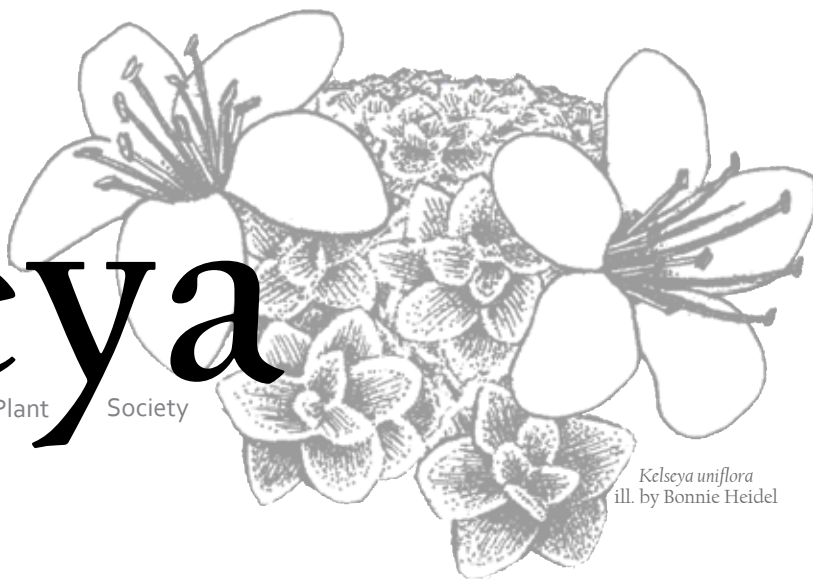


Kelseya

Newsletter of the Montana Native Plant Society



Kelseya uniflora
ill. by Bonnie Heidel

Dendroctonus the Destroyer

How pine beetles are changing the face of North American forests

By Diana L. Six

[This article first appeared under a different headline in the Fall 2010 issue of *Montana Naturalist*. —Editor]

Scientific names often describe important features of the organisms to which they are attached. The mountain pine beetle, for example: its genus name, *Dendroctonus*, is formed from Dendro—meaning tree—and tonus—meaning destroyer. Judging from the beetle's effects on many western forests these days, the name seems particularly apt. It's species name, *ponderosae*, indicates that this beetle is found in ponderosa pine; however, while it often kills substantial numbers of this tree, pine beetles prefer lodgepole pine—and it is in lodgepole that pine beetles develop their largest, most spectacular outbreaks.

The mountain pine beetle is native to western North America and sporadically develops outbreaks that lead to vast expanses of trees killed. These beetles are a natural disturbance agent that, like fire, act to regenerate forests and to maintain the structure and resilience of our dynamic forest ecosystems. However, the current west-wide outbreak is different in many ways from those that have occurred in the past, indicating that the role this insect plays in our forests may be changing. First, the current outbreak is bigger by an order of magnitude—ten times larger—than any recorded beetle outbreak in the past. It is estimated to have affected over 22 million acres and is still increasing. In fact, 80% of the mature lodgepole pine in British Columbia is predicted to be pine beetle-killed by 2013 (and, in fact, much of those forests are already dead). Second, due to a warming climate, the beetle is expanding its range. The insect now has moved hundreds of kilometers farther north, infesting trees in

areas where previously it was too cold for the bugs to survive. They also have jumped the northern divide and now are moving across Alberta, where they are attacking jack pine, a species new to the beetle. One fear is that pine beetles may move across the continent in jack pine and then begin to infest eastern forests.

Warming temperatures also have allowed pine beetles to move higher in elevation, where they are devastating whitebark pine at treeline. While lodgepole pine is expected to regenerate well after beetle populations decline, whitebark pine is not expected to recover in many places. The loss of this keystone species has serious implications for snow pack retention, wildlife and fisheries, and indeed, the function and structure of our entire western subalpine ecosystem.



Pine beetle on an infested tree.
Ron Long, Simon Fraser University, bugwood.org

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Chapter Events

Calypso Chapter

A great thing-to-do when you're in the Calypso Chapter's area is one of the summertime weekly walks offered at Lewis & Clark Caverns. Park naturalist Tom Forwood is a very accommodating bat, bird and plant enthusiast. If you're traveling along I-90 between Butte and Bozeman next summer, exit at Cardwell for a short drive along the beautiful Jefferson River until you reach the state park entrance. The Caverns are a site in themselves! But do schedule your visit for a Saturday if you'd like to take in one of Forwood's nature walks, which typically meet in the lower visitor center parking lot at 9:00 a.m. There is no state park fee for Montana residents and Tom's hikes are free, but admission is charged for the Caverns tour.

On September 18, chapter member Linda Lyon gave a workshop in Virginia City on Native Medicinal Plants as part of the Montana Heritage Commission's monthly heritage education program. She will repeat her talk in October (see below).

On September 22 chapter member Catherine Cain, of Southwest Montana Native Landscapes, led a workshop at the Kalsta Ranch near Glen, MT on "Riparian Communities on the Big Hole River and Learning to Identify the Trees and Shrubs."

October 16—Native Medicinal Plants, 1:00-3:00 p.m. Linda Lyon, associate professor of environmental sciences at UM/Western, leads a journey into the healing uses of plants by Native Americans. Dr. Lyon currently is studying with the Southwest School for Botanical Medicine to complete their herbal Material Medica program. The talk will be held at Montana Tech in Butte, Science Building., Room 101.

December 11—Annual Christmas Brunch. Our holiday gathering will be at Catherine and Bill Cain's home in Glen from 11:00 a.m.-2:00 p.m. Bring a dish and join us for some good cheer and to help plan for 2011. Info: 498-6198.

Clark Fork Chapter

October 14—Celebrate Glacier National Park's 100th Birthday, 7:30 p.m. Hear about the Park's interesting botanical history from Peter Lesica as he presents "Discovering the Jewels in the Crown: A Century of Botany in Glacier National Park." Rm Log, Gallagher Business Bldg, UM Campus.

November 11 — Conservation of Madagascar's Orchids, 7:30 p.m. Plant conservation is done in botanical gardens as well as in the field. Missoula's own Brenda Oviad of Botanica will tell us about her efforts.



Rm Log, Gallagher Business Bldg, UM Campus.

December 9—Annual Christmas Potluck, 6:30 p.m. Our holiday gathering will again be held in the Del Brown Room, Turner Hall, UM Campus on the northwest side of the Oval. Parking (hopefully) will be available west of the Gallagher Bldg. in lots, or on the streets off Arthur and Connell. A map will be emailed in early December. Bring plates, utensils and a dish to share. Alcoholic beverages are okay! Don't forget to bring a few of your favorite slides or digital pictures from the summer. Info: Peter at 728-8740 or Kelly at 258-5439.

January 10, 2011—Home Is Where You Make It: Woodpeckers and Giant Columnar Cacti, 7:30 p.m. Warm up by taking a trip to the Sonoran Desert with ornithologist Paul Hendricks as he presents this talk about southwestern woodpeckers. This is a joint meeting with Montana Audubon. Note different day and location: Rm 123, Gallagher Business Bldg, UM Campus.

Flathead Chapter

Monthly meetings are the 3rd Wednesday of the month in October, November, and January through April at Discovery Square, 540 Nucleus Ave. in Columbia Falls (the old First Citizen's Bank). Programs start at 7:00 p.m. unless otherwise noted. We encourage members to attend the 5:30 general meetings beforehand to discuss chapter business and plan activities. Feel free to bring your supper.

October 20—Potluck Dinner, 5:30 p.m. We'll be sharing adventures from the summer and planning events for the coming year. With no program, this evening gives us more time for socializing. Bring dishes, utensils and some food to share.

November 17—Botanical Expeditions in Glacier National Park: 1909 and 1910, 7:00 p.m. Join Marcus Jones, noted western botanist, and Morton Elrod, founder of Flathead Lake Biological Station, on two early journeys through the Park. Rachel Potter will be our guide, using their written accounts, historic and modern photos and, of course, lots of wildflower pictures.

December 16—Christmas Party, 5:30. Start with visiting and refreshments, followed by a potluck dinner at 6:30. The gathering will be at Edd and Betty Kuropat's house, 2688 Witty Lane, Columbia Falls. Bring a potluck dish, beverages and an inexpensive or recycled gift. We hope to see you there! Info: Betty at 892-0129 or watch email for directions.

Kelsey Chapter

For information about upcoming Chapter events, call Kathy Lloyd at 449-6586.

Maka Flora Chapter

The Maka Flora Chapter will host next year's Annual Meeting June 17-19, 2011 at Camp Needmore near Ekalaka in the Custer National Forest.

For information about upcoming Chapter events, call Beth Madden at 789-7266.

Valley of Flowers Chapter

For information about upcoming Chapter events, call Joanne Jennings at 586-9585



A Walk in the Cabinets

by Anne Garde

Saturday, August 28, eight of us met near Noxon for a walk to Chicago Peak in the Cabinet Mountain Wilderness. Judy Hutchins organized the trip and Peter Lesica was our fearless leader and plant identifier. They, plus Wilderness Ranger Carrie, Petra, Randy, Kitty, Jenn and I, set off in sturdy trucks up several miles of challenging switchbacks to the trailhead. We enjoyed a pleasant walk alongside Chicago Peak to Cliff Lake. We saw lots of *Carex* and rushes and Pete knew them all—Carrie began a list for the Forest Service. And while the flowers were mostly in fruit, we did get to see the bright pink of *Spiraea densiflora*, the yellow of *Arnica latifolia* and *Senecio triangularis*. *Parnassia fimbriata* was another treat, still blooming quite profusely. It was a cloudy day but we all had fun, and the rain and hail held off until we were nearly back at the vehicles!

Welcome New Members

The Montana Native Plant Society welcomes the following new members:

Calypso Chapter: Dean Deneal and Steven F. McGrath

Clark Fork Chapter: Joan Finger, John Fothergill, Winston Milonski, Dean Pearson and Janet Simms

Valley of Flowers Chapter: Loren Barber, Donna Coles, Dick and Sylvia Davis and Marlene Saccoccia

State At-Large: Hope DeWitt, Linda McMullen, Linda Streett Todd and Bill Roney

President's Platform



What a beautiful summer we had! The El Niño conditions that brought us dismally low snowpack last winter and fears of forest fires made a rapid shift to La Niña this summer. So instead of a dry, smoky summer we had a cool, pleasant summer. While nearly all the U.S. baked with above average temperatures, only the Pacific Northwest states of Washington, Oregon, Idaho and Montana had below average temperatures. The phenology of many of our native plants was delayed compared to recent years, giving us extended opportunities to enjoy our favorite wildflowers. Even in early September, when I visited the Upper Missouri River Breaks, the prairie was still green and the sweet clover along the river was more than head high! The abundant Woodhouse's toads and orb-weaver spiders were still enjoying the season as well.

As we shift to fall, I'm enjoying the gentians on the prairie, the sunflowers along the roads, the chokecherries along the streams and looking forward to the fall colors that will soon be here. La Niña is expected to persist for the next several months and could provide us with a wetter than average winter. After last winter, that would be a welcome change. Time will tell...

~ Dave Hanna



2010 Annual Meeting Wrap-up

Highlights from the Pioneers

by Linda Lyon & Catherine Cain

Great hiking weather and a splendid wildflower display were the big highlights of the MNPS Annual Meeting in the Pioneer Mountains near Dillon. Lee Harry's "Columbus Tree" bark beetle presentation also was highly interesting, especially in light of the current state of western forests. Everyone had a fun time with Calypso chapter member Tom Elpel's grass rope tug-o-war, in which we braided a rope from fresh grass and tested its strength. Tom runs the Hollowtop Outdoor Primitive School and has some wonderful plant identification learning materials for sale through his web site, www.hollowtop.com (click on the icon for "Granny's Country Store." See also Book Notes in this issue.)

The Calypso Chapter meeting organizers want to thank everyone who attended and/or volunteered for the MNPS Annual Meeting at Birch Creek this summer. A great time was had by all and we look forward to next year's meeting hosted by the Maka Flora Chapter in Ekalaka. Thanks very much!



Eritrichium nanum. Photo by David Hanna.

A sampling of the outstanding wildflowers sighted during the MNPS Annual Meeting.



Distinguished Servant Valley of Flowers' Joanne Jennings



Joanne Jennings was presented with MNPS' Distinguished Service Award at the Annual Meeting. Her friend Anne Banks contributed these remarks:

Joanne was present at the creation—she was a founding member of the Valley of Flowers Chapter of MNPS. She has served in many ways since then, but most importantly she has been the glue that has held the chapter together in recent years. She has served repeatedly as chapter president and representative to the state board, agreeing to take on the tasks again and again as other members were unwilling. She's effective at getting other people to participate, but she hasn't been a passive president: she has worked at getting speakers for our meetings, lined up leaders for field trips, made sure information about our meetings and other activities reached members and the public, helped to organize the annual meetings hosted by the Valley of the Flowers chapter, participated in countless weed pulls, trail work, cleanup Bozeman days and similar events. And Joanne always shows up! She was even out there with others last night, spreading mulch in the new pollinator garden designed by Linda Lyon in one of our local parks. Well done, Joanne!



Townsendia montana. Photo by Peter Lesica



Taking a break and enjoying the view on the Lion Mountain hike. Photo by Peter Lesica.



Kelsey Chapter Wins MNPS Election Prize

by Patrick Plantenberg

MNPS continues to have the most interesting election results of any professional society in Montana! The 2010 MNPS election results were reported in a PowerPoint presentation at the MNPS Annual Meeting on July 17. No more hand-drawn flip charts and canvas with election statistics! The officers that were (re) elected almost unanimously were Karen Shelly, Vice President; Patrick Plantenberg, Secretary; and H. Wayne Phillips, Eastern-At-Large representative.

The Kelsey Chapter won the \$100 prize as the chapter with the highest percentage of votes, beating the home team Calypso Chapter. The Maka Flora Chapter, winner in six of the last eight years, came in second. The Calypso Chapter, the 2008 winner, finished a distant fourth. Congratulations to the Kelsey Chapter on being the first large-membership Chapter to win the prize! Some other highlights of my analysis:

- Overall membership in MNPS was down 4% from 2009, dropping from 727 to 698 members and down from the record high 833 members in 2008;
- The number of voters was slightly down in 2010, with only 111 of the members voting compared to 115 in 2009. Voters east of the divide beat western voters by the largest margin ever, 25% to 8%. The west-of-the-divide voters have never won this competition. Helena was the city with the most votes (20) again in 2010;
- One out-of-state member, Teresa Schrum from Georgia, was the first member to vote in 2010 -- again! Lowell Anderson from Helena was the last member to vote in the 2009 elections, sending in his ballot on May 11, 2010! Better late than never.

Much to the chagrin of the MNPS Elections and Public Perception Committee, MNPS members used plant stamps less than patriotic stamps for the first time since 2004. Interestingly, the number of e-mail ballots decreased from 37% in 2009 to 15% in 2010. The MNPS Electoral College thanks MNPS members for their excellent turnout in 2010. See you at the polls in 2011!



What's behind it?

Most of the time, mountain pine beetles are present in our pine forests in very low numbers. So what happens that allows populations to expand into an outbreak? Some observers believe that appropriate stand conditions alone (particularly, pure stands of mature lodgepole pine) can cause an outbreak, but this is not true. Outbreaks require a trigger, and triggers for the mountain pine beetle include warm temperatures and drought. Each greatly influences the speed at which beetle populations grow, and the rate and amount of tree mortality that occurs in an area. Warm temperatures act as a trigger because they better support the growth and survival of the insect, allowing populations to build to the point where beetles can overwhelm even healthy, resistant trees. Drought acts by stressing trees and reducing their ability to defend themselves against attack. It takes fewer beetles to kill trees with low defenses. The double whammy of better beetle productivity and fewer beetles required to overwhelm a tree's defenses can quickly lead to outbreak populations of beetles. Most past outbreaks have occurred during pulses of warm temperatures combined with drought, and the end of these outbreaks usually has coincided with a return of cooler, wetter conditions. This "control" of outbreaks by the return of environmental conditions unfavorable to beetles meant that outbreaks usually declined before all mature pines in an area were killed. However, with long-term climate change, chronic warm, dry periods mean we cannot rely on a return to "normal" conditions to contain the beetles.

Life and death

Despite their small size (about like a grain of rice) and a healthy tree's ability to fight back with resin and other substances, mountain pine beetles overcome trees through a coordinated mass attack initiated and controlled by chemical signals. A beetle chooses a tree and bores in. As she bores (it's always a female that starts the attack), she releases an attractant pheromone that will draw in any nearby mountain pine beetle, male or female. Responding beetles add to the call by releasing more pheromone. If these initial attackers can attract sufficient help, the tree's defenses are overwhelmed and it reaches a "point of no return" from which it cannot recover. At this point, the beetles switch to releasing a repellent pheromone that tells any new arrivals to go away, the tree is full. This allows beetles to avoid overcrowding that would result in the starvation of their offspring.

Yet even after a tree is overwhelmed, beetles still face big challenges. One the biggest is that their food source—wood—is very poor nutritionally. Beetle larvae feed in the phloem layer just under the bark. Phloem is mostly indigestible cellulose and contains only low amounts of nitrogen and other nutrients

that beetles need. To overcome this problem, beetles carry nutritional supplements in the form of fungi. These fungi are carried in little pockets, called mycangia, in the exoskeleton of attacking adult beetles. As beetles tunnel under bark to lay eggs, their fungi are released and begin to grow in the phloem and sapwood of the tree. Larvae feed on the fungi as well as the phloem. This supports their survival and growth by increasing nitrogen and probably other nutrients in their diet. The fungi also support adult reproduction, most likely through providing the sterols beetles need to produce cell membranes and hormones.

So called blue-stain fungi is obvious in a beetle-infested tree when the bark is peeled off. The blue color of the wood in infested trees is due to melanin (the same compound responsible for the color in human skin) in the cell walls of the fungi. The fungi do not reduce the structural integrity of wood, but the color can downgrade the wood at the mill, decreasing the financial value of logs from beetle-affected trees. Some innovative woodworkers, however, have begun to make specialty products, such as furniture and bowls, out of the blue-stained wood, capitalizing on the beauty of what is now called "denim pine."

Mountain pine beetles are considered one of the most difficult of all insects to manage in a forest. This is not surprising. The beetle has an amazingly complex biology and is a rapid and strong responder to changes in environmental conditions. Under outbreak conditions, across large areas of forests, there often is little that can be done to reduce the mortality of trees. For homeowners, there are some measures that can be taken. The removal of infested trees is paramount to reducing spread. High-value living pines can be treated with either pesticides or repellent pheromones to help them stave off infestation. And, coordinating across a neighborhood also is also important as beetles do not respect property lines!

Diana Six is a professor of forest entomology at the University of Montana. Her research on insects and forest ecology spans from the United States to South Africa, Mexico and Canada.



Distinctive blue-stain coloration in a beetle-killed tree. Photo by Jim streeter



News & Notes

Northern Rockies Invasive Plant Council Biennial Meeting

MNPS is helping to sponsor the second meeting of the Northern Rockies Invasive Plant Council October 25-29 in Coeur d'Alene, Idaho. Please join us for discussions on biocontrol, re-vegetation after weed management, project monitoring, human dimensions of invasive plant management in natural areas, ecology of invasions and more. Keynote speakers will be Richard Mack, professor of ecology at Washington State University, on "Naturalization of ornamental bamboos in montane forests in the western U.S.: the potential for multiple environmental hazards," and Bernd Blossy, assistant professor of natural resources at Cornell University, on "Invasive plant management: pride, prejudice and revenge effects."

The Mission of the Northern Rockies Invasive Plant Council (NRIPC) is to support the management of invasive exotic plants in the Northern Rocky Mountain states by providing a forum for the exchange of scientific, educational and technical information. Researchers, practitioners, managers, activists and students from the U.S. and abroad will be attending and contributing. Complete information is available at www.nripc.org.

Whitebark Pine May Receive ESA Status

On July 20, the U.S. Fish and Wildlife Service announced a 90-day finding on a petition to list whitebark pine (*Pinus albicaulis*) as endangered or threatened and to designate critical habitat. The Service found that the petition presents substantial scientific or commercial information indicating that listing whitebark pine may be warranted. Therefore the Service is initiating a review of the status of the species, and requests scientific and commercial data and other information regarding the species. Based on the status review a 12-month finding will be made on the petition addressing whether the petitioned action is warranted.



K.D. Swan @ USDA-NRCS
PLANTS Database

LOGAN PASS SITE NAMED MONTANA'S FIRST IMPORTANT PLANT AREA

[For anyone who did not see the article on Montana's first Important Plant Area by Tara Carolin and Karen Shelly in the Spring issue of *Kelseya*, the story also appeared in *The American Gardener* (July/August 2010) below -- Editor]



The Montana Native Plant Society recently designated a region in the central part of Glacier National Park as Montana's first Important Plant Area (IPA). The 26,770-acre area, centered at Logan Pass, is a haven to nearly 30 rare plant species, including glaucous gentian (*Gentiana glauca*), running pine (*Lycopodium lagopus*), and Macoun's draba (*Draba macounii*), three plants that cannot be found growing wild anywhere else in Montana. The site also fosters a variety of habitats, such as alpine meadows, wetlands and hanging gardens. The IPA program is modeled on the Audubon Society's Important Bird Areas, an international program designed to identify and preserve critical bird habitats. Similarly, though IPAs are not legal site designations, identifying them helps to pinpoint areas that

would benefit from research, conservation efforts and funding. Plantlife International, an environmental organization committed to preserving Britain's plants, fungi and lichens, has been the major force behind implementing IPAs. While IPAs have been designated throughout the United Kingdom and several other European countries, Logan Pass is the first IPA site in the United States. In Montana, citizens can nominate an area to be designated as an IPA, and the site must meet specific criteria regarding the conservation status of the plant species found there. Each state that implements an IPA program has its own guidelines to determine what constitutes an eligible site. To learn more about Important Plant Areas in the United States, visit www.plantsocieties.org/importan.htm.



Ripening

[From "Walking in the Beauty of the World: Reflections of a Northwest Botanist," written by Joseph Arnett (Washington Native Plant Society, 2004).]



October and heavy rain: it's a time of both ripening and decay, of capsules shattering and scattering their seed, of herbaceous growth dying to the ground. The road is thick with acorns and samaras and a mush of leaves, and everything is going brown at the edges. Even where green is still the prevalent color, the leafage is tattered and marked by insects. But the melancholy of things falling away, the end of a year, isn't the only theme of October, and even the mash of seeds on the sidewalk foreshadows another, newer year.

These days I walk the mile to my office with less urgency. One benefit of the general slowdown at work, worrisome in other ways, is that I can take the extra fifteen minutes to detour on the path along North Creek. The shrubs are heavy with fruit, the hawthorns dark red, the snowberries like ghostly porcelain. The leaves and twigs of red osier dogwood, true to its name, are brightening to crimson, framing pale blue berries. And there are empty pods of Scots broom, and wet seed heads of dandelions waiting for just one more sunny day and a dry breeze to blow them away. I even find a few overripe Himalayan blackberries, still surprisingly sweet.

I think about the notion of "fruition." The word seems to denote completion, as if fruit were the object of all this flowering and growing. Of course, that is the frugivore's bias; it is the seeds within that are the object of it all. I find some Nootka rose hips, deep red, some already starting to darken to brown, and put one in my pocket to look at later. Along the creek, the bittersweet nightshade is dripping with red berries, like masses of miniature tomatoes, the color of blood.

The swath of North Creek is a palette of sumacs and ash, maples and willows, and the tall standing fluttering of yellow cottonwoods. The trees getting ready to drop their leaves are ablaze with color, with improbable combinations of orange and green, and yellow with highlights of scarlet.

I wonder what the advantage is of all this extravagance at the end of the season. I know the biochemistry of it, the chlorophyll breaking down, exposing yellow carotinoids, and colorless flavonols converting to red and purple anthocyanins. But what good does all this autumnal brilliance do the trees?

The blaze of color reminds me of real flames in the world these days, and the suffering brought by humans, so intent, and so successful, at

doing harm to each other. It is a bitter harvest, and abundant, and I stand on a bridge over the creek and look into the black water roiling under it. Last week there were dozens of sockeye spawning in this stretch, their red flanks and green heads reflecting the hues of maples along the road, and I saw one speckled chinook, huge among the sockeye, guarding a favored spot under a foot bridge. Today the creek is swollen with rain and the water is dark.

At first I can't see anything, but then barely pick out the wavering of pale tail fins through the sheen of the water. A lone female kokanee is working her way up against the current. I watch for two full minutes as she gains, and then loses, and then gains again the distance she had lost. I am impressed by her persistence. How long have fish spawned in this creek, I wonder, and then answer my own question: four thousand, five thousand years? A thousand generations of fish, battling this same current? For a moment the worries of the day diminish and I glimpse the durability of life that only seems frail, a lone fish's tail, hardly visible, beating against a current heavy with rain.

Later, at the office, I take the rose hip out of my pocket and peel the hypanthium back with my thumbnail, and put the fruit, open, under the dissecting scope. Enfolded in that secret interior are rows of pale seeds, each with rounded facets, vested in transparent trichomes, each glistening and alive, perfect, each ready for another spring.



Cornus sericea USDA-NRCS PLANTS Database / USDA NRCS. Wetland flora: Field office illustrated guide to plant species. USDA Natural Resources Conservation Service.



Silver Bow Creek Restoration Work Nominated for Award

By Patrick Plantenberg, DEQ Reclamation Specialist

This summer, I toured some of the Silver Bow Creek wetland restoration work completed between Butte and Anaconda (near Ramsey) with Rich Prodgers, MNPS Calypso Chapter member and owner of Bighorn Environmental in Dillon. Rich has been the Montana Department of Environmental Quality's (DEQ) vegetation consultant on the project for many years, and has just won a new contract for his efforts. Rich would love DEQ to be recognized for the splendid revegetation along Silver Bow Creek, of which there is plenty, but Rich, too, needs to be recognized for his dedication to the project. It is not unusual for Rich to go out on his own time and spray weeds and reseed areas that did not take the first time.

Almost 10 miles of stream revegetation has been completed to date. Rich has developed seed mixes and planting plans for each hydrologic zone: upland (with a special mix for coarse substrates there), subirrigated, transition (between subirrigated and wetland) and jurisdictional wetland. Both seeding and transplanting have important roles. Seeding provides by far the fundamental primary productivity as well as ground cover, whereas transplanting provides wildlife habitat such as thermal and escape cover, perching sites and, in some cases, fruits. All but the most impaired borrow materials used as coversoils along the restored stream can be successfully seeded. Transplants in the coversoils are far more sensitive, with a few exceptions such as common silverweed (*Potentilla anserina**).

Impacted stretches along the stream first have any tailings and metal-contaminated soils removed, then a thin layer of unmineralized borrow material is used for coversoil. The wetlands that are being produced along the restored creek in the country's largest Superfund site are impressive, especially for their diversity. I have seen many wetlands over the years, but these are award winners! One wetland, in particular, was an approximately 8 acres of salty muck when seeded and transplanted in the fall of 2006 and late-winter/spring of 2007. The site now has wonderful diversity with more than 90 species of seeded, transplanted and volunteer plants. In most hydrologic

regimes there are few volunteers other than weeds, but, in wetlands, waterfowl bring in many propagules so the contribution can be significant.

When the 8-acre wetland was implemented in 2006, it was too wet for equipment so Rich hand-seeded the whole area. Important seeded species include American mannagrass (*Glyceria grandis*), tufted hairgrass (*Deschampsia cespitosa*), seaside arrowgrass (*Triglochin maritimum*), yellow monkeyflower (*Mimulus guttatus*) and Baltic rush (*Juncus balticus*). Planting was done primarily by a Montana Conservation Corps crew. Transplants that have done well include water sedge (*Carex aquatilis*), but also Nebraska sedge (*C. nebraskensis*) and Northwest Territory sedge (*C. utriculata*). Sandbar willow (*Salix exigua*) has done well in the drier areas. The most abundant volunteer is American speedwell (*Veronica americana*), but common cattail (*Typha latifolia*) and Torrey's bulrush (*Schoenoplectis torreyi*) also are present.



Veronica americana Al Schneider @ USDA-NRCS PLANTS Database

I am proud to report that this important Silver Bow Creek restoration work is being nominated for the joint Montana Wetland-Watershed Stewardship Award. Good luck Rich, and thanks for your dedication to this important restoration project!



Botany Books for All Ages

What shape is the stem of plants in the Mint Family? What is the pattern of parts in flowers from the Mustard Family? How many petals do flowers from the Lily Family really have, or are they tepals?

The answers to these and more questions can be found in a fun book called "Shanleya's Quest: A Botany Adventure for Kids Ages 9 to 99" by Calypso Chapter member Thomas Elpel and illustrated by Gloria Brown. The book tells the story of a girl sent on a mission to collect samples from a number of plant "islands" and thereby learn the keys to identifying major botanical families. The book is a great way to spark or extend an interest in the plant world. There also is an accompanying card game to further practice plant pattern recognition.

Shanleya's Quest grew out of another book by Elpel, "Botany in a Day: The Patterns Method of Plant Identification." This larger, more scientific text contains a primer on plant evolution, keys to learning plants by families, and keys to figuring out specific types of plants within many groups. The majority of the book is a field guide with numerous illustrations.

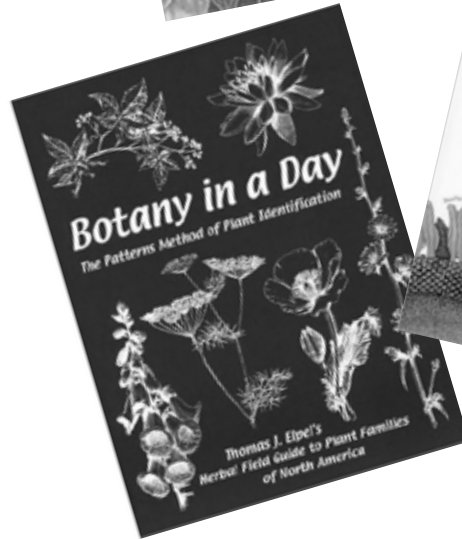
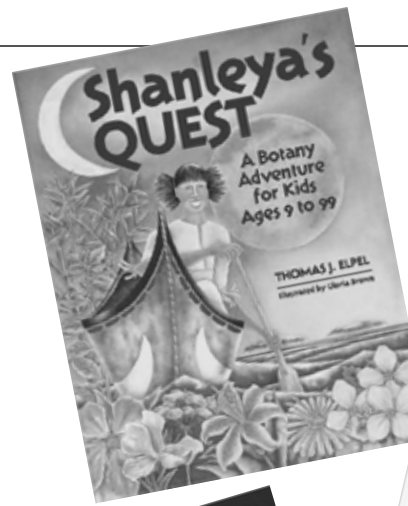
Check out these resources at www.hopspress.com or www.wildflowers-and-weeds.com.

Another book about plants for little kids (or grown ups!) is "A Seed is Sleepy" by Diana Hutts Aston, with illustrations by Sylvia Long (Chronicle Books, 2007). The simple text introduces readers to the wonders of seeds -- the diversity of shapes and sizes, how they get around, what they contain -- through beautifully detailed watercolors. It's great bed-time reading and a fun picture book as well.



Source Guide Online

The landscaping committee has updated the Source Guide for Native Plants, a directory of nurseries that carry native plants in Montana and surrounding states. It is posted on the MNPS website at www.mtnativeplants.org. Additions and edits are always appreciated. Please send them to kathy@blackfootnativeplants.com.



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.

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=Calypso; 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.**

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 *Kelseya* 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_____

If you wish to be affiliated with a chapter (see above), list it here_____

You will receive membership acknowledgement by email, as well as a pdf of the most recent Kelseya. Future newsletter issues will arrive by mail.

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	-----

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About Montana Native Plant Society

The Montana Native Plant Society (MNPS) is a 501(c)(3) not-for-profit corporation chartered for the purpose of preserving, conserving, and studying the native plants and plant communities of Montana, and educating the public about the value of our native flora. Contributions to MNPS are tax deductible, and may be designated for a specific project or chapter, for the Small Grants fund, or the general operating fund.

Your yearly membership fee includes a subscription to *Kelsey*, the quarterly newsletter of MNPS. We welcome your articles, field trip reports, book 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 or contact our webmaster Bob Person at: thepersons@mcn.net

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Montana Native Plant Society

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