

WILDFLOWER

The Newsletter of the National Wildflower Research Center Volume 4, Number 2 Summer 1987

A non-profit organization dedicated to researching and promoting wildflowers to further their economic, environmental, and aesthetic use.

Wildflowers Provide Activity in Summer

Summer and spring kept staff and volunteers busy with wildflowers. There were highlights and hard work; following are some of the best parts of our previous months' activities.

Center reaches a wide public

Smithsonian, the magazine of the Smithsonian Institution, contained a feature article on the National Wildflower Research Center in the April 1987 edition. Pick up a copy if you can, to read more about the place you so generously support.

Publication of the first edition of the National Wildflower Research Center journal, *Wildflower Report*, has been delayed until this Fall. The quality of articles reviewed for publication has surpassed expectations. In addition, the journal will contain photographs and sketches, rendering it more readable and visually appealing. Your interest and support of this publication is gratifying. We know you will find the wait for the first edition worthwhile.

Conferences Plan and Edmentc

Over seventy members of the Center's Board of Trustees and Advisory Council met for their annual meeting this May in Austin, Texas. They came from as far afield as New York and Utah, with innovative ideas and plans for the upcoming year. Texas showed its wildflower heritage with carpets of Indian Blanket and pink evening primrose blooming along the roadsides around Austin. Over 100 professionals and lay people in the

fields of landscape architecture, horticulture, and botany amongst others attended *A Landscape-Design Conference* presented by the National Wildflower Research Center in April in Austin, Texas. Interest and enthusiasm were high!

Assistance by Summer Interns

Thanks to the generosity of many members and donors, the Center is able to hire two student interns this summer. They will assist the botanists in gathering and analyzing this season's wildflower data.

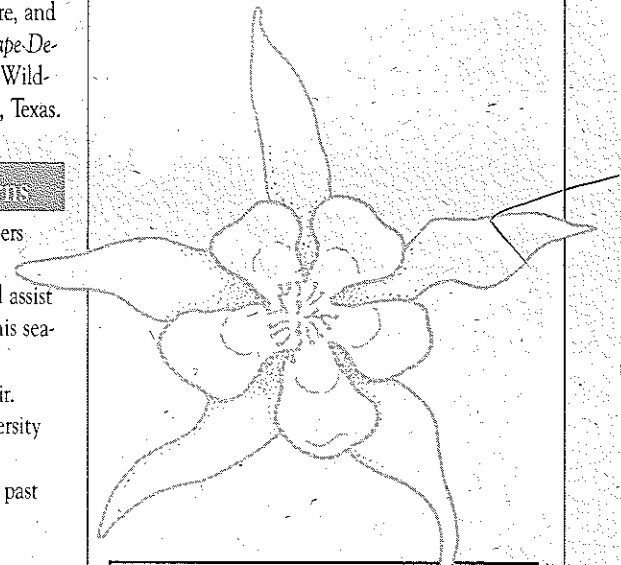
A profile of one summer intern—Dale Weir.
—a junior majoring in biology at the University of Texas at Austin
—an active volunteer at the Center for the past two years
—from Texas

If you wish to make a contribution to this fund, we would be most grateful. Please mark your envelope *Summer Intern Program* and mail it to the National Wildflower Research Center, 2600 FM 973 North, Austin, Texas 78725.

Beautiful Colorado Beckons

The National Wildflower Research Center is organizing a tour of five activity-filled days this July to Crested Butte, situated in the magnificent Colorado Rockies. Wildflowers reach their peak in July in that area. In addition, the Crested Butte Wildflower Festival coincides with three of the four tour days, to allow you the opportunity to partake in wildflower photography, landscaping, and natural history workshops.

Mr. and Mrs. Bill Bransford, experts in wildflower photography and appreciation, will lead a one day tour into the most colorful wildflower viewing areas, and be available for questions and consultations during the entire tour.



Colorado Tour Facts

Dates: Wednesday, July 8—Sunday, July 12, 1987.

Accommodation: Grande Butte Hotel in Crested Butte for four nights.

Activities: Wildflower tour on one day, workshops on two days. In addition, hot air ballooning, horseback riding, and a trip on the ski lift into alpine valleys, can be arranged.

Includes: Transportation to and from Gunnison Airport, accommodation, one box lunch, tax and gratuities. All other meals to be paid for separately.

Cost: \$375.00 per person based on double occupancy.

Reservations: A confirmed reservation will be made on receipt of the full amount of \$375.00, by June 22. No cancellations or refunds will be made after June 29.

For additional information call or write Nikki Kriss, National Wildflower Research Center, 2600 FM 973 North, Austin, Texas 78725 (512) 929-3600. As the size of the tour group will be limited, it is advisable to make reservations as soon as possible.

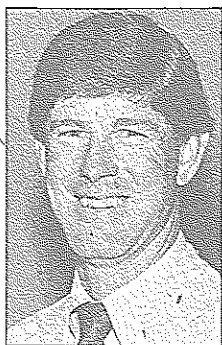
What Is Research?

David Northington

As with many things, our perception of research is often a function of its presentation by the news/media. Recently a visitor to the National Wildflower Research Center asked one of our botanists, "where are the researchers and laboratories?" At the time, our botanist was sitting in one of our labs weighing out seed for a field plot. She was wearing jeans, however, and a Wildflower Center sweatshirt, not a white lab coat. The lab had a scale, herbarium cases, plant presses, a dissecting scope, a germinator, bags of seed, and assorted field equipment—but no test tubes, bunsen burners, or round bottom flasks on ring stands. Our botanist and our lab did not look like our visitor's expectations!

Another visitor asked me what major "research break-throughs" we had made this year and yet another wanted to know about our "experiments" and how many "new wildflower varieties we have developed." These are not surprising questions if one looks at what newspapers, news magazines, radio and television reporters cover as research. Coverage of "break-throughs" and "cures" in medical research, and new varieties in horticulture and agriculture crop research are commonplace.

According to Webster, research is "careful, systematic, patient study and investigation in some field of knowledge, undertaken to discover or establish facts or principles." Mr. Webster further defines experiment to be "a test or trial of something; specif. a) any action or process undertaken to discover something not yet known



Dr. David Northington

to answer a question dealing with the usefulness to human existence. Much basic research ultimately has application and applied research often furthers the pool of basic knowledge, but the initiation of the study can usually be categorized as one or the other.

At the Wildflower Center we conduct natural history and ecological studies to understand the germination requirements, growth periods, resource needs, flowering period, and the soil and climactic influences on all of these factors (*Wildflower*, Vol. 4 No. 1). These would be considered basic research. However, we need this knowledge to design our field trials which are semi-agricultural in nature, an applied science. Our field trials test which soil preparation techniques, seeding techniques, seed densities, species composition, time of seeding, and post seed set management procedures provide optimum results in the establishment of wildflowers.

In addition, our seed inoculation, seed and seedling identification, seed storage, and even our demonstration plantings are all either basic

or to demonstrate something known, b) any action or process designed to find out whether something is effective, workable, valid, etc."

Science is generally of two types. Basic research is conducted for knowledge's sake alone. Applied research is specifically designed

or applied research projects, designed to add new knowledge and establish facts and principles about wildflowers and native plants. All our research studies discover something not yet known or add to our understanding of what techniques are most effective, workable, and valid, so we can provide the best, most reliable advice to the many thousands of people asking for help.

It is not our purpose to develop new wildflower varieties. In fact, quite the opposite, we want to conserve and use appropriately what nature has already provided. Although we have made numerous advancements in understanding and techniques, one's mental image of a breakthrough implies a sudden, quantum leap in new knowledge. Most of these sudden break-throughs that we read about in medicine or other sciences

DIRECTOR'S REPORT

are really the result of many years of slow trial and error and the accumulation of many small advancements.

We have many years of research ahead of us and thousands of gradual advancements in understanding and knowledge yet to gather. We are involved in a new area of investigation filled with many questions and information voids, but it is an area of high public interest and long range significance. True research is slow, careful, systematic study that yields small additive pieces of new information. We all must be impatiently patient and work toward the goals of wildflower conservation and use.

Trustee Profile

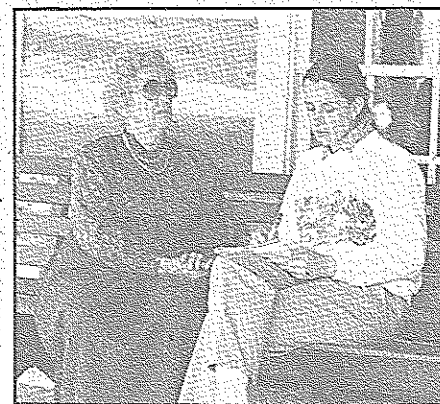
Mrs. Charles Bybee

Mrs. Charles Bybee (Faith), one of the great American preservationists, is a member of the Board of Trustees of the National Wildflower Research Center. Her philanthropy is extraordinarily sensitive to needs that must be met and rectified in conservation.

In addition to her caring for wildflowers, she spends extensive time working on the restoration of the Texas village of Historic Round Top, situated mid-way between Houston and San Anto-

nio. Over 60 structures are being restored to their original utility and beauty, in a graceful setting of wildflower meadows, sweeping vistas of creeks and oaks, and on a small town square.

- Born on a rice farm in Katy, Texas and now residing in Round Top and Houston, Texas.
- Preservationist and restorationist of Historic Round Top, Texas.
- Served on the first Texas Highway Beautification Committee, which accelerated the use of wildflowers along the state's highways.
- Recipient of the State of Texas third annual award for Meritorious Service in Historic Preservation in 1966, given at the White House.
- Advisory Committee Member of the Houston Symphony.



Mrs. Charles Bybee being interviewed by Wildflower editor, Mae Daniller, at Round Top, Texas

- Board Member of the Texas Historical Foundation.

Annie Paulson

Highway beautification extends beyond mowing and spraying with herbicides in order to achieve a clean green appearance.

It is no longer a matter of wiping out plants, but of encouraging desired species that diversify and beautify roadsides. Using native plants along the thousands of miles of roadside rights-of-way contributes significantly to preserving a state's natural heritage and genetic diversity, as well as saving taxpayer's money. Many states are planting wildflowers to beautify their roadsides and simultaneously reaping the benefits of a lower mowing bill and increased tourism.

The National Wildflower Research Center Clearinghouse receives thousands of inquiries from highway departments to community garden clubs on **how to plant wildflowers along their roadsides?** The following information should serve as a guideline for establishing a roadside beautification project.

The Planning Process

Do not expect to plant the entire state or interfere with existing landscaped areas. Start small and expand in time. If very few wildflower plantings have occurred in your state, you may wish to set up test plots to deter-

Along Highways and Byways: Planning your roadside beautification project

mine what works best in your area. Keep in mind that a one mile test plot may be too ambitious!

1. **Mark out small test plots** (10m x 10m), delineate with stakes and mow two meter strips between to separate them. Use signage informing motorists that it is a wildflower test area. Establish two plots of each test and alternate them.

2. **Select eight to ten indigenous species.** Observations of nearby natural areas with similar soil, slope, drainage, and exposure will help you select the most appropriate species. Check on commercial availability. Select species for blooming succession and include both annuals and perennials. Annuals generally will germinate and give color the first year, while perennials will often take two to three years. Research conducted for the Nebraska Department of Roads developed the following criteria to evaluate the potential usefulness of a species:

- It must not be a noxious weed.
- It must not be poisonous.
- It should be a perennial or it must self-seed and reestablish readily if it is an annual or biennial.
- It must have a showy vegetative or reproductive structure.
- It must have a good root system to help stabilize the soil.

• It must associate and compete well with other vegetation.

3. If you are unsure of which indigenous species to use, a commercially available mix designed for your region of the country can be used in your tests. Observe which species native to your area work from the mix. Remember, a mix must be hand seeded, because mixes do not work well in mechanical seeders.

4. **In selecting a planting site,** it is important to select highly visible points such as rest areas, interchanges, park turnouts, and approaches to cities and towns. The existing vegetation should have fairly short grass, with few noxious weeds and no erosion problems. Newly constructed highways are



also good possibilities. Wildflowers germinate more readily in loose, rather than hard, compacted soil.

5. **Ground preparation** requires equipment, time, and labor. Highway departments usually own flail mowers or other equipment which lightly scalp the ground, loosening the topsoil. Lightly discing the ground is another option, but be aware that by limiting soil disturbance fewer weed seeds are exposed.

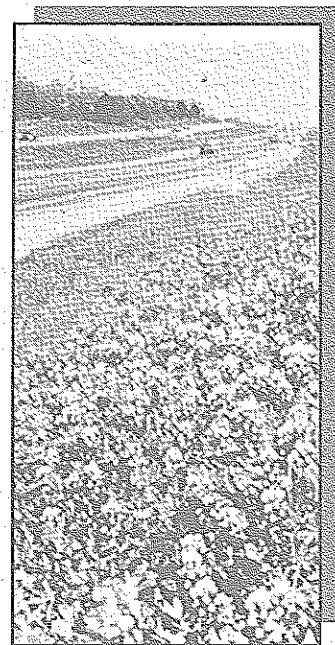
6. **Hand broadcast** the seed in the fall. In the northern U.S., try both a spring and fall planting, to compare results. Mix seed with sand to ensure even distribution. Work the seed into the soil with a hand rake or drag a section of a chain link fence by trac-

tor across the area. Scout groups or other service organizations could be organized to help.

7. **After the blooming season,** wait four to six weeks after seed has set to mow. Ask a botanist to view the plots to determine that all seed is mature. Leave the plots staked, so they can be monitored over a three year period. In certain parts of the country, mow again to control woody shrubs.

With this conservative start, you can plan larger plantings using the same techniques and species that worked in the test plots. Use of a drill seeder, which is an agricultural grain drill modified to handle pure seed of different sizes, will greatly facilitate large-scale plantings. A drill seeder provides even coverage at the proper seeding rate and plants or drills for optimum germination.

It is important to meet with a Department of Transportation representative, such as the district manager, to receive permission for your planting



and for possible help in coordinating the project. Many states will assist with planting the area and manage accordingly if you can provide the seed. Also, matching grants or other funds may be available. The Center's Clearinghouse can always help with your additional questions.

Annie Paulson is a resource botanist at the National Wildflower Research Center. She has advised numerous organizations on large-scale planting projects.

Manzanita

Shrubs to brighten your Western Showplace

Katy McKinney

One of the more beautiful shrubs in the California landscape is manzanita. Its smooth red bark and evergreen leaves make it an excellent ornamental for many California gardens.

Manzanita is a common name for all species in the genus *Arctostaphylos*. Primarily a western plant, manzanita occurs from northern Baja California up through Oregon. It is found in a variety of plant communities: coastal sage scrub; chaparral; douglas fir; yellow pine; and redwood forests up to subalpine habitats, to name only a few. Many species occur in the coastal regions of California. Some *Arctostaphylos* species in frequently burned areas will form a basal burl and sprout from the stump after fire.

Manzanita is in the *Ericaceae* family along with cranberries, blueberries, madrones, and azaleas. The small urn-shaped flowers appear from February to April in most species. The flowers are white to pink and grow in clusters. The name manzanita means little apples and refers to the small, apple-like fruit. Jelly and tea can be made from the fruit of some species.

This woody shrub is best

propagated by cuttings. Germinating the plants by seed is difficult and may require several pretreatments. A high germination rate is hard to obtain. Young and Young (1986) report a 50% germination success with the combination of one scarification (light abrasion of the seed coat) and two stratification (temperature) treatments. With so much excellent plant material commercially available, it is probably best to purchase container grown plants.

Arctostaphylos is one of the most diverse genera in California, and hybridization between species in the wild is common. In addition, many horticultural selections have been developed for specific landscape uses including groundcovers, shrubs, and small trees. Groundcover selections which grow only 6-8 inches high include Emerald Carpet, Radiant, and the *Arctostaphylos uva-ursi* selections Alaska, Massachusetts, and Point Reyes. Sea Spray and Greensphere do well as shrubs. Dr. Hurd and Sentinel grow as small trees, 6 feet or taller. Most commercially grown

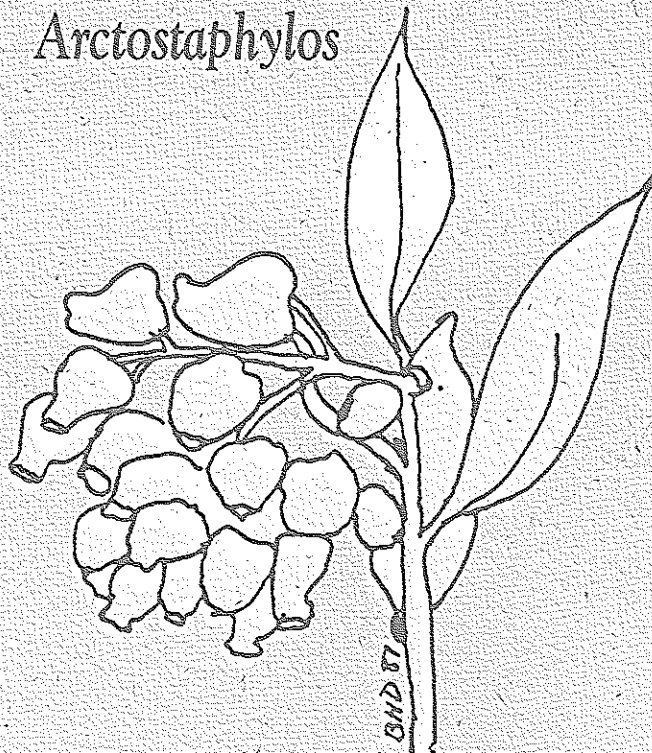
plants are available in one gallon containers.

All manzanitas require well-drained, loose soil in full sun. Some selections will tolerate dappled shade. For optimum establishment, plant manzanitas in a shallow hole on top of the ground to ensure good drainage. In the first summer after planting, water the plants every 4-7 days. After the plants are established, water deeply once a month. Overwatering will encourage root rot, which is a common manzanita malady. Drip irrigation is preferred, rather than overhead sprinkling, as the plants are also susceptible to stem canker, a fungus which affects leaves and branches.

This attractive shrub is an excellent representative of the rich and diverse biological heritage of California. With a little care, manzanita can become the show piece of any garden or landscape as well.

Katy McKinney is a research botanist at the National Wildflower Research Center.

Manzanita genus *Arctostaphylos*



FROM THE M-A-I-L-B-O-X

May 30-31, 1987—*Meadow Landscapes, the Aesthetics and Management of Open Space at National Wildlife Federation Auditorium, Vienna, Virginia.* Natural meadow gardening, development, and maintenance. Lectures, workshops, and field trips. Contact: Cole Burrell (202) 475-4855 or (202) 475-4852.

June-Nov. 1987—*Smoky Mountain Field School 1987 in the Smoky Mountains, Tennessee.* Intensive weekend and five day courses with outdoor exploration and classroom activities covering native vegetation. Contact: Smoky Mountain Field School, Non-Credit Programs, 2016 Lake Avenue, University of Tennessee, Knoxville, TN 37996 (615) 974-6688.

June 8-12, 1987—*New England Wildflower Society Plant Sale at Garden in the Woods, Framingham, Massachusetts.* Wide variety of native plants on sale. Contact: Sue Day, NEWFS, Garden in the Woods, Hemenway Road, Framingham, MA 01701.

June 18-19, 1987—*Southwestern Native Plant Symposium at University of New Mexico, Albuquerque, New Mexico.* Topics to cover conservation, landscaping, propagation, ethnobotany, and uses of native plants. Contact: Southwestern Native Plant Symposium, NPS-NM, P.O. Box 934, Los Lunas, NM 87031.

June 19-20, 1987—*Texas Vanishing Prairies: Economics and Conservation at Thompson Conference Center, Austin, Texas.* Sessions include history, ecology, restoration, and management of prairies. Contact: Lea Stone, Conference Coordinator (512) 327-8180.

June 20-21, 1987—*Annual Spring Wildflower Show at the Oakland Museum, Oakland, California.* Features California wildflowers in interesting floral arrangements. Contact: Genevieve Prlain or Bon Linsdale (415) 273-3884.

July 23-25, 1987—*Landscaping with Native Plants, a conference at Cullowhee, North Carolina.* Topics cover landscaping, nursery suppliers, and taking botanical walks. Contact: Dr. Jim Horton, Division of Continuing Education, Western Carolina University, Cullowhee, NC 28723.

July 24-25, 1987—*Operation Wildflower Workshop at Lime Creek Nature Center, Mason City, Iowa.* Includes lectures on wildflowers, developing native trails, and roadside management. Contact: Mark and Camprey, 913 West 5th, Spencer, IA 51301 (712) 262-7437.

Michigan Highlights Wildflowers

Beth Anderson

Across the midwest, highway departments, native plant societies, and prairie groups are joining the wildflower chorus. The spotlight for 1987, however, undoubtedly shines brightest on Michigan. To commemorate their Sesquicentennial, Michiganders are celebrating with wildflowers. The 1987 theme for Operation Wildflower is *Wild and Wonderful*, in recognition of Michigan's diverse beauty.

Operation Wildflower, the brainchild of the Michigan Department of Transportation (MDOT) and the Federated Garden Clubs of Michigan, Inc., began in 1974 "to promote the planting, propagation, and growth of roadside wildflowers"; according to a recent brochure. Though the initial plantings proved disappointing, interest was rekindled in the spring of 1985, and two small plots near Marshall, were planted with seed donated by the Federated Garden Clubs. These plots bloomed successfully enough to encourage the planting of 12 acres in April of 1986 by the MDOT Sesquicentennial Roadside Beautification Program.

This year, according to MDOT botanist Kim Herman, MDOT will plant 20 more acres statewide, mainly near urban areas. At least one planting will occur in each Federated Garden Club district. Wildflowers are also being added to landscaping efforts at seven

of the major entrances into Michigan. By spring of 1987 more than 70 acres in seventy locations will have been planted along Michigan highways. The cost of seeds and planting averages \$1,000—\$3,000 per acre, depending on site requirements.

The wildflower mixes chosen include hardy prairie and meadow species (such as coreopsis, butterfly weed, rough blazing star, lupine, and brown-eyed susan), all native to Michigan or the midwest. Purchased commercially, the seed mixes contain successively flowering species for continuous color throughout the blooming season. Most of the plants are perennials, and may take 2 to 3 years to become firmly established, but Michigan wildflower advocates are enthusiastic nonetheless. Interspersed with the wildflowers, several species of native grasses (Indian grass, big and little bluestem, switchgrass, and Canada prairie wild rye) were selected to provide additional contrast and texture. Aside from the aesthetic value and maintenance cost reduction, this tough crew of wildflowers and grasses will combat soil erosion and provide habitats for fast-diminishing wildlife.

Although the Sesquicentennial offers Michigan a unique opportunity to promote wildflowers, the plan has been in progress for many years. As early as 1961, MDOT began to cut back on mowing and chemical spraying along roadsides to aid the existing native plants. The National Highway Beautification Act, spearheaded by Lady Bird Johnson in 1965, boosted these efforts tremendously. Now, 26 years later, Michigan saves \$2 million per year, and the naturalized roadsides abound with color and diversity. Even private sectors are incorporating natives into landscaping. Steelcase, Inc. of Grand Rapids has recently decided upon a prairie landscape for its corporate development center. It will be the largest prairie reconstruction site in the state as well as the first by a private company.

With the increased interest and demand for more information, the Michigan Wildflower Council, a networking organization, is being formed to promote the conservation and planting of wildflowers in the state.

Thus one small flower inspires a song, each state adds a verse, soon the whole country will join the refrain.

Condensed from 'Operation Wildflower', by Kim Herman & Sue Crispin, Michigan Natural Resources, March/April 1987.

Beth Anderson is a resource botanist at the National Wildflower Research Center.

Texas Vanishing Prairies: A Time To Learn

Annie Paulson

Prairies are plant communities dominated by grasses, but also contain a diversity of wildflowers with woodlands scattered

throughout. The word prairie is derived from French and translates to meadow or grassland. Prairies inhabit every continent and major island on earth, and once covered approximately three-fourths of Texas.

Grasses, members of the family Poaceae, are probably the most valuable plant family to humans, providing grains that are staples in our diet, as well as forage for livestock. Grasses are of paramount importance to human existence.

Most prairies have been converted to cropland, and those areas of unbroken native sod that remain have generally been overgrazed. What remains of Texas prairies are small fragments of a once vast and valuable resource. Texas has as few as 10,000 acres of Blackland Prairies left from the original 12.4 million acres, and less than 500 acres are preserved. In addition, those remaining 10,000 acres are largely in small hay meadows, and it has been calculated that they are disappearing at a rate of 10% per year.

The opportunity for prairie conservation is fast-diminishing and in response to the urgent need for recognition within the parks and preserves systems, a conference is scheduled for June 19 and 20 at the Joe C. Thompson Center at the University of Texas at Austin. The conference sessions include: information about state agency activities which are affecting prairies; an ecological overview; native seed production and harvesting; proper management; restoration and landscaping with prairie plants; and range management.

Texas Vanishing Prairies: Economics and Conservation

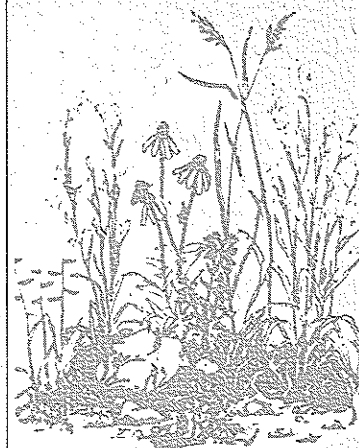
When: Fri, Sat, June 19-20, 1987.

Where: Joe. C. Thompson Conference Center, 26th and Red River, Austin, Texas.

Cost: \$20 for pre-registration by June 10.
\$25 for registration at the door.
\$7 additional cost for box lunch.

Make checks payable to Texas Prairie Conference and mail with this form to Annie Paulson, National Wildflower Research Center, 2600 FM 973 N. Austin, Texas 78725.

For additional information contact Lee Stone (512) 327-8180.



Valuable Book for Californians in the Works

Katy McKinney

One important resource developed through taxonomic research in botany is the plant key. A key is a botanical guide used to identify plants growing in a particular region. It is not only a comprehensive list of species, but also includes direc-

tions on how to distinguish between plant species. A description of each plant species is included, which traditionally contains a succinct botanical description (leaf shape, flower color, plant height, etc.), habitats where the plant may be found (dry, rocky hillsides or open meadows) and the range where the plant grows (southeastern Florida or throughout the Appalachian Mountains.)

An exciting new project is underway in California. The *Jepson Manual*, a guide to California plants last published in 1925, is being revised with several innovative features. The new volume will consist of an updated list of species, with the traditional botanical information necessary for plant

identification and will be illustrated with high quality line-drawings. Combining this much information alone will be a significant contribution to the understanding of California plants.

In addition, all information available on the endangered status, toxicity, weed potential, and horticultural uses will be included in the description of

Executive Director: Dr. David Northington
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Wildflower is the newsletter of the National Wildflower Research Center. It is financed through contributions from friends. Material contained herein may be reprinted with the proper written acknowledgement of the editor. Address all correspondence to *Wildflower*, National Wildflower Research Center, 2600 FM 973 North, Austin, TX 78725.

each species.

The *Jepson Manual* is being administered through the Jepson Herbarium at the University of California at Berkeley. The project was initiated in 1982 and a 10 year schedule was developed. Over 120 botanists are contributing work to the Manual. It will be approximately 1,600 pages and designed to be portable in the field and easy to use.

The National Wildflower Research Center looks forward to the publication of this work. We hope that future keys for other regions of the country will follow in its example and include information pertinent to the good stewardship of our country's rich botanical heritage.

On Becoming A NWRC Member

Your membership donation is tax deductible to the extent allowed under Federal and State laws. For information concerning the benefits of each level of membership, please contact the Center. Return to: Membership, National Wildflower Research Center, 2600 FM 973 North, Austin, TX 78725

- \$25 Supporting Member
- \$250 Center Sponsor

- \$50 Sustaining Member
- \$500 Trust Member

- \$100 Key Member
- \$1000 Benefactor

Please make your check or money order payable to "NWRC."

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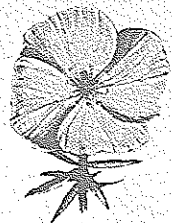
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Wildflowers Work!

Volume 4, Number 2 Summer 1987

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