

Kelseya

Newsletter of the Montana Native Plant Society



Kelseya uniflora
Ill. by Bonnie Heidel

Plants Don't Need Nerves

By Peter Lesica, Clark Fork Chapter

Being a plant can be a tough row to hoe. One of the biggest disadvantages to being a plant is having to be stationary.

Of course, a plant can forage for food to a minor extent by sending roots out in different directions. Plant pollen and seeds can move when carried by wind or animals such as insects or fur-bearing mammals. But if some pesky insect or animal is chewing away on your leaves, you just must sit there and take it. Most animals can move to escape their predators, but plants can't. Because plants cannot escape herbivory, they must respond with chemical defenses to deter herbivores and repair damaged tissue. But how does the whole plant "know" if one of its leaves is being chewed on?

Animals have a nervous system. If a mosquito bites your leg, your nerves send a pain message in a fraction of a second, and you slap that bugger to oblivion. Plants don't have a nervous system. Or do they? Plant physiologists have shown that herbivory and pathogens are perceived at the point of attack, and the responses they elicit are propagated throughout the plant. How does that happen? Masatsugu Toyota and collaborators studied *Arabidopsis thaliana* (mouse-ear cress), a small mustard, to find out.

Electrical signals carried by increases in calcium ions (Ca^{2+}) carry signals from the site of both herbivory and mechanical wounding to

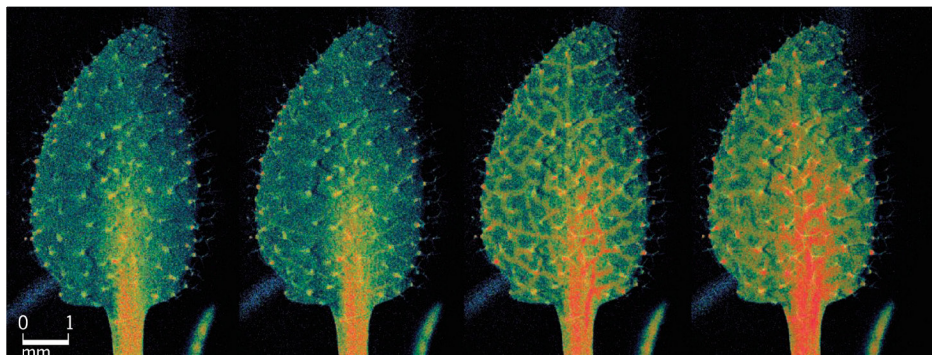
distant leaves at rates of approximately 1 mm per second, which is faster than can be explained simply by chemicals diffusing through liquids in the plant's vasculature. This signal moves through plasmodesmata (singular: plasmodesma) which are microscopic channels which traverse the walls of plant cells enabling transport and communication between them. The electronic signal uses changes in Ca^{2+} concentration through these channels for signal propagation. In *Arabidopsis* leaves, wounding-associated long-distance electrical signals are detectable using surface potential monitoring electrodes. Although plants lack nerve cells like we have, they do have an electrical system of within-body communication. Who knew? But this is not the only way plants can rapidly sense what's happening to their bodies.

Sounds are simply vibrations carried through the air. We perceive vibrations created by plucking the string of a guitar as music. It has been shown that music can influence the growth and germination in some plants, but such crude experiments provide little evidence for a function

since plants were around long before Beethoven. Insects make a lot of different sounds. So, can plants "hear" insects? Researchers at the University of Missouri decided to find out. They recorded the sound of a cabbage butterfly larvae



Arabidopsis thaliana
photo by Peter Lesica



Wound-induced spread of calcium signal (red color) in the leaf of *Arabidopsis* over a period of approximately 4 seconds (Muday and Brown-Harding 2014).



Chapter Events

Calypso Chapter

Info: Catherine Cain at 498-6198; nativeplants@montana.com or Karen Porter at 498-9728; karenwporter44@gmail.com.

Late June onward (Date(s) to be determined), Bannack Ghost Town, Pipestone Pass:

Adopting Trailheads in Southwest Montana for Annual Noxious Weed Maintenance. Under the guidance and assistance of the Adopt a Trailhead Program (AATP), Catherine Cain will lead trip(s) to Bannack Ghost Town, and Karen Porter will lead trip(s) to Pipestone Pass. Please contact trip leaders for more information. Catherine Cain: 406-498-6198 or nativeplants@montana.com; Karen Porter: 406-498-9728 or karenwporter44@gmail.com.

Tuesday July 6th: Evening Walk in Durant Canyon. An evening walk in a beautiful canyon with mixed vegetation, including good *Penstemon* locales. For more information, contact trip leader Rich Prodgers: 405-683-6529 or bighornenv@outlook.com.

Saturday, September 11: Field Identification of Sagebrush (*Artemisia*), South of Dillon. Learn field identification of the three main varieties of big sagebrush: mountain, Wyoming, and Great Basin, plus the three-tip and little or low sagebrush. See sagebrush <1/4 meter tall to 2 meters tall. Plus, Petrophyton on limestone and probably much more. For more information, contact trip leader Rich Prodgers: 405-683-6529 or bighornenv@outlook.com.

Clark Fork Chapter

Info: Teagan Hayes at 920-979-9009; teagan.hayes@gmail.com or Paul Buck at 406-970-901-2418; paul7703@gmail.com.

Saturday, August 7, 8:30 a.m. Wildflowers of the Montana-Idaho Divide. Meet at the Mackenzie Pizza parking lot (north Reserve by I-90) at 8:30 a.m. for possible carpooling and directions. The drive will be approximately 75 miles to Hoodoo pass, on the Idaho border. The hike is approximately 3 miles with an elevation gain of about 800 ft. to the east-facing basin above Heart Lake. Hopeful to return to Missoula by 5:00 p.m. To register email trip leader Peter Lesica at: lesica.peter@gmail.com.

Eastern At-Large

Contact Jennifer Lyman for all field trips or information at 406-860-0223 or jenclyman@gmail.com.

July 10, 9:00 a.m., Red Lodge: Subalpine and Alpine Meadows of the Beartooth Mountains. We will explore alpine meadows of the Beartooths for later flowering plant species. We will also continue over to the Long Lake area to look for plant species in wetland and shoreline habitats of the subalpine. The trip will involve 3-4 miles of moderate hiking, at altitude, over the course of the

day. Weather is always an issue, so please be prepared for dramatic changes in temperature, wind, and precipitation. Also, bring the *Manual of Vascular Plants of Montana*, hand lens, notebook, camera, lunch, snacks, and water. The trip will last all day, but feel free to leave as necessary. We will meet at the Old Roosevelt School Parking Lot at the south end of town at 9:00 a.m. Please contact trip leader, Jennifer Lyman to sign up and to get more information at: 406-860-0223.

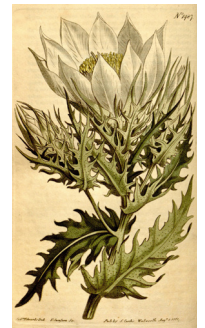
Flathead Chapter

Info: Tara Carolin at 406-607-7670; mnps.flathead@gmail.com.

Thursday, July 8th, 5:30-7:30 p.m. : Family Forest Walk, Kalispell. Join MNPS members Linda de Kort and Pat Jaquith for a family-friendly walk on a wooded forest service road in western Kalispell. We'll look for flowers, birds, and other wildlife. Dress appropriately for the weather and wear sturdy footwear. Bring your own binoculars, hand lens, and curiosity. Space is limited to 8 participants. Meeting location to be disclosed after registration. Contact: Linda de Kort at: lindardekort@gmail.com or 406-261-7672.

Friday, July 16th, 6:30 p.m. : Chasing *Mentzelia decapetala* (Ten-petal Blazing Star), Kerr Dam.

Join members at large, Caroline Kruckeberg-Clemans and Jim Boyer, for a one-of-a-kind evening trip to view the *Mentzelia decapetala* plots at Selis Kasanka (formerly Kerr Dam). These spectacular, night blooming flowers should begin to open on the shady side of the hoodoos. This is the land of the Confederated Salish and Kootenai Tribes and the gates will close at sunset. Bring binoculars for birding and viewing. Meeting Place: Overlook at Selis Kasanka, Polson, MT. Space is limited! Please call Caroline to sign up. Contact: Caroline at 406-249-8511 or jbck@centurytel.net.



Mentzelia decapetala

Saturday, July 17th, 10 a.m. - 4 p.m. : Ear Mountain Natural Area and Yeager Flats. This moderately difficult, five-mile round-trip hike led by Dave Shea passes through limber pine savannah, narrow-leaved cottonwood groves, sagebrush, Douglas-fir/Engelmann spruce forest, and a portion of the 2000 lightning-caused Ear Mountain fire. In these varied habitats grow a great variety of shrubs, grasses, and forbs, including bitterroot and several orchids. Some archaeology and history, as well as Rocky Mountain Front geology, wildlife, and management issues will be discussed. Meet at 9:00 a.m. at the Chateau Information Center parking lot at the north end of town on Hwy 89. Contact: Dave Shea at 406-466-2161.

Thursday, July 22nd, 10 a.m. - 4 p.m. : Glacier National Park Weed Blitz, West Glacier. Join fellow citizens in removing invasive plants from priority sites in Glacier National Park. Park biologist Dawn LaFleur will train participants on identification and

effective hand-pulling techniques for targeted weed species. The morning will focus on learning about invasive plant ecology, issues and identification. We will head into the field during the afternoon. Bring some muscles, water and gloves. Lunch will be provided by the Glacier National Park Conservancy. Contact: RSVP before July 14th by emailing: glac_citizen_science@nps.gov or call 406-888-7986.

Sunday, July 25th: Huntsberger Lake Wildflowers.

Join Rachel Potter & Debo Powers to explore diverse habitats and plants as we climb up through the montane forest to this jewel of a subalpine lake. Flower-lined rivulets run through lush meadows into the lake, nestled in a limestone basin at the crest of the Whitefish Range. Cosponsored by the Montana Native Plant Society and North Fork Preservation Association. Required registration opens June 15th for MWA members, and June 17th for the general public at www.wildmontana.org/wilderness-walks. Register early as this will be limited to 8 participants and fills up fast!

Thursday, August 5th, 6 p.m. : Native Plant Landscaping for the Birds.

Join MNPS & Flathead Audubon member, Kathy Ross, where she'll share ideas from 30 years of gardening experience in the Flathead Valley working with and around native plant communities. Birds are declining, insect species are disappearing, and habitat is being destroyed. Native plants are the key to rewinding! Learn how to create a biodiverse habitat in your own landscape with native plants for the birds and the insects they depend on. Registration is required as space is limited. Meeting location: Center for Native Plants, 5605 Hwy 93 South, Whitefish. Contact: 406- 862-4226, or email: go-native@centerfornativeplants.com.

Kelsey Chapter

Info: Mark Majerus (president) or Jane Fournier (secretary) at kelseychaptermnps@gmail.com.

July Date T.B.A.: Plant Identification at Spring Meadow

Lake State Park (Helena). Amanda Coyle, AmeriCorps member at Spring Meadow Lake State Park, is creating signs showing visitors which native plants they're seeing around the park, and she has asked us to help with native plant ID. This month's trip leader will be announced at a later date. For more information and to register, send an email to: kelseychaptermnps@gmail.com with the subject line "Spring Meadow Survey".

Maka Flora Chapter

Info: Bob Srygley at 488-6086, robert.srygley@usda.gov.

Valley of Flowers Chapter

Info: Beth Madden at 224-1012, bethmadden64@gmail.com.

Friday, July 9 : Medicinal Plants of Hyalite Canyon

(Bozeman). Join Robyn Klein, medical botanist and instructor at Montana State University in exploring the native plants of the northern Gallatin Range at 6,500 feet. During an easy meander

of 1-2 miles, we should see *Arnica*, *Angelica*, cowparsnip, sticky geranium, and many more. Not for picking or digging! Robyn will describe which ones are easy to grow and the history of their use in Montana and around the world. Limit 10 people. Sign up with leader Robyn Klein by email: herbrobin@gmail.com.

Tues/Thurs, August 3 or 5, 6:30 - 7:30 p.m. : Plants for Birds Demo Garden at Story Mill Community Park (Bozeman).

Visit this bird-friendly garden, installed in 2020 and funded in part by a small grant from MNPS. The garden showcases trees, shrubs and flowers that provide benefits to birds and pollinators. Most of the plants are native to Montana and require less water and maintenance. As urban growth and subdivisions alter the native landscape, bird-friendly yards are becoming extremely important in the survival of our native songbirds, bees and butterflies. See examples of some of the best landscaping plants for the Gallatin Valley area and visit with gardeners from Sacajawea Audubon with your landscaping questions. Participants can also visit the nearby "Food Forest" and walk in the Story Mill Park Nature Preserve. Choose an evening when you sign up - either Tuesday August 3, or Thursday August 5. Limit 10 people per evening. To register, contact: Beth Madden bethmadden64@gmail.com (preferred) or 406-224-1012.

Western At-Large

Info: Kris Boyd at 295-9414, boyd.kristina@yahoo

Plants Don't Need Nerves, (Continued from page 1)

feeding and played the recording at the edge of a large rosette leaf of several *Arabidopsis thaliana* plants. They found that sound-treated plants had higher levels of insect-repellant chemicals in all the larger leaves compared to plants that did not receive the caterpillar noise treatments. Their results suggest that the whole plant can respond to the chewing sound occurring at just one leaf!

So, there you have it. Plants can respond to an insect eating on them just like we can. Their reaction is almost as fast as we can slap them. We might be a little faster, but then I often miss the little devils, darn it.

Additional reading:

Appel, H. M., and R. B. Cocroft. 2014. Plants respond to leaf vibrations caused by insect herbivore chewing. *Oecologia* 175:1257–1266.

Muday, G. K. and H. Brown-Harding. 2018. Nervous system-like signaling in plant defense. *Science* 361: 1068–1069.



Arabidopsis thaliana
photo by Peter Lesica



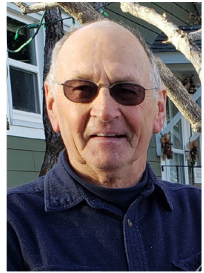
The People Behind the Plants

Election Results Finalized

By Rachel Potter, MNPS Secretary

The votes are in, and we welcome Patrick Plantenberg, President, and Laurie Kurth, Treasurer, to the Board of Directors. Voters re-elected Kris Boyd, incumbent, as Western Director-at-Large. Gretchen Rupp is retiring as President after two terms but will continue to contribute her wisdom to the Board as Past-President. We are very grateful to retiring Co-Treasurers Shannon Kimball and Jenny Tollefson, who have served six and ten years, respectively.

For the second year in a row, Calypso Chapter smashes the competition in election participation. Sixty one percent of Calypso members voted, earning the Chapter a \$100 reward. Both Maka Flora and Western-at-Large voters returned 100% of their paper ballots with flower stamps. Thank you to everyone that took the time to vote for our volunteer leaders, and a huge thank you to those who volunteer(ed) their precious time and expertise to the Montana Native Plant Society!



Incoming President
Patrick Plantenberg



Incoming Treasurer
Laurie Kurth



Returning Western
Director-at-Large
Kris Boyd



Retiring President
Gretchen Rupp



Retiring Co- Treasurer
Shannon Kimball



Retiring Co- Treasurer
Jenny Tollefson

Kelsey Chapter Revitalization

For almost two decades, from the mid-1990s, the Kelsey Chapter relied on the exceptional leadership of Kathy Lloyd to organize its programs, field trips, projects, and hands-on experiences. When she stepped back from this responsibility in 2014, Bob Person took over a care-taker role for the chapter, while long-time loyal treasurer Greg Hallsten kept the books in order. Under Bob's guardianship the chapter maintained subsistence-level communications and activities until new leadership emerged. Finally, that void has been filled.

In 2020, Andrea Pipp and Bob Person worked together to outline a new chapter organizational structure and used information gathered by the MNPS volunteer poll to gather a new leadership team committed to revitalizing the chapter. In a few short months and working within the pandemic restrictions, the new Kelsey Chapter executive committee has met regularly, stepped up communications with chapter members, organized several successful Zoom presentations over the winter and spring, and kicked off a modest series of summer field trips and local native plant-related projects. The committee is looking forward to continuing and building on this initial effort by fully re-engaging

with Chapter membership when in-person meetings and presentations are once again possible.

The Kelsey Chapter's committee is composed of vice-president, treasurer, secretary, program and event coordinators, technical lead, and advisors, led by President Mark Majerus. You can reach any member of the executive committee through the chapter's email address: kelseychaptermnps@gmail.com.

Honoring previous *Kelsey* graphic designer, Eileen Chontos

During her time as *Kelsey* Editor, Caroline Kurtz brought in Eileen on the Summer 2015 issue. From then until the Winter 2021 issue, Eileen was the magic behind the puzzle pieces that melded the imagery and voice of *Kelsey*. (Continued next page)

Eileen said, "Producing *Kelseya* has been a rewarding project. My appreciation for our natural surroundings has benefited from working on the newsletter, and it has helped me learn about the flora of our beautiful state."

Eileen's father retired from the Forest Service after 30 years of service in 1978. He used to say he could remember when there was no knapweed in Montana. He hated knapweed and always said, in jest, that his tombstone would read "the weeds got him." Her father passed on respect for the land and reverence for this beautiful state. In that regard, Eileen greatly appreciates the Montana Native Plant Society's efforts to protect Montana.

2020 was a watershed year for Eileen, as it was for many others. "2021 seemed like the perfect time to bite-the-bullet and see what is next for me," she said. "More traveling, more gardening, more living, and less time in front of the computer."



*Eileen Chontos, Graphic Designer for *Kelseya* from Summer 2015 until Winter 2021*

Welcoming New Clark Fork Chapter President

By Annie Garde, Clark Fork Chapter

MNPS would like to welcome Teagan Hayes as the new Clark Fork Chapter President. Teagan has undergraduate degrees in zoology and geography from the University of Wisconsin, and a Master's Degree in wildlife biology from the U of M. She fell in love with the West on a bike trip from the Yukon to Yellowstone National Park. Since then, she's worked on research projects involving musk oxen, deer, elk, birds,

photo by Sam Pannoni



beetles and bats. Working in many habitats, she's no stranger to flora. Teagan has given presentations to the Clark Fork and Flathead chapters on the plants and wildlife of Greenland and Iceland. She currently works for USGS and her field work for them is in Glacier National Park, eastern Montana, and Wyoming. Teagan will bring new energy, enthusiasm and ideas (and tech know-how) to the chapter and the state Board.

WELCOME NEW MEMBERS!

The Montana Native Plant Society would like to welcome and thank new members from the following chapters:

Calypso Chapter

Sally Behr Schendel, Leslie Clark, and Cathy Maloney

Clark Fork Chapter

Stephanie Ashmore, Alice Burchak, Sally Friou, Jessica & Jason Glenn, Kimberly Lugthart, Annette Marchesseault, Judy Molland, Lauren Pfund, and Michael Wood joining as a Lifetime Member

Flathead Chapter

Mary Dojnik, Bob Donahue, Connie J. Johnson, Jessica Wendel, and Christine Ayers joining as a Lifetime Member

Kelsey Chapter

Liz Burke, Joan Davis, Sonja Hoeglund, Kerry Hovland, Barbara Lien, Ann Morren, Kirstan Roush and Melissa Smith

Maka Flora Chapter

Gary Knopp and Kelly McMillen

Valley of Flowers Chapter

Alexandra Amonette, Phillip & Michelle Barber, Rose Waltz, Patrice Burr, Lee Harry, Mary Hesse, Keffer Hudson, Anna Jacobs, Ruth Kincaid, Connie & Eric Lange, Frank Marchak, Andrew Maritan, Ashley Martens, Nora Miller, Barbara Phinney, Cathy Rechlin, Yvonne Rudman, Anoushka Sharma, Ryan Strother, Sandy Taylor, and Maggie Triska

Eastern Montana at Large

Monica Howick, Pat Moore, and Murry & Carolyn Spector

Community Scientists Needed for Western Redcedar Dieback Research

Researchers from Washington State University seek community scientists to document the health of western redcedar trees in western Montana. Dr. Joey Hulbert presented about the need and opportunity during a recent Zoom presentation to the Flathead Chapter. You can watch the presentation on YouTube to learn more about the concern for the dieback of western redcedar and the methods to help advance knowledge about the issue. Questions or feedback can be shared with Joey at hulbe@wsu.edu or by visiting the Forest Health Watch program website <https://foresthealth.org>. (photos on page 9)



Herbarium. The Quest to Preserve and Classify the World's Plants.

By Barbara M. Thiers

Timber Press, Portland, OR. 279 pp.
ISBN 978-1-60469-930-2. \$40

Review by Arnold Tiehm of the Nevada Native Plant Society.
[Edited lightly by Matt Lavin. A slightly different version was published in the February 2021 Newsletter of the Nevada Native Plant Society, volume 47, issue 1, pages 8-9.]

Mr. Webster defined herbarium as “A collection of dried plant specimens usually mounted and systematically arranged for reference”. When people ask me, I always refer to a herbarium as “A library of plant specimens”. From the dust jacket on Barbara Thiers’ marvelous book, *Herbarium*, is the following quote: “Since the 1500s, scientists have documented the plants and fungi that grew around them, organizing the specimens into collections. Known as herbaria, these archives helped give rise to botany as its own scientific endeavor”. Herbaria are indeed an archive, a historical account of plants collected over time. Comparison of historical collections and modern collections allows for positive identification. Historical collections show what plants occurred in an area before alteration by humans. Reports of plants for any area are based on the documentation of a herbarium specimen.

In *Herbarium*, Barbara Thiers, director of the Herbarium at the New York Botanical Garden, takes us on a trip through the history and functioning of herbaria around the world. The book is divided into five major sections: *The Origin of Herbaria*; *Herbaria and the Age of Botanical Exploration*; *Development of Herbaria in the United States*; *Development of Herbaria Around the World*; and *The Future of Herbaria*.

From *The Origin of Herbaria*, we learn that the first herbaria were developed by herbalists and apothecaries. The modern herbarium dates to the early 1500s and starts with Renaissance

man Luca Ghini. He taught medicine at the University of Bologna, in Italy, and subsequently added a course in plants. In order to allow the year-round study of plants he pressed plants and glued them to the pages of a blank book. It is a short stretch to imagine how books and portfolios of plant specimens were converted to the modern herbarium method of plant specimens on loose sheets of paper filed in a systematic order. Unfortunately, Ghini’s herbarium no longer exists.

From *Herbaria and the Age of Botanical Exploration* we learn how many countries in Europe in the 1700s and 1800s sent expeditions to the ends of the world. This was the golden age of colonialism. These expeditions also sought out plants that could be used in commerce, such as spices, crops, medicines, or to adorn the grounds and greenhouses of the aristocracy.

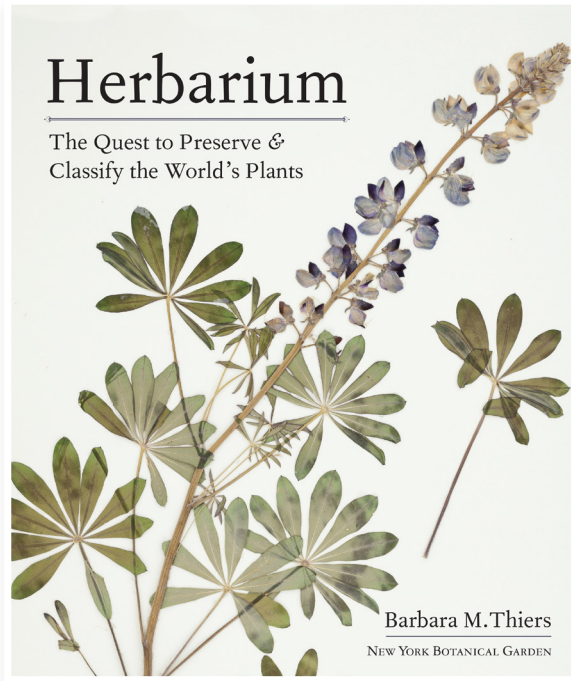
One fascinating story in this section is about a French expedition sponsored by Louis XV. It was led by Louis-Antoine de Bougainville. His name is familiar because of his namesake, the striking South American genus *Bougainvillea*. The naturalist on the voyage was Philibert Commerson. He hired an herb lady, Jeanne Baret, his mistress, as his assistant. At the time women were banned from sailing on French ships. Commerson had Baret dress and act like a man. She also used the name Jean to further cloud the issue. She stayed away from the captain and crew

and claimed to be a eunuch. Seeming to be ashamed of this mutilation she was allowed to urinate and bathe alone. The expedition went, among other places, to South America, Tahiti, Samoa, New Hebrides, and New Guinea. With their return to Europe Baret became the first woman to circumnavigate the world.

In *Development of Herbaria in the United States* we learn that the early collections from America were sent to museums and sponsors in Europe. The first scientific organization in the United States was the American Philosophical Society founded in Philadelphia in 1743. As more people poured into America more Universities and Colleges were established, more science was taught, and more natural history museums were created. We learn about The Twisted Tale of Lewis and Clark’s Botanical Specimens. We learn about

the establishment and development of major herbaria at Harvard, The New York Botanical Garden, and the Missouri Botanical Garden. We learn about botany in California with the rise of herbaria at the California Academy of Sciences and the University of California, Berkeley.

In *Development of Herbaria Around the World* we learn about the development of herbaria in Australia, Brazil, The People’s Republic of China, and South Africa. There are fascinating tales and stories about herbaria in all of these areas which only



leaves me wanting more. In the preface the author laments: . . . *I could not focus equal attention on herbaria worldwide – a realization that saddened me greatly.* After all there is a story behind every herbarium. How, when, and why did it start? Who were the people that supported and contributed to its existence? Who were the collectors who braved sometimes uncomfortable and dangerous conditions to make interesting collections in remote locations to be preserved in perpetuity?

In *The Future of Herbaria*, we learn that herbaria worldwide currently number about 3,300, are housed in 178 countries, and contain about 390 million specimens. This section delves into studies of DNA extracted from herbarium specimens. We learn that the oldest specimen at the New York Botanical Garden from which DNA has been successfully extracted was collected in 1835. We also learn how extractions from herbarium specimens have allowed studies of air borne pollutants such as heavy metals and

“Herbarium is impeccably researched and written with an envious clarity of prose.”

how herbarium studies have documented phenological changes. There are also sections on *Preserving Herbaria*, *Threats to Herbaria*, and *How You Can Help*.

Included in this section is an image I am grateful to see. That is one of the cold storage room at The New York Botanical Garden. It is here that the Garden stores specimens waiting their turn to be mounted on archival paper and expedition specimens that are being processed. The room is kept cold to prevent insect infestations damaging the collections. I vividly remember the first time I was shown this room and how much I was in awe with it. When I was working at the Garden the cold storage room was always included on guest tours. The image shows a row of shelves containing expedition specimens that have been organized by collector and plant family. In the background are shelves containing specimens to be mounted. The room is taller than the image shows and certainly has many more rows that simply could not be shown in one image. I showed this image to a student who remarked it was sheer chaos. Sheer chaos - No! Organized chaos - maybe. The different colored drop tags delineate and define what is contained in the bundles and once the system is learned order is born from seemingly chaos.

Herbarium is impeccably researched and written with an envious clarity of prose. It is a fascinating enquiry into this unique field of plant biology, exploring how herbaria emerged and have changed over time, who promoted and contributed to them, and why they remain such an important source of data for their new role: Understanding how the world's flora is changing. Barbara Thiers also explains how recent innovations that allow us to see things at both the molecular level and on a global scale can be applied to herbaria specimens, helping us address some of the most critical problems facing today's world.

At its heart, *Herbarium* - is a compelling reminder of one of humanity's better impulses: to save things—not just for ourselves, but for posterity, whoever she is. In short *Herbarium* is a marvelous book about the ages, for the ages.

SMALL GRANT REPORT

Tell our History with Native Plants!

By Kathe A. Gabel, Volunteer and Member
Huntley Project Museum and Garden Club

While mapping a route from Missouri to the Pacific Ocean, Meriwether Lewis collected native plants during the long and arduous trek. Since the Huntley Project Museum is located near Pompeys Pillar, a nationally designated site on the Lewis and Clark trail, establishment of the Homesteader Memorial Native Plant Gardens aims to promote native plants discovered by Lewis and other native plants suitable for Montana gardens. In the 1970's, Charles Banderob, a Huntley Project homesteader, envisioned that the museum would feature native plants, plus crops grown by Huntley Project homesteaders. These two ideas, promotion of Lewis & Clark native plants and vision of a homesteader, created excitement for establishing the Homesteader Memorial Native Plant Gardens.

Berm locations located southwest of the museum



Homesteader Memorial were initially marked and then mounded with appropriate soil. Raised



beds were constructed to display four local crops and native grasses. After review by Marilyn Lockwood, a Master Gardener and project

consultant, plus members of the Huntley Project Museum and Huntley Project Garden Club, 50 native plants and appropriate soils were obtained for use in the gardens. Wild bergamot, maximilian sunflower, and syringa (mock orange) greet visitors as they enter the gardens. Four garden circles, designed to promote greater visibility of individual plants, feature colorful native plant communities. Three of the circles introduce plants initially identified on the Lewis & Clark trail in Montana and adjoining states, e.g. arrowleaf balsamroot, prairie smoke, Wilcox's penstemon, rabbit rubber bush, and kinnikinnik. The most southern garden circles contain colorful plant communities suitable for Montana native gardens. Wild blue flax, upright prairie cornflower, paprika yarrow, blanket

Continued on page 9



Gardener's Notebook

Using Native Plants in Backyard Landscaping

Penstemon fruticosus

By Kelly Chadwick, Clarkfork Chapter

What has 5 stamens and is purple all over? To be more accurate, what has 4 fertile stamens, 1 sterile stamen (staminode), and its flowers are often purple? The answer is a *Penstemon* or beardtongue. With approximately 270 species, *Penstemon* is the largest plant genus endemic to North America.

Penstemon fruticosus is this spring's beardtongue celebrity, also known as shrubby, bush, or lowbush penstemon.

Some say *Penstemon* means "five stamens" derived from "penta", meaning "five". Others say *Penstemon* is derived from the Latin "pene" ("paene") meaning "nearly" or "almost"; and "stemon" Greek for "thread". Using this derivation, *Penstemon* means "nearly a thread" referring to the staminode, an almost functional stamen. *Fruticosus* is from the Latin "frutex" meaning "shrub" or "bush".

Penstemon fruticosus is in the primitive subgenus *Dasanthera*. Most species in this group are low, evergreen shrubs displaying numerous, large, showy flowers with dense, long-wooly anthers on short, one-sided racemes.

P. fruticosus has shiny, leathery, evergreen, usually serrate leaves with spreading, woody stems. The showy purple flowers are prolific and up to two inches long. Its native range extends from the east slopes of the Cascades of British Columbia, Washington, and Oregon, east to southwestern Alberta, western Montana and Wyoming. June 15, 1806, Lewis and Clark collected it along the Lolo Trail near the mouth of Lunch Creek in Idaho.



photos by Ken Stolz

Our species, *Penstemon fruticosus var. fruticosus* is found in rocky, open forests, outcrops, and talus slopes from foothills to the lower subalpine in west and southern central Montana. It attracts at least 23 species of bumble bees.

Indigenous peoples of the west used this plant to treat several medical conditions. A tea was taken for flu, colds, headaches, internal disorders, itchy scalp, and acne. Raw roots were placed on a tooth to treat toothaches. A wash was used for inflamed eyes, kidney troubles, rheumatism, arthritis, aches, sores, ulcers and to increase milk production in new mothers.

P. fruticosus is an exceptional garden plant, possessing the best qualities of the subgenus, tolerant of moist conditions and long-lived for the genus. I grow it in both full sun and partial sun and have watered regularly and withheld water. It is planted in soil rich with compost, dense garden soil, and rocky, compacted soil. In all cases it thrives. In my gardens, it is not eaten by deer. In spring there may be minor winter burn. Adding boughs or having extended snow cover helps to reduce damage. Showy purple blossoms and gentle, humming bees cover this plant for several weeks in spring.

Sources:

- Morrison, Sheila. *Magic of Montana Native Plants*.
- Phillips, H. Wayne. *Plants of the Lewis and Clark Expedition*.

USDA Hardiness Zone: 4 - 9

Height: 4 – 16 inches

Width: 18 inches - 3 feet

Space: 2 feet

Light: part shade to full sun; best part sun

Water: low to regular garden conditions; tolerates some drought

Soil: poor to well-drained rich, loamy soil

Ph: neutral – acid; slightly alkaline

Blooms: mid-May to June

Noteworthy Characteristics: deer resistant, pest and disease free, attracts native bees, evergreen, cultivars available.

Propagation: seed, cuttings, layering.

Seeds require at least 8 weeks of cold stratification. Sheila Morrison recommends barely covering seeds and planting outside in flats or pots in fall. Sporadic, extended germination takes place in spring.

Tip cuttings may be taken from non-flowering stems, a few inches long that include 4-6 nodes. Remove the lowest 2 sets of leaves; treat with rooting hormone. Place cuttings in a few inches of dampened, coarse, potting medium in pots or trays. Plastic lids or bags may be used to keep cuttings from drying out, but cuttings do well in a shaded open-air situation.

Layering is easy and fast; plants often root as they creep over the soil surface. Cover stems with soil, keep in direct contact with soil by anchoring with a rock or garden stakes.

Sources, continued:

- Munger, Susan H. and Charlotte Staub Thomas. *Common to This Country, Botanical Discoveries of Lewis and Clark.*
- Lewis and Clark Herbarium - Plants collected by Lewis and Clark (plantsystematics.org).
- Shrubby Beardtongue - Montana Field Guide (mt.gov).
- Southwest Colorado Wildflowers, *Penstemons*, Red (swcoloradowildflowers.com).
- *Penstemon* - *Dasanthera* Group | North American Rock Garden Society (nargs.org).
- Rydberg's penstemon (*Penstemon rydbergii*) (fs.fed.us).
- Shrubby Penstemon - *Penstemon fruticosus* (plant-life.org)

Redcedar Dieback

(continued from page 5)



Small Grant Report (Continued from page 7)

flower, and pasqueflower provide hues of blue, yellow, pink, and purple to illustrate color theme possibilities for native plant gardeners.

Museum visitors also enjoyed viewing native grasses, e.g., bluebunch wheatgrass (Montana state grass), wheat, barley, sugar beets and field corn grown in the new raised beds located south of the Dassinger building.

Although squirrels, rabbits, and a destructive hailstorm damaged plants, trees, and museum buildings, we look forward to 2021 with more planting and an increased number of museum visitors. To further our goals, remaining grant funds will help print brochures and purchase botanical plant labels and interpretative signs illustrating the historical nature of native plants. Museum donations will also be used to build a boardwalk to guide visitors from the museum main building to the native plant gardens.

Appreciation goes to Huntley Project Garden Club and museum volunteers, who planted and watered the gardens. Although the pandemic diminished museum traffic, we celebrated the gardens during the annual Garden Club 2020 Tour! Crop displays were made possible with seeds donated by the Southern Agricultural Research Center, plus seeds and soil from Leroy and Mike Gabel. Lastly, we appreciate the Montana Native Plant Society for this opportunity to promote native plant gardens. Thank You!



President's Platform



Thanks for the memories! Serving as President of the Montana Native Plant Society has been a deeply rewarding experience for me. During my time in this role, we have engaged more and more Montanans in learning about and conserving our native plants and the natural communities they populate. I am especially grateful to our board members, who are smart, hard-working, and dedicated to our organization's mission. It has been a pleasure working with you!

- Gretchen Rupp, Outgoing President



I would like to personally thank Gretchen for all she has done over the last five years as President of MNPS. She has left the organization stronger than ever. I have asked for her help in her new role as Past-President to continue the excellent job she has done running meetings and programs with the digital platform this past year.

I would like to thank the Board of the Montana Native Plant Society for asking me to consider running for President of this much needed organization. And thanks to all the members that voted for me. I will try to do my best to keep MNPS growing. One of the first issues MNPS must address is the need for a new organizational strategy to

stop burning out our dedicated volunteers. Can MNPS continue to grow with only volunteers doing all the work? Perhaps not, we may need to hire a part-time executive assistant.

We also need to tap some of our talented younger members to step up as chapter Presidents or Board members, to help direct the future of this great organization. My goal over the next two years is to try and lower the average age of the Board by 20 years!

Native plants face many challenges in our growing economy and rising population. The Montana Native Plant Society must be there to help conserve our native species. MNPS must help complete the Montana Plant Conservation Strategy that was initiated with our seed funding. Once the strategy is complete, MNPS must help address needed research to conserve our critical native species and habitats.

MNPS members love field trips. Now that COVID-19 is potentially under control, we must get members back in the field to highlight the value and beauty of our native flora and to show the threats invasive species and human activities are causing.

There is a continuing increase in the use of native plants in landscaping. Audubon is helping MNPS by asking for native species planting to help save native birds. MNPS must reactivate our Landscaping Committee to forward this effort. I hope to continue to develop partnerships with groups such as Audubon who share our love for native plant species.

Finally, MNPS is in discussions to develop a Citizen Botany program in Montana. If we can do this, it would greatly magnify our effectiveness in conserving Montana's native plants.

Looking forward to meeting and working with all of you over the next two years.

- Patrick Plantenberg, Incoming President

out is very boggy and wet, the exact type of conditions that sweetgrass thrive in. It is also an already known spot for sweetgrass picking. The vegetation is high in this area but sweetgrass spreads quickly when disturbed and can be sometimes referred to as weed-like in its growth. The soil proves to be highly suitable for sweetgrass, since it needs a lot of water.

Water Quality or the Brownfields Department would have assisted me without hesitation prior to COVID-19, but I'm very grateful that my family volunteered to help with planting in the area right behind the powwow grounds. It is an easily accessible area to all, whether you are walking or driving.

The transplants are thriving. This project is coming to an end, but it is also a new beginning for our community. More and more we see traditional plants being harvested by tribal members. How beautiful that is.

The land is healing. Coming back to it provides growth in oneself. Like all things, we now wait and hope that these plants will grow for our community and help continue our journey of self-sustainability and cultural revitalization.



SMALL GRANT REPORT

Revitalizing Sweetgrass for the Fort Belknap Indian Community *by Colette Work*

We were fortunate to be awarded a small grant from the Montana Native Plant Society. Our grant was based on cultural revitalization by means of repopulating sweetgrass in the Little Rocky Mountains. To begin, a GIS Technician marked off a spot for planting, and Sweetgrass saplings were ordered from the Prairie Moon Nursery. The place we marked

Colette Werk is an enrolled member of the Aaniiih (White Clay) people, more commonly known as the federally recognized name, Gros Ventre. Colette lives in Hays, Montana on the southern end of the Fort Belknap Indian Reservation. She works in the Fort Belknap Environmental Protection Department.



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Membership Level	Dues with affiliation*	I am paying for ___ years	Donation**	Total amount enclosed
Individual	\$20			
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MNPS Chapters and the Areas They Serve

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. Alternatively, you may choose to be a member At-Large. 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.

Moving? Please notify us promptly of address changes at mtnativeplantmembership@gmail.com.

Your mailing label tells you the following:

CHAPTER AFFILIATION: CAL=Calypso; CF=Clark Fork; F=Flathead; K=Kelsey; MF= Maka Flora; VOF=Valley of Flowers

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YEAR YOUR MEMBERSHIP EXPIRES: Memberships expire in February of the year listed on your mailing label.

Use this form to join MNPS only if you are a first-time member!

To renew a membership, please wait for your yellow renewal card in the mail.

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 *Kelsey* 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!



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About 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 *Kelsey*, the quarterly newsletter of MNPS. We welcome your articles, field trip reports, 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. All items should be emailed to scottguse@yahoo.com, or mailed to: Scott Guse, *Kelsey* Editor, 725 Twin Lakes Road, Whitefish, MT 59937.

- **Fall issue deadline is September 10**
- **Winter issue deadline is December 10**
- **Spring issue deadline is March 10**
- **Field Trip Guide issue deadline is April 10**
- **Summer issue deadline is June 10**

Please send web items to our webmaster concurrent with these dates, at:

Bob Person at: thepersons@mcn.net

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.

If you would like extra copies of *Kelsey* for friends or family, contact the Newsletter Editor at: scottguse@yahoo.com. No part of this publication may be reprinted without the consent of MNPS. Reprint requests should be directed to the Newsletter Editor.

Changes of address and inquiries about membership should be sent to **MNPS Membership, P.O. Box 8783, Missoula, MT 59807-8783.**

Please visit our website at: www.mtnativeplants.org

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