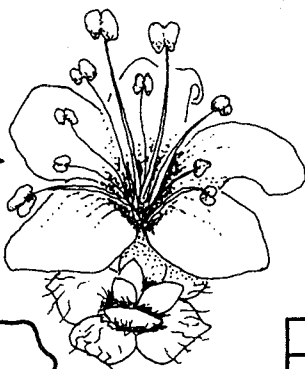


Kelseya uniflora



Kelseya

Vol 6, No 4

SUMMER 1993

Newsletter of the Montana Native Plant Society

OROBANCHE CORYMBOSA, A "LOW PROFILE" MONTANA NATIVE

— Judy Hoy

Historically, *Orobanche corymbosa* (flattopped broomrape) has succeeded in maintaining a low profile in Montana, figuratively as well as literally.

Until August 1992, this inconspicuous little plant had been recorded from only two or three sites in the state of Montana. Consequently, it was classified as an S1 species by the Montana Natural Heritage Program, a rating given to a plant which has been reported from five or fewer sites in the state.

O. corymbosa belongs to the Orobanchaceae (Broomrape Family), all of whose members are parasitic leafless herbs which grow on the roots of other plants. Plants in this group do not contain chlorophyll and so are not green. The roots of *O. corymbosa* invade the roots of *Artemisia tridentata* (Big sagebrush), from which it derives all of its nutrients and water.

In late July and early August, the pale spike-like inflorescence pushes up through the soil. The attractive yellow and purple flowers open just above ground, ranging from three to eight inches in height. At maturity, the oval seed capsules split and release tiny spore-like seeds.

In August of 1992, 50 to 60 plants of flattopped broomrape were found on a south-facing, sagebrush covered hillside in the Bitterroot drainage, between Willoughby Creek and the top of Sunset Bench. Since that discovery, several botanists and amateur plant enthusiasts have done surveys for *O. corymbosa*. Their findings indicate that it can be found wherever *A. tridentata* grows in the foothills of the Sapphire Mountains, on the east side of the Bitterroot River. It was also found on the West Fork of the Bitterroot River in Ravalli County. Botanists in Deerlodge County report finding *O. corymbosa* there after being alerted to watch for it.

Except on the hillside between Willoughby Creek and Sunset Bench where it was first found, the plants are scattered and not abundant, so finding them takes a sharp eye and a fair amount of searching.

This broomrape apparently responded to the heavy early July rains which occurred in western Montana in 1992. Its

floral spikes began pushing up through the ground the first part of August. Most of 1992's blossoms did not have time to mature before the late August frost. Only a few plants were found with mature seed pods.

The frost turned the entire floral spike bright rust red or burnt sienna color. These dried rust red floral parts could still be found near big sagebrush plants in late fall and ranged in height from one to four inches.

With careful examination of the dried floral parts, *O. corymbosa* can easily be distinguished from the dried

floral spikes of other species of *Orobanche*, especially the fairly widespread *O. fasciculata* (common broomrape). *O. fasciculata* is parasitic on several species of *Artemisia* (including *A. tridentata*) and so is found in the same areas as *O. corymbosa*.

The prolonged rainy season Montana is experiencing in 1993 will no doubt mean another banner year for this species. Flattopped broomrape seems to be most abundant in areas with older stands of *A. tridentata*, on south or southwest facing slopes. Anyone finding *O. corymbosa* in counties other than Deerlodge and Ravalli should send complete data to the Montana Natural Heritage Program, 1515 E 6th Av, Helena MT 59620.

Judy Hoy has a ranch in the Bitterroot Valley, and is a frequent contributor to KELSEYA, including "A Bitterroot Valley Refuge for Dryland Species," and "Rediscovering Lost Species."

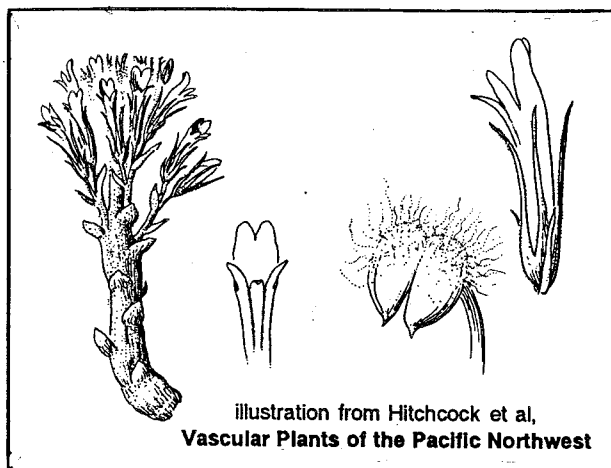


Illustration from Hitchcock et al,
Vascular Plants of the Pacific Northwest

MNPS Sixth Annual Meeting:

ALPINE WILDFLOWERS OF THE GRAVELLY RANGE

Registration fee is \$10.00

FRIDAY, JULY 23

- 7:30 pm Registration and slide show of alpine areas and wildflowers in the Northern Rockies

SATURDAY, JULY 24

- 7:00 am Board of Directors Meeting (over breakfast at Wall Creek)
- 8:00 am Breakfast on your own (coffee, hot chocolate, sweet rolls will be provided)
Registration
- 9:00 am Head for the Hills! Carpool to the Gravelly Ridge Road at 10,000 ft (bring a lunch, warm clothes, rain gear, field guides, camera etc.)
- 10:30am Field Trips – Meet on Gravelly Ridge Road. There will be three trips of varying difficulty:
- (1) climb Black Butte or Cave Mountain, a gain of about 1500 vertical feet;
 - (2) Big Horn Mtn. a gentle climb and 3–4 mile hike; or
 - (3) Short hikes off of Gravelly Ridge Road – suitable for children, photographers and less vigorous adults. Trips will be led by Bob Moseley, Steve Cooper and Peter Lesica.
- 4:00 pm Return to Wall Creek
- 6:00 pm Supper on your own
- 7:30 pm General membership meeting
- 9:00 pm Campfire – S'Mores and Ghost Stories (bring your scariest tale)

SUNDAY, JULY 25

- 8:00 am Breakfast on your own (coffee, hot chocolate, sweet rolls will be provided)
- 9:00 am Committee meetings
- 11:30am Lunch on your own
- 12:00pm Madison Valley field trip (a short hike to look at wildflowers on the valley floor)
- 3:00 pm Break camp and cleanup

HOW TO GET THERE

The meeting will be held at the Wall Creek Wildlife Management Area, roughly 20 miles south of Ennis, just west of the Madison River. The main building will be available for activities in case of rain. Camping is allowed on the premises. Large trailers can find accommodations half a mile east at BLM's West Madison Recreation Area on the river. Fishing and hiking are alternate activities for those not interested in wildflowers.

FOOD

Please note that no food will be provided except coffee, hot chocolate and sweet rolls for breakfast. A microwave oven is available at Wall Creek WMA. The Blue Moon Saloon and Restaurant, seven miles north at Cameron, serves meals and is reasonably priced. The nearest grocery is in Ennis; Cameron has a convenience store.

Drinking water is available at the camping area.

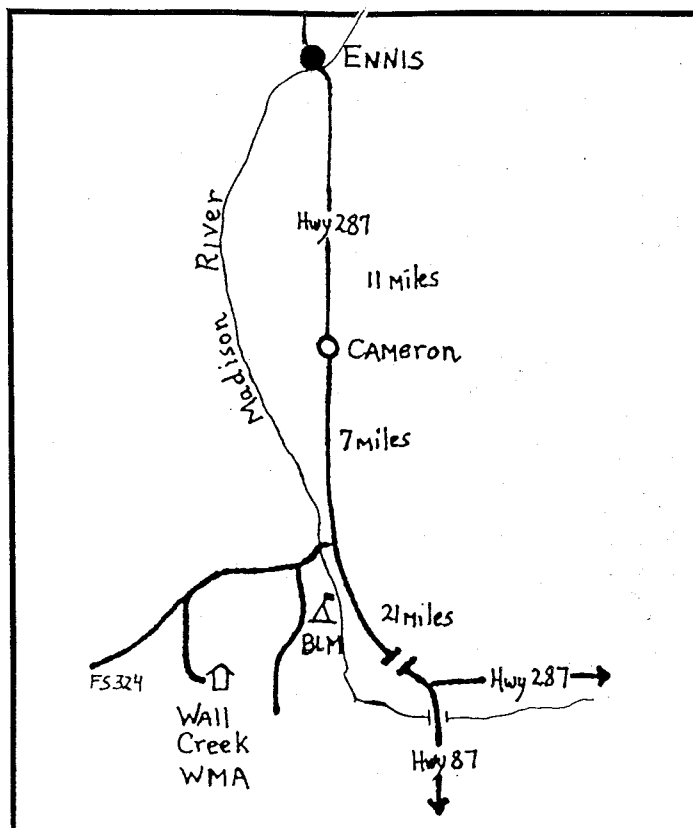
ALPINE WILDFLOWER Books Available

Instead of having a silent auction, we will be selling autographed copies of **Alpine Wildflowers of the Rocky Mountains** by Duft and Moseley, and limited edition Gravelly Range t-shirts to raise money for the state coffers.

MOTEL/CABIN ACCOMMODATIONS

The Upper Madison gets heavy tourist traffic all summer – recommend you make reservation inquiries as soon as possible!

Motels in Ennis (about 20 miles north of Wall Creek); prices are for two persons for one night:	
El Western (682-4217)	\$65
Hickey's Four Seasons Motel (682-4378)	\$35-40
(kitchen units available, add \$4)	
Rainbow Valley Motel (682-4264)	\$50-55
(kitchen units available)	
Riverside Motel (682-4240, 1-800-535-4139)	\$38-48
(kitchen units available)	
Silvertip Lodge (682-4384)	\$35
(all rooms have refrigerators)	
Sportsmans Lodge (682-4242)	\$38-45
Near Cameron:	
Madison Valley Cabins (682-4890)	\$32
(located 10 miles north of Wall Creek)	
Beartooth Lodge (682-7525)	\$55
(located 4 miles from Wall Creek)	



PEOPLE CHANGE – SO DO PLANT COMMUNITIES

– Richard A Prodgers

Do you ever think back and conclude, "I was a different person then"? Or meet a friend from bygone days and find that they – or you – are hardly recognizable in comparison to memories? Of course. Parole boards reflect society's consensus that people change.

If integrated organisms like people change over time, how about plant communities? Plant species combine in recognizable, more-or-less definite communities. the "more or less" qualifier refers to the level of homogeneity present in communities, and the distinctness of boundaries with other communities. Mapping plant communities is an interesting exercise that focuses your mind on some fundamental questions about the nature of vegetation. While no vegetation map can do justice to the complicated pattern of species distributions and abundances, maps have undeniable utility.

We know that plant communities vary in space, but how do they vary in time? This is a complicated question, with many answers. Some believe that change is change, nothing more. Others think they see directional changes, proceeding toward or away from climax plant communities. Classifications such as *habitat types* or *range conditions* are based on models of plant succession.

We would expect the greatest changes in plant communities to occur where relatively short-lived species inhabit a variable environment. Here in Montana, we expect to see more rapid variations in grass-dominated communities in eastern Montana, with its low and irregular precipitation, than in forest communities in western Montana, where individual trees can live over 200 years and the environment is less variable. Of course, aggressive and widely adapted invader species, such as knapweed, can cause dramatic changes in species composition.

Let's consider some common prairie communities in eastern Montana. During a five year period, the peak standing crop (PSC, a measure of production based on a single clipping and drying of current year's growth, timed to coincide with the maximum yield of dominant species) of a community co-dominated by needlegrass (*Stipa comata*), wheatgrass (*Agropyron smithii*), and blue grama (*Bouteloua gracilis*) – all common grasses – was 334kg/ha (kilograms/hectare) in 1977, and 1420kg/ha in 1978. That's a four-fold change in a year! Spring precipitation is by far the most important factor affecting prairie community dynamics.

How did each of the three dominant species act? *Stipa comata*, a mid-size bunchgrass, had PSC of 84kg/ha in 1980 and 354 kg/ha in 1978, about a four-fold difference. *Bouteloua gracilis*, a mat-forming short-grass, had PSC of 70 in 1977 and 140 in 1979, so it didn't change as much. In contrast, *Agropyron smithii*, a rhizomatous mid-grass, had PSC of 68 in 1977 and 447 in 1981, more than a six-fold change. There is a trend for communities to attenuate

species responses. Notice also that the years of minimum and maximum crop are different in some cases.

Now, let's consider how similar floristically the same community was over a four-year period. This time we'll use canopy-coverage data (an ocular estimate) collected by the same investigator at the same twenty 20x50cm plots at the same time of year. This time we'll consider all species, not just the dominant grasses. We'll need a formula (or index) to compare data sets, and the one we'll use is:

$$\text{Similarity} = \frac{2C}{A + B} \times 100$$

where:

A = Average total canopy-coverage, year A;

B = Average total canopy-coverage, year B;

C = Amount of species in common, years A and B.

This is a good similarity index because when you compare a data set to itself, it is 10% similar, which is not true for some indices. All similarity indices have some problems, such as the assumption that species are equally different, but we can live with that for now.

We are considering the similarity of "a community" to itself over a four year period. Similarity was highest (84%) in the consecutive years of 1980 and 1981. However, data from 1978 and 1981 revealed only a 67% similarity. This raises the question of how justified we are in referring to an upland prairie community as a single entity over time.

Finally, let's consider a simple measure of species diversity, or more properly species density. We'll define species density as the number of species with 1% or more average canopy-coverage (based on 20 sample plots).

In a little bluestem community, species density ranged from 12 in 1978 to 5 in 1979. That's quite a change, and makes you wonder if you can characterize community species density without sampling over a lengthy period. But in a bluebunch wheatgrass/blue grama-threadleaf sedge community, species density ranged from nine in 1978 to seven in 1981, not much of a change, given the vagaries of sampling and weather.

There you have it: a complicated picture of community dynamics that should have you thinking twice if you have assumed that plant communities are static over time, or if you compare data from different areas that were collected in different years.

Richard Prodgers is a plant ecologist and reclamation specialist in Butte, whose prior contributions to KELSEYA include "Has Salt Tolerance Pre-Adapted Inland Saltgrass for Metal Tolerance?"



MEETINGS

THURSDAY, SEPTEMBER 9, CLARK FORK CHAPTER: 7:30 pm, Rm 307, Botany Bldg, UM Campus, Missoula. Pat Burke of Bitterroot Native Growers will speak on "Landscaping with Native Plants."

WEDNESDAY, OCTOBER 6, VALLEY OF THE FLOWERS CHAPTER: 7:30 pm, Loft of the Plant Growth Center, MSU Campus, Bozeman. Bring 8-10 slides to share of neat plants/neat places to botanize from your summer's excursions.

THURSDAY, OCTOBER 14, CLARK FORK CHAPTER: Rm 307, Botany Bldg, UM Campus, Missoula. Kelly Chadwick and Peter Lesica will conduct a tour of "Tropical and Subtropical Plants of the University Center Gardens."

WEDNESDAY, NOVEMBER 3, VALLEY OF THE FLOWERS CHAPTER: 7:30 pm, Loft of the Plant Growth Center, MSU campus, Bozeman. Jennifer Whipple, botanist in Yellowstone National Park, will discuss current plant-related topics of interest in Yellowstone. Further details in the Fall KELSEYA.

THURSDAY, NOVEMBER 11, CLARK FORK CHAPTER: 7:30 pm, Rm 307 Botany Bldg, UM campus, Missoula. James Habeck of the UM Division of Biological Sciences will show slides of "Eco-trekking in Australia's Northern Territory."



FIELD TRIPS

See separate pull-out sheet in this issue.



FIELD TRIP REPORTS

ESTES LAKE

Flathead Chapter's Anne Morley led the first field trip of 1993 on May 15. Starting out at 3800' on the Crane Mountain Forest Service road, the Estes Lake trail travels through a mixed forest of Douglas fir, larch and paper birch with blooming shrubs - maple, mountain ash and serviceberry.

The trail passes by three small pothole lakes and many large rock outcrops which are evidence of the last glaciation of the area, occurring more than 10,000 years ago. These different habitats provide an abundant variety of blooming spring wildflowers. Aralia, fairy bells, solomon seal and arnica in the moist areas, and - in the drier rock areas - paintbrush, kinnikinnik, balsamroot, pussytoes and holly grape.

In the woods we found purple clematis vines, purple violets and the Utah honeysuckle (*Lonicera utahensis*) in bloom. The trail continues downhill through an old growth cedar forest with orange cup fungi to Estes Lake at 3500' elevation.

- Pattie Brown



ANNOUNCEMENTS

**FIELD ECOLOGY COURSE, JUNE 21-26
MONTANA ENVIRONMENTAL EDUCATION ASSN**

MEEA announces a graduate-level field ecology course for teachers in grades 5-12, to be held in Deer Lodge. Two graduate credits from U of M are offered. The course consists of six days of field study and lab work. Teachers pay \$40-65 to register (depending on whether they're members of MEEA), and receive a stipend to help defray living and travel expenses. Financial support for the course comes in part from the EPA environmental education grant program. For more information and/or application, contact MEEA at P O Box 928, Dillon MT 59725, or call Jack de Golia at 683-3984.

**PROPAGATION AND CULTURE OF INTER-
MOUNTAIN NATIVE PLANTS
JUNE 22, UNIVERSITY OF MONTANA**

Sponsored by the American Society for Horticultural Science (Western Region) and co-sponsored by the Botanical Society of American (Pacific Section). Organizer is Larry A Rupp, Department of Plants, Soils and Biometeorology at Utah State University, Logan UT 83422-4820. Will examine the current state of propagation and production of native plants for horticultural purposes, and focus on future research and educational needs.

**NATURAL SITE RESTORATION WORKSHOP
YELLOWSTONE NATIONAL PARK, JUNE 23-26**

The Student Conservation Association is sponsoring a professional-training workshop featuring four days of remote-site restoration study and practical applications in site analysis, planning, design, implementation and management. This course is designed for managers and practitioners working with wilderness, wildlands and other geographically challenging terrain.

Workshop participants will take part in on-site visits and evaluations, collecting, cleaning and storage of seed; plant salvage strategies, and site stabilization, preparation and bioengineering sessions. Both lectures and hands-on experiences will help participants to enhance their skills in dealing with challenging restoration projects. Cost of the workshop is \$300, which includes food and housing.

- continued next page

ANNOUNCEMENTS, continued

College credit is available. For more information on this or upcoming workshops and activities, contact Sue Thieder, Assistant Program Director, Student Conservation Association, Northwest Regional Office, 2524 16th Av South, Seattle WA 98144, or phone (206) 324-4649.

FIRE ECOLOGY SYMPOSIUM CANCELED

The symposium **Fire's Role in Rocky Mountain Ecosystems**, previously announced for November 15-18 at Montana State University, has been canceled due to current and anticipated budget uncertainties within many government agencies.

The Symposium Steering Committee encourages those interested in fire as a management tool in Rocky Mountain ecosystems to attend training sessions and symposia already planned on this subject, such as Yellowstone National Park's Second Biennial Scientific Conference in September.

NORTHERN ROCKIES PLANT STUDY CENTER OFFERS WORKSHOPS AND WALKS

Jackson Hole's new Northern Rockies Plant Study Center offers a variety of plant-related activities throughout the summer, based in and around the Tetons and adjacent valleys and ranges. Offerings include: "Wildflowers of the Alpine Tundra," **Saturday, July 17**; wildflower walks at Black Canyon (**July 18**), Teton Pass (**July 31**), and Coal Creek (**August 1**); wildflower trek (**Wednesdays, July 7, 14, 28 and Aug 4**); and "Medicinal Plants: Identification, Documentation and Uses," (**Thursday-Sunday, July 22-25**). Call them at (307) 733-6811, or write P O Box 8042, Jackson WY 83001, for cost and availability of space.

AMERICAN HORTICULTURAL SOCIETY CONFERENCE "CHILDREN, PLANTS AND GARDENS: EDUCATIONAL OPPORTUNITIES" AUGUST 12-14

This is a national symposium on educating children through plants and gardens. Contact Maureen Heffernan, American Horticultural Society, 7931 East Boulevard Dr, Alexandria VA 22308, or call (703) 768-5700.

SYMPOSIUM: ECOLOGY, RESTORATION AND MANAGEMENT OF PRAIRIE WETLANDS, AUGUST 9-13

A meeting sponsored by the U S Fish and Wildlife Service will be held at the Northern Prairie Wildlife Research Center in Jamestown, North Dakota. For more information contact: Dr N H Euliss, USFWS, Northern Prairie Wildlife Research Center, Route 1, Box 96C, Jamestown ND 58401-9736, or call (701) 252-5363.

DRYLAND RESEARCH GARDEN BEING ESTABLISHED IN BRITISH COLUMBIA

The Friends of the Summerland Research Station Gardens and the Agriculture Canada Research Station of Summerland, British Columbia, Canada, are in the process of establishing a major dryland garden which will utilize indigenous, naturalized and introduced plants. The Research Station is located in the South Okanagan Valley, in USDA horticultural Zone 5, where it receives 11-12 inches of precipitation annually.

This new dryland research garden is looking for Zone 1 to 5 dryland seed and plant material. Research findings, propagation information and cultural data will be collected from the garden's plantings. Funding of this project is by public support. Gardens manager Brian D Stretch would welcome sharing of ideas and information, as well as sources for suitable plant material, from MNPS members. He notes that economy in construction, establishment and operation of this project is essential. Contact him at: Friends of the Summerland Research Station Gardens, Box 5000, Summerland, British Columbia, DOH 1Z0.



MNPS SOURCE LIST FOR NATIVE SEEDS AND PLANTS

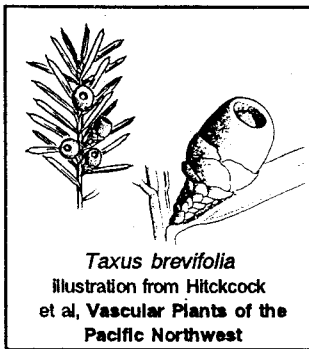
MNPS now has available the **Montana Native Plant Source Guide**, an updated list of nurseries, seed companies and individuals retailing native plants and/or seeds. Companies dealing strictly (or primarily) in a wholesale capacity have not been included at this time.

There is a charge for some of the suppliers' catalogs (between \$1 and \$3), but many have good information on the plants and on seed germination techniques. Gardening with natives is a very rewarding experience, and a great chance to learn about seed germination and plant-habitat requirements.

Cost of the **Source Guide** is \$3.00, which includes postage; order from Linda Iverson, HC 88, Box 3733, Big Timber MT 59011. We also have available a book list with many sources for information on how to garden with natives. This book list is free (on request) when you order the **Plant Source Guide** from Linda.

We think you'll find the **Guide** a treasure trove of information, and we welcome your feedback. We will continue to update and add to the list, so any contributions of additional sources are encouraged. Growers or seed sources in-state are most desirable, since those further afield are almost certainly dealing in different ecotypes, even though the species is the same.

HARVESTING OF PACIFIC YEW NO LONGER NEEDED FOR CANCER DRUG



In 1992, 1.6 million pounds of yew bark were harvested in the Pacific Northwest, and demand for the compound *taxol*, derived primarily from the bark, is increasing. However, Bristol-Meyers Squibb Company recently announced that such rapid progress has been made in the production of a semi-synthetic form of *taxol*, that it will no longer need to

harvest the slow-growing Pacific yew (*Taxus brevifolia*) to obtain the compound.

Taxol, which occurs in the bark of the yew and to a lesser extent in the needles and wood, has been approved by the US Food and Drug Administration for treatment of ovarian cancer. Demand for the cancer fighting compound has led to great concern in recent years that the Pacific yew would be extirpated from Forest Service and Bureau

of Land Management forests in Oregon, Washington, Idaho and western Montana.

Bristol-Meyers was given exclusive rights to yew on federal land in 1991. The company had expected that it would need to obtain *taxol* from natural sources at least until 1995, and in addition to its harvest from public lands purchases some yew from private landowners. Unexpectedly rapid strides have been made, however, in synthesizing the drug from a *taxol* precursor found in other members of the genus *Taxus* in Europe and the Himalayas.

A Bristol-Meyers spokesperson has announced that no yew harvest will be necessary on public lands in 1993, and that FDA approval of the synthetic form of *taxol* is expected soon.

Pacific Regeneration Technologies, a Canadian company which produces various conifers for reforestation, has announced plans for a 400-acre yew plantation in British Columbia. Trials will be conducted on various *Taxus* species and cultivars to select those with maximum *taxol* content and growth rate.

CONSERVING RARE PLANTS: THE FOREST SERVICE AND CENTER FOR PLANT CONSERVATION JOIN FORCES

The Center for Plant Conservation and the USDA Forest Service have banded together to save rare and threatened plants in national forest and grasslands. The two organizations signed a landmark Memorandum of Understanding at Rancho Santa Ana Botanic Garden in Claremont CA during the Center's Annual Meeting of Participating Institutions in November, 1992.

Under the agreement, imperiled native plant populations will be conserved in the wild, and the organizations will work jointly to further public education and understanding of the plight of endangered plants in the United States.

"The Center for Plant Conservation is pleased to enter into a national cooperative partnership with the Forest Service as part of our strategy to protect plant diversity," said Donald A Falk, CPC Executive Director. "National Forest lands are important reserves for biodiversity and plant conservation."

The Forest Service manages 191 million acres of public land, ranging from sub-arctic Alaska to tropical Puerto

Rico, including 156 forests and 19 national grasslands in 43 states.

"The Forest Service and the CPC have mutual interests in plant conservation," said F Dale Robertson, then chief of the Forest Service. "We will be working together on all levels to protect plant species throughout the United States. During the past three years we have stressed our rare plant program, tripling the number of professional botanists on our staff."

Other projects to be undertaken through the agreement include the collection, propagation and maintenance of the National Collection; sharing of databases concerning the biology, horticulture and conservation status of all nationally endangered plants; identification of special management areas; and monitoring activities.

- Reprinted from **Plant Conservation**,
Vol 7, No 2, a publication
of the Center
for Plant Conservation

New book...

Requiem for a Lawnmower - and Other Essays on Easy Gardening with Native Plants Sally and Andy Wasowski

Taylor Publishing, \$15.95 softcover

Using native plants not only provides today's gardeners with beautiful and low-maintenance landscape ideas, it allows for the recreation of natural habitats that can help save endangered plants and wildlife. **Requiem for a Lawnmower**

is full of useful information and insight. What's wrong with the "plant-a-tree" movement? Why do so many evergreen shrubs and trees look like "lollipops" and "poodles"? What dangers lurk for gardeners on bookstore shelves? The authors explore these and other important topics, and do so in an entertaining, often humorous style that everyone can understand.

Sally Wasowski has also written **Texas Native Plants: Landscaping Region by Region**.

MONTANA NATIVE PLANT SOCIETY *** MEMBERSHIP APPLICATION/RENEWAL

Date _____ New _____ Renewal _____
NAME _____ ADDRESS _____
CITY/STATE/ZIP _____ PHONE _____

STATEWIDE MEMBERSHIP WITH CHAPTER AFFILIATION* **MEMBER-AT-LARGE (Statewide membership only)**
____ \$12 I. Individual _____ \$ 8 I. Individual
____ 16 II. Family _____ 12 II. Family
____ 28 III. Business/Organization _____ 25 III. Business/Organization
____ 4 IV. Yearly chapter dues for Lifetime Members _____ 150 IV. Lifetime member (one-time payment)
Additional Donation \$ _____

*AREAS COVERED BY CHAPTERS:

ARTEMISIA CHAPTER - Yellowstone and Carbon Counties; south-eastern/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
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 counties 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 September each year will expire the following February; those processed after the first of October will expire in February of the year after. Membership renewal notices are included in the Winter issue of KELSEYA. Anyone not renewed by the time the Summer KELSEYA is ready to mail will be dropped from the mailing list/MNPS roster.

Your mailing label tells your

CLASS OF MEMBERSHIP (I, II, III, IV - see above)

CHAPTER AFFILIATION, if any (ART = Artemisia; CF = Clark Fork; F = Flathead; K = Kelsey; VoF = Valley of the Flowers)

DATE YOUR MEMBERSHIP EXPIRES: If your label reads "x2/93" your membership expired February 28, 1993...please send in your renewal today! New memberships received since October 1, 1992, are good through 2/28/94, and the top line of your label should read "2/94." Please drop us a note if any information on your label is incorrect.

MAKE CHECKS PAYABLE TO:

MONTANA NATIVE PLANT SOCIETY

MAIL TO: Montana Native Plant Society
P O Box 992
Bozeman MT 59771-0992

ECOLOGICAL RESTORATION AT THE TELLER WILDLIFE REFUGE

At the Teller Wildlife Refuge in Corvallis, Montana, volunteers and staff are working to restore the native vegetation on 850 acres of riverbottom land. The Refuge was formed in 1985 by conservationist Otto Teller to preserve and protect the land from development. The land is managed by a private non-profit organization, the Teller Wildlife Refuge, Inc.

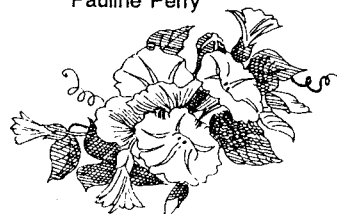
Primary impacts on the native plant communities have been from cattle grazing, logging, plowing and irrigation. Cows have been excluded since the Refuge was established, and recovery has begun to take place. In selected areas we are experimenting with planting natives, seeding grasses, using intensive sheep grazing, and using biological controls. However, on much of the Refuge our primary technique is to let the land rest.

This summer we will establish permanent monitoring plots in each of our community types to track long term vegetation changes, establishing transects and measuring cover/frequency and production. Data will be collected once a year for the first three years, then as determined to be necessary.

Volunteers are also needed to help collect and mount reference specimens for the Refuge and to continue to add to our species list. Anyone interested in this project can call Sue Wall-MacLane at 961-3707, or Chris Miller at 961-3507. Or write: Teller Wildlife Refuge, 1200 Chaffin Road, Corvallis MT 59828.

PLEASE WELCOME THESE NEW MEMBERS: MONTANA

BIGFORK	LAKESIDE
Ruth Quist	Louise Hunt
BILLINGS	LINCOLN
Andrew Freestone	Celeste Jenest
BOZEMAN	LIVINGSTON
Bernard & Mary Baumann	Kathleen Doll
Scott Ohm	MISSOULA
Carol Lee-Roark	Todd Hoitsma
Mary VantHull	Joyce Nave
BUTTE	ROUNDUP
Sheryl Vogel	Bill Milton
CLANCY	WEST GLACIER
Rayene Lehmann	Nancy & Robert Lundgren
EMIGRANT	WHITEFISH
Tanya Baker	Rhonda Anderson
HELENA	Elizabeth Kuropat
Howard E Johnson	Pauline Perry
Doug McDonald	
Sue & Bruce Newell	
Charles & Kathy Van Hook	
KALISPELL	
Dan Oursland	
Nancy Tarrant	
Chuck & Jean Walkherr	



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Paper

MONTANA NATIVE PLANT SOCIETY

The Montana Native Plant Society is a 501-C-3 (non-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 one- or two-line "bio" sketch 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.

Changes of address and inquiries about membership in MNPS should be sent to MNPS, P O Box 992, Bozeman MT 59771-0992. All newsletter material should be mailed to Jan Nixon at the same address, and may be typed or on disk (either size) in WordPerfect 4.2 or better.

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 Fall issue is SEPTEMBER 10; please include meeting/field trip notices through early January '94. The Fall issue of KELSEYA will be mailed the last week of September.

**IF YOU MOVE, PLEASE SEND US YOUR
CHANGE OF ADDRESS!**



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1993 MNPS ANNUAL MEETING * AN ALPINE ADVENTURE!**

"ALPINE WILDFLOWERS OF THE GRAVELLY RANGE"

Friday through Sunday, July 23-24-25

Featuring Bob Mosely (co-author of *Alpine Wildflowers of the Rocky Mountains*),
along with Steve Cooper and Peter Lesica

See Page Two of this issue for full details...don't miss it!