FRIENDS
OF THE UNIVERSITY OF MONTANA
HERBARIUM

Spring 2009

Flora On-Line Project Nears End

By Peter Lesica

By the time you read this the Montana Flora On-line Project will almost be finished! Nearly all of the approximately 64,000 Montana specimens will have been entered into the database. You will be able to find almost any species occurring in the state, complete with range maps and often a picture. We have already had several out-of-state users, including a graduate student at University of California, Davis, looking for collections of *Achillea millefolium* from the Stillwater Complex and James Reveal, a well-know authority on buckwheats, looking for locations of *Eriogonum mancum* in Carbon County. This new database will not only make data retrieval easier, but it will save wear and tear on the specimens because they will no longer need to be handled to obtain label information. Nearly all of the data entry this past year was done by two women who graduated in 2008. Ali Pons and Brynn Griffin needed the work to get them through the winter, and we were happy to have a couple of old pros (see photo on page 6). You can find the on-line database at the UM Herbarium website: www.umt.edu/herbarium/.

MONTU's only collection of *Damasonium californicum*, collected just one year before the population was inundated under Lake Koocanusa.

Several previously unreported Montana records were unearthed from the collections in the past year. These include three exotics: *Centaurea virgata, Madia sativa,* and *Tanacetum parthenium*. All of these are known from just one or two collections. More interesting are the newly-found natives. *Psilocarphus elatior* (tall wooly-heads) is primarily a Pacific slope species that was collected once in the wet forests near Libby. *Damasonium californicum* (fringed water plantain) was collected by Marie Mooar along the Tobacco River near its confluence with the Kootenai River in a habitat that was flooded the next year by the impoundment of Lake Koocanusa. *Cyperus strigosus* was collected by Mrs. J. J. Kennedy near Columbia Falls in 1899. The specimen was masquerading as *C. erythrorhizos* in the collections. *Scirpus pendulus* was collected twice by Wally Albert along Carlton Creek in the Bitterroot Valley in 1993 and 1994. *Azolla filiculoides* is an aquatic fern-ally native to subtropical and coastal areas. Wally Albert collected it south of Stevensville in 1999, where it may have been introduced. This brings the total to 36 new Montana records since the start of the project.

An additional benefit of the Montana Flora On-line Project has been the creation of more cabinet space. Approximately 3,000 specimens were deaccessioned and removed from the collections; the equivalent of at least two cases. Some of these specimens were duplicates that will be sent to herbaria that specialize in the flora of western North America. Many of the specimens were collections from the tropics and subtropics. We kept representative specimens of all the genera but felt that these collections would be more useful to the scientific community housed at an herbarium that specializes in these regions of the globe. This past year we sorted out over 1,800 specimens of grasses from Central America, Mexico, and adjacent U.S. These specimens were collected by LeRoy Harvey and his students, as well as collaborators whom he traded with. Harvey was curator of the UM Herbarium fifty years ago (see 1997 newsletter), and his specialty was grasses, especially in the tropical genus *Eragrostis*. No one working on the systematics of tropical grasses would ever think to request a loan from UM. Now this valuable collection will be housed at the Missouri Botanical Garden, perhaps the global center of tropical botanical research.

FRIENDS
of the University of Montana
HERBARIUM

BIOLOGICAL SCIENCES
UNIVERSITY OF MONTANA
MISSOULA, MT 59812

THE MISSION OF THE FRIENDS IS TO SECURE SUPPORT FOR AND TO ENRICH THE COLLECTIONS AND OPERATIONS OF THE UM HERBARIUM

The *Friends* Newsletter
is edited by
Peter Lesica and David Dyer

Layout by
Drake Barton and Kathy Lloyd

Activities

The Clark Fork Chapter of the Montana Native Plant Society held three meetings in the herbarium during the winter of 2008. In January, Peter Stickney held forth on the Phlox Family in Montana. Peter Lesica led the group in learning the anatomy of and keying out Montana's bluegrasses in February. In March, Scott Mincemoyer shared his new treatment of Montana's pussytoes.

Notes from the Board

Serenity Now!

Every time I enter the herbarium, I feel instantly calmed by the cabinets full of plants ready to be discovered, by the anticipation of a few quiet hours to spend regarding specimens. You never know what you'll find—a very old yet perfectly preserved lupine, or a page full of alpine *Senecio* with their taproots arranged at just the right angle. There is always something to please the imagination, reinforce aesthetic values, and of course, to satisfy the craving for data or need to confirm someone's identity. I understand that not everyone is as excited about dead and flattened plants. I understand it, but I feel bad for those who don't appreciate the limitless potential of a vast library of information.

There is no way to predict all the uses of the herbarium. Herbaria at first seem so assuming and quaint, but they are priceless for their possible solutions to problems in conservation, scholarship, and management. Are you curious about the genetic mechanisms behind the evolution of rare mustards? The herbarium has helped researchers with that. Trying to identify some sedge from a wetland, so you know what species to buy for a restoration project? I've been there personally (thank you very much, UM Herbarium).

The first herbarium I ever visited, at UC Davis, had the same calming yet simultaneously exciting effect on me. I've read that the Davis herbarium has been used to identify poisonous plants eaten by children, and even solve murder cases. My task as a student volunteer was less dramatic; I carefully mounted pressed specimens from a nearby nature preserve. I've never been especially artistic but I certainly loved seeing a page full of, perhaps, *Claytonia perfoliata* arranged just so, filling up the page with just the perfect amount of space in the lower right corner for the label. It was a peaceful respite from the rest of the busy day; my work table caught some sunlight from a window and everything was quiet, despite the flurry of work going on around me. I have the same sense in the UM Herbarium. People are working: studying, filing, databasing, mounting specimens, filling requests for exchanges. The remarkable thing to me is that none of us can predict what kind of questions the future holds, and how our work today will help answer those questions when we've all moved on.

Thank you for your support of the UM Herbarium. I hope to see around the cabinets during the comings months. I don't get there as often as I would like, now that my office has moved across town. But if I'm there, you can recognize me by my contented expression and tendency to linger in the calm.

Marilyn Marler

MONTU People
...Albert Finley

Albert C. "Fin" Finley was born in 1923 in Dayton, Ohio. His natural mother died when he was 10 days old. He was adopted by family friends in Butte, where he spent his early childhood. His adopted father, a miner in Butte, died when he was 11, so he and his mother moved to the Madison Valley to be closer to her family. He graduated from high school in Ennis, and attended college at Montana State in Bozeman. He served in the U.S. Marine Corps in the South Pacific during WWII, and ultimately completed a Master's degree in School Administration in Greeley, Colorado.

In 1948, Al got his first teaching position as the high school science teacher in Choteau, Montana. In Choteau, he met Pauline Lyon, whose family ran the Spring Creek Dairy north of town. They were married in 1949. Al taught at Choteau High School until 1966. Many of his former students still reside in the area, and all remember him as a favorite teacher. He challenged his students and expected a lot of them, but made learning a fun experience. He had a long list of ways for students to earn extra credit—from participating in field trips to bringing rattlesnakes into school. He frequently took students on field trips, and Glacier National Park was a favorite destination. He also loved to climb mountains, and over the years led dozens of student trips to the top of Ear Mountain, the iconic peak west of Choteau.

Albert Finley at Choteau High School in 1964.

In the early 1960s, Al pursued a second Master's degree, this time in botany at the University of Montana. In 1963 and 1964, he made several hundred plant collections that reside in the herbarium. He made numerous collections during his commutes between Choteau and UM, stopping along the highway whenever he saw an interesting plant. On June 2, 1964, he collected a small mustard near the highway at the Dearborn River bridge, which he did not identify. It turns out this is the first known collection of *Lesquerella klausii* (Roger's Pass bladderpod) in the UM Herbarium, a Montana endemic that was not described until 20 years later in 1984.

Most of Al's collections were made in the Choteau area—on local ranches, roadsides, hiking and camping trips in the mountains, in Choteau itself, and frequently on his father-in-law's ranch. His collections are some of the first records of invasive species in the Choteau vicinity, including the first collections of spotted knapweed (*Centaurea maculosa*) and oxeye daisy (*Leucanthemum vulgare*) in Teton County, and the first collection of common tansy (*Tanacetum vulgare*) in Lewis and Clark County (made along the highway on a trip back from Missoula). He also made the first collection of scentless chamomile (*Matricaria maritima*) in Teton County, a specimen he collected in front of the Choteau High School on July 28, 1963 (the high school has since been torn down and relocated).

In 1966, Al and Pauline moved to Spokane, Washington, where he taught high school science for another 20 years. Even from Washington, he still brought students on field trips to Montana. After retirement, Al and Pauline remained active, traveling widely. As part of a walking club, they completed events in all fifty states. Al had a gift for giving, and was an inspiration for others. He died February 23, 2009, in Spokane at the age of 85.

Dave Hanna

MONTU NEWS BRIEFS

New Acquisitions

Wally Albert Collection: approximately 725 specimens from MT and ID.

Peter Lesica: 228 specimens from Montana.

Jessica Brewer, Bitterroot National Forest: one specimen of *Allium acuminatum* from Ravalli Co., MT.

Robert Dorn: 3 specimens from Carbon Co. and Sheridan Co., MT.

John Pierce: 3 specimens from Missoula Co., MT.

Loren Bahls: 200 diatom slides from MT and CA for the Montana Diatom Collection.

Roger Rosentretter: 21 lichens and mosses from the western U.S., and the Jina Mariani Collection of 132 lichens from MT, ID, and Canada.

Andrea Pipp: 39 lichens from MT.

Eva Masin: 64 lichens from MT, WY, and CA.

Exchange Acquisitions

Oregon State University: 38 specimens from OR, WA, and CA.

Snake River Plains Herbarium, Boise State Univ.: 274 specimens from Idaho.

Loans for Research

Portland State University, Diana Jolles: 22 sheets of *Pyrola* for morphological analysis for dissertation research.

University of Western Ontario, James Phipps: 14 specimens of *Crataegus* for continuing research on Hawthorn in Montana.

Canadian Museum of Nature, Julian Starr and Brianna Chouinard: 77 sheets of *Carex* and 23 sheets of *Kobresia* for revisionary and phylogeographic studies.

Oregon State University, Richard Halse: 5 sheets of *Sphaerophysa* and 6 sheets of *Caragana* for Flora of North America treatment.

University of California, Berkeley: Barbara Ertter: 23 sheets of *Potentilla* for continuing research on this genus.

University of Northern Iowa, Steve O'Kane: 12 sheets of *Lesquerella* and *Physaria* for a study of genetics and morphology.

Publications Based on MONTU Specimens

Bahls, L. 2007. Diatom indicators of climate change in Glacier National Park. Intermountain Jour. of Sci., Vol. 13, No. 4: 99-109.

Bahls, L. *et al*. 2008. Diatom biocriteria development and water quality assessment in Montana: a brief history and status report. Diatom Research, Vol. 23, No.2: 533-540.

Kumar, S. *et al*. 2009. Potential habitat distribution for the freshwater diatom *Didymosphenia geminata* in the continental US. Frontiers in Ecology and the Environment 2009; 7,doi: 10.1890/080054.

Zika, P. F. 2006. Impatiens X pacifica (Balsaminaceae), a new hybrid jewelweed from the Pacific Northwest coast of North America. Novon 16: 443-448.

Examples of Information Requests

USDA National Center for Genetic Resources: data for *Humulus lupulus* at MONTU.

PBS & J Consultants, Helena: information on MONTU lichen collection; number of specimens and species.

Joshua Brokaw, PhD. student, Washington State University: records of *Mentzelia*, for dissertation research.

Benton Lake National Wildlife Refuge: provided technical information for development of their new herbarium.

Lolo National Forest: locality information on *Gaultheria*, to aid in its protection.

Cheryl Bradley: information on *Halimolobus virgata* for Alberta Provincial status report.

Thanks to new members of the Friends!

Your continued interest and support is what makes us effective. Thanks, and welcome to these members, new since the last newsletter.

Rhithron Associates

Don't Forget to Pay Your Dues!

If you haven't already done so, send in your membership renewal. You won't want to miss a single issue of the newsletter or miss out on what is happening at the herbarium. There is a membership form on page 8. Gift memberships are also available and are a great idea for friends.

2009 Friends of the UM Herbarium Annual Meeting

The Annual Meeting of the Friends of the UM Herbarium will be held Saturday, October 24 from 10:00 AM to 2:00 PM. The meeting will be held in Rm. 202 of the Natural Sciences Building on the UM Campus. This is the annual meeting of the Board of Directors and is open to the membership.

Donald E. Brink and Lillian M. Mayer

One of the largest sources of botanical information for eastern Montana is relatively unknown to most biologists in government or academia. The State of Montana, as part of the mining permit process, requires that baseline botanical studies be conducted at sites on and around proposed mining areas. Thousands of hours have been spent, mainly by consultants, gathering information on species composition, density, frequency, and productivity of plant communities, especially in eastern Montana. Unfortunately, it is difficult, often verging on impossible, to retrieve these studies and there is no centralized database such as the Montana Natural Heritage Program that tracks these studies or collection records.

It is rare that specimens collected from these baseline mine studies are deposited in herbaria, which is why collections deposited in the University of Montana herbarium in the late 1970's by Donald Brink and Lillian Mayer are noteworthy. These botanists conducted surveys at proposed mine sites near Decker, Montana, and Sheridan, Wyoming, and deposited several hundred specimens in the University of Montana herbarium and published the results of their studies in the journal *Phytologia* in 1978. Their studies identified 407 plant species, mostly from big sagebrush/grassland communities. These communities are of interest because they provide important habitat for sage grouse and other species of concern that are obligately linked to sagebrush habitats. Currently, large areas of big sagebrush communities in Montana and Wyoming are being affected by coal-bed methane extraction.

The Brink and Mayer collections provide an excellent representation of the species typical of the big sagebrush grassland communities in southeastern Montana and adjacent Wyoming. They are one of the few collections from this region in the UM Herbarium, which is perplexing given the large number of vegetation studies that have been conducted at active and proposed mines. At least 10 active and proposed mines, extending from Colstrip to the Sheridan, Wyoming area, have had intensive vegetation studies conducted, often many times over a period of twenty years. Montana botanists who have worked on these studies include Pete Husby, Dean Culwell, Ken Scow, John Beaver, Steve Cooper, Peter Lesica, Lisa Larsen, Rich Prodgers, Drake Barton, Kathy Lloyd, and Joe Elliott. All of these botanists should consider taking the time to submit specimens to the herbarium. In the time it takes to polish a vasculum, ten specimens could be collected and prepared.

At the time of the Montana studies, Donald Brink and Lillian Mayer were botany Ph.D. students at the University of Wyoming, hired by the mining company (Peter Kiewitt Son's) to conduct baseline vegetation and wildlife studies on proposed mine sites. Lilly completed Bachelor of Arts and Master of Arts degrees at California State University, Chico, prior to working in Montana and Wyoming. While conducting their mining baseline studies, the two botany professors at the University of Wyoming retired or went on sabbatical, leaving Brink and Mayer without a major professor. Following his work in Montana, Don Brink went to the University of Illinois, finished his Ph.D, and remained on the faculty of the Botany Department. Lilly Mayer continued to work as a botanist and wildlife biologist for the mining company for four years and then had a diverse career studying seed viability at the National Seed Storage Laboratory in Fort Collins, Colorado; doing research on non-histone proteins in the nucleus of wheat at the Agricultural Research Service, Albany, California; and as a botanist for the Targhee National Forest. Donald Brink published articles on the genus *Aconitum* in various journals and authored the section on *Aconitum* in the Flora of North America in 1992. I was not able to locate Donald Brink or his work after 1992, although the Internet led me down several unproductive paths. I located Lilly Mayer at Clackamas Community College in Oregon, where she has been on the faculty since the mid 1980's. She provided much of the information for this article.

Although Lilly Mayer did not recount the hardships that your typical eastern Montana botanist faces, I know from more than 25 years of being hunched over a Daubenmire frame or clipping meter-square plots that field work is not always fun stuff like pressing, mounting, and exchanging keys. Cold rain in June with associated gumbo mud; temperatures in excess of 100 degrees, with clouds of mosquitos and deer flies; chiggers; irrate landowners; and the social stigma of working for clients who contribute carbon dioxide to the atmosphere are all part of a day's work. Rattlesnakes, of course, are a regular feature. When I look at an herbarium specimen of Don Brink and Lilly Mayer, it brings back all of the fond and not-so-fond memories of delving into the botanical secrets of the mixed-grass prairie and sagebrush steppe of eastern Montana.

Joe Elliott

Visitors to the University of Montana Herbarium in 2009

General Public and Private Consultants

Leslie Millar, Andrea Pipp, M. Wegener, R. R. Shupe, Nancy Seiler, Rebecca Rawlinson, John Pierce, Eva Masin, Merle Rognrud

UM Researchers and Students

Lauren Preistman, Scott Mincemoyer, Jim Habeck, Cat McIntyre, Natalie Byars, Greg Howard, Mike Merigliano

Out-of-town Academic Researchers

Jim Romo, Ben Grady, Tom Mitchell-Olds, Dick Johnson, Robert Pal, Matt Lavin

Federal, State, Tribal, NGO Biologists

Peter Stickney, U.S. Forest Service
Darlene Lavelle, U.S. Forest Service
Helen Atthowe, Missoula Co. Extension
Sharla Bryant, U.S. Forest Service

Meet the Herbarium's Student Employees

Unfortunately, this spring we have to say good-bye to Lauren Stoffel who has been with the herbarium for a year and a half (see profile in last year's newsletter). Lauren will graduate this spring with a degree in biology. She has done a great job in all areas of the herbarium and we will miss her! After many rigorous years of school, Lauren's current plans following graduation include spending a summer hiking Montana's trails and floating its rivers.

Krissy Wruck is our other student employee this year, and has probably the most unusual background of any of our herbarium students. Krissy is a senior in anthropology and is specializing in forensic sciences. Her eventual goal is to become a crime scene investigator or a pathologist's assistant. She is interested in working in the interface of law enforcement and medical investigation. Her unusual background has included setting up lab exercises for a forensic mortuary archaeology class.

So how does Krissy's background relate to botany and her interest in the herbarium? She has a long-standing interest in plants and has been active in growing plants from seed. She is thinking of combining her interests in forensics and plants by pursuing the study of forensic botany. Krissy is interested in studying botanical trace evidence, such as seeds and spores, to help solve crimes.

She is now considering graduate school in forensic botany, but unfortunately for us, probably not in Montana. She may study in Oregon, Texas, or maybe Virginia—the home of the "body farm" which is well-known in forensic anthropology circles.

By the way, not only has Krissy been in school full-time, worked at the herbarium and other jobs while a student, but she somehow managed to raise a family! Krissy has 4 children, with the youngest being 6 months old. It is the dedicated student who can attend college, work, and raise children! Please say "Hi" to our fine students the next time you're in the herbarium!

Dave Dyer

Krissy Wruck organizing the teaching collection.

Lauren Stoffel working in the lichen collection.

Ali Pons and Brynn Griffin at work on the database.

Limestone and Plant Geography in Montana

Montana is blessed with great geologic diversity that engenders a wide array of soils, so sometimes different bedrocks translate into variation in the vegetation. Walk from sandstone onto mudstone, and there won't be much change. The same goes for walking from granite onto quartzite. These are all crystaline, acidic rocks. But things will be different if you walk from any of those parent materials onto rocks that are rich in calcium (**calcareous**) such as limestone, dolomite, or gypsum. Not all the dominant species will change, but many will. Many species are more-or-less indifferent to parent material; they are as abundant on limestone as they are on other parent materials. Most grasses appear to be among these "indifferent" species. However, some plants occur preferentially on calcareous soils and are called **calciphiles**. Those that are always found on calcareous soils are **obligate calciphiles**, while those that most often, but not always, occur there are **facultative calciphiles**.

Plants can also be classified by their geographic distribution in relation to Montana. **Widespread** species have a broad distribution in Montana as well as North America; ponderosa pine and bluebunch wheatgrass are good examples. **Peripheral** species have a broad range in North America but are on the edge of their range in Montana and usually are found in a very limited portion of the state. Utah juniper is a good example of a peripheral species; it is common in Utah, Nevada, and Wyoming, but occurs only in southern Carbon County in Montana. Finally there are **regional endemics** which I define as plants with a global range no bigger than one-third the size of Montana. I have always been fascinated by the geology-plant geography connection. Now that I am nearly done with the first rough draft of a flora for Montana I have an opportunity to explore my casual observations in a more quantitative way.

Montana calciphilic plants are concentrated in six families; the number of calciphilic species by family is provided below: Asteraceae-21; Brassicaceae-18;Fabaceae-15; Cyperaceae-14; Rosaceae-10; Polygonaceae-8

The Asteraceae, Cyperaceae, Brassicaceae, and Rosaceae are among Montana's largest families, so it is no surprise that they contain many calciphiles. Calciphiles are over-represented in the Fabaceae and Polygonaceae and under-represented in the Poaceae. More interesting is the relationship between facultative and obligate calciphiles and geographic distribution. My database lists 152 species of calciphiles for Montana (this does not include grasses). Of these, 86 species (57%) are obligate calciphiles in Montana. However, of the 40 regional endemic calciphiles, 83% are obligate calciphiles, and of the 45 peripheral calciphiles, 73% are obligate calciphiles. This means that there is a strong tendency for Montana endemics and peripherals to be obligate rather than facultative calciphiles, while widespread calciphiles are more likely to be facultative.

Widespread facultative calciphiles have wide ecological amplitude and occur over a large area, but are more common on limestone soils probably because these soils provide nutrients or other conditions conducive to enhanced growth or reproduction. *Valeriana edulis*, *Cypripedium calceolus*, and *Pinus flexilis* (limber pine) are probably examples of this syndrome. The story is probably the same for species that are widespread obligate calciphiles. Many widespread ferns such as *Asplenium trichomanes-ramosum* and *Pellaea breweri*, and arctic or boreal plants like *Salix rotundifolia* and *Carex livida* are examples. It is the endemic and peripheral, obligate calciphiles that present the more interesting problem.

Calcareous regions are rich in endemic species throughout the world, and it is not just in Montana where species at the edge of their range occur on limestone. Merritt Fernald wrote about this phenomenon 100 years ago after seeing disjunct western montane species growing in limestone-derived soil on the shore of Lake Superior. This same pattern can even be seen within Montana. *Stenotus armerioides* (=*Haplopappus armerioides*) is a widespread species of the Great Plains where it occurs on many different kinds of soil. It is rare west of the Continental Divide where it always occurs on calcareous soil.

The most commonly espoused explanation for the higher occurrence of endemic and peripheral plants on calcareous soils states these plant populations persist on limestone (or other unusual parent materials such as serpentine) because they are escaping competition from the dominant vegetation found on non-limestone soils. In the case of peripheral obligate caliciphiles, the more central populations continue to persist. In the case of endemic obligate caliciphiles, the populations growing off limestone are extirpated by competition, and only the populations on limestone persist. Limestone is hard relative to other sedimentary rocks like sandstone and shale and sometimes forms only thin soil incapable of supporting dense vegetation. Most Montana calciphile endemics do occur in sparsely-vegetated habitats, so this hypothesis seems plausible. Peter Raven suggested that disjunct populations occurring on harsh soils undergo rapid genetic reorganization due to small population size to become edaphic endemics.

There are problems with this explanation, however. In southwest Montana and adjacent Idaho where the majority of our limestone endemics occur, limestone is not unusual, and sparsely-vegetated habitats occur on both limestone and non-limestone parent materials. And there are other patterns that remain unexplained. Of the 33 endemic obligate calciphiles almost half are in just two families: Brassicaceae (9) and Fabaceae (6), but I have no idea why. Many of the peripheral species that are obligate calciphiles in Montana are members of the Colorado or Great Basin desert floras. Examples include *Cryptantha cana*, *Townsendia incana*, and *Wyethia scabra*. These species are adapted to desert soils, calcareous or not, that have high concentrations of salts. In some quantity these elements are necessary for plant growth. Calcareous soils are often high in ions of calcium, magnesium, iron, and sulphur. Perhaps these desert plants require high ionic soils, and in the relatively cool Montana climate, calcareous soils may be the only ones with comparable ion concentrations. It is pretty clear that there is plenty of room for more research on some our most interesting plants.

Raven, P. H. 1964. Catastrophic selection and edaphic endemism. Evolution 18: 336-338.

Gankin, R. and J. Major. 1965. Arctostaphylos myrtifolia, its biology and relationship to endemism. Ecology 45: 792-808.

Kruckeberg, A. R. 2002. Geology and plant life. University of Washington Press, Seattle.

Peter Lesica

YES! *I want to help protect the irreplaceable collections and enhance the facilities of the University of Montana Herbarium*

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Dues are for a period of **two** years. Dues for current members are payable in even- numbered years. New memberships are accepted at any time. All contributions to the Friends are tax deductible to the full extent provided by law. All checks should be made payable to: U.M. Foundation/Friends of the U.M. Herbarium.

Dues may also be paid online at: http://umfoundation.onlinemontana.org
1. Click on "Click here to Submit a Gift"
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