

# Kelseya

Newsletter of the Montana Native Plant Society



*Kelseya uniflora*  
ill. by Bonnie Heidel

## SMALL GRANT REPORT

### Bedrock Meadows: A Remarkable Habitat Type in Northwestern Montana

By Viktoria Wagner and Ricarda Pätzsch, Dept. of Biological Sciences,  
University of Alberta, Edmonton

**T**he Interior Pacific Northwest is globally renowned for its vast coniferous forests. Apart from locals and botanists, few people know that this region is also home to native mid-elevational meadows that occur as pockets interspersed among forest. Given its occurrence on shallow soils over bedrock, former Kootenai National Forest botanist Tony Spribille coined the term “bedrock meadows” for this habitat type in 2004.

Bedrock meadows appear to be bound to periodically seepy soils over argillite bedrock in mountain ranges in northwestern Montana, southern British Columbia, northern Idaho, and northern Washington, and display a rich native flora, including many annual, bulbous, and tap rooted plants. In contrast to their forest counterpart, they have never been studied by scientists and hence are overlooked in environmental education and decision-making.

Our field team received a Small Grant from the Montana Native Plant Society to explore the plant diversity and species composition of bedrock meadows in northwestern Montana in June 2019. We surveyed a total of 59 four by four meter ( $13.1 \times 13.1$  sq. ft.) plots in the Kaniksu, Kootenai, and Flathead National Forests in the Salish and Cabinet Mountains. We recorded all vascular plant, bryophyte, and lichen species in each plot, estimated abundance, collected data on soil depth, and extracted soil samples for laboratory analyses. We were accompanied by two botanists from Germany (Thomas Becker, Hans Georg Stroh) and Toby Spribille.

We collected 300 vascular plant specimens, 345 bryophyte specimens, and 400 lichen specimens. Our preliminary list of vascular plants encompasses about 180 species. In the course of our work, we found four vascular plant species listed in the Montana Natural Heritage Species of Concern list: (1) Geyer’s onion, *Allium geyeri* var. *geyeri* (state rank S3), which occurred infrequently in our survey except for the Wolf Creek

## Regarding COVID-19

**Like everyone else in Montana and the nation**, the Montana Native Plant Society is concerned about COVID-19 and the transmission of the novel coronavirus. We are closely following local, state, and federal guidance regarding public health best practices and social gatherings, but we also recognize that outdoor activities in small groups where people can spread out might be an important outlet in this time of social distancing.\*

As of press time, the following actions have been taken:

- the biennial Plant Conservation Conference, April 8-9 in Bozeman, has been cancelled;
- the 2020 MNPS Annual Membership Meeting, July 3-5 in the Centennial Valley, has been cancelled;
- spring and summer field trips listed inside are still scheduled to take place. Whether they actually happen will be at the discretion of the local organizers.

MNPS outings also may be cancelled for weather or other reasons; please do NOT bring pets. Look for latest status details on Facebook (MNPS; Clark Fork, Flathead, and Valley of Flowers Chapters), the MNPS website, and from listed contact people. Cancellations are disappointing, but an ounce of prevention now hopefully is worth pounds of cure later. You should still enjoy getting outside to soak up the restorative power of the natural world. Party on plant people!

*\*For some field trips, we would normally encourage carpooling. However, carpools may NOT be a good idea at this time. Please use your best judgement.*



# Chapter Events

## Calypso Chapter

Info: Catherine Cain at 498-6198, [nativeplants@montana.com](mailto:nativeplants@montana.com).

**Sunday, May 3, 10:00 a.m. Native Garden Care.** Help monitor the Chapter's native garden in the median strip on Helena Ave. in Dillon (left turn at the first light on Montana Street, coming from the north). Our work will continue throughout the summer. Bring gloves, knee pads, a digging tool, and lend some time to weeding out non-native perennials and encouraging native plantings in their sixth year. Info: Catherine Cain at 498-6198, [nativeplants@montana.com](mailto:nativeplants@montana.com).

**Sunday, June 14, 9:00 a.m. Beaverhead Trails Coalition Wildflower Walk.** Meet at the Dillon Town Overlook Trailhead for a hike to see what's blooming and to enjoy the results of the Trail Coalition's hard work. We will return by noon. Info: Celine Beauchamp Stout at [beaverheadtrails@gmail.com](mailto:beaverheadtrails@gmail.com) or Catherine at [nativeplants@montana.com](mailto:nativeplants@montana.com).

**Thursday, June 25, time TBA. National Pollinator Week at Vipond Park.** The Chapter co-hosts this event with the Beaverhead-Deerlodge National Forest; Catherine Cain and Forest Botanist Jessie Salix lead. We will plan to depart from a central meeting place and return by 3:00 p.m. Bring field guides, lunch, water, and appropriate clothes for sun or rain. Info: Catherine Cain at 498-6198, [nativeplants@montana.com](mailto:nativeplants@montana.com), or Jessie Salix at 683-3947.

## Clark Fork Chapter

Info: Anne Garde at 721-7627, [anniegarde@yahoo.com](mailto:anniegarde@yahoo.com) or Paul Buck at (970) 901-2418, [paul7703@gmail.com](mailto:paul7703@gmail.com).

**Thursday, April 9, 7:00 p.m.** Stephanie Frostad, Kristi Hager, Kendahl Jan Jub, Rosella Mosteller, and Nancy Seiler will show us their wildflower art and tell us stories about how they all came to be. Montana Natural History Center, 120 Hickory St. (note different location).

**Wednesday, April 22, 5:30 p.m.** Clare Beelman leads this trip to visit spring bloomers such as the uncommon Missoula phlox, Rocky Mountain douglasia, treasured bitterroots, and important pollinator plants like buckwheat (*Eriogonum ovalifolium*). Meet at the Waterworks trailhead on Greenough Dr., just north of Vine St. Info: Clare at 728-0189, [clare.beelman@gmail.com](mailto:clare.beelman@gmail.com).

**Wednesday, May 6, 5:30 p.m. Wildflower Walk at Milltown State Park.** Celebrate National Wildflower Week with Clare Beelman as she leads this outing along the Overlook Trail to find blooms that we can identify and catalog. The trail begins at the cliff that overlooks the confluence of the Clark Fork and Blackfoot Rivers and works its way down through mixed ponderosa forest to the flood plain. Meet at the Overlook parking area on Deer Creek Road. Visit [www.facebook.com/MNPSClarkForkChapter/events](http://www.facebook.com/MNPSClarkForkChapter/events) for a map and details. Info: Clare at 728-0189, [clare.beelman@gmail.com](mailto:clare.beelman@gmail.com).

**Wednesday, May 13, 5:30 p.m. Trillium Walk in Spring Gulch.** Tarn Ream and others will lead us along forested streams and seeps, where we'll likely encounter some beautiful trillium. These white flowers only occur once a plant is about 20 years old, and many individual plants live longer than people. Find out what else we can learn about this and other early bloomers along the way. Meet at the main Rattlesnake trailhead parking area. Visit [www.facebook.com/MNPSClarkForkChapter/events](http://www.facebook.com/MNPSClarkForkChapter/events) for a map and details. Info: Tarn at 549-7933, [tarn.ream@umontana.edu](mailto:tarn.ream@umontana.edu).

**Thursday, May 14, 6:30 p.m. Spring Potluck and Plant Label Party.** Bring a dish to share and nimble fingers to prepare plastic plant labels for our upcoming plant sale. We'll hope to enjoy a warm spring evening under the Pavilion at Pineview Park, near Rattlesnake School, and view the spring flora along Rattlesnake Creek. Bring your own plate and utensils. No alcohol please. Info: Peter at 728-8740 or Clare at 728-0189.

**Wednesday, May 20, 5:30 p.m. Grasses of Missoula Valley.** Grasses are the foundation of many local habitats. This walk, led by Jim Romo, will help you distinguish between natives and non-natives, and provide information about their growth, life cycles, and roles in local plant communities. Meet at the Waterworks trailhead on Greenough Dr., just north of Vine St. Info: Paul at 970 901-2418, [paul7703@gmail.com](mailto:paul7703@gmail.com), or visit [www.facebook.com/MNPSClarkForkChapter/events](http://www.facebook.com/MNPSClarkForkChapter/events) for a map and details.

**Thursday, June 4, 6:30 p.m. Plant Labeling Party.** Nosh on hors d'oeuvres and sweets while preparing this year's plants for sale. Bring your labeling fingers and a savory or sweet dish to share. Meet at Clare Beelman's house, 2 September Dr., Lincoln Hills. Info: Clare at 728-0189.

**Saturday, June 6, 8:00 a.m. Clark Fork Farmer's Market Annual Montana Native Plant Society Plant Sale.** Help with the sale of many Montana native plant species at this one-day event. Come early for the best selection for your garden. Info: Clare Beelman at 728-0189.

**Wednesday, June 10, 5:30 p.m. Montana Native Botanic Garden.** Kelly Chadwick leads a tour the native gardens at the University of Montana to see what's blooming and to admire the diversity of plants that can be grown in the Missoula area. This is a great way to identify and learn about our native flora. Refreshments provided. The garden is located west of the University Center (UC), north of Main Hall, surrounding the botany greenhouse. The closest parking is in lots east of the UC or along Campus Drive, both free after 5:00 p.m. Info: Paul Buck at (970) 901-2418, [paul7703@gmail.com](mailto:paul7703@gmail.com), or visit [www.facebook.com/MNPSClarkForkChapter/events](http://www.facebook.com/MNPSClarkForkChapter/events) for a map and details.

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## Eastern At-Large

Info: Jennifer Lyman at 860-0223, [jenclyman@gmail.com](mailto:jenclyman@gmail.com).

**Saturday, June 13, time TBA.** Pryor Mountains.

Info: Jennifer Lyman at 860-0223, [jenclyman@gmail.com](mailto:jenclyman@gmail.com).

**Saturday, July 11, time TBA.** Beartooth Mountains.

Info: Jennifer Lyman at 860-0223, [jenclyman@gmail.com](mailto:jenclyman@gmail.com).

## Flathead Chapter

Info: Tara Carolin at 260-7533, [mnps.flathead@gmail.com](mailto:mnps.flathead@gmail.com).

**Tuesday, April 21, 5:00 p.m.** Native Plant Trivia Night. Grab some friends, have a beer, and put on your thinking cap! Until 8:00 p.m. each brew sold will benefit MNPS, so bring a designated driver and prepare to support native plants. Backslope Brewing, 1107 9th St. W (Hwy 2), Columbia Falls. (Note: Tuesday, not Wednesday.)

**Thursdays in May, 10:00 a.m.** Swan River Nature Trail. Join naturalist and botanist Anne Morley and the Flathead Audubon Society for a gentle, two-hour spring birding and wildflower identification stroll. We'll wander two miles along the Old Swan River Road in Bigfork's backyard, listening to the river next to the trail. Bring binoculars! Meet in front of ShowThyme Restaurant, Bigfork. Info: Anne at 886-2242.

**Wednesday, May 13, 5:30-7:30 p.m.** Native Flora and Birds of Spring Brook Ranch. Join MNPS, Flathead Audubon Society, and ranch owner Jim Watson for an evening adventure exploring this unique sanctuary located in an urban setting. We will enjoy a close-up look at the flora and fauna of Flathead Valley's west side. Space is limited. To register: Kathy Ross at 837-3837, [mtkat67@gmail.com](mailto:mtkat67@gmail.com).

**Tuesday, May 19, 5:30 p.m.** Birds and Native Plants of Wayfarers State Park. Join MNPS, Flathead Audubon Society, and MT State Parks for a short evening walk with naturalist and botanist Caroline Kruckeberg-Clemens. Explore the natural landscapes of Harry Horn and Wayfarers Park, identifying spectacular wildflowers and prime breeding habitat of migratory birds. Space is limited. To register: Flathead Lake Ranger Station at 837-3041.

**Wednesday, May 27, 6:00 p.m.** Columbia Mountain Wildflowers. Join Amy Robinson of the Montana Wilderness Association and MPNS member Ellen Horowitz for a three-hour evening wildflower walk. You'll travel at an easy pace, making multiple stops to view bold blossoms as well as beautiful, unobtrusive ones. Expect to see 25-30 different species. This outing is co-sponsored with MWA. Registration is required and opens April 27 for MWA members and April 30 for the general public at [www.wildmontana.org/walks](http://www.wildmontana.org/walks).

**Wednesday, June 3, 1:00 p.m.** Huckleberry Phenology Training. Huckleberries are an important food source for all wildlife, including grizzly bears. Glacier National Park is collecting data to understand how weather and other factors influence the

phenology, or timing, of berry ripeness. Join research ecologists to learn how you can contribute to this unique citizen science program. Meet at the Apgar Education Center. Registration required by May 28. To register, call 888-7986 or email [glac\\_citizen\\_science@nps.gov](mailto:glac_citizen_science@nps.gov).

**Wednesday, June 3, 6:00 p.m.** Whitefish Trail Wildflower Walk. Meander through the forest with MNPS and Whitefish Legacy Partners to learn about the array of colorful wildflowers that line the Whitefish Trail. You'll learn how to identify local wildflowers and noxious weeds, using the hand lenses and field guides provided during this two- to three-mile hike. This event is free and suitable for all ages/abilities. Meet at the Lion Mountain Trailhead in Whitefish. Info: 862-3880, [margosia@whitefishlegacy.org](mailto:margosia@whitefishlegacy.org), or at [www.whitefishlegacy.org](http://www.whitefishlegacy.org).

**Sunday, June 7, 10:00 a.m.** Johnson Terraces. This annual excursion, led by Lynn Smith and Betty Kuropat, will take us to a species-rich bedrock meadow northwest of Whitefish. The shallow, moss-covered soils are flooded by seeps in the spring and dry up quickly as summer approaches. This results in a unique and varied flora; we may even find the tiny, rare native scalepod (*Idahoia scapigera*). Bring lunch, water, and a hand lens if you have one. This outing entails a two-mile, round-trip walk and a one-hour drive each way. Meet at the Grouse Mountain Lodge tennis court rest area parking in Whitefish. Info: Lynn Smith at 250-2307, [calypsolynn@gmail.com](mailto:calypsolynn@gmail.com).

**Thursday, June 11, 5:30 p.m.** Columbia Mountain Wildflowers. Glacier National Park Biologist Tara Carolin leads this evening stroll up the Columbia Mountain Trail. Enjoy spring and early summer blooms along the forested path with lovely rock outcrops in the sunshine. Bring a sack supper if you like. Meet at the Columbia Mountain parking lot and trailhead. Info: Tara at 607-7670, [montara96@gmail.com](mailto:montara96@gmail.com).

**Saturday, June 13, 9:00 a.m.** Flowers, Fire, and Photography. Join Steve Wirt, USFS forester and fire manager, for an all-day exploration of the tranquil Howe Lake. You'll view some of Glacier National Park's most beautiful flora, learn about the park's ecology, and capture all the beauty through a lens. Meet at the Apgar Visitor Center to carpool to the trailhead. This trip is limited to 12 people. Info and to sign up: Steve at 261-2542, [wirtland@yahoo.com](mailto:wirtland@yahoo.com).

## Kelsey Chapter

Info: Bob Person at 443-4678, [thepersons@mcn.net](mailto:thepersons@mcn.net).

**Saturday, May 16, 9:00 a.m.** Mosses of Mount Helena. Join botanists Justina Dumont and Andrea Pipp on a hike to explore these little gems of the plant world. We'll focus on how to recognize mosses by genus, though a few species will pop up. As we hike and hunt, we'll observe and discuss their ecology, structure, and life cycles. Let's hope for a little rain the night before





so we can find them hydrated and looking their leafy-best! Bring water and a lunch, sturdy hiking shoes, appropriate clothing for the weather, field guide, and a hand-lens or magnifying glass to see some of the morphological intricacies. Meet at the main Mt. Helena trailhead parking lot. Info: Andrea at 439-0284 or Justina at (315) 380-4196.

**Saturday, June 13, 8:00 a.m. North Fork Dupuyer Creek.** This three-mile hike, led by Dave Shea, is through prairie and foothill wildflowers, across the Old North Trail and grizzly country on the Boone & Crockett Club's Theodore Roosevelt Memorial Ranch. Dave will help with plant and wildlife identification, and discuss the history and geology of the area. Expect to see more than 75 species of wildflower, as well as tipi rings and features of the Old North Trail. Meet at the Choteau Information Center, near the Old Trail Museum. This hike is co-sponsored by the Montana Wilderness Association; registration required at [www.wildmontana.org/walks](http://www.wildmontana.org/walks). Info: Dave Shea at 466-2161.

**Sunday, July 19, 9:00 a.m. Ear Mountain Natural Area and Yeager Flats Hike.** This moderately difficult, five-mile round trip outing led by Dave Shea passes through limber pine savannah, narrow-leaved cottonwood groves, sagebrush, Douglas-fir/Englemann spruce forest, and a portion of the 2000 lightening-caused Ear Mountain fire. In these varied habitats grow a great variety of shrubs, grasses, and forbs, including bitterroot and several orchids. Clark's nutcrackers and other birds are common, and prairie falcons nest on cliff faces. This is also good mule deer, elk, mountain sheep, and black and grizzly bear country. Some archeology and history, as well as Rocky Mountain Front geology, wildlife, and management issues will be discussed. Meet at the Choteau Information Center parking lot on Hwy 89 at the north end of town. This hike is co-sponsored by the Montana Wilderness Association; registration required at [www.wildmontana.org/walks](http://www.wildmontana.org/walks). Info: Dave at 466-2161.

## Maka Flora Chapter

Info: Bob Srygley at 488-6086, [robert.srygley@usda.gov](mailto:robert.srygley@usda.gov).

## Valley of Flowers Chapter

Info: Beth Madden, 224-1012, [bethmadden64@gmail.com](mailto:bethmadden64@gmail.com).

**Sunday, May 17, 2:00-8:00 p.m. FUNDay at Bozeman Brewing Company.** Bozeman Brewing will donate 50 cents of every pint of beer sold to the Valley of Flowers Chapter, a novel way for us to raise funds and engage new and potential members. Join us for socializing at 504 N. Broadway, Bozeman.

**Friday-Sunday, July 3-5. Sagebrush and Sandhills: MNPS Annual Membership Meeting is CANCELLED.** See related story for info on our awesome raffle!

## Western At-Large

Info: Kris Boyd at 295-9414, [boyd.kristina@yahoo.com](mailto:boyd.kristina@yahoo.com).

**Friday, May 15, 1:00 p.m.** Jack Nisbet will lead a moderate-effort hike along Noisy Creek to a recent burn area. He will discuss forest and fire management history in the context of his new book "The Dreamer and the Doctor." Meet at the trailhead for FS #263.

**Friday, May 15, 5:00 p.m.** Author Jack Nisbet will take us on a journey through his new book via wonderful storytelling and images. Meet at The Little Theatre, 724 Louisiana Ave, Libby. Books will be available for purchase during his talk.

## Correction

In the winter issue of *Kelseya*, Membership Chair Maria Mantas was incorrectly identified as a Clark Fork Chapter member. In fact, she is the founder and a dyed-in-the-wool member of the Flathead Chapter. Apologies to her Flathead cohort!

## WELCOME ABOARD!

*The Montana Native Plant Society welcomes the following new members:*

### Calypso Chapter

Karen Laitala and Kristin Snyder Douglass renewing as a lifetime member

### Clark Fork Chapter

Clancy Cone, Kenneth Cook, Sarah Flynn, Jonda Larnes, Hanna Mohr, Robert Yokelson, and Karla Wiencek renewing as a lifetime member

### Flathead Chapter

Julie Doerner, Dawn LaFleur, Carolyn Milheim, and Tara and Vance Carolin renewing as lifetime members

### Eastern-At-Large Chapter

Janna Vanrooyen, Yellowstone Wildlife Sanctuary (Courtney Long)

### Kelsey Chapter

Robin Biffle, Faith Peterson, and Sara Toubman renewing as a lifetime member

### Valley of Flowers Chapter

Issac Dell, Brent Jacobsen, Shane Sater, Julia Smit, Anna Visscher, and Michael and Stephanie Becker, Gretchen Rupp, Janice Hand, Bill Klen, and Matt Lavin all renewing as a lifetime members

### Western-At-Large

Eric Dickinson, Mike Kintgen, Lisa Theobald, Beth Workman

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# MNPS News

## 2020 Annual Member Meeting: CANCELLED Fabulous Raffle Still On!!

By Beth Madden, Valley of Flowers Chapter

**A**s we go to press, we have no idea what the state of the world or our own Montana will be this summer. And so, in prioritizing member health and safety, the MNPS Board regretfully has cancelled our Annual Membership Meeting for 2020. Be assured, plans are already in the works for our 2021 gathering!

However, while we're all disappointed that we won't be having our usual summer gathering to botanize and socialize, we can still have a bit of fun supporting our society. Remember that the Annual Meeting is the only fundraising event we have every year. The Valley of Flowers Chapter had pulled together an outstanding array of raffle prizes for the 2020 meeting — A Yellowstone Frosty Fun Package! — and we will go ahead and award them to five lucky winners in a raffle event by mail.

**Here's the deal:** There are 200 tickets and five prizes, so each ticket has a 1 in 40 chance of winning. Tickets are \$20 each or 6/\$100. Check out the prizes below, decide how many tickets you'd like, and mail a check made out to MNPS to: Bill Klenn, 408 Overbrook Drive, Bozeman, MT 59715. By state law, we cannot take credit

cards, but if you would like to pay through your bank account with Venmo or Paypal, contact Beth Madden at 224-1012, bethmadden64@gmail.com. See also the Insert in this issue.

The drawing will be held at the next MNPS Board of Directors meeting, at the end of June or early July, date to be determined.



You do not need to be present to win. The Board will draw five tickets, and prizes will be awarded in this order:

### **Grand Prize: Yellowstone National Park Frosty Fun Winter 2021 Package.**

Two-night stay for two at Old Faithful Snow Lodge, including snow coach travel from Mammoth Hot Springs, breakfasts, and more. \$1,200 value.

**2nd Prize: Willow Basket hand-crafted by Doug Smith,** full of goodies, including an REI Trail 5 waist pack, a Duckworth winter wool cap, MNPS tees, and *A Montana Table* cookbook. Priceless.

**3rd Prize: Gift Certificate for your choice** of a pair of Oboz Shoes, plus a Duckworth WoolCloud Snap Shirt. \$400 value.

**4th Prize: Gift Certificate for your choice** of a pair of Oboz Shoes, plus a Duckworth Vapor Wool Tee. \$250 value.

**5th Prize: Tizer Botanic Garden, Helena.** One-night stay at their guest cabin, located within the garden. \$125 value.

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## Election Time is Here

Get Ready to Vote! Despite the cancellation of the 2020 Annual Membership Meeting, you can still register your preference for statewide Board positions. This year, we need to confirm people for the roles of Vice-President, Secretary, and Eastern At-Large Representative. Please read the candidate profiles and fill out the enclosed ballot, or vote online at [www.mtnativeplants.org](http://www.mtnativeplants.org) by July 3. We will announce the result in the fall issue of Kelsey.

*Thank you!*

## Check Your Filters!

MNPS Membership Chair, Maria Manta, reports that she has noticed a significant number of emails are being rejected by recipients and/or possibly diverted to spam folders whenever she sends out large-batch emails, as with the newsletter or other special communications, because MNPS looks like junk mail to some recipients.

She asks members to set their email programs to accept mailings from [MTNativePlantMembership@gmail.com](mailto:MTNativePlantMembership@gmail.com) to make sure they receive timely and important information.



# President's Platform

## THE PURPOSE OF THE MONTANA NATIVE PLANT SOCIETY

is the preservation, conservation, and study of the native plants and plant communities of Montana, and the education of the public about the values of native flora and habitat. Everyone who's reading this enjoys the study aspect, and directly or indirectly, we each support the other elements of this mission. It's those I want to speak about here.

In recent years, research ecologists and botanists have begun using the terms "plant blindness" or "hidden in plain sight" to describe efforts to conserve threatened or endangered plant species. These expressions refer to the fact that nature-conservation efforts at every level are strongly skewed towards animals. We all know and love the "charismatic megafauna." I'll bet you can name bird and mammal species that have gone extinct in historical time. How about a plant species? Gotcha! This disparity was explained recently by a pair of Australian researchers, who noted: Experimental research and surveys have demonstrated higher preference for, superior recall of, and better visual detection of animals compared with plants. This bias has been attributed to perceptual factors such as lack of motion by plants and the tendency of plants to visually blend together, but also to cultural factors such as a greater focus on animals in formal biological education.

The upshot of this bias is disproportionately low effort and funding towards plant conservation, compared to animal conservation. For example, in the United States, more than half of the species listed under the Endangered Species Act are plants, but plant conservation efforts under the Act receive less than five percent of the dedicated funding. The state wildlife action plans that guide conservation efforts nationwide were developed under federal language that specifically excludes plants from the definition of "wildlife." Some states have prioritized plants nonetheless; Montana is not among these.

It goes without saying that conservation of plants in trouble also benefits the animals in their communities. Conservation ecologists have performed cost-benefit analyses showing how much more effective, overall, is plant conservation than animal conservation. Specific, thoughtful approaches have been developed; it's up to the NGOs, the states and the Nation to implement them.

Back to the Aussies for encouragement: Plant blindness is common, but not inevitable. If immersed in a plant-affiliated culture, the individual will experience language and practices that enhance capacity to detect, recall, and value plants... conservation programs can contribute to reducing this bias. This is where the rest of the MNPS mission comes in: our efforts to educate others and conserve the plants of Montana is not only gratifying to us, but it moves our own community towards that "plant-affiliated" condition in which our neighbors also come to appreciate our green friends. We are doing good work.

— Gretchen Rupp



## Notice: Board Policy Change

The MNPS policy on special contracts was revised in January, 2020. The current policy is as follows:

The purpose of this policy is to assure clear communication within the MNPS Board and between the Board and contractors regarding the nature of work and payment promised for the work. This policy applies to creative work contracted by MNPS designed to accomplish a stated goal of the Board that is within a dollar limit set by the Board and that is additional to routine work like maintenance of the organization's website or production of the quarterly newsletter.

All contracts must be in writing, which, for contracts less than \$500 in total commitment, may be recorded by email.

All contracts must clearly state the scope and product of work, expected timeline, and amount to be paid (hourly rate up to a maximum, or a lump sum).

No contract in excess of \$500 may be entered into on behalf of the Montana Native Plant Society without prior approval of the Board on the purposes and dollar limit of the contract.

Expenses charged by a contractor additional to those specified in the contract must be approved by the Board prior to payment.

Only when necessary due to time constraints, the MNPS President, Vice President, and Treasurer together are empowered to represent the Board in approving a contract. They may authorize another person to negotiate details with a contractor, but must retain final approval authority.



# Small But Mighty 2020 MNPS Grants

By Anne Garde, Clark Fork Chapter and Small Grants Committee Member

This year, the Small Grants Committee and the MNPS Board of Directors are pleased to fund four ambitious projects around the state with awards of \$1,500 each. Two are educational garden projects and two are restoration projects on wild land. They range from the northern to central to the southwestern parts of our state. Below are brief descriptions of each project. Congratulations to the recipients!

## Plants For Birds Demonstration Garden at Story Mill Park in Bozeman

The Sacajawea Audubon Society (SAS) believes that public education about the benefits of using native plants is critical to protecting diversity. They intend to use the popularity of landscaping for birds and pollinators as an effective way to influence landscaping choices. MNPS funds will help SAS install a demonstration garden within the Learning Garden in Bozeman's beautiful and widely visited Story Mill Park. The garden will contain almost 100 plants of 35 native species, including blanket flower (*Gaillardia aristata*), bee balm (*Monarda fistulosa*) and dotted gayfeather (*Liatris punctata*). They'll be in a 730 sq. ft. bed that's ready now for planting, has a deer proof fence, and a water source for irrigation. SAS will offer classes promoting landscaping for birds. They'll be partnering on this project with the City of Bozeman, Trust for Public Lands, Linda Iverson Landscape Design, and others.



American goldfinch on purple coneflower

## Reestablishing Native Plant Communities Post-herbicide in the Centennial Valley

In order to reestablish a healthy and intact native plant community and prevent noxious weed species and invasive grasses, the Centennial Valley Association will reseed a bare ground site that has undergone herbicide application. They've chosen a 10 acre area within the Monida Hill area. Weed management has been ongoing since 2015. The site was reseeded in 2019 with a fall dormant grass seed mix, and in June 2020 there will be a reseeded treatment with broadcast seeding using a native fescue and forb mixture. MNPS funds will cover the cost of an Idaho and rough fescue mixture as well as a forb mixture of arrowleaf balsamroot (*Balsamorhiza sagittata*), Rocky Mountain bee plant (*Cleome serrulata*), yarrow (*Achillea millefolium*), and others. The site will be monitored twice a year for five years to evaluate seeding success and growth. Hand pulling invasive species will take place at least once a year. The Centennial Valley Association will coordinate these activities in cooperation with the Beaverhead County Weed District and the Bureau of Land Management.



Preparing a community garden area, Ft. Belknap Indian Reservation.

## Revitalizing Sweetgrass for the Fort Belknap Indian Community

The Fort Belknap Indian Reservation is home to the Assiniboine (Nakoda) and Gros Ventre (Aaniiih) Tribes. It's the fourth largest Indian reservation in Montana. Sweetgrass (*Anthoxanthum hirtum* (formerly *Hierochloa odorata*)) is a traditional plant used by the tribes in many ceremonies. It is rarely found in the wild on the reservation now. Most tribal members have to buy sweetgrass grown in greenhouses and they know little about its growing habits. But the Fort Belknap Environmental Department has a vision and has enlisted our help through the MNPS Small Grant program. In an effort to boost tribal members' cultural connection to the land, continue growth of traditional plant knowledge, and help restoration efforts on the land, sweetgrass saplings will be added to repopulate a small existing sweetgrass population in Mission Canyon in the Little Rockies. Some will also be grown in a community garden. The project is in collaboration with MSU Extension and the Fort Belknap Tribal Historical Preservation group and community volunteers. MNPS funds will cover stakes, fencing, travel, and sweetgrass saplings. We are pleased to be able to participate with the tribes on the Fort Belknap Reservation in their pursuit of cultural self-sustainability.



Sweetgrass (*Anthoxanthum hirtum*)

## Huntley Project Museum Native Plant Memorial And Educational Garden

The Huntley Project includes the towns of Huntley, Shepherd, Ballantine, Worden, and Pompey's Pillar, northeast of Billings. The Huntley Project Museum covers 10 acres and portrays the pioneer history of the area with restored buildings, shops, homes, schoolrooms, and more. The Huntley Project Museum Board of Directors and The Huntley Project Garden Club have planned an ambitious Homesteader Memorial Native Plant Garden, which will feature plants discovered by the Lewis and Clark expedition (Clark carved his name in the rock at Pompey's Pillar). Other plots will feature native plants that are bird and pollinator friendly. The group also intends to develop and distribute native plant information through tours, displays, signs, and plant labels. MNPS funds will cover the cost of plants for the native garden, as well as soil and amendments and the printing of trifold brochures.



## Natural History Notes

# Why do Leaves Have Different Shapes?

By Peter Lesica, Clark Fork Chapter

It was about 30 years ago that I went to Costa Rica to get my first experience in a tropical rain forest. I took some books and thought I would be able to at least identify the trees. Fat chance! Although there were dozens of different tree species in mature forests, their leaves all looked the same — broadly lanceolate with entire margins and elongate tips (drip tips). Although our temperate deciduous forests have far fewer broad-leaved (dicot) trees, these often have distinctive shapes and are easy to tell apart. So what's going on?

As it turns out botanists have been trying to figure out the functional differences between the various aspects of leaf shape for a long time, and there are a number of different but not mutually exclusive ideas.

The most obvious trait of many temperate forest trees compared to tropical rain forest trees is lobing or the complete division into leaflets. Many botanists have found a strong correlation between entire-margin leaves and wetter habitats. The main hypothesis to explain this correlation is that lobed leaves have a greater margin to surface area ratio; i.e., they've got more edge for each square inch of surface. Leaves thin down at their edges, so if a leaf has more "boundary layer" relative to interior, it can stay cooler on hot days and will lose less water to evaporation. Of course this doesn't matter if you have access to lots of water, but it can be useful in drier habitats. Think of it this way; wearing gloves (lobed) will not keep your hands as warm as wearing mittens (entire margin) if they are made of the same material. Lobed leaves also have fewer small veins because they have less area than if they had entire margins. As a result water moves more

easily in lobed leaves; another advantage in drier environments.

Plants with narrow leaves also have more boundary layer when compared to those with broader leaves, and they have the same advantage in xeric habitats.

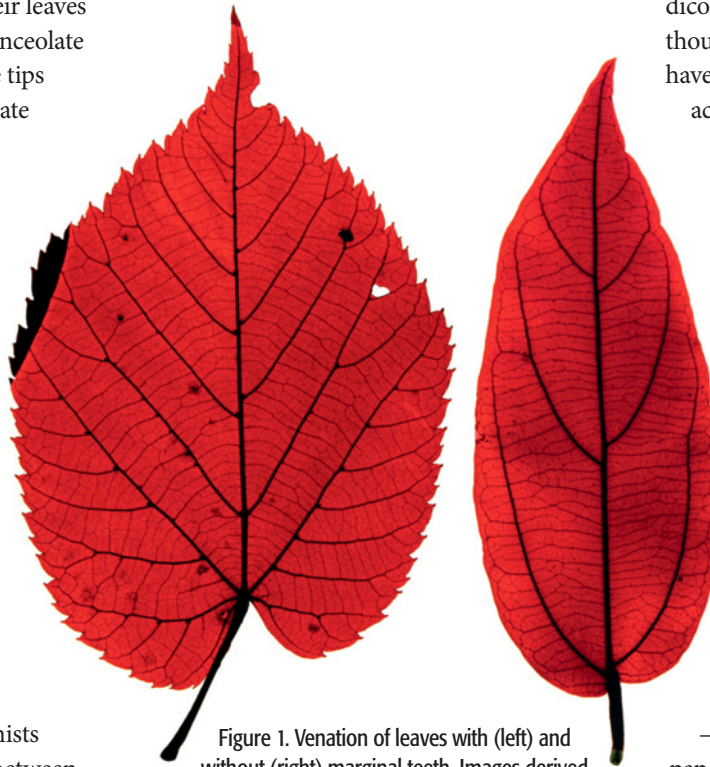


Figure 1. Venation of leaves with (left) and without (right) marginal teeth. Images derived from the National Cleared Leaf Collection.

Interestingly, plants living under water, the wettest possible environment, tend to also have narrow leaves. But in this case the increased boundary layer helps the plants capture more CO<sub>2</sub>, an essential molecule for photosynthesis. Think water buttercup (*Ranunculus aquatilis*) or numerous species of pondweed (*Potamogeton*).

Another obvious leaf-shape trait is the presence of toothed margins which have been shown to be more common in temperate forests compared to tropical forests. Veins go all the way to the tip of the teeth in toothed leaves but rarely go to the very edge of an entire-margined

leaf (Figure 1). Thinner leaves are more likely to have toothed margins. This is possibly an adaptation to keep them from folding or rolling up. And like lobed leaves, thinner leaves can stay cooler on hot days. In addition, toothed margins of woody dicots increase in colder climates. This is thought to be the case because the teeth have been shown to be photosynthetically active earlier than the rest of the leaf, so toothed leaves can begin making carbohydrates earlier in the spring which is advantageous in a cold climate with a short growing season. Finally, there is conjecture that spiny-toothed leaves may deter herbivory.

Montana has only 14 native deciduous tree species. So how do our trees match the above hypotheses? Bur oak (*Quercus macrocarpa*) has lobed leaves, and boxelder (*Acer negundo*) and green ash (*Fraxinus pensylvanica*) have compound leaves with leaflets. All of the remaining 11 species — red alder (*Alnus rubra*), river and paper birches (*Betula occidentalis*, *B. papyrifera*), narrow-leaved, black, and plains cottonwoods (*Populus angustifolia*, *P. balsamifera*, *P. deltoides*), quaking aspen (*P. tremuloides*), bitter and pin cherry (*Prunus emarginata*, *P. pensylvanica*), narrow-leaved willow (*Salix amygdaloides*) and American elm (*Ulmus americana*) — have toothed leaves. The fact that none of our trees have entire-margin leaves suggests that we do not have a warm and moist climate. But we knew that. All three of the trees with lobed or compound leaves occur east of the Divide, mainly in the eastern half of the state. Many, but not all of the trees with toothed leaves, such as quaking aspen and paper birch, are found at higher elevations or in cool, moist sites. However, there are a number of species that don't match the



predictions. American elm occurs only in extreme eastern Montana but has toothed rather than lobed leaves like ash or oak. River birch is equally common across the state in both cool-wet as well as drier environments.

The problem is that climate is only one, albeit an important one, driver of leaf shape. A lot simply depends on genetic heritage. All maples have lobed leaves and all elms have toothed leaves regardless of whether they occur in warm-and-wet South Carolina or cool-dry Utah. There are also other adaptations at play. While the red and white oaks we are most familiar with have lobed leaves, some occur in moist forests, while several live oaks occur in very dry habitats and have entire-margin leaves. Many of these live oaks have thick, waxy leaves that persist for more than one year. So the climate-related trends are simply generalizations suggesting that leaf shape is, to some extent, adaptive. It's something to notice when you're out botanizing. 🌸

#### ADDITIONAL READING

Ferris, K. G. 2019. Endless forms most functional: uncovering the role of natural selection in the evolution of leaf shape. *American Journal of Botany* 106: 1532-1535.

Givnish, T. J. 1987. Comparative studies of leaf form: assessing the relative roles of selective pressures and phylogenetic constraints. *New Phytologist* 106 (Suppl.):

Zohner, C. M., E. Ramm and S. Renner. 2019. Examining the support-supply and bud-packing hypotheses for the increase in toothed leaf margins in northern deciduous floras. *American Journal of Botany* 106: 1404-1411.



## Gardener's Notebook

Using Native Plants in Backyard Landscaping

### Pasqueflower:

*Anemone patens* or *Pulsatilla patens*

By Linda Iverson, Valley of Flowers Chapter

**W**hat native plant is more of a poster child for spring than the pasqueflower? Bravely blooming, often before the snow has completely melted, this harbinger of warmer days ahead can be a welcome early sight in our gardens. Newly emerging pollinators make a beeline for their bright yellow stamens.

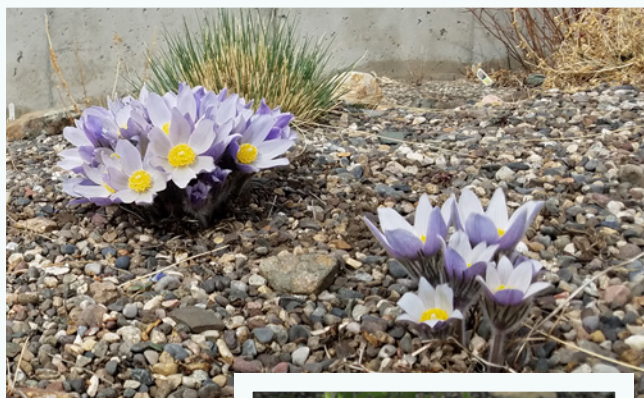
Pasqueflowers have a long period of interest in the garden. Furry flower buds open to soft, lavender, crocus-like blooms before the finely dissected foliage appears. Each flower is short lived,

but there is a long bloom procession on older plants. The encore performance is the silky, plumed seedhead, so dramatic when backlit in early morning and evening. With a little extra watering during the dry periods of summer, the foliage can remain green. Without water they will go dormant. Be careful not to crowd them or overwater.

This diminutive native likes well-drained soils but can sometimes be happy in deeper soils. Plant in full or partial sun, keep it on the dry side with a few deep waterings during hot, dry periods. Because of its small stature, I often place three or four transplants together. Pasqueflower is long lived and forms a deep and extensive woody root system that doesn't like to be disturbed, so pick a permanent location.

I use potted pasqueflower plants in my designed gardens. I need to hunt for them, often finding more of the European pasqueflower (*Pulsatilla vulgaris*) in nurseries. If you want to grow from seed, our past MNPS president Kathy Settevendemie gives this advice: collect when the seeds loosen and turn a light brown. They ripen quickly, so you need to be vigilant. Collect from a population near your garden with similar soil conditions and light exposures. She has the best luck planting shallowly in a seed-starting mix. Keep the soil evenly moist and set outdoors; cool evenings seem to help the process. Germination occurs in several weeks with germination rates of about 50 percent. Place seed trays in a shady, cool spot for the summer, don't let them dry out. The second year the seedlings can be transplanted into pots, clustering a few together for a fuller effect. Keep moist but not heavily watered in moderate shade until well rooted. If the seed dries out and is stored for long, it goes into a deep dormancy and requires a cold stratification before it can germinate. Kathy has best luck with the fresh seed method.

—Linda Iverson designs home and commercial/public landscapes, specializing in native seeding and waterwise gardens. Pasqueflowers are a particular favorite of hers.



Pasqueflower is found throughout Montana. They make their homes in rugged habitats, from grasslands to open forests, and occasionally above treeline.

Photos: Mary Swanson





locality, where it formed a carpet of about two acres (Fig. 1b); (2) lace lipfern, *Cheilanthes gracillima* D.C. Eaton (S3S4), spotted on Grimm Mountain in Lincoln county; (3) common bluecup, *Githopsis specularioides* (S1S2), a small annual species with a western coastal distribution and a disjunct population in western Montana. We found the species in our survey plots on Berray Mountain, Sanders county (about >1000 individuals), and confirm earlier reports of its presence on this mountain (Fig. 2A); and (4) scalepod, *Idaho scapigera* (S1S2), a tiny annual species that has been reported for northwestern Montana. We found >1000 individuals growing in a population in Lincoln county (Fig. 2B).

Bedrock meadows create low-productivity sites on seasonally moist soils that some rare plants in Montana critically depend on. We have not yet mapped this habitat type but estimate that we surveyed only 15 percent of its extent in northwestern Montana. We found only a few non-native invasive plants, e.g. cheatgrass (*Bromus tectorum*), spotted knapweed (*Centaurea maculosa*), and St John's wort (*Hypericum perforatum*). The low frequency of weeds is likely the result of a long isolation of these habitat patches and low recreational use. However, we suspect they could be easily susceptible to weed encroachment. Visitors should avoid trampling and clean their boots prior to entering a bedrock meadow patch. Off-road vehicles could be

particularly detrimental to this habitat type given their facilitation of soil disturbance and weed propagule dispersal.

Why bedrock meadows persist among a sea of forest is a mystery. The contrasting water availability throughout the year, proximity to bedrock, and exposure to wind could create strong microclimatic fluctuations that limit tree establishment. Although speculative at this point, bedrock meadows could have also been promoted through fire by local Native Americans, to foster growth of edible plants with taproots, rhizomes, or bulbs that grow abundantly in these meadows.

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Fig. 1. (A) Bedrock meadow at the base of Sheep mountain, Lincoln county, with *Camassia quamash* and *Floerkea proserpinacoides* (June 13, 2019), (B) bedrock meadow at Johnson Terrace, Flathead County, with *Delphinium nuttallianum* and *Lithophragma parviflorum* (June 3, 2019), (C) bedrock meadow SW of Olney, with *Delphinium nuttallianum* (June 4, 2019), and (D) bedrock meadow dominated by *Allium geyeri* var. *geyeri*, Wolf Creek drainage, Lincoln county (June 5, 2019), (photos by Viktoria Wagner).

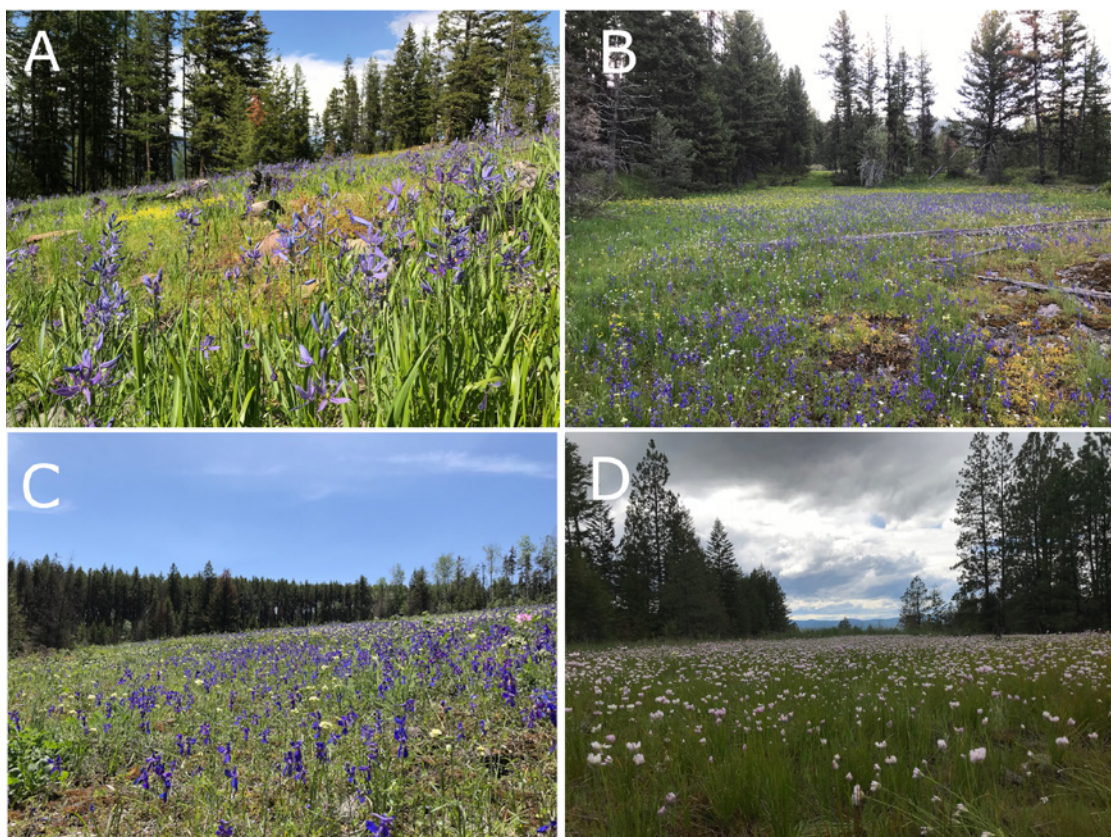


Fig. 2. Two tiny bedrock meadow plants that are listed in the Montana Species of Concern list: (A) common bluecup (*Githopsis specularioides*), and (B) scalepod (*Idaho scapigera*), (photos by Viktoria Wagner and Ricarda Päscht, respectively).



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