Minnesota Plant Press

The Minnesota Native Plant Society Newsletter

The Minnesota Native Plant Society – *A non-profit organization dedicated to the conservation and appreciation of Minnesota's native plants and plant communities* through education *and public awareness.*

Volume 41 Number 1 **January 2026**

Rare Plant Conservation at the University of Minnesota Landscape Arboretum

by Brian Johnson *(MN NPS co-editor)*

*(**Editors' note** – Steve Saupe and I recently met with the Plant Conservation Program staff and toured their facilities. We thank them for this opportunity.)*

The Plant Conservation Program (PCP) at the University of Minnesota Landscape Arboretum began in 2013. The purpose of this program is the protection and conservation of rare plant species of the upper Midwest, and the orchid species of Minnesota. Furthermore, its location at the Arboretum allows the public to learn about these plants, permitting the PCP to fulfill an education and outreach mission.

The PCP facilities are located at the University of Minnesota Horticultural Research Center near the main campus of the Minnesota Landscape Arboretum. In addition to typical office space, they also have a freezer room and share lab facilities and a greenhouse.

Figure 1. PCP team. From left to right – David Remucal, Kim Drewiske, and Angie Miner. Not pictured is Malcolm McFarlane. Image courtesy Steve Saupe.

David Remucal (**Figures 1 & 5**), the program manager of the PCP, claims to be the second hire of the program in 2013. He joked that the first hire was a seed storage freezer that needed an employee to build up a seed banking program. Staff now consists of seed conservation biologist Kim Drewiski, conservation botanist Angie Miner, and field botanist Malcolm MacFarlane. In addition, a large group of volunteers assists them.

Since the focus of the PCP is the preservation and protection of rare native plants in Minnesota, much of their work involves seed banking or plant rescues. This article will discuss those two approaches and present a case study showing how each can play a role in the conservation of one species.

Seed Banking

Of the 1700 vascular plants in Minnesota, approximately over 300 are considered rare (listed as special concern, threatened or endangered) and thus would be candidates for seed banking. In addition, seeds from all Minnesota orchids are banked with the PCP. At present, there are over 100 different species and over 3,000 seed populations in the bank.

There are several goals of the seed banking program. First, and most obviously, the seeds provide potential replacements for wild plants which have disappeared from their natural habitats. Second, research can help to determine the proper propagation conditions for a species, which may not be known if the plant is rare. If a plant resists giving up its propagation secrets or is difficult, this provides evidence that locations containing its natural population should be more strongly protected. Third, plants grown from seed might be used to augment a dwindling native population in a particular site. And finally, common species with potentially unusual genetics might be banked. For

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example, *Geum triflorum* (prairie smoke) is a common prairie species that occasionally grows in forest openings in northeast Minnesota, and some seeds from these more unusual populations are in storage.

Plant seed may arrive at the bank from several different sources. PCP staff may go into the field and collect seed. Increasingly, PlantWatch volunteers assist with gathering seed, often by return visits to populations of rare plants that have been surveyed that year. Seeds are occasionally submitted by members of the public who believe they have access to rare plant seed. In this case, however, they are encouraged to contact the PCP before gathering them to ensure that the species is appropriate for the bank and that proper permitting from the DNR can be obtained.

When seed is gathered in the field by anyone harvesting seed, there are limits placed on the numbers of seed that can be gathered to ensure that reproduction in the existing population is not hampered. For example, the PlantWatch seed gathering protocols specify that there must be at least 10 seed-bearing plants present, and then one can collect up to 20% of the available seed for endangered or threatened plants, or 30% for a special concern species with the ideal being 60 ripe seeds from 50 different individuals (if possible).

When seed is collected, it is placed in individual glassine envelopes so that each maternal seed source is separate. In addition, seed gatherers collect data about the site and the plant population.

The envelopes are returned to the PCP office and then placed into a desiccator and dried to about 30% relative moisture content. Volunteers separate the chaff from the seed and count the number of seeds in each packet (**Figure 4**).

Approximately 10% of the seed is removed to be tested for viability. This is typically done by actually growing the seeds. Alternative methods such as tetrazolium staining can be used, though they have not proven to be as reliable and effective.

The rest of the seed, in individual maternally-sourced packets, is placed in larger mylar envelopes which are impervious to gases and water. These mylar packets are placed in a -20 C freezer for storage. Since native plant seed banking is relatively new, it is not always clear how long seed might be viable when stored, and this is likely different for individual species.

The seed bank itself receives protection in a couple of ways. A backup generator for the building can provide power if there is a prolonged outage. To prevent a major catastrophe from wiping out all seed at one location, collections may be backed up at other seed banks such as the Chicago Botanical Garden, the National Seed Lab in Fort Collins, or elsewhere at the University of Minnesota Landscape Arboretum.

Plant Rescue

Another option for preserving rare species is moving them from threatened locations and placing them in new locations where they will be safe. This has been employed for many species, such as a number of rare *Rubus* species located in the Anoka sand plain. Unfortunately, many species do not do well when directly transplanted, possibly due to root damage.

Work by the PCP established that digging the plants in the fall and transferring them to growing medium in the greenhouse increases plant survival. After overwintering and growing them there for a season, they are replanted in their new location.

Transplanting is typically done in the fall as the plants go dormant so they can be watered by the spring rains and snow melt at the start of the following growing season. In addition, research is underway to improve rescue and transplanting techniques. For example, it may be possible to harvest and root *Rubus* canes, rather than moving the entire plant, to create an even more successful and easier method for rescuing members of this genus.

The Ball Cactus–A Case Study

Another example that illustrates the interplay between seed banking and plant rescue is that of the ball (pincushion) cactus (*Coryphantha vivipara*). This cactus has stunningly beautiful flowers and is found in only 2 counties in western Minnesota near Ortonville, which is the extreme eastern portion of its national range. It is listed as endangered in Minnesota. Since it grows on rocky outcrops, its survival is threatened by mining. Two new quarries were planned on land where the cactus grew. The PCP applied for, and received, a LCCMR grant to collect seed as a backup for the plant rescue and transplant them to permanently protected habitats in the region.

In addition, seed was collected from several subpopulations from the known Minnesota location, including from one of the quarry sites, and separate samples were maintained from maternal (coming from one mother plant) and zonal (coming from several different plants in the same general outcrop) sources.

Figure 2. Flat of ball cacti grown by the PCP at the UM Landscape Arboretum greenhouse awaiting transplant to a suitable rocky outcrop. Image courtesy Steve Saupe.

Prior to storage and growth, the seed needed to be removed from the fleshy fruit of the cactus. Initial attempts to grow the seed produced about 25% germination. The following year the greenhouse team experimented with variables such as seed starting medium and growing conditions and attained a 70% germination rate (**Figure 2**).

Figure 3. Volunteer Steve Saupe, uses a calipers to determine the diameter of a cactus planted in a previous year. Image courtesy Angie Miner.

In 2023 the first cacti were ready to be planted in the field. In November, a PCP team and some volunteers replanted them in the Big Stone National Wildlife Refuge. Cacti about 10 mm in diameter were placed in groups of 4 to 6 containing at least one zonal and one maternal cactus to ensure genetic diversity. Individual groups planted on outcrops in sites classified as cracks or shields (relatively flat areas that contained moss or soil) provided different microhabitats for study.

Since small cacti can get buried under moss or other plants (**Figure 6**), a picture of each set and its GPS location aided in future relocation (**Figure 7**). In addition, soil depth measurements were made.

In 2024 and 2025, additional cacti were planted, and the previous plants were relocated and measured (**Figure 3**). After one year, the survival rate reached an impressive 80% and this continued after the second year. Some of the 2023 transplants measured 30 mm in diameter, and several appeared to have flowered. Thus, it seems that the seed growing and transplanting procedure was successful.

No additional cacti are scheduled to be planted at the Big Stone NWR site, but the PCP will continue to monitor the existing transplants. Any leftover cacti remaining in the greenhouse may be used in a prairie demonstration area at the Landscape Arboretum. This will allow visitors to see these rare plants, fulfilling the educational component of the PCP. In addition, there may be other opportunities for the Minnesota cacti genetics to be useful, such as to fulfill a current request for cold-hardy cacti from a higher altitude botanical garden in a southern state.

Hopefully, efforts such as these will ensure the continued survival of the ball cactus and other rare Minnesota plants. A future article will discuss research to propagate orchids at the PCP facility.

Figure 4. Kim counts and cleans seeds with the aid of a dissecting microscope. Image courtesy Steve Saupe.

Figure 5. David supervises a team of volunteers planting cacti. Image courtesy Steve Saupe.

Figure 6. A cactus planted a previous year hides among the rock moss. Image courtesy Steve Saupe.

Figure 7. A set of newly planted cacti pose for a picture in their new home, in this case a "crack" microenvironment. To aid in future relocation, the largest marker identifies the overall location, the wide short one points North, the blue one gives information about the planting set number, and the remaining ones point at individual cacti and indicate the origin of the seed from which they were grown. After the picture, all markers are removed.

Minnesota Wildflowers Plant of the Month: *Spinulum canadense*

by ***Katy Chayka, MN Wildflowers (www.mnwildflowers.info)***

Family: Lycopodiaceae (clubmoss)
Common names: Northern clubmoss, Northern bristly clubmoss
Life cycle: Perennial
Plant height: 6 to 14 inches
Bloom season: July – October
Habitat: Conifer swamps, bogs, fens

Figure 8. Spinulum canadense. Image courtesy K Chayka, MNWildflowers.info.

Plant Description

Leaves and stem: Leaves are evergreen, whorled or nearly so but spirally arranged with 8 to 10 leaves in a cycle, appearing as 8 to 10 columns when viewed from the side of the stem (8 to 10-ranked), and round in cross-section (like a bottle brush). Leaves are mostly spreading to ascending, up to ¼ inch (4 to 6 mm) long, to .9 mm wide, lance-linear, broadest near the base, dark green, toothless, and usually have a pale, sharp, spine-like tip. Stomata (pores) are usually moderately abundant on the upper surface.

Stems are horizontal, running above ground or buried just below the surface of the mossy floor, but not underground. At fairly regular intervals, erect shoots emerge that have up to 10 branches, most of which originate near the base of the shoot. Each year's new growth is marked by a distinct constriction where the annual bud grew, typically with a whorl of smaller leaves at that point. Horizontal stems are up to 6 feet long and the erect shoots up to 14 inches tall.

Fruit: Spores develop in spike-like or cone-like structures called strobili. Strobili are single at branch tips, ½ to 1 inch (1.5 to 2.5 cm) long, and stalkless. Each tiny spore sac is attached to a scale (sporophyll) that is about 1/8 inch (3mm) long, generally triangular and tapering to a slender, sharply pointed tip but lacks any hair-like extension. Scales are initially light green and tightly appressed, turning yellowish as they mature and light brown when dry, then become more spreading to release the spores in late summer into fall. The strobili persist through winter.

Notes

Northern Clubmoss is a species of cool, shady conifer swamps and bogs, usually growing in a thick carpet of sphagnum moss, and reaches the southern edge of its range in Minnesota's northeastern counties. It is one of two *Spinulum* species known to be in Minnesota, distinguished by: stalkless strobili that are single at branch tips, erect shoots have up to 10 branches, horizontal stems are above ground (or running through living moss), leaves are 4 to 6 mm long, not scale-like, broadest towards the base, have a minute spine-like tip, scattered stomata on the upper surface, and number 8 to 10 in a spiral cycle. The above ground stems, branching, and toothless leaves that lack a hair-like tip can help identify it even when strobili are not present.

The only other *Spinulum* species currently known to be in Minnesota is Stiff Clubmoss (*S. annotinum*), which is similar in all respects but is a more stout plant, leaves are larger, mostly more than 6 mm long, broadest above the middle, usually minutely toothed on the tip half, and lack stomata on the upper surface. The two were previously treated as vars of the same species, with S. canadense known as *Lycopodium annotinum* var. *pungens* or subsp. *alpestre*. Some references still lump them both under *S. annotinum*.

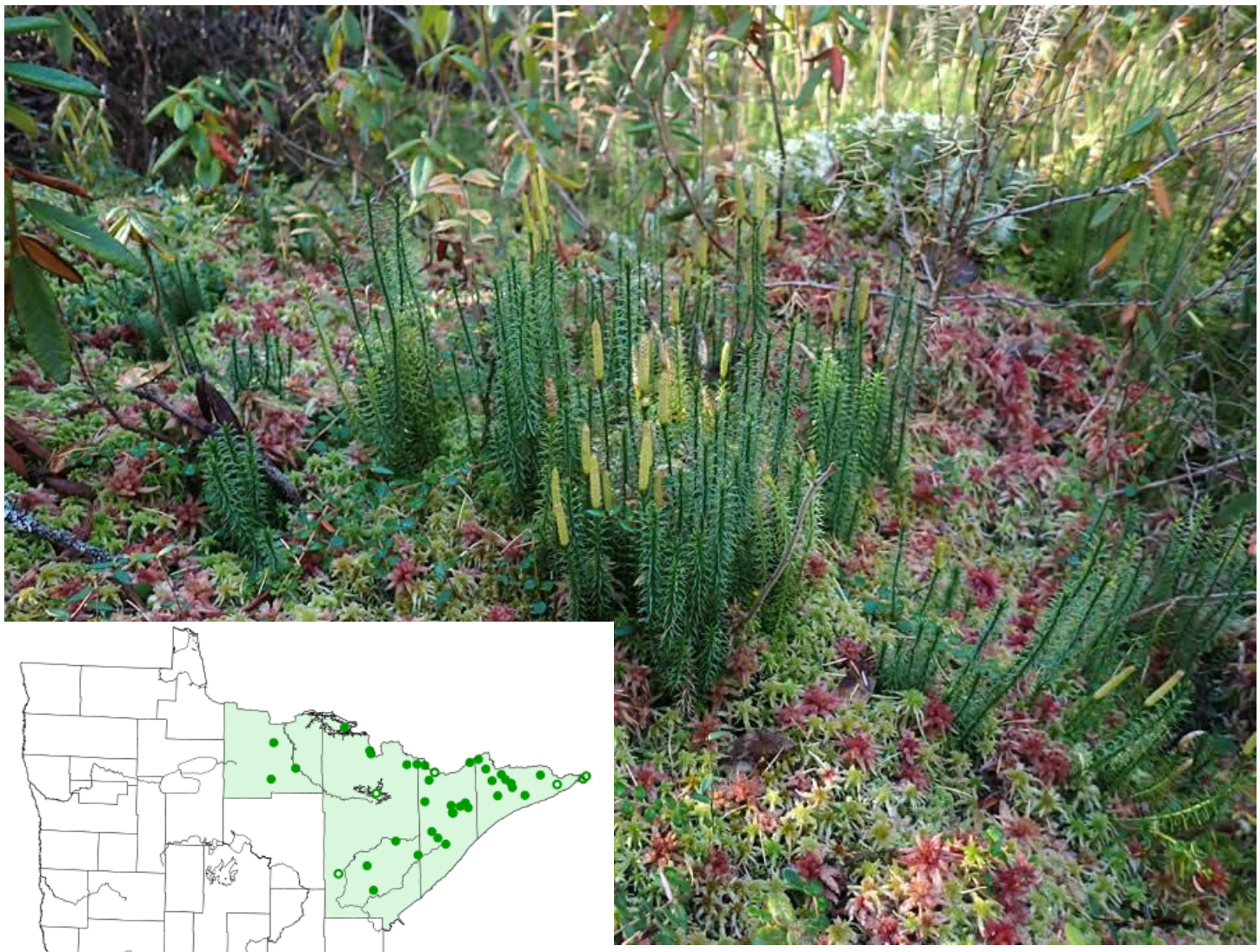
Compared with other clubmosses with cone-like strobili: *Lycopodium* species have long-stalked strobili and hair-like extensions on leaf tips, *Dendrolycopodium* have stalkless strobili but tree-like branching, and *Diphasiastrum* have stalked strobili and scale-like leaves. While several different clubmoss species may grow side by side, hybridization is not common.

Image credits

Photos by Katy Chayka taken in Lake County.

Minnesota county distribution map ©Minnesota Wildflowers Information.

More images available at https://www.minnesotawildflowers.info/fern/northern-clubmoss.



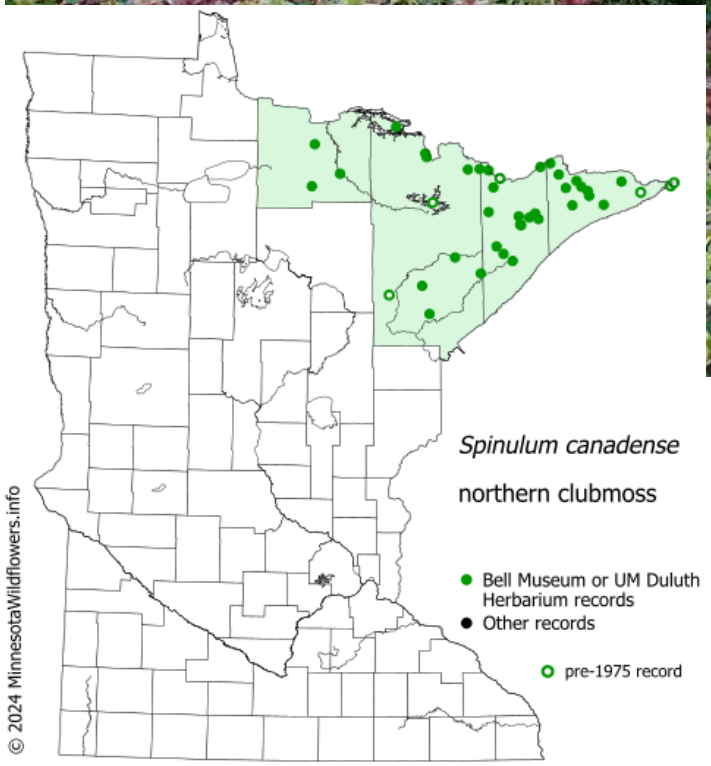


*Figure 9. (above) Spinulum canadense in situ. Image courtesy Katy Chayka, **MNwildflowers**.info.*

*Figure 10. (left) Distribution map for Spinulum canadense. Image courtesy Katy Chayka, **MNwildflowers**.info.*

November MN Native Plant Society Meeting – Presentation Summary

by Brian Johnson *(MN NPS, newsletter co-editor)*

On November 12, Dr. Lee Frelich, Director for the Center of Forest Ecology at the University of Minnesota, presented "Forest Fire Behavior and Tree Mortality." In his talk, he noted that tree mortality could be due to root scorch, crown consumption, basal scorch and crown scorch. Though a tree might look dead immediately after a fire, it is important to wait a year after the fire, as there may be regrowth.

The rate of fire spread was highest for spruce and jack pine stands and lowest for red and white pine, with birch and aspen stands intermediate. It was further noted that bark is a good insulator. For 40 cm diameter trees, a red or white pine must be exposed to high heat for 12 or 13 minutes for cambial death, while a white spruce requires only five. This survival difference can be exploited in controlled burns.

Furthermore, examination of a partially burnt tree can provide forensic information. For example, the direction of fire movement can create a shape like a gothic cathedral door on the leeward side of the tree. This is due to vortex formation on the back side of the tree that can cause burning to continue about twice as long as on the front side of the tree. This phenomenon also allows dating of previous fires from tree ring analysis.

For more information, including quantitative relationships in fire behavior and analysis, please view a recorded version of the talk at https://mnnps.org/video/.

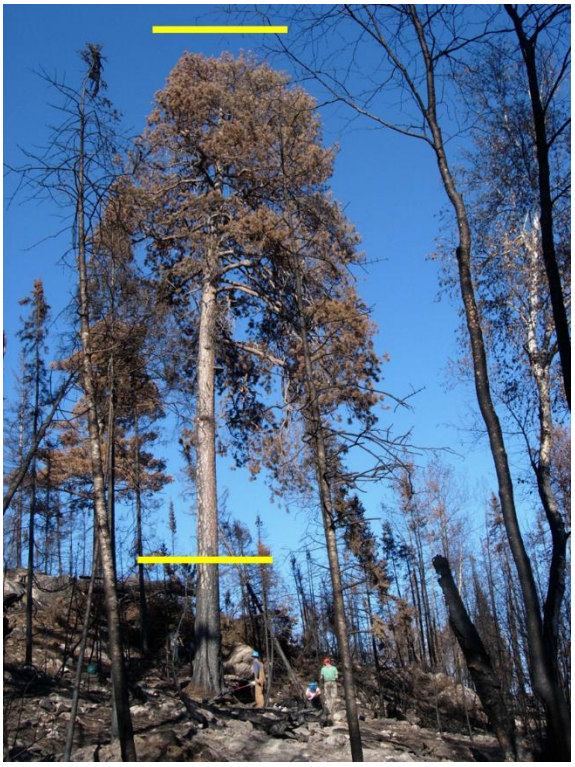


Figure 12. Red pine killed by crown scorch from a surface fire (photo courtesy Alex Reich). The lower yellow bar shows a 12-foot char height, also indicating a 12-foot flame length, which corresponds to an 80-foot scorch height (shown by the upper yellow bar) due to rising hot air above the flames. The scorch height was greater than the tree height, so that 100% of the foliage was scorched, leading to the death of the tree.

Figures 11 & 13 (right). Fire scars on pine trees depend on duration of the flames at the base of the tree. A prescribed fire at Cloquet Forestry Center (May 2022) was not hot enough to scar the base of this 200-year-old red pine tree (above left), due the insulation properties of its thick bark. Only minor charring of the outer bark occurred; live tissue in the cambium under the bark was not killed and no fire scar was formed. However, the 1910 fire in this same forest did cause scarring on this pair of 200-year-old red pines (right) and a white pine tree in the background on the left.

Notes from the Herbarium

by Tim Whitfeld *(Collections Manager of the Bell Museum Herbarium at the University of Minnesota)*

The start of a new year is a time for taking stock and assessing our achievements over the past twelve months. Just as in life, this is true in the Bell Museum Herbarium. At this time, we tally collection activities for the past year to evaluate whether we're fulfilling our responsibilities and achieving our goals as the State's official natural history museum.

One of those goals is to keep building the collections so future generations of botanists have specimens and data for their research (**Figures 14** & **15**). We don't know what that research might entail but it's important the first half of the 21st century be represented, along with all the other time periods in the collection, dating back to the early 1800s. The Victorian-era botanists collecting in the 19th century had no idea their specimens would be sliced and diced to extract DNA in 2025 (*they didn't even know that DNA existed*!), or used to document changing phenology, or to make 21st century conservation decisions. Similarly, we don't know how 22nd-century scientists might use our specimens or what future technology might exist for understanding plant diversity.

Figure 14. **Nelumbo lutea** *specimen in the Bell Museum Herbarium. Image courtesy T. Whitfeld.*

As the present-day Collections Manager, one of my responsibilities is to ensure we provide those future researchers with raw material for their work. With that in mind, here's a summary of incoming collections over the past year.

Since January 1, 2025 we mounted, digitized, and added 3,188 plant specimens to the collection. Most of the specimens came from the United States but we also added collections from Argentina, Bolivia, Canada, Chile, Ecuador, Mexico, New Zealand, Peru, South Africa, and Venezuela. The US specimens added to the Herbarium in 2025 came from California, Illinois, Michigan, North Dakota, Wisconsin, and Minnesota. Those Minnesota specimens came from across the state. In fact, all but four of our 87 counties (Brown, Pipestone, Redwood, and Sibley) were included in the 2025 accessions.

Among other things, we added Minnesota algae specimens from 363 lakes and orchids from Isanti, Pine, Murray, Anoka, Chisago, Pennington, Wilkin, and Washington counties. We also accessioned pitcher plants and sundews from Sax Zim Bog, Bear Head Lake State Park, Savanna Portage State Forest, and Chippewa National Forest as well as grasses and sedges from all over the place. Collections came from Voyageurs National Park in the north to Mound Spring Prairie SNA in the south and many points between. This new set of specimens is a great addition to the Herbarium and we're grateful for all the work of the botanists out in the field.

It's important to count specimens coming into the collection, but we also send out specimens from the Bell Museum Herbarium to other institutions and these also need to be tallied. In 2025, we sent 586 plant specimens to 11 other herbaria in the US as gifts. We also made 12 loans to researchers across the country. This back and forth of herbarium specimens is typical, in the same way that people trade baseball cards and libraries loan books.

Another way we're able to track the value of our collection is to document the number of times our specimens are cited in peer-reviewed publications. For this, we turn to the analytics software of the Global Biodiversity Information Facility (GBIF for short). This online database (https://www.gbif.org/) is a global aggregator of biodiversity data from institutions around the world. GBIF "harvests" data from online databases (including our Minnesota Biodiversity Atlas), pulls everything together, and provides open access to everyone. In this way, our collections are part of an international network that's used by researchers around the world. GBIF tracks when specimen data is downloaded and from which institutions the data originated. In this way, we know that Bell Museum plant records were cited 1,145 times in various publications around the world. This points to the importance of making our specimen data available online. We digitize all incoming specimens and, as funding becomes available, we're also gradually working through all of the older specimens. Eventually, the entire collection will be online and open to the world.

Figure 15. **Liatris punctata** ***specimen in the Bell Museum herbarium. Image courtesy T. Whitfeld.***

Online visits are important but people still come the collection in person to use our specimens for research. In 2025, we hosted 140 visitors from other universities, botanical gardens, museums, consulting companies, and state agencies. For many researchers, digital images and online data are not enough, they need to see the actual specimens, so our doors are always open.

Overall, 2025 was a busy year and we're looking forward to more of the same in 2026!

Minnesota's Buffer Law and What More Can Be Done

by Scott Milburn *(MMSPA President)*

With my travels around the state's agricultural counties, I have wondered about how the buffer law, enacted during the Dayton Administration, is working.

In concept, these buffer areas, associated with public water features (lakes, rivers, streams, etc.), serve to limit nutrient inputs into public waters and thus improve overall water quality. The statute, as written, requires that the buffer be vegetated with perennial vegetation and have a width of up to 50 feet for lakes, rivers, and streams. It additionally pertains to ditches, but requires a narrower buffer width of 16.5 feet. The passing of this statute was a major legislative achievement, and according to the Minnesota Board of Water and Soil Resources, compliance is at 99% as of 2024. That, metric-wise, appears to be a great success.

The Dayton Administration had wanted to have larger buffer widths for private ditches, but through negotiations (something that the two-party system is not capable of doing system-wide today), the width of 16.5 feet was agreed upon. The question now is whether this width is enough, especially when considering the expansive network of ditches, both public and private. Take for example the expansive network of waterways between Marshall, Willmar, and Mankato (see **Figure 16**), with much of this landscape either planted in row crops (corn and soybeans) or pasture lands. It is important to note that these waterways feed into the Minnesota River, which ultimately feeds into the Mississippi River, and contributes to the "Dead Zone" in the Gulf of Mexico.

Water quality should be an issue that we all rally around, regardless of political ideology. Yet we are not doing enough.

Some may disagree with that statement, but I would challenge

Figure 16. Map showing ditches between Marshall, Willmar and Mankato. Image courtesy Scott Milburn.

those in disagreement with me to simply drink the surface water in any waterbody feature where they live. Obviously, there are parasites and naturally-occurring bacteria that would be problematic regardless of anthropogenic pollution, but the point is that too many of our waters are impaired. Those impairments not only affect aquatic life, but humans as well.

You may wonder how this issue involves native plants. My response is that we have a great opportunity before us. We need to approach problems where the solution provides multiple benefits rather than a single one. My proposal involves increasing buffer widths, including ditches.

The incentive would be subsidized, with that money being pulled from other government-funded practices that carry minimal benefit. These applied subsidies would work to cover associated property taxes, thus not decreasing the tax base for the counties or local municipal units.

Money would also be available for the purchase of a select native seed mix and installation. In such a scenario, it would be beneficial for the Minnesota Department of Natural Resources to have direct involvement with their Regional Plant Ecologist overseeing these seed mixes, ensuring a focus both on protecting native genotypes and that the appropriate plants are being used.

We also have a large network of native seed producers in place, but this could even expand the industry and allow for more specialized or regional entities to establish and thrive. And perhaps in return, the producers would be allowed to harvest seed from these dedicated spaces, thus not having to invest in more and more land in order to grow more native seed.

In doing all of this, we would be increasing green corridors, improving water quality, expanding nectar sources for insects to the benefit of other fauna, and creating economic opportunities.

President's Column

We Need You!

by Scott Milburn

I would like to thank Brian Johnson and Stephen Saupe with filling a crucial need for the Society, that being co-editors of our quarterly newsletter, the *Minnesota Plant Press*. Volunteerism is simply essential for an organization like ours, and so we are looking for help from our membership. This includes serving on our board, which is a perfect segue into announcing that we will be having board elections soon. At this time, we are seeking nominations of members who are in good standing and are willing to contribute in several facets. This includes helping with field trips, programming, conservation, and the newsletter.

We are seeking both a general field trip organizer and those to lead field trips, with the hope of having field trips throughout the entire state.

With programming, we are looking for those to help secure speakers, moderate those talks, and for someone to lead the symposium committee.

Regarding conservation, we are looking for someone to lead that effort, with the focus of staying well-informed on critical conservation issues that pertain to our mission, as well as representing the Society when the need arises.

Lastly, we are always looking for content for our newsletter, also in line with our mission. (**Editors' note** – please send news, story ideas or complete stories to editors@mnnps.org.)

With a slate in hand, we will be having our board elections online during the month of March, with three-year terms beginning in June of 2026. If interested in nominating someone or volunteering, please email me at scott.milburn@mnnps.org.

December MN Native Plant Society Meeting – Presentation Summary

by Brian Johnson *(MN NPS, newsletter co-editor)*

Figure 17. Ron Bowen in 1996. Image courtesy PRI.

Ron Bowen gave the final MN Native Plant Society presentation of 2025 on December 18. In it, he shared his native plant "origin story" as well as his memories of the early years of Prairie Restorations.

In addition to simply enjoying being outside among native plants, Ron fondly recalled his days as a Forestry student at the University of Minnesota. He also spent some time at field stations at Itasca and Cloquet. Later, while working at PRI, he received a scholarship to study at the University of Wisconsin-Madison. This ultimately morphed into an exploration of philosophy and psychology and helped him see how plants can help people live in a better way.

His first professional activity was as Bruce Dayton's gardener in 1968. When he was getting his first tour of the Dayton garden, he was surprised to see that a large portion of it consisted of native plants. In order to enhance that planting, he began a search for short native plants. As one might guess, commercial sources of native seed were almost non-existent. However, he had access to a greenhouse on the Dayton property where he could grow plants. He started his first prairie planting in 1970.

In his early years at PRI, Ron hoped that his prairie plantings themselves would help enhance his business by word of mouth. This was supplemented by printed material and radio advertisements, which has continued to this day. A key event was his work accepting a prairie project at the Blue Cross / Blue Shield building in Fargo in 1980, which involved planting thousands of seedlings and exists to this day.

Ron believes species diversity is a measure of success in a prairie planting. While an acre of a prairie remnant might have 250 different plant species in it, a good restoration might have 70. He hopes that future efforts might see this number get up to 100 or beyond. He notes that, if at all possible, one should start with a good diversity of species—what you start with is what you tend to end up with. Toward this end, he helped develop a computer program called PRESTO to assist people in selecting plants appropriate for their site based on historical distribution and plant adaptability. It can be found at https://www.prairieresto.com/presto/.

For the complete talk, including Q and A and some fascinating photos from the early days of Prairie Restorations (**Figures 17** & **18**), please visit https://mnnps.org/video/.

Figure 18. Ron Bowen poses on one of their Gleaner combines in 1991. Image courtesy PRI.

MNNPS Membership Update
by Ken Arndt

Ever wonder about the MN Native Plant Society overall membership? You would be amazed at our reach of members from all around Minnesota and nationwide. Our members come from ten different states across the country including Alaska, California, Iowa, Illinois, Michigan, Minnesota (*of course*!), North Dakota, Ohio, South Dakota, and Wisconsin.

In Minnesota alone, we are from 127 different cities including Avon, Bemidji, Bovey, Duluth, Ely, Frontenac, Moorhead, Northfield, Preston, Rochester, St. Cloud, St. Peter, Wabasha, Windom, and Winona just to name a few. Much of our membership live in larger cities across the state but many of you come from smaller towns as well. It probably will not come as a surprise that Minneapolis represents the plant society with the most members at 73, followed by St. Paul with 56, Duluth with 17, and Rochester with 14.

In the past twenty-five years our membership has grown from roughly 300 members to over 500 members. Membership over the last five years is: 2021 (452), 2022 (464), 2023 (526), 2024 (553), and 2025 (449). Although we dipped back below 500 members in 2025 for the first time in three years, I am certain the membership will continue to grow in 2026. If you are already a member, consider getting a membership for a friend or family member who may have a budding interest in native plants.

As a reminder, now is a great time to renew your membership. If you have not yet received an email renewal notice, which is typically sent out in early January, you can always go to the membership page on our website at https://mnnps.org/membership/ to sign up. The membership year for the society runs from January 1st to December 31st each year.

As membership chair, I would like to recognize the lifetime members added in the last five years (***see sidebar***). Of the 76 total lifetime members, 27 have joined this level since 2021. A big thanks from all of the MNNPS officers and board members go to those of you who elevated your membership level to lifetime status. We are very glad that all of you are committed to our organization into the future.

MNNPS Recent Lifetime Members

2021
Joan Barnes, Tom Mahoney (Maddy Maxeiner), Rob Peterson, and Becky Marty (Paul Conklin)

2022
Ethan Perry, Simba Blood, David Schimpf, Vija & Valts Treibergs, Kathy Connelly (Carolyn Sampson), and Matthew Billings

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You've been warned!

by Steve Saupe *(MN NPS, newsletter co-editor)*

Coral snakes and king snakes. Monarch butterflies and viceroys.

You may recognize these familiar animal pairings as classic examples of mimicry. King snakes are "Batesian mimics" of coral snakes, while viceroys are "Müllerian mimics" of monarchs.

Figure 19. White deadnettle plant growing along the banks of the Thames River. Image courtesy of S. Saupe.

Batesian mimicry is the situation in which a benign species, such as a non-toxic king snake, evolves to look like, or mimic, a well-defended species, like a poisonous coral snake. The "mimic" takes advantage of the protection offered by looking like the "model." Potential predators are duped by the similar appearance and dutifully avoid both the model and mimic.

Müllerian mimicry is similar to Batesian mimicry. Both species look similar (*i.e.,* mimic one another). However, there is one major difference. Both species are also defended. Monarch butterflies are rich in toxic cardiac glycosides derived from milkweed, while viceroys sequester toxins from its food source (*Salix* sp.). Müllerian mimics evolve a similar appearance to jointly advertise that they are bad-asses, ensuring that birds and other predators receive the message loud and clear that they should avoid snacking on orange and black colored butterflies.

You may be wondering – does mimicry also occur in plants? Of course it does! Well, at least I think so. Two of my favorite examples involve one of our common MN herbaceous plants, stinging nettle (*Urtica dioica*), which some folks also call itchweed.

As anyone who has ever accidentally brushed into a stinging nettle plant knows, it is well-defended. The stems and leaves are covered with hypodermic-like hairs, called trichomes. When a trichome comes in contact with your skin, the tip breaks off injecting histamine, and perhaps other chemicals, resulting in a painful, itchy rash that can last for hours.

Fortunately, stinging nettles are relatively easy to identify and avoid. They have opposite (paired) leaves with distinct veins and serrated, or toothed, margins. However, there are several other plants that look remarkably similar to nettles including black raspberry (*Rubus occidentalis*) and white deadnettle (*Lamium album*) (**Figure 19**).

This past autumn, my wife Linda and I spent several days walking along the Thames River near Oxford (England). In the moist soil along the path, we commonly encountered large patches of both stinging nettle and white deadnettle. White deadnettle, like many other species in the mint family (Lamiaceae), has whorls (called verticillate) of white flowers near the apex of the plant. In bloom, they are easy to recognize.

However, vegetative white deadnettle plants look nearly identical to nettle (**Figure 20**). I spent a long time trying to decipher the differences between the two and I am still not confident I can reliably identify them if the plants are strictly vegetative.

I thought that this might be an especially good accuracy test for my *PictureThis* app. Using plants in flower so I knew which species it was, I photographed only the leaves and asked the app to identify the species. Impressively, in most of my trials the app could distinguish between the two species, and did so as well as, or maybe even better, than I

could. Not only did these experiments leave me impressed with *PictureThis*, but they provided additional proof that I am obsolete – my botanical skills have been been replaced by AI.

Unlike stinging nettle, white deadnettle lacks stinging hairs, so you can handle the plant with impunity. Essentially the plant is 'dead' to your touch, and this explains, in part, its common name.

Figure 20. A comparison of white deadnettle (top left with white flowers) and stinging nettle (runs diagonally from lower left to upper right). Image courtesy of Steve Saupe.

White deadnettles and stinging nettles are a great example of Batesian mimicry. Just like the defenseless king snake mimics a poisonous coral snake, the defenseless white deadnettle mimics a well-defended model, stinging nettle.

Brittlestem hemp-nettle (*Galeopsis tetrahit*) and yellow archangel (*Lamiastrum galeobdolon*) are also considered to be 'dead nettles.' They are nettle look-alikes without stinging hairs and they have been suggested as potential nettle "mimics," too.

When I realized on our Thames walk that stinging nettle and white deadnettle are likely Batesian mimics, I was rather proud of myself. However, any hope I had of receiving a Nobel Prize for my brilliant insight about botanical mimicry was dashed once I started doing a little research for this story. I learned that I was more than a century late to the party. This very same idea had been previously discussed in a paper published in 1904 by Marloth (*Transactions of the Royal Society of South Africa*; Vol 15, No 1, pp 97-102).

Now, consider black raspberries. You may have noticed that its leaflets look rather similar to the leaves of stinging nettle. I learned just how similar they are when I was picking berries a few years ago. I reached down to grab a few berries in our patch (**Figure 21**) and suddenly it felt as though the back of my hand had been zapped by multiple cattle prods. I jerked my hand away and looked down for the source of my agony. As you likely guessed – there was a robust stinging nettle lurking among the raspberries that I never noticed (**Figure 22**). It was amazingly camouflaged – a Müllerian mimic in the bush!

It's not clear if white deadnettle or black raspberries intentionally evolved to mimic stinging nettle. Though these species may experience reduced predation or other benefit from their similarity to nettles, admittedly, their appearance may be a response to their habitat or merely a coincidence (or, as a scientist might say, a classic example of a non-causal correlation).

Figure 21. A black raspberry patch awaiting picking. Image courtesy S. Saupe.

Mimicry is an active field of botanical research and I'm sure we will learn more about botanical mimics in the future. Until then, I recommend that you use care when picking black raspberries in a nettle-infested patch. And for heaven's sake, before jumping half naked into a field of white deadnettles, be sure you've correctly identified this nettle mimic, or you could end up like the kid in *YouTube* video clip at the link below. You've been warned!

Figure 22. (right) A stinging nettle, lower left, waiting for an unsuspecting black raspberry picker. Image courtesy S. Saupe.

YouTube Video Clip – "Jumping in Nettles. You have been warned,"
https://www.youtube.com/watch?v=AmTKGowyCfg

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