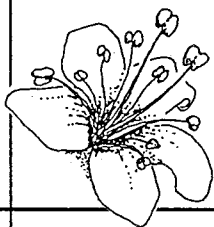


*Kelseya uniflora*



# Kelseya

Vol 9, No 1

AUTUMN 1995

Newsletter of the Montana Native Plant Society

## HOW PLANTS TALK TO EACH OTHER

– Richard Stout

Remember the book **The Secret Life of Plants**? Published in the early 1970s, it enticed readers with chapters such as *Plants Can Read Your Mind* and *Force Fields, Humans and Plants*, while billing itself as a report on "the latest discoveries of scientists." Such chapters included accounts of electromagnetic communication between plants as well as between humans and plants. My favorite is the investigator who seriously proposed connecting a philodendron to his garage door opener so that he could mentally signal the plant to open the door as he approached.

Perhaps because of the book's popularity at the time, the mere mention of its title in my introductory botany class (circa 1975) provoked the professor to angrily revile the book. This reaction, I think, was indicative of how the book was regarded by most professional plant scientists. Because of this, no serious consideration of plant-to-plant communication likely occurred within the scientific community without being affected by the stigma of **The Secret Life of Plants**.

Despite this, the notion that plants communicate with one another, as well as with other living organisms, has been supported by several recent studies, which have shown that this occurs not through electromagnetism but through airborne chemical signals. Most of this research has occurred within the context of plant responses to disease-causing microbes or to insect pests.

The first two of these reports came in the early 1980's and were dubbed by the popular media as the "talking trees" studies. The gist of the findings was that insect-damaged trees (willows and poplars) somehow induced changes to occur in the leaf biochemistry of nearby trees. These changes included an increase in the biosynthesis of organic compounds (such as tannins) known to inhibit insect digestion. These initial reports were the object of much criticism and were generally regarded as unconvincing. Not until nearly ten years later that skeptics began to be persuaded that airborne signals among plants can happen in nature.

In 1990 a report involving interplant defense signals was published in the **Proceedings of the National Academy of Sciences** from the laboratory of an eminent plant biochemist, Dr Clarence A Ryan of Washington State University. Dr Ryan's lab had been involved in plant defensive mechanisms for over two decades. Some of these mechanisms involve the production by some plant species of large, complex organic

molecules (proteins) that thwart some of the digestive enzymes produced by insect pests. Interestingly, these molecules are not produced by "undamaged or control" plants, but may be synthesized within several hours after a plant is damaged – by an insect chewing on a leaf, for instance. What Ryan and coworkers reported in this 1990 paper was that a volatile chemical, *methyl jasmonate*, found in

some perfumes, can diffuse through the air and induce the production of these anti-insect molecules in undamaged plants. Moreover, they reported that a sprig of sagebrush (*Artemisia tridentata*) could also elicit such a response in undamaged plants. They isolated the active compound from sagebrush and identified it as methyl jasmonate (MJ).

Ever since Ryan's report there has been much interest in this compound as a plant signal molecule. MJ is found in at least nine plant families and is also produced by some insects. In the past few years researchers have found that MJ levels increase in some insect-damaged plants. But whether the MJ levels are high enough in insect-damaged

– continued on Page Six

Coming next...  
a  
calling  
card  
for  
plants?





## IN MEMORIAM:

### Klaus Heinrich Lackschewitz

1911-1995

The Clark Fork Chapter and the entire Native Plant Society mourn the loss of Klaus Lackschewitz, who died on August 10. He did much during his life in Montana to make knowledge of our flora accessible to lay people and scientists alike.

The obituary below is excerpted from the Missoulian of Friday, August 11, 1995. Thanks to all who sent in copies of this. Several people are writing remembrances of Klaus and his work, and we will publish these in the winter KELSEYA. In addition to the two species mentioned in the obituary, the pink mountain dandelion, *Agoseris lackschewitzii*, also was named in Klaus' honor.

The Lackschewitz family has suggested memorials to the Montana Native Plant Society, and we appreciate that generous gesture, as we are equally thankful for Klaus' life and work in Montana. At press time we had received over \$875 in donations in Klaus' name.

MISSOULA - Klaus Heinrich Lackschewitz was born May 4, 1911, in the Neu-Laitsen Forstei, Latvia, of Baltic German ancestry. His early childhood years were spent in a forester's residence in Estonia.

After fleeing from the upheavals of the Russian Revolution, the family settled in Riga, Latvia, where Klaus was educated in a German gymnasium. He had an early interest in the natural sciences and studied botany, zoology and ornithology at the Institution Herderianum Rigense. He then went to an agricultural school and began farming in Latvia. In 1939, the German population of the Baltic provinces was forced to leave and resettle in western Poland. A year later, Klaus was called to the German Army and served on the Russian Front until 1945.

He was taken prisoner of war and spent two years in POW camps in Northern Russia. When released, he returned to war-devastated West Germany. Like many of his countrymen, he decided to emigrate to the United States.

From 1952 to 1960, he worked as a farmer and a landscape gardener in the New York area. He studied assiduously the flora of that region. When coming to the west at age 50, he began anew to explore the flora of his western Montana surroundings, especially the Bitterroot Mountains. After a few years of landscaping work, he was employed by the Botany Department of the University of Montana to oversee the research greenhouses and assist in the Herbarium.

He experimented with the use of native plants in flower gardens and was the main

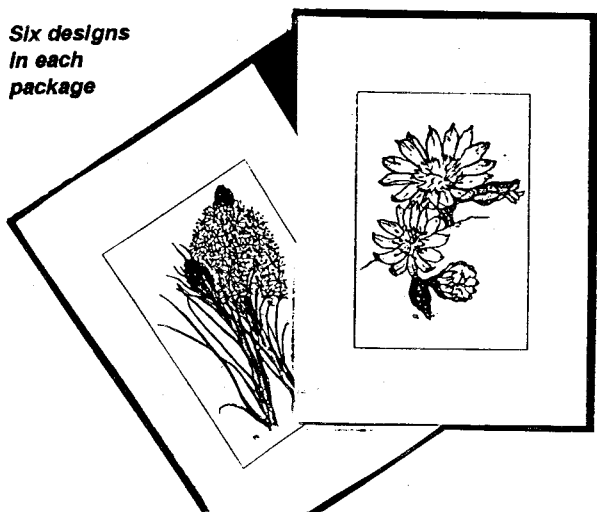
driving force [along with Sherman Preece] in establishing a Native Plant Garden on the university grounds.

In the course of the years, he collected about 12,000 plant specimens in 32 of the 38 Montana mountain ranges. He found about 100 specimens which had not previously been identified for Montana. Two new species he collected were named after him: *Erigeron lackschewitzii* and *Lesquerella klausii*. In 1991, the US Forest Service published his 675-page guidebook, *Flora of West Central Montana*....

The family suggests memorials to the Montana Native Plant Society, in care of Dorothy Faucett, P O Box 8783, Missoula 59807....

## NATIVE PLANT NOTECARDS

Six designs  
in each  
package



Packets of cards will be available through MNPS chapters around the state. Note that cards bought locally help raise funds for your chapter.

Make check payable to **Montana Native Plant Society**. Mail to: MNPS - Cards, P O Box 8783, Missoula MT 59807-8783.

## OUR THANKS TO THE CONTRIBUTORS TO THE ANNUAL MEETING SILENT AUCTION

Many individuals donated "neat stuff" for the Silent Auction, which has become a very popular event at our annual meetings, and a very important source of funding to supplement our membership dues. Thanks to all of them for the things they shared.

Special thanks go to the various businesses which donated items:

**Big Fork:** Electric Avenue Books

**Big Timber:** Blake Nursery

**Bozeman:** Cashman Nursery, Mecklenburg Gardens, Wild Birds Unlimited

**Columbia Falls:** Dee Strickler

**Dillon:** Patagonia Outlet (double donation)

**Great Falls:** Big Horn Wilderness, Bundi Gardens, Spencers

**Helena:** Falcon Press

**Kalispell:** Wildflower Pottery

...and Montana Rock Gardens.

The MNPS flower notecards sold at the Annual Meeting are now available through the mail. To raise funds for MNPS we are selling packages of six cards for \$7.00 each, plus postage. Save money on postage/handling by ordering multiple packages:

|            |                            |
|------------|----------------------------|
| 1 package  | \$ 7.00 + \$1.00 = \$ 8.00 |
| 2 packages | 14.00 + 1.50 = 15.50       |
| 3 packages | 21.00 + 2.00 = 23.00       |
| 4 packages | 28.00 + 2.50 = 30.50       |
| 5-10 pkgs  | 7.00 ea + 3.00 total postg |

## MEETINGS

**Kelsey Chapter** – A great fall program is being organized but has yet to be scheduled at the time the newsletter went to press. Kelsey folks -- watch for an announcement in the mail.

**Maka Flora Chapter** will schedule its fall/winter program and business meeting later this year. Notices will be mailed to all members.

**Wednesday, October 4, Valley of Flowers Chapter:** 7 pm, library (2nd floor) of the Emerson Cultural Center, 111 S Grand, Bozeman. "Native Plants of the Mountains of the Moon: Plant Life of the African Ruwenzori Mountains," presented by Richard and Teresa Galli, with a discussion of the plant life of the African highlands.

**Thursday, October 12, Clark Fork Chapter:** 7:30 p.m., Room 307, Botany Bldg, UM campus, Missoula. Maria Mantas, botanist with the Flathead National Forest and photographer extraordinaire, will present a slide show.

**Wednesday, October 18, Flathead Chapter:** 7 pm, Fish, Wildlife and Parks building, Meridian Rd, Kalispell. Kathleen Young Fenner, an award-winning calligraphic and watercolor artist, will present a slide lecture and demonstration of "Language to Landscape," a new painting/communications technique which turns letter forms to landscape via a brushstroke system based on Italic and Oriental painting methods. The focus of the lecture will be silviculture of the Glacier National Park area and will also include native Montana wildflowers and plants. Business meeting beforehand at 5:30 – everyone is welcome.

**Wednesday, November 1, Valley of Flowers Chapter:** 7 pm, library (2nd floor) of the Emerson Cultural Center, 111 S Grand, Bozeman. "Flowers with Their Feet Wet," an enlightening look at Montana orchids, presented by Ron Shimek.

**Thursday, November 9, Clark Fork Chapter:** 7:30 p.m., Room 307, Botany Bldg, UM campus. Peter Lesica will show slides and discuss "Ants in the Plants at Pine Butte Swamp Preserve." Along with being the cofounder of MNPS, Peter is a botanist for the Nature Conservancy and has conducted research at Pine Butte for over ten years.

**Wednesday, November 15, Flathead Chapter:** 7 pm, Fish, Wildlife and Parks bldg, Meridian Rd, Kalispell. Program to be announced. See local newspapers or call Rachel Potter at 892-2446. Business meeting beforehand at 5:30. Come help plan the MNPS 1996 state meeting!

### CALENDAR COORDINATOR

Tulli Kerstetter, MNPS vice president, is now serving as coordinator for all meeting and field trip notices, field trip reports, and chapter activity writeups. Please send them typed or on disk (see back page for specs) no later than **December 1** for inclusion in the Winter issue of the newsletter: KELSEYA, Attn: Tulli Kerstetter, P O Box 6444, Bozeman MT 59771-6444.

**Wednesday, December 6, Valley of Flowers Chapter:** 7 pm, library (2nd floor) of the Emerson Cultural Center, 111 S Grand, Bozeman. "Flavorful and Magical Mushrooms," an entertaining look at functional as well as fanciful fungi of our region, presented by Don Mathre.

**Friday, December 8, Clark Fork Chapter:** 6:30 pm, Anne Garde's house, 201 S 4th West, Missoula. Please bring a dish, your own silverware, and a few slides of your most interesting summer trips!

**Wednesday, December 20, Flathead Chapter:** Annual Christmas party at Neal and Pattie Brown's, 560 Wolf Creek Dr, Bigfork. Don't miss it! Visiting starts at 6 pm, potluck supper at 7 pm. Call Pattie at 837-5018 for details.

**Wednesday, January 17, 1996, Flathead Chapter:** 7 pm, Fish, Wildlife and Parks bldg, Kalispell. "Plants of Ecuador," a slide show by Sam Culotta and Tara Luna. Business meeting beforehand at 5:30 – everyone is welcome.



## FIELD TRIPS

### ANNUAL MNPS FALL CANOE TRIP SATURDAY, SEPTEMBER 30

Our annual end-of-the-season canoe/kayak trip is sponsored by the Flathead Chapter. This year's float is the Flathead River from Dixon to Perma. Meet at 10 am at the Dixon Store, Hwy 200. Bring lunch & water. Call Jean Parker, 406-273-6412 (Missoula), or Anne Morley, (Swan Lake) 406-886-2242, for information.



## FIELD TRIP REPORTS

### THE GRASSES OF PEET'S HILL

A unique field trip was held June 10 in Bozeman. We studied and identified several species of native grasses within the city limits, where *Poa pratensis* reigns supreme. Peet's Hill Trail is a portion of Burke Park, an open area on the east side of town set aside for walking, jogging, and – in this case – plant-watching. Recently, a "Friends of Peet's Hill" group formed to help fund upkeep for one main trail in this area instead of several side trails. NRCS biologist Peter Husby led us on a walk that began with wetland grasses, sedges, and rushes at the base of the hill and ended in a pristine Idaho fescue (*Festuca idahoensis*) grassland community.

Moving up along the slopes, we found three bluegrasses (*Poa palustris*, *P. sandbergii*, and *P. bulbosa*) along with green needlegrass (*Stipa viridula*), bluebunch wheatgrass (*Elymus spicatus*), and western wheatgrass (*Elymus smithii*). A highlight for Peter was finding timber oatgrass (*Danthonia intermedia*). We discussed the major identifying features of grasses using an informative handout and plant keys. Although the trip focused on grasses, we could not resist keying the colorful *Penstemon attenuatus* in bloom. Canine "Kelly iversonii" experienced his first plant walk and leash lesson! And after a dreary week of rain we welcomed the sunshine and greenery.

– Linda Iverson

## A RARE CHANCE TO VISIT THE SWEETGRASS HILLS

An enormous group from Canada and the US met at Sweetgrass, Montana, on July 9 to hike on the Clark Ranch on West Butte of the Sweetgrass Hills in north central Montana. Led by Adrien Corbiere of the Alberta Native Plant Council, the group observed birds and Native American vision quest sites as well as a wide variety of wildflowers.

The plentiful rain during this growing season meant that the flowers were varied and lush. Larkspur, penstemon, paintbrush, sticky geranium, wild onion, and death camas were among the flowers observed. Because some members of the group were expert on rangeland, grasses and other range plants were also identified. A negative aspect was the patch of leafy spurge observed along the trail.

- Darlene Skarl

## CRAZY DAYS

Humming that Patsy Cline tune, we drove through pouring rain to the trailhead at Half Moon Campground on the east slope of the Crazy Mountains in central Montana. On July 22-23, a group of hardy backpackers hiked to the headwaters of Big Timber Creek to enjoy the amazing alpine scenery, plant life, and clearing weather! Sally Orr steered us up an old unused trail to camp in the high meadows above Twin Lakes. The lush valley floor was carpeted with the delicate foliage of plants such as western meadowrue (*Thalictrum occidentale*), false hellebore (*Veratrum viride*), raceme pussytoes (*Antennaria racemosa*), and several ferns: Oregon woodsia (*Woodsia oregana*), holly fern (*Polystichum lonchitis*), brittle fern (*Cystopteris fragilis*), and shield fern (*Dryopteris filix-mas*). West slope people marveled at the old stands of whitebark pine and lamented the demise of their whitebark pines by blister rust.

Steve Shelly, botanist with the Region 1 Forest Service office, helped us identify over 100 plants, many of these just emerging from late snowbanks. We were happy to also have Dana Field along, back in Montana this summer working on the Lewis and Clark Forest. As luck would have it, she spotted the rare *Agoseris lackschewitzii* in an open meadow, exactly where she expected to find it. Alpine plants in bloom included moss campion (*Silene acaulis*), alpine avens (*Geum rossii*), and alpine forget-me-not (*Eritrichium nanum*), all tucked in among the rocks above timberline. We hope to explore another drainage next year! The Crazies are a truly remarkable island mountain range worth appreciating.

- Linda Iverson

## MAKA FLORA SUMMER ACTIVITIES

The Maka Flora Chapter had a busy summer with three field trips. The first was north of Plentywood at the Wagner farm on June 4. Although we had a very hot day, there was a good turnout, and we had a pleasant afternoon of viewing and identifying early season prairie plants over some varied terrain. Afterward, Cherryl Wagner prepared a snack, and we had a tour of her brother's woodworking operation. Thanks, Wagners!

On July 16, there was a field trip to the Medicine Lake Wildlife Refuge. Among other things, we examined an experimental grassland burn, but the highlight was a hike into an "off limits to the public" white pelican rookery. This nesting site is one of the

largest in North America. Later in the day, a hike into the sand hills area on the Smith Farm near the Refuge gave us a chance to see an ecosystem that is unique in Montana. Thanks to the Refuge staff and Doug for a good day!

The final outing of our season was on August 20, to the Redman Ranch south of Sidney, which lies along the east bank of the Yellowstone River. The day was surely a fitting finale, with a perfect day and wonderful hosts in the Redman family. We toured and hiked one of the last stretches of the Yellowstone that has not been developed or farmed. We even saw a stretch of perfectly flat benchland that is still virgin prairie! Thank you to Georgia and Ramona for organizing things. Sorry, Bonnie, no *Rorippa calycina* sightings!

## ANNUAL MEETING FIELD TRIPS

**Onion Park/O'Brien Creek RNA:** On a bright blue Saturday morning (June 24), one of the "drive & walk" tour groups warmed up with a stop in a beautiful montane grassland at the south end of Belt Park, where we were treated to profuse blooms of spring beauty (*Claytonia lanceolata*) and glacier lily (*Erythronium grandiflorum*). Other plants of interest here included Parry's lousewort (*Pedicularis parryi*), as well as a number of species common to montane grasslands, such as old man's whiskers (*Geum triflorum*) and shooting star (*Dodecatheon conjugens*).

The next stop was at Onion Park Research Natural Area, one of several recently established RNAs on the Lewis & Clark National Forest. Owing to the rather late blooming year, we unfortunately did not see any of the three native onion species in bloom, although the leaves of chives (*Allium schoenoprasum*) were conspicuous and abundant; the other onions present here are short-style onion (*Allium brevistylum*) and Geyer's onion (*Allium geyeri*). We also found the emerging foliage and buds of blue camas (*Camassia quamash*), which in an "average" year would have presented a sea of purple blossoms at the time of our visit. One species that WAS in full bloom here made the stop very worthwhile, though, as we were treated to large colonies of white globeflowers (*Trollius laxus*).

Another stop west of the main highway was at O'Brien Creek Research Natural Area, where we hiked a short distance to see an old-growth Engelmann spruce/labrador tea/false hellebore (*Picea engelmannii*/*Ledum glandulosum*/*Veratrum viride*) plant community.

The last stop before heading home provided a perfect final highlight for the day. This was on King's Hill, where we did not have to venture far from the cars to be treated to the fantastic purple blooms of limestone columbine (*Aquilegia jonesii*)! Numerous other species were observed in the very interesting, exposed limestone outcrops along the ridge, including Rocky Mountain douglasia (*Douglasia montana*) and Missoula phlox (*Phlox kelseyi* var. *missoulensis*); the latter is endemic to Montana. All told, it was a fabulous time to be in the Little Belt Mountains, despite the late season.

- Steve Shelly

**Paine Gulch:** Another Saturday field trip visited the Paine Gulch RNA. Gary Davis, ethnobotanist and principal of Great Falls High School, and Angie Evenden, USFS Natural Areas

- continued on Page Six

**ANNUAL MEETING FIELD TRIPS, continued:**

Ecologist, led a group on an exploration of the Paine Gulch Research Natural Area (RNA). This 2405-acre natural area supports a variety of forest types on limestone substrates: ponderosa pine, Douglas fir, limber pine and subalpine fir.

The group hiked about three miles up the gentle grade in the bottom of the gulch through dry forests to openings with aspen and rough fescue grasslands. Gary Davis shared his knowledge of Native American uses of plants we encountered along the way. The group identified numerous wildflowers on the hike, and added several previously-undocumented species to the plant list for the RNA. Among the highlights were a number of flowering orchids including frog orchis (*Habenaria viridis*), two coral roots (*Corallorhiza trifida* and *C. wisteriana*), fairy-slipper orchid (*Calypso bulbosa*), and mountain lady's slipper (*Cypripedium montanum*).

- Angie Evenden

**Big Baldy Mountain:** After driving through the old mining town of Neihart and up the Jefferson Creek Rd (#267) and Chamberlain Creek Rd #3328, we started our climb near the head of Chamberlain Creek at about the 7500 foot contour. No trail here, the route was a bushwhack up through lodgepole, spruce, subalpine fir and whitebark pine forest with an understory dominated by grouse whortleberry (*Vaccinium scoparium*). Other plants seen here included *Pyrola secunda*, *Pyrola chlorantha*, *Vaccinium globulare*, *Carex geyeri*, *Carex concinnoides*, *Goodyera oblongifolia*, *Lonicera utahensis*, *Fragaria virginiana*, as well as wolf lichen and many other mosses and lichens. An old Forest Service sign on a tree marked an old sheep driveway, up through the trees, to the forage areas in the parks above.

Headed by trip co-leaders Wayne Phillips and Maria Mantas, the group then broke out into the open, to be greeted by a multitude of wildflowers and grasses. Among them were: *Polygonum bistortoides*, *Dodecatheon pulchellum*, *Agoseris glauca*, *Claytonia lanceolata*, *Delphinium bicolor*, *Besseyia wyomingensis*, *Lomatium cous*, *Geum triflorum*, *Saxifraga rhomboidea*, *Mertensia oblongifolia*, *Festuca idahoensis*, *Potentilla fruticosa*, *Sedum lankeolatum*. And as the group climbed higher into the alpine turf: *Deschampsia cespitosa*, *Douglasia montana*, *Erytrichium nanum*, *Fraseria speciosa*, *Potentilla diversifolia*, *Arenaria obtusiloba*, *Polemonium pulcherrimum*, *Polemonium viscosum*, *Ranunculus glaberrimus*, and *Erigeron melanocephalus*.

The group - after becoming somewhat strung out - stopped together for lunch at about the 8800 foot contour, after a 1300 foot climb. From the lunch spot there were great views of Yogo Peak, Neihart Baldy, and in the distance (from east to west): the Big Snowys, Crazy Mountains, Bridger Range, and Big Belt Mountains. After lunch about half the group descended with Wayne to get back to camp in time to start the plant ID contest. The other half went with Maria to the summit, reporting an easy quarter mile and 400 foot vertical climb, for great views down into the cirque and Rhoda Lake a thousand feet straight down.

As far as we know, everyone returned to camp safely!

- Wayne Phillips

**Belt Creek Dry Fork:** On Sunday morning (June 25), a group of orchid enthusiasts joined Gwen McBride for a visit to two sites along the Dry Fork of Belt Creek. At the first stop in a mid-successional Douglas-fir forest, we saw several spectacular

clusters of fairy slipper (*Calypso bulbosa*), including one group with over 20 blossoms! Right nearby we enjoyed seeing two of the five Montana species of *Corallorhiza* (spotted coral root [*C. maculata*] and yellow coral root [*C. trifida*]). For the second stop we travelled upstream to the mouth of Blankenship Gulch to see northern rattlesnake-plantain (*Goodyera repens*), although it was, not quite yet in bloom. This intriguing orchid is a rare species in Montana that is designated "sensitive" by the US Forest Service. Most of the known locations in the state are in the Little Belt and Big Snowy Mountains, with one site also being known in Glacier National Park; otherwise, the species typically occurs to the north and east in North America. The weather remained warm and dry -- a perfect way to spend a June Sunday in Montana, experiencing the unique diversity of plants and habitats in the Little Belt Mountains!

- Steve Shelly

**South Fork Judith River/Judith Guard Station:** For this motor tour on Sunday, MNPSers were joined by participants from the Lewis and Clark Festival from Great Falls. Heading south over Kings Hill Summit from the camp to Deadman Creek, we turned up Forest Rd #837 and #487 to the Smith River/Judith River divide at Spur Park. Here we stopped for lunch at about 8100 feet in the sunshine in a subalpine parkland. From this spot we could look down into the Lost Fork of the Judith, a Montana Wilderness Study Area and the site of the 1985 Sandpoint Creek fire (13,000 acres). After lunch we drove on down through Ant Park and down to Hoover Spring, where Jake Hoover and Charlie Russell spent some early days hunting together. Here we were greeted by a multitude of wildflowers, including *Pedicularis parryi*, a beautiful rosy-purple lousewort.

The tour continued down to the South Fork Judith road (#487), through the grasslands of Russian Flat, with views of Daisy Notch, Mount High and Russell Point. In the rugged limestone canyons of the lower South Fork Judith River, we stopped in Hay Canyon to search for two plants on the Forest Service Sensitive list: *Goodyera repens* (northern rattlesnake-plantain), and *Aquilegia brevistyla* (short-styled columbine). Anne Morley was the first to find each of these plants: the variegated leaves of the rattlesnake-plantain hiding in the moss of the shaded woods, and the small blue flowers of the columbine in the open, partial shade of the large Douglas fir trees nearby.

From the Judith canyons the group drove on down to the old Judith Guard Station, which is being restored as a historical site. Here in the open ponderosa pine forest along the Middle Fork Judith River, the group disbanded, with some hiking on up the river to look for pictographs and others heading for home.

- Wayne Phillips

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**...FOUND...**

...at the Annual Meeting last June in the Little Belts: a blue Patagonia cotton jacket (size Large), left in the meeting hall of St Thomas Camp. Please contact Linda Iverson at 406-932-5840 if it belongs to you.

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## BOTANICAL EXPLORATION IN MONTANA: Part 3, *W E BOOTH*

– Robert Dorn

The knowledge of a state's flora necessarily evolves through several stages over many years. In the early stages, all collected material is taken out of the state, and sometimes out of the country. When the first resident botanists arrive, the only information they have on the state's flora is what they can glean from scattered and difficult-to-obtain literature, mostly descriptions of new species and plant lists compiled by early expeditions. Occasionally there was a very incomplete regional flora done by a non-resident based on these early collections.

The first and most difficult task for the first resident botanists is to collect and catalog as much of the flora from as much of the state as possible. In the days of rail and horse travel, this was a slow process.

The use of the automobile in the 1920s made this a bit easier, although the roads were none too good then. The period from about 1900 to 1950 covers the main collecting and cataloging of Montana's flora, even though it is still continuing today. Numerous people were involved in that process.

Once a reasonable base of collections is accumulated, the second difficult task begins: writing a flora for the state. This task usually is undertaken by one or two people. Limited access to literature, a common problem in remote places, makes the task even more difficult. For Montana, this was the task that fell to William Edwin Booth.

Ed Booth, as he was known by his colleagues, was born in St Francis, Kansas, on April 2, 1909. He obtained his Bachelor of Arts degree from Nebraska State Teachers College in 1930 and his Master of Science from the University of Oklahoma in 1932. He was a superintendent of schools in Nebraska from 1932 to 1935, an instructor of biology at Wisconsin State Teachers College, Oshkosh, in 1936 and 1937, and obtained his PhD in plant ecology from the University of Kansas in 1941. He arrived in Bozeman in 1941 to be Assistant Professor of Botany at Montana State College. His stay was shortly interrupted by World War II. He served in the Medical Corps from 1942 to 1945. Ed did extensive collecting all over Montana. In a short five years after returning to Bozeman, he completed *Part I (Monocots)* of his *Flora of Montana*. This included the economically important grass family.

With the help of J C Wright, *Part II (Dicots)* was completed nine years later. He also wrote a textbook on Agrostology. His contributions are undoubtedly the most significant that any single botanist has made to our knowledge of Montana's flora. The final part of this series will look at W E Booth as a teacher.

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Robert Dorn, author of *Flora of Wyoming* and *Flora of Montana* (among numerous other publications), has examined the early botanical exploration of Montana in two previous issues of *KELSEYA*.

## HERITAGE CORNER

### CELEBRATE WITH MTNHP: A DECADE OF BOTANY

Montana Natural Heritage Program marks its Tenth Anniversary with an Open House for the public on November 2, 1995 from 4–7 pm in the State Library–Justice Building foyer, 1515 E 6th Ave, Helena. YOU ARE INVITED!

The Program – jointly funded by the Nature Conservancy and the State of Montana – is part of an information service housed in the Montana State Library, with a central mission of responding to statewide biological information requests from general public, agencies, researchers, county planners and consultants. It builds and maintains information on State Species of Special Concern and plant associations, including their distribution, status, classification, habitat features, and supporting literature.

An array of plant species and plant associations have been the subject of intense research across the state over this decade, compiling and significantly expanding knowledge about the state's flora and vegetation. A succession of Heritage botanists/ecologists, contractors, and graduate students, as well as botanists or ecologists in cooperative positions with the US Forest Service, have made highly significant contributions.

The roles and capacities of the Program have also expanded, and new botany information services will continue to be announced in this newsletter.  
– Bonnie Heidel

### CONTRACTORS' LIST AVAILABLE

In the last couple of issues of *KELSEYA*, the Natural Heritage Program has requested the names of botanists in the region who are available and interested in participating in a "pool" of names to be provided when the Program receives inquiries.

MNPS is publishing the preliminary list of respondents as a pull-out in this issue. Bonnie Heidel (who made the original compilation) will be happy to have additions or corrections; the address to contact her is on the pull-out.

### BIOLOGICAL CONTROL CENTER PROPOSED

A proposal is gaining support to establish a Western Biological Control Center in Bozeman MT. The center is planned to be an interdepartmental, interagency facility dedicated to research, technology transfer, and implementation of biological control for weeds and insect pests on rangelands, croplands and forests.

Staff of the center will be drawn from USDA Agriculture Research Service, Forest Service, Animal Plant Health Inspection Service, BLM, EPA, and US Fish and Wildlife Service. The regional center will provide coordination and leadership in the development of biological control as an economical, long-term, environmentally-sound solution to weed and pest problems.

For more information, contact Dr Chuck Quimby, Research Leader, USDA ARS Rangeland Weeds Laboratory, Culbertson Hall, Montana State University, Bozeman MT 59717; or call 406–994–4526.

### NORTH AMERICAN DIATOM SYMPOSIUM

The 13th North American Diatom Symposium will be held September 27–30, 1995, at Iowa Lakeside Laboratory, Milford, Iowa. For more information contact Dr. Stephen P. Main, Biology Department, Wartburg College, Waverly Iowa, 50677. Phone (319) 352–8386; FAX (319) 352–8582. If email is your thing, use: main@wartburg.edu.

plants in the field to induce defensive responses in neighboring plants remains an unresolved question at the present time. For this and other reasons, some ecologists remain doubtful that MJ is part of a natural airborne interplant warning system, though it has been known for many years that plants produce a gaseous chemical that can dramatically affect plant development, namely ethylene.

Along with ethylene and MJ, plants release a myriad of volatile chemicals when munched on by insect herbivores such as caterpillars. We now know that some of these compounds may serve as chemical signals that attract predatory

Notwithstanding their disagreements, most biologists would agree, I think, that complex and subtle communication takes place among neighboring life forms in nature. We are just beginning to be clever enough to develop ultra-sensitive methods to detect these interactions. It remains to be seen whether we'll ever be able to sort out the multiple lines and many levels of communication that likely exist among co-evolving plants, animals and microbes that inhabit an alpine meadow, for example. In this article, I've tried to briefly review our rudimentary knowledge about interplant (and plant-insect) communication via airborne signals. (I haven't even mentioned what may be going on underground!) Despite the increasing evidence in favor of this idea, many scientists still ridicule the idea of "talking" plants first popularized by **The Secret Life of Plants**. The stigma lives on?

To receive a list of selected references regarding interplant communication, please send a SASE to: Richard Stout, Dept of Biology, Montana State University, Bozeman MT 59717.

## BUREAU OF LAND MANAGEMENT ADOPTS SENSITIVE SPECIES LIST

The Montana office of the Bureau of Land Management (BLM) designated 29 plant species as sensitive and adopted a sensitive species policy on August 3, 1995; fitting tribute to Don Heinze on his last day of work as BLM Botanist. Credit is to be given to Don Heinze, now retired, and Larry Hamilton, State Director. Copies of the list and policy are available from: Bureau of Land Management, P O Box 36800, Billings MT 59107-6800.

The Nature Conservancy has instituted a new ecosystem research program in recognition that successful protection of biological diversity requires a better understanding of the habitats and ecosystem processes that support species. Realizing that it could not accomplish this kind of understanding alone, TNC has embarked on a program that seeks out research partnerships with agencies, universities and other non-profit organizations. The new Ecosystem Research Program (ERP) provides the vehicle to create the partnerships and fund the research.

In 1993 the A W Mellon Foundation gave TNC \$1.5 million to begin ERP. TNC agreed to fundraise an additional \$1.5 million for the program, and each participating researcher is required to match – dollar for dollar – the funds they receive from the ERP.

The first set of proposals has been awarded. Twenty-two grants have been given to scientists in the United States, Ecuador, Indonesia, and Panama. The studies cover a diverse range of topics including hydrologic studies on a number of riparian ecosystems; integration of socio-economics of palm fruit and game hunting with sustainable use; modeling of a boreal

macrotidal estuary; the role of fire on insect diversity; and new strategies for prairie conservation, restoration and management.

The latter study uses the Willamette Valley Natural Areas Network in Oregon. TNC preserves and Research Natural Areas managed by the Army Corps of Engineers and the US Fish and Wildlife Service will be the focus of an attempt to refine a model initially developed to predict vegetation community response to natural disturbance. It is hoped that the revision of the model will provide clues to grassland manipulations that enhance native species and discourage or diminish the spread of exotics.

– Reprinted from the **Natural Areas Report**, Vol 7, No 2 (Summer 1995), an information exchange publication for Natural Areas scientists and managers

Several years ago, MNPS developed a list of books relating to native plant identification and gardening/landscape use. This fall we will be revising and updating that list, and will publish it as part of the Winter *KELSEYA*.

The updated version will include a NEW section on edible and medicinal uses of native plants. We welcome your suggestions for possible titles to include in this new section. Books or other publications need not necessarily be in print to be included. However, please limit your suggested titles to those relating to the Rocky Mountains/Northern Great Plains/ Intermountain regions. There are lots of general books on edibles of the Euell Gibbons/Bradford Angier type, and these are certainly helpful for someone getting started, but often deal with plants that are most common in other parts of the country, or that are introduced, not native to our region.

On each book we need the following: author, complete title, publisher name and city, publication date; if you have price information that is helpful. Please send your recommendations to: **KELSEYA**, Attn: Booklist Update, P O Box 6444, Bozeman MT 59711.

# MONTANA NATIVE PLANT SOCIETY \*\*\* MEMBERSHIP APPLICATION/RENEWAL

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**ARTEMISIA CHAPTER** - Yellowstone and Carbon Counties; southeastern/south-central 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 and Jefferson Counties

**MAKA FLORA CHAPTER** - Richland, Roosevelt, McCone, Sheridan and Daniels Counties

**VALLEY OF THE FLOWERS CHAPTER** - Gallatin, Park, Madison and Sweet Grass Counties plus Yellowstone National Park

All MNPS chapters welcome members from areas other than those indicated - we've listed the counties just to give you some idea of what part of the state is served by each chapter. More chapters are in the planning stages for other areas; watch for announcements of meetings in your local newspaper. Ten paid members are required for a chapter to be eligible for acceptance in MNPS.

Membership in the 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 included in the Winter issue of KELSEYA. Anyone who has not renewed by the time the Summer KELSEYA is ready to mail will be dropped from the mailing list/MNPS membership roster.

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**MAIL TO:** Montana Native Plant Society/Membership  
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 Missoula MT 59807-8783

## NEW PUBLICATIONS:

### Principles and Practice of Plant Conservation

David R Given

Timber Press, 1995, \$29.95 (hardcover)

This book, sponsored by the World Conservation Union and the World Wide Fund for Nature, presents the first systematic treatment of conservation principles and practices for rare, threatened, or disappearing plant species. Using detailed case studies from all over the world, it provides a comprehensive summary of current information and techniques on sustainable resource management, including short-term and long-term economic implications.

### Ethics in Forestry

Edited by Lloyd C Irland

Timber Press, 1995, \$39.95 (hardcover)

The issue of timber supply has become a national concern in recent years, symbolized by the 1993 Timber Summit held in Portland OR. It is a debate that has sometimes been couched in moral terms.

This far-ranging collection of readings examines professional,

business, environmental, and governmental ethics as they apply to forestry. Although primarily addressed to foresters and natural resource managers, it will be of considerable interest and importance to concerned citizens and citizen groups. For all readers, it does not seek to teach the right answers, but rather to ask the right questions.

## PLEASE WELCOME THESE NEW MEMBERS:

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### ADDRESS CORRECTION REQUESTED

#### PLEASE NOTE OUR NEW ADDRESS

All newsletter-related items should be addressed to KELSEYA at our new P O Box number, shown above.

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### MONTANA NATIVE PLANT SOCIETY

The Montana Native Plant Society is a 501-C-3 (not-for-profit) corporation chartered for the purpose of learning more about plants native to our state and their habitats, and of sharing that knowledge. Contributions to MNPS are tax deductible, and may be designated for a specific project or chapter, or may be made to the general fund.

Your yearly membership fee includes a subscription to KELSEYA, the newsletter of MNPS, published quarterly. We welcome your articles, clippings, field trip reports, meeting notices, book reviews - almost anything, in fact, that relates to our native plants or the Society. **Please include a line or two of "bio" information with each article.** Drawings should be in black ink or good-quality photocopy. If you send clippings, please note the source, volume/issue and date.

All meeting and field trip notices, field trip reports or announcements should be mailed to KELSEYA, Attn: Calendar, P O Box 6444, Bozeman MT 59771; articles should be sent to Terry Wamsley, P O Box 1304, Harlem MT 59526. All items should be typed or on disk - prefer 3.5" - in WordPerfect 4.2 or better, or in a generic ASCII file.

**Changes of address** and inquiries about membership in MNPS should be sent to MNPS, Attn: Membership, P O Box 8783, Missoula MT 59807-8783. General correspondence should also be sent to the Missoula address.

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 plants or the interests of MNPS members.

**Deadline for the WINTER issue is DECEMBER 1;** please include meeting/field trip notices through mid-April '96. The Winter issue of KELSEYA will be mailed the last week of December.

### IF YOU MOVE, PLEASE SEND US YOUR CHANGE OF ADDRESS



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### \*\* MNPS OFFERS GRANTS FOR NATIVE PLANT PROJECTS \*\*

The Montana Native Plant Society is offering a total of \$500 in 1996 to fund projects benefiting native plants in Montana. Any resident of Montana or member of MNPS may apply for a grant to cover the costs (or partial costs) of a project that will promote native plant conservation or stimulate appreciation of Montana's native flora and vegetation.

There is no standardized application form, but applications must include the title of the project; the applicant's name, address and phone number; a brief description of the project and how it will benefit native plants; the total cost of the project, including funding sources other than MNPS; a budget summary explaining what the money will be used for; and a work schedule/timetable for completion of the project. A letter of support from a teacher,

professor or other plant professional is strongly recommended.

Projects requesting less than \$500 will be given priority consideration - we would rather fund several smaller projects but will consider all proposals up to \$500.

Send five copies of the application to:

MNPS-Grant Applications, P O Box 8783  
Missoula MT 59807-8783

no later than January 1, 1996. A committee appointed by MNPS President Linda Iverson will consider the proposals and give their recommendations at the MNPS board meeting in February. A winner or winners will be announced by March 15, 1996.

Winners will be expected to summarize the results of their project for publication in a future issue of KELSEYA.