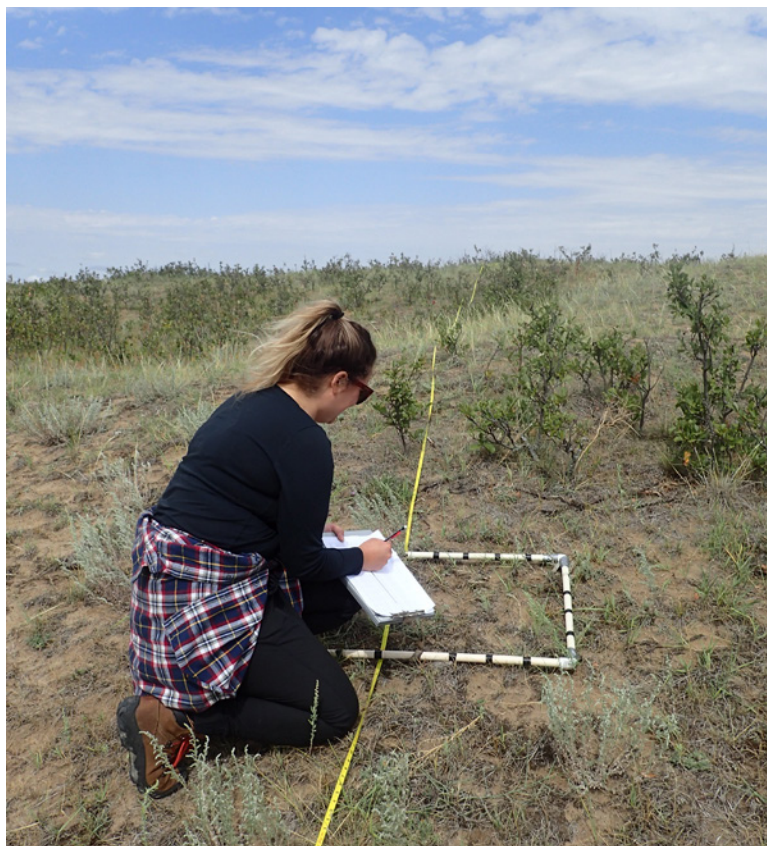
provincially listed species at risk: Beaked Annual Skeleton-weed (*Shinnersoseris rostrata*; S2), Sand-dune Wheatgrass (*Elymus lanceolatus* sp. *psammophilus*; S2), Small Lupine (*Lupinus pusillus* ssp. *pusillus*; S3), and Kelsey's Cryptantha (*Cryptantha kelseyana*; S2). An interesting find this season was Flat-topped Broom-rape (*Orobancha corymbosa* ssp. *mutabilis*) which is a newly recognized species in Saskatchewan as of 2020 and has not yet been ranked. Chet also found federally listed insect species at risk while surveying: Gold-edged Gem moths (*Schinia avemensis*) and two Monarch butterflies. The property had very few invasive species, but three small patches of Downy Brome (*Bromus tectorum*) were found and the second week I was out there I spent my time hand pulling the Downy Brome and searching more dunes for rare plant populations.

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Rare Plants and Ranchers

The next two weeks of July were spent near Fox Valley, SK surveying a property with a similar habitat type which consisted of large active sand dunes and native prairie. The same methods were used here to assess the health of the ecosystem and very few invasive species were found in this area. Many of the same species were found here including Smooth Goosefoot, Beaked Annual Skeleton-weed, Sand-dune Wheatgrass, and Small Lupine. Additionally, a few other provincially rare species were located here such as Louisiana Broomrape (*Orobanche ludoviciana*; S3), Prickly Milk-vetch (*Astragalus kentrophyta* var. *kentrophyta*; S2), Bur Ragweed (*Ambrosia acanthicarpa*; S2), Northern Blue-eyed-grass (*Sisyrinchium septentrionale*; S3), and Nodding Umbrella-plant (*Eriogonum cernuum*; S2). There were also Sprague's Pipits on the property (another species at risk), and a moose was spotted napping on the sand dunes, which was very cool to see!

August and September were spent surveying three properties near Mortlach, SK. These properties also consisted of active sand dunes and native prairie. However, they had different species



Hilary Pinchbeck conducting a range health assessment.
Photo by Chet Neufeld.



Bur Ragweed. Photo by Hilary Pinchbeck.



Flat-topped Broom-rape. Photo by Hilary Pinchbeck.

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present from the sand dunes near Maple Creek. The federally listed species at risk Hairy Prairie-clover (*Dalea villosa* var. *villosa*) was located on all three properties. Other provincially rare species located on these properties were Bur Ragweed, Small Lupine, Schweinitz's Flatsedge (*Cyperus schweinitzii*; S3), American Bugseed (*Corispermum americanum* var. *americanum*; S3), and Narrow-leaved Umbrella-wort (*Mirabilis linearis*; S3). Northern leopard frogs, another species at risk, were also seen along a creek in this area. Unfortunately, in this area Leafy Spurge (*Euphorbia esula*) was quite abundant and occurred significantly across these properties. Our goal is to try and find ways to work with these landowners to control the spread of Leafy Spurge throughout their properties to continue to prevent the loss of native prairie and species at risk located in this area!

The winter was spent summarizing all the data that was collected and sharing my findings with the participating landowners. Last summer was an absolute blast, and this year looks just as promising!

This project was undertaken with the financial support of Environment and Climate Change Canada and the Fish and Wildlife Development Fund.



Prickly Milk-vetch. Photo by Hilary Pinchbeck.



Smooth Goosefoot. Photo by Hilary Pinchbeck.



Hairy Prairie-clover. Photo by Hilary Pinchbeck.

This issue's COVER PLANT

Thermopsis rhombifolia



Goldenbean, also known as Buffalobean, is an early spring bloomer on the prairies. While many plants are still dormant and the prairie grasses greyed from winter, Goldenbean's vibrant blossoms add much needed colour and the reassurance that warmer weather is on its way. Goldenbean is common across the Prairie Provinces and in Saskatchewan it can be found in grasslands from the dry hillsides of the south to the moist meadows of the aspen parkland. On a continental scale, it ranges from British Columbia in the west to Ontario in the east and through the Great Plains of the United States as far south as New Mexico and Oklahoma.

Goldenbean is a perennial, typically growing about 30 cm high in our region, spreading by seeds and rhizomes, and often forming patches. The seeds are some of the largest and heaviest wildflower seeds we have in Saskatchewan, especially relative to the specie's size, and likely only travel short distances which may be why it also spreads by rhizomes. The seed also has a thick outer coating which helps to protect it until conditions are right, and keeps it viable for years, likely even decades. It has trifoliate leaves that have a greyish green appearance. It's most striking feature, though, is its clusters of bright, yellow flowers. These are an important nectar source for early spring pollinators. A member of the legume family, it can fix nitrogen through a symbiotic relationship with bacteria that live in nodules in its roots. This added nitrogen often benefits other nearby plants, as it can be a limiting factor in some prairie soils.

Though avoided by livestock due to toxicity, some early ranchers used Goldenbean's flowering as an indicator of when to turn the cattle out in the pastures, as soon after there would be sufficient forage growing. Similarly, some Indigenous groups would time their spring hunts by using Goldenbean's flowering as an indication that the bison were returning to take advantage of the new grass that would soon follow. This is likely the reason behind its alternate name, Buffalobean.

Goldenbean is a welcome addition in garden settings where it has room to spread, such as acreages and farms, or where it can be confined in urban settings, such as in raised beds. It would also do well as part of a native prairie lawn. It is very drought tolerant once established and prefers full sun. It can be grown from plants or seeds (the NPSS website lists some sources), but if growing from seed, keep in mind that it may take up to two years before it flowers. Seeds germinate best if the hard seed coat is scuffed with sandpaper or nicked with a sharp knife so water can be more easily absorbed.

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