



Minnesota Plant Press

The Minnesota Native Plant Society Newsletter

www.mnnps.org

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Summer 2012

Monthly meetings

Thompson Park Center/Dakota Lodge

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

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. 4: Program to be announced. Check the website (www.mnnps.org) for details.

MNTaxa lists state vascular plant species

MNTaxa is the Minnesota DNR's list of all vascular plant species that have been documented in the state.

For each species, MNTaxa provides the full scientific name, whether the species was introduced to Minnesota, current endangered species status, and the counties and subcounties in which the species has been documented.

The DNR uses MNTaxa to organize data in various plant and vegetation databases and to generate regional or county checklists for survey work, projects, and reports. It is available as a statewide checklist or as a county record checklist at mndnr.gov/eco/mcbs/plant_lists.html

Prairie Conservation Plan is implemented

by Steve Chaplin, senior conservation scientist, The Nature Conservancy.

Native prairie once covered as much as 18 million acres of Minnesota. A hallmark of this prairie was its rich diversity of grasses and flowering forbs, often as many as 200 species per acre. Now, most of the native prairie is gone, with only about 235,000 acres surviving. Unfortunately, the loss and degradation of prairie and other grasslands continue, due to agricultural conversion driven by high crop prices, the expiration of Conservation Reserve Program (CRP) contracts, and new technologies for rock removal and water drainage.

The Minnesota Prairie Conservation Plan, developed by 10 conservation agencies and organizations, is a response to these losses. The initial draft was completed in 2011 and is now being implemented (See http://files.dnr.state.mn.us/eco/mcbs/mn_prairie_conservation_plan.pdf) The plan calls for three approaches: conservation of prairie core areas, development of corridors connecting the core areas, and local projects within the surrounding agricultural landscape.

Prairie Core Areas

Thirty-six areas with concentrations of native prairie have been identified in Minnesota. These are special places where some of our prairie heritage (the prairie biota and its physical habitat) still exist and where grass-based agriculture remains part of the economic base. These places range from 5,000 to 300,000 acres in size, totaling about 1.6 million acres. Together they capture 77 percent of the native prairie in the prairie region of the state. The goal for these core areas is to maintain or restore 40 percent to prairie or grassland and 20 percent to wetland. The remaining 40 percent would continue to be used for row cropping and other development.

Prairie Corridors

Even if all of the prairie core areas are protected, many prairie plants and animals will have difficulty moving between them to recolonize or claim new habitat. Such movement is essential to maintain genetic integrity and population viability, especially

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Treasurers' report

Treasurers Ron and Cathy Huber report that on June 30, the Minnesota Native Plant Society had total assets of \$29,170.03. For the first six months of this year, income totaled \$13,867.51; expenses totaled \$10,087.46. Net income was \$3,780.55.

Major income items were dues, \$2,348; symposium, \$5,934, and orchid books, \$3,593.55. Major expenses were symposium, \$5,451.78, and orchid books, \$3,231.99. Communication expenses (newsletter, membership directory, meeting postcards, member packets, and postage) totaled \$905.59.

Sale income down

Proceeds from the 2012 June Plant Sale totaled \$368.50, including \$331.50 from the sale and \$37 from the plant auction. This total is the lowest in the last seven years. The highest total was \$911 in 2006; the previous low was \$416 in 2009. The weather reduced attendance at the meeting and sale.

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, ecosystems.
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.

Welcome, new members

The Society gives a warm welcome to 15 new members who joined during the second quarter of 2012.

All are from Minnesota. Listed alphabetically, they are:

Steve Chaplin, Roseville;
Ross Collins, Excelsior;
Brian Fewell, Falcon Heights;
Laura Geris, Richfield;
Enrique Gentzsch, Minneapolis;
Gloria Gervais, Ely;
Karin Grimlund, Rushford;
Catherine Gutfleisch, Northfield;
Laurel Krause, Excelsior;
Bram and Lori Middeldorp, Northfield;
Bill and Anna Morrison, Ham Lake;
Jeanne Quillen, Pequot Lakes;
Karen Westphall, St. Paul.

Field trips

There is a waiting list for the August 25 field trip to Iron Horse Prairie. For future trips, go to the website: www.mnnps.org

MNNPS Board of Directors

President: Scott Milburn, board member, scott.milburn@mnnps.org

Vice President: Shirley Mah Kooyman, shirley.mah.kooyman@mnnps.org

Secretary, program coordinator: Andrés Morantes, andres.morantes@mnnps.org

Treasurers, membership data base: Ron and Cathy Huber, ron.huber@mnnps.org

Ken Arndt: board member, field trip chair, ken.arndt@mnnps.org

John Arthur: board member, john.arthur@mnnps.org

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Field Trips: fieldtrips.mnnps.org

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Prairie plan

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when confronted with the impacts of climate change. The Prairie Plan identifies a set of corridors, each six miles wide, along five geomorphological features that will connect the prairie core areas: the Agassiz Beach Ridges, Alexandria Moraine, Minnesota River, Altamont Moraine, and Buffalo Ridge. The goal for the corridors is to have at least 10 percent of each section of land (64 acres) in perennial cover as well as large (four to nine square mile) grassland/wetland complexes spaced every six miles along the corridor as “stepping stones.”

Agricultural Matrix

To maintain the full range of local genetic variability of prairie plants and animals, we will have to conserve not just the core areas but also smaller grasslands and wetlands in all parts of the state where prairie once occurred. This approach will provide small pockets of local ecotypes scattered around the state that can be the source of propagules for prairie and native plant restoration projects, the foundation of water quality and flood retention efforts, and the base of grassland-oriented recreation.

The Prairie Plan proposes that a minimum of 10 percent of each Land Type Association in the Prairie Region of the state be maintained in permanent perennial vegetation. Most of the conservation work in the Agricultural Matrix will take the form of stream buffers, grassland strips, and habitat restorations, but to achieve the maximal results, it will be important to strategically locate the projects.

Even with substantial new public conservation funding, the success Minnesota has in maintaining and restoring its prairie heritage will largely depend on private actions. In areas of the world where large areas of native grasslands have

President's column

by Scott Milburn

The Society's Board of Directors will meet later this summer to elect the officers for next year. This will be the first board meeting with our latest board additions, Steve Eggers and John Arthur. Steve is a former board member from the earlier days of the Society, and John has been an active member in recent years. They will complement the existing board and help provide an exciting year.

Looking forward to the upcoming year, we need to explore two particular topics. Besides discussing the ecology and biology of plants, I believe it is imperative that we also discuss policies and laws as they pertain to our natural resources. Specifically, I would like to provide an opportunity for us to explore the issue of School Trust Lands, as well as the push to allow cattle grazing at locations with intact prairie.

Members should question a number of the issues surrounding the School Trust Lands, including the proposed land swap of these lands within the BWCA in a House

survived, it is usually because local residents can earn a greater net return from grass-based agriculture, such as grazing livestock, than they can by tilling and annually planting the land. That will need to be the case in Minnesota as well if we want to have more than scattered public reserves and wildlife management areas.

The Prairie Plan endorses the use of public funding and lands to catalyze the growth and health of grass-based agriculture in the prairie core areas. Minnesota needs to protect its remaining prairies, but it also needs to buffer and reconnect them with restored grasslands and wetlands.

bill. We also need to look at the recent power play, where elected officials have sought managerial control over these lands. The premise behind the concept of extracting resources from a set area of land within each township was to provide financial support for schools. Times change, and so should this policy and the mindset of continuous resource extraction under the disguise of serving our children. These lands provide only \$26 per student annually.

How would politicians manage these lands? They may be under the false impression that the management of lands is a rudimentary task. For instance, consider the certification process for selling timber. The market place says timber needs to be certified. Will these politicians continue the existing practices that meet the requirements for certification? If they don't, the product sits. That may be their agenda, with the politicians moving in a direction to sell off this land to private interests.

The other issue is the push to allow cattle grazing on lands with intact prairie. This has been gaining momentum, perhaps due to a combination of group think and appeasement to a vocal industry. This is not the West, where cattle roam on large tracts of land. We don't know who is going to manage these efforts, what monitoring will take place, and what safeguards will be in place to protect the integrity of these sites. We hear about aquatic invasive species, but what about terrestrial invasives and grazing? Some may argue that invasives are of little concern, but how much practical experience do they have? Visit a place like Blue Mounds State Park where the wild carrot (*Daucus carota*) is problematic, or the remote site of Caribou WMA.

These issues should provide motivation for all of us to be engaged.

Plants are keys to quality of wetlands

by Michael Bourdaghs, Minnesota Pollution Control Agency. This is a summary of his talk at the Feb. 2, 2012, MNNPS meeting.

Minnesota has a policy to achieve “no net loss” in the quantity, quality, and biological diversity of the state’s wetlands, but how do we know if these goals are being met? A variety of wetland monitoring and assessment approaches are needed to answer this question. Tracking wetland quantity through project accounting and an ongoing DNR statewide status and trends aerial photo survey is well established. Our ability to track wetland quality, on the other hand, continues to improve as the science behind wetland quality monitoring and assessment evolves.

Wetland plant communities tend to respond in predictable patterns when exposed to human impacts such as changes in wetland hydrology, physical wetland alterations, or excess nutrient and sediment loading. Responses to these stressors include changes in the species composition and/or community structure. In severe cases, wholesale changes can occur where a native plant community is replaced by invasive species. These plant community responses integrate the effects of impacts over time. They can be measured and thus be used to indicate wetland quality.

The Minnesota Pollution Control Agency (MPCA) has an active research program to develop wetland quality monitoring and assessment techniques. Most recently, the MPCA has focused on an approach called the Floristic Quality Assessment (FQA). FQA relies on a measure called the Coefficient of Conservatism (C),

which is a numerical rating from zero to 10 that reflects how restricted a particular plant species is to intact natural habitats. Species that have narrow habitat requirements and/or little tolerance to human disturbance have high C-values, and vice versa. For example, the Small white lady’s slipper (*Cypripedium candidum*) is typically only found in intact wet prairies and has a C = 10 value. Box elder (*Acer negundo*), on the other hand, can be found in many disturbed habitats outside the floodplain forests where it naturally occurs and has a C = 1 value. Metrics derived from vegetation data and the C-values have been found to be robust and reliable wetland quality indicators.

In 2007, the MPCA completed a project to assign C-values to the Minnesota wetland flora. Since then, work has progressed to develop a simplified Rapid FQA sampling approach and data driven assessment criteria that can be used to turn FQA metrics scores into meaningful categories of wetland quality for all of the wetland types in Minnesota. This will allow natural resource professionals with a moderate level of wetland botanical expertise to make rapid and scientifically robust wetland quality assessments, which can then be applied to their specific management questions.

The MPCA is currently using FQA as the primary assessment approach in a statewide wetland quality survey. Wetlands are first sampled randomly statewide. Because the sample is representative, the results reflect the overall quality of Minnesota’s wetlands. This survey, in conjunction with increased

monitoring for wetland projects, will begin to provide an answer as to whether we are achieving “no net loss” of wetland quality and biological diversity in Minnesota.

Rainwater plan transforms mall parking lot

The results of the “extreme makeover” of the Maplewood Mall parking lot will be featured at its grand opening Saturday, Sept. 15, from 11 a.m. to 3 p.m. at the east main entrance of the mall. This rainwater management project includes 16 rainwater gardens and 200 trees.

The event will include a ribbon-cutting ceremony with the Farmsworth Aerospace Magnet School marching band and student parade; tours and displays; “show and tell” with landscaping artists and experts; and photo ops with their mascot, “Leap Frog.” Grant information and applications to make over home yards will be available, as will information on a Girl Scout service project for clean water.

The mall is located at 3001 White Bear Ave. N., Maplewood. For additional information, contact Louise Watson at 651-792-7956, or go to the Ramsey-Washington Metro Watershed District website at www.rwmwd.org

Ancient seeds grown

Russian scientists have successfully grown narrow-leafed campion plants from seeds buried by an arctic ground squirrel 31,800 years ago. The frozen *Silene stenophylla* seeds were found in an ancient burrow on the banks of the Lower Kolyma River in northeastern Siberia by a Russian research team. The scientists took cells from the placentas in the seeds and grew them in culture dishes into whole plants. The plants appear identical to the present-day narrow-leafed campions, but their petals are narrower and more splayed-out.

Book review

Native Orchids of Minnesota is Welby Smith's newest book

Book by Welby Smith, published by the University of Minnesota Press, 2012. Softcover, 285 pages; seven by 10-inch format; color photos, black-and-white drawings, range maps. \$34.95

Review by Ron and Cathy Huber

The sign-in sheet for the MNNPS May monthly meeting showed 126 attendees, but the actual headcount was over 140 — a new all-time record. The reason? Welby Smith gave a fascinating presentation to launch the sale of his new book, *Native Orchids of Minnesota*.

Although originally slated to be an updated edition of his first (1993) book on Minnesota orchids, this new revision is greatly expanded, treating 49 wild orchids (six additional from 1993), with emphasis on their identification, habitat, and natural history.

Exciting new discoveries are

presented on the seldom noted subterranean aspects of orchids' lives. This fascinating material is well explained in the book and was the main thrust of Welby's May program.

A one-page preface is followed by an extensive introduction. This includes basic orchid biology, the roles of mycorrhizal fungi, and habitat discussions. Two pages of "Frequently Asked Questions about Orchids" are followed by several pages of pictorial keys to orchid genera.

The following 237 pages of Genera and Species Accounts provide the real "meat-and-potatoes" of this book, enhanced by anatomical drawings, range maps, and beautiful color photos, showing details of the plants, their underground features and often their habitats.

The book concludes with a two-page phenology, seven pages of glossary, an extensive five-page bibliography, and the index.

One might expect such a lavishly illustrated book to be much higher priced, but virtually everyone can enjoy having a copy on their bookshelf. MNNPS members also received a substantial discount on the price.

Excerpt from *Native Orchids of Minnesota*

"[Showy lady's slippers] do best in partial shade or direct sunlight, not in deep shade. You will most often find these conditions in a mossy, forested swamp under a thin canopy of conifers, or sometimes in a not-so-mossy swamp under hardwoods or tall shrubs. Sometimes showys can be found in open wetlands such as seepage fens or sedge meadows. Into this last category I would put the odd roadside ditch where showys sometimes make a brief appearance. I say brief because roadside habitats tend to get scraped or graded on a regular basis."



Ditches are a favorite location for Minnesota's state flower, the showy lady's slipper, *Cypripedium reginae*. Scott Milburn took this photo on Highway 371 south of Cass Lake in Cass County in June 2012.

Stalking and finding rare native plants

by Malcolm and Rosemary MacFarlane, volunteers, Minnesota DNR County Biological Survey.

Our experience with rare native plants has been a 30-year journey with many side trips, chance encounters, frustrating attempts to acquire expertise, and a measure of dumb luck. It started with photography and ended in moonworts. There was never any grand plan. The photography was pure entertainment, at least to start. The accumulating images pushed us in directions we had not anticipated nor were we properly prepared to go. Neither of us can claim to be a botanist. But we were enticed by interests-turned-obsessions, each in its way more compelling than the last, until we found ourselves a part of a long and grand tradition of amateur botany in Minnesota.

As we acquired expertise, our interests slid slowly from the common to the rare. We were drawn through a series of obsessions with orchids, lichens, endemic species, relicts, disjuncts and species of exceptionally unique and rare habitats. We crossed paths with folks who had a wealth of unique expertise, which they shared most generously. These encounters presented us with lifelong friendships and opportunities to participate in new ways, in new discoveries.

So, by way of a very circuitous path, we found ourselves in June of last year in the middle of Koochiching County, on hands and knees, in the ubiquitous cloud of black flies, bleeding from the temples, nose to nose with a curious little moonwort. We were having the greatest time.

Part of the allure of moonworts was the flood of new information, new



***Botrychium simplex*. Photo by Malcolm MacFarlane.**

distributions, even new species. Only six percent of the moonwort records in the Natural Heritage Database predate 1990. Significant pieces of the puzzle of moonworts in North America were coming from here in Minnesota.

Each new piece of information prompted new questions. Many of these could be addressed at our level of expertise. Three of the most rare species of moonworts in Minnesota were first found in tailings basins on the Cuyuna Iron Range — *Botrychium ascendens* and *B. spathulatum* in 1998, and *B. lineare* in 2005. Could any of these be found on mine dumps as well? Yes, we looked and found two of them, *B. ascendens* and *B. spathulatum*, in 2008. And what about the Mesabi



***Botrychium ascendens*, a rare moonwort. Photo by Malcolm MacFarlane.**

Range? Yes again, we found *B. ascendens* and *B. lineare* in 2007. So, is there a chance of finding them in other habitats outside the iron range? Apparently so. We found *B. ascendens* last year all the way up in Lake of the Woods County.

In southeastern Minnesota, there was one isolated collection of prairie moonwort, *B. campestre*, from a bedrock bluff prairie in 1993. Is it likely that could be the only place it occurs in that part of the state? We searched a number of prairies over a period of six years and found 12 populations in four counties.

There were no collections of moonworts from Koochiching or Roseau counties, and only three (two species) from Lake of the Woods County. Two of those collections, dating from 1894, were from an island in the middle of the lake. But habitats looked especially good, at least to us. We spent a long weekend in each of 2009 and 2010 on the hunch that we could find them there. We did. In 2011, we applied for a contract from the

County Biological Survey, and that allowed us to spend the entire month of June.

From 2009 through 2011, we made nearly 200 collections from these three counties, including nine species of moonworts and a rare grape fern. The rarest of these were *B. ascendens*, *B. lunaria*, *B. minganense*, and *B. simplex* var. *tenebrosus*, which was unusually robust and significantly west of its known range.

Minnesota is richer in moonwort species than anyone would have predicted just a few years ago. Discoveries of species here that were thought to be limited to the western states and provinces would beg the question: might there be others? We believe that we found one in 2008, *B. pedunculosum*, on a mine dump west of Hibbing. Confirmation awaits genetic testing, but so far prospects look good.



Euphrasia hudsoniana var. *ramosior*. Photo by Peter Dziuk.

Plant Lore

by Thor Kommedahl

What is eyebright?

Eyebright is *Euphrasia hudsoniana*, in the figwort family, but the taxonomy is confusing and it may be listed as other species, e.g., *E. arctica*. Of the hundreds of described species, *E. hudsoniana* is recognized by the Integrated Taxonomic Information System.

How did it get its names?

Eyebright (*E. officinalis*) was called “Eyebryghte” by William Turner in England (1548). *Euphrasia* means “good-cheer” in reference to its use in eye lotions. *Hudsoniana* refers to its being found along Hudson Bay — and sometimes called Hudson Bay eyebright. *Arctica* (perhaps a synonym) points to its circumpolar distribution.

What does the plant look like?

It is an annual herb and has small, opposite, toothed stem leaves and white to pale-blue flowers that look like eyes. Petals have an upper lip that may be two-lobed or notched and a lower lip that is three-lobed. There are four stamens. Stems are hairy. The plant is a semiparasite

with roots attached to grasses. (For this reason some have placed eyebright in the broomrape family.)

Where does it grow?

This native species grows along the north shore of Lake Superior in rock fissures and ledges, and it blooms from June to September.

Does it have medicinal uses?

Milton in *Paradise Lost* suggested it was mankind’s first medicine:

Michael from Adam’s eyes the
film removed,
Which the false fruit, that
promised clearer sight,
Had bred; then purged with
euphrasy and rue
The visual nerve, for he had
much to see.

Eyebright has been a folk remedy for eye ailments, coughs, and earaches. Because the blossoms look like eyes, they were thought in medieval times to benefit eye maladies. Cotton Mather in Boston, 1724, remarked, “A plain Eye-bright water constantly or frequently used will continue to the eye-sight a brightness to be wondered at.” It has been reported in recent times that members of this genus contain anti-inflammatory and antibacterial compounds.



Euphrasia officinalis (above), European eyebright, is rapidly invading the Arrowhead. Photographer Peter Dziuk says it is almost identical to *E. hudsoniana*, and the two species may hybridize.

Minnesota Native Plant Society
P.O. Box 20401
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Summer 2012

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



Directions:

Take Highway 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.