Kelseya

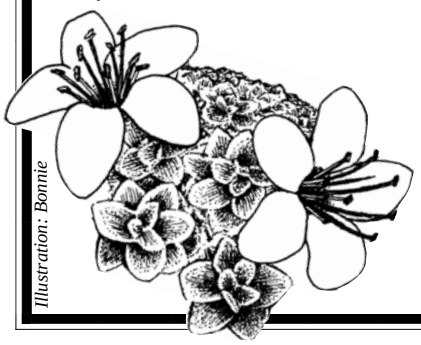


Illustration: Bonnie

Spring 2003
Volume 16 No. 3

Kelseya

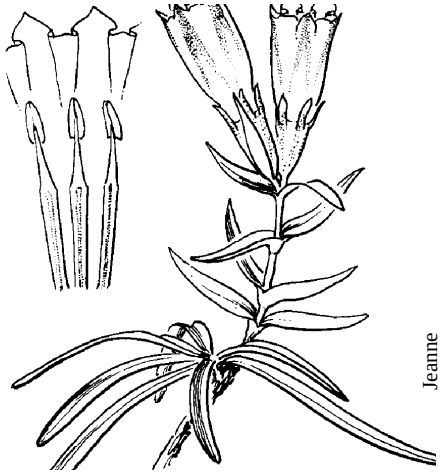
Newsletter of the Montana Native Plant Society
www.umt.edu/mnps/

Who Says Plants Don't Move?

by Peter Lesica

Of course plants move; everyone (except maybe a few wildlife biologists) knows that! Over 120 years ago Charles Darwin and his daughter Francis wrote a book titled "The Power of Movement in Plants." In fact, the majority of vascular plants are capable of moving some portion of their anatomy in response to external stimuli. Famous examples include Venus fly traps and the folding leaves of the sensitive plant mimosa.

Perhaps the most commonly observed plant movements are floral heliotropisms, where flowers rotate in order to remain oriented toward the sun throughout the day. Sunflowers are a well-known example. Researchers working in arctic and alpine environments have found that heliotropic flowers are warmer inside than those that do not track the sun. Consequently they attract more insects for longer periods of time and have higher rates of pollination and seed set. Warmer flowers also develop fruits faster.



White Gentian (*Gentiana algida*)

Botanists are just beginning to explore other types of flower movements. Michael Bynum and William Smith at the University of Wyoming studied white gentian (*Gentiana algida*), a species found in many mountain ranges of southwest Montana as well as Wyoming. This low-growing alpine plant has white-and-purple, bottle-shaped flowers nearly two inches long. Bynum and Smith noticed that these gentians often closed their flowers in mid-afternoon. They showed experimentally that corollas close at 60° F, but only if the temperature is falling. These are conditions that generally precede August thunderstorms in the central Rockies. They observed that flowers could close in less than ten minutes and reopen nearly as fast when conditions ameliorated. But why? Bynum and Smith found that flowers artificially forced to stay open during a thunderstorm lost pollen from the anthers and had reduced seed set compared to flowers that were allowed to close. The corolla not only attracts pollinators, it also acts as an umbrella.

There is a similar story for the Asian wild crocus or pasqueflower (*Pulsatilla cernua* = *Anemone cernua*). These spring wildflowers are erect when they first open, but usually bend over when the anthers ripen, and finally become erect again once the pollen is shed. Researchers found that insects visit nodding and erect flowers with equal frequency and affect pollination equally. However, they discovered that rain causes the pollen grains to burst. So again it appears that the plants are moving their flowers to protect them from the elements. Once the pollen is shed, the flowers become erect, presumably to aid in seed dispersal. Our pasqueflower (*Anemone nuttalliana, A. patens*) often nods during rain or snow events but becomes erect again once good weather returns.

Similar flower movements are practiced by glacier lilies (*Erythronium grandiflorum*). The six

(Continued on page 8)

Flora of Discovery
MNPS 2003 Annual Meeting

The Calypso Chapter is gearing up to host the **Montana Native Plant Society 2003 Annual Meeting** during the weekend of **June 20-22**. Enjoy southwest Montana's beauty at the University of Montana's Birch Creek Center. The Center is located in the picturesque setting of the East Pioneer Mountains within the Beaverhead-Deerlodge National Forest, 22 miles northwest of Dillon, Montana. Numerous field trips are planned in surrounding areas. Two guest speakers will entertain us with tales of the Lewis and Clark Expedition. Mark your calendar now and pre-register on the enclosed form for the fun to come.

Kelseya

President's Platform

Betty Kuropat

It's March, 03-03-03. Spring and flowers should be showing up soon. It's finally snowing. In spite of icy roads and fresh powder that we could have been skiing on, your Board of Directors met in Helena on Saturday, 3-1-03. We had a busy and productive meeting even though several board members were absent. They couldn't wait for the spring flowers in Montana and went off in search of adventures with either better weather or better skiing.

The Calypso Chapter is working hard planning the Annual Meeting that will be on June 20-22 at the Birch Creek Center in the Pioneer Mountains near Dillon. Check out the enclosed registration and information insert. Don't miss a fantastic weekend of scenic field trips and socializing with your plant friends. Several chapters will soon have new officers who will be introduced at the membership meeting on Saturday evening.

Don't forget to vote for President, Treasurer, and Western Montana Representative. For the 2nd year, the chapter with the highest percentage of voter turnout will get $100. Last year Kelsey Chapter won the prize with 39% of the chapter casting votes. Let's see you beat that!

The ad-hoc Lewis and Clark Committee worked all winter on the list of plants collected by Lewis and Clark that is enclosed in this issue. It was a lot of work. The result is so professional and timely that Montana Fish, Wildlife and Parks and a non-profit called "Rivers Across" helped pay the printing costs so they can have copies to distribute during the bicentennial celebrations of the Corps of Discovery.

MNPS committees are all active with ongoing and special projects. The Small Grants Committee received 12 excellent proposals and 2 were approved for funding. See the article on page 4. The Conservation Committee continues to comment on public land management issues and the Landscape and Conservation committees, working with the Montana Nursery and Landscape Association, drafted "Guidelines for Selecting Horticultural Plant Material for Montana". You can find the guidelines on our website. The Education Committee printed 2000 copies of the brochure *Plant Collection Guidelines for Teachers* and is distributing them to science and environmental education teachers across the state. It is also on our website. The Education Committee has active members ready to work on projects. But, they need a chair to provide leadership. If you might be interested, please contact Kim Goodwin or me to find out more.

The Board finalized the 2003 budget. It is included in this issue. Notice that we have funded a number of special projects this year. They all contribute to education and conservation of Montana's native plants. If you have questions or suggestions on the budget, please contact a Board member listed on the back of the newsletter. We operate best with input from you.

In the last few years, we have had an increase in requests to fund really worthwhile projects. We would love to fund them all. We decided to set up guidelines on who can submit funding requests, how and when they should be submitted, and how we budget for them. Pattie Brown will prepare a draft that we can review at the summer meeting. Generally, funding requests will need to come through a chapter or committee and proposals should be ready for the fall board meeting so we can prepare a budget.

Enjoy the snow and the thaw. I'll see you at Birch Creek for the summer solstice.

Betty Kuropat

Betty can be reached at 2688 Witty Ln. Columbia Falls, MT 59912 406-892-0129 e-mail: kuropat@bigsky.net

MNPS SPECIAL DONATIONS

As you will notice in this issue of *Kelseya*, MNPS is funding a number of special projects that will advance the conservation of native plants in Montana. This is an exciting time for the society. Due to the success of fundraising activities at our annual meetings and through individual donations, we have developed a large enough funding base at the state level to fund worthy projects that support better understanding and appreciation of Montana's flora. We would like to continue this important work in future years. If you would like to support the MNPS Small Grants program, or other special projects, please consider a tax-deductible contribution to MNPS. You may use the donation check-off on the membership form or mail a donation directly to MNPS, P.O. Box 8783, Missoula, MT 59807-8783.

WELCOME new members!

Tom & Debbie Schmidt, Louis Lamit, Nan & Ray Breuninger, Jennifer Hintz, Beth Brenneman, Ann Jeremiassen, Jill & Bill Hicks, Roger Hearst, Jim Cancroft, Laurie Henneman, Joyce Saunders, Harlen Johnson, Laura Atwood, Noorjahan Parwana, Heidi M. Anderson, Janet Stetzer, Lindsay Amsberry, Mim Schultz, Stillinger Herbarium, U Of ID, Susan & Brad Robinson, Greenspace Landscaping Inc., Denise Montgomery

Your participation and support are important to us. Contact your local representative with any questions or suggestions you may have.

The Annual FIELD TRIP Booklet will be out by May 1. Please submit entries to the Editors by the April 10 deadline.

The Release of Three Native Plants Announced

Old Works Germplasm fuzzytongue penstemon (*Penstemon eriantherus*), Washoe Germplasm basin wildrye (*Elymus cinereus*), and Prospectors Germplasm common snowberry (*Symphoricarpos albus*) were recently released by the Development of Acid/Heavy Metal-tolerant Cultivars (DATC) Project. The DATC Project is sponsored by the Deer Lodge Valley Conservation District in cooperation with the NRCS Bridger Plant Materials Center. The project was founded in 1996 to select plants inherently adapted to the low pH and heavy metal laden soils common at mine-impacted sites in western Montana. The program is structured around the collection of seed from plants growing in contaminated mine soils in western Montana. These (Go) seed accessions are subsequently tested against other accessions of the same species at a common garden at the Anaconda Smelter Superfund Site. Superior performing accessions are then planted at the Plant Materials Center in Bridger, Montana, to produce G_1 seed and investigate cultural requirements. If an accession tests well and can be effectively farmed, it is petitioned for release through the Montana Foundation Seed Program. Upon approval, a release becomes commercially available to seed producers. Seed producers generally plant G_1 seed and produce G_2 seed, which is sold directly or indirectly to the general public, most commonly via seed company catalogs.

Old Works Germplasm fuzzytongue penstemon is a blue-flowering perennial forb adapted to loamy and sandy soils. It is commonly found in dry, open terrain from the prairies into the mountains of Montana, southern British Columbia and Alberta. This selection was collected near the historic Old Works smelter in Deer Lodge County, Montana. It has excellent potential for the restoration of dry, open lands and for xeriscape and rock garden applications.

Washoe Germplasm basin wildrye is a tall, coarse, robust, perennial bunchgrass native to the intermountain region of the western United States. The species' tall stature and extensive fibrous root system make it an excellent soil stabilizer and wind barrier. Washoe Germplasm basin wildrye was originally collected in Deer Lodge County, Montana, 1.25 miles southwest of the Washoe smelter stack on gravelly, sandy-loam textured soil. Soil pH at the collection site ranged from 4.6 to 5.6 and heavy metal concentrations ranged from moderate to above established phytotoxicity levels. Washoe Germplasm had better overall height, vigor, and survival compared to 'Trailhead' and 'Magnar' when tested in contaminated soil. Basin wildrye provides excellent forage and cover for many wildlife species. It is readily grazed in most seasons but is critical winter forage for

(Continued on page 7)

Equal Protection for Plants?
a letter to the Editors

Equal protection for plants under the Federal Endangered Species Act seems well justified, but the issue is not as simple as it seems at first glance. There may be a good reason that federally listed threatened and endangered plants are not given protection on private lands. I believe it is primarily a matter of jurisdiction. If there is a deer in your back yard, it doesn't belong to you, and if it jumps your fence into your neighbor's, it doesn't belong to your neighbor. That deer belongs to all of us. Most vertebrate wildlife is public domain in most states; game species are managed by states, and other birds are managed by the U.S. Fish and Wildlife Service. You can't "take" a deer or duck or warbler or trout without a permit (e.g., collecting, hunting or fishing license). Since government agencies regulate non-endangered vertebrate wildlife across both public and private lands, it makes sense that they would be able to protect endangered vertebrates on both private and public land as well. If we want the feds to protect endangered plants on private lands, we must be willing to grant them jurisdiction over wild plants on private lands, and there's the rub. You can't shoot that deer in your back yard without a permit, but you can cut down a boxelder with impunity. You don't own the deer or robin in your back yard, but you do own the plants and invertebrates. Would you want it any other way? If the government can protect an endangered plant on your property, it implies that they have jurisdiction

(Continued on page 8)

SMALL GRANTS ADVANCE CONSERVATION OF MONTANA' S NATIVE FLORA

The MNPS Board of Directors is pleased to announce two awards, one each in education and research, in this year's Small Grants competition. The Small Grants Committee received 12 excellent proposals encompassing school and interpretive gardens, as well as a variety of educational and scientific projects. Each proposal was worthy of funding and would have made an excellent contribution towards better understanding, appreciating and conserving Montana's native flora. Following is a list of proposal titles that we received:

RESEARCH (including inventory)

- Nutcracker foraging and minimum tree densities for restoring whitebark pine.
- Whitebark pine (*Pinus albicaulis*) regeneration within a community context: restoring a keystone species.
- Snowshoe Peak: an ice-age refugium in northwest Montana?
- How do herbivore impacts on arrowleaf balsamroot change depending on elevation?
- *Trillium ovatum* in western Montana – implications for conservation.
- Commercializing production of native Montana species.

EDUCATION

- Preserving Nature's Living History Through Growth
- Flora of Montana – Rimrocks to River (Part 1 – Rimrocks)
- The 10 Most Desired Native Plants Poster
- DeSmet's Last Best Place
- Habitat Enhancement Series – Grasslands Restoration on Teller Wildlife Refuge Property
- Meadow Hill Neighborhood Park

This year's education award goes to Marijka Wessner, Weed Education Specialist for the Missoula County Weed District. Marijka is creating a poster of important desirable native vegetation found in Missoula Valley open spaces. The poster will depict 5 native grasses and 5 native wildflowers and will include a brief written description, line drawings and pictures. The overall goal of this project is to increase awareness of native vegetation and help to educate new urban landowners about the importance of native plant communities. The MNPS will contribute $500.00 to help with printing costs.

The second successful proposal was submitted by Tarn Ream, a graduate student at the University of Montana. Tarn is conducting research to advance the scientific understanding of *Trillium ovatum* in order to determine rates of sustainable harvest. *Trillium ovatum* is a long-lived species and the roots and rhizomes are collected for medicinal purposes. There is concern that unsustainable harvesting could decimate populations in a very short time. Tarn's research will help determine this species' vital rates (plant fecundity, seedling recruitment, and survival) and is expected to provide critical information for conservation planning. The MNPS contributed $500.00 in 2002 towards this project and will contribute $1,000.00 in 2003. See Tarn's report on this page for a summary of her work in 2002.

We have asked Marijka and Tarn to prepare *Kelseya* articles about their projects to keep MNPS members informed of their progress in 2003.

Thanks to everyone who participated in this year's competition. We hope to hear from many of you again in future competitions.

Cathie Jean

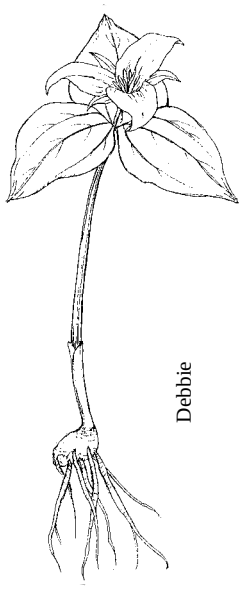
CONSIDER BECOMING INVOLVED IN THE SMALL GRANTS COMMITTEE

If you would like to become more involved in the Montana Native Plant Society, there are many avenues for you to try. Why not volunteer to participate on the Small Grants Committee? You can help get the information out, help choose worthy recipients, or try your hand as committee chair. If you are interested, please call Cathie Jean, Small Grants Committee chair at 522-9503. Thanks!

Trillium ovatum in Western Montana—Implications for Conservation

A 2002 Small Grants Report

Those of you who walk along the forested streams and seeps of western Montana in the spring are likely to encounter a beautiful plant called Trillium. Trillium, a name that refers to three leaves and three petals, has many common names including Wake-robin, because it blooms early in the spring, and Bethroot (Birthroot), in reference to traditional medicinal use of the rhizome by Native Americans for childbirth. There are many species of Trillium in North America, but only Western Trillium, *Trillium ovatum* (*ovatum* describes its egg-shaped leaves), occurs in Montana.



Trillium ovatum

Trillium mature slowly and live a long time. Their life starts with a two-year germination cycle—the first year a root grows, the second year a leaf sprouts. For several years the plant has only one leaf, then graduates to a three-leaf non-reproductive stage. Plants do not reproduce clonally, therefore recruitment of offspring is exclusively dependent upon sexual reproduction. Preliminary data show that Trillium in western Montana may require at least 19 years to reach the three-leaf reproductive (flowering) stage, suggesting a slow reproductive rate. The oldest plant I sampled had 58 leaf scars on its rhizome—the end of which was broken off, meaning the plant could be anywhere from 80-100 years old!

Western Trillium is highly sensitive to disturbance. A broken shoot can take a year or more to regenerate

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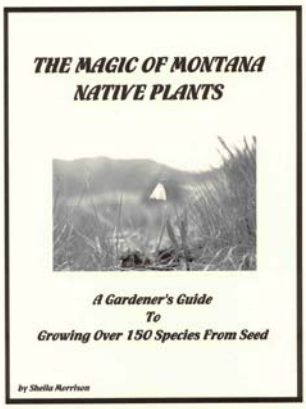
The Magic of Montana Native Plants: A Gardener's Guide to Growing Over 150 Species From Seed

by Sheila Morrison



Gardening with native plants is becoming more popular every year. Information on native plant gardening is difficult to find and most literature is focused on the Pacific Northwest. We in the Rocky Mountains have very limited resources and it has been difficult to find sources for native plants until now.

The Magic of Montana Native Plants provides the adventuresome gardener with the answer. Grow your own! Sheila Morrison provides information on methods for growing your own native plants from seed. Sheila is no novice to Montana's native flora. She wrote a trail guide for the Bitterroot Mountains and compiled a portfolio of wildflower photographs. As past-president of the Clark Fork Chapter of the Montana Native Plant Society (MNPS) she became aware of native plant conservation problems and began growing natives from seed. Sheila shares with us the results of twelve years of research and experience in growing Montana native plants from seed in her Missoula garden.

The introductory sections clearly present all the background information you need to get started growing your own native plants. A brief description on preparing a site for planting natives is given, along with soil preferences, tips on germination, planting media, and types of containers to use. She also addresses the ethical issues of collecting plants and seeds in the wild. The book is very user-friendly. The plants are listed in alphabetical order by scientific name in the text and the index lists plants by common and scientific names.

The majority of the book is filled with instructions for germinating and growing over 150 species of Montana natives. Plant height, flower color, bloom time, root type, habitat, and whether the plant is an annual, biennial, or perennial are listed in the text, along with giving the requirements for soil, light, and water. Most importantly she provides germination methods for both indoors and outdoors. There is also a full paragraph or more of interesting facts about each species. For example, when describing *Brickellia grandiflora* she says, "At last! A native plant that actually chooses to bloom late in the summer instead of with the crowd in June. *Brickellia* makes a tidy mound of green, studded with its small white flowers. Although it reportedly grows to 2 ft, my plants stayed under 1 ft."

Sheila's book includes color photographs of nearly 100 of the species she describes. They will help you learn the plants as well as color coordinate your garden. For the timid or those with a brown thumb, a list of the 23 easiest-to-grow species is provided.

I am a gardener by profession and am very interested in native plants. This book is written so that either a novice or an experienced horticulturist will be able to succeed with the information given. Many of the plants described in her book have a range far beyond Montana, so this book should be of interest to anyone in the western U.S.

The Magic Of Montana Native Plants reveals secrets for growing Montana native plants successfully from seed to maturity. Sheila's book includes a wealth of knowledge and reflects her passion for the value of native plants in a format that is interesting and easily read. She shares her experience "in order to give a starting-point to those with a new enthusiasm for nurturing these clever plants" and to keep Montana native plants from disappearing.

Copies can be obtained by sending $17.95 plus $3.00 postage to Montana Native Plant Press, 3912 Lincoln Road, Missoula, Montana 59802 or from MNPS chapters.

Kelly Chadwick

Native Plant Landscaping Guide ...available from the Kelsey Chapter

The Kelsey Chapter of the Montana Native Plant Society has just released a guide for landscaping and gardening with native plant species in the Helena area. The guide consists of a packet of information including a list of recommended ground covers, trees, shrubs, forbs, grasses, vines and cactus species specific to the Helen area; a list of recommended resources for additional information; *Where the Prairies Meet the Mountains...an introduction to using native plants*, answers frequently asked questions; a copy of *Creating Native Landscapes,* a brochure published by the Bridger Plant Materials Center; the *Plant Collection Guidelines for Teachers*, published by MNPS; and a MNPS membership brochure. The list of recommended species provides a wealth of information, including soil, moisture and light requirements, plant height and color, applications for suitable planting and use, species for birds and wildlife, and more. All of the recommended species can be found by using sources referenced in the *Source Guide for Native Plants of Montana.*

The Kelsey Chapter plans to advertise the packet locally and hopes to provide the information necessary to enable land owners and gardeners to make informed decisions about using native plants for local gardening and landscaping projects.

The packet is available for $3.50, to cover copying and mailing costs. To order call Kathy at 449-6586 or e-mail: drakekath64@msn.com

Thanks to Ric Casteel, Connie Geiger, Jo Lace, Kathy Lloyd, Andrea Pipp and Sara Toubman, the Kelsey Chapter Landscaping Committee, for putting together a great resource!

Website Information

The Center for Plant Conservation's new website provides comprehensive information about the country's native, imperiled plants. Visit: www.centerforplantconservation.org for plant profiles, photos, descriptions and distribution information.

PUBLICATIONS

Geology and Plant Life: The Effects of Landforms and Rock Types on Plants

by Arthur R. Kruckeberg
2002 University of Washington Press

Arthur Kruckeberg spent much of his 40-year academic career researching and writing about how plants evolve in response to soils derived from serpentine. Serpentine soils are toxic because they are high in magnesium and heavy metals. Most plants can't grow in these soils, but some that do grow nowhere else. This unusual situation has attracted the attention of many botanists and evolutionary biologists, and Kruckeberg is one of the foremost among them.

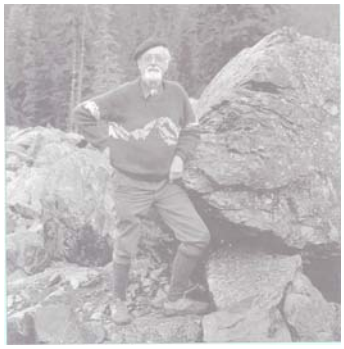
The scope of *Geology and Plant Life* is far wider than just serpentine and its well-known flora in the Pacific states (Montana doesn't have any) where Art did his work. Chapter 5 is the heart of the book; in more than 100 pages he covers it all - sedimentary like shale and limestone, igneous such as granite and basalt, and, of course, metamorphic like serpentine. Plants on limestone and serpentine are given the most coverage because they have unique floras that have been extensively studied. Billy Turner, who used to teach summer classes at Flathead lake, studied endemic plants of Mexico's gypsum soil and might argue that gypsum got short shrift. The black-and-white photos are great, and the text introduced me to lots of places I'd never heard of before, such as the serpentine island of New Caledonia and the tropical limestones of Cuba and Jamaica.

Not only does limestone form different soils, it begets many unusual formations, and Kruckeberg's book also has a chapter on geologic landforms. He explains how different slope aspects foster different vegetation and discusses plant response to different geomorphological settings such as avalanche chutes, talus slides and alluvial terraces. Other chapters explore the history of geologic botany, geology's effects on plant geography, and Kruckeberg's home turf, the role of geologic botany in the study of evolution.

Kruckeberg weaves all these themes around the thesis of the primacy of geology rather than climate in determining plant distributions. Emphasizing this as the book's central thesis is unfortunate because it seems like a straw man. Climate and geology are so interdependent that Kruckeberg seems to be engaging in a chicken-and-egg debate. And really, who cares which is most important? What is interesting is how species and communities respond to differences in soils and landforms and why. In this regard Kruckeberg won't disappoint you; he knows a lot of the stories. As a student of limestone plant geography, I appreciate all of the references, especially the classics.

The botany-geology interface is an interesting subject no matter where you go in Montana. Limestone endemics occur throughout the mountainous regions. Unusual plant communities are found on acid-shale outcrops in several north-central counties. Many uncommon plants are associated with sandstone outcrops in the southeast. Art's book will help you understand what you're seeing.

Peter Lesica



Arthur R. Kruckeberg

Plants Collected in Montana During the Lewis and Clark Expedition is included as an insert in this newsletter. The list covers the plant species collected by the Expedition in Montana that are still extant and gives the date and place of collection. The handout will serve as an excellent resource during Lewis & Clark Bicentennial festivities and will help promote awareness of Montana's native plant heritage. If you need more copies to distribute at local events, contact your chapter representative or MNPS Publications.

Available from MNPS

The third edition of the *Source Guide for Native Plants of Montana* is now available. The cost is $6.00. Send a check made out to MNPS to: MNPS Publications, 1270 Lower Sweet Grass Road, Big Timber, Montana 59011. The cost will cover postage. The guide lists 55 sources for over 500 species of trees, shrubs, forbs and grasses. This edition has e-mail and website addresses for many sources and a handy common name index. The guide is a must for home landscapers, native plant gardeners and those involved in restoration projects.

Available free from MNPS Publications: MNPS membership brochures, *Plant Collection Guidelines for Teachers* brochures, and *Echinacea* Cultivation Information. Also available are additional copies of *Plants Collected in Montana During the Lewis & Clark Expedition.* Please send a SASE to the address above to receive any of these publications.

Available from the Flathead Chapter: *Native Plant Gardening and Landscaping References* and *Recommended Species for Native Plant Gardening in the Flathead.* The packet can be mailed to you for $2.50. Contact Tara Carolin at P.O. Box 382, West Glacier, MT 59936, call 406-888-7919 or e-mail: Tara_Carolin@nps.gov

Available from the Kelsey Chapter: a packet of information on landscaping with natives in the Helena area. The packet will be mailed to you for $3.50. Contact Kathy at 449-6586 or e-mail: drakekath64@msn.com to order.

Visit the MNPS website at www.umt.edu/mnps to download in pdf format *Weeds Listed as Noxious by Montana Counties*, a list of weeds that are targeted by each county; *Guidelines for Selecting Horticultural Plant Material for Montana*, voluntary guidelines by MNPS and the Montana Nursery and Landscape Association; and *Lewis & Clark Plants Collected Elsewhere That Occur in Montana*, an inclusive list of Lewis & Clark plants found in the state.

Big Sky Sketches

Lewis's Red Monkeyflower
Mimulus lewisii Pursh

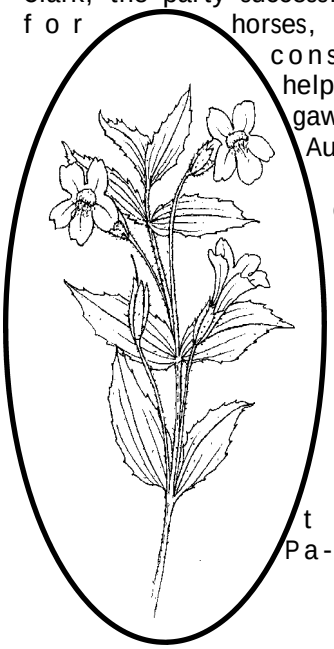
by Wayne Phillips

Lewis's monkeyflower, a member of the Scrophulariaceae (Figwort) family, is a perennial herb up to three feet tall, with opposite leaves having coarsely toothed margins and sticky glands on the surface. The flowers are pink or magenta to purple, with yellow marks in the throat. The flowers are arranged singly on long stalks from the leaf axils. The large flowers have two lips; the upper lip having two lobes and the lower lip having three lobes and two hair-lined ridges. These are riparian herbs growing along streams and seeps from British Columbia to California and east to the Rocky Mountains from Alberta to Colorado.

In 1814 Frederick Pursh described Lewis's monkeyflower in his book *Flora Americae Septentrionalis,* and credited a dried herbarium specimen of Meriwether Lewis's as the source of his information, writing, "on the head springs of the Missouri, at the foot of Portage hill. M. Lewis. (perennial) Aug. v. s. in Herb. Lewis. Not above eight inches high; flowers two or three, larger than any other known species (of *Mimulus*), of a beautiful pale purple." Pursh was the first person to describe this species for science, and he named the plant in honor of Meriwether Lewis. He also featured this plant as one of the twenty-three illustrations in his book. Lewis's specimen has since been lost, but from Pursh's description we know that Lewis collected his red monkeyflower specimen in the spring-fed headwaters of present-day Trail Creek, Montana, just below Lemhi Pass, where it still grows today.

On August 12, 1805 Lewis and a small party became the first U. S. citizens to traverse the Continental Divide, crossing at Lemhi Pass in a desperate search for the Shoshone Indians and the horses the party needed to proceed by land. On August 12 Lewis rested at the spring just below Lemhi Pass, and wrote in his journal, "two miles below McNeal had exultingly stood with a foot on each side of this little rivulet (Trail Creek) and thanked his god that he had lived to bestride the mighty & heretofore deemed endless Missouri."

They not only found the Shoshone Indians, but discovered that the Chief, Camehwait, was the brother of their Shoshone Indian interpreter, Sacagawea. After re-crossing Lemhi Pass on August 15 and joining Captain Clark, the party successfully traded for horses, with the considerable help of Sacagawea. On August 18 Lewis crossed Lemhi Pass for the last time as the party proceeded on toward the Pacific Ocean.



Debbie

Lewis's Monkeyflower (*Mimulus lewisii)*

(Continued from page 3)

elk and deer. It provides cover and thermal protection for many birds and small mammals.

Prospectors Germplasm common snowberry is an erect, densely branched deciduous shrub found at various elevations and climatic zones. It is a cool season plant with rhizomatous roots and often forms dense thickets. It is an important food, nesting, and cover species for many game and songbirds in the western U. S. Bighorn sheep, pronghorn antelope, and deer browse the foliage and twigs. This selection was collected adjacent to the defunct Washoe smelter in Deer Lodge County in a loamy textured soil. Soil pH at the collection site ranged from 4.1 to 6.0. Arsenic, cadmium, copper, lead, and zinc concentrations ranged from benign to above established phytotoxicity levels. This species is an excellent soil stabilizer with a branched and rhizomatous root system that often forms dense plant colonies.

Leslie Marty

SPOTLIGHTING SCOTT…Thanks to our volunteers!

Volunteers keep MNPS on track. Because of the dedication and commitment of many people, the society is able to pursue the goals of conservation and education about Montana's native plants. Scott Mincemoyer has served as membership chair since 1999, without much glory and certainly without pay! Scott is leaving us to pursue adventures along the Appalachian Trail. We wish him the best! We also want to welcome Marijka Wessner, who has taken on membership duties. Thank you!

...Equal *(Continued from page 3)*

over all the plants in your yard. Would you want to have to get a permit to dig a clump of rough fescue in order to fix your sewer line? Are you in favor of getting a license to snuff a boxelder bug? Personally, I'm with Chief Seattle in believing that private property is wrong-headed, but it is a cornerstone of the American way of life and will be difficult to change.

There is another, more pragmatic reason to think that unequal protection for plants is acceptable; it makes listing under the Federal Endangered Species Act a whole lot easier. *Howellia aquatilis* occurs in several places on Plum Creek lands, yet they didn't protest when it was considered for listing. In fact only one group (ranchers leasing grazing lands with *Howellia* ponds) objected. Compare this with the bull trout listing process. We didn't get protection for *Howellia* on private lands, but the Forest Service has done a good job of protecting it on their lands, and we have Federal listing, in part, to thank for that. If the Act called for protection on private land as well, we'd probably still be waiting. Of course many plants occur only on private lands, and this is where non-governmental organizations like The Nature Conservancy have an important role to play. In Montana, *Silene spaldingii*, another listed species, occurs only on private, state or reservation lands. TNC bought the largest population and protected another with a voluntary agreement. In Washington, the largest populations are on federal land, and they are now protected. It is certainly a debatable question, but it may be that plants benefit in the long run from not being legally protected on private land.

Peter Lesica

As reported in the winter 2003 issue of Kelseya, MNPS joined the Native Plant Conservation Campaign. A sidelight of that campaign is an effort called the Equal Protection for Plants Campaign. Although we probably all agree on the importance of preserving the diversity of our native plant heritage, there may be differing opinions on how best to do that. Kelseya welcomes your views on this and any other plant related issue.

...Trillium *(Continued from page 4)*

and removal of rhizomes can devastate a population. There is concern among conservationists and herbalists that market-driven, unsustainable harvest of native medicinal plant species, such as Western Trillium, could decimate populations in a very short time. I began a research project in the spring of 2001 to provide documentation in order to help conserve of what Klaus Lackschewitz referred to as "perhaps the most elegant spring wildflower in our area."

My objectives for this study are to synthesize information on Trillium and provide demographic data from local Trillium populations. Research on population structure, determined by stage class, and plant distribution across the landscape offers valuable information about populations in Montana. Survival of any given population depends on its vital rates (plant fecundity, seedling recruitment, and survival) and mortality rates, and data describing these rates will provide critical information for conservation planning and sustainable use of this species.

I would like to thank the Montana Native Plant Society for supporting this project through the Small Grants program.

Tarn Ream

...Move *(Continued from page 1)*

tepals are rolled back exposing the anthers on sunny days, but they remain extended over the flower parts at night and on cloudy days. Many evening primroses (*Oenothera* spp.) open their flowers at dusk to attract nigh-flying pollinators and close them again after the sun comes up in the morning. Paying attention to plant behavior adds another dimension to botanizing. They might be a little slow, but plants are very graceful.

Additional reading:

Bynum, M. R. and W. K. Smith. 2001. Floral movements in response to thunderstorms improve reproductive effort in the alpine species *Gentiana algida* (Gentianaceae). American Journal of Botany 88: 1088-1095.

Huang, S., Y. Takahashi and A. Dafni. 2002. Why does the flower stalk of *Pulsatilla cernua* (Ranunculaceae) bend during anthesis? American Journal of Botany 89:

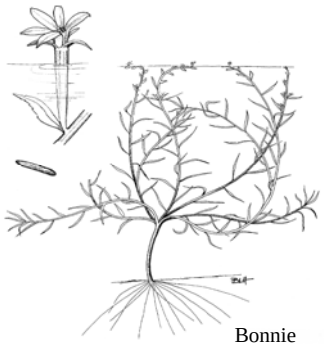
BOARD MOVES TO ENTICE VOTERS

The 2002 Montana Native Plant Society (MNPS) elections set an all time record for voter turnout. The MNPS Board of Directors offered a $100 prize to the chapter with the largest percentage of voters, and the number of voters increased from 33 in 2001 to 83 in 2002, out of a total membership of 412. This equals almost a 20% turnout for the non-contested elections. Voter turnout increased 251%. The Kelsey Chapter, headquartered in Helena, cast the largest percentage of votes with 39% and won the $100 prize.

Now it's election time again. The MNPS Board of Directors has again decided to award $100 to the chapter with the largest percentage of votes. Last year, if the Maka Flora Chapter in northeastern Montana had cast two more ballots it would have beat the Kelsey Chapter and taken the prize. Please fill out the enclosed official ballot today and help your local chapter win in 2003. Results will be announced at the MNPS Annual Meeting, June 20-22, 2003 at the Birch Creek Center northwest of Dillon.

The MNPS Election Committee is proud to announce that incumbent President Betty Kuropat and incumbent Treasurer Madeline Mazurski have agreed to run again for two year terms (Note: the MNPS Board has not felt the need to impose term limits). The most exciting news in the 2003 election is that Dennis Nicholls of Noxon has agreed to run for Western Representative-at-large. Please read the enclosed ballot for the scoop on each candidate.

Patrick Plantenberg



Bonnie

Howellia aquatilis, one of Montana's three threatened plant species

CALENDAR

Artemisia chapter

Tuesday, April 15, 5:30 p.m.
"ZooMontana meeting and tour". Meet at ZooMontana at 5:30 p.m. to tour the planting site. Call Sandy King at 652-8468 for details.
Saturday, April 26
"Weatherman Draw Hike". The hike, near Bridger, is 6 miles round trip, and will require windbreakers, hiking boots, water and lunches. Early spring wildflowers and Native American rock art are the main attractions. Sponsored jointly with the Sierra Club, contact Susan Winslow at 668-9112 (evenings) for registration and details.
Saturday, May 3
"ZooMontana workday". Volunteers needed! For details, call Sandy King at 652-8468.
Saturday, May 10
"Bear Canyon and East Pryor Mountain", led by Professor Lyman, who can be reached at 657-1186 during office hours for details. This trip, approximately a two-mile climb, is co-sponsored with the Sierra Club.

Calypso chapter

Catherine Cain 267-3362

Clark Fork Chapter

Saturday, March 29, 2:00 p.m.
"Folfing Damage in Pattee Canyon". Mike Chessin and Mavis Mckelvey will lead this trip and answer questions about the harm of recreational folfing (part Frisbee, part golf) to trees and trails. Meet at the Pattee Trailhead at the end of the pavement in Pattee Canyon.
Thursday, April 10, 7:30 p.m.
Join Clark Fork Chapter photographers for an early-season refresher when they show slides of "Montana's Naturalized Wildflowers (a.k.a. Weeds)". Rm L09 Gallagher Business Bldg., UM Campus.
Saturday, April 12, 10:00 a.m.
"Moss and Lichen Field Trip" Join bryologist Joe Elliott and lichenologist Andrea Pipp for an introduction to mosses and lichens. We will start by sharpening our identification skills at Joe's house and then enjoy a stroll up the lower Rattlesnake with these experts. Meet at 3918 Lincoln Road. Bring a lunch. Call Joe at 542-5014 for more information.
Thursday, May 8, 6:30 p.m.
Our "Annual Spring Potluck" will be held at the Greenough Park Pavilion at the end of Monroe Street in the Lower Rattlesnake. Bring your own utensils and a dish to share.
Saturday, May 17, 9:00-12:00
"Farmer's Market—Montana Native Plant Society Annual Plant Sale" on the north end of Higgins Ave. in Missoula.
Tuesday, May 20, 6:30 p. m.
Celebrate Wildflower Week! Hike with Morgan Valliant, University of Montana plant ecologist, for a "Weeds to Wildflowers Walk on Mount Jumbo", an interpretive walk through native grasslands. Learn to identify local wildflowers and grasses. Meet at the Lincoln Hills Trailhead. Contact Marilyn Marler at 243-6642 for information.
Tuesday, May 27, 6:30 p.m.
"Dyers Woad Weed Pull #1". Come help control weeds and raise money for the Clark Fork Chapter. The chapter is paid $10.00 an hour per person, up to a total of $400.00. Eleven years ago the Dyers Woad infestation was 7000 plants and we are now pulling only 400 plants a year. The pull takes about two hours. Meet at the Mount Sentinel trailhead. Call Marilyn at 243-6642.
Tuesday, June 10, 6: 30 p.m.
"Dyers Woad Weed Pull #2". Meet at the Mount Sentinel trailhead. Contact Marilyn at 243-6642 for more information.
Saturday, June 28, 10:00 a.m.
"Ross Creek Cedars". Botanist Peter Lesica will lead a hike up Ross Creek. We will start in the deep cedar forest and finish on the rocky outcrops above. This will be a moderately strenuous hike. Meet at the Ross Creek parking lot, approximately a three-hour drive from Missoula. Pack a lunch. For more information contact Dennis Nicholls at 847-0105.
Sunday, July 6, 9:00 a.m.
"Lewis and Clark Botany Hike". Join Wayne Phillips, botanist and Lewis and Clark plant historian, for a five mile hike from Lee Creek to Packer Meadows Campground. Trace the route Lewis and Clark traveled and observe the same plants they saw on their journey. Meet at the southwest corner of the Wal-Mart parking lot on Hwy 93 south. Bring a lunch and water. For more information call Kelly at 258-5439

Eastern Montana

Jennifer Walker 538-9054

Flathead chapter

All Flathead Chapter meetings are at the Montana Logging Association Building, 2224 Highway 35, east of Kalispell, across and just east of Hooper's Nursery. The conference room door is at the back of the building. Everyone is invited to the 5:30 general meeting. Programs start at 7:00. Call Rachel Potter at 892-2446 for more information.
Wednesday, April 16
Dr. Chuck Miller will give a program on "Plant Fossils" - the main kinds, how they are studied, and how they help us understand modern plants. Call Terry Divoky at 387-5527 for more information.
Sunday, May 18
"Lubec Ridge Photography Hike", cosponsored by the Montana Wilderness Association. D. Blank will lead the group on an easy to moderate hike in the Badger - Two Medicine country near East Glacier. Photographers of all abilities will enjoy the spectacular wildflower bloom on Lubec Ridge and the panoramic views of the Badger Two Medicine and Glacier National Park. Call D. Blank, 862-7544, for reservations and details by May 13.
Wednesday, May 21, 5:30 p.m.
"Spring Creek Cemetery Walk". Visit an old cemetery in the West Valley where a rare remnant patch of native grassland still exists. See what the Flathead Valley floor looked like 200 years ago before cultivation and development. Maria Mantas, ecologist with The Nature Conservancy, will lead this walk through the headstones. We will meet at the north end of the Flathead Valley Community College parking lot at 5:30. Call Maria Mantas at 862-3044 for details. This field trip is in lieu of the regular May meeting.

(Continued on page 10)

...Calendar *(Continued from page 9)*

Sunday, June 8, 9:00 a.m.
Steve Wirt, Wildland Fire Use Program Manager for the Hungry Horse/ Spotted Bear Ranger District, will lead a tour through the Moose Fire burn area. Meet in the parking lot of the Night Owl Restaurant in Columbia Falls at 9:00 a.m. The tour will travel through the Moose Fire area and look at plants that are found in the 2nd post-fire year. Contact Steve Wirt at 387-3832, or 758-5376 for details.

Wednesday, June 18, 7:00 p.m.
Jen Asebrook and Tara Carolin, Glacier National Park botanists, will lead an easy 1 to 2 mile walk through a moist forest habitat of West Glacier. Learn a variety of native plants and see mountain ladyslippers and striped coralroots. Meet at the West Glacier Post Office at 7:00 p.m. Contact Jen Asebrook, 863-9630 or Tara Carolin, 888-7919 for details.

KELSEY CHAPTER

For more information about Kelsey Chapter programs and events, call Kathy at 449-6586.

Tuesday, May 20
Celebrate National Wildflower Week by sharing your appreciation for native plants with Helena area students. Hikes are scheduled on Mount Helena in the morning and afternoon and there are still openings for hike leaders. Call Kathy Martin at 443-1712 to sign up.

Thursday, May 29, 5:30 p.m.
Join the Kelsey Chapter and MWA for a hike into the Brooklyn Bridge area. The hike will focus on wildflowers and will celebrate the new non-motorized status of the area. Bring a picnic dinner. Reservations required. Call Kathy at 449-6586 for details.

Sunday, June 8
Join Andy Kukolax for a hike to Crown Butte. Wildflowers and views are the highlights. Bring lunch and water. Reservations required. Call Andy at 458-9220 for details.

Sunday, June 15
Join the Kelsey Chapter and MWA for a history and wildflower hike to Lewis & Clark Pass. Wilbur Rehmann will fill us in on the history and Drake Barton will help with plant ID. Reservations required. Call Wilbur at 443-5677 for details.

Sunday, June 15
Join the Kelsey Chapter and MWA for a hike to Grassy Mountain, east of Townsend. The hike leads through the Carl Creek drainage that boasts spectacular wildflowers. Reservations required. Call leader Andy Kukolax at 458-9220 for details.

MAKA FLORA CHAPTER

Rebecca Kallevig 488-5455

VALLEY OF FLOWERS

Valley of Flowers Chapter meets the third Monday of each month. Programs will begin at 7:00 p.m. in Room 108 (on the first floor using the door at the bend of the "L") of the Agbioscience Building on South 11th. Parking is available in the lot to the north of the building (they do not require a permit at night). For info call Joanne Jennings at 586-9585.

Monday, April 21, 7:00 p.m.
Come and hear Cindi and Bob Crayton talk about "Bugs on Weeds". They do hands-on collecting in the summer for use with biocontrol of weeds. This will be our last evening meeting of the season. Agbioscience Building on South 11th, Room 108.

WESTERN MONTANA

Sal Culotta 837-5018

Saturday—Sunday, May 24-25
"Spring's Feast of Edible Plants" sponsored by the Glacier Institute and taught by Lynx Shepherd & Jami Belt. Call 755-1211 to register.

Saturday, June 14
"Orchids: Glacier's Precious Beauties" sponsored by the Glacier Institute and taught by Steve Wirt. Call 755-1211 to register.

Sunday, June 15
"Prairie Patchwork of Wildflowers" sponsored by the Glacier Institute and taught by Ellen Horowitz. Call 755-1211 to register.

Saturday—Sunday, June 21-22
"Spring Mushroom Extravaganza" sponsored by the Glacier Institute and taught by Larry Evans. Call 755-1211 to register.

Saturday, June 28
"Ross Creek Cedars" with Pete Lesica. Join in on the easy hike along the nature trail and then stay on for a slightly more difficult excursion to the magnificent South Fork Ross Creek Falls. Meet in Noxon at Uncle Mike's Diner (formerly the Noxon Cafe) at 9:00 or at the Ross Creek Cedars parking area at 10:00. For more information contact Dennis at 847-0105 or

ARTEMISIA CHAPTER REPORT

The Artemisia Chapter had meetings in February and March. The new president is Leslie Marty, who works at the USDA Plant Materials Center, near Bridger, Montana. Her co-worker, Susan Winslow, is the new vice-president. Hal Vosen of Miles City is the secretary-treasurer. The field trip chair is Dr. Clayton McCracken, and the ZooMontana project leader is Sandy King. The chapter welcomes its two newest members, Dwayne Bondy of ZooMontana, and Jennifer Lyman, professor of botany at Rocky Mountain College. The chapter has accepted the challenge to host the 2004 Annual Meeting, and is looking for a suitable place near Red Lodge.

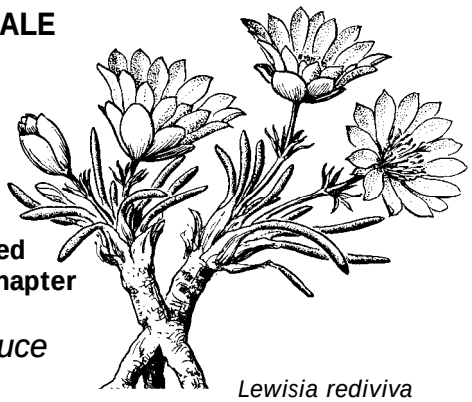
MONTANA NATIVE PLANT SALE

SATURDAY, MAY 17 9—12 A.M.

FARMERS' MARKET IN MISSOULA (NORTH END OF HIGGINS AVE.)

Beautiful natives grown from seed by members of the Clark Fork Chapter

Here is your chance to spruce up your native garden!



Lewisia rediviva

Illustration: Jeanne R. Janish,

MNPS Chapters & the Areas They Serve:

ARTEMISIA CHAPTER - Yellowstone and Carbon counties; southeastern/south-central Montana
CALYPSO CHAPTER - Beaverhead, Madison, Deer Lodge and Silver Bow counties; southwestern Montana
CLARK FORK CHAPTER - Lake, Mineral, Missoula, Powell and Ravalli counties
FLATHEAD CHAPTER - Flathead and Lake counties plus Glacier National Park
KELSEY CHAPTER - Lewis & Clark, Jefferson and Broadwater counties
MAKA FLORA CHAPTER - Richland, Roosevelt, McCone, Sheridan and Daniels counties
VALLEY OF FLOWERS CHAPTER - Gallatin, Park and Sweet Grass counties plus Yellowstone National Park

All MNPS chapters welcome members from areas other than those indicated. We've listed counties just to give you some idea of what part of the state is served by each chapter. Watch for meeting announcements in your local newspaper. Ten paid members are required for a chapter to be eligible for acceptance in MNPS.

Your mailing label tells you the following:

CLASS OF MEMBERSHIP: See I, II, III, IV below
CHAPTER AFFILIATION: ART= Artemisia; CAL=Calypso; CF=Clark Fork; F=Flathead; K=Kelsey; MF= Maka Flora; VOF=Valley of Flowers
DATE YOUR MEMBERSHIP EXPIRES: If your label reads "2/99" your membership expired February 28, 1999. Use this form to renew your membership TODAY! Please drop us a note if any information on your label is incorrect. Please notify us promptly of address changes.

Membership in Montana Native Plant Society is on a calendar-year basis, March 1 through the end of February of the following year. New-member applications processed before the end of October each year will expire the following February; those processed after November 1 will expire in February of the year after. Membership renewal notices are mailed to each member in January. Please renew your membership before the summer issue of *Kelseya* so your name is not dropped from our mailing list. Your continued support is crucial to the conservation of native plants in Montana. THANK YOU!

MONTANA NATIVE PLANT SOCIETY MEMBERSHIP

DATE_____

NAME (please print)_____E-MAIL_____

ADDRESS_____CITY/STATE/ZIP_____

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STATEWIDE MEMBERSHIP WITH AFFILIATION (check chapter below)

___ $18 I. Individual
___ $22 II. Family
___ $35 III. Business/Organization
___ $300 IV. Lifetime Membership (one-time payment)

_____ Artemisia
_____ Calypso
_____ Clark Fork
_____ Flathead
_____ Kelsey
_____ Maka Flora
_____ Valley of Flowers
_____ Eastern-at-large

MEMBER-AT-LARGE (check East or West below) or LIVING LIGHTLY (check chapter below)

___ $12 I. Individual
___ $18 II. Family
___ $30 III. Business

_____ Western-at-large

MAKE CHECKS PAYABLE TO:
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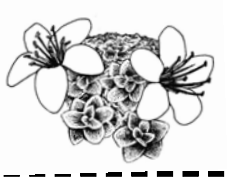
P.O. Box 8783
Missoula, MT 59807-8783



Canadian subscribers please add $4.00 to cover mailing costs. Additional donations may be specified for a particular project.

Montana Native Plant Society

The Montana Native Plant Society (MNPS) is a 501(c)(3) not-for-profit corporation chartered for the purpose of preserving, conserving and studying the native plants and plant communities of Montana, and educating the public about the value of our native flora. Contributions to MNPS are tax deductible, and may be designated for a specific project or chapter, for the Small Grants fund, or the general operating fund.

Your yearly membership fee includes a subscription to *Kelseya*, the newsletter of MNPS, published quarterly. We welcome your articles, clippings, field trip reports, meeting notices, book reviews or anything that relates to native plants or the Society. Please include a line or two of "bio" information with each article. Drawings should be in black ink or a good quality photocopy. If you send clippings, please note the source, volume/issue, and date. All meeting and field trip notices, field trip reports, articles or announcements should be mailed to *Kelseya* Editors, 314 Travis Creek Rd., Clancy, MT 59634. All items should be typed and if possible put on a 3.5" disk and saved in Microsoft Word or rich text format (rtf.) for a PC. Please include a hard copy with your disk. They can also be sent electronically in the same format as above to: drakekath64@msn.com

Changes of address, inquires about membership and general correspondence should be sent to MNPS Membership, P.0. Box 8783, Missoula, MT 59807-8783.

Advertising space is available in each issue at $5/column inch. Ads must be camera-ready and must meet the guidelines set by the Board of Directors for suitable subject matter; that is, be related in some way to native plants or the interests of MNPS members.

The deadline for each issue is: Fall— September 10; Winter— December 10; Spring— March 10; Summer— June 10.

If you want extra copies of *Kelseya* for friends or family, call the Newsletter Editors, write to the above address or e-mail: drakekath64@msn.com

Visit our website at: www.umt.edu/mnps/ or contact our webmaster Marilyn Marler at: marler@bigsky.net

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