Minnesota Plant Press

The Minnesota Native Plant Society Newsletter

Volume 28 Number 3 **Summer 2009**

Monthly meetings

Thompson Park Center/Dakota Lodge
Thompson County Park
360 Butler Ave. E.,
West St. Paul, MN 55118
651-552-7559 (kitchen)

Programs

The Minnesota Native Plant Society meets the first Thursday in October, November, December, February, March, April, May, and June. Check at www.mnnps.org for more program information.

6 p.m. — Social period

7 – 9 p.m. — Program, Society business

Oct. 1: "Forest Warming — an Ecotone in Danger" by Rebecca Montgomery, University of Minnesota Department of Forestry Resources. **Plant-of-the-Month**: *Quercus macrocarpa,* bur oak.

Nov. 5: "Decorative Tree Harvesting from Minnesota's Spruce Bogs," by Norm Aaseng, Minnesota County Biological Survey plant ecologist. **Seed exchange.**

Dec. 3: "Salvage Logging in St. Croix State Park: Restoring a Rare Community," by Gretchen Heaser, St. Croix State Park resource specialist.

Additional program information will be on the Society's website.

MNNPS website

For current information about Society field trips, meetings and other events, check the website: www.mnnps.org

Emerald ash borer is found in St. Paul

by Gerry Drewry

The deadly emerald ash borer has arrived, as anticipated, in Minnesota. The infestation was discovered in the South St. Anthony Park section of St. Paul on May 13. The borer could kill all varieties of ash trees in Minnesota. It has already killed 30 million ash trees since it was discovered in Detroit in the early 1990s.

The borer probably came to this country from China in the wood of crates. It has now been found in 13 states and two Canadian provinces. The tiny eggs are laid in bark cracks. The creamy white larvae live under the bark for one or two years; the adult emerald-green beetles emerge in mid-June. Symptoms may take several years to show. They include die-back of the canopy, split bark that reveals serpentine tunnels made by the larvae, and epicormic shoots growing from the trunk of the tree. Eventually, the infected trees die.

At this time there is no way to stop the borers, but their spread can be contained. To do this, ash wood and trimmings from both Hennepin and Ramsey counties are quarantined and cannot be taken out of those counties. Ash wood is also quarantined in a portion of Houston County, which is 15 miles from an infestation in Victory, Wis.

Individual trees may be given a chemical treatment in mid-autumn or in spring, before the adults emerge. However, the annual cost is typically $50 to $200 per tree. Experts recommend removing small infected trees and replanting with another species. The Department of Agriculture is using purple sticky traps to monitor the beetles. Their natural predators in Asia are three forms of parasitic wasps, which are being studied by the U.S. Department of Agriculture's Agricultural Research Service

Information is available on the Internet. Go to the Minnesota Department of Agriculture website at www.mda.state.mn.us or call its Arrest the Pest Hotline at 651-201-6684 or 888-545-6684. For detailed information on treatment options, go to the University of Minnesota Extension website at extension.umn.edu/issues/eab/

In this issue

President's column

by Scott Milburn

The Society wrapped up another great year of presentations in June with Nancy Sather's talk on the Western Prairie Fringed Orchid. This was followed by several field trips in Northern Minnesota, where members had the opportunity to explore a cedar swamp near Hill City and trek to the Aspen Parklands.

Planning has already begun as we approach the upcoming year with our first set of talks scheduled. The basic themes for the year will be similar to recent years, with the emphasis being on ecology, conservation, and restoration. One topic I hope we can explore in our second half is the emergence of the emerald ash borer in Minnesota. Questions we need to ponder regarding the subject include what will be the true impacts and what will happen to forest communities whose major components are black and green ash.

Regarding the board, we will have our summer board meeting in early August, when we will elect officers and discuss our path for the next year.

I would like to announce that we need to bring a proposed bylaw change to the members' attention. We had mistakenly added another membership category of Lifetime membership. This actually requires approval by the general membership, and not through action of the board alone. The board is hereby proposing to add the category of Lifetime membership to our list of membership categories. The cost for a Lifetime membership will be set at twenty times the cost of an individual membership, or $300 at our current membership price. This will be brought to the members this upcoming year. The date will depend on attendance and whether we have a quorum at that point.

I hope and encourage folks to enjoy the summer months, and I look forward to seeing you in October.

Minnesota Native Plant Society's purpose

(Abbreviated from the bylaws)

This organization is exclusively organized and operated for educational and scientific purposes, including the following.

1. Conservation of all native plants.
2. Continuing education of all members in the plant sciences.
3. Education of the public regarding environmental protection of plant life.
4. Encouragement of research and publications on plants native to Minnesota.
5. Study of legislation on Minnesota flora, vegetation, ecosytems.
6. Preservation of native plants, plant communities, and scientific and natural areas.
7. Cooperation in programs concerned with the ecology of natural resources and scenic features.
8. Fellowship with all persons interested in native plants through meetings, lectures, workshops, and field trips.

MNNPS Board of Directors

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Book review

'Wildflowers of the Boundary Waters'

Book by Betty Vos Hemstad, published by the Minnesota Historical Society Press, St. Paul, 2009; 272 pages, 7- by 10-inch format, softcover, $22.95.

Review by Ron Huber

Here is another welcome and very useful regional guide, arranged by season and then by color. The author is a summer resident of the Gunflint Trail and a longtime nature photographer.

She offers 620 color photographs of some 120 regional flowers, showing each in its general habitat and then in close-up throughout its lifecycle, from bud to flower to seed pod. She has chosen to show some of the common species that might be encountered while hiking through the woods, so a few non-native taxa (usually, but not always, noted as such) are also included.

Each species is accompanied by a paragraph or two describing such things as fragrance, uniqueness of habitat, uses by Native Americans, translation of Latin names, superstitions regarding the plant, and assorted other interesting factoids.

Some "fussier" guides are careful not to include flower photos that have distractions such as beetles or butterflies, but not so this book. It is delightful to see the occasional nectar-seeking insects on these flowers, imparting therein a more natural, rather than sterile, image.

The book was printed in China. The price is reasonably low, given the number and quality of the photographs.

Sioux Community is making a floral atlas

by Victoria Ranua, environmental assessment specialist, Shakopee Mdewakanton Sioux Community. This is a summary of her talk at the May 7, 2009, MNNPS meeting.

The Shakopee Mdewakanton Sioux Community (SMSC) is located at an agriculture/urban interface in Scott County. In 2007, the SMSC began a floral atlas of its 3,000 acres of land to complement its faunal atlas.

An atlas project documents particular species occurring at a specific period in time. For plants, they are strictly presence or absence, and do not record species abundance or health. The data can be used to compare with historical records and as a baseline for future atlas projects at the same location.

The SMSC Land and Natural Resource staff used the quarter-quarter section (40 acres) of the Public Land Survey as a sampling unit. There are approximately 90 sampling units. Staff members record all plants identifiable to the species level within each 40-acre unit. Some units, like farm fields, have few species and do not take long to survey. Other units with woodland, grassland, and wetland take longer to survey. Each unit is sampled twice, at different times during the growing season. Survey work will be complete in 2009.

So far, the survey has resulted in 60 potential new Scott County records and two new Minnesota records. The two new state records are the buttercup pennywort (*Hydrocotyle ranunculoides)* and tall wheatgrass *(Thinopyrum ponticum)*. The nearest state with the buttercup pennywort is Illinois, which lists it as endangered. It is not native to Minnesota. It is found in three wetlands on SMSC lands, and potentially others on non-SMSC lands. Its origin here is unknown. Tall wheatgrass is an Eurasian pasture grass that has spread across the Great Plains. It presumably came here in a seed mix used on a construction project.

In the absence of a floristic quality index for all of Minnesota's plants, the atlas data can serve as a proxy for habitat quality. A farm field might have 15 species, but 90 percent are non-native. One grassland might have 55 species, but 60 percent are non-native, while another grassland might have 40 species, but only 15 percent are non-native. This can help land use planners or natural resource managers determine which areas are priorities.

The SMSC complements its atlas work with the Minnesota Land Cover Classification System, pre-European settlement vegetation data, and wetland and forest inventories. Once the floral atlas is complete, the SMSC will likely create an electronic publication of all species encountered.

Symposium was successful

The Society's 2009 symposium on the Aspen Parklands earned a net profit of $1,241, treasurers Ron and Cathy Huber reported. About 135 people attended.

Income included admissions, vendor fees, and the silent auction, in that order. Expenses included the catered lunch, speakers' honoraria (meals, lodging and mileage — some came from Canada), and the printing/mailing of the brochures, in that order. The Bell Museum of Natural History graciously did not charge for the use of its spaces.

A natural history of the Beltrami Island Area

by Scott C. Zager, plant ecologist, Wildlands Ecological Services. This is a summary of his talk at the March 5, 2009 MNNPS, meeting.

The greater Beltrami Island Area in northwest Minnesota includes LUP lands that were the subject of an ecological assessment documented in part by a natural history report. These parcels are federal lands administered by the U.S. Fish and Wildlife Service. They were purchased by the federal government from a few remaining settlers, scattered throughout the area, who were isolated and distressed by the extreme financial crisis of the 1930s.

The acronym ALUP comes from A Land Utilization Project, which authorized the federal government to purchase submarginal lands and relocate their owners to more accessible and productive lands. LUP lands are leased to the Minnesota Department of Natural Resources and managed by the Red Lake Wildlife Management Area, whose headquarters at Norris Camp was built in the 1930s to aid the resettlement program. Norris Camp is a little north of center for the Beltrami Island Area and is located 270 miles north-northwest of St. Paul. The camp is 100 miles east-northeast of Grand Forks, N.D., and about 28 miles due south of the Canadian border.

The greater Beltrami Island Area (BIA) is a geopolitical boundary artificially created for analytical purposes for the report. It is 858,811 acres (1,342 square miles) in area. It comprises mostly public land that largely encompasses the geomorphic land formations known as the Red Lake Peatlands and Beltrami Island, although no defined boundary exists.

Beltrami Island is named after the Italian explorer Giacomo Constantino Beltrami, who searched for the source of the Mississippi River in 1823. In 1897, Warren Upham described Beltrami Island in his massive tome on Glacial Lake Agassiz:

"These [elevation] data show that Lake Agassiz in its highest stage had a large island northwest of Red Lake, comprising the headwaters of numerous streams flowing outward from it to the Lake of the Woods, Rainy River, Red Lake, the Red Lake River, and the Red River of the North. This island had probably a diameter of 40 miles or more, with an area exceeding 1,000 square miles. ... [Beltrami Island] had before been supposed to be comparatively low and perhaps wholly beneath the highest level of Lake Agassiz. … "

Beltrami Island is a knob of hard rock that arises above the surrounding peneplain — a level plain worn down from ancient mountains by countless years of erosion. The peneplain is underlain by Precambrian bedrock comprised of igneous, metamorphic and sedimentary rock of volcanic origin. The prominence of Beltrami Island is attributed to the bedrock's superior resistance to erosion.

During the ice age, the bedrock was repeatedly covered by thousands of feet of glacial ice, which deposited up to a hundred feet or more of unsorted sediments of glacial till. The enormous weight of the glaciers compressed the Earth's crust hundreds of feet, and it is still rebounding to this day. Glacial meltwater created Glacial Lake Agassiz, a vast meltwater-lake surrounding the margin of the Wisconsin Glacier, whose surface water inundated the depressed peak of Beltrami Island. Waters of Glacial Lake Agassiz subsided when ice dams broke and flooded enormous volumes of freshwater into the Arctic and Atlantic oceans.

As Beltrami Island emerged above the surface, waves sorted the glacial till, depositing sand and gravel in a series of beach ridges or strandlines, while silts and clays were deposited within basins of inter-beach swales. Today, these beach ridges are covered by a mixed forest of coniferous and deciduous trees, and the swales support a portion of the largest peatland complex in the contiguous United States.

The Beltrami Island Area is characterized by broad areas of conifer forests, mixed hardwood-conifer upland forests, and swamps with extensive peatlands and lakes. BIA is part of the Agassiz Lowlands Ecological Subsection, which consists of a flat, poorly drained, glacial lake plain with beach ridges and peatlands. The peatlands are a mixture of acidic fens, bogs, black spruce forests; and circumneutral-to-alkaline (mineral-rich) fens and swamps dominated by tamarack, white cedar and sometimes, black spruce.

At the time of the original public land survey, the upland beach ridges were dominated by jack pine with lesser amounts red pine, paper birch and very rarely white pine. Aspen probably occupied lower slopes bordering swamps and other moist areas, which were scattered about in small basins. Because fire was a commonly recorded occurrence, and because jack pine requires periodic fire for regeneration, pine trees formed open-canopied woodlands or pine savannas with an open understory (i.e., brush thickets were scarce). The pine openings were small meadows scattered throughout the barrens.

By the late 1800s and early

1900s, logging and farming caused a precipitous drop in pine forests. Several miles of drainage ditches were dug in the peatland area between 1900 and 1918 in preparation for agriculture. However, despite the failure of this homestead project, these ditches remain today.

Historic climate patterns reveal important considerations for the management of peatlands in the Beltrami Island Area. Peat did not develop in northwestern Minnesota until about 5,000 years after Glacial Lake Agassiz receded from Minnesota.

Deglaciation was immediately followed by a gradual change from a cold-dry climate to a warm-dry climate maximum during the Late-Middle Holocene period (about 7,000 to 5,000 years ago). This warming period is known as the Hypsithermal. During this time, the moisture balance between precipitation and the moisture loss due to evapotranspiration was negative, causing water tables and lake levels to drop across the Upper Midwest. This dry climate hindered the development of the Red Lake Peatlands until about 3,500 years ago.

It is predicted that in the next 100 years the climate will increase in temperature in a magnitude equal to or possibly greater than historical levels. The peatlands within northwest Minnesota are on the edge of a favorable moisture balance for peat development, where evapotranspiration losses just equal precipitation.

This is evident by the prevalence of fire-scarred peat, which is common along the edge of the prairie-forest boundary. Peatlands at this boundary are extremely vulnerable to atmospheric changes that would tip the balance to a warmer-dryer climate. Historically, this has been shown to lower local water tables and thereby increase the propensity of peat fires.

The margins of bogs are sensitive to the adjustment in height of the water table. These changes are best evident in areas altered by drainage ditches. Blocking the drainage ditches within BIA will impede waters from leaving the peatland and promote high water tables, thereby lowering the likelihood of peat fires.

Roseau 'Wildlife Drive' is open on weekends

The 29-mile "Wildlife Drive" that provides vehicle access to the Roseau River Wildlife Management Area (WMA) opened July 20-26 and will be open on weekends through Aug. 23.

The drive traverses wetland, woodland, brushland, and farmland habitats, allowing visitors ample opportunity for wildlife viewing. Motorists are urged to use caution because of narrow roads, soft shoulders, deep ditches, and two-way traffic. The speed limit on all WMA roads is 20 mph.

The Minnesota Department of Natural Resources may close the drive if road conditions deteriorate due to poor weather. Only motor vehicles licensed for use on public highways are legal to operate on the WMA wildlife drive. The recommended entry point is the main dike road, one and three-quarter miles south of the WMA headquarters on Roseau County Road 3.

The Roseau River WMA is located 20 miles northwest of Roseau. For more information, contact or stop by the Roseau River WMA office: phone 218-463-1130; 27952 400th St., Roseau, MN 56751.

Birds, butterflies need native plants

Summarized by Thor Kommedahl

Managed home landscapes in which non-native ornamental plants are favored over native plants dominate home properties in the United States. The question arises as to how this affects bird and butterfly populations on home grounds. This question was investigated by Karin Burghardt and associates at the University of Delaware.

They reported that properties with native plants supported many more caterpillars and caterpillar species and greater abundance of birds with greater diversity and more species, and more breeding pairs, than properties landscaped with more conventional plants and shrubs. Moreover, when bird species that were of special conservation concern were considered, they were eight times more abundant and more diverse on the native-plant properties.

Note: This summary is based on an abstract in Conservation Biology 2009 *of research by Karin T. Burghardt, Douglas W. Tallamy, and W. Gregory Shriver, Department of Entomologyand Wildlife Ecology, University of Delaware, Newark, Del. An extensive discussion of their research is found in Tallamy's book,* Bringing Nature Home.

Tallamy's nature book is updated, expanded

Douglas Tallamy's book, *Bringing Nature Home*, is now available in an expanded, paperback version. The publisher is Timber Press, www.timberpress.com

Plant sale results

Cathy Huber reports that in spite of bad weather, the Society received $416 at the June plant sale. Thanks to all those who brought plants and to those who helped arrange the plants.

Between the Mississippi and the Missouri, 1838-1839

A new look at the botany of Charles Geyer

by Charles Umbanhowar, Jr. This is a summary of his talk at the April 2 meeting.

"He will triumph who understands how to conciliate and combine with the greatest skill the benefits of the past with the demands of the future." – J.N. Nicollet

The 1836-1839 Nicollet expeditions in Minnesota and the Dakotas represent the earliest detailed description of the landscape, plants, and people of the "Northwest Territories" located between the Mississippi and Missouri rivers. The field notes and observations of Nicollet were the basis for his 1843 map and report on the region, and for the time they were unrivalled in their detail and accuracy. Often overlooked are the contributions of Charles A. Geyer, who accompanied Nicollet in 1838-1839 as the expedition botanist.

Over the past two years, our team of three faculty and 12 students at St. Olaf College has been working to illustrate the expeditions of Nicollet. We have been supported in these efforts by a generous grant from NCUR/Lancy. We are working to better understand changes in the landscape since the time of Nicollet, combining modern landscape photography with lake water data, sediment cores from five lakes, and images of the original journal. The current product of our work can be found at www.stolaf.edu/academics/nicollet/index.html

As part of this project, we have been "rediscovering" the botanical work of Charles A. Geyer. His work has often been overlooked, perhaps because his journal notes are interwoven so seamlessly in the seminal work about the Nicollet expeditions of 1838-1839 by Martha and Edmund Bray. Mike Heinz did highlight Geyer's work in the Spring 1989 *Minnesota Plant Press*.

Geyer's botanical notebook of 1838 contains a wealth of information on the vegetation of the region as well as the identity and distribution of many individual plants. For example, for Tuesday, Oct. 2, 1838, he records the banks of Spirit Lake, Iowa, as being "well timbered but only interrupted" and then proceeds to fill a page with a list of the plants found on the shores of the lake. Only one-third of this journal entry makes it into the Brays' book, but it and other such listings could form the basis for a more detailed look at the 1830s flora of region. Sadly, if it existed, any 1839 botanical journal that Geyer kept is missing.

Geyer collected and pressed many botanical specimens. Most of these were collected in 1839, because hundreds of the specimens he collected in 1838 were sadly lost in transit from Fort Snelling to St. Louis. John Torrey catalogued the Geyer collection in the 1843 Report to illustrate Nicollet's map and lists 430 plant specimens. We have now located over 300 of these specimens. The majority we have found were either at the National Herbarium or the Missouri Botanical Garden Herbarium, but others were found at the Philadelphia Academy of Sciences, New York Botanical Garden, Harvard Herbarium, and even one at the University of Minnesota. The herbaria have all graciously either arranged to image these specimens or have allowed us to image them, and they will be posted eventually at the St. Olaf Nicollet website. These specimens provide an invaluable way to check Geyer's identifications.

Geyer summarized his work in a never published "Report of an agricultural botanical survey as an addition to a general report of a geographical survey…" This report is housed at the Smithsonian Archives. The report summarizes the 1838-1839 expeditions and provides long lists of plants, both common and rare, associated with different geographic regions and soils and should provide a real answer to the question of what plants should/could be present in different types of remnants and restorations. Work to transcribe and eventually publish or post this report on the Internet is on-going.

John Almendinger, DNR forest ecologist, talks to participants on a June 27 field trip to a cedar swamp in the Hill City area. Photo by Scott Milburn.

Plant Lore

by Thor Kommedahl

What is fringed gentian?

It is *Gentianopsis crinita*, formerly known as *Gentiana crinita*, in the gentian family, native to moist prairies in Minnesota. The lesser fringed gentian is *G. procera.*

How did it get its names?

Gentianopsis means "like a gentian," and gentian was named after Gentius, King of Illyria (second century B.C.) who, according to Pliny, was supposed to have discovered medicinal uses for the yellow gentian (*G. lutea*). *Crinita* means "with long hairs," referring to the long fringe on petals. *Procera* means tall. which is contradictory because *G. procera* is the shorter of the two species.

Where does it grow?

It grows in moist meadows in the state from southeast to northwest, but less so in northeast and southwest Minnesota. It often heralds the end of the wildflower season. It is either threatened or endangered in many states.

What does it look like?

It is a biennial and flowers in the second season; sometimes it behaves as an annual. The plant forms a small, basal rosette the first year. Plants are 12-32 inches tall. Flowers open and close daily, and are open when it's sunny and closed when it's cloudy. It has four petals, four sepals, and the blue petals flare out with fringed lobes from a corolla tube. The fruit is a capsule containing many tiny seeds that are wind-blown. It flowers in late summer. The opposite leaves are egg- to willow leaf-shaped.

Is it edible, poisonous, or medicinal?

None of the above. Some gentians have medicinal properties (tonic) but not this species.

Is there folklore for fringed gentian?

Yes, poems have been written about the fringed gentian by William Cullen Bryant, Emily Dickinson, Edgar Allan Poe, Helen Hunt Jackson, and Sarah Whitman.

Is it a garden plant?

It needs sunny locations in moist habitats and to be seeded annually.

To the Fringed Gentian

by William Cullen Bryant (1794-1878)

Thou blossom bright with autumn dew,
And coloured with the heaven's own blue,
That openest when the quiet light
Succeeds the keen and frosty night.

Thou comest not when violets lean
O'er wandering brooks and springs unseen,
Or columbines, in purple dressed,
Nod o'er the ground-bird's hidden nest.

Thou waitest late and com'st alone,
When woods are bare and birds are flown,
And frosts and shortening days portend
The aged year is near his end.

Then doth thy sweet and quiet eye
Look through its fringes to the sky,
Blue — blue — as if that sky let fall
A flower from its cerulean wall.

I would that thus, when I shall see
The hour of death draw near to me,
Hope, blossoming within my heart,
May look to heaven as I depart.

Fringed gentian*, Gentianopsis crinita, *photo by Scott Milburn.

MNNPS welcomes new members

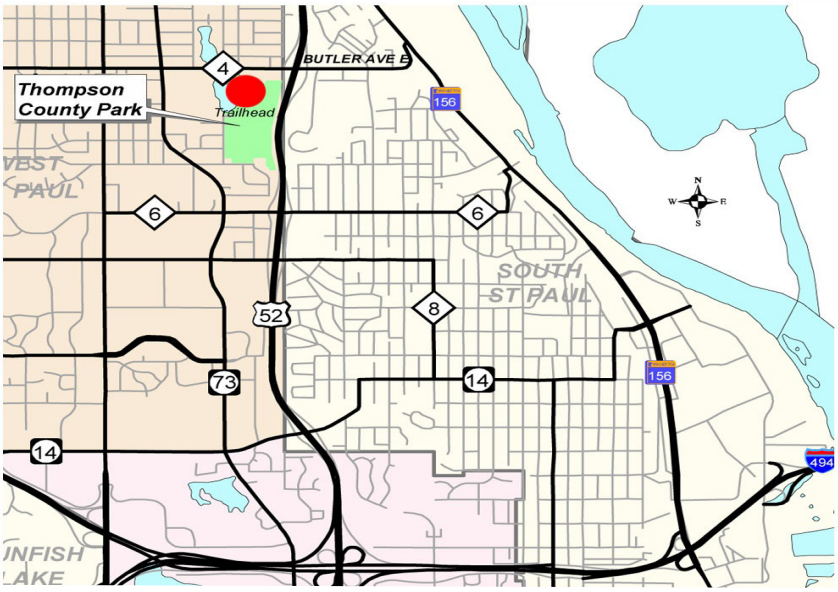
The Society gives a warm welcome to 17 new members (listed alphabetically) who joined during the second quarter of 2009.

Dale Blount, Minneapolis
Susan Damon, St. Paul
Jim Drake, Arden Hills
Katherine Grumstrup, Minneapolis
Cary Hamel, Winnipeg, Manitoba
Bobby Henderson, Ada
Ross Hier, Crookston
Kristina Hughes, Minneapolis
David Klett, Eden Prairie
Rachel Marty, Burnsville
Brian O'Brien, St. Peter
Donovan Pietruszewski, Karlstad
Laura Reeves, Gardenton, Manitoba
Russ Reisz, Karlstad
Cheryl Ryland, Plymouth
Dan and Vicki Svadarsky, Crookston
Susan Weaver and Paul Mote, St. Cloud

Minnesota Native Plant Society
P.O. Box 20401
Bloomington, MN 55420

Summer 2009

Thompson County Park:
360 Butler Ave East, West St. Paul, MN 55118



Directions:

Take MN Hwy. 52 to the Butler Ave. E. exit in West St. Paul.
Go west on Butler 0.2 mile to Stassen Lane.
Go south on Stassen Lane to Thompson County Park.