Minnesota Plant Press

The Minnesota Native Plant Society Newsletter

Volume 25 Number 3 **Spring 2006**

Monthly meetings

Minnesota Valley National Wildlife Refuge
Visitor Center, 3815 American Blvd. East
Bloomington, MN 55425-1600
952-854-5900

6:00 p.m. — Building east door opens
6:00 p.m. — Refreshments, information, Room A
7 – 9 p.m — Program, society business
9:00 p.m. — Building closes

Programs

The MN NPS meets the first Thursday in October, November, December, February, March, April, May, and June. Check the website for more program information.

May 4: "Sioux Nation Calcareous Fen," by Jeanette Leete, hydrogeology technical analysis supervisor, DNR. **Plant of the Month**: Carex sterilis (a sedge) by Scott Milburn, Society vice president.

June 1 "Invasive Cattail Control," by Cindy Kottschade, University of Minnesota graduate student. **Native Plant Sale** immediately following the program.

Symposium is April 22

At press time, there were still a few openings at this year's MN NPS symposium — The Land That Glaciers Forgot: The Ecology of the Driftless Area. It will be from 9 a.m. to 4 p.m. Saturday, April 22, at the St. Olaf College Science Center, Room280, in Northfield. Details are on the website, www.mnnps.org

MN NPS website

www.mnnps.org
e-mail: contact@mnnps.org

MN NPS Listserve

Send a message that includes the word "subscribe" or "unsubscribe" and your name in the body of the message to: mn-natpl-request@stolaf.edu

Finding the invisible orchid

by Erika Rowe, Plant Ecologist/Botanist, Minnesota County Biological Survey, Division of Ecological Services,Minnesota Department of Natural Resources

There are a handful of native plant species in Minnesota that have mythic qualities: elusive, rare, revered, endangered, or so specific in their habitat requirements they are not likely to be seen. Bog adder's-mouth *(Malaxis paludosa)* encompasses all of these qualities and therefore has earned the reputation of being one of the rarest orchids in North America. Bog adder's-mouth is one of the most challenging orchid species to find, partly because of its rarity, but also because it is easily overlooked. The orchid's small stature and greenish color make it difficult to distinguish from the mossy hummocks where it typically grows. Prior to 2005, only six known records existed from four counties in Minnesota, the only state within the contiguous United States to have any documented locations. The first finding was in Otter Tail County in 1904; however, that population has not been relocated. Other populations were subsequently found in Hubbard, Clearwater, and Beltrami counties. It has also been found in scattered locations in Canada and Alaska. It is less rare in northern Europe.

In 2005, *Malaxis paludosa* was on my rare plant list as a species to look out for while surveying Becker County for the DNR's Minnesota County Biological Survey. The idea of finding it, however, seemed so remote I was reluctant to search for it. So when my colleague, Tim Whitfeld, who was surveying nearby Clearwater County, told me that he was going to spend a few days looking for *Malaxis paludosa*, my initial reaction was one of amazement for attempting such an ambitious goal. In fact, several other experienced botanists uttered words such as "wild goose chase" and a sarcastic "good luck!" However, this wasn't going to dissuade him from organizing a trip with another DNR botanist, Welby Smith, to a documented location of *Malaxis paludosa* during peak flowering in early August. Often, seeing a flowering specimen in its habitat is the best way to begin searching for rare

Continued on page 4

In this issue

Society's first T-shirt features design by Vera Ming Wong

by Jason Husveth

The Minnesota Native Plant Society is pleased to announce the upcoming arrival of its own limited edition T-shirt.

Since October 2005, the Society has been collaborating with Vera Ming Wong, renowned local botanical artist (and plant society honorary member), to design the Society's first T-shirt. Vera produced a stunning woodcut print design, which will be printed with forest green ink on natural organic shirts.

The design showcases Minnesota's state flower — the Showy Lady's Slipper Orchid (*Cypripedium reginae*), along with the Society's name and website address.

The shirts are now in print and will be available for sale at the April 22 symposium and at our monthly meetings and field trips. Sizes Small to XXXL will be available. Be sure to purchase these uniquely beautiful shirts before they sell out!

Invasive species events

If you are sponsoring an invasive species event this year, send the information to Dianne Plunkett Latham at PlunkettDi@mn.rr.com and she will coordinate posting on the MN NPS website with our webmaster. If you would like to volunteer in one of the many noxious weed control programs throughout the state, go to www.mnnps.org/invasive/index.htm for a listing of events, and select one that has a convenient time and location for you.

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 and ecosystems.
6. Preservation of special 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.

MN NPS Board of Directors

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Mary Brown resigns from board; three members re-elected

Mary Brown has resigned from the Minnesota Native Plant Society Board of Directors. She cited time constraints, but said she will continue to remain active in the Society.

The three board members whose terms expire in June have been re-elected. They are Scott Milburn, Shirley Mah Kooyman, and Daniel Jones.

Memorial honors Dr. Valentine O'Malley

by Linda Huhn

Long-time Minnesota Native Plant Society member Dr. Valentine (Val) O'Malley, who passed away June 2, 2005, at the age of 86, made many contributions to the Society as well as to his community and country.

In memory of his friend, Arden Anestad has made a significant monetary gift to the Society. "We will miss him at meetings," he remarked to me. And that's an understatement.

In addition to his membership dating back to 1992, Val served on the Society's Board of Directors from 1994-97 and was chair of the Conservation Committee for several years. More recently, I remember him as a most enthusiastic front-row sitter — along with his good friend and former board member Arden — at our monthly programs. "Linda, this was really a good program, thank you so much," and "This is really great!" were phrases he often used. Even though his hearing was impaired and his health obviously failing last spring, his enthusiasm for learning and for our Society never waned.

According to Arden, "He was very interested in the natural world," and was also a member of Audubon Society, Como Zoo, Friends of the St. Paul Public Library, the Geological Society of Minnesota, and the Horticultural Society. "We always did a lot of birding together, and he helped me in banding birds and on field trips with my classes," Arden added.

In his professional life, according to Arden and the June 3, 2005, *St. Paul Pioneer Press* obituary, Val practiced internal medicine and cardiology in St. Paul for 30 years, was chief of staff at St. Joseph's Hospital from 1967-69, and was Minnesota Deputy Commissioner of Health from 1983-87. At the time of his death, he was a medical consultant for the Minnesota Department of Health. During the Korean Conflict, he was a captain in the Army and in 1983 retired from the National Guard as a brigadier general. Val's wife Lorraine preceded him in death. In his immediate family, he is survived by three children and four grandchildren.

Sign up now for field trips in May, June, July

by Ken Arndt

Spring wildflowers will soon be blooming, so now is the time to sign up for the next MN NPS field trips. Sign-up sheets will be at the monthly meetings, along with detailed information about each field trip. Or, you can sign up anytime by going to our website and following the link to "Field Trips." New information is being posted regularly on upcoming trips for the spring and summer.

Wolsfeld Woods SNA

Sunday, May 7**,** from 1 to 3 p.m., join Shirley Mah Kooyman, MN NPS board member and adult education manager at the Minnesota Landscape Arboretum, for an afternoon of woodland wildflower identification at Wolsfeld Woods Scientific Natural Area in Long Lake. This fine example of "Big Woods" is home to many spring ephemerals like bloodroot, hepatica, rue anemone and bellwort.

Pioneer Park

Saturday, June 10, from 8 a.m. to 2 p.m., the Society will be leading a working field trip at Pioneer Park in Blaine. Come work with Botanist Jason Husveth, our president, in the continued effort to restore the fen. Participants will assist with invasive plant removal and seed collection. After lunch, there will be an interpretive walk led by Jason, which will give everyone the chance to see the progress of the fen restoration. Many rare plants will be encountered on this field trip, so sign up now and help make a difference on the ground! Group leaders will be on-site throughout the day. Come work for as many hours as you can spare, and enjoy a day helping to restore the habitat of several threatened and endangered plant species of the Anoka Sand Plain.

Patterned peatlands of northern Minnesota (Date changed.)

Set aside the weekend of July 21 to 23 for a field trip to the northern reaches of Minnesota near Ely, within the Superior National Forest. Jason Husveth will lead this two-day field trip. On Saturday the 22nd, the participants will be led on an all-day hike across a saturated cushion of peat moss, through patterned peatlands, rich and poor fens, black spruce and tamarack swamps, to see and experience the northern plant communities of this region. Many different native plants will be encountered along the way, including orchids, carnivorous plants, sedges, rushes, and grasses. The second day will entail a less rigorous but equally spectacular hike at another local setting (or serve as a back-up in case of inclement weather on Saturday). Camping and lodging are plentiful in this area, but remember to make reservations in advance, since the summer can be busy. Check our website in the coming weeks for detailed information regarding this field trip. A $10/person or $20/family fee is required to register for this event.

Finding the orchid

Continued from page 1

plants. Pictures and herbarium specimens can only go so far in conveying how tiny and difficult this orchid is to see.

I decided to take part in the foray to relocate the existing population of orchids, although I remained skeptical that we would find them. Many people have tried returning to known populations of *Malaxis paludosa* and have been unsuccessful in relocating them, perhaps because the orchids were not in bloom at the time, but more likely because the plants have an uncanny ability to disappear into the vegetation even when one is standing in a patch of them.

Our destination was a rich black spruce swamp in Clearwater County. We set out in a line and walked slowly, scouring the ground with our eyes. Close to an hour went by and still no orchids. Something then caught my eye, despite thinking that it was probably just another fruiting stem of naked mitrewort *(Mitella nuda),* which is common in that habitat. As I got closer, I immediately knew that it was *Malaxis paludosa*, despite having never seen it in the field. I was then determined to find a new population in Becker County.

The next day, I set out hiking for a small black spruce swamp mixed with tamarack in Becker County that seemed to have all the right characteristics for potential habitat. The confidence that I had felt the day before had worn off by the time I had arrived at my destination and I had begun to feel that this long, arduous hike would be for naught. Shortly into my search I spotted green adder's-mouth*(Malaxis unifolia)*, which is often known to coexist with *Malaxis paludosa*. I stooped down to confirm this, and to my disbelieving eyes there were also four *Malaxis paludosa* in full bloom! I was in such shock that I just stood there frozen, saying to myself "this can't be — what are the chances!" I came to my senses and proceeded to count another 10 plants within roughly two acres. When I got back to the field house that evening, my colleague Mike Lee (also working in Becker County), who was also inspired by Tim's enthusiasm for finding *Malaxis paludosa*, told me of his own discovery of yet another population. By the end of summer, five new locations were found in Becker County, bringing the total up to 11 locations in Minnesota.

Photo by Erika Rowe, Copyright 2005, State of Minnesota, Department of Natural Resources, Reprinted with Permission.

All known occurrences of *Malaxis paludosa* are in conifer swamps dominated by black spruce with occasional white cedar or tamarack. The plants are usually growing in semi-shaded sites perched on hummocks of *Sphagnum,* feather mosses, or rarely *Mnium* moss, appearing as if not rooted at all. The basal parts consist of a pseudobulb, which is a swelling of the stem, covered by the bases of two to five alternate leaves. Stems arise from the pseudobulb and are typically three to six inches long (including inflorescence). Flowering begins around mid-July and lasts through the end of August, producing 10 to 29 very small, greenish yellow flowers that have a faint blue-green striped lip. These flowers twist themselves 360 degrees so that the lip is uppermost of the perianth parts. Most orchids twist 180 degrees in order to have the lip lowermost in the flower. Another interesting adaptation of this orchid is its ability to develop tiny vegetative propagules called foliar embryos at the margins of its leaves that are capable of growing into new adult plants once the leaves drop. How often or effective this process is in producing a new plant is not known. The only insect observed carrying pollen from this plant is a species of fungus gnat, *Phronia digitata*.

When I returned to the office, I notified Welby about the new populations that Mike and I had found. In near disbelief, he somewhat jokingly said, "Wow, finding *Malaxis paludosa* will be the top find of your career!" Well, I guess it's all down hill from here.

Sonja Larsen nature prints are on exhibit

by Sue Filbin, member of the Minnesota Native Plant Society and the Nature Printing Society

Nature printer Sonja Larsen is presenting an exhibit of spring ephemerals and buds native to Minnesota at the Eloise Butler Wildflower Garden during April. The show is in the Martha Crone Visitors' Shelter. The garden opens at 10 a.m. Monday through Saturday and at noon on Sunday and closes one hour before sunset. Admission is free.

Sonja Larsen lives near Nisswa. For many years, she led workshops at the annual meeting of the Nature Printing Society, and, for the 15th year, will guide her own workshop in June at Driftwood Resort. She makes her prints directly from the plants, to enable viewers to identify and appreciate the beauty inherent in the plant life we often take for granted.

A match made in humus? The association between bolete mushrooms and trees

by Bryn T. M. Dentinger, University of Minnesota graduate student. This is an abstract of his talk at the March 2, 2006, meeting.

Fungi are one of the most diverse lineages of eukaryotic organisms on the planet. With over 1.5 million estimated species, only a fraction are yet known to science. These organisms, whose ecological roles are mimicked by distantly related cousins, the water molds and slime molds, are instrumental in all living environments as decayers, pathogens, and mutualistic symbionts.

One way in which the true fungi (not including water molds and slime molds) are essential is through an intimate association with plants' roots, known as mycorrhizae. In these mutually beneficial associations (mutualisms), the plant provides the fungus with sugars it creates through photosynthesis in return for water, minerals, and protection from pathogens. The interdependence on this mutualism is so strong that both the fungus and plant are unable to persist in natural environments without each other.

This association is also very old — about 460 million years. It is now widely believed that a mycorrhizal association facilitated the initial colonization of land by the earliest aquatic non-vascular plants. Since this arrival on land, the mycorrhizal association has dominated the life of plants, and at present, more than 90 percent of all plants are involved in a mutual symbiosis with fungi.

There are several types of mycorrhizal associations that are characterized by the morphology and anatomy of the contact between the fungus and plant roots, as well as the plant and fungus species involved. One type, in which the fungus envelops the developing lateral roots but does not penetrate the plant's cells, is called ectomycorrhizae. It is this type of association that is found in many of the trees that dominate the temperate forests of the world, most prominently in the *Pinaceae, Fagaceae, Betulaceae* and *Salicaceae*. In Minnesota, eight species of conifers and 24 species of angiosperms are known to form obligate ectomycorrhizal associations with fungi, including all oaks (*Quercus* spp.), pines (*Pinus* spp.), spruce (*Picea* spp.) and Balsam fir (*Abies balsamea*). The state tree of Minnesota (*Pinus resinosa*) would not exist without these beneficial fungi on its roots.

The fungi involved in these mutualistic associations are far more diverse than the plants. It has been estimated that more than 5,000 species of fungi forming ectomycorrhizal associations have been described! One prominent group of ectomycorrhizal fungi are called the "boletes," based on the morphology of the reproductive structures (mushrooms) that they produce.

A bolete is a typical-looking fleshy, stalked mushroom, but with densely packed vertical tubes underneath the cap, rather than the gill-like structures of the stereotypical mushroom. These tubes give the underside of the cap an appearance similar to a sponge. It is inside of these cylindrical tubes where the numerous spores are produced, which, at maturity, are forcibly discharged into the air for dispersal by wind. When a spore lands in a suitable environment, it will germinate to produce filaments of cells known as hyphae. These hyphae are the form in which the fungus lives most of its life. An aggregate of hyphae is known as a mycelium, which is the "body" of the fungus that resides in the soil and humus layers and, in ectomycorrhizal fungi, interacts with the roots of plants. Only when two suitable mycelial mates join with each other (fungal sex!) can a mushroom be produced, thus completing the life cycle of a mushroom-producing fungus.

In Minnesota, 20 of 50 known genera of boletes have been recorded. In contrast, we only have documentation for 9.4 percent of all described species of boletes. This low species diversity is partly on account of the limited biogeographic distribution of many boletes, but also largely a factor of very poor sampling. Clearly, more mushroom hunters are needed to better document Minnesota boletes. Some of the common Minnesota members include the often slimy-capped *Suillus*; the pink-spored, bitter-tasting *Tylopilus*; the kooky "Old Man of the Woods" (*Strobilomyces floccopus*); the blue-staining *Gyroporus cyanescens*; and the false truffle genus *Scleroderma*.

Minnesota also has the strange Midwestern endemic *Paragyrodon sphaerosporus* and one species that has been collected only once in the history of the world, *Suillus weaverae*, named in 1965 in honor of the avid mushroom hunter Peg Weaver.

One other notable group of boletes found in Minnesota are the gourmet edible porcini (genus *Boletus* section *Boletus*). There are at least three species known as porcini that are found throughout the state: the *Boletus nobilissimus* complex is found in oak forests in central and southern Minnesota; *Boletus edulis* var. *clavipes* is found with conifers, aspen, and birch in the boreal habitats of central and northern Minnesota; *Boletus subcaerulescens*, a rare species, has been documented from a single red pine (*Pinus resinosa*) plantation.

Floristic Quality Assessment for state wetlands being developed

by Scott Milburn

The Floristic Quality Assessment (FQA) was first introduced in the Chicago Region in an attempt to provide a standardized method for assessing the quality of natural areas. This methodology is additionally advantageous in that it can be used to assess restored areas, ecological quality between sites, and changes to floristic quality over time.

The FQA is based on native species conservatism or coefficient of conservatism (C-value). This C-value is a numerical gauge of species tolerance towards disturbance and habitat fidelity. The FQA provides two values, a mean coefficient of conservatism and a floristic quality index. The mean coefficient of conservatism is determined by calculating the average C-value for an area of interest. The floristic quality index incorporates the mean coefficient of conservatism in addition to species richness.

To determine the floristic quality index, all native species inhabiting the subject area or vegetative community are documented. Once the list is compiled, the C-values derived from the species list would be averaged and multiplied by the square root of the number of native species documented. The greater the mean C-value and Index value are, the higher the floristic integrity is.

The floristic quality assessment has already been implemented in Illinois, Indiana, Iowa, Michigan, Missouri, North Dakota/South Dakota, Ohio, and Wisconsin. The Minnesota Pollution Control Agency's Biological Monitoring Program (www.pca.state.mn.us/water/biomonitoring/index.html) is funding the project through a U.S. EPA wetland program development grant to develop a consistent and reliable method to monitor the quality of the state's wetlands. The C-values are currently being assigned by a panel of expert Minnesota botanists and should be completed this year. In addition to the development of C-values, updated species distribution maps will also be generated.

Meet members at 6 p.m. social hour

by Anne McGee,Social Committee chair

On MN NPS meeting nights, skip your take-out food or home stop, and come right to the Wildlife Refuge at 6 p.m. for a healthy snack and friendly conversation. Our social committee is working to create an environment which is welcoming to new members and encourages getting acquainted, professional sharing, and exchange of native gardening ideas. We also like whole foods and a non-package/garbage emphasis. Bringing your own mug for your beverage will be appreciated.

When you arrive for the social hour, we will greet you and give you a name tag. Help yourself to a filling snack. Beverage will be provided, or select one from the pop machine in the entry. Beginning in May, we will have hot coffee or tea for those who bring their own mugs. Then join a table hosted by an experienced member, or mix and mingle until you head into the program at 7 p.m.

If you would like to join the social committee, call Anne McGee at 651-994-1956.

Garden with native plants

A class, "Using Native Plants in the Garden," will be taught at the Minnesota Arboretum from 10 a.m. to 12:30 p.m. Saturday, April 29. The instructor will be Douglas Owens-Pike. For more information, e-mail education@arboretum.umn.edu or call 952-443-1422.

Pot your plants now for June 1 plant sale

by Ken Arndt

The annual MN NPS native plant sale will be June 1, following the meeting. Plants will be arranged outside of the main building, similar to previous years. Members are asked to bring native plants that they have propagated themselves from seed or division to the front of the building at 6 p.m. We need all plants to be potted individually and labeled with common and scientific names. Pricing will be done by the plant sale volunteers.

Now is the time to get out and divide your extra native plants as they start to emerge from the soil. The longer the plants can be potted up before the sale, the better the condition they will be in for the sale. We ask that only native plants be donated, not cultivars or other horticultural selections. In addition to members' donations of plant material, we will also be adding to this year's sale native plants from local nurseries that specialize in native plant material.

No out-of-state plants can be accepted unless they have been certified by the Department of Agriculture of the state in which they were grown. Minnesota has reciprocity with all other state departments of agriculture, so they will let in plants from other states if they were certified there.

A few volunteers are needed to help with setting up the sales area and assisting members with their plants. Once the sale begins, volunteers will be allowed to select plants first, followed by members who brought plants, and finally all other members and visitors.

Dave Crawford and Ken Arndt are co-chairs of the plant sale. To volunteer, contact Ken Arndt at karndt@pioneereng.com. or 651-251-0626.

Plant Lore

by Thor Kommedahl

What is wild ginger?

Wild ginger is *Asarum canadense*, a native plant of Minnesota in the birthwort family (*Aristolochiaceae*).

How did it get its names?

Asarum is an ancient Greek word of unknown derivation used by Dioscorides. Birthwort refers to its flowers, which resemble a swollen womb, and wort means the plant was once used in medicine. Aristolochia, in the family name, means birth-improver. Ginger refers to its taste resemblance to commercial ginger (no relation).

What does the plant look like?

The heart-shaped leaves of this low-growing perennial grow in pairs from the underground stem (rhizome), and both leaf blades and petioles are hairy. In the fork made by the paired leaf stalks, a solitary, reddish-brown flower is borne. Often hidden by leaves, the flower is detectable by its foul odor that attracts flies, to foster pollination, fungus-gnats, and other ground insects.

Where does wild ginger grow?

It grows in rich, moist woods, usually in colonies, throughout the state but is native in similar climates of North America, Europe, and Asia.

What are its medicinal uses, if any?

American Indians used root tea for colds and for uterine problems. Indian women used it to regulate menstrual cycles and for birth control, influenced by the womb-shaped flowers. Pioneers consumed it to ease gas formation and as a tonic. It contains the anti-tumor compound aristolochic acid.

Does it have any economic uses?

Dried roots have been candied or pulverized for use as a kitchen spice. It is a constituent of some snuffs. Wild ginger is planted in shaded wild gardens and to make a ground cover in shade. It can be propagated by division and by seeds.

***Asarum canadense* drawing and photo by Jason Husveth**

Thank you, volunteers

by Ellen L. Fuge, Management Supervisor, Scientific and Natural Areas Program

I want to thank the Minnesota Native Plant Society (who've adopted Grey Cloud Dunes SNA) and all who showed up on Feb. 10 to cut and burn brush. Thirteen volunteers made the four-hour event very successful. These hard workers consolidated many small, unburnable piles into six burn piles. This cleared the area of brush that would have interfered with the prescribed burn planned for this spring. Additionally, they cut and burned more honeysuckle, the dominant exotic invasive shrub in the savanna that is being restored.

Thank you!

Back to Boot Lake SNA for Winter Botany

by Ken Arndt

On Saturday, March 11, a group of 15 MN NPS members enjoyed a morning of winter plant identification at Boot Lake Scientific and Natural Area, located in northern Anoka County. Field trip participants were led by Vice President Scott Milburn (botanist) and Board Member Ken Arndt (urban forester) through several different plant communities on the way to Boot Lake, including a tamarack swamp, mature hardwood forest, and stands of large white pine.

With temperatures in the 40s and very little snow cover, a sense of spring was in the air. The winter was gentle to the plants here, with several types of ferns still green from last year. Small herbaceous plants like goldthread *(Coptis groenlandica)* and bunchberry *(Cornus canadensis)* were clearly visible throughout the tamarack hummocks.

From the tamaracks, the group was led into a stand of mature white pine — one of the finest stands left in Anoka County. As we made our way through the woods, we were able to identify many different trees and shrubs by their buds, form, and other key winter characteristics.

We came across several areas that are part of a reforestation project where deer exclosures have been placed to encourage the regeneration of white pine. With the noted high deer population at Boot Lake, a long-term study like the one underway will provide valuable information about the deer's effect on the plants. After seeing water-willow *(Decodon verticillatus)* along the banks of Boot Lake, the group headed back through the forests and wetlands with an appreciation of the many different plant communities in this great SNA.

Minnesota Native Plant Society
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Spring 2006