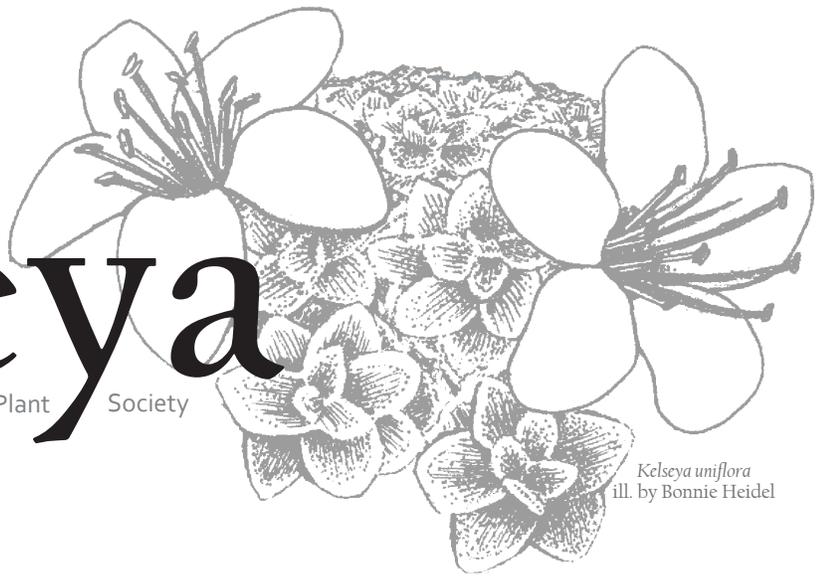


Kelseya

Newsletter of the Montana Native Plant Society



Kelseya uniflora
ill. by Bonnie Heidel

What's in a Name? Pursh and *Purshia*

by Walter Fertig

[This article originally appeared in the September 2009 issue of *Sego Lily*, the newsletter of the Utah Native Plant Society.]

Frederick Pursh sought botanical fame in North America, but due to some unscrupulous deeds, achieved greater infamy instead. Despite publishing one of the first floras to cover North America, he died penniless at the age of 46 with the reputation of a drunkard and a cheat. Perhaps it is no surprise that "bitterbrush" is a common name of the genus named in his honor.

Pursh was born in Saxony in 1774, and was educated in the ways of horticulture and taxonomy at the Royal Botanical Gardens in Dresden. At the age of 25, Pursh emigrated to the United States, where he was employed at several botanical gardens in Baltimore and Philadelphia.

In 1805, Pursh was hired by Benjamin Smith Barton to work as a plant collector and assist with Barton's planned flora of North America. Barton previously had written the first American textbook of botany and was regarded as one of the young republic's leading botanists. President Jefferson had tapped Barton to provide training in botany and medicine to Meriweather Lewis and to describe any new plant species documented by the Corp of Discovery. The elderly Barton's days as a field collector were well past and he hired several capable younger botanists (including Thomas Nuttall) to go into the wilds seeking new plant species. Pursh spent two years exploring eastern North America from South Carolina to New Hampshire and the Great Lakes, collecting hundreds of specimens for his mentor and gaining valuable first-hand experience with the flora.

Meriweather Lewis returned to Philadelphia in 1807 with about 150 botanical specimens in need of

identification and publication. Technically, Barton remained in charge of publishing Lewis' discoveries but his advanced age, poor health and decreasing productivity (Barton's flora never came close to being completed) prompted Lewis to hire Pursh for the task. Pursh was paid \$70 to organize the collection, prepare illustrations and write new species descriptions as part of a planned publication on the scientific findings of the Lewis and Clark expedition.

Unfortunately, this publication was never completed. Lewis committed suicide in the fall of 1809. Barton failed to live up to his obligations to publish the collections of the Lewis and Clark expedition before his own death in 1815. Meanwhile, Pursh continued to work on the collections, but left Barton's employment and eventually returned to England. Pursh ultimately published 94 of Lewis' collections as new species in his 1813 publication *Flora Americanae Septentrionalis* (Latin for "Flora of North America"). Forty of the names Pursh gave to these specimens are still accepted, including three new genera he described: *Lewisia* (bitterroot) and *Clarkia* (clarkia), named for the explorers, and *Calochortus* (literally, "beautiful grass"). Pursh's book included nearly 3,100



Purshia tridentata.
Al Schneider, USDA-NRCS PLANTS
Database

continued, page 6

Chapter Events

Calypso Chapter

The chapter has been busily planning an excellent weekend of botanizing in the Pioneer Mountains for MNPS' Annual Meeting, July 16-18. See page 7 or www.mtnativeplants.org for details and directions.

Clark Fork Chapter

The chapter produced a packed calendar of events for the first half of 2010, including lectures, wildflower walks and weed pulls, a photography excursion, and greenhouse and nursery visits. One event was the series of annual Dyer's woad pulls on Mt. Sentinel. *Isatis tinctoria* is a pernicious weed that has degraded thousands of acres of rangeland in Idaho and Utah. One of the few and oldest infestations in Montana is on Mt. Sentinel above the University of Montana. The MNPS Clark Fork Chapter has been helping Missoula County and UM control the plant by pulling it for the past 18 years. When we started, we pulled thousands of woad plants. This year there were fewer than 100. Go MNPS!

[And you can go to www.mtnativeplants.org to see what Clark Fork activities we inadvertently left out of the spring Kelseya! —Editor]

August 28—Chicago Peak/Cliff Lake Field Trip, 9:00 a.m. Chapter member Peter Lesica will lead a six-mile, moderately strenuous hike in the Cabinet Mountain Wilderness near Noxon in conjunction with the Montana Wilderness Association. One goal is to find native azalea (*Rhododendron albiflorum*)—which has never been found in Sanders County—and some rare, high-elevation clubmosses. The hike will be off-trail around Chicago Peak, and the focus will be on native alpine and sub-alpine plants. Hikers also could decide to climb Chicago Peak and have lunch at Cliff Lake. Chicago Peak Road requires high-clearance, 4x4 vehicles. We will carpool from the highway; trailhead parking is limited. Group size is limited to 8, or groups of 8 each, to comply with wilderness guidelines. Registration is required by August 20. Info: Judy Hutchins at 847-2717, jhutch494@aol.com.

October 14—Discovering the Jewels in the Crown, 7:30 p.m. Hear about the interesting history of botany from Peter Lesica when he presents a century of botany in Glacier National Park. Rm TBA, Gallagher Business Bldg, UM Campus.

Flathead Chapter

June 15-August 24—Volunteer Opportunity at Glacier National Park Nursery, Tuesdays.

Help with seeding, transplanting, weeding and cleaning, or work on a research or

experimental project. Bring a sack lunch, your favorite work gloves and work clothes. Work an hour or stay all day. Meet at the Native Plant Nursery at Glacier National Park. Info: Joyce at 888-7817.

August 7—Piegan Pass Hike, 8:00 a.m. Join botanist Jennifer Hintz for a modestly difficult hike to Piegan Pass in Glacier National Park. This lovely alpine site is included within Montana's first designated Important Plant Area (IPA). The hike will go at a moderate pace to the pass first, followed by botanizing in the alpine area that includes some Montana Species of Concern. We can then botanize on the way down if there is time. This is a relatively long hike (9 miles round trip), so bring a lunch, ample water for the day, sunscreen and extra clothing. Meet at the Super One parking lot in Whitefish, or at 8:30 a.m. at Coffee Traders in Columbia Falls, to car pool. Info: Jennifer at 270-7028, jhintz2004@yahoo.com. Please RSVP; the site is subject to change depending on construction along Going-to-the-Sun Road.

Kelsey Chapter

For information about current chapter activities and events, contact Kathy Lloyd at (406) 449-6586.

Maka Flora Chapter

July 10—Skjermo Lake (ND) Visit, 9:00 a.m. (MDT)/10:00 a.m. (CDT). Join us on an easy hike on state land in northwest North Dakota, where we'll hope to catch western red lillies (*Lilium philadelphicum*) in flower. Bring a sack lunch for a picnic on the prairie; no shade available so bring sun protection. Meet at the Skjermo Lake boat access site. Info: Doug Smith at 483-5431.

August/September, dates TBD—Native Seed Collecting at Medicine Lake National Wildlife Refuge. Help harvest native forb seed for prairie restoration projects. Dates will depend on plant phenology and volunteer interest/availability and can be weekday or weekend. Equipment and training provided. Updates and details will be sent out via email. Info: Scott Williams at 789-2305 or scott_a_williams@fws.gov.

August 15—Brush Lake State Park Clean Up, 10:00 a.m. Come to the chapter's annual gathering at Montana's newest state park. Help pick up litter along the lake shores and have a potluck and BBQ at noon. Maka Flora members will bring canoes and shade canopy; there's a nice swimming beach. Info: Beth Madden at 789-7266

September 11—Sather Lake/Sheep Butte Tour, 9:00 a.m. A Little Missouri Grasslands botanist will lead a tour of some of the unique environments in the Little Missouri badlands. The itinerary will include the area's 60-million-year-old petrified forest and the unique flora environment surrounding badland buttes. Meet at the Sather Dam Campground. Info: Beth Madden at 789-7266 or Jake Powell at 600-5260.



Valley of Flowers Chapter

July 11—Truman Gulch Hike, 10:00 a.m. Matt Lavin and Robyn Klein will lead a tour of this biodiverse hiking trail. To carpool, meet at the MSU Plant Biosciences parking lot at 9:15 a.m., or meet us at Truman Gulch Trailhead. It's about 23 miles (40 minutes) from Bozeman. Go 3.5 miles on Springhill Rd., right 2 miles on Toohey Rd. to end, left on Walker Rd., 3 miles to Forsewell Rd., right about 3 miles.

Welcome New Members

The Montana Native Plant Society welcomes the following new members:

Flathead Chapter: Jenny Cloutier and Edwin F. Prach

Clark Fork Chapter: John and Eleanor Csoka, Susan Kemper, Steven Kloetzel, Tara Macdonald, Andrea Morgan, Alison R. Mynsberger and Craig Odegard

Valley of Flowers Chapter: Doug Broling /Natural Green and Laurina Lyle

Calypso Chapter: Jessie Salix and Susan Kemper

Maka Flora Chapter: Jake Powell and Scott Williams

State At-Large: Michael Pecora, Native Solution Restoration LCC, Lainey Renolds-Keene and John. W. Peterson

Publications & Guides

Free from MNPS Publications:

- MNPS membership brochures
- Plant Collection Guidelines for Teachers brochures
- Echinacea Cultivation Information
- Plants Collected in Montana During the Lewis & Clark Expedition. Please send a SASE to 1270 Lower Sweet Grass Road, Big Timber, MT 59011 to request any of these publications.

Online at www.mtnativeplants.org:

- Guidelines for Selecting Horticultural Plant Material for Montana (voluntary guidelines by MNPS and the Montana Nursery and Landscape Association)
- Lewis & Clark Plants Collected Elsewhere That Occur in Montana, an inclusive list of Lewis & Clark plants found in the state.
- Guide to Missoula and West-Central Montana Landscaping with Native Plants

Flathead, Kelsey and Valley of Flowers chapters also offer inexpensive booklets about gardening with each respective area's native plants.

President's Platform



We think of spring as a time of renewal, and summer becomes a time of getting things done and living it up. With spring so short in Montana (and seemingly constantly interrupted by winter), it's easy to forget about the renewal once summer is here.

Recently I ran across one of my favorite prairie wildflowers, *Castilleja sessiliflora* (downy painted cup). While usually I just would have taken notice and walked on, I decided to stop for a closer look. Up close the flowers are quite spectacular, the shapes and colors simultaneously bold yet subtle. As I stooped just inches away, I suddenly caught a very sweet and distinctive scent and realized it was the paintbrush. While I've looked at this flower many times over the years, I had never noticed its aroma! Maybe I just got the right flower, on the right day, but it was quite a gift.

The paintbrush reminded me how often we get stuck in our habitual ways of seeing and miss what is right in front of us. So this summer, while you're busy living it up, take time to renew your acquaintance with that familiar flower. Give it a fresh look—you might be surprised at what you see (or smell)!

~ Dave Hanna



Election Polls are Still Open (Dehiscent)

By Patrick Plantenberg

Unlike elections that are caducous, the MNPS elections provide ample opportunity (e.g., elections are indeterminate) for members to vote to show their enthusiasm for the new officers and to win a prize for their local Chapter or At-Large organization. Members can vote using hard (indurate) paper ballots that were included in the spring *Kelsey*, or can use their imaginations to create interesting, flower-decorated email ballots. The polls will remain dehiscent until the week before the annual meeting, which is July 16-18, 2010.

The Maka Flora Chapter regained the voting championship again last year. Maybe some clever individual could provide copies of ballots at your next meeting and coerce Chapter members that have forgotten to vote to vote. This slick procedure (adventitious) has netted (reticulate) other Chapters the \$100 prize for the "Chapter with the largest percentage of votes." It may be your only chance to dethrone the Maka Flora Chapter of its 6-out-of-7-year dominance. So, if you're having a meeting or field trip between now and July 15 remember this strategy (or simply send a reminder ballot to all your members).

Exit polls show that a couple of Chapters have ample time and members to collect the prize. Wouldn't it be great if the Calypso Chapter could win the prize on their home turf (probably a *Poa* species)? Surely, they will have another planning meeting before July 15! Hint! Hint!

Election results will be interesting. The Secretary of State has informed the Electoral College to be prepared for the last minute rush (i.e., *Juncus* species). The Electoral College has been approved by the MNPS Board to prepare a PowerPoint presentation analyzing the ballots at the annual meeting. No more flip charts and canvas—a sad day for us all. See you in Birch Creek!

In Memoriam: Clayton Berg

Friend of Native, Cold-Hardy Woody Plants Passes Away

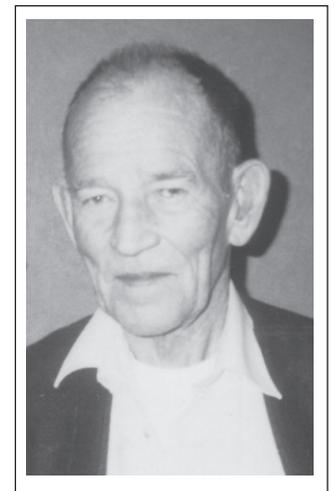
Clayton Berg, the 'Plants Man', died June 17, 2009 from a series of complications surrounding a farming accident at his Valley Nursery in Helena. Clayton was 78 years old at the time of his death and is survived by three children, Ken, Arnold and Lori. Armed with a degree in entomology with minors in botany and horticulture from South Dakota State University, enhanced by a wealth of field experience, Clayton founded and operated Valley Nursery in Helena in the 1960's. He later established satellite operations in Great Falls and research plantings on the Missouri River at Hardy.

Clayton's Valley Nursery is home to the largest collection of cold-hardy woody plants in the northern U.S., with more than 80 native species. Clayton grew and collected native plants from the northern tier, propagated them and introduced several into the trade. Some plants have been patented. Clayton's family is working to preserve the collection and keep the nursery open.

Clayton was a long-time member of the Montana Native Plant Society, and he and Valley Nursery were featured in the first of a series of articles on native plant growers in Montana, in the summer 2006 (Volume 19, No.4) edition of *Kelsey*. The article can be read online at <http://www.mtnativeplants.org/filelib/76.pdf>.

Clayton also was also a long-time member of the Montana Nursery and Landscape Association and was given life member status several years ago. Several MNPS members attended a celebration of his life last October at the nursery. Clayton and his work with Montana's native plants will be missed.

Read a Helena Independent Record article about Clayton and his work, and his obituary, at http://www.helenair.com/news/local/obituaries/article_5d72d2a4-be06-11de-95b3-001cc4c03286.html and http://www.helenair.com/lifestyles/article_4059dc2f-e87e-5fff-9b16-f3681fc81cbc.html.



Clayton Berg.
Photo courtesy Helena IR

[This article originally was intended to appear in last fall's *Kelsey* newsletter. My apologies to the friends and family of Clayton Berg for the delay. —Editor]



News & Notes

International Plant Propagators Society Western Region Event

The 51st Annual Meeting of the International Plant Propagators Society Western Region will be held September 8-11, 2010 at the Lakeway Inn and Convention Center in Bellingham, WA. Western Region IPPS unites commercial propagators, teachers, researchers, extension agents and people working in allied fields for the advancement of the art and science of plant propagation.

This year's conference will showcase a wide range of speakers, native plants, and tours of parks, gardens and nurseries. The program will include a pre-conference tour of the fertile Skagit Valley; two days of Whatcom County tours during the conference; a keynote speech by Dan Hinkley, world renowned plant explorer; a fabulous silent auction; invited papers; expanded Nuggets of Knowledge and New Plant Sessions; and lots of opportunities to network with colleagues.

For complete details about the September conference and tour schedule, plus registration information, go to www.ippswr.org.

Mustard Survey Seeks Help



Would you like to be part of the world's largest scientific research project on an invasive species? The Global Garlic Mustard Field Survey is an international collaboration aimed at obtaining much-needed data on the abundance and distribution of garlic mustard (*Alliaria petiolata*) across its native and introduced ranges. In our first field season last year, we received measurements and seed samples from 65 populations, with a majority from Europe, making it already one of the largest systematic field surveys of an invasive species ever. Our goal for this summer is to sample 150 populations or more, with a stronger emphasis on the southern and mid-west to western United States.

This year, we are hoping to increase participation among educators as well as land managers and 'citizen-scientists' who may not have much formal science training. The survey involves a simple protocol that can be followed directly or incorporated into field courses and nature surveys. A population takes two people about 2 to 4 hours to measure. We also are planning to develop internet-based teaching modules and tools to aid with monitoring and managing this invasive plant. The sampling protocol and contact information is available at the Global Garlic Mustard Field Survey website: www.GarlicMustard.org (note: you do not need to log in to the site to participate). Ideal sampling time is 2 to 4 weeks after flowering finishes, ranging from early June in southern states (e.g., OK, AR, AL, GA, SC) and lower altitudes to mid- to late-July in northern states (e.g., OR, WA, ID, ND, MN, WI, MI, VT, ME), higher altitudes and Canada.

According to the organizers, it seems that garlic mustard is still rare in Montana, although there have been some reports of it in the Missoula area. Montana is a state of particular interest precisely because it is still rare here.

If you are interested in participating or in the status of the survey, contact Dr. Rob Colautti, North American Coordinator, Biology Department, Duke University at rob.colautti@duke.edu.

To See Is To Believe: Virtual Botany Tour

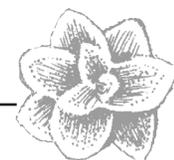
From time to time, MNPS members submit weblinks for interesting virtual botanical field trips. The one below will lead you to Socotra, a chain of four islands off the Horn of Africa in the Indian Ocean. As one site says, "It's like being on a different planet... The island simply blows away any notion about what is considered 'normal' for a landscape on Earth."

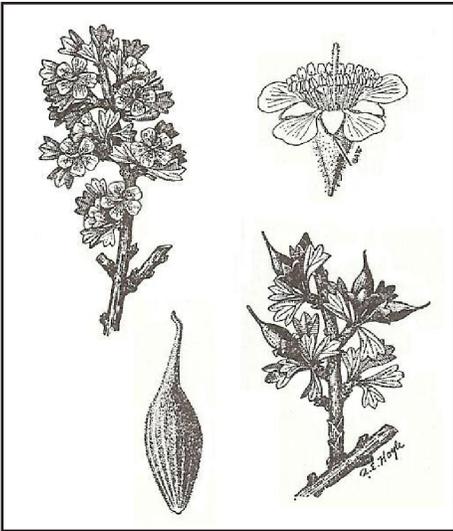
Go to www.slideshare.net/Helga/socotra-island-presentation, or google Socotra Island Exotic Plants, and prepare to be amazed.

New Treasurer Appointed

The board of MNPS welcomes Jenny Tollefson from Missoula, who has agreed to take over the MNPS Treasurer's duties from Marlene Renwyck for the remainder of her term. We are grateful to Marlene for all the time and energy she gave to the office, and wish her and her husband well as they embark on a lifetime-dream backpacking trek through the Rocky Mountains this summer.

Thank you Jenny and Marlene!





Bitterbrush (*Purshia tridentata*).
Illustration by A.E. Hoyle from *Range Plant Handbook* (U.S.D.A., 1937).

species from North America and was well received by the botanical community as the leading flora of its time.

Pursh might be forgiven for absconding to London with the Lewis and Clark material, given that Barton had failed in his publishing responsibilities. Where Pursh got into trouble, however, was in helping himself to collections of undescribed species sent to England for safekeeping by English collectors Thomas Nuttall and John Bradbury. Pursh took the liberty of publishing his own names for their materials, denying both men their rights to name the plants as they saw fit. Nuttall would overcome this slight by publishing his masterpiece, *Genera of North American Plants* in 1818, which supplanted Pursh's flora as the preferred reference for the continent. Bradbury never recovered and abandoned his pursuits in botany altogether. He remained bitter for the rest of his life and his angry correspondence regarding Pursh did much to tarnish the German's reputation.

Pursh returned to North America in 1816 to establish a botanic garden in Montreal and to collect specimens toward a flora of Canada. His specimens were destroyed in a fire and the project was never completed. He died in 1820, having never restored his reputation from that of a botanical charlatan.

One of the Lewis and Clark plants that Pursh described as a new species was *Tigarea tridentata*, a yellow-flowered shrub with three-lobed, wedge-shaped leaves in the rose family, collected by the explorers west of Lewis and Clark Pass in western Montana in 1806. The genus name proved to be illegitimate under the technical rules of nomenclature and was replaced with *Purshia* by de Candolle in 1816. Originally, the concept of *Purshia* was restricted to two shrubby species from western North America with one or two achenes lacking an elongated, feathery style. Recently the genus has been expanded to absorb four species formerly placed in the genus *Cowania*, based on evidence that the genera are capable of hybridization.

Purshia tridentata, the bitterbrush or antelope bitterbrush, is a multi-branched, woody shrub that often grows nearly prostrate to the ground and occurs widely across western North America, from southern Canada to northern Arizona and New Mexico. True to its name, the foliage of the plant is extremely bitter tasting to us but quite palatable to deer, elk and livestock. The stunted habit often is a consequence of heavy browsing, as bitterbrush can become tall and upright where protected or in favorable sandy soils. Bitterbrush also is important ecologically for the nitrogen-fixing bacteria that live in specialized nodules on the plant's roots.

Cliffrose (*Purshia mexicana* var. *stansburyana* or *P. stansburiana*) resembles bitterbrush, but tends to be a taller shrub with one main trunk, five-lobed leaves and creamy white petals. It also differs in having numerous achenes, each tipped at maturity with an elongated, feathery style that helps disperse the fruit. The leaves of cliffrose are frequently coated in a resin-like varnish, which helps impart an unpleasant taste to humans but less so to browsing animals. Southwestern Indian tribes used the bitter leaves to induce vomiting, to make cough syrup, and to wash wounds or treat skin problems. Leave and twigs also were used to make a gold dye, and the shredded bark was valuable as stuffing for pillows and baby beds.

The type locality of *Purshia mexicana* var. *stansburyana* is Stansbury Island in the Great Salt Lake. The plant was



Purshia stansburiana.
Photo courtesy Al Schneider @ USDA-NRCS PLANTS Database



Annual Meeting: Pioneer Plants

collected there by Captain Howard Stansbury in 1850 during his survey of a potential railroad route around the Great Salt Lake. Stansbury was a topographical engineer by training but like many other early explorers in the west, he kept an eye out for unusual plant specimens. His collections are among the earliest to come out of Utah.

Bitterbrush and cliffrose can hybridize when they grow together and the two taxa are thought to have given rise to a third species, *Purshia glandulosa* or desert bitterbrush. This species strongly resembles *P. mexicana* in flower and leaf characters, but has the fruit traits of *P. tridentata*. In Utah, desert bitterbrush is found primarily in the Beaver Dam Mountains west of St. George.

Cliffrose is a popular garden ornamental in the west because of the beauty and sweet aroma of its flowers. Plants are often available from native plant nurseries or can be grown from seed following 30 days of cold stratification. *P. mexicana* thrives in rocky soils and full sun, though in hot climates may do better on a shadier north aspect.

Though less showy, bitterbrush is also used in cultivation. It can be grown from stem cuttings or seed that is cold stratified for 90 days. Plants do best in full sun or light shade on moist, well-drained soils.

Cliffrose is sometimes confused with Apache plume (*Fallugia paradoxa*), another shrubby species in the rose family with enlarged, feathery styles in fruit. Apache plume is distinct in having white flowers and leaves that are densely yellowish-wooly below, rather than whitish-hairy as in *Purshia*. *Fallugia* is also distinctive in having separate male (staminate) and female (pistillate) plants and unisexual flowers (this is the "paradox" of *F. paradoxa*!) Hybrids between Apache plume and cliffrose have been reported in the past from northern Arizona, but the validity of these hybrids recently has been questioned, as they appear to be *P. mexicana* plants with aberrantly developed stamens. Though closely related, the two genera are in no danger of being combined.

References:

Dorn, R.D. and J.L. Dorn. 2007. Growing Native Plants of the Rocky Mountain Area. Mountain West Publ., Cheyenne, WY.

Meyer, S.E., R.K. Kjølgen, D.G. Morrison and W.A. Varga. 2009. Landscaping on the New Frontier. Utah State Univ. Press, Logan, UT.

Phillips, H.W. 2003. Plants of the Lewis and Clark Expedition. Mountain Press Publishing Company, Missoula, MT.

Reveal, J.L. 2003. Frederick Traugott Pursh (1774-1820). <http://lewis-clark.org>

Williams, R.L. 2003. "A Region of Astonishing Beauty": The Botanical Exploration of the Rocky Mountains. Roberts Rinehart Publ., Lanham, MD.

Mark your calendars for the 2010 MNPS Annual Meeting at the Birch Creek Center, Pioneer Mountains, July 16-18. The Calypso Chapter has organized a fabulous weekend of plant exploration in southwestern Montana with a variety of field trips. Bunk style housing is available in the Birch Creek Center facility/cabins, or you can opt for tent or RV camping. Delicious breakfasts and dinners will be available. No food preparation is allowed outside the center's closed kitchen, other than individual lunch preparations. The center will open at 3 p.m. on Friday, July 16, for registration confirmation, bunk assignments, meal tickets, site selection for tents and RV's and field trip sign-up. Friday's campfire will feature Lee Harry discussing the "Columbus Tree" and the impacts of pine bark beetle and spruce budworm on our forests. Saturday evening's program will feature Andrea Sterile and her ethnobotanical work with Montana native plants, and our silent auction—so come prepared to support the Montana Native Plant Society! No pets are allowed at Birch Creek or on any of the hikes. For more details, visit www.mtnativeplants.org. See you there!

Friday July 16

3:00-6:00 Arrive, Register
5:00-6:00 Social hour, field trip, sign-up
6:00-7:00 Dinner
7:00-8:00 Board of Directors meeting, Grass ropes game
8:00-9:00 Campfire talk

Saturday July 17

7:00-8:00 Breakfast
8:30-4:30 Field trips
4:00-6:00 Annual Wayne Phillips plant ID contest, Botany card games
6:00-7:00 Dinner, Silent auction
7:00-8:00 Membership meeting
8:00-9:00 Evening Presentation

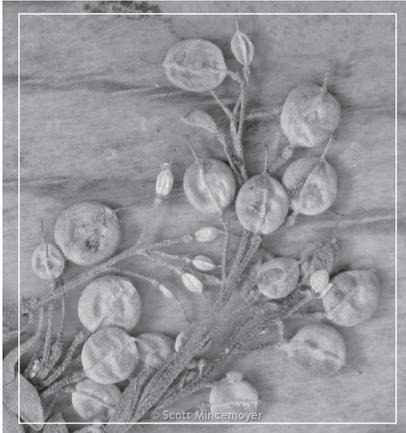
Sunday July 18

7:00-8:00 Breakfast
8:00-9:00 Committee Meetings
9:00-11:00 Break camp, clean up, farewells, field trips depart



Bladderpod: A Study in Diversity

by Patrick Cross



Beautiful Bladderpod (*P. pulchella*)
Photo courtesy Scott Mincemoyer,
<http://fieldguide.mt.gov>

Of all the vascular plants endemic to Montana, no genus is as diverse as *Physaria* in the Mustard (Brassicaceae) Family. Seven identified species of the genus can be found in Montana and no where else in the world, separated from each other on mountain islands surrounded by valley seas. Perhaps over a timeframe that is difficult for humans to grasp an ancestral species of these modern bladderpods covered a far greater range in the state, but became restricted to montane and alpine habitats during gradual climate change. The resulting isolation may have driven archipelago speciation. *Physaria* species also can be cross-pollinated by insects, so perhaps some far-ranging bugs occasionally passed from one mountain range to another, mixing just enough genes during their floral pit-stops to start a new species on its course.⁽¹⁾ Or maybe, like its Brassica cousin, *Draba*, which reproduces seeds asexually, a new form of *Physaria* could clone itself vegetatively in its isolated condition.⁽²⁾ What is certain is that most of the existing *Physaria* populations are small, and this vulnerability, combined with natural cycles, human and animal disturbance, and noxious weed invasions, now threatens members of this native flora with global extinction.

In 2002, *Physaria* was united with *Lesquerella* — a more recently defined, though more species-rich, genus — following molecular analysis of the evolutionary history of the two groups. Though previously separated because of differences between their fruits, *Lesquerella* and *Physaria* are indistinguishable in most other morphological aspects. They also share a similar geographic range and occupy similar habitats.⁽³⁾ And through modern molecular analysis, two new endemic species were identified as recently as 2007.⁽⁴⁾

Montana bladderpods all have small, yellow flowers that usually begin blooming in June. Like other flowers in the Mustard Family, these have four petals and four sepals. *Physaria* species also have six stamens, four long and two short, and usually have solitary inflorescences at the end of a stem. Bitterroot bladderpod (*P. humilis*), with three to five flowers per inflorescence, is the exception. All the species are perennial, have unbranched stems that are either prostrate or ascending, feature entire-margined basal leaves and smaller, alternate stem leaves, and arise from a taproot with a usually unbranched root crown—except for beautiful bladderpod (*P. pulchella*), which has a branched root crown. Most bladderpods prefer sparsely-vegetated slopes and some prefer certain soil types, possibly indicating that they would rather deal with disturbance from soil erosion than competition from other plants.

The best way to distinguish these species is by examining their basal leaves, fruits (distinct siliques of the Mustard Family), and by knowing the Montana county they come from as all but the Divide bladderpod (*P. klausii*) are restricted to a single county.

Garnet Bladderpod (*P. carinata* var. *languida*)

The Garnet bladderpod is only known in three sites in the Garnet Mountains, along tributaries of the Clark Fork River in Granite County. Its basal leaves are a broad spoon-shape on a slender petiole and covered in dense, silvery, star-shaped hairs. Its silique is narrowly elliptic and flattened, has a keel on each face, and a four to five millimeter style at the tip. Even though it found its niche in the Garnets on dry, rocky slopes, an invasive newcomer—spotted knapweed—is rapidly taking over. Since the Garnet bladderpod was first identified in the late 1980s, its numbers have significantly decreased while knapweed densities have increased, becoming the dominant plant on most of the bladderpod sites. Like other native flora, the bladderpod just cannot compete with the invader.



Bitterroot Bladderpod (*P. humilis*)

The Bitterroot bladderpod exists in four sites within the Selway-Bitterroot Wilderness in the Bitterroot Mountains of Ravalli County. Its basal leaves are ovate to elliptic, on a long, narrow petiole, and covered in dense, silvery, branched hairs. Its silique is only three to four millimeters long and is wider than long. Because this species has only been found in a federally protected wilderness, threats to this bladderpod are low but impacts from unofficial hiking trails, including some that lead to the lookout on Saint Mary Peak, might end up threatening this species.

Beautiful Bladderpod (*P. pulchella*)

The beautiful bladderpod can be found in 14 sites in the Centennial and Pioneer Mountains of Beaverhead County. Its basal leaves are elliptic on a short petiole and

are covered in branched hairs. Its silique is broadly elliptic, flat, has a keel on both sides, but lacks a style. This more abundant bladderpod's range in southwestern Montana corresponds to an area with a long history of agricultural activity, so the plant can coexist with humans and might possibly benefit from human-caused disturbance that eliminates competing plants. However, like the closely related Garnet bladderpod, this species might not be able to coexist with exotics like knapweed.

Lesica's Bladderpod (*P. lesicii*)

Lesica's or Pryor Mountain bladderpod is known in three sites in the Pryor Mountain National Wild Horse Range in Carbon County. Because of its small numbers, the plant is ranked at the highest level of threat of global extinction by the Montana Natural Heritage Program, as are Garnet bladderpod and Bitterroot bladderpod. Lesica's bladderpod has basal leaves that are short, spade-shaped on one to three centimeter-long petioles, longer than the leaves, and sparsely covered with star-shaped hairs. The silique is globose, has a short style on the top and is found on the tip of a reflexed stalk. Though its native range in the desert Pryors is mostly inaccessible to humans, it is frequented by non-native wild horses. Up to 20 percent of this bladderpod's habitat on steep slopes has been destroyed by horse trails terracing across the hillsides. The plant is unable to grow on the trampled paths, according to a study by Peter Lesica, who first described the plant in the mid-1990s. While the study said this species is in no immediate danger of extinction, the negative impact of the wild horses is undeniable.⁽⁵⁾

Thick-Leaf Bladderpod (*P. pachyphylla*)

One of the most recently described members of the genus, *P. pachyphylla* is another plant unique to the Pryor Mountains in Carbon County. With many identifying features very similar to those of *P. lesicii*, *P. pachyphylla* has curved-ascending fruiting pedicels, unlike *P. lesicii*'s that recurve into an arc. Its basal leaves are almost one millimeter thick and somewhat cupped, more robust than those of *P. lesicii*. The thick-leaf bladderpod also occurs at lower elevations than Lesica's bladderpod, and has only been found in pinkish or reddish soils derived from limestone and diatomaceous earth.

Sheep Mountain Bladderpod (*P. eriocarpa*)

Sheep Mountain bladderpod, another new species, was identified from a population that only has been found on the summit of that mountain and a ridgeline

connecting it to Black Lion Mountain in the Pioneer Range of Beaverhead County. The narrowly obovate to suborbicular basal leaves that abruptly narrow to the petiole of this plant are slightly different from the elliptic leaves of *P. pulchella*, also found in the Pioneers. It also has long trichomes on mature fruits, giving them a shaggy appearance, and those silicles are not compressed like those of *P. pulchella*.⁽⁴⁾

Divide Bladderpod (*P. klausii*)

The Divide or Rogers Pass bladderpod, in nearly 40 sites, is the most widely distributed endemic *Physaria* species in the state, ranging across central Montana from the Big Belt Mountains up to the Rocky Mountain Front. Its basal leaves are very similar to the Garnet bladderpod, but have a longer petiole. Its siliques are thick, heart-shaped, wider than long and densely hairy. Though abundant when compared to other bladderpods, its small populations and declining habitat keep it as a species of special concern in the state.⁽⁵⁾

The ranges of other, more widely distributed members of the genus overlap with some of these rarer species, while other endemics in neighboring Idaho and Wyoming, as well as plants that straddle the borders between Montana and those states, have also been identified.⁽⁴⁾⁽⁵⁾

Literature cited

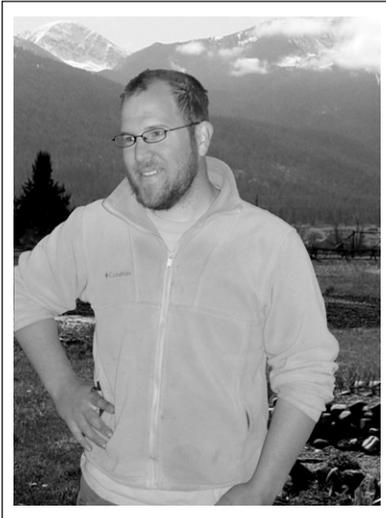
- (1) Dierig, D. & D. T. Ray, 2009. New crops breeding: Lesquerella. Oil Crops: Handbook of Plant Breeding 4 (USDA) 507-516.
- (2) Lesica, Peter, 2010. Phone interview on June 16, 2010
- (3) Al-Shehbaz, I. A. & S. L. O'Kane, Jr., 2002. *Lesquerella* is united with *Physaria* (*brassicaceae*). *Novon* 12: 319-329.
- (4) Grady, B. R. & S. L. O'Kane, Jr., 2007. New species and combinations in *Physaria* (*brassicaceae*) from Western North America. *Novon* 17: 182-192.
- (5) Montana Natural Heritage Program, 2010. Montana Field Guide. <http://FieldGuide.mt.gov/displaySpecies.aspx?family=Brassicaceae>

Patrick Cross, originally from Billings and a University of Montana graduate, is a newspaper reporter at the Big Timber Pioneer in Big Timber, Montana.



Native Ideals Seed Company: Bryce Christiaens and Rebecca Shoemaker

by Sheila Morrison



Bryce Christiaens of Native Ideals

Masses of white cut-leaf daisies, rows of electric blue waxy-leaf penstemons, and spikes of purple lupines make a colorful show at Native Ideals native plant nursery. But these are not even the crop. The crop comes after all the bright petals have fallen and the flower stems are brown and brittle. Bryce Christiaens and Rebecca Shoemaker are growing seeds so that others can enjoy their own native plants without anyone overharvesting in the wild. Part of their inspiration came from seeing seed catalogs advertising native, wild-collected seed sold in 10 pound bags. They wondered what that was doing to the wild populations and decided that growing seeds would be a better alternative.

Being raised on a ranch near Valier, MT gave Bryce a broad range of experience for this ambitious venture. He also had worked on weed programs for Marilyn Marler in Missoula, and as the Weed Coordinator in Ravalli County, learning firsthand about the menaces to native plant populations. Maybe even his philosophy degree from the University of Montana helped give him a grander vision.

In 2007, he and his wife, Rebecca Shoemaker, found a spot in the Jocko Valley near the south fork of the Jocko River and McCleod Peak. Here they started their business, with Rebecca's botany and wildlife degrees rounding out their education and experience. During the week, she also works for the Grizzly Bear Recovery Office at the University of Montana.

The plan of Native Ideals is to supply "genetically appropriate and genetically diverse" native seeds to wholesale and retail customers. Bryce is careful with his collection of wild seeds as a base for his growing. To be "genetically appropriate," he notes the locale of the parent populations, which include Montana, Idaho, British Columbia and Alberta. To keep his seed "genetically diverse," he makes sure his seed sources includes many different plants. He keeps a record of more than a dozen facts on each collection, including date and site of collection with GPS coordinates and site descriptions.

Harvesting seeds from such a variety of plants has led Bryce to develop ingenious methods and tools. He has modified one pruning tool to speed up *Clarkia* seed collection, and resorts to a shop vac to collect cut-leaf daisy seed.

After only three years, Bryce and Rebecca already have more than a dozen species ready for sale. Many more will be available next year, and the goal is large quantities of 30 to 40 species in the future. Seeds for retail are packaged in charming little vials with a cork plug. Again, Bryce has been creative with his tools, using a reloader's gunpowder measure to fill the vials accurately. He and Rebecca sell seeds at the Clark Fork Market in Missoula on Saturdays, and also supply seeds to Catherine Cain in southwest Montana and Terry Divoky in the Flathead for sale in their areas. In Missoula, three businesses sell Native Ideals seeds: Caras Nursery, The Good Food Store and Greenway. Sam's Spade carries them in Hamilton.

For a complete list of seeds available and more information about Bryce and Rebecca's project, go to www.nativeideals.com. Native Ideals is easy to find at 31046 Jocko Road, a main road out of Arlee, MT.

They welcome visitors—especially those interested in learning about native plants and pulling weeds!

Seeds currently available:

<i>Achillea millefolium</i>	Western yarrow
<i>Allium cernuum</i>	Nodding onion
<i>Clarkia pulchella</i>	Deerhorn clarkia
<i>Erigeron compositus</i>	Cut-leaf daisy
<i>Fritillaria pudica</i>	Yellowbells
<i>Heterotheca villosa</i>	Hairy false goldenaster
<i>Ipomopsis aggregata</i>	Scarlet gilia
<i>Monarda fistulosa</i>	Wild bergamot
<i>Oenothera caespitosa</i>	Gumbo evening primrose
<i>Penstemon eriantherus</i>	Fuzzy-tongue penstemon
<i>Penstemon nitidus</i>	Waxy-leaf penstemon
<i>Penstemon procerus</i>	Small-flower penstemon



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