

# Kelseya

Newsletter of the Montana Native Plant Society



*Kelseya uniflora*  
ill. by Bonnie Heidel

## Tenacious Beauty: In Awe of Alpine Wildflowers

Story and photos by Allison DeJong, Montana Natural History Center

**I**t was a sunny, gorgeous Sunday in late July. My husband, two friends and I had scattered ourselves across the broad alpine meadow of Goat Flat in the Anaconda-Pintler Wilderness, noses to the ground, peering at the myriad tiny wildflowers strewn across the landscape; most of the bright bits of color reached no higher than the tops of our hiking boots. From a distance the meadow looked fairly uniform—low, matted plants, flashes of intermingled colors—but upon closer inspection, the flowers revealed dozens of unique shapes and shades.

Paintbrush, their colorful bracts low to the ground, painted a vivid magenta. A plant with a tall, reddish stem and a spiraling cluster of white flowers on top: alpine bistort (*Bistorta vivipara*), which I'd never seen before. Another white flower, six-petaled with a circle of green on the inside: mountain death camas (*Zigadenus elegans*), so toxic that the Okanagan people mashed up the bulb and used its poison to tip their arrows.

The tundra is a harsh environment, and the species that live there have, through necessity, adapted to be tough little buggers. Their home is scoured by wind, subject to bitter temperatures (on both extremes), and exposed to intense solar radiation. Not only that, it's covered with snow eight to nine months out of the year, making for a very short growing season; even during the summer months frost can descend at any time. Yet these little plants make do and even thrive. And when I knelt down for a closer look, I was reminded that toughness in no way precludes beauty—up close,



Alpine Bistort

these tiny flowers were vivid and breathtaking. Crouched down, I also realized that there was a difference between the conditions at human level and the conditions at alpine wildflower level. The breeze I felt standing up was greatly diminished near the ground. The sunshine beat down. The ground was warm, its heated surface sending up an earthy fragrance. I could understand why the plants here had adapted to be shorter than

their lower-altitude counterparts—in this environment, a few inches is the difference between survival and extinction.

Alpine plants have other adaptations as well. In a windy environment, wind-dispersed seeds are an advantage, so many tundra plants have seeds that are winged, or hairy, or tiny and lightweight. Another form of wind dispersal is found in plants like paintbrushes, campions and poppies, which have capsules on stems that stick up through the crust of the first early snowfall: when buffeted by the wind, they drop their seeds atop the crusty snow to be skittered away across the landscape. The leaves of some alpine plants, such as louseworts, some saxifrages and Sitka valerian (*Valeriana sitchensis*), have deep red and purple pigmentation to warm themselves more quickly when the sun comes out, and the dark colors may also help protect the plants from the sun during their more sensitive phases in the spring and fall. Another common adaptation is hairiness, which can provide protection from the sun, keep moisture from escaping and even create a greenhouse effect by holding in heat and warming the plant.



# Chapter Events

## Calyпсо Chapter

**Saturday, July 25, 9:30 am.** “Goat Flats: Alpine Jewel in the Anaconda-Pintler Wilderness.” This is a full-day hike, seven miles round-trip with moderate altitude gain and lots of switchbacks. Meet at Storm Lake trailhead, or at 8:00 am in Butte in the Montana Tech Library parking lot to carpool. Space is limited. Info and to RSVP: Catherine at 498-6198, nativeplants@montana.com.

## Clark Fork Chapter

**Friday, July 10, 9:00 am.** “Hemlock Lake, Mission Mountains Wilderness.” See what’s happening in the 2003 Crazy Horse burn area 12 years post fire. Enjoy stunning views on this eight to 10 mile, strenuous hike to Hemlock Lake. If the group is adventurous, we may bushwhack up to Conko Lake, even deeper in the wilderness area. Maria Mantas, plant ecologist and director of the Swan Ecosystem Center, will be our guide. Group size is limited. Jointly sponsored by the Swan Ecosystem Center, the Montana Wilderness Association and the Montana Native Plant Society. Info and to sign up: Maria at 754-3137, maria@swanecosystemcenter.org.

**Thursday, October 8, 7:00 pm.** “The Macrofungi of Montana: An Introduction to Mushrooms and Lichens of the Big Sky.” Everyone wants to know more about our local mushrooms. Join Tim Wheeler for this presentation at the Lee Metcalf National Wildlife Refuge headquarters, Stevensville. (*Note different time and place!*) A field trip is planned for the following Sunday; details to follow.

## Flathead Chapter

**Saturday, July 18, time TBA.** “Flathead National Forest Field Trip.” Join US Forest Service Botanist Chantelle Delay and naturalist Sonja Hartmann on an exploration of either the Glacier View District up the North Fork of the Flathead River, or the Hungry Horse District to the south. Info and to carpool: Sonja at 387-4576 or Chantelle at 210-1266.

**Tuesday, July 21, 10:00 am.** “Glacier National Park Weed Blitz.” Help remove 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. Meet at the West Glacier Community Building. Space is limited; if there is sufficient interest a second date may be set. Info and to sign up: Dawn, dawn\_lafleur@nps.gov.

## Kelsey Chapter

**Sunday, August 2, 10:00 am.** “Red Mountain Hike.” Peter Lesica, author of the definitive “Vascular Plants of Montana,” will accompany this outing. This is a fairly rigorous, four-mile round-trip hike to the igneous alpine summit of Rimini Red Mountain with views in all directions. Along with a variety of summer flowers, we may be able to find *Hulsea algida* in bloom in the fellfield near the summit. Bring lunch, water, and wear sturdy shoes and clothing appropriate for the weather. Meet at the trailhead. Info and directions: Bob at 443-4678. If no answer, please leave a message mentioning the event.

## Maka Flora Chapter

**Saturday, July 18, 10:00 am.** “Kane’s Grove.” Visit this seasonal Native American camp site from prehistoric days. In the early 1900s, the grove became a favorite picnic and hiking area for Richland County homesteaders. Moderate hiking, great geology, flora and fauna. Bring lunch, water, appropriate clothing, sunscreen and a hat. From Sidney, take Hwy 16 North to a field approach on the left, 0.4 miles past mile marker 18. From Culbertson, go south on Hwy 16, 0.6 miles past mile marker 17, on the right. Meet at the gate. Info and to confirm trip: Libby at 774-3778, rek@midrivers.com.

**Saturday, August 15, Noon.** “Brush Lake State Park.” The lake has a sandy beach, good swimming, and camping is allowed. Come for clean-up around the lake and plant walks. Bring garbage bags, gloves and something for a potluck picnic. From Plentywood, go south 15 miles on Hwy 16 to Hwy 258 (East Reserve Highway), turn east about 15 miles to Brush Lake county road, turn south 1 mile. From Medicine Lake, go north eight miles on Hwy 16 to Hwy 258. There are signs for the state park. Info and to confirm: Libby at 774-3778, rek@midrivers.com.

## Valley of Flowers Chapter

**Sunday, July 12.** “West Pine/Dry Creek Ridge, Gallatin Range.” One of two official Gallatin National Forest Wildflower Viewing Sites, with lush wildflower stands and spectacular views of Paradise Valley and the Absaroka Mountain Range. This is a moderately strenuous outing — up to five miles walking with a high point of 7,500 feet, all on trail. We’ll begin in a forest that burned in 2001, ascend to an open grassland ridge, and continue to climb gently through mountain meadows with rich seasonal displays of wildflowers. Bring water and snacks. To carpool from Bozeman, meet at 8:15 am at the Softball Complex parking lot off Highland Boulevard, across from the hospital. To carpool from Livingston, meet at 9:00 a.m. in the northeast corner of Albertson’s parking lot (take exit 333 to US 89 S). Info: Beth at 224-1012, bethmadden64@gmail.com.

**Saturday, July 25, 8:30 am.** “Native Grass Identification Walk.”

Jon Siddoway leads this easy, less than two-mile ramble in a Gallatin Valley grassland. Bring a hand lens and your copy of Lesica’s “Manual of Montana Vascular Plants” with Matt Lavin’s *Poaceae* (Grass Family) guide. Meet in the southwest corner of the Gallatin Valley Mall parking lot (by Tire-Rama). Info: Jon at 868-4434, Jon.Siddoway@mt.usda.gov.

**Sunday, August 2, 6:30 am.** “Windy Pass Field Trip.” Check out the high-elevation plant community atop the Gallatin Range to look for three types of gentian and remnants of the Gallatin Petrified Forest. In the forest below, we may encounter flushes of edible mushrooms. This is a strenuous hike, six miles round trip with an elevation gain of more than 2,000 feet to a high point of 9,600 feet. Meet in the southwest corner of the Gallatin Valley Mall parking lot (by Tire-Rama). Info: Gretchen at 586-8363, beesgrmt@gmail.com.

**Tuesday, September 8, 7:00 pm.** “Summer Recap and Fall Planning.” Bring your program ideas, favorite summer plant pictures on a thumb drive and a snack to share. Room 108 of the Plant Bioscience Building, MSU. Info: Joanne Jennings, 586-9585.



On April 14, MNPS President Kathy Settevendemie braved her way to Bozeman in a blizzard to put on a workshop about propagating native plants for 25 VoF Chapter members and friends. Participants worked with 20 kinds of seed and learned about seed storage, stratification and planting. Best of all, everyone went home with several planted pots for the spring! *Photo by Casey Delphia.*

Nine curious folk joined Jeff Copeland on May 23 to learn what was in bloom in the foothills east of Bozeman – quite a lot, as it turned out! We compiled a list of 48 plants in bloom, nearly all of which the collective brain was able to identify to species. More field trips are happening this summer and newcomers are welcome! *Photo by Denise Montgomery.*



## Eastern At-Large

**Sunday, July 12, 9:00 am.** “Ear Mountain Outstanding Natural Area & Yeager Flats Hike.” Dave Shea leads this trip that traverses limber pine savannah, narrow-leaved cottonwood groves, sagebrush, Douglas-fir/Engelmann spruce forest, a bit of the 2000 Ear Mountain fire and ends in a vast, high-elevation native fescue prairie. Moderately difficult, five miles round trip. Meet at the Choteau Information Center parking lot, north end of town on Hwy 89. We’ll drive up the Teton River to the Ear Mountain Trailhead. Jointly sponsored by the Montana Wilderness Association and the Montana Native Plant Society. Info: Dave Shea at 466-2161.

**Sunday, July 19, 7:00 am.** “Fossils and Flowers of Rierdon Gulch.” Join paleontologist/geologist Becca Hanna and botanist Dave Hanna for a strenuous, day-long hike that will give you a glimpse into the past and a chance to learn about different plant communities in an area of the Lewis and Clark National Forest west of Choteau. This place is named for the Jurassic Rierdon Formation, which contains the remains of ancient sea critters such as coiled ammonite cephalopods. We’ll go about nine miles;

come prepared for fun exploration and the multitude of different weather conditions we might experience. Bring water, lunch and river shoes for an “invigorating” stream crossing at the trailhead. Group size is limited to 15; please reserve a spot by July 14. Meet at the Visitor Information Center in Choteau. Jointly sponsored by the Montana Wilderness Association and the Montana Native Plant Society. Info and to register: [www.wildmontana.org](http://www.wildmontana.org)

**Sunday, July 19, time TBA.** “Pryor Mountain Knapweed Pull I.” Join us for a day in this botanically rich part of Montana to help get rid of noxious weeds in the Custer National Forest ([www.pryormountains.org/natural-history/botany](http://www.pryormountains.org/natural-history/botany)). High clearance

vehicles recommended. Meet at Sage Creek Work Center. Jointly sponsored with the Montana Wilderness Association. Info and to register: Susan Newell at 656-9064 or at [www.wildmontana.org](http://www.wildmontana.org).

**Saturday, July 25, time TBA.** “Pryor Mountain Knapweed Pull II.” Join us again in this botanically rich part of Montana to help get rid of noxious weeds in the Custer National Forest ([www.pryormountains.org/natural-history/botany](http://www.pryormountains.org/natural-history/botany)). High clearance 4x4 vehicles required. Meet at Burnt Timber Ridge Road. Jointly sponsored with the Montana Wilderness Association. Info and to register: Susan Newell at 656-9064 or at [www.wildmontana.org](http://www.wildmontana.org).



## President's Platform

Spring rains in Montana produced a flush of early wildflowers, with many species blooming earlier than expected. This alteration of the phenologic calendar keeps us actively observing plants as we continue to be amazed and intrigued by the vagaries of nature.

Weeds also have been profuse this spring, and diligent gardeners and landowners are laboring to keep weeds from overtaking native species. My demonstration garden, planted on a former smooth brome site, continually challenges me to be observant and keep the brome from retaking territory. It is a challenge that has been rewarding as I see native plants thrive where previously weeds flourished.

Identification and control of weeds is a significant aspect of landscaping with native plants. At our recent Annual Meeting, Tris Hoffman, weed specialist with the Flathead National Forest, conducted a two-hour workshop on the subject. If you were unable to get to the meeting this year, there are many field trips offered throughout the summer by various local MNPS chapters. Take time to get out in the field and appreciate Montana's native plants!

And finally, I'd like to acknowledge Lisa Hensley, the former graphic designer for *Kelsey*, and offer our thanks for her years of wonderful work on the newsletter. In her place, we welcome Eileen Chontos as our new art director. I think you will enjoy her unique approach to our stories and photos as well.

— Kathy Settevendemie

## Small Grant Report

### Germination and first year survival of whitebark pine direct sowing efforts in Glacier National Park and the Greater Yellowstone Ecosystem

By Elizabeth Pansing, University of Colorado, Denver

**W**hitebark pine (*Pinus albicaulis* Engelm.), an upper subalpine and treeline conifer distributed throughout the western United States and Canada, stabilizes ecosystem function and fosters biodiversity. Populations have declined nearly range-wide because of an exotic fungal pathogen (*Cronartium ribicola*) that causes white pine blister rust, and also through outbreaks of mountain pine beetle (*Dendroctonus ponderosae* Hopkins) and, in some areas, successional replacement caused by fire suppression (Tomback et al. 2001). Restoration efforts to mitigate these declines include planting nursery-grown seedlings, which is both costly and labor intensive. Direct sowing, a method that involves sowing seeds rather than planting seedlings, shows promise in reducing both cost and labor (DeMastus 2013). Preliminary trials have been successful, yet obstacles to large-scale application of direct sowing still exist, including seed predation by small rodents. Identifying best microsite types and determining the influence of elevation could guide management decisions when planning restoration activities (Schwandt et al. 2007, DeMastus 2013).

In 2012, we sowed seeds in subalpine and treeline communities at two locations: Tibbs Butte, Shoshone National Forest, and White Calf Mountain, Glacier National Park. We cached seeds in three common microsite types used by whitebark pine's avian seed disperser, Clark's nutcracker (*Nucifraga columbiana* Wilson): near rocks, trees and in open sites. We monitored caches for two years to assess 1) seed predation by small seed-eating mammals, 2) germination and 3) first year survival.

Table 1 shows the results for pilferage, germination and survival rates by year. Prior to cache assessment in 2013, rodents removed one or more seeds from 54% of the caches, causing a substantial reduction in seeds available for the regeneration process. Yet because both the density of small mammals—as determined by trapping—and the odds of pilferage were similar among study areas, the influence of pilferage on regeneration may vary with rodent density (Pansing 2014). The odds of both germination and seedling survival were more than two times higher on Tibbs Butte than White Calf Mountain, suggesting that conditions on Tibbs Butte may be more suitable for whitebark pine regeneration.

Microsite types associated with increased seed persistence, germination and seedling survival change with study area and elevation zone. In the subalpine, odds of seed survival increased in the open relative to rocks and trees, and no trends were apparent in germination and survival. These results suggest that no object increases the odds of regeneration success in the subalpine on Tibbs

Butte. In contrast, at treeline on Tibbs Butte, odds of seed survival decreased near rocks relative to open microsites, whereas odds of germination and survival increased near rocks relative to trees and in the open. Here, discordance of microsite types favorable for seed persistence and later stages of regeneration are apparent.

On White Calf Mountain, we detected no association between microsite type and regeneration success. Thus regional conditions may be more important for regeneration than microsite type.

After two years, living seedlings were present at 31% of all caches. Because recruitment rates of 10% could be deemed a success (DeMastus 2013), results indicate that direct sowing is a viable option for whitebark pine restoration despite pilferage rates in excess of 50%. However, best microsite types vary regionally and by elevation; we hypothesize that regional climatic variation may contribute observed differences. Importantly, generalized protocols across regions may not be possible without information from pilot studies. The encouraging results from Tibbs Butte, however, provide support overall for this less expensive approach to restoration. Thank you to the Montana Native Plant Society for supporting this work.

*Elizabeth Pansing received one of MNPS's Small Grants in 2014. She currently is working on her master's degree in Dr. Diana Tomback's forest ecology lab in the Department of Integrative Biology, University of Colorado, Denver.*

**REFERENCES:**

DeMastus, C.R. 2013. Effective methods of regenerating whitebark pine (*Pinus albicaulis*) through direct seeding. M.S. thesis, Montana State University, Bozeman, Montana.

Pansing, E.R. 2014. The influence of cache site and rodent pilferage on whitebark pine seed germination in the northern and central Rocky Mountains. M.S. thesis, University of Colorado Denver, Denver, Colorado.

Schwandt, J.W., D.F. Tomback, R.E. Keane, W.W. McCaughey, and S.J. Kearns. 2007. First year results of a whitebark pine seed planting trial near Baker City, Or. USDA Forest Service R6-NR-FHP-2007-01

Tomback, D.F., Arno, S.F. and Keane, R.E. 2001. The compelling case for management intervention. In: Whitebark Pine Communities: Ecology and Restoration (ed. by D.F. Tomback, S.F. Arno and R.E. Keane), pp. 3–25. Island Press, Washington DC, USA.



Whitebark pine seedling.  
Photo by Elizabeth Pansing

	<b>Tibbs Butte (%)</b>	<b>White Calf Mountain (%)</b>	<b>Study Areas Combined (%)</b>
Pilferage/predation	54 (n = 366)	54 (n = 351)	54 (n = 717)
2013 Germination	64 (n = 217)	42 (n = 212)	53 (n = 429)
2013-2014 Survival	63 (n = 139)	26 (n = 90)	48 (n = 229)
2014 Germination	36 (n = 217)	1 (n = 212)	21 (n = 429)
2014 Living (Includes 2013 and 2014 cohort)	36 (n = 366)	7 (n = 351)	31 (n = 717)

Table 1: Summary of seed loss, germination, survival, and living seedlings per cache by year. Note that the total number of individuals varies depending on the life-stage.

**WELCOME  
NEW MEMBERS**

Please welcome the following new members:

**Clark Fork Chapter**  
Bruce and Darcy Hover,  
Karen Hajek, Roger  
G. Hayes and Beverly  
Young

**Flathead Chapter**  
Patti Mason and  
B. Hudnell Stamm

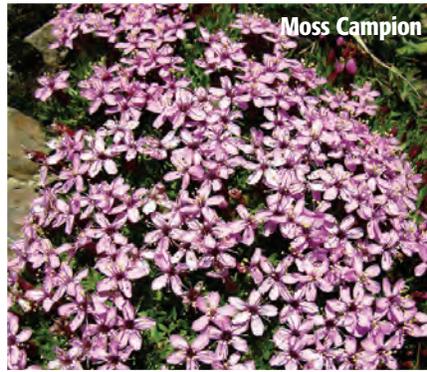
**Maka Flora Chapter**  
Sherry Turner

**Valley of Flowers  
Chapter**  
Charissa Bujak,  
Lynn Bacon and  
Tad Weaver

**Eastern At-Large**  
Daniel Bennett and  
Mary Decker



Mountain Death-camas



Moss Campion



Monument Plant

Goat Flat is home to many of these plants. That bright July day, we continued to amble across the hummocky landscape, moving slowly, not wanting to crush any of the minute flowers beneath our boots. Grasses intermingled with the flowers which intermingled with cushiony mosses, patches of bare earth and scattered rocks. A sprinkling of low white flowers caught my eye, and I bent down for a closer look. The flowers were cup-shaped with dark bluish-purple dots on the edges of the petals and a few vertical stripes of the same deep hue tinting the outside of the “cup.” My plant-loving husband told me it was a gentian—I’d never seen a white gentian before—and I found out later from my field guide that it was the aptly-named whitish gentian (*Gentiana algida*). The field guide also informed me that one of this plant’s adaptations is to close up its petals before storms, presumably to keep its pollen from being swept away by the rain.

Another gentian in this meadow was impossible to miss: monument plant (*Frasera speciosa*). It was one of the few flowering plants that stood taller than a hiking boot; in fact, it was about two feet tall and looked rather like a Christmas tree, the bottom half whorls of lance-shaped leaves; the top half mostly greenish-white flowers with deep purple flecks. And, of course, this plant also has some impressive adaptations: the plant populations form their flowers three years or more before they actually bloom, and then the plants all flower together...and then die. The leaf litter from the parent plants helps protect the seeds and new young plants as they grow and start the process all over again.

The more I ponder the array of alpine plant adaptations, the more I wonder if my perception of the tundra as harsh is completely accurate. It is harsh to me—I could not survive there. But if I were a plant like mountain avens (*Dryas sp.*), with bowl-shaped flowers that reflect and focus sunlight to speed up growth as well as provide a warm, enticing spot for pollinators to land, perhaps I would not perceive a meadow at 9,500 feet above sea level as such a challenging place. After all, the deep snows found in some alpine areas insulate the ground—and the dormant plants—below, and may provide such

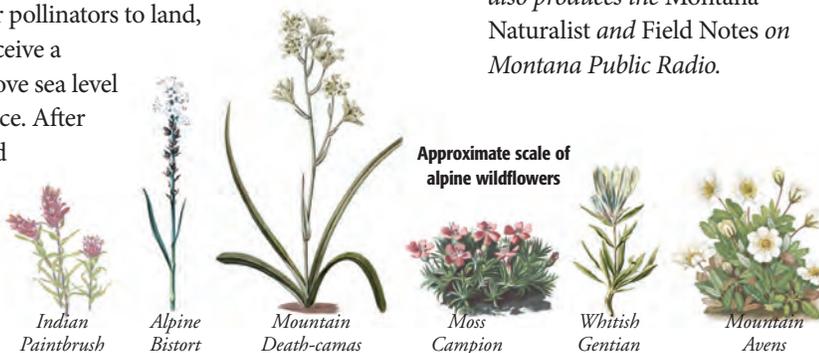
protection for nearly nine months of the year. Indeed, Goat Flat still had a few lingering snow fields melting away in the last week of July.

Visiting this remote, wild place reminded me that my human perspective is limited. To the flowers that bloom there, I am just a shadow that falls across their petals or a shoe that crushes. I am but a brief visitor in a cycle of sun and cold and wind that has spanned millennia.

What might future years bring to alpine habitats such as this? Our too-rapidly-changing climate threatens the survival of the flora and fauna that make their homes in high-altitude places like Goat Flat. Yet I can’t help but find hope in the fact that the vast array of plants in that meadow have developed myriad creative adaptations to conditions we humans consider harsh. I am humbled by their resiliency, and I can’t help but believe that they will continue to adapt, somehow, to whatever comes next. And I find in myself a renewed desire to protect their habitats, so that these wild places, and the plants that call them home, will remain to awe future naturalists with their exquisite perseverance.



Allison DeJong is Volunteer Coordinator at the Montana Natural History Center. She also produces the Montana Naturalist and Field Notes on Montana Public Radio.



Approximate scale of alpine wildflowers

Indian Paintbrush

Alpine Bistort

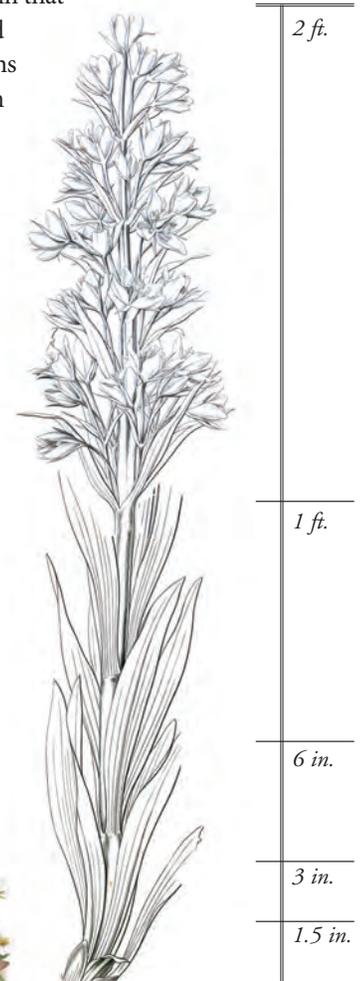
Mountain Death-camas

Moss Campion

Whitish Gentian

Mountain Avens

Monument Plant



# Palouse Prairie:

Synaptic Relics from a  
Senior Pseudo-Botanist

By Frank M. Dugan, Washington State University

**F**or a plant-loving old duffer the title had a strong, if distinctly geeky, allure: “Botanists and their childhood memories: an underutilized expert source in ethnobotanical research” (Łuczaj and Kujawska 2012). As a plant pathologist, I can reasonably pass for a semi-competent pseudo-botanist. Could I also be a living repository of vanishing ethnobotanical wisdom? To be honest, these days I have vanishing memories of what I did ten minutes ago, but my childhood memories of plants remain crystal clear. Unfortunately, once you’re into the fine print of Łuczaj and Kujawska (2012), it turns out that adult botanists, who usually have grown up in urban settings, frequently remember too many weeds and not much old-time plant lore. Aw, shucks! But they do remember lots of plants!

I know a retired semi-botanist (he eventually morphed into a computer jock – it paid better) who can recall things ethnobotanical. For years, David “Sebastian” Browder and I tromped around clear cuts together, counting tree seedlings for the US Forest Service, and assigning clear cuts to habitat types (sensu Pfister et al. 1977). He once told me that he could remember when American Indians pitched their teepees near the junction of Brooks and Russell in Missoula (Malfunction Junction, in local parlance). He was told they were there to dig bitterroot (*Lewisia rediviva*) and I think his memory is correct: “Many traditional [Salish] families continued to dig bitterroot in the area of South Missoula, near Fort Missoula, Reserve, Russell, and Brooks Streets, into the early 1960s” (Mathews 2002).

Of course traditional Salish people know all about the how, why, where and when (including history) of digging bitterroot. Sebastian and I were just two white kids growing up in South Missoula. Culturally, we were about as far from ethnobotany as “Leave It



My childhood house on Livingston Ave., at the very edge of town with only fields beyond. I’m third in line, on the tricycle, behind Tippy, the dog, and my friend Susie.

to Beaver” was from the Little Big Horn. Now I explore Native American ethnobotanical foods via Moerman (1998) and Turner (2014), but it remains a source of wonder to me that Malfunction Junction, since 1957 the site of Trempers Shopping Center and now the geographic center of Missoula, was at the time of my childhood still visited by Native Americans in search of edible plants.

Although I remember the construction of Trempers, I have no recollection of the flora on the pre-Trempers site. However, less than a mile away was my house on Livingston Avenue, in 1950 on the very edge of town and in the mid-1950s still only a stone’s throw from the edge. Also a stone’s throw away were Hale Field and Johnson Flying Service (now the site of Sentinel High School), where we kids watched the old Ford Trimotors lumber skyward. If you were so fortunate as to have grown up in the Missoula of that time, you can compare your memories with an aerial photograph

archive, online courtesy of University of Montana’s Mansfield Library ([www.lib.umt.edu/asc/photos](http://www.lib.umt.edu/asc/photos)). I’m gratified to report that in spite of my diminished capacity to remember where I put my hat, every school, house, road, vacant lot and chicken coop of my youth is readily located on the photos.

It’s this correlation between archive and recall that boosts my confidence in other memories, specifically those pertaining to the flora of “the field,” a patch of ground just yards from my backdoor. Although nearby areas were cultivated to wheat, “the field” was rocky, populated with bunchgrasses and with a low swale. Portions of the swale persisted



*Lewisia Rediviva*. Illustration contributed by University of Massachusetts Amherst Libraries, U.S.A.



I annotated this aerial photo from 1950 to show the relative locations of my house and some other local landmarks, including “the field” at the corner of Dearborn and Queen. *The original image is from the Mansfield Library at the University of Montana.*

as a vacant lot at the southwest corner of Dearborn and Queen until filled in and built upon about 1960. The bunchgrasses and occasional sagebrush we kids ignored, but not the flowers. These we had names for: sunflower, bitterroot, bluebells, buttercup, Indian paintbrush, larkspur, lupine, shooting star, and yellow bells. I also remember stinkweed, a prickly pear cactus, and (unnamed by us) a forb with finely divided leaves and white to pale yellowish flowers. There was another plant (also with no name), with droopy, pinkish flowers, later producing large tufts of diffuse silky threads. Others too, but too ill-remembered to describe well.

“In contrast to the general population, botanists are able to report their childhood memories using botanical taxonomy and, as they have often been interested in plants and worked with plants from an early age, their memories may be preserved more vividly” (Łuczaj and Kujawska 2012). Still, one has to dust off the old synapses to put scientific names on mental images of plants after an interval of sixty years. Helpful were Missoula Valley plant lists from an unpublished thesis, (Mitchell 1958), as were analogous

lists from later studies (Antos et al. 1983; Lesica and Kittelson 2010). Images, plus collection records of various dates from around Missoula, were viewed courtesy of the databases of The University of Montana Herbarium ([herbarium.dbs.umt.edu](http://herbarium.dbs.umt.edu)). Images from USDA-Plants ([plants.usda.gov/](http://plants.usda.gov/)) and the Burke Museum ([biology.burke.washington.edu/herbarium](http://biology.burke.washington.edu/herbarium)) were also useful.

Especially pertinent were decades-old records from the UM Herbarium denoting collections from the Missoula Valley floor. Numerous accessions from 1921 through 1964 were collected in prairie habitats immediately south of Missoula, adjacent to the campus, at the south end of Higgins, etc. To these sorts of records can be added various records from steeper locales bordering the valley; and records from the valley floor to the west, near the present airport.

Other than herbarium records, I could find no list of plant species from the area of Missoula Valley immediately proximate to my old neighborhood (i.e., the old Pattee Creek floodplain). But when all of the above were compared to images

in my mental databank (sorry, no URL), I was able to produce the following genera or species names corresponding to the list of remembered common names above:

*Balsamorhiza sagittata* (sunflower - which we kids recognized as different from sunflowers in yards or gardens); *Lewisia rediviva* (bitterroot - I recall feeling guilty for having picked one, because I was told they were rare); *Mertensia oblongifolia* (our bluebells also had pink tints on the lower corolla); *Ranunculus glaberrimus* (our buttercups were locally famous for being first to flower in spring, even when barely emergent); *Castilleja sp.* (our Indian paintbrush did not match the yellow-flowered *C. lutescens* of Mitchell's list, but had red tints); *Delphinium bicolor* (our larkspur); *Lupinus sericeus* (lupine); *Dodecatheon sp.* (shooting star) and *Fritillaria pudica* (yellow bells). Our stinkweed was definitely *Achillea millefolium*. We had no name for what was very plausibly *Lomatium macrocarpum*; the leaves were very finely divided and umbellate flowers were white to pale yellow.

The plant whose flower eventually turned to diffuse silky threads I now know to have been *Geum triflorum*. The cactus was certainly an *Opuntia*, probably *O. fragilis*, the only species in Lackschewitz (1991) and the only species in Missoula County in Lesica (2012). There are several candidate species for red-flowered *Castilleja* in Lackschewitz (1991) and Lesica (2012), and several possible species of *Dodecatheon* in the same sources. The *D. puberulum* in Mitchell (1958) has nomenclatural priority over *D. pulchellum*, "a name now in use for the most common and widespread of the western North American species of the genus" (Reveal and Gandhi 2008). The identity of the bunchgrasses and sagebrush in "the field" is guesswork. Several bunchgrasses collected under the names *Agropyron* (*Agropyrum*) *spicatum* (now *Pseudoroegneria spicata*), *Festuca idahoensis*, *F. scabrella* or other names were often collected in the same wider locale according to literature and herbarium records. The



*Balsamorhiza sagittata*. Illustration contributed by: Smithsonian Institute, Washington, U.S.A.



*Geum triflorum*. Illustration contributed by: Smithsonian Institute, Washington, U.S.A.

sagebrush may have been species in *Artemisia* or *Chrysothamnus* on the same basis.

As time progressed and disturbance became the norm, I recall some weeds: *Taraxacum sp.* (dandelions), *Tragopogon dubius* (milkweed) and possibly *Salsola tragus*, *Sisymbrium altissimum* and/or *Amaranthus albus* (tumbleweeds). Like the grasses or sagebrush, tumbleweeds did not have spectacular flowers, so we largely ignored them, although temporary "forts" could be built by collecting the larger specimens. Venturing farther, beyond "the field," there was land in wheat cultivation, such as immediately to the west of the playground at Lewis and Clark Elementary. Uprooted wheat plants, their roots heavily laden with soil, could be gripped by the tops and wielded with great effect as clubs. I also remember stalks of common mullein (*Verbascum thapsus*) used as spears, but I think that was later. I'm not sure that childhood forts, cudgels and spears qualify as ethnobotanical uses, except maybe in a modified Lord of the Flies sense (as houses continued to spring up, we little baby boomers ran in savage packs). Like the botanists surveyed in Łuczaj and Kujawska (2012), Sebastian and I remember relatively little ethnobotany. But unlike the botanists in that study, I recall native plants with greater frequency and accuracy than weeds.

Discounting cultivated wheat, all the above plants were components or early invaders of the original Missoula Valley prairie, but it should be stressed that "the field" was not pristine prairie. Mitchell (1958) notes, "No stands were found that were

known to be true relics, although many of the ones used were considered fair representations of the climax condition [sensu Rexford Daubenmire]. Some ... were ... in a subclimax state." However, they (and "the field") still were strongly indicative of "Palouse bunch grass prairie" (a term that Mitchell discussed in detail, citing several sources). The term "Palouse prairie" persists in recent literature as indicating Pacific Northwest prairies dominated



*Fritillaria pudica*. Illustration contributed by:  
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by specified bunchgrasses and forbs (e.g., *Pseudoroegneria spicata* and *Balsamorhiza sagittata*) (Jensen and Six 2006), although the term is sometimes applied in a more geographically circumscribed sense to bunchgrass prairie of the Palouse *sensu stricto*, i.e., southeastern Washington and adjacent Idaho (Hanson et al. 2008). Weaver (1919), referring to bunchgrass prairie, wrote “At Missoula, Montana ... the *Agropyrum-Festuca* community of Washington and Idaho meets and intermingles with ... eastern prairie species ... while *Agropyrum spicatum*, ... *Achillea millefolium*, and others occur throughout both regions.” Clements (1920) listed plants in societies of “the *Agropyrum-Festuca* community of Washington and Idaho” including *B. sagittata*, *Lu. sericeus*, *A. millefolium*, *R. glaberrimus* and *F. pudica*. Composition of plant associations of Palouse prairie, including prairies of west-central Montana, is well documented, although the reminiscences here comprise, to my knowledge, the only species list for the historical Pattee Creek floodplain prairie of South Missoula.

Even for the practiced cynic, getting old can generate creeping sentimentality, such as that I feel for “the field.” Presently, the barest relics of such prairie remain in South Missoula, although some noble souls battle to save the pieces (Thelen and Dixon 2009). USDA-ARS Western Regional Plant Introduction Station offers free to qualified investigators and conservationists seed of *B. sagittata*, *Le. rediviva*, *D. bicolor*, *Lu. sericeus*, *F. pudica*, *Lo. macrocarpum*, *G. triflorum* and *A. millefolium*, as well as seed of bunchgrasses common to Palouse prairie associations ([www.ars-grin.gov/npgs/](http://www.ars-grin.gov/npgs/)).

At the time of my boyhood, I had no notion that “the field” represented a shrinking and precious environment, nor did I know that bitterroots were a valuable resource for Native Americans. I hadn’t a clue about any of these things. Today, at the venerable age of 68, I can only say it was a privilege to have known “the field” and its floral denizens. 

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#### LITERATURE CITED

- Antos, J.A., McCune, B., and Bara, C. 1983. The effect of fire on an ungrazed Western Montana grassland. *American Midland Naturalist* 110: 354-364.
- Clements, F.E. 1920. Plant indicators: the relation of plant communities to process and practice. Carnegie Institution of Washington Publication No. 290, Washington D.C. 388 pp.
- Hanson, T., Sánchez-de León, Y., Johnson-Maynard, J., and Brunsfeld, S. 2008. Influence of soil and site characteristics on Palouse Prairie plant communities. *Western North American Naturalist* 68: 231-240.
- Jensen, J.M., and Six, D.L. 2006. Myrmecochory of the exotic plant, *Centaurea maculosa*: a potential mechanism enhancing invasiveness. *Environmental Entomology* 35: 326-331.
- Lackschewitz, K. 1991. *Vascular Plants of West-Central Montana—Identification Guidebook*. USDA-Forest Service Gen Tech Rep INT-277. 648 pp.
- Lesica, P. 2012. *Manual of Montana Vascular Plants*. BRIT Press, Fort Worth. 771 pp.
- Lesica, P., and Kittelson, P.M. 2010. Precipitation and temperature are associated with advanced flowering phenology in a semi-arid grassland. *Journal of Arid Environments* 74: 1013-1017.
- Łuczaj, Ł.J., and Kujawska, M. 2012. Botanists and their childhood memories: an underutilized expert source in ethnobotanical research. *Botanical Journal of the Linnean Society* 168: 334-343.
- Mathews, A.J. 2002. *A Guide to Historic Missoula*. Montana Historical Society. 173 pp.
- Mitchell, W.W. 1958. *An Ecological Study of the Grasslands in the Region of Missoula, Montana*. Montana State University (now University of Montana). 111 pp.
- Moerman, D.E. 1998. *Native American Ethnobotany*. Timber Press, Portland, Oregon. 927 pp.
- Pfister, R. D., Kovalchik, B.L., Arno, S.F., and Presby, R.C. 1977. Forest habitat types of Montana. Gen. Tech. Rep. INT-GTR-34. Ogden, UT: U.S.D.A., Forest Service, Intermountain Forest & Range Experiment Station. 174 pp.
- Reveal, J.L. and Gandhi, K.N. 2008. Proposal to reject the name *Dodecatheon meadia* var. *puberulum* (Primulaceae). *Taxon* 57: 1006-1007.
- Thelen, G.C., and Dixon, K.J. 2009. Native sod rescue – a viable business model (Montana). *Ecological Restoration* 27: 127-129.
- Turner, N.J. 2014. *Ancient Pathways, Ancestral Knowledge: Ethnobotany and Ecological Wisdom of Indigenous Peoples of Northwestern North America*, vols. 1 & 2. McGill-Queen’s University Press, Montreal. 554 + 552 pp.
- Weaver, J.E. 1919. The ecological relations of roots. Carnegie Institution of Washington Publication No. 286, Washington D.C. 128 pp + 30 plates.

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