Spring 2018

2018 Friends of The University of Montana Herbarium Newsletter

Peter Lesica

FRIENDS
OF THE UNIVERSITY OF MONTANA
HERBARIUM

Spring 2018

Cabinet Drive a Success!

It is with great pleasure that the Friends of the Herbarium announce the completion of the 2017-2018 Cabinet Drive. The following contributors donated a total of $16,370.00, enabling the purchase of 11 new cabinets:

Kathy Ahlenslager, Loren Bahls, Drake Barton, Nancy Brown, Tara Carolin, Kelly Chadwick, Conservation Biology Research, Steve Cooper, Molly Davidson, Ann DeBolt, Susan Geske, Dave Hanna, Judy Hoy, Shannon Kimball, Peter Lesica, Kathy Lloyd, Scott Mincemoyer, Montana Native Plant Society, Sheila Morrison, Ron & Adina Pagel, Roger Rosentreter, Peter Stickney, Tad Weaver

After careful consideration by the Friends of the Herbarium Board and faculty members at both the University of Montana and Montana State University, we have made the decision to move the mycological collection to the Denver Botanical Gardens Sam Mitchell Fungi Herbarium. There the fungi will receive proper curatorial care and be more available to the research community. By doing so three additional cabinets will become available for the vascular collection, bringing our total increase to 14 cabinets.

Additional cabinets will allow MONTU to continue to expand its vascular plant collection without jeopardizing the integrity of its more fragile specimens. Historical collections are at increased risk for damage from crushing. Plants that date back to the mid- and late-1800s are extremely brittle. Spreading out the specimens ensures they will be protected for future generations.

Cabinets will be ordered in late spring and delivered in July. Once the new units are installed we will be relying on extra help from volunteers to spread out the collection. Please consider contacting us if you may be able to help with the distribution of specimens in late fall. **Thank you to all donors who have helped ensure the longevity of the MONTU vascular plant collection!**

The Clark Fork Chapter of the Montana Native Plant Society holds Herbarium Night led by Peter Lesica. Shown from left are Maggie Ross, Kelly Chadwick, Karen Joynt and Kathy Knudsen.

Notes from the Board

When I look back over the history of the University of Montana Herbarium detailed in past newsletters, I see a lot of impressive accomplishments and outcomes. The collections have been an invaluable resource for understanding the flora of Montana, and have contributed to botanical and ecological knowledge at regional and continental scales. Likewise, a diverse array of users from Montana and across North America have benefitted from the collections – students and scientists, land managers and conservationists, historians and artists, amateur plant enthusiasts and the general public. All that adds up to a pretty large-scale impact.

But another aspect that I find impressive relates to the scale of time. MONTU houses specimens that were collected over the last century and a half – the accumulated effort and knowledge of generations of botanists. This irreplaceable resource only exists due to their persistence and dedication, as well as the efforts of all those who have helped maintain the collections over the years.

And while the Friends of the UM Herbarium has only been around for just over two decades, it also has some impressive accomplishments. Its role in ensuring the persistence of MONTU at the University of Montana, policy direction, the past and recent cabinet drives, and ongoing operational support and guidance have been essential for maintaining a vital herbarium. The Herbarium Endowment Fund provides lasting financial support for MONTU, extending the scale of time into the future.

Together these efforts demonstrate commitment, dedication, and vision that sustain the enduring value of the Herbarium. So thanks to all who have helped build that value and the continued vibrancy of MONTU. Your efforts provide inspiration to build on that legacy for a long time to come.

Dave Hanna

FRIENDS
of the University of Montana
HERBARIUM

DIVISION OF 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
Edited by
Peter Lesica

Layout & Copy Editing by
Drake Barton and Kathy Lloyd

Thanks to new members of the Friends!

Your continued interest and support is what makes us effective. Thanks, and welcome to this new member.

John Harris

MONTU NEWS BRIEFS

New Acquisitions

Joe Elliott: Over 100 curated moss specimens from various locations in Montana.
Dave Hanna: Sixteen vascular plant collections, primarily from the Rocky Mountain Front.
Judy Hoy: Collection of *Tortula truncata*, identity confirmed by Joe Elliott and Judy Harpel.
Shannon Kimball: Nine vascular plant collections from northwest Montana.
Ben Legler: Uncommon *Botrychium* collections from a variety of Montana, Idaho and Wyoming locations.
Matt Lavin: Montana specimens from various collectors and locations in Montana.
Peter Lesica: Approximately 100 vascular plant collections from across Montana.
John Pierce: Primarily aquatic specimens from various Montana locations.
Andrea Pipp: Two specimens of *Azolla filiculoides* collected by landowners in Missoula and Ravalli Counties, MT.
Karissa Ramstead: One collection of *Festuca campestris* from Lewis and Clark County, MT.
University of Washington: Donation of *Castilleja kerryana* paratype collected by Peter Lesica and Dave Hanna in 2011.

Loans for Research

Patricia Eckels, Missouri Botanical Garden: Approximately 20 moss collections for determination.
Danielle Marcoux & Linda Jennings, University of British Columbia: 19 specimens of *Tofeldia glutinosa*.
John Spence, Glen Canyon National Recreation Area: 6 moss collections from Montana and Idaho for determination.
David Giblin, University of Washington: *Poa laxa* collection by Peter Lesica for determination.

Publications

Lesica, P., D. Hanna, T. Luna and J. Salix. 2017. Noteworthy collections: Montana. Madrono 64: 114-115.

Shimai, Hiro. 2017. Taxonomy and conservation ecology of the genus *Pinguicula* L. (Lentibulariaceae). PhD. Thesis, University of Kent, Canterbury, England.

Villaverde et al. 2015. Direct long-distance dispersal best explains the bipolar distribution of *Carex arctgena* (*Carex* sect. *Capituligerae*, Cyperaceae). Journal of Biogeography 45: 1514-1525.

Wefferling, K. M. and S. B. Hoot. 2017. Species circumscription of the *Caltha leptosepala* polyploid complex (Ranunculaceae) based on molecular and morphological data. Phytotaxa 316: 201-223.

Visitors to the University of Montana Herbarium in 2017

General Public and Private Consultants

Scott Mincemoyer, Karissa Ramstedt, Janet Simms, James Habeck, Gibson Hartwell, Cynthia Unrau

UM Researchers and Students

Wendy Ridenouer, UM Western Plant Systematics class, Lila Fishman, Rocky Mountain Flora class, John Harris, Scott Miller, Maggie Ross, Arica Scheetz, Peter Rice, Cody Riley, Candace Odom, Nicole Ichtertz

Federal, State, Tribal, NGO Biologists

Jordan Rice (DNRC), Andrea Pipp (MTNHP), Maria Mullins (USFS), Jessica Johnson (USFS), Megan Lutzke (USFS)

Other Academic Researchers

Roger Rosentreter (Boise State U.), Ann DeBolt (Idaho Botanic Garden), John Gibson (U.C. Davis), Georgia Hansen (Texas A & M)

Don't Forget to Pay Your Dues!

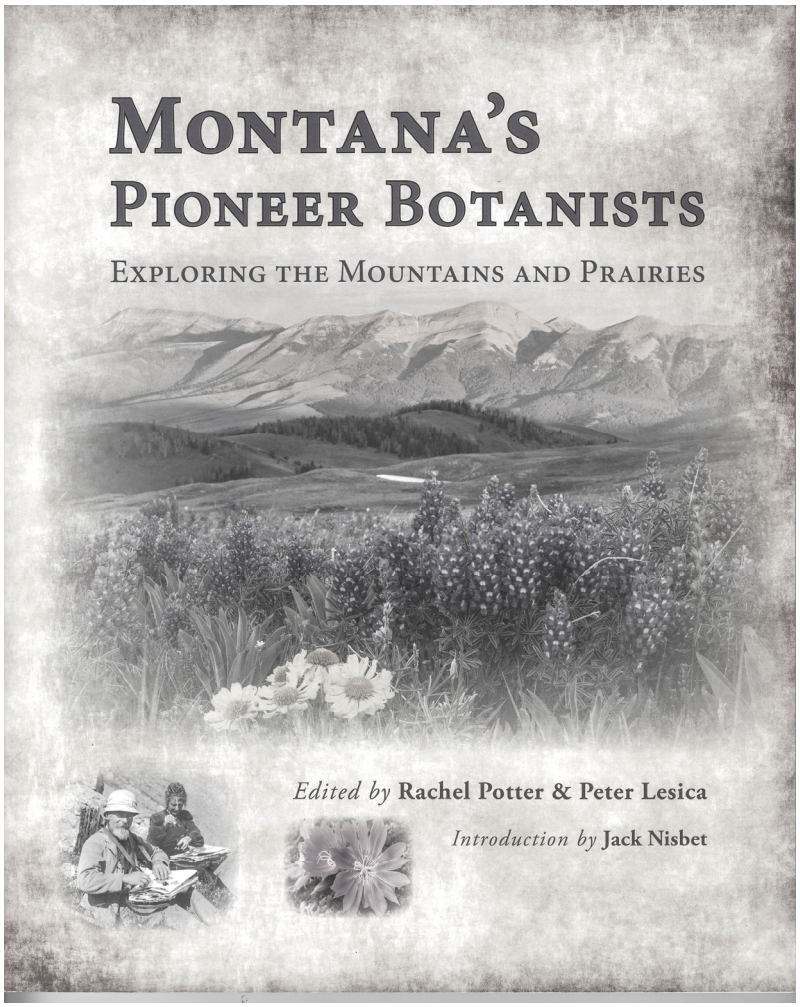
If you haven't already done so, send in your membership renewal. You won't want to miss a single issue of the newsletter or miss out on what is happening at the herbarium. Use the membership renewal insert included in this newsletter, or the membership form on page 8. Gift memberships are also available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

Researcher Mariah McIntosh collects small tissue samples from collections of *Mimulus guttatus*, to be used for genomic sequencing studies in the Lila Fishman Lab at the University of Montana.

Montana's Pioneer Botanists: Exploring the Mountains and Prairies

Published by the Montana Native Plant Society
Edited by Rachel Potter & Peter Lesica

Montana is a large state with diverse vegetation, from Great Plains prairie and deciduous forest in the east, to northern coniferous forest and alpine tundra in the west. Discovering the botanical secrets of this spectacular landscape began with indigenous peoples and continued through the 20th century with early explorers, geographers, and entrepreneurs followed by teachers, scientists, and curious and dedicated lay persons. Montana's multitude of rugged mountains and wide open spaces means that botanical discoveries that started with the Lewis and Clark Expedition continue to this day. This book, recently published by the Montana Native Plant Society, contains 31 stories written by 17 different authors, and over 200 photos and botanical illustrations by 32 artists. The majority of the contributors are members of the Montana Native Plant Society. *Montana's Pioneer Botanists* traces the growth of botanical knowledge in this wild and beautiful state. It can be purchased from the Montana Historical Society (https://app.mt.gov/Shop/mhsstore/books) for $29.95. The following biography is taken from this book.



Nathaniel J. Wyeth (1802-1856)

By Peter Lesica

Nathaniel J. Wyeth was a New Englander who, as a young man, invented a method for easily cutting ice into blocks when that was the only means of refrigeration. Just being a successful businessman wasn't enough for Wyeth, and in 1832 he set out for the west to make his fortune in the fur trade. That summer he traveled through Wyoming and Idaho to Vancouver on the West Coast. He wintered there, and the following spring returned east on a more northern route. Wyeth entered Montana going upstream along the Clark Fork River, then up the Flathead River, south to Missoula, and up the Bitterroot River to Lost Trail Pass. Although these are considered three different rivers today, Wyeth called them all the Flathead. His journals indicate that he was in western Montana from April 4 through May 27 of 1833. Later that summer, probably in mid-August, Wyeth reentered Montana from the south along the Bighorn River and floated down to the Yellowstone River and then to its confluence with the Missouri River at Fort Union, just east of what is now the North Dakota border, arriving on August 24.

Back in New England Wyeth had become friends with Thomas Nuttall, a famous Harvard botanist, and agreed to collect plant specimens for him. He did this on the trip west, but those specimens were lost. Undeterred, Wyeth collected more specimens on his return trip. Many of these were new to science and were delivered to Nuttall at the end of his adventure. Unfortunately, the date and location information on the labels of his plant collections often do not match his journal entries, so it is not always possible to determine with certainty where they were taken. Wyeth made the first collections of Wyeth biscuitroot (*Lomatium ambiguum*) along the Clark Fork near the Thompson River in mid-April and shortly after discovered Montana larkspur (*Delphinium bicolor*) and tufted phlox (*Phlox caespitosa*) in grasslands near what is now the town of Plains. He apparently collected specimens of pasqueflower (*Anemone patens*), bitterroot (*Lewisia rediviva*), and western trillium (*Trillium ovatum*) in the Bitterroot Valley. Wyeth also made the first collection of northern mule's-ears (*Wyethia amplexicaulis*), but there is confusion about whether it was made in Montana or later in Idaho. There is no date on the type specimen, but the location is given as 'Flathead River.' The plant does occur near Missoula and is known to flower in late May, so it may have been collected in Montana, but both Arthur Cronquist and William Weber believe Wyeth found it and the related white-rayed mule's-ears (*W. helianthoides*) in Idaho. It does not appear that Wyeth collected any specimens on either the Bighorn or Yellowstone Rivers in the more eastern part of Montana.

The very next year Wyeth set out again for the west in the company of Thomas Nuttall and the ornithologist John Townsend. They traveled to the coast but remained south of Montana. They described numerous species of plants and birds new to science, but Wyeth's fur trading business failed. Wyeth helped to have Oregon annexed by the United States, and he lived to see it become a U.S. Territory, but died in 1858, just before Oregon's statehood in 1859.

References

Nuttall, T. 1834. A catalogue of a collection of plants made chiefly in the valleys of the Rocky Mountains or Northern Andes, towards the source of the Columbia River, by Mr. Nathaniel B. Wyeth and described by T. Nuttall. Journal of the Academy of Natural Sciences of Philadelphia 7: 1-60.

Thompson, L. S. 1985. Montana's explorers. The pioneer naturalists, 1805-1864. Montana Magazine, Helena, MT.

Young, F. G. 1899. The correspondence and journals of Captain Nathaniel J. Wyeth, 1831-6, parts 3-6 *in* Sources of the history of Oregon. Oregon Historical Society, Eugene.

Wyethia amplexicaulis is named for Nathaniel J. Wyeth.

Herbarium Activities

CURATORIAL ACTIVITIES

The combined efforts of herbarium volunteers and staff have fueled progress in several important areas. Curatorial Assistant **Jordan Morey** and volunteers **Maggie Ross**, **Steve Sutherland**, **Barbara Amidon,** and **Martin Skinner** have provided countless hours assisting Curator/ Collections Manager **Shannon Kimball**. Without their help the following projects would not have been possible.

The process of imaging the entire Montana vascular plant collection was initiated in 2011 (see FOH newsletter from that year) and finished in the spring of 2018! Specimen images have been taken using a specialized light box, a Canon EOS 5D digital camera fitted with a 50 mm macro lens, and specific imaging software. They are then renamed so they link to the appropriate database records that were digitized between 2005 and 2010 with funding from the National Science Foundation. The database is part of the Consortium of Pacific Northwest Herbaria online portal (PNWH) housed at the University of Washington's Burke Museum. Volunteers and staff have recently been working to fill in missing images and specimen data in the database.

Confirming identifications and updating the taxonomy of MONTU's moss collection, done entirely by bryologist **Joe Elliott**, was initiated in 2017 and finished in early 2018. This was a necessary step before entering the label information from these specimens into PNWH. Joe has generously donated his time and skill. Databasing will start in the fall of 2018, enabling natural resource managers, other scientists, and interested members of the public to search our moss collection data online. The same process used to bring the mosses online will be used for our lichen collection in late 2018. Please let Shannon know of any skilled volunteers or consultants who may be able to help with lichen identification and updating of taxonomy.

Driven by frequent requests for loans from members of the public, such as teachers and botanical artists, our staff and volunteers have begun putting together a formal collection for teaching and outreach. Herbaria are limited in loaning specimens that have been accessioned into the collection. Only herbaria that are listed in the Index Herbariorum are able to exchange specimens in that manner. The new Teaching Collection, made up of extra plant contributions that have been given to MONTU, will enable us to share plant collections with other people interested in learning more about our fascinating flora.

An essential but often overlooked herbarium activity is examining the collection for insect infestation. In late 2017, Jordan carried out a "pest check," pulling out a random sample of 10-12 herbarium sheets from each vascular plant cabinet. Her results indicate that MONTU vascular plants are officially pest-free. The lichen and moss cabinets will be examined in 2018.

Herbarium staff member Jordan Morey carefully mounts specimens collected by Peter Stickney, to be accessioned into the MRC herbarium's vascular plant collection.

EDUCATIONAL ACTIVITIES

Tours of the herbarium are given frequently to UM students and interested members of the public. For the last two years MONTU has provided tours of the herbarium to roughly 150 students enrolled in **Dr. Lila Fishman's Rocky Mountain Flora Class.** The class is a requirement for students who have chosen majors such as Wildlife Biology and Environmental Science. Dr. Fishman is an Associate Professor in the Division of Biological Sciences at UM. **Dr. Wendy Ridenour's Plant Systematics Class,** from UM's Dillon campus, also visited MONTU. Dr. Ridenour is an Assistant Professor of Biology at UM Western. Each year many of the students who visit MONTU express interest in learning more about plants and become volunteers in the herbarium.

The Clark Fork Chapter of the Montana Native Plant Society held one meeting in the herbarium during the winter of 2017. In January Peter Lesica presented on the genus *Eriogonum* (see the photo on page 1).

MONTU is always in need of volunteer help. Please contact us if you're interested in assisting with any of our ongoing projects (shannon.kimball@mso.umt.edu).

MONTU Contributes to Archaeological Research

John "Daniel" Harris, M.A. student at the University of Montana

Most archaeologists investigate the signatures of the human past through artifacts and ruins, not vegetation. However, plants can also provide clues to past human behavior and are ubiquitous at most archaeological sites. Despite the important role plants have played in human lives during the recent and ancient past, archaeologists have rarely considered the social significance of plants and seldom conducted systematic vegetation surveys of forest regrowth or relict species. This is especially true in the Northern Rockies prior to its homesteading boom in 1909, where my research goal is to establish the ecological context of settlers' interactions with the plants they used, and their historical imprints on forests and landscapes.

Recently some archaeologists have sought to improve sampling methodologies by recognizing that vegetation is not an impediment but can be archaeologically relevant. Many archaeologists have noticed that certain plants are often associated with archaeological sites. Systematic vegetation surveys have shown how plants can serve as indicators of these sites. Surface vegetation surveys informed by historical research, my topic of study, will be more accessible, inexpensive, and more constructive to the needs of field archaeologists working in the forests of the Northern Rockies and beyond. Plants have the potential to enlighten understanding of archaeological boundaries and provide information about cultural identity, trade, religious beliefs, place making, and home making.

Students from UM's Rocky Mountain Flora class, instructed by Shannon Kimball, learn about MONTU's collections and why herbaria are important.

Archaeological researcher John Harris from the University of Montana conducts site vegetation surveys of Western Montana settler cabins and burial sites.

My project offers a way for both professional and laypersons to read the land as a reflection of its history. Archival research in the West's pre-homestead era can inform the public on how the settlers used plants and shaped our forests. This research can help us understand how, when, and why they carried the roots, bulbs, cuttings, and seeds of cherished plants across vast distances. My project's findings seek to share the compelling stories of the plants that have been passed down to us. Plants are a missing page from the human story, waiting to be told if only we can teach ourselves to read it printed across the landscape wherever humans have gone.

I am grateful to the UM herbarium that helped make my interdisciplinary research possible. My numerous visits to access voucher specimens, the plant dryer, and the plant freezer have been essential to the processing of specimens that I've collected as I conduct archaeological site vegetation surveys at late 19th-early 20th century western Montana settler log cabins and burial sites.

Relevant literature

Bennett, Rebecca, Kate Welham, Ross A. Hill, and Andrew Ford. 2012. The Application of Vegetation Indices for the Prospection of Archaeological Features in Grass-Dominated Environments. *Archaeological Prospection* 19: 209–218.

Schiffer, Michael B. 1987. *Formation Processes of the Archaeological Record*. University of Utah Press. Salt Lake City, Utah.

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

☐	***Regular Member***	**$15**
☐	***Sustaining Member***	**$25**
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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-Fund #29H.

Join or renew online: www.hs.umt.edu/herbarium/support.php

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