Spring 1996

1996 Friends of The University of Montana Herbarium Newsletter

Peter Lesica

David Dyer

Friends
of The University of Montana Herbarium

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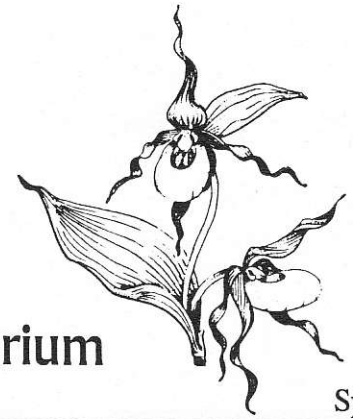


Our Story

Last winter an *ad hoc* group of Montana Native Plant Society members got together in response to a need to protect and enhance the herbarium facilities. This group decided to form an organization under the umbrella of The University of Montana Foundation and developed a draft set of bylaws. In April the *ad hoc* steering committee sent out ca. 250 letters soliciting membership for the Friends of The UM Herbarium as well as nominations for the five positions on the board of directors. Over the summer we recruited 75 members from 15 states and provinces and nine nominations for the board of directors.

The *ad hoc* steering committee sent out ballots in October, and five of the nominees were informed of their election to the board of directors in late November. The first board meeting was held in early December. At this meeting the board reviewed the various needs of the herbarium facilities, and decided to initiate a campaign to raise funds for new herbarium cabinets. The board of directors also discussed ways to increase membership and planned the first newsletter. We are encouraged by our strong beginning. The response to our first mailing clearly indicates the widespread interest in The UM Herbarium.

Friends Launch Cabinet Drive

The UM Herbarium holds over 120,000 specimens and continues to accession approximately 1,000 new specimens each year. These collections are currently housed in 62 cabinets meant to hold no more than a total of 100,000 specimens. Clearly, storage cabinets are very overcrowded, and specimens, prepared to last at least 200 years, are being damaged by compression. Institutional money for new herbarium cabinets will not be forthcoming in the near future. Consequently, the Friends of The University of Montana Herbarium has decided to embark on a campaign to raise money for new cabinets. Acquisition of 25 new cabinets will allow the collections to be properly stored and should provide adequate space for the next 10 years. Contributions of any amount will be greatly appreciated.

1996 Friends of the UM Herbarium Annual Meeting

The annual meeting of the Friends of the UM Herbarium will be held Saturday, November 2nd from 10 AM to approximately 2 PM. The meeting will be held in room 307 of the Botany building on the UM campus. This is the annual business meeting of the Board of Directors and is open to the membership. A tour of the Herbarium will be included.

Friends of The University of Montana Herbarium

Herbarium
Division of Biological Sciences
The University of Montana
Missoula, Montana 59812

The mission of the Friends is to secure support for and to enrich the collections and operations of The UM Herbarium.

Please join us! Dues are $15 for two years. Checks should be made payable to: **UM Foundation/Friends of The UM Herbarium** and sent to the above address.

The Friends Newsletter is edited by Peter Lesica and David Dyer. Layout by Suzann Knaup.

MONTU People

Lisa M. Campbell

The New York Botanical Garden (NY) has one of the world's most significant collections of the western North American flora. In addition, some of the best-know and most productive western-trained botanists have spent part or all of their careers there. These include Bassett Maguire, Arthur Cronquist, Rupert Barneby, Noel and Patricia Holmgren, and Arnold Tiehm. One of the newer residents at NY is a graduate of the University of Montana, Lisa M. Campbell.

Lisa grew up in New Jersey, and after a year at Old Dominion University in Virginia she moved to Missoula in 1982 to study botany at UM. She received her undergraduate degree in 1985. During her senior year she did a project on the breeding system of Missoula phlox (*Phlox kelseyi missoulensis*) on Waterworks Hill. The project so interested her that she decided to stay on at UM and complete a masters program. Her thesis combined the systematics of the mat-

forming species of *Phlox* in the Northern Rockies and the relationship between flower color, gene flow and incipient speciation in Missoula phlox. Under the guidance of Kathy Peterson, former curator of the UM Herbarium, Lisa conducted a three-year study that included field collecting, morphological analyses, chromosome counts, and *in situ* hand pollinations- not an easy job in early spring on Waterworks Hill. She curated and annotated specimens of *Phlox* at the UM Herbarium as part of her project. Lisa defended her thesis and was awarded an M.A. in 1988.

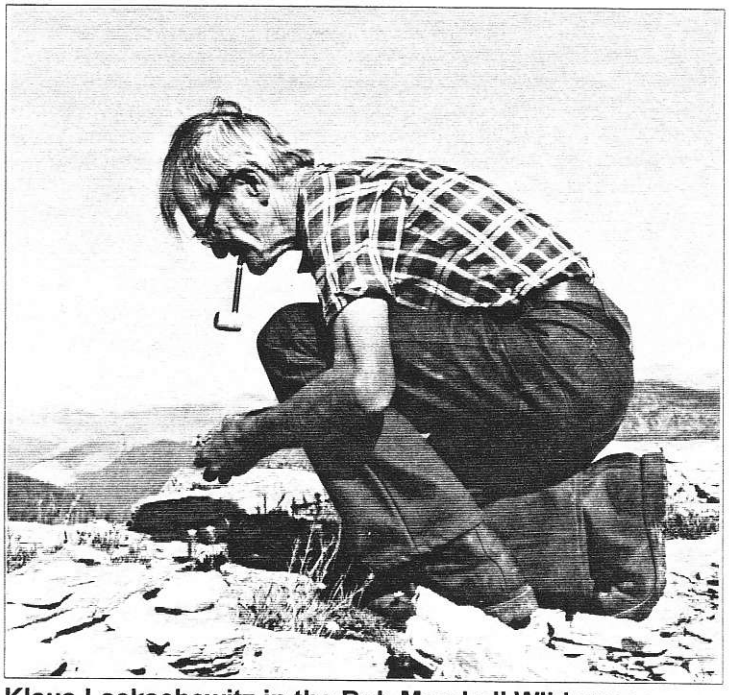
Lisa didn't waste any time pursuing her career in plant systematics. She accepted a position as curatorial assistant at the Harvard University Herbaria in 1988 and worked there until 1989 when she left Harvard to accept a position on the staff at the New York Botanical Garden. She now helps curate one of largest herbaria in North America. Lisa oversees the mounting and accessioning of new collections as well as cataloging the type collection. She is also an associate editor of the systematics journal, *Brittonia*.

Lisa's research interests have shifted from species level to family level systematics and from phenetics to cladistics. She is currently working on the evolutionary relationships among the families in the Ranunculiflorae. She authored a paper on the subject and spoke at the 1995 meeting of the American Botanical Society and at a symposium on the subject held in Bayreuth, Germany. Lisa intends to continue on at NY for the immediate future, and if she comes back to Montana, it will be to look at buttercups and poppies rather than phlox.

UM Herbarium Collectors

Klaus H. Lackschewitz

Montana has had its share of good botanists. Well known collectors such as Per Axel Rydberg, Marcus Jones, W. E. Booth, and C. Leo Hitchcock have worked here and deposited specimens in the state's herbaria. However, none has contributed more to the knowledge of Montana's flora than Klaus Lackschewitz. Klaus came to western Montana in 1960 and became the horticulturalist for the University of Montana Botany Department in 1965. His collecting for the UM herbarium (MONTU) began in the mid-sixties and continued unabated for the next thirty years. During this time he collected over 12,000 specimens, including 38 published state records and four species new to science. All of these are deposited at MONTU.



Klaus Lackschewitz in the Bob Marshall Wilderness

Lackschewitz's longest and most concerted floristic research was his study of the Bitterroot and Sapphire ranges and the intervening valleys. This began in earnest in 1966 and ended with publication of **Vascular Plants of West-central Montana** by the U.S. Forest Service in 1991. During this study he discovered many state records including *Lomatium bicolor, Plantago hirtella, Polystichum scopulinum, Pyrola elliptica* and *Rorippa sylvestris*. He also discovered *Lesquerella humilis*, a species endemic to the northern Bitterroot Range.

Lackschewitz was also active in other parts of the state during this time. He frequently explored the Anaconda Range southeast of the Bitterroot Valley. Among the high peaks he found numerous state records including *Antennaria monocephala, Carex incurviformis, Erigeron radicatus, Polystichum kruckebergii, Ribes triste*,and *Saussurea weberi*. He also helped Patrick Elvander, a student at the University of Washington, locate additional populations and describe a new species from the Anaconda and Bitterroot ranges, *Saxifraga tempestiva*.

For many years during the late 1970's and early 1980's Lackschewitz made annual pack trips into the Bob Marshall Wilderness and the Front Range. He made some of his most exciting discoveries among these high limestone peaks. *Plantago canescens, Saussurea densa* and the widely disjunct *Astragalus molybdenus* were new to the state. It was also during these trips that he discovered the little alpine daisy that would bear his name, *Erigeron lackschewitzii*. Other favorite alpine areas were the Gravelly Range and the Beartooth Mountains, where he was first to collect *Juncus triglumis* and the arctic disjunct *Koenigia islandica*. His alpine checklist for the Beartooth is published in

(Continued on Page 4)

(Continued from Page 3) **Beartooth County** by Bob Anderson.

There is no doubt that the high country was Lackschewitz's first love. Nonetheless, he was no stranger to the lower elevation valleys and plains. In 1978 he was contracted by the U.S. Fish and Wildlife Service to conduct a floristic survey of the newly created Charles M. Russell National Wildlife Refuge. During this effort he discovered *Plagiobothrys leptocladus, Phacelia thermalis*, and *Astragalus geyeri* for the first time in Montana. He also spent part of one summer collecting in Rosebud County in the southeast part of the state. In 1982 he discovered a new mustard endemic to Montana on Rogers pass in Lewis & Clark County. The plant was named *Lesquerella klausii* in his honor by Reed Rollins of Harvard University. In the latter half of the 1980's he spent more time in the mesic valleys of Lincoln and Sanders counties in northwest Montana. Here he again discovered many species new to the state, including exotics such as *Barbarea vulgaris, Cytisus scoparius, Lychnis flos-cuculi, Myosotis discolor* and *Valeriana locusta*, moving east from adjacent north Idaho. He also added two native shrubs, *Ribes cognatum* and *Spiraea pyramidata*, to our state flora.

Specimens collected by Klaus Lackschewitz undoubtedly comprise the most important collection at The University of Montana Herbarium. Not only is the Lackschewitz collection larger than any other from Montana, but the specimens are well-prepared and accurately labelled. Duplicates have been sent to major herbaria around the country, and thousands of specimens have been received in exchange. Lackschewitz's contribution to MONTU and the study of Montana botany cannot be overstated. Klaus Lackschewitz died on August 10, 1995. We will be learning from his legacy for many years to come.

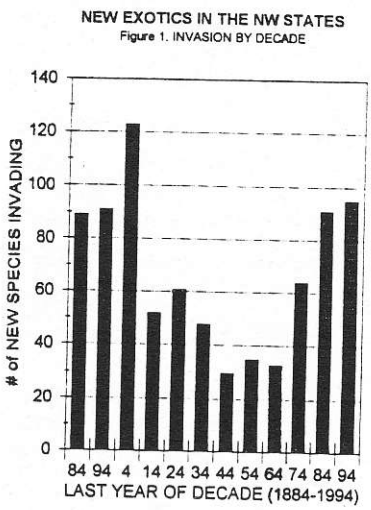
Notes from the Board

With this first issue of the Friends' newsletter, it may be well to ask, "What is a herbarium?" and "Whom does it serve?" A herbarium is more than an assemblage of dried, pressed plants. It is a repository of all the information about a plant that can be reduced to a flat, 12 x 18 inch format. I regard each herbarium sheet as a book; and like a book, each has a story to tell. What kind of story and how well it is told rests with the intent and ability of the collector and the care given it its curation. Like a library the herbarium functions as a cumulative depository of botanical and historical information, enabling us to know, understand and appreciate our flora.

The principal focus of the UM Herbarium has been taxonomic and systematic botany. Important as this may be, MONTU's collections could and should serve a larger audience. I advocate expanding the purpose of the herbarium to serve a broader portion of the academic community and lay citizenry of Montana. The UM Herbarium contains reference information useful to a wide range of natural resource fields, including vegetation ecology, range management, forestry, poisonous plants, wildlife food habit studies, weeds and ruderal plants, watershed stabilization, riparian ecology, and rare and sensitive species. The herbarium should be chartered to expand its holdings to include material that documents seeds, seedlings, basal rosettes, innovations, winter habit of evergreen and wintergreen plants, fire effects on plants, and other aspects of interest to academia and the public. In short, MONTU should be regarded and supported as a complete regional botanical resource for our portion of Montana and the Northern Rocky Mountains.

- Peter F. Stickney

INVADERS Database Project
THE WEED THING



The INVADERS Database project is examining the historic spread of exotic plant species in the Pacific Northwest and Northern Rocky MountainStates. Peter Rice, of the Division of Biological Sciences at The University of Montana, has been coordinating the develpoment of this comprehensive database of plant names and distribution information for Washington, Oregon, Idaho, Montana, and Wyoming. The project includes custom PC software that draws regional distribution maps and calculates population expansion rates from county-based presence or absence data. One of the principal applied goals of the project is to protect native plant habitats by improving regional scale weed management strategies.

The INVADERS Database consists of an electronic plant catalog and distribution data files. The plant catalog began in 1992 with John Pierce's Forest Service Region 1 database, but the naming data have been extensively edited and supplemented over the last four years. The catalog files in the INVADERS Database Release 6.3 (Jan. '96) contain current scientific names, synonyms, and common names for more than 6,100 naive and exotic species. Approximately 980 of these species are exotic to North America, 240 have been declared as noxious weedsby one or more states of the region or the Federal government. The database also recognizes 900 sensitive native plant species.

The distribution files contain 76,115 records for 2,604 species (841 exotic species). These records identify the plants to the species epithet as defined in the plant catalog. The data spans 1875-1995. These distribution data come from major regional herbaria, State Extension Service weed diagnostic labs, land management agencies, and private collectors.

The INVADERS data have been used to support a number of land management projects. These have included the compilation of a comprehensive regional flora, prediction of susceptibility of vegatative cover types to invation by noxious weeds, identification of rapidly expanding exotics, development of statewide management plans for targeted weed species, and evaluation of long-term invasion patterns. For example, the number of new species successfully invading the Northwest was very high until the turn of the century because of new settlement and lack of agricultural inspection at ports of entry. New species establishments declined during the period of the World War and Great Depression, then increased with the expansion of global commerce and travel in the post war period (see Figure 1).

The data collection and software development phase of the project will be completed by July 1997. Efforts are starting to establish a distribution mechanism for the software and database.

RECENT RESEARCH AND ACQUISITIONS AT MONTU

Research Using MONTU Specimens

DeBolt, A. and B. McCune. 1993. Lichens of Glacier National Park, Montana. Bryologist 96: 192-204.

Lesica, P., K. Ahlenslager and J. DeSanto. 1993. New vascular plant records and the increase of exotic plants in Glacier National Park, Montana. Madrono 40: 126-131.

Lesica, P. and P. F. Stickney. 1994. Noteworthy collections: Montana. Madrono 41: 229-231.

Luken, J. O., J. W. Thieret and J. H. Kartesz. 1993. *Erucastrum gallicum* (Brassicaceae) invasion and spread in North America. Sida 15: 569-582.

Rollins, R. C. 1995. Two Lesquerellas (Cruciferae) of south central and western Montana. Novon 5: 71-75.

Loans for Research

The UM herbarium sent out 12 loans in 1995, totaling 354 sheets. These include:

Matt Lavin from Montana State University studying the taxonomy of the closely related, rare plants *Astragalus molybdenus* and *A. schultziorum*.

Steven Broich at Oregon State University writing a treatment of *Lathyrus* for The Flora of North America.

Suzanne Warwick at the Center for Land and Biological Resource Research, Ontario, working on a monograph of the Tribe Brassiceae in the Mustard Family.
Ian Shackleford is a M.S. student at Miami University of Ohio studying the biosystematics of quilworts (*Isoetes*).
Bruce Robart is a Ph.D. candidate describing the developmental, systematics and ecological relationships among species of lousewort (*Pedicularis*).

New Acquisitions

UM Herbarium received ca. 1,000 specimens in 1995. These included donations made by regional collectors Peter Lesica (ca. 250), Jim Vanderhorst (118), Klaus Lackschewitz (100), Jaculyn Cory (50), Kieth Duholm (32), Jack Greenlee (11), Bonnie Heidel (2), and Judy Hoy (2). Many of these collections were first records for Montana or significant range extensions. In addition, MONTU received exchange specimens from a number of university herbaria: Northeast Louisiana University (143), University of Colorado (101), Texas A&M University (101), and Missouri Botanical Gardens (28).

Visitors to MONTU

There were 79 recorded research visits to the UM Herbarium in 1995. These included many people working for public agencies engaged in land management:

- U.S. Forest Service personnel Michael Arvidson, Jack Greenlee, John Pierce, Linda Pietarinen, Steve Shelly, and Toby Spribille.
- Christian Damm, a graduate student working at Glacier National Park.
- Roger Rosentretter from the Bureau of Land Management.
- Montana Natural Heritage Program researchers Debbie Dover, Bonnie Heidel, Jim Vanderhorst.

In addition, MOTU had visits from

- Private consultants from Bitterroot Native Growers and Riparian Resources.
- Robert Burckhaltor from Louisiana State University studying the systematics and distribution of *Nyssa*.
- Janet McGahan, a local artist using specimens as models.
- Numerous students and faculty from Biological Sciences, Forestry, and Environmental Studies.

Computerization of MONTU

The software developed for the INVADERS Database Project was modified and expanded to begin putting The University of Montana Herbarium collection into computer form. People entering the data do not have to have formal training in botanical nomenclature or computing. A user friendly graphic interface allows undergraduate students and public volunteers to transfer label data from specimen sheets into specialized database file formats. The data entry software automatically checks for correct spelling of plant names, county and country names, and looks for duplicate accession numbers before accepting information from the label. The program also keeps track of authority names, families, and other standard botanical information.

The collection database can be queried by species, genus, family, collector name, country, state, locale, date, and a number of other categories to examine the collection data without physically retrieving the specimen sheet. This will allow herbarium users to rapidly extract information on plants in the collection. For example, you could retrieve data on all the MONTU specimens collected by Joseph Blankenship (1862-1938), Arthur Cronquist (1919-1992), or Klaus Lackschewitz (1911-1995). Ecological data, such as elevation or habitat type, noted on the specimen label are available from a general comments field. Herbarium users would only have to go to the storage cases and remove the specimen sheets if they wanted to examine the actual plant for morphological details. They could avoid a tedious procedure and the specimens would be preserved for longer periods.

The entire MONTU Herbarium collection is in excess of 120,000 specimen sheets. Public volunteers and student workers have placed 7,200 specimen records on line. All new specimens are now first logged into the computer before being put in the cases. It will take four to five person-years of effort to computerize the backlog of specimens in the cases. Peter Rice (DBS Research Associate) and Dave Dyer (DBS Museum Specialist) have been coordinating the project. Please contact Peter (243-2671) or Dave (243-4743) if you are interested in helping with this project.

1995 Events

The Clark Fork Chapter of the Montana Native Plant Society held four "herbarium nights" at the UM Herbarium in 1995. These are small two-hour classes in which instructors use the collections to illustrate various aspects of botany. In January, Diane Pavek and Roberta Walsh (UM Biological Sciences) gave a presentation explaining the various kinds of inflorescences. Steve Shelly (U.S. Forest Service) talked about plants of northwest Montana peatlands in February. In March, Peter Lesica held forth on the different kinds of roots, and a month later Peter Stickney (U.S. Forest Service) gave a presentation on ephemeral spring wildflowers. In addition, members of the Clark Fork Chapter got together for a work night, which included an overall cleaning of the herbarium, rearranging of specimens, and putting new seals on the herbarium cabinets.