

Kelseya

Newsletter of the Montana Native Plant Society

www.umt.edu/mnps/

BADLAND II A HUGE SUCCESS

by Doug Smith

The 2005 annual meeting of the MNPS was held June 17-19 in the Big Muddy Valley near Antelope in the far northeast corner of the state. This year's gathering was hosted by the Maka Flora Chapter that worked in cooperation with local landowner Neal Richardson to fix up the old family homestead in preparation for the annual meeting.

By Saturday there were 96 people registered for the meeting and participants had six field trips to choose from that showed off the diversity of the glaciated plains region in the northeast corner. Two field trips went to the prairie potholes—one near the ghost town of Comertown featuring a Nature Conservancy preserve, and the other to the Wildlife Service's waterfowl production areas near Westby along the North Dakota border. Another field trip, led by Montana expatriate Bonnie Heidel, went to the state's largest sandhills biome located on the east end of the Medicine Lake National Wildlife Ref-

uge. A fourth field trip went to Eagle Creek, a perennial stream tributary to Big Muddy Creek that cuts through a drainage divide exposing a badlands topography with numerous springs and seeps and vegetative diversity. Muddy roads kept this field trip from reaching the area of optimum diversity further up the creek.



Candice Savage reads from *Prairie: A Natural History* at the annual meeting.

But muddy roads were apparently not an obstacle for the bus drivers on the tour of the Saskatchewan archaeological sites north of the border. The group toured two separate boulder effigy sites and a buffalo jump overlooking the Big Muddy Valley in Canada, followed by a drive through a large community pasture (PFRA) of native prairie. For those not wanting to get back in a vehicle, a field trip was held at the Richardson's Coulee campsite featuring the woody draws and upland prairies overlooking the Big Muddy Valley.

On Saturday night, the group enjoyed a catered lasagna dinner provided by Laura Belle's restaurant of Plentywood, followed by a silent auction, raffles, and the annual membership meeting. Local chapter member Al Joyes was recognized for his contributions in preserving native prairie and raising public awareness. Outgoing MNPS President Betty Kuropat was recognized for her outstanding leadership and commitment to our organization. The evening program by award-winning Saskatchewan author Candace Savage, profiling her book *Prairie: A Natural History*, was entertaining and informative.

The Da Vinci Code in Gardening

by Steven Bartlett

reprinted with permission from the author and the Salem Hardy Plant Society

The best-selling novel, *The Da Vinci Code*, by Dan Brown has given new popular life to interest in the Fibonacci sequence. The novel's main character, Harvard professor Robert Langdon, found some of the numbers in the sequence scrawled mysteriously in a scrambled order on the floor of the Louvre. It turns out that there is something here to appeal even to non-gardeners like myself—

if (can we never avoid it?) you do a little digging!

The Fibonacci sequence is named after Leonardo Pisano, who, being a member of the Bonacci family eight centuries ago, became known in the history of mathematics as the "son of Bonacci," i.e., "*filius Bonacci*," shortened to "Fibonacci." The Fibonacci sequence is given by the numbers 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, etc., where each number after the second 1 is the sum of the two previous numbers.

Botanists estimate that 90% of all plants exhibit patterns of petals, leaves, and seed heads that involve Fibonacci numbers. In fact, Fibonacci sequences occur

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President's Platform

Susan Winslow



As the newly elected President of the MNPS, I want to thank everyone for putting their trust in me to carry on the lofty traditions associated with the 2-year term. I also want to thank Betty Kuropat for the super job she did for the Society during her 4-year reign. Betty has been influencing me ever since we were employed together many, many moons ago on a Forest Service preconstruction crew. I'm sure her can-do attitude and professionalism has had a positive impact on many others as well. In addition, I look forward to working with the vastly experienced Board of Directors on whatever issues and challenges come our way.

I was thrilled to travel this past June to Antelope and attend the annual meeting, put on by the Maka Flora Chapter—a good time was had by all! After being initiated for the first time in 2004 to the rigors of hosting an annual meeting, I have great respect for all the folks who work diligently to insure that attendees have a pleasant experience. Efforts are well underway by the Clark Fork Chapter to convene the 20th anniversary gathering in 2006; a meeting that will be somewhat remi-

niscent of the first official meeting held in 1986.

A few items of interest that will be coming down the MNPS pike include: organizing the 4th Plant Conservation Conference in cooperation with federal and state entities to be held on February 28 and March 1, 2006 in Helena; facilitating the development of educational guidelines for county employees spraying weeds along roads and trail rights-of-way; brainstorming new and exciting fundraising activities to support native plant projects; and resolving the issue of whether or not the organization needs to acquire a liability insurance policy.

On a plant-related note, this growing season the Clarks Fork Valley (of the Yellowstone River) received more precipitation than any other since my arrival in 1994. The area is considered to be semi-desert, so the plant communities are mostly adapted to extended periods of drought and they have been sorely tested for more than a decade. It is simply unbelievable the large amount of foliage and seed production attained by local populations of bluebunch wheatgrass, needle and thread, green nee-

dleglass, western wheatgrass, Sandberg bluegrass, blue grama, scarlet globemallow, slimflower scurfpea, dotted gayfeather, and dozens more species. Thankfully, many of the parent plants are rejuvenated and the seed bank is replenished—hopefully this becomes a trend so the cycle continues.

With all the accumulated biomass comes a serious fire threat and Montanans are experiencing firsthand the devastation of rangeland and foothill grass fires—something the state hasn't seen much of in a very long time. The native grasses we know and love can turn into a deadly fuel load if not properly managed adjacent to homes, outbuildings, and transportation routes. Homeowners and communities must be proactive by designing and installing low-stature plant materials, mowing dense pastures and roadways, thinning trees and underbrush, trimming vegetation along buildings, and assembling additional water sources and hoses. Fire doesn't just happen in forests.

I hope to meet many more MNPS members in the near future. Feel free to contact me with questions, concerns, or suggestions.

Susan can be reached at P.O. Box 502, Bridger, MT 59014 406-668-9112 e-mail: susan213@msn.com

WELCOME new members!

The Montana Native Plant Society extends a warm welcome to the following new members:

Clark Fork Chapter: Pat Bartholomew, Tim Lewis, Noel Naiden, Leah Schulte; **Kelsey Chapter:** Frontier Resource Management Inc., John Taylor; **Maka Flora:** Carl Eidsness, Mike Rabenberg, Chuck Wilder; **Valley of Flowers Chapter:** Eric & Audrey McCully.

Your participation and support are important to us! Please contact your chapter representative with any ideas or suggestions you may have. You will find them listed on the last page of this newsletter.



Betty Kuropat, outgoing (left) and Susan Winslow, newly elected President.

MNPS Conservation Committee and Forest Plans

Chapter conservation coordinators are busy finalizing comments on management plans for the Beaverhead-Deerlodge, Flathead and Lolo National Forests. These plans will help guide forest management for the next ten years. MNPS members from the Valley of Flowers Chapter have already provided suggestions to the Gallatin National Forest on their travel plan revisions. If you would like to help, contact your chapter conservation coordinator:

Calypso	Sheila Thompson	846-1855
Clark Fork	Tarn Ream	549-7933
Flathead	Melissa Waggy	257-9051
Kelsey	Pete Strazdas	442-3888
Valley of Flowers	Cathy Weeden	582-1014

2006 Small Grants Program

The Montana Native Plant Society (MNPS) is pleased to announce the eleventh annual Small Grants Program. Grants up to \$1000 will be awarded in 2006 to fund projects that stimulate research, conservation, and educational activities, and foster an appreciation for Montana's native plants and plant communities. Project or study proposals must pertain to native plants of Montana.

The small grant competition is open to residents of Montana or members of MNPS. The deadline for proposals is January 31, 2006. The winter issue of *Kelsey* and the MNPS web site will include a grant application and complete proposal details.

In 2005, the MNPS gave an award to Vicky Lawrence, volunteer with Libby Revitalization, Inc. in Libby, Montana. Vicky's small grant project demonstrated the use of native plants in landscaping and restoration on a section of Flower Creek in Libby. See the article on page 5 for Vicky's small grant report.

For more information contact committee chair Cathie Jean at: cjean@imt.net

Information Requested

Dr. Rhoda Love and Art Kruckeberg are undertaking a major book project: *Plant Hunters of the Pacific Northwest*. Most bios are now done, but they are still looking for biographical information on Montana collectors Martin Elrod and J. E. Kirkwood. Contact Art at: ark@u.washington.edu

2006 Annual Meeting ...plan ahead!

Mark your calendars early and often for the upcoming 2006 annual meeting to be held in the foothills of the Gravelly Range on July 14-16. The Clark Fork Chapter, the event sponsor, is planning another great time. Help us celebrate our 20th meeting anniversary.

Plant Profile: Prairie Coneflower

by Susan R. Winslow, PMC Agronomist Reprinted from *Plant Materials Today*

Prairie coneflower *Ratibida columnifera* is a native, herbaceous perennial in the Aster Family. It is a very drought-tolerant wildflower commonly found in the Great Plains and in all of Montana except the very most western reaches of the state. Prairie coneflower prefers to grow in the dry, open spaces of prairie grasslands and mountain foothills, and is found along roadsides, in waste and disturbed areas, and along railroad rights-of-way.

It is prominently taprooted and grows upright from a woody base to a height of 12 to 48 inches. The numerous, pinnate leaves are deeply cut into linear or lance-shaped segments along alternately branched stems. Showy yellow ray flowers droop and surround the columnar-shaped, brown, central disk. Occasionally, the ray flowers are reddish-brown in color. Flowering occurs from late June until August, with seed ripening completed in early August to September. The mature seedhead has a pleasant odor that when crushed is similar to anise or licorice. The fruit is a 1-seeded, gray-black achene, with winged margins.

It does well on a variety of soil types, including loams and rocky to gravelly-sandy textures. It tolerates a pH range from slightly acidic to moderately alkaline, and weakly saline conditions, in areas receiving 10 to 30 inches of annual precipitation. It's use is recommended in adding species diversity to native seed mixes in the rehabilitation of disturbed sites, and is commonly recommended as an ornamental wildflower in low maintenance or natural landscapes.

This species is fairly easy to establish when planted in the spring at a shallow depth of ¼ to ½ inch. There are approximately 600,000 seeds/pound and the recommended seeding rate as a component in a native mixture is ¼ to ½ pound/acre. When used in a mix, adjust the seeding rate to the desired percentage of the mix.

There is only one release of this species available on the commercial market—Stillwater Germplasm Selected Class prairie coneflower was released in 2004 from the Bridger Plant Materials Center. It is a composite of five accessions originally collected in Montana's Carbon and Stillwater Counties. The five accessions were selected because of their consistently tall stature, uniformity in seed maturity dates, and superior seed production. Stillwater Germplasm has been well received in the commercial seed industry and the availability of seed is growing (no pun intended).

Montana Plant Conservation Conference

The Montana Native Plant Society (MNPS) and the Montana Natural Heritage Program (MTNHP) will host a Montana Plant Conservation Conference February 28-March 1, 2006 at the Best Western Great Northern Hotel in downtown Helena. Topics will include: status of our three federally-listed plants (*Howellia aquatilis*, *Spiranthes diluvialis* and *Silene spaldingii*), threats to rare plants, identifying important plant areas, and sensitive plant habitat restoration. The conference will be open to the public, and all MNPS members are invited to attend the two-day event. Check the MNPS and MTNHP websites in the near future for registration and conference information, and watch for an update in the winter *Kelsey*.

PUBLICATIONS

Available from MNPS

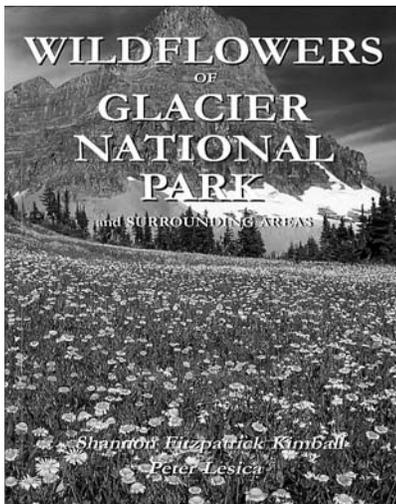
The third edition of the *Source Guide for Native Plants of Montana* is now available. The cost is \$6.00. Send a check made out to MNPS to: MNPS Publications, 1270 Lower Sweet Grass Road, Big Timber, Montana 59011. The cost will cover postage. The guide lists 55 sources for over 500 species of trees, shrubs, forbs and grasses. This edition has e-mail and website addresses for many sources and a handy common name index. The guide is a must for home landscapers, native plant gardeners and those involved in restoration projects. The *Source Guide* will include an insert with recent updates for each source. Contact information for several new sources is included but their plants are not listed. If you already purchased a Guide, you can find the update on the website or send a SASE to MNPS Publications (see address above).

Available free from MNPS Publications: MNPS membership brochures, *Plant Collection Guidelines for Teachers* brochures, and *Echinacea Cultivation Information*. Also available are additional copies of *Plants Collected in Montana During the Lewis & Clark Expedition*.

Wildflowers of Glacier National Park and Surrounding Areas
by Shannon Fitzpatrick Kimball and Peter Lesica; Published by Trillium Press

Wildflowers of Glacier National Park is a true "field" guide. Along with its pleasing aesthetic qualities—gorgeous photos, clutterless layout, and intelligent text—every aspect of this book is geared towards functionality in the field.

As we hiked in Glacier with Pete and Shannon's book, we found the large type and unadorned font style ideal for on-the-hoof viewing (also very handy for readers who forgot their glasses!). Searching for a flower by color was effortless, thanks



to the page-wide color banners across the top of the book. When using the detailed index for Latin or common name look-up, page numbers set in the upper outside corner of each page allowed for additional ease in trailside use. Sturdily bound, this guidebook withstood the rigors of being pulled in and out of a crowded pack, and survived constant page turning, cover bending and consultations in the rain and alongside damp streamsides.

The format of just one or two photos per page was ideal, making for ease-of-use in the field and pleasant viewing in one's campsite lawn chair. The inclusion of leaves and stems in most of the photos was a great asset in our amateur identification attempts. (Diane is new to botany and Anne has been new to it for years.) If we were still befuddled after studying the plant and the photos, we went to the text. The descriptions are brief and give key characteristics, scientific enough for any budding botanist and easy enough to observe with or without a hand lens. Measurements are given in inches (thank goodness). On occasions when we were unable to confirm ID, it was comforting to be assured by our thoughtful authors that "a technical plant key is often necessary," or "this is the largest genera in Gla-

cier National Park....making field identification difficult."

Over 300 of the most common plant species in the Park are featured in this book. That's a lot. On a July hike in the Sperry Chalet area, with book in hand, Anne was able to identify over 100 species of flowering plants, as well as several shrubs and even a sedge and some ferns. Diane found that not once in all her Glacier trips this summer did she fail to find the flower, or at least a close relative, she was trying to identify with the help of this book. And though flowers were her main interest, she found herself distracted enough by the impressive tree, fern, and grass photos to add these to her ID quest, piquing an interest that has stayed with her in subsequent field trips.

In late August, with a plethora of berried bushes circling our tent in St. Mary's Campground, a silver-leaved shrub minus flower or fruit caught our attention. With the use of a hand lens and the authors' instruction to look for rust colored glands on the leaf underside, we were close to identifying the shrub as silverberry (*Elaeagnus commutata*). Clinching our ID was a line in the notes informing us that silverberry could be found "at the end of St. Mary's Lake."

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Please send a SASE to the address above to receive any of these publications.

Available from the Flathead Chapter: a packet of information about gardening with Flathead Valley native plants. The packet can be mailed to you for \$3.50. Contact Tara Carolin at P.O. Box 382, West Glacier, MT 59936, call 406-888-7919 or e-mail Tara at: vance.tara@centurytel.net

Available from the Kelsey Chapter: a packet of information on landscaping with natives in the Helena area. The packet will be mailed to you for \$3.50. Contact Kathy at 449-6586 or e-mail: drakekath@direcway.com to order.

Visit the MNPS website at www.umt.edu/mnps to download in pdf format *Weeds Listed as Noxious by Montana Counties*, a list of weeds that are targeted by each county; *Guidelines for Selecting Horticultural Plant Material for Montana*, voluntary guidelines by MNPS and the Montana Nursery and Landscape Association; and *Lewis & Clark Plants Collected Elsewhere That Occur in Montana*, an inclusive list of Lewis & Clark plants found in the state.

FLOWER CREEK RESTORATION PROJECT A Small Grant Report

The Flower Creek Restoration Project (FCRP) originated from a city beautification idea of mass planting daffodils on an undeveloped, weed-infested, acre-size plot of land in the middle of Libby's shopping center on Highway 2. Flower Creek flows through this piece of land and was little more than a barren landscape. I shared my ideas with a neighbor who gave me the name of Mike Justus, a forester with Montana Department of Natural Resources and Conservation. It is thanks to Mike's expertise and encouragement that our project became a reality.

Three basic problems confronted us with our expanding project: lack of water for irrigation (the creek dries up in July), a very harsh growing site (rocky soils and denuded creek banks rip-rapped to prevent flooding and erosion), and knapweed infestation. Mike's suggestion of xeriscape landscaping was the solution to the watering problem. Native, drought-resistant plants would have the best chance of survival and would restore a natural, more attractive appearance to the creek. Why not excavate large planting holes along the creek and import soil for a more favorable growing environment? With better soil, plants would need less water. Knapweed control began in the spring of 2004. Two truckloads were pulled from the softer creek banks and spraying with Weedar began on a regular basis.

I will candidly admit to the reader that I had never considered landscaping with native plants. Why spend money on chokecherries or wild roses when they already grow everywhere! I began research with the help of local Forest Service personnel and the Internet and realized that the concept of xeriscape landscaping seemed very suitable to our needs.

Our high school biology teacher volunteered his students for a riparian restoration project and nine students of Libby's Master Gardening Class were eager to help with the final planting the first weekend of

May. Libby Revitalization, Inc., agreed to sponsor the project. Mike suggested labeling our native plants with educational signs so people who visited the site could learn about each species of native plant. We also conceived the idea of a wooden sponsor sign to face Highway 2 giving credit to all major contributors to the project. I thought that we had a good project to offer MNPS and we were very fortunate to receive a grant for \$850 to cover the majority of the expense of the project.

Our final project had three planting sites: the east side of the creek where we excavated 18 planting holes 5' by 5' by 18" along the top of the 260' bank, the creek bottom where students planted willow and dogwood cuttings, and the narrow, west bank of the creek where we planted 20 plants including 4 trees. Survival rate on the east side is excellent among the 120 clump-planted specimens. The excavated area was covered in weed mat and then mulched with wood chips after planting. Volunteers imported water all summer for both the east and west side sites. Because of low snow pack, the creek did not rise at all this year and the cuttings did not survive. We will replant in 2006. Survival on the east side is about 65% with greatest loss among junipers.

We decided to plant a wide variety of species for our plant demonstration-education site including chokecherry, serviceberry, rose, snow-

berry, spiraea, potentilla, water birch, Rocky Mountain maple, mountain ash, mahogany, common juniper, mock orange, ninebark, and elderberry. Of the 160 plants purchased, 80% were bare-root stock and the remainder were either potted or plugs. Three species, Oregon grape, kinnikinnik, and burning bush, were dug in the wild. We planted about 2' apart in the excavated holes with the expectation of a 75% survival rate. If survival continues to be excellent, we will thin the clumps by transplanting to the west side of the creek.

The total cost of our project was \$1350.00. Plants cost \$498; non-plant purchases including 20 cubic yards of soil, weed mat and chemicals were \$509. The remaining \$343 will purchase materials for the sign that should be completed this autumn by Flathead Valley Community College students. A \$500 donation to the project came from Jason Rosauers of Seattle. Other donations included 20 cubic yards of wood chips, lunch for volunteers the day of planting, labor and machinery for excavation by the City of Libby, many hours of support by Forest Service personnel, and plant identification signs by Montana DNRC.

On behalf of Libby Revitalization, Inc., I would like to thank MNPS for awarding us this grant; we feel confident that your money was well spent on our project.

Vicky Lawrence



Jon Reny (right), MNPS member; Vicky Lawrence, FCRP coordinator; and Charles Lawrence, examine a healthy river birch shrub on the west site. The Flower Creek Restoration Project in Libby was recipient of a 2005 small grant award from MNPS.

MNPS 2005 ELECTRONIC ELECTION A HUGE SUCCESS Maka Flora Dominates Chapter Voting (again)

New officers were installed at the 2005 Montana Native Plant Society (MNPS) Annual Meeting sponsored by the Maka Flora Chapter in Richardson's Coulee near Antelope, Montana on June 18. Elected with overwhelming majorities were Susan Winslow, President; Madeline Mazurski, Treasurer; and Erich Pfalzer, Western Representative. The 131 total ballots cast exceeded the 2004 total of 118. Over 19% of 689 MNPS members voted in the first electronic election in MNPS history. Almost 28% of the ballots were electronic, much to the dismay of the U.S. Postal Service. (Editors' note: Postal Service stocks have plummeted since MNPS announced the election results).

The Clark Fork Chapter, the largest MNPS chapter, jumped out of the gate with the first nine ballots in the election. The Clark Fork Chapter

doubled its voting percentage from 9% to 18% in 2005. The Maka Flora Chapter continued its election fame and won the \$100 prize for the chapter with the largest percentage of voters for the third year in a row. Over 52% of their members voted.

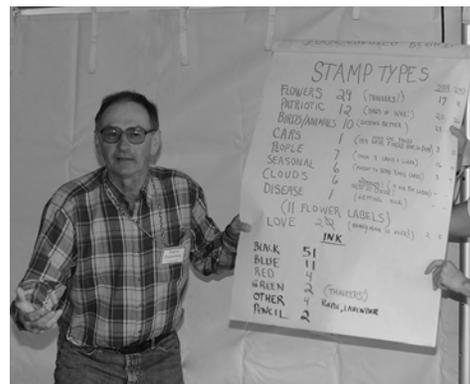
The Calypso, Kelsey, and Maka Flora Chapters dominated the elections in 2005. Three of the large chapters, Kelsey, Clark Fork, and Valley of Flowers, had higher voter turnout than in 2004. Voters from east of the Divide decisively beat the western voters again 24% to 17%.

MNPS Secretary Patrick Plantenberg from Townsend presented election statistics gleaned from the mail-in and electronic ballots at the annual meeting to an enthusiastic crowd. The crowd was impressed by the gifts of the homemade jams and jellies provided by the Maka Flora Chapter. Criticism that the jams and jellies were used to bribe election tabulators is being investigated. Patrick would like to thank the Maka Flora Chapter for the second jar of

jam Maka Flora gave him.

The MNPS Electoral College would like to thank MNPS members for their election support. The MNPS Election Committee challenges other similar professional societies and organizations to try and beat MNPS results in getting members to vote in uncontested elections! Keep up the good work MNPS members.

Patrick Plantenberg



MNPS Secretary Patrick Plantenberg explains the importance of stamp types on election ballots.

Al Joyes Receives the MNPS Outstanding Service Award

Al Joyes was awarded the MNPS Outstanding Service Award for 2005 at the annual meeting this past June. Al was instrumental in organizing the Maka Flora Chapter of the MNPS eleven years ago in 1994. He led his chapter in putting on the much-celebrated MNPS annual meeting at Makoshika State Park in 1997. Appropriately, he was presented with his award at the annual meeting in another corner of northeast Montana, Richardson's Coulee near Antelope, Montana.

After founding and organizing the Maka Flora Chapter in 1994, for nine years he organized local meetings and field trips and represented his chapter at state board meetings 500 miles away in Helena! He damaged his car and killed Sheridan County's only squirrel in the process.

Al is passionate about conserving the prairie and wetlands of northeastern Montana. He and his brother Dennis donated a conservation easement on 280 acres of their property to permanently protect it. They

have also implemented progressive grassland and cropland management on the other portions of the property they manage with their father, Arnold. A great advocate of conservation, Al has organized and participated in many tours that highlight the importance of the surrounding area and management practices that benefit wildlife and the native flora of Sheridan County.

In addition to his devotion to bot-



Al Joyes was awarded the Outstanding Service Award at the 2005 annual meeting near Antelope.

any, Al has been very active in social issues in his community. He obtained grants for and administered low-income housing projects in Westby, Plentywood, and rural Sheridan County (as if Plentywood and Westby were urban). He has been active in the Westby Development Corporation, a group dedicated to revitalizing the local economy. Al is active in the Sheridan County Stockgrower's Association and sits on the Sheridan County Conservation District Advisory Board. Al is a native Montanan who grew up on a farm near the small town of Westby in the northeast corner of the state. He lives on his family's farm with his wife Paula and two-year-old son Anson.

After much ribbing and story telling by Peter Lesica and Brian Martin, Al was presented with a beautiful drawing study of several native plants by Missoula artist and MNPS member Nancy Seiler.

We thank Al for his all his work over the years in support of the Montana Native Plant Society and its mission to preserve, conserve and study the native plants and plant communities of Montana.

Awards Committee

The 11th Annual Wayne Phillips Plant ID Contest

The plant ID contest at this year's annual meeting outside Antelope, Montana was especially challenging. Much of the flora of eastern Montana is unfamiliar to many and grass diversity is particularly well developed. Couple that with a late flowering season, due in part to some cool spring temperatures, and the contestants were faced with more grass species and members of the large pea family than ever. However, many brave individuals, undaunted by the scorn and ridicule of their peers, plunged in and submitted their best answers. The field was not particularly large this year, and only two official categories were offered. First place in the amateur division went to Lih-An Yang of Glasgow, who lives far enough east to be familiar with the flora. She used her insider knowledge to good advantage. Fine job Lih-An! The winner of the professional division was our own prairie fairy Patrick Plantenberg. Patrick is conversant with plants from the plains of Antelope to the alpine peaks of the Beartooths.

Creativity sometimes pays benefits and we had one entry submitted under the category "sub-novice." For the combination of innovation, audacity and a pretty good job with the plants, Jo Lace (of "no new taxa" fame) and Mary Lou Heppner handily won that division.

Phil Johnson from Helena provided bags of native seed mix for prizes (thank you Phil).

The real benefit of these plant ID demonstrations and contests is the opportunity to learn a little about the plants from parts of the state we may not often explore. Our state is large and the flora is diverse, so take a chance and learn a new plant when you visit a different section of the state.

A special thanks to the members of the Maka Flora Chapter for all the hard work they put in to bring us a very special annual meeting. We hope to see you next year in the Gravelly Range.

Drake Barton

Calypso Chapter Report

All five field trips conducted by the Calypso Chapter this summer were well attended. Members and non-members alike benefited from the skill of the field trip leaders in locating the plant species that were the highlights of each trip.

We began in May with a field trip led by Sherry Vogel to see the stand of mountain mahogany on Timber Butte. The landowner was very cordial and the hikers enjoyed not only the misty rain and the mountain mahogany, but also the prolific display of *Phlox hoodii* and the numerous blooms of *Polemonium*. We spotted a little yellow mustard identified later by an authority as a probable *Lesquerella carinata*. We saw four species of sagebrush: *Artemisia absinthium*, *A. frigida*, *A. ludoviciana*, and *A. tridentata* ssp. *vaseyana*. It was a fun start to a great season.

Because of the wet (thank goodness), cool spring, the white bog orchid advertised for the Moulton Reservoir field trip on June 28th had not ventured forth by trip time. But its absence was barely noticed because of the showy display of blue camas along with many other hardy and beautiful flowers. A bonus on this field trip was several young scouts who joined us to work on earning a badge. They were serious list makers and will be great recruits for our organization a decade from now. Trip leader Paul Sawyer showed us a phenomenal display of *Lewisia rediviva* en route—a great opportunity for our young scout friends to see the state flower up close and personal.

July 7th found us headed up to German Gulch to view the forbs and shrubs in flower. Trip leader Kris Douglass filled us in on the progress of the exclosures that are a Calypso Chapter project funded through the DNRC via the George Grant Chapter of Trout Unlimited. We had a great turnout and much interest in the beautiful historic setting as well as the native species we viewed.

The following week a field trip led by Paul Sawyer and Grant Mitman was a departure for the group from the typical wildflower field trip. It was a fascinating educational oppor-

tunity to see and learn about plants that colonize a landscape with highly acidic pH. Graduate students at Montana Tech have studied the area and Paul and Grant shared with us the results of some of the studies. We viewed a site near the Badger Mine where dump trucks from the Berkeley Pit's operations in the early years dumped the tailings. It was amazing to see the natural revegetation in the area by several plants, including the rare copper moss, *Mielichhoferia mielichhoferii*, which will grow only in an acidic environment. Grasses and trees were also present in amounts that seemed copious considering that they'd been growing for less than fifty years, without the benefit of human intervention.

Our last outing, held July 20th, was near Deer Lodge. On this beautiful evening, Sheila Thompson led us to a magical spot where warm water seeps out of the cliff and provides a micro site for plants that otherwise don't grow in southwest Montana. We saw an outcrop of a beautiful, rare orchid, *Epipactis gigantea*, that thrives in this lovely place where no cattle grazing occurs. We also saw a profusion of ferns and yellow monkeyflowers along the warm stream, which no one seemed to mind wading through to explore the other side. What a great night, thanks to Sheila's earlier diligent efforts exploring.

Debbie Mueller



Jeanne

Epipactis gigantea (giant helleborine)

Fun & Orchids With Wayne Phillips

Thirty-three participants from nine places in Montana and California came to see orchids near Augusta on July 2nd. Everyone was very careful to minimize impact, and very enthusiastic about the study of the plants in the wonderful places we visited.

The group met and carpoled from Augusta, beginning the loop-drive at Sun River. Wayne Phillips began the trip by burning the leaves of *Artemisia ludoviciana* in a mussel shell on the banks of the Sun River and recited the following words, paraphrasing Black Elk from Singing of the Willow Song: "This buffalo skull is for the earth, from whence we all came and at whose breast we suck as babies all our lives, along with all the animals, birds, trees, and grasses. The earth does not belong to people; people belong to the earth. All things are connected, like the blood that unites one family. All things are connected, so that whatever befalls the earth, befalls the sons and daughters of the earth. People did not weave the web of life, they are merely a strand in it, so that whatever we do to the web, we do to ourselves."

The majority of the day was spent at Wagner Basin Research Natural Area. On the stunning hike into Wagner Basin, we saw petroglyphs, had morphological and taxonomical debates, and ended at a verdant wetland where we saw *Epipactis gigantea*. Leaving Wagner Basin we continued to Beaver Creek and saw the enchanting *Listera borealis* and *Amerorchis rotundifolia*. The most zealous of the group continued on and were rewarded by spotting *Cypripedium passerinum*, the Sparrow's-egg Lady's Slipper.

We saw approximately 95 species of plants in bloom, along with the following 14 species of orchids: *Calypso bulbosa*, *Corallorhiza trifida*, *Corallorhiza maculata*, *Cypripedium parviflorum*, *Cypripedium montanum*, *Cypripedium passerinum*, *Epipactis gigantea*, *Habenaria unalascensis*, *Habenaria obtusata*, *Habenaria viridis*, *Habenaria dilatata*, *Habenaria hyperborea*, *Listera borealis*, and *Amerorchis rotundifolia*.

Wayne, of course, was well prepared and shared his knowledge, songs, and poems making for a full and entertaining day. The weather was perfect, making a great day even better on the beautiful Rocky Mountain Front. It was a very fun trip!

Kelly Chadwick



Wayne Phillips examines a pesky *Arnica*, the source of much discussion in Wagner Basin. Photo: Kelly Chadwick

Flathead Chapter had a Busy Summer

The Flathead Chapter led ten field trips this summer season throughout the Flathead Valley area from Glacier Park to Lone Pine State Park, Columbia Mountain, Tally Ridge, and Jewel Basin. In addition, volunteers weeded the Central School Garden and assisted in seeding, transplanting and weeding at the Glacier Park Nursery. Attendance at all activities was high with an outstanding year for blooms! Thanks to all the field trip and activity leaders. Last spring the chapter finished a list of native gardens and restoration projects around the Flathead Valley, summarizing successful native landscaping. The publication is available from the chapter and is posted on our website www.umt.edu/mnps. Contact Tara Carolin (755-9412 or vance.tara@centurytel.net) for more information. We're looking forward to seeing everyone at the first fall meeting/potluck on October 19th to develop next year's programs, goals, and activities.

Linh Hoang

AVEDA CORPORATION GATHERS 160,000 SIGNATURES TO PROTECT ENDANGERED PLANTS AND THE ENDANGERED SPECIES ACT

On July 20, 2005, the Aveda corporation presented Congress and President Bush with a petition in support of the federal Endangered Species Act specifically urging improved protection for endangered plants. The petition garnered more than 170,000 signatures. The petition was circulated by Aveda, in partnership with native plant science and conservation groups, during Aveda's annual Earth Month. In Earth Month, the spa and salon network works to raise funds and build public awareness of key environmental issues. The 2005 Earth Month focused on threats to endangered plants and to the Endangered Species Act itself. Aveda also raised more than \$1 million to assist conservation and scientific organizations working to save imperiled plants.

Plants are the foundations of ecosystems and of life itself said Dr. Emily Roberson, Director of the Native Plant Conservation Campaign. They produce the oxygen we breathe, clean the water we drink, and supply us with life saving medicines and other invaluable commodities. Still, few people think of plants when they consider threats to endangered species and the web of life on which we all depend.

As a result, plants are at a disadvantage in conservation budgets and policies. Although scientists estimate that nearly 30% of U.S. plant species are at risk of extinction, and plants make up 61% of federally listed species, less than 5% of federal species conservation funds go to plants. This must change if plants, and the ecosystems they support, are to survive. Scientists and conservationists have long asked Congress for full funding for the Act.

Emily Roberson

CALENDAR

ARTEMISIA CHAPTER

For a schedule of Artemisia Chapter events or to get your questions answered, please call Leslie at 445-9178.

CALYPSO CHAPTER

Call Sheila Thompson at 846-1855 for times and details.

CLARK FORK CHAPTER

Thursday, October 13, 7:30 p.m.

Bob Keane, U.S. Forest Service Fire Ecologist, is recently returned from a year in north-central Australia. Come and learn how fire regime affects the plants, wildlife and people in this vast country when Bob tells us about "The Fire Ecology and Management of Tropical Savanna of the Northern Territory, Australia." Rm. L09 Gallagher Business Bldg., UM Campus.

Thursday, November 10, 7:30 p.m.

Are wildflowers just the pretty faces of our grasslands? Monica Pokorny, researcher with MSU's Center for Invasive Plant Management, doesn't think so. Monica will tell us about her research on "Wildflowers of Southwest Montana Grasslands: A diverse display that resists weeds." Rm. L09 Gallagher Business Bldg., UM Campus.

Thursday, December 8, 6:30 p.m.

Our annual "Christmas potluck" will be held at the Open Way Center, 702 Brooks just north of the Rose Garden on the southeast corner of Brooks and Franklin in Missoula. Bring plates, utensils, and a dish to share. Don't forget to bring a few of your favorite slides from the summer.

Thursday, January 12, 7:30 p.m.

Last winter was great for desert wildflowers and Drake Barton and Peter Lesica went down to see. Join them when they try "Making Sense of All Those Desert Wildflowers." Rm L09 Gallagher Business Bldg, UM Campus.

EASTERN MONTANA

For more information about Eastern Montana events call Connie Jacobs at 622-5266.

FLATHEAD CHAPTER

Our meetings have moved to the Mountain View Mennonite Church. To reach the church, follow Highway

35 east from Kalispell past Woody's (Highway 206 jct.) Just past Woody's, turn left on the Lake Blaine Road and continue for one mile. Turn right on the Creston Hatchery Road and go another mile. The Mennonite Church is on the right at the junction of Creston Hatchery Road and Mennonite Church Road. From Bigfork on Highway 35, turn right by the Creston School, drive 1 1/2 miles to Mennonite Church Rd., turn right, church is on your left after 1 mile. A general meeting is at 5:30 (everyone invited). November and January programs start at 7:00 p.m.

Wednesday, October 19, 5:30 p.m. Potluck, social, and planning meeting for the upcoming year.

Wednesday, November 16

"Ecology and Conservation of Whitebark Pine." Whitebark pine is a keystone species of upper subalpine ecosystems that is declining rapidly due to a number of natural and human induced causes. Come fall in love with one of the West's most captivating conifers and find out what biologists and land managers are doing to conserve this species. Presented by Mel Waggy from Glacier National Park.

Wednesday, December 14

"Annual Christmas Party" at Edd and Betty Kuropat's in Columbia Falls. (Date tentative, note that this is the second, not third Wednesday). Come at 5:30, potluck at 6:00. Bring a recycled or under \$5 gift. Call Betty (892-0129) to confirm the date and get directions.

Wednesday, January 19

Program to be announced. Please call Rachel (892-2446) or Linh (270-7533) for more information.

KELSEY CHAPTER

For more information about Kelsey Chapter programs and events, call Kathy at 449-6586.

Saturday, December 10, 6:00 p.m.

Our annual "Holiday Potluck" will be held at Jo and Brian's home, 210 S. California St. in Helena. Bring a dish to share, your own table service, and some slides of recent adventures.

MAKA FLORA CHAPTER

For information about the Maka Flora Chapter or events call Rebecca Kal-

levig at 488-5455.

VALLEY OF FLOWERS

During the fall and winter, the Valley of Flowers Chapter meets on the second Tuesday of each month, except December, in Room 108 of the Agbioscience Building at MSU. The building is on South 11th, and parking is free in the evening in the lot to the north of the building. Meetings begin at 7:00 p.m. For more information contact Monica Pokorny at 763-4109.

Tuesday, October 11, 7:00 p.m.

Dr. Norm Weeden will present "Montana Flora compared to California Mountain Flora." Norm is a professor at Montana State University in the Dept. of Plant Sciences and Plant Pathology. Please come to the meeting with ideas for additional presentation or activities.

Tuesday, November 8, 7:00 p.m.

Richard McEldowney, PBS&J (formerly Land and Water Consulting) will present "An Introduction to Special Status Plant Surveys." This talk will provide an overview of special status plant surveys using the specific methodologies required by the U.S. Fish and Wildlife Service Region 6 for *Spiranthes diluvialis* - Ute ladies' tresses orchid as a specific example. This orchid is listed as threatened under the Endangered Species Act and potentially occurs in Gallatin County. The talk should be of interest to rare plant fans and natural resource professionals.

Tuesday, December 13

No meeting.

WESTERN MONTANA

For information about activities in Western Montana, call Erich Pfalzer at 406-827-4078.

Watch the winter issue of *Kelsey* for a riveting account of the trip to Beaver Peak near the Idaho border sponsored by Western Montana at-large members and led by Peter Lesica.

"Ultralight **Wildflower** Guide
to the Central **Montana**
Rocky Mountains" **665 photos**
333 species, Only 1.5 oz., Waterproof, 3" x 5"
\$21.95 Diamond Springs Press
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...*Da Vinci Code* (Continued from page 1) throughout nature, from seashells to the path a falcon takes when it spirals down on its prey. All of this is too much for coincidence, but it's been only in the last ten years that we've come to understand the rationale for nature's reliance on Fibonacci patterns.

Just consider: The number of petals on many plants is a Fibonacci number: irises and lilies (often with two sets) have 3 petals; buttercups, wild roses, larkspur, columbine, have 5; some delphiniums 8; corn marigolds and ragwort 13; black-eyed Susan, chicory, and some asters 21; plantain and pyrethrum 34; while many daisies have 13, 21, 34, and in Michaelmas daisies, 55 and 89 petals. Some species are very exacting about the number of petals they produce; in others the number of petals commonly varies around an average that is a Fibonacci number.

The same pattern can be found in the arrangement of seeds on flower heads. *Echinacea purpurea* typically has 55 spirals that rotate outwards and clockwise; closer to the center, you can count 34 spirals. In sunflowers, you can see a beautiful pattern of double spirals. In many, you'll find 21 or 34 clockwise spirals and 34 or 55 counterclockwise. Pinecones often have 5 clockwise and 8 counterclockwise spirals. All these are exact Fibonacci numbers.

The same fruitful layout is found, to name just a few, in pineapples (8 clockwise spirals and 13 counterclockwise), bananas (count how many flats on the outside, and look at the pattern when you cut a banana in cross-section), and apples cut through their equators.

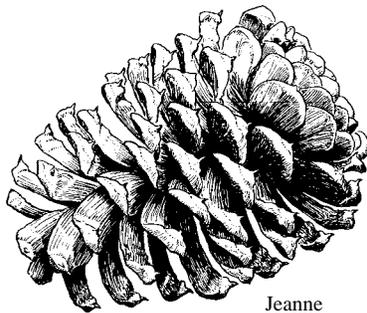
Vegetables follow the same pattern, as in cauliflower, broccoli, Chinese leaves, and lettuce.

The same is true of the spirals of cacti spines, growth patterns of bromeliads, the California pine, and the Aroids family of plants that include the Dieffenbachias, Monsteras and Philodendrons. If as many as 90% of plants exhibit Fibonacci numbers, the

sampling listed here is just tiny, and so it is.

And then there is the pattern of leaves, which phyllotaxis studies. A huge number of plants express Fibonacci numbers in the arrangement of leaves around their stems. Looking down on a plant, the leaves are frequently arranged so that the upper leaves don't shade those below and so that they catch rain optimally. The Fibonacci numbers come to light when we count the number of times you must circle a stem before you find an upper leaf that directly overhangs a lower one, and in the process how many leaves you encounter as you revolve along the stem.

If t is the number of turns and l the number of leaves, here are ratios for some common trees and other plants (and bear in mind that all of these numbers are special Fibonacci numbers): 1:2 for elms, lindens, limes, and grasses; 1:3 for beech, hazel, blackberry, and sedges; 2:5 for oaks, cherries, apples, hollies, and plums; 3:8 for poplars, pears, plantains, and willow; 5:13 for pussy willow, leeks, and almonds; and here again this list could go on and on. Phyllotaxis based on Fibonacci numbers is not universal among plants, but it is extremely widespread.



So, why do seed heads, fruit, vegetables, the spines of cacti, trees, and other leafed plants so often share Fibonacci patterns? The answer to this question has been asked for many centuries, but has been answered

only recently. It has to do with the mathematics of maximally efficient growth. For plants to grow most efficiently, flower and seed heads and plant leaves grow in Fibonacci patterns. Seed heads, for example, grow their seeds in a way that packs the seeds with maximum efficiency, so that no matter how large a seed head becomes, the seeds are uniformly packed throughout the growth process, keeping all the seeds uniform in size, without crowding at the center, and without sparsely spacing the

seeds moving outward. The last step in understanding how Fibonacci ratios optimally solve the mathematician's growth equations came only recently, in 1993, thanks to the research of two French scientists, Stéphane Douady and Yves Couder. The Fibonacci sequence is, in other words, one of nature's discoveries of maximum efficiency.

Fortunately, we don't need to understand them technically to appreciate them: But Fibonacci sequences continue to be at the basis of patterns we have become so used to that a little math helps to spark a fresh sense of wonder. For some of us who like to dig in theory but not in dirt, this view of things can add to an appreciation of a garden's beauty.

For more about the mathematics of plants, see: <http://www.math.smith.edu/~phyll/>; June 2004 issue of *Discover*

...*Book Review* (Continued from page 4)

Such clear identification instruction doesn't happen by accident. Peter Lesica, one of the founders of the Montana Native Plant Society, has been a field botanist in Montana for over 25 years, is the author of the definitive *Flora of Glacier National Park* for serious botanists, and has been getting down on the ground to get that perfect flower shot for even longer. He's teamed up with fellow botanist and Glacier consultant Shannon Fitzpatrick Kimball, and their collaboration makes full use of their scientific, creative, and technical expertise.

Can you tell? We love this book. It's definitely worth taking in your pack on hikes in Glacier and surrounding areas. Having this book with you is like having Pete and Shannon along, and you won't consider going out without them again. That is, until, as Diane says, "...some dream future when Latin rolls off my tongue and I know what a galea is and why I need to know. Then I'll move excitedly on to Pete's big *Flora of Glacier National Park*."

Annie Garde & Diane Hafeman

NOTE: Shannon and Peter's book will be available from the chapters for \$15, \$5 of which goes to MNPS.

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- ARTEMISIA CHAPTER - Yellowstone and Carbon Counties; southeastern/south-central Montana
- 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.

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Living Lightly	\$12	\$12
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Montana Native Plant Society

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Your yearly membership fee includes a subscription to *Kelseya*, the quarterly newsletter of MNPS. We welcome your articles, field trip reports, meeting notices, book reviews 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 submissions should be mailed to *Kelseya* Editors, 314 Travis Creek Rd., Clancy, MT 59634. All items should be typed and put on a 3.5" disk and saved in Microsoft Word or rich text format (rtf.) for a PC. Please include a hard copy with your disk. They can also be sent electronically in the same format as above to: drakekath@direcway.com

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