Minnesota Plant Press

The Minnesota Native Plant Society
Newsletter

Volume 19 Number 3 **Spring 2000**

Upcoming Monthly Meetings

Minnesota Valley National Wildlife Refuge
Visitor Center, 3815 East 80th Street
Bloomington, MN 55425-1600
612-335-2323

6 - 6:30 p.m. — Board meeting, Room B
6:30 - 7 p.m. — Refreshments, information, Room A
7 - 9 p.m. — Program, Society Business
9 - 9:30 p.m. — Socializing
9:30 p.m. — Doors locked

Programs

May 4
"Seminary Fen: a Calcareous Jewel in the Minnesota River Valley," by Fred Harris, Minnesota DNR
Plant-of-the-Month: Twisted Yellow-eyed Grass, by Jason Husveth
Election of board members

June 1
"Western Prairie Fringed Orchid: Monitoring and Research," by Nancy Sather
Plant Sale following program

Oct. 5: Next meeting

Plant sale guidelines

Members are urged to donate native plants for the June 1 sale. Plants must be from a garden or started from seed. Do not dig wild plants. Bring them by 6:30 p.m. Each plant must be in an individual container and labeled. Each buyer may select three plants the first time. Volunteers who help at the sale will have the first choices, followed by plant donors and then by others. To volunteer, call Gerry Drewry at 651-463-8006.

MNPS Web Site
http://www.stolaf.edu/depts/biology/mnps

2000 symposium is a huge success

by Nancy Sather

Over 240 people attended the Native Plant Society's March 18 symposium, which was held at the School of Environmental Studies near the Minnesota Zoo. The program, titled "Rare Plants and Local Ecotypes: Emerging Issues in Native Plant Restoration," attracted a mixed crowd of NPS members, gardeners, professional restorationists, and botanists, drawing 68 new members into the society.

A number of co-sponsors lent financial support or advertisement to the effort. The Society is especially grateful for the support of the University of Minnesota's Institute for Sustainable Natural Resources, directed by Barbara Coffin, which underwrote travel expenses for both out-of-state speakers. Other co-sponsors included the Chicago Botanical Garden, the U.S. Fish and Wildlife Service, "The Prairie Reader," The Minnesota Chapter of the Wildlife Society, the Minnesota Department of Natural Resources, and the Conservation Biology Graduate Program at the University of Minnesota.

A group of society members and nonmembers were involved in planning and implementation. This group included Nancy Albrecht, Lori Biederman, Paul Bockenstedt, Meredith Cornett, Hannah Dunevitz, Ellen Fuge, Bob Jacobson, David Johnson, Cynthia Lane, Camille LeFevre, Judith Miller, Ann Pierce, Nancy Sather, and Jan Shaw Wolff.

Biological issues in rare plant reintroduction

Dr. Kayri Havens, manager of endangered plant research, Chicago Botanic Garden, provided the keynote address, "To plant or not to plant: biological issues in rare plant reintroduction." Dr Havens is a regional leader in collaborative programs for conservation of globally rare plant species from the Upper Midwest. Her talk summarized genetic and biological issues that have bearing on restoring, augmenting and introducing endangered plants. A retrospective of this talk is presented on page 6 of this newsletter.

Biological issues in restoration of non-rare plants

For the biological perspective on restoration of non-rare plants, Dr. Daryl Smith, director of the Iowa Ecotype Project at the University of Northern Iowa, explained the rationale and process for dividing the state of Iowa into ecotype regions and increasing the amount of seed of known regional origin available for Iowa restorations. The project was

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Three nominated for positions on board; election is May 4

Meredith Cornett, Esther McLaughlin and Ethan Perry have been nominated for three-year terms on the MNPS Board of Directors. The election will be May 4, and additional nominations may be made then. Biographies submitted by the three candidates are on this page and the next page.

Meredith Cornett

Meredith Cornett grew up in Georgia and earned a B.A. in biology from Oberlin College in Ohio. She developed an interest in ecological restoration and conservation while working for the Center for Plant Conservation in Boston and as a Forestry Extensionist in the Republic of Panama. She earned a M.S. (1996) and Ph.D. (2000) in forestry from the University of Minnesota, completing studies of forest ecology and ecological restoration in conifer-hardwood forests of northeastern Minnesota.

In her current position as a forest ecologist with the Minnesota Department of Natural Resources, Meredith provides assistance to communities working on ecological, restorative and natural resource management projects.

Ethan Perry

A native of coastal Rhode Island, Ethan Perry began his career exploring the salt marshes, oak forests and pine barrens near his home. His advisor at Tufts University opened the door for him into the fascinating world of native plants.

Although Ethan labored in the University herbarium and restored native vegetation to a damaged wetland, his later work wandered through a wide range of ecological studies. Some of that research was in Panama, where he married Meredith Cornett. Later, he earned a M.S. in wildlife conservation at the University of Minnesota, where he studied factors influencing the reproductive success of forest birds. Much of his other work in Minnesota has involved natural community mapping and conservation.

In his current position with Great River Greening, he is mapping land cover in the Mississippi and Minnesota River valleys, and he manages an interagency team that prioritizes and coordinates restoration efforts in the metropolitan area.

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.

The Minnesota Native Plant Society

Minnesota Plant Press

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The Minnesota Native Plant Society is a tax-exempt 501 (c)(3) organization as determined by the U.S. Internal Revenue Service. Contact the society by e-mail at: mnps@altavista.net. Dues for regular members are $12 per year; for students and seniors, $8; for families, $15; for institutions, $20; and for donors, $25. All dues include a newsletter subscription. Four issues are published each year. Make checks out to: Minnesota Native Plant Society; mail them to: Minnesota Native Plant Society, 220 Biological Sciences Center, 1445 Gortner Ave., St. Paul, MN 55108.

Esther McLaughlin

I come from California originally, and majored in botany at Berkeley where I also got a Ph.D. in botany in 1968. My interests originally were in green plants generally, and aquatic plants specifically, but I have developed my interest in and expertise in fungi since coming to Minnesota. I have lived in Minneapolis since 1969 and have taught in the Biology Department at Augsburg College since 1989. My e-mail address is:
mclaugh@augsburg.edu.

I served once in the past on the MNPS board and have been involved in organizing several of the society's symposia, including the first one. Now I get the postcard out each month, with the help of Heather Olson, our secretary at Augsburg. My specific interests include encouraging the MNPS to remain helpful and interesting to all its members by continuing to present speakers, programs, and symposia which appeal to a broad range of native plant enthusiasts. I think we've done a good job in the past, and I want to help this continue. I also am interested in exploring the possibility of offering half-day or day-long lab and/or field workshops for members (or others) to learn about topics such as the basics of flower structure and classification, mosses, or specific difficult groups like grasses.

Board of Directors is planning projects, speakers for next year

The Minnesota Native Plant Society Board of Directors met March 25 at President Catherine Reed's house. Following are highlights of the meeting.

Symposium

Nancy Sather reported that the symposium, "Rare Plants and Local Ecotypes," was a big success, with more than 240 people attending (over twice the previous record). The financial balance was positive, and 68 new members joined. A complete report will be made in June. The board thanked Nancy for her work in making it a success. Nancy attributed the outcome to several factors, including such hard workers as Lori Beidermand and Camille Lefevre; the cooperation of several organizations, including Great River Greening; and good advertising.

Board positions

Ethan Perry, Meredith Cornett and Esther McLaughlin have been nominated for the three positions. that will be open. The election will be at the May meeting. Present board members are as follows. Third-year (departing) members are Catherine Reed, Roy Robison and Dave Johnson. Second-year members are Virginia Card, Joel Dunnette and Cynthia Lane. First-year members are Harriet Mason, Nancy Sather and Deb Strohmeyer.

Treasurer's report

The society's budget was in the black again for the fiscal year 1999. The largest single source of income (more than $3,000) was from memberships. The largest expenses were printing (more than $1,500) and postage (almost $1,000).

Program committee

The program committee is collecting suggestions for next year's speakers and topics and is striving for a balanced program. Potential topics include the Nature Photography Club, botany on the North Shore, The Nature Conservancy, the Dakota County LCMR project, Great River Greening, the DNR Conservation Connection, National Forests in Minnesota, radicals (such as the Hiawatha expansion protesters) and the BWCA blowdown of 1999. Members with suggestions or who would like to volunteer to give a Plant of the Month talk should contact Virginia Card.

Proposed MNPS grant project.

Dave Crawford has suggested setting up a program to help homeowners purchase and plant native plants in their gardens. After a lengthy discussion, the board voted for Deb Strohmeyer to convene an ad hoc committee composed of Joel Dunnette, Dave and herself to investigate issues relating to setting up such a project, and to develop a set of rules and guidelines to be presented to the board at the June meeting.

Board member profile: Deb Strohmeyer

Deborah Strohmeyer was born in Oklahoma but did not live there long. Her dad was in the military, which resulted in frequent moves. Her life-long enjoyment of plants began early, via family camping trips. Deborah's first backpacking trip was at age six. As an adult, her interest in plants took an applied emphasis.

Deborah earned a B.S. in Renewable Natural Resources at the University of Arizona. Two weeks after graduation, she was in Idaho researching wapiti in a sagebrush desert. In 1992 she finished her Master's degree in wildlife ecology. Next she went to Colorado, where she worked with pronghorn on the Pawnee National Grassland for a few years.

In Colorado, Deborah got married and had her first son. In June 1998 she moved to Bloomington, where she purchased a house on a 1/2-acre lot. Deborah and her husband are avid birders and wanted to increase the wildlife value of their property. In her search for information on native plants having wildlife value, she stumbled across the MNPS website and promptly joined the MNPS.

Last April, when Deborah volunteered to be on the board she was unaware that her second son was on his way. Although she has had to miss some meetings, she has been responding to technical inquiries sent to the MNPS.

Symposium

Continued from page 1

spurred by needs of the Iowa Department of Transportation for local seed and the fact that market forces made it much cheaper for the highway department to use western seed than seed of Iowa origin. The objective of the project was to increase the amount of Iowa-origin seed available, make it competitive with western seed, and localize its origin as much as possible.

After dividing the state into regions, local seed is obtained from each region and the harvested pool of collected seed is grown out by the Natural Resource Conservation Service in ecotypically separated plots in Ellsburg, Mo. Once the amount of seed has been sufficiently increased, it is released back on the Iowa market as Iowa certified seed. At the present time, 70 species of native seed from 117 sources are being marketed by 79 Iowa growers through this program.

Species lists for metro area

Even when seed is available, how can we know what is appropriate to plant in any given situation? A follow-up presentation by Dr. Cynthia Lane of the Great River Greening project answered this question for the Twin Cities Metro area by explaining a collaborative project that uses plant community data collected by the DNR's County Biological Survey and Natural Heritage Nongame Research Programs to generate lists of species appropriate for restorations of particular plant communities within the region.

Minnesota case studies

Minnesota restoration activities occur on both the grand, collaborative, scale and through the efforts of individuals attempting to restore appropriate species or communities on their own land. Two case studies closed the morning session.

Dr. Carolyn Carr of Great River Greening explored the possibilities of multi-partner collaboration with a series of slides showing the involvement of youth, corporate interests and local governments in restoring riparian corridors through downtown St. Paul.

Welby Smith, wearing his hat as a private property owner and plant society member, closed the morning with a sometimes-humorous account of his attempts to establish an ecotypically appropriate savannah restoration on his Wright County land. In case you didn't hear it, aspen is not one of the species available from the state forest nursery, but the DNR's Forest Stewardship planning program can provide valuable assistance to individuals seeking to manage and enhance privately owned forests.

Legal and seed certification issues

Opening afternoon panelists presented brief overviews of the legal framework for native plant protection and seed certification in Minnesota. Panelists included Ben Lang, field services manager for the Minnesota Crop Improvement Association; Robert Jacobson, supervisor for the Turf Establishment and Erosion Control Unit of the Minnesota Department of Transportation; Nancy Sather, botanist/ecologist with the Minnesota Natural Heritage and Nongame Research Program; and Steven Shimek, coordinator of the Minnesota Department of Agriculture Nursery Inspection and Certification Program. Ben Lang is chair of MCIA's Native Grasses and Forbs Committee, which developed standards for the certification of seed of native plants in Minnesota. Bob Jacobson is responsible for the program that evaluates and converts roadsides to native species. Steve Shimek's responsibilities include administering Minnesota Statute 17.23, Conservation of Wildflowers. Nancy Sather served as a spokesperson for the Minnesota Natural Heritage and Nongame Research Program, which administers the state endangered species law.

The Minnesota Seed Certification program assures that the purchaser is obtaining seed of known origin. Certification requires identification of the locale from which the seed comes, ensures that the land is not contaminated, that seed has been isolated from seed of the same species from other geographic areas by a distance of 165 - 1,320 feet, that records are kept on the seed and that both the field and the seed have been inspected. Certified seed must pass Minnesota standards with respect to weed content.

MnDOT identifies certain corridors as wildflower routes and is working to increase the numbers of miles of rights-of-way in native vegetation. For this reason MnDOT has an interest in the availability of local provenance seed at competitive market rates. Native plant lovers need to be aware that plants growing in Minnesota rights-of-way are not free for the taking without securing permission from the appropriate level of government that maintains the road. This means the regional offices of MnDOT for state highways, and the county or township for county and township roads.

The Minnesota Natural Heritage and Nongame Research Program has statutory authority for species listed under the Minnesota Statute 84.0895, Protection of Endangered and Threatened Species. Under this statute it is illegal to take, import, transport or sell all or part of an endangered plant without a permit from the DNR. This includes import into the state and collection within the state of pollen, leaves, flowers, seeds, and whole plants. Permits are customarily issued only for non-redundant research and activities that are judged to be necessary for the long-term natural viability of the species. Anyone contemplating restoration activities that involve Minnesota listed species should contact Bonita Eliason, coordinator, Minnesota Natural Heritage and Nongame Research Program, DNR Box 25, 500 Lafayette Road, St. Paul, MN, before taking further action.

Minnesota Statute 17.23, Conservation of Wildflowers covers the Nelumbo water lily, all

gentians, trilliums and lilies. The Department of Agriculture approaches this law within the context of its responsibility to certify nursery stock. Plants can be collected from private land for personal use without a MDA permit but must be taken with written permission of the landowner. Plants intended for sale need to be cultivated by a grower with a nursery stock grower's certificate.

If plants are being dug with the intention of sale, contact Steven Shimek, Nursery Inspection and Certification, Minnesota Department of Agriculture, 90 Plato Boulevard, St. Paul, before taking further action.

Vendors' views

The day's concluding vendor roundtable gave symposium attenders a glimpse of some of the concerns of native plant dealers. Panel participants included Shawn Fritcher, native seed production manager, Ion Exchange Nursery; Roy Robison, owner and manager, Landscape Alternatives; and John Pauley, manager, Prairie Creek Farm, Prairie Restorations, Inc. All three operations obtain material from native remnants. Ion Exchange and Prairie Restorations deal in both seeds and plants. Landscape Alternatives deals only in growing plants.

One of the frustrations that arose from this panel is the fact that agencies that are major buyers of native seed usually have to put jobs out on bid and in the case of grasses, the price of western seed may outbid local seed. Project managers sometimes lag in lining up sources for local seed until the 11th hour, and the industry is one in which seed or plants could be provided with advance planning, but not at the last minute.

Comments from the panel suggest that there needs to be more stringent early oversight on the part of buyers to assure that managers and middlemen are really doing their best to secure the local plant materials that are actually available on the market.

Conference on North American Prairies to be in Mason City, Iowa

North American Prairie Conference 2000 will be held in Mason City, Iowa, July 16 - 20.

"It is close enough that people interested in prairie should really consider going," Joel Dunnette said. "I have attended a couple of these meetings in the past, and enjoyed them. The web page has quite a bit of information; take a look."

Ellen Fuge will be attending and is willing to car pool. Contact her at:

Ellen Fuge
Scientific and Natural Areas Program
500 Lafayette Rd., Box 25
St. Paul, MN 55155-4025
651-297-3288

Information on the conference and a form to request registration materials are on the website:
http://www.niacc.com/prairie2000/

You may also request information and materials from Carol Schutte by mail, phone, fax or e-mail at:

Carol W. Schutte
North Iowa Area Community College
500 College Drive
Mason City, Iowa 50401
515-422-4319
fax: 515-422-4115
chutcar@niacc.cc.ia.us

Prairie Smoke award

by Deb Anderson

The Olmsted Environmental Commission presented an award for Environmental Excellence to Prairie Smoke of the Chatfield Fish and Game Club. This award is given for contributions to environmental quality in the community.

Prairie Smoke received this award for its continuing spring and nature area restoration on a corner of the Chatfield High School Campus and for its roadside vegetation work.

Plant Lore

by Thor Kommedahl

What is trillium?

Trillium, also called wakerobin, is a member of the lily family. Four species are native to Minnesota: *T. grandiflorum, T. cernuum, T. flexipes, and T. nivale.*

How did it get its name?

Obviously, "tri" comes from the Latin *tres* and refers to the fact that its parts are in threes: three petals, three sepals, three leaves.

What are some of its features?

Trillum is in part of the family that has fleshy berries instead of dry capsules. *T. grandiflorum* is the showiest, and *T. cernuum* hides its flower under a leaf. Petals are white to pink. They are perennials and overwinter as rhizomes. Fruits mature by midsummer.

What about the fruit?

The fruit is a light-green, one-inch capsule, on the end of a long stalk. As seeds mature, the fruit splits on one side and the fruit-bearing stalk bends toward the ground where the sticky seeds fall in clusters. Each seed has material (strophiole) attractive to ants. Ants carry seed and strophiole back to their nests, sometimes as far as 30 feet away.

Where are trilliums found?

T. cernuum is the most widely distributed in Minnesota woodlands and is found in most counties. *T. flexipes* grows in southeastern and *T. grandiflorum* in central eastern counties. *T. nivale* is a tiny trillium that grows on limestone soil in woods of southeast Minnesota and blooms with the crocuses before the snow melts.

Are the plants edible?

Most trilliums should not be picked, but leaves of *T. grandiflorum* have been used in salads. Roots were once used in medicine (introduced into the "Materia Medica" in 1830) but are not so valued today.

To Plant or Not to Plant

Some take-home thoughts from Dr. Haven's keynote address

by Nancy Sather

Over 12% of the world's flora are listed in the IUCN "Red Book" as endangered, with projections that as high as a third of the world's flora could be extinct by the year 2050. The flora of North America is the world's fourth most endangered. Of the 722 federally listed plant species, only 12% are actually protected by the Federal Endangered Species Act. Given these facts, planting more of an endangered species is often the first thought that comes to mind. But is this always appropriate? As the symposium audience discovered, the answer is highly dependent on the ecological setting, genetics and reproductive biology of the species, and the ability to implement and follow-up on restoration activities for a period of years. What is appropriate in one case is not necessarily appropriate in another. This is one reason plans for re-introductions are best done by professionals with a knowledge of the target species' life history, genetics and environmental needs.

Multiple factors affect the persistence of populations. These include environmental influences, demographic fluctuations (changes in the size of populations and the proportion of reproducing and non-reproducing individuals), and genetic factors. The interplay of reproductive mechanisms and genetics is the key to population success. Many species have unique mechanisms to assure that they are either cross-pollinated or self-pollinated. Some species permit both types of pollination. Species that customarily outbreed can suffer from inbreeding depression when their populations become too small and are isolated from genetically different individuals. Inbreeding depression results in increasingly poorer fitness of offspring and is believed to be more widespread than outbreeding depression.

In general, the symposium focused on use of local ecotypes for restoration of native plants. However, in the case of rare plants whose reproductive problems are caused by inbreeding depression, restorationists may need to look farther for plant material that can enhance genetic diversity. An example of such a species illustrated by Dr. Havens is the Lakeside daisy, *Hymenoxys acaulis* var. *glabra*. Isolated existing populations of the species have little genetic diversity. Studies of the reproductive biology of Lakeside daisy determined that the species is self-incompatible, meaning that self-crosses and crosses between closely related plants do not produce fruit. This biological problem was deemed one of the reasons for the near-extirpation of the species in Illinois. For this reason, restorationists used plant material from Ohio and Michigan in recent re-introductions in Illinois.

Such a course of action would not be advisable in the case of a species that could experience outbreeding depression. Examples of outbreeding depression are less well-documented, but such depression may occur in cases where there is extreme local adaptation so that introduction of plants from distant sources could result in disruption of closely-adapted gene complexes. The distance from which species are naturally pollinated varies between and within taxonomic groups. A specific example is the wider pollination distance of the cardinal flower *Lobelia cardinalis*, which is pollinated by hummingbirds, than of *Lobelia siphilitica*, which is pollinated by bumblebees. Insect-pollinated species have a narrower pollination distance than wind-pollinated species like grasses. Therefore, it would be reasonable to hypothesize that outbreeding depression would be more likely to occur in the case of insect-pollinated species than wind-pollinated species. We can extend this thinking to postulate that, in the absence of specific information about the genetics of a population, it would be less advisable to re-introduce insect-pollinated plants from a distant source than would be the case for wind-pollinated plants.

What are the practicalities of re-introducing rare plants? Dr. Havens reminded listeners that the process of re-introduction involves an unconscious selection of individuals at every stage from seed collection to growth in a greenhouse or nursery. We collect seeds that are ripe the day we visit; those that survive our storage and ex-situ propagation techniques are those best adapted to storage and greenhouse conditions. One of our objectives in this type of work should be to minimize unconscious selection as much as is possible. Restoration of rare plants is intrinsically a labor-intensive and scientifically designed activity. Practical considerations include:

Seed collection

Customary practice among botanical gardens is to collect seed from several populations to assure a range of natural genetic variability, and from multiple plants within a population. Because we are talking here about fragile populations of rare species, a rule of thumb would be never to collect more than 5% of the seed at the site to avoid impact to the population.

The importance of keeping maternal lines separated is becoming increasingly well understood, so several seeds from a single plant should be collected to assure viability and these should be kept in a separate envelope or container instead of being pooled. These guidelines necessitate hand collection.

Seed storage

Seeds that are being stored for long periods of time, as is the case at the national seed storage facility in Fort Collins, are kept in cool, dry, clean conditions, often at -20 degrees Celsius or even in liquid nitrogen. Most Midwestern seeds require both drying and freezing to germinate. Seeds in long-term storage should be tested periodically to assure they are still viable and enhanced with new seedlots from the wild.

If ex-situ populations are being established in the laboratory or greenhouse, it is important to look at the soil conditions of natural populations, to take into account whether the species requires a mychorrhizal inoculant, and to determine whether information is available on the germination requirements of the species. A good, useful reference for this is the book "Seeds" by Carol C. Baskin and Jerry M. Baskin of the University of Kentucky. Ex-situ (laboratory) populations should not be retained for long periods of time through several generations because of the risk that plants will adapt to their greenhouse conditions. As a result of small population sizes, these populations are also more prone than natural populations to genetic drift and the accumulation of mutations.

Site selection

In general, sites should be selected only within the documented natural range of the species and should match the ecological conditions of the nearest known populations, or of the populations from which source material is available. Such a match includes not only geographical proximity, as is often emphasized, but also such factors as soils, climate, and slope exposure. *De novo* introduction should use multiple sources of seed, but re-introductions or augmentations of small populations should use propagules only from that site.

Dr. Havens suggested the following guidelines that can help agencies responsible for issuing permits reach sound biological decisions about the appropriateness of proposed introductions or re-introductions.

When re-introduction may be appropriate

- The species is near extinction;
- There is evidence of population decline;
- Populations are poorly protected;
- It is experiencing dispersal problems;
- There is appropriate source material for re-introduction;
- Propagation is possible;
- The activity supports Recovery Team recommendations.

When re-introduction is not appropriate

- Re-introduction would result directly or indirectly in the loss of plants or populations at a natural site;
- Appropriate source material is not available;
- Other threats to the species are not controlled, so the re-introduced population would be in jeopardy

Genetic guidelines

- Create a genetically diverse population.
- Equalize founder representation.
- Use stock from the same ecoregion or evolutionary lineage if known, except under exceptional circumstances.
- Consider the breeding system of the species—for example, don't plant insect-pollinated species in an area from which the pollinators are absent.
- Design restorations as an experiment with three to five replications.
- Monitor re-introductions or restorations for a period of years appropriate to the life history of the species being introduced. Ideally this means monitoring through the successive two generations (NPS).

Anyone thinking of using state or federally listed species for research, restorations or reintroductions must contact the appropriate agencies for permits. In Minnesota, contact Dr. Bonita Eliason, coordinator; Minnesota Natural Heritage and Nongame Research Program, DNR.

People and Cliffs in Minnesota

Summary of Dec. 2 program
By Virginia Card

Professor Mike Farris, College of Liberal Arts, Biology and Environmental Studies, Hamline University, and his students studied the effects of trampling by humans on the vegetation of cliffs in Minnesota. They are particularly interested in damage caused by rock climbers and sightseers in state parks. Some of the cliffs they studied are Buffalo Ridge, Interstate State Park, and Shovel Point .

Buffalo Ridge, in Blue Mounds State Park in southwestern Minnesota, is beautiful, and a nice place to rock climb, especially in March and April. Interstate State Park, near Taylor's Falls, includes the most heavily used climbing cliffs in Minnesota, and there are also several heavily used cliff faces across the river in Wisconsin.

Shovel Point, on the North Shore, is less steep and has more trees, such as cedars and birches. The rock faces are less angled and have more features, which leads to a higher abundance of vascular plants. Shovel Point is also the only place in the study where *Umbellaria* and *fruticose* lichens were found.

Handbook is resource for roadside plantings

"Roadside Use of Native Plants," a handbook by the Federal Highway Administration, provides guidance on using native plants for erosion control, landscaping, maintenance of rights-of-way, and helping control introduction of invasive species of plants.

The 665-page book contains state-by-state information and can be ordered from Fred Bank, FHWA, HEPN-30, Room 3240, 400 Seventh St. S.W., Washington, D.C., 20590; or by e-mail to Bonnie Harper-Lore at Bonnie.Harper-Lore@fhwa.dot.gov.

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