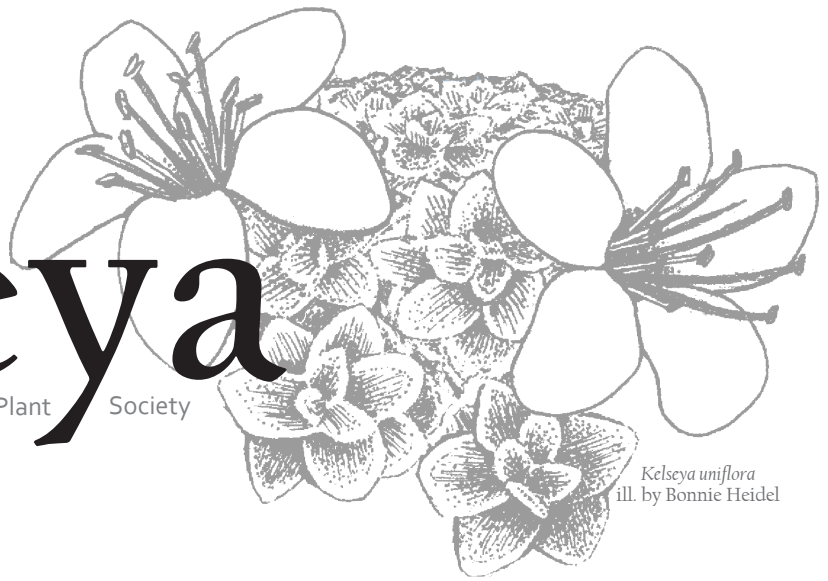


# Kelseya

Newsletter of the Montana Native Plant Society



*Kelseya uniflora*  
ill. by Bonnie Heidel

## Wild Mountain Heather

by Dana Visalli

[This article is reprinted with permission from *The Methow Naturalist*. While it references locations in the Methow Watershed in Washington, we've featured it because Montana does share an abundance of Ericaceae in Montana. —Ed.]

There is something peculiar about the Heather family in the Northwest: it tends to dominate the understory plants from about 4000 feet elevation up to the tops of the mountains. In the lodgepole pine forest the plants on the ground will almost always be dominated by grouseberry (*Vaccinium scoparium*), while in the fir forests the understory is covered with tall huckleberry (*Vaccinium membranaceum*) and other Heather family plants. On the slopes above timberline various species of red, white, and yellow mountain heathers prevail. There are over forty families of flowering plants in the Methow watershed; why has one of them come to rule the uplands?

The word heather comes from an Old English word meaning wasteland, and indeed the Heather family tends to grow in areas where the soils are so acidic that most plant species cannot survive there, such as bogs, coniferous forests, and granite soils. The scientific name of the Heather family is *Ericaceae*, named after a genus in Europe called Erica, a Greek word meaning...heather.

Left to their own humble devices, heathers would be no more capable of modifying their chemistry and colonizing acidic wastelands than any other plants. But they are not left to their own devices—almost all members of the Heather family live in a symbiotic relationship with one or more fungal species. These fungi colonize the root hairs of the heathers and enter into a partnership of sorts. The plants are able to make their own sugar and starch from the contents of the atmosphere through photosynthesis. All they need to complete this process are access to the essential nutrients in the soil—phosphorus, potassium, and nitrogen. The plants pump their photosynthetically produced sugars down into their roots and feed the root



© Scott Mincemoyer

*Vaccinium scoparium*. Photo by Scott Mincemoyer, [www.fieldguide.mt.gov](http://www.fieldguide.mt.gov)

fungi, which in turn are able to disarm the free hydrogen ions in the soil and transfer nutrients to the plant.

The interaction is known as a mycorrhizal relationship—mycorrhiza means “fungusroot”—and it is beneficial to both the plant and the fungus. However, there is a somewhat shocking dynamic at work in the biological world, and that is that every time a new relationship is formed between organisms, the opportunity exists for one species to in some way take advantage of the other. Insect galls are one example of this phenomenon. Some insects have evolved the capacity to lay an egg under the epidermis of a plant, at which point the chemistry of the developing egg hijacks the chemistry of the plant and forces it to build a small, edible home for the soon-to-hatch insect grub. What must have begun as a

*continued on page 9*

---

# Chapter Events

## Calypso Chapter

The Calypso Chapter enjoyed a fun Christmas Brunch Gathering hosted by Linda Lyon and Dinesh Badouraly. We reminisced about our wonderful 2014 field trip summer season with six excursions and planned for 2015.

In **early March 2015** Linda Lyon will give a presentation on "Invasive Plant Issues in Scotland" at Montana Tech in Butte. Linda has been on sabbatical from UMW in Scotland and this will be a very interesting talk including discussion of natives that have become "weeds" and what Scotland is doing to control them. Call Catherine Cain at 498-6198 for details.

**Date TBD.** Bob Wooley will present "Getting to Know Your Western Trees" as part of the FWP "Getting to Know Your Old Friends" series at the Old Depot in Dillon. This program will include a later field trip to monitor Whitebark Pine regrowth in a site devastated by pine bark beetle and rust.

**Saturday, April 4, 10:00 a.m.** The 7th annual "Gardening with Natives" workshop in Divide at the Grange Hall.

In **May**, there will be a Mother's Day "Kids Wildflower Day" over two weekends in conjunction with USFS with a kids workshop to make Mother's Day cards with pressed flowers followed by a Mother's day field trip with kids to view flowers.

In **Late June**, we will again do a tour of Vipond Park in the Pioneer Mountains for the public in conjunction with USFS botanist Jessie Salix.

We will have at least five other field trips including National Pollinator Day, Goat Flats in the AP and a trip to explore the unique flora of the Tendoy's.

Call Catherine Cain 406-498-6198 for details of these events.

And don't forget to put our **2016 Annual Meeting** on your calendar. This will be June 24-26 2016 in conjunction with the American Penstemon Society and we will be staying at Fairmont Hot Springs.

## Clark Fork Chapter

**Monday, January 12, 7:30 pm.** In the natural world, "everything is hitched to everything else." Come and hear Forest Service ecologist Yvette Ortega tell a surprising story of the Rippling Effects of Knapweed Invasion on Native Communities and the Erosion of Bird-song Diversity. This will be a joint meeting with Montana Audubon, Rm 123 Gallagher Business Bldg, UM Campus (note the different day and place).

**Tuesday, January 27, 7:30 pm.** Herbarium Night. They won't really keep the fleas off your dog, but it is the 3rd largest genus in Montana. Join Peter Lesica to learn about Fleabanes, the Genus *Erigeron*. Rm 303, Natural Sciences (Botany) Bldg., UM Campus.

**Thursday, February 12, 7:30 pm.** Morgan Valliant leads the fight against weeds on open space around Missoula. He will explain The Missoula Conservation Lands Vegetation Management Program. Rm Log Gallagher Business Bldg, UM Campus.

**Tuesday, February 24, 7:30 pm.** Herbarium Night. Their diversity is as great as for vascular plants, but few people know them well. Join us when Andrea Pipp presents an Introduction to Montana Lichens. Rm 303, Natural Sciences (Botany) Bldg., UM Campus.

**Thursday, March 12, 7:30 pm.** UM's Mandy Slate received an MNPS grant for her research. Come and learn about these poorly understood plants from her talk: Slight but Consequential: The Ecological Significance of Moss. Rm Log Gallagher Business Bldg, UM Campus.

## Flathead Chapter

Monthly meetings are the 3rd Wednesday of the month in October through April at North Valley Community Hall, (also North Valley Physical Therapy), 235 Nucleus Ave., Columbia Falls unless otherwise noted.

**Wednesday, January 21, 6:00 pm.** Flathead Chapter Annual Meeting planning session with potluck of snacks and finger food. Flathead Chapter will host the Annual Meeting June 26-28, 2015 at the Loon Lake 4H Camp near Ferndale.

**Wednesday, February 18, 7:00 pm.** "Connecting the Past to the Future with Native Plants." Mike Keefer will make the trip from British Columbia to explore the ancient human connections to native plant species through the discipline of ethnoecology. He will explain the uses of these plants via the related discipline of restoration ecology.

**Wednesday, March 18, 7:00 pm.** "The Floras of Glacier and Zion National Parks: Decidedly Different but Surprisingly Similar." Have you been to both Glacier and Zion National Parks? Being located in such different ecosystems, you might think they have little in common when it comes to plants. Come listen to Sonja Hartmann and learn about the similarities and differences in floras of these two amazing places.

## Kelsey Chapter

**Winter Shrub Identification & Snowshoe.** Have you ever thought naked shrubs have no identity? Join us and learn the secrets of distinguishing shrubs when they have no leaves. Andrea Pipp, Botanist for the Montana Natural Heritage Program, will provide two different experiences for exploring shrubs in their winter condition. The programs are free, open to ages 10yrs to adult, and all skill levels. Reservations are greatly appreciated. The Wednesday session is strongly recommended as a pre-requisite to Saturday's snowshoe trip

### **Wednesday January 28, 2015: 7:00pm-9:00pm**

In the comforts of the indoors, you'll learn how to distinguish different shrubs and see the diversity in our neighborhood. Andrea will bring the shrubs inside and teach you skills with samples and tools in a relaxed and fun setting. **Directions:** At Carroll College, park in Lot B, off of Lyndale Avenue. At the cross walk, cross Learning Street into Scola Hall (Building #24) and take the elevator or staircase up to the 3rd floor, walk west to Room 320 (which takes you into Simperman Hall, #10).



---

**Saturday January 31, 9:30am – 1:30pm** snowshoe and lunch, Moose Creek Campground

This event is co-sponsored by the Kelsey Chapter of the Native Plant Society and the Montana Discovery Foundation. Meet at 9:30am at Moose Creek Campground on Rimini Road. The Discovery Foundation will provide snowshoes\* or you can bring your own. We'll stomp around on snowshoes, explore the riparian and forested areas, and discover what shrubs are around us. Lunch will be provided at the Moose Creek Cabin. Bring waterproof pants, sturdy boots, and layer as appropriate for the weather conditions, and water. Directions: From Helena head west on Highway 12. Before driving up McDonald pass, turn left onto Rimini Road and note road sign; the campground is about 4-miles up Rimini Road on your left.

\*For more information or to make reservations (required for snowshoes) contact Andrea Pipp at (406) 439-0284. For reservations please provide your name and, if snowshoes are needed, your weight category (less than or more than 130 pounds) by end of day Thursday, January 29th.

**Wednesday, February 11, 7:00 pm.** Scott Mincemoyer will lead a hands-on study night on warm season grasses. Rm 320, Simperman Hall, Carroll College campus.

**Sunday, April 26.** *Kelsey uniflora*. Join us to visit the plant discovered by our chapter's namesake Francis Kelsey. It is a short walk to see this plant, but depending on conditions, we may wander up the Trout Creek Canyon to see what else early spring has to offer. The first mile is an easily accessible trail. For more information, contact Bob Person at (406) 443-4678 – if no answer, please leave a message mentioning the event.

**Spring, date to be announced.** Madeline Mazurski and Clare Beelman will present a program on landscaping with native plants. They will present preliminary findings about native plant gardens and landscapes – what works and what doesn't. Watch the website and your email for details.

**Thursday, May 21, 7:00 p.m.** Mount Helena Spring Wildflowers. The third week in May is set for "Celebrating Wildflowers" a program for grade schools jointly sponsored by the Forest Service, the Discovery Foundation, and the Kelsey Chapter. The Kelsey Chapter and the Prickly Pear Land Trust invite you to celebrate wildflowers yourself on an evening walk of about a mile on the same route the grade school children follow to see a wide variety of spring blooming plants on Mount Helena. Meet at the Main Mount Helena Trailhead above Reeder's Village and plan for about a 2 hour walk. For more information, contact Bob Person at (406) 443-4678 – if no answer, please leave a message mentioning the event.

## Maka Flora Chapter

Info: Libby Knotts at 774-3778, rek@midrivers.net.

## Valley of Flowers Chapter

Unless otherwise noted, all programs begin at 7:00 p.m. and take place in room 108 of the Plant Bioscience Building on the west side of 11th Avenue, on the main MSU campus. For further information contact Jeff Copeland: 582-7671, jouzelcopeland@gmail.com.

**Tuesday, January 13, 2015.** Mandeville Creek Project - Abigail Breuer and colleagues will discuss the new project to restore Mandeville Spring Creek, which flows through central Bozeman and over the Bozeman High School grounds. There are a number of opportunities for MNPS involvement in the project, including in the teaching aspects, plus selecting, planting and maintaining native plants in the restored creek corridor.

**Tuesday, February 10.** Vegetation Status of Yellowstone Park - Hal Hunter, NRCS State Forester (retired), will present on the topic of the Northern Range (winter range) in Yellowstone National Park and how it has changed over time. He'll compare sets of photographs from the earliest days of the Park, the 1970s and 2013-14, and also discuss the changing management philosophy over time.

**Tuesday, March 17.** In a Fescue Meadow - Dr. Tad Weaver, MSU Plant Ecologist (retired), will relate his observations over decades of following a native plant meadow in southwest Montana.

**Tuesday, April 14.** Propagating Native Plants - Kathie Settevendemie will lead a workshop on the techniques for propagating the most popular types of Montana plants that are used in landscaping. Kathy and her husband own and operate Blackfoot Native Plants Nursery outside of Potomac, Montana, and she currently serves as president of MNPS.

**Saturday, April 25, 9:00 a.m.** Clean Up Bozeman Day (Earth Day). We'll continue our highly-successful battle against spotted knapweed and other invasives on the Kagy Boulevard roadcut, then move over to the Pollinator Garden in Langohr Park for its spring cleanup. Meet at the roadcut, just east of Kagy & South Church,. Bring a digger and gloves. Info: Joanne at 586-9585.

## Eastern At-Large

More details to come in the Spring and Summer issues of *Kelsey*. Info: Jennifer Lyman at 656-7869.

## Western At-Large

Jon Reny (Libby) is working on activities for the year and would love to hear your thoughts. You can reach him at 334-0459, jreny@kvis.net.



---

# News & Notes



## President's Message

The start of the new year is an appropriate time to consider our goals. We have a clear mission, but what is our vision for the future? What is it we want to accomplish as an organization? Are there things we want to look back upon ten years from now and feel proud to have done them? It's easy to ask the questions, more difficult to sort out answers and come to consensus.

While we can all agree that we are doing important work for native plants, we also realize that there is limited time and energy available to a volunteer organization and limited opportunity for people across Montana to work together on projects. For now, we continue to move forward despite these challenges.

Nonetheless, the questions remain, perhaps dormant like the many plants that have senesced for the winter—ready to emerge when conditions are right. In the meantime, I invite your thoughts, ideas and suggestions. Email me: [kathy@blackfootnativeplants.com](mailto:kathy@blackfootnativeplants.com) or give me a call at (406) 880-8809. I'd love to talk with you.

— Kathy Settevendemie

## Do You Like Us?

Like MNPS on Facebook and you'll stay up to date on events, state-wide topics and other pertinent information. Find us at

[www.facebook.com/MTNativePlantSociety](http://www.facebook.com/MTNativePlantSociety).

You can also follow individual chapters; search for your chapter to find out more.

For information about MNPS and Facebook, contact Clare Beelman at [clare.beelman@gmail.com](mailto:clare.beelman@gmail.com).

## MNPS Small Grant Competition

The Montana Native Plant Society (MNPS) announces its 19th annual Small Grant competition for projects or studies that support the following objectives: 1) stimulate research, conservation and educational activities that help foster an appreciation of Montana's native plants and plant communities; and 2) promote native plant conservation through better understanding of Montana's native flora and vegetation and the factors affecting their survival. Project or study proposals must pertain to native plants of Montana. All proposals that meet the minimum criteria will be considered for up to \$1000.

However, proposals that demonstrate cooperation with others and generate data or public support for conservation of native plants in the wild are preferred. The competition is open to residents of Montana and to all members of the MNPS. The deadline for proposals is January 31, 2015. See the insert included with this newsletter or the MNPS website for more information, or you may contact Betty Kuropat at [bkuropat@centurytel.net](mailto:bkuropat@centurytel.net).

## Welcome New Members!

The Montana Native Plant Society welcomes the following new members:

### Clark Fork Chapter:

Jane Smith and Nick Engler

### State-Western-At-Large:

Dr. Linelle Wagner

## Errata

Owners of the first printing of *Manual of Montana Vascular Plants* can download a page of errata by going to the following web address and scrolling down.

<http://shop.brit.org/products/manual-of-montana-vascular-plants>



## 2015 MNPS Annual Meeting: For Peat's Sake...Befriend the Fens!

Marilyn Reynolds, Betty Kuropat and Chantelle DeLay – Flathead Chapter

The Flathead chapter is pleased to be hosting the 2015 Annual Meeting of the Montana Native Plant Society, titled For Peat's Sake...Befriend the Fens! It will take place on **June 26-28, 2015** at the Loon Lake 4H Camp at 29906 Loon Lake Road, about 20 minutes from Bigfork. (<http://www.loonlakecamp.org/>). The camp is all-inclusive, with a large central lodge, meeting/dining room, rest rooms and showers. There are many bunk beds in cabins, tent spaces, and a few RV spaces (no hookups). Camp is on a small lake with a dock and canoes we can use. Camp staff will provide Friday and Saturday dinner and Saturday and Sunday breakfasts; attendees should bring their own lunches. Like last year's meeting, alcohol is prohibited at camp.

There will be a Friday evening social at Maria Mantas's house, about 3.5 miles from camp. Overnight parking and shuttles will be available there, because parking is limited at the camp. Consider carpooling to the meeting.

This site is close to the beautiful Swan Valley, where there will be many field trips to both uplands and wetlands; maybe even a snorkeling trip. Prepare to see peatland species such as orchids and sundews (*Drosera anglica*). Some trips will require rubber boots or hip waders. Vistas of the Swan Valley will also be on the must-see list.

We're planning some Friday afternoon workshops. If there is a particular subject of interest, send an email to [mnps.flathead@gmail.com](mailto:mnps.flathead@gmail.com) with "Annual Meeting" in the subject line.

We are looking for items for the silent auction. Member donations are popular and highlight our unique, generous and talented community of plant people. Please think about what you can contribute - arts or crafts, photos, plants, seeds, baked or preserved goodies, services or that loved item you are ready to pass on. Your creativity is encouraged! To donate, contact Jen Asebrook [jenasebrook@gmail.com](mailto:jenasebrook@gmail.com) 406-871-8020.

Misadventures.com, a website for and about adventurous women, featured an interview with three wonderful MNPS members who work in Glacier Park: Jen Asebrook, Shannon Kimball, and Jen Hintz. Read the interview here:

[www.misadventuresmag.com/2014/11/07/interview-three-glacier-botanists/](http://www.misadventuresmag.com/2014/11/07/interview-three-glacier-botanists/)



Sundew (*Drosera anglica*). Photo by Chantelle Delay.



Sparrow's egg lady's slipper orchid (*Cypripedium passerinum*). Photo by Chantelle Delay.



---

## 2014 Small Grants Report: Growing Programs at the Fort Missoula Native Plant Garden

*Lisa Bickell and Christine Morris*

The Fort Missoula Native Plant Garden run by the Montana Natural History Center, is a beautiful example of restoration and reuse. Begun 15 years ago, the garden was built on a weedy, flat lot at Fort Missoula. Following



Children show off native flowers during a summer day camp program.  
Photo by Lisa Bickell.



Adults using the classroom for the Master Naturalist program. Photo by Lisa Bickell.

the design ideas of children and the hard work of volunteers and botanists, the area has been transformed into a diverse native garden open to the public year-round. More than 50 species of plants, shrubs and trees attract wildlife and curious learners of all ages.

The Montana Native Plant Society provided essential support for program implementation at the garden in 2014. In the past few years programming capacity and scope has increased due to the addition of a restored classroom, seasonal gardener, and focus on outreach. Over 400 children and 45 adults participated in educational programming at the garden this year.

Children from MNHC summer camps, Flagship, YMCA, and school classes spent hours learning and playing in the garden. Inquiry-based activities promoted close investigation of native plants and pollinators. Students engaged in discussion about invasive weeds and assisted with eradication projects. The child-friendly landscaping—hollow logs, tiny trails, water feature, and fort building materials—provided an enriching space for self-directed play. Informative activities combined with time to nourish emotional connections with the plants, engaged youth with nature in a meaningful way.

Adults and older youth participated in Work and Learn Volunteer Days offered weekly at the garden. This format flexibly permitted study of specific topics during garden maintenance and improvement tasks. Missoula Youth Homes was one of several groups to regularly attend throughout the summer. This crew and their counselors focused on gaining native plant identification skills with the gardener as they worked. Other volunteers came with interests in creating native plant gardens at their own homes or managing invasive weeds. The MNHC Master Naturalist course, Naturalist Field Day classes and a teacher workshop also utilized the garden for adult education experiences.

The Fort Missoula Native Plant Garden provides the Missoula community with a landscape for creative outdoor play, wildlife habitat and educational space to learn about Montana native plants. Programming here leads to science skill development and motivation for stewardship. As programming grows so we hope the knowledge and capacity to care for our native plants will increase.

We want to thank the Montana Native Plant Society for supporting the Native Plant Garden at Fort Missoula. It is a wonderful showcase of how dynamic, educational, and fun a native plant garden can be.

---

## Conservation Corner Update

Peter Lesica

The U.S. Department of Agriculture (USDA) has a history of importing exotic plants for use in lawns, pastures, roadsides, rangeland and other applications. They are usually bred or selected for traits that make them highly productive. This selection, and the fact that they are imported without their natural pests, make them highly competitive in their new environment. Several of these intentional introductions (e.g., tamarisk, Lehmann lovegrass) have invaded native plant communities, resulting in losses of native plant diversity as well as millions of dollars in attempts to control them. In the summer of 2013 a coalition of five western native plant societies (AZ, MT, NV, OR, UT) wrote a letter to the USDA Agricultural Research Service (ARS) protesting the practice of importing exotic plants for rangeland “improvement” (see *Kelsey* Vol. 27, No.1). Since then a lot has happened.

In the spring of 2014, ARS organized a conference call between several of their scientists and administrators and representatives of the five native plant societies to discuss the issue raised by our letter. ARS made the point that these plants are introduced to address serious rangeland health problems. The most recent example is the introduction of forage kochia (*Kochia prostrata*, *Bassia prostrata*) to vegetate burned-over sagebrush steppe invaded by cheatgrass (*Bromus tectorum*). Native plant societies countered by pointing out that there is evidence that forage kochia is invading native rangeland and is considered a threat to the federally-listed slickspot peppergrass (*Lepidium pappiliferum*). In the final analysis, importing exotic plants seems to be a case of trying to solve an immediate problem at the expense of potential adverse impacts further down the road.

Improved rangeland and pasture plants for the western U.S. are developed by the Forage and Range Research Laboratory in Logan, Utah (FRRL). Following the phone conference, the five native plant societies were invited to send a representative to the 2014 meeting of the FRRL Focus Group Executive Committee meeting held in central Washington in mid-October. I attended this meeting and raised the issue of forage kochia being a potential threat to native plant communities. I also suggested that importing exotic species should be discontinued because these plants are always going to be a risky proposition. They do not have their natural enemies and diseases, and there is often a lag time between when exotic plants are introduced and when they become invasive, so results from a short “test period” are not reliable in the long term. I felt that the ARS and BLM people present took these considerations seriously, but a rancher from Dillon, Montana and a seed grower from Logan, UT remained unconvinced. Jack Staub, the FRRL director, stated that they evaluate imported

plants for 7-15 years to determine whether they will escape; however, details of how this research is conducted were not provided. The BLM restorationist present at the meeting stated that agency is no longer seeding forage kochia into rangeland but using it only to create fire-resistant buffer strips.

In follow-up correspondence, ARS scientists indicated that they are working on methods for treating forage kochia with herbicide when it invades native grasslands and sagebrush steppe. They have also started to develop protocols to grow and establish stands of American kochia (*Kochia americana*, *Bassia americana*) that could eventually take the place of the exotic forage kochia. FRRL also plans to hire a plant ecologist to monitor if and when forage kochia escapes into native plant communities. Most hopefully, the director of FRRL informed us that in 2009 they decided to discontinue their collecting trips to Asia, suggesting that there will be no more exotic plants in the near future. The five native plant societies are hopeful that their involvement will raise awareness of the problems with importing exotic plants for restoration.



*Kochia americana*. Photo by Bonnie Heidel, Montana Natural Heritage Program.



*Lepidium pappiliferum*. Photo by Sheri Hagwood, hosted by the USDA-NRCS PLANTS Database



---

# Strawberries : More Interesting than Just Jam

Peter Lesica

Wild strawberries (*Fragaria spp.*, Rose Family) occur across the northern hemisphere and are disjunct in South America. We have two species here in Montana, Virginia strawberry (*Fragaria virginiana*) and woodland strawberry (*F. vesca*). The latter has more distinctly veiny leaves and is less common than the former. Both species occur throughout most of North America. Woodland strawberry is found mainly in forests, but Virginia strawberry occurs in meadows and grasslands as well as forests. Beach strawberry (*F. chiloensis*) a third species found in North America, occurs only in sandy soil along the Pacific coast. Finally, the recently described Cascades strawberry (*F. cascadiensis*) is very similar to the Virginia strawberry, but occurs only in the Cascade Range of western Oregon. The strawberry of commerce (*F. ananassa*) is a hybrid between wild strawberry and beach strawberry. It was originally created and subsequently cultivated in Europe in the 18th century. This same hybrid was discovered growing naturally on the Pacific coast from Alaska to California.

One group of six strawberry species occur in North America and Europe, while a second group of about a dozen species are found in Asia. Despite most species being common and having similar life-history traits, only one species has become naturalized outside of its native range. Woodland strawberry has invaded Hawaii as well as South and Central America.

It seems like wild strawberry is one wildflower that almost everyone knows. Perhaps it's because the plant is so commonly grown in home gardens as well as commercially. Across the globe, domestic strawberry production is twice the amount of all other berry crops combined. In addition to its well-known culinary utility, extracts are used in perfumes and cosmetics, and the stolons have even been used for dental floss. Remember that the next time your oral hygiene is suffering when you're out in the backcountry.

Antoine Duchesne was the first to propose (correctly) that the cultivated strawberry was a hybrid between octoploid species: the Virginia strawberry and beach strawberry. He made this correct proposal in a book he published in 1766 when he was 19 years old.

The fruit of the strawberry plant is an achene, a single seed surrounded by a persistent, thin coat. What we call the strawberry "fruit" is actually a fleshy amalgam of flower tissue and numerous achenes. Flowers of Virginia strawberry can be either hermaphroditic with both fertile styles and stamens in the same flower, or male-sterile or female sterile. Woodland strawberry plants may have hermaphroditic flowers or flowers with sterile



*Fragaria vesca*. Photo by Peter Lesica.



*Fragaria virginiana*. Photo by Peter Lesica.

stamens. Having male-sterile or female-sterile flowers limits the amount of self-fertilization. However, the strawberry of commerce can produce fruit through self-fertilization. All species of strawberry produce stolons, prostrate stems that lie on the ground and form new plants vegetatively.

Humans and most other species of animals are diploid; that is they have two sets of chromosomes, one set from each parent. Plants are different; many species have four, six or more sets of chromosomes. Woodland strawberry has two sets of chromosomes just like we have. However, Virginia strawberry has eight sets, four from each parent. Beach strawberry also has eight sets; that's why it is able to hybridize with Virginia strawberry to form the strawberry of commerce. Woodland strawberry and Virginia strawberry should not be able to hybridize because they have different numbers of chromosome sets. Nonetheless, Cascades strawberry which has ten sets of chromosomes is hypothesized to be derived from these two species. From an applied perspective, the presence of different numbers of chromosome sets among *Fragaria* species has been an impediment to the incorporation of desirable traits from the diploid woodland strawberry into the strawberry of commerce.

Often even the most common plants have interesting stories to tell. That's one of the things that makes botany so much fun. Of course, eating wild strawberries is right up there too!

## References:

Liston, A., R. Cronn and T. Ashman. 2014. *Fragaria: a genus with deep historical roots and ripe for evolutionary and ecological insights*. American Journal of Botany 101: 1686-1699.



more benign relationship evolved over time to be beneficial to one member and detrimental to the other.

Some heathers have evolved a similar dynamic with their mycorrhizal partners. Many fungi in the coniferous forests are already in a mycorrhizal relationship with the conifer trees—the trees supply food in the form of sugars to the fungus, and the super-fine fungal hairs that radiate through the soil breakdown dead organic matter and recycle essential nutrients for the trees. The roots of some Heather family plants—such as pinedrops (*Pterospora andromedea*), pinesap (*Hypopitys monotropa*), and several species of pyrola (especially *Pyrola picta*)—encounter this flow of underground food and nutrients between tree and fungus and enter into the relationship on a third party basis—not as a mutually beneficial member, but as a parasite.



*Pterospora andromedea*.  
Photo by Miguel Vieira, [www.inaturalist.org](http://www.inaturalist.org)

Most readers are familiar with the attractive but enigmatic forest plant known as pinedrops. The plant is unusual in at least two ways. First, it is not green but pink in color. This is because it has abandoned photosynthesis for a less stressful livelihood: it simply intercepts the sugars being transferred between trees and mycorrhizal fungi and absorbs them itself. The other striking aspect of pinedrops is that it has no visible leaves (there are small, scale-like structures on the stalk that are the devolved remnants of leaves)—for why bother with leaves if the plant is not photosynthetic? A second species in our area, pinesap, has adapted to a similar strategy. These plants are known as—brace yourself—mycotrophic epiparasites. Mycotrophic means “fungus feeding,” and the prefix epi means “upon.”

Our pyrola species also engage in this mycotrophic behavior, but they seem to be mildly conflicted about such activities. They are known to be parasitic on below-ground fungi, but they also usually develop green leaves and are photosynthetic and thus produce some of their own food. The species *Pyrola picta* is experimenting with reducing its investment in the leaves by not producing chloroplasts in the veins of the leaf, which are therefore white. In

fact, the common name for this species is whiteveined pyrola. Another iteration, in which a pyrola flower stalk appears out of the ground with no leaves at all, used to be considered a unique species (*Pyrola apylla*) but is now recognized as *P. picta* experimenting with going completely non-photosynthetic. There is an extenuating circumstance for these deep forest plants that should be pointed out: so little sunlight reaches the forest floor that plant species have been forced to seek other means of making a living besides photosynthesis.

Not to be outdone by the machinations of their root systems, the above-ground structures of Heather family plants have their own engineering genius, much of which can be observed by the itinerant naturalist. In alpine laurel (*Kalmia microphylla*), the petals are fused into a shallow 5-lobed bowl. The surface of the bowl is interrupted by ten pocket-like indentations. As the flower bud matures the expanding stamens thrust their pollen-bearing anther heads into these pockets. When the flower is fully open, the anthers are held under spring-like tension until a large-bodied insect (like a bumblebee) triggers the stamen and is showered by pollen. The bee will carry this pollen lode to the next *Kalmia* flower it visits to bring about cross-pollination. Inquisitive humans can also spring the stamens. All of the *Kalmia* species are suspected of being poisonous to livestock and humans, which is certainly an effective defense against herbivory.

The Heather family succeeds by displaying that quintessential quality of living organisms: it continually adapts itself to reality. Taken as a whole, the family adapted over time to living conditions that were uniquely challenging by entering into symbiotic relationships with other organisms, thereby opening up new physical environments to diverse life.



*Kalmia microphylla*. Photo by Susan McDougall, hosted by the USDA-NRCS PLANTS Database.



# UM Herbarium Database Makes Searches Easy

Jim Habeck, professor emeritus, botany and ecology [1960-1992], University of Montana

I want to share a happy, remarkable experience I had utilizing the University of Montana herbarium database. Dr. Joseph E. Kirkwood was hired by UM in 1909 to facilitate the launching of the campus programs for educating foresters; he was the chief organized for the School of Forestry started in 1913. He was a trained field botanist, holding a PhD, and during his years at UM he published many books and papers, including a three part series of what he called "Botanical Explorations" in the northern Rocky Mountains.

Kirkwood's field trips were taken in the mid 1920's and included areas that today are called the "Lolo Trail", the "Selway-Bitterroot Wilderness" and the "Bob Marshall Wilderness." All of these 2-3 week trips were published in "The Scientific Monthly" as lengthy descriptive narratives, with many maps and photos added.

After recently re-reading Kirkwood's report of his travels through much of the upper South Fork of the Flathead River, now included in the Bob Marshall Wilderness, I started an effort to find out exactly what plants Kirkwood collected in August of 1925; I could have examined each sheet in the herbarium, a multi-year task, but with the help of Marilyn Marler, UM herbarium curator, I undertook a search into the UM database of Montana Vascular Plants. I knew only the approximate dates of Kirkwood's collections; and the collection site names were only partially known, based on a route map Kirkwood provided. The names of only a few plant species collected are listed in Kirkwood's published report.

But, starting with his approximate collecting dates, and using J. E. Kirkwood's name in the search routine, I was rewarded with almost 200 listings. Kirkwood collected in 1925, providing each with specific collection site descriptions and locations. These included the remote Big Prairie interior area, major drainages, as well as sites along the Chinese Wall and Continental Divide. To Kirkwood's knowledge these were the first plant collections ever made in the Upper South Fork, but I never would have learned very much more of the floristic details in my 1960's report reading.

Things have really changed! To modern botanists and ecologists, the UM database, which is just one part of a Pacific Northwest network of herbaria databases, has to be viewed as a treasure trove of valuable historical, as well as scientific, information. Try your own search on the UM Herbarium website at [herbarium.dbs.umt.edu/database/Default.aspx](http://herbarium.dbs.umt.edu/database/Default.aspx) —you'll like it!



THE UNIVERSITY OF MONTANA  
HERBARIUM  
University of Montana, Missoula, MT

Tuesday, December 23, 2014

[Click here to search county dot maps](#)

Search for a genus or by first few letters of genus:  
 (eg. Actaea)

Search by habit:  
 (eg. pasture)

Search by county:  
-select a county-

Search by Collector:  
Kirkwood

Search by Locality:

click on results for more specific information

Abies lasiocarpa
Acer glabrum
Acer negundo
Acer negundo var. interius
Achillea lanulosa
Achillea millefolium
Acroclasia tenerima

The University of Montana Herbarium website's database search.

## Read up on Your Lichens

"Montana Lichens: An Annotated List" is now available! This is volume 2 of "Monographs in North American Lichenology."

This book contains the first comprehensive summary of the occurrence, literature references, and ecological context for lichens in any state or province in the Pacific Northwest or northern Rocky Mountains. Because we also include reports from adjoining states and provinces, the book should be useful in a broad area. The monograph will be an invaluable reference for people delving into crustose lichens.

So far, a total of 1074 species are documented from Montana. Of these, 283 species are new for the state and 19 are new to North America. The book discusses the rare, threatened, and endangered lichens of Montana. Priorities for surveys and monitoring are evaluated by placing species in one of eight categories, based on all combinations of global rarity, ease of detection, and habitat vulnerability.

For ordering information, please use the "Store" tab at the new NW Lichenologists website: <http://northwest-lichenologists.wildapricot.org>

## MNPS Chapters & 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. 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.

Your mailing label tells you the following:

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

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. **Moving? Please notify us promptly of address changes at [mtnativeplantmembership@gmail.com](mailto:mtnativeplantmembership@gmail.com).**

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!

## MONTANA NATIVE PLANT SOCIETY MEMBERSHIP

Name (please print) \_\_\_\_\_ E-mail \_\_\_\_\_

Address \_\_\_\_\_ City/State/Zip \_\_\_\_\_

Phone \_\_\_\_\_ Chapter Affiliation (optional) \_\_\_\_\_

Delivery preference \_\_\_\_\_ paper copy by mail \_\_\_\_\_ digital copy by email

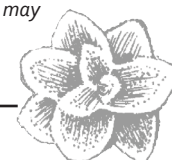
*You will receive membership acknowledgement by email, as well as a pdf of the most recent Kelsey. Future newsletter issues will arrive according to your preference indicated above.*

**JOIN OR RENEW ONLINE at  
[www.mtnativeplants.org](http://www.mtnativeplants.org)**

or by mail at  
 Montana Native Plant Society  
 P.O. Box 8783  
 Missoula, MT 59807-8783

Membership Level	Dues w/affiliation	Dues w/o affiliation
Individual	\$20	\$15
Family	\$25	\$20
Business/Organization	\$40	\$35
Living Lightly	\$15	\$15
Lifetime (one-time pymt)	\$300 per household	-----

*Canadian subscribers please add \$4.00 to cover mailing costs. Additional donations may be specified for a particular project or the general fund.*



# 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 review, 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 typed, saved in Microsoft Word or rich text format (rtf), and sent electronically to: carokurtz@gmail.com or mailed to Kelsey Editor, 645 Beverly Avenue, Missoula, MT, 59801.

Changes of address, inquiries about membership, and general correspondence should be sent to MNPS Membership, 398 Jeffers Road, Ennis, MT 59729. 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.

The deadline for each issue is Fall–September 10; Winter–December 10; Spring–March 10; Field Trip Guide–April 10; Summer–June 10. Please send web items to our webmaster concurrent with these dates.

If you want extra copies of *Kelsey* for friends or family, call the Newsletter Editor or email: carokurtz@gmail.com. No part of this publication may be reprinted without the consent of MNPS. Reprint requests should be directed to the Newsletter Editor.

Visit our website at: [www.mtnativeplants.org](http://www.mtnativeplants.org) or contact our webmaster Bob Person at: [thepersons@mcn.net](mailto:thepersons@mcn.net)

# MNPS Board of Directors

President	Kathy Settevendemie	Bonner	880-8809
Past-President	Dave Hanna	Choteau	466-3661
Vice President	Karen Shelly	Missoula	542-0620
Secretary	Patrick Plantenberg	Townsend	266-5265
Treasurer	Jenny Tollefson	Missoula	381-3331
Newsletter Editor	Caroline Kurtz	Missoula	239-2695
<b>Directors At-Large</b>			
Eastern Montana	Jennifer Lyman	Billings	656-7869
Western Montana	Jon Reny	Libby	334-0459
<b>Chapter Representatives</b>			
Calypso Chapter	Catherine Cain	Glen	498-6198
Clark Fork Chapter	Anne Garde	Missoula	721-7627
	Madeline Mazurski	Missoula	542-0262
Flathead Chapter	Tara Carolin		260-7533
Kelsey Chapter	Kathy Lloyd	Helena	449-6586
Maka Flora Chapter	Libby Knotts	Lambert	774-3778
Valley of Flowers Chapter	Gretchen Rupp	Bozeman	586-8363
<b>Standing Committees</b>			
Conservation	Peter Lesica	Missoula	728-8740
Membership	Cathie Jean	Ennis	599-9614
Landscaping/Reveg	Madeline Mazurski	Missoula	542-0262
	Clare Beelman	Missoula	728-0189
Small Grants	Betty Kuropat	Whitefish	892-0129

Moving? Please let us know at [mtnativeplantmembership@gmail.com](mailto:mtnativeplantmembership@gmail.com)

## Montana Native Plant Society

*Membership Chair*

398 Jeffers Road  
Ennis, MT 59729

© Copyright 2015  
Montana Native Plant Society  
Printed on recycled paper