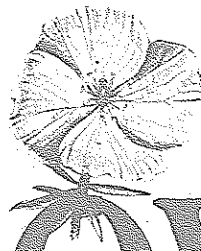


# WILDFLOWER



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

Newsletter of the National Wildflower Research Center

Vol. 2, No. 3 Fall 1985

## Greenhouse Assists Research

A highlight of many visitors' tour of the facilities at the National Wildflower Research Center is to inspect the modern greenhouse built this past spring with a generous grant from the Meadows Foundation. According to Executive Director, Dr. David Northington, "The greenhouse enhances the capabilities of the Center's research into germination rates and seedling identification, which will aid us in producing more reliable results for landscaping with wildflowers."

The elegantly proportioned, English-style aluminium greenhouse is 20 feet by 48 feet, with an inside area of 960 square feet. Doors lead into the greenhouse from each end, and are sufficiently large to allow through a cart carrying flats. The roof consists of Tuffak Twinwall, which is ten times stronger than the conventionally used tempered glass, and also reduces the effect of plant burn. The possibility of summer plant burn is further reduced by the shade system which has a 63% shade factor, to protect the plants from the intense heat of the Texas summer sun.

The heating system cuts costs from that of a conventional system by 50-75 percent. The novel use of two infrared radiant heaters with 100 percent automatic gas and air safety shut-off provides this feature. The cooling system consists of two coolers rated 550cfm placed opposite the exhaust fan. They are made specifically for greenhouses and contain a liner to trap dirt and dust which protects the young seedlings. These coolers work in conjunction with the ventilation and evaporative systems, and allow for total user-control.

Six individual watering zones can be maintained by the irrigation system, which consists of dew hoses, ooze headers, and a long header system. Each of these is based on the drip irrigation model, and allows distribution of water at specific times in controlled amounts. Automatic



David Thomas

*The Greenhouse on a mellow winter day.*

timers may be set to facilitate and control the watering. Thirty sturdy redwood tables covered with flats and pots are spaced throughout the greenhouse.

Botanist Pam Dwiggins has sown countless seeds into flats and pots, using commercial mixes and seed harvested from open spaces. The results of research using the combination of automatic watering and stable heating and cooling, which allow controlled conditions, should greatly enhance research on wildflowers from Texas and could serve as a model for wildflower research in other regions of the country.

## Wildcolor on the Hills

by David Northington

On a clear fall day, there are plants that appear to be ablaze with color. With bright red-orange foliage set against a green hillside, sumacs do appear to be on fire. Much of the visual impact is imparted by the long fern-like compound leaves with their many narrowly pointed leaflets.

Pronounced as either "sue mack" or "shoe mack," the genus *Rhus* contains about 250 species in the temperate and tropical regions of the world and several species are native to North America. Most sumacs are shrubs or small trees that prefer open, sunny habitats. Sumac is common along roadsides throughout the southern United States and is sometimes considered a weed in the southeast because it is so prevalent.

It is not just the color of the leaves in the fall that make sumac so attractive. During the summer clusters of yellow or cream-colored

flowers bloom and are followed by bright red to rust-colored berries. These are set off against the glossy green leaves that later turn bright orange and red. Sumac thrives in the poorest of soils, and tolerates extremes of heat, cold, and drought. Several species of *Rhus* are commercially available as propagated stock, which is both ecologically more desirable and is usually more successfully established than plants dug from the wild.

Flame-leaf sumac, *R. lanceolata*, has the most vivid leaf colors in the fall. It also has whitish flowers and rust colored berries that remain after the leaves finish turning. *R. aromatica* is known as lemon sumac or as fragrant sumac. With pale yellow flowers providing a sweet perfume in the summer, *R. aromatica* leaves also change from shiny dark-green to shades of orange and red in autumn. *R. virens* is an example of a species that does not change leaf color.

*continued on page 2*

## Director's Report

Dr. David Northington

One of our primary research goals at the Center this past year has been to evaluate the commercially available wildflower seed mixes. We need to know answers to the following questions to ensure useful results from the field plot studies:

1. How best to prepare the ground for seeding?
2. What seeding rate gives the best flower density?
3. What is the most effective seeding technique?
4. When should seeding be done?
5. Should supplemental watering be provided?
6. Which species work best?
7. When to mow?
8. How well do wildflowers reseed themselves for the next year?

Several of these questions were discussed in our Spring 1985 issue of *Wildflower*. All our findings are being developed into fact sheets that are available through the NWRC clearinghouse. (For further information see elsewhere in this newsletter.)

### Previously discussed results, a brief recap

Ground preparation should provide access to the soil for the seed; tilling or flail mowing-at a ground contact setting works best. The seeding rates recommended by the seed producers appear to give the best densities. Mechanical seeders provide a more even seed distribution than scattering seed by hand; rake the seed into the soil following seeding. Fall seeding, especially in the southern half of the country, is the most efficient and successful. If fall rains are light, watering increases germination success; less than average winter and spring rainfall should be supplemented for best results.

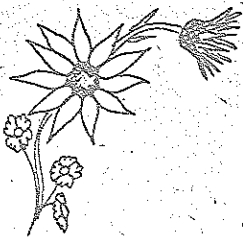
### Further findings

The most dramatically consistent results that held true for every mix we tested was that species indigenous to the local area worked better than non-indigenous species by approximately 3 to 1. This means that if eight species successfully flowered, six of them were species that grow wild in the area, and only two were indigenous to other areas of the country.

Equally significant in a different way is that approximately 80 percent of the unsuccessful species in the seed mix were not indigenous to the local area. Another way of looking at the data is that if a mix contains twenty-eight species, and twenty fail to successfully establish and flower, sixteen are found wild in some other area of the country, only four are local. It is understandable that some local species are unsuccessful as soil types vary within a local area.

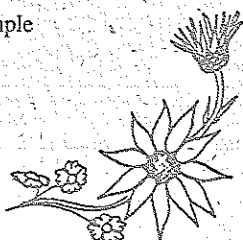
Our recommendation is to purchase a seed mix with the highest percentage of wildflower species indigenous to the immediate area. Generally these are regional mixes developed for specific geographical areas of the country, instead of an approach that attempts to provide a single mix for half or more of the United States. Add to this recommendation our suggestion to comparison shop for both the best price per unit weight of seed and the best germination test ratings, and the potential for successful wildflower establishment is enhanced.

If you know of any completed studies in your own area, please let us know about them and their results. By now we have completed sowing the Center's test plots for this Spring. We hope to further substantiate our results, follow these plots through a second year, and discover new ways to propagate wildflowers successfully.



Nature's Democracy  
The wildflower  
meadow  
is nature's best example  
of a plural  
society  
living in peace.

by George H. Allen



continued from page 1

Although they are more common in the southeastern states, smooth sumac (*R. glabra*) and dwarf sumac (*R. copallina*) are also attractive members of the genus and deserve consideration in landscaping plans. If the sumac of your choice is not available as nursery stock, you can use a spade to cut outer shoots from a spreading cluster in the wild. This will allow the plant to remain in its natural setting while providing you with transplantable shoots that have a developed root system. Before doing this, check whether your state has a policy against taking cuttings.

Simply cut straight down between the outside sucker shoots and the mother plant to separate them and then cut around the new shoots to remove them from the soil. Keep the roots wrapped in damp newspaper and out of the sun and replant the same day if possible. As with any shrub or tree, native or introduced, the first year requires regular deep watering for successful root establishment. Once established, however, sumac requires no fertilizing, spraying, or watering beyond average rainfall to thrive.

There is one species of sumac that is to be avoided; *R. vernix* or poison sumac can produce a poison ivy-type rash. In fact, poison ivy, *Toxicodendron radicans*, is so closely related that it has also been classified as a member of the sumac genus, *R. toxicodendron*. Like poison ivy, poison sumac prefers wet thickets and bogs and is found from the woods of east Texas throughout the eastern half of the United States.

Whether you appreciate sumacs by driving in the country during the fall or use them in landscaping, they provide texture and color unequalled by most non-native landscaping plants. As important as its beauty, sumac's hardiness and low maintenance makes it an outstanding choice for use in landscapes.

## Clearinghouse Wildflower Facts

The National Wildflower Research Center clearinghouse provides fact sheets to aid you in your wildflower plantings. New fact sheets for all states are constantly being developed and updated. The clearinghouse staff would appreciate hearing from you with information on seed sources, resource people, and wildflowers that flourish in your area. This information will enable the clearinghouse to become a greater help to all wildflower enthusiasts across the country.

To obtain the following information write to: Clearinghouse, National Wildflower Research Center, 2600 FM 973 North, Austin, TX 78725.

### Fact Sheets

- Sources of Native Plants/Seed, Resource People and Organizations—available for all states.
- Seed Growers Producing Regional Mixes—available for all states.
- Large-scale Planting—pertinent to all states.
- Gardening and Landscaping with Wildflowers—pertinent to all states.
- Wildflower Bibliography—pertinent to all states.
- Recommended Species—available for Central Texas.
- Planting Bluebonnets—available for Texas.
- Wildflower Bibliography—available for Texas.

Executive Director: Dr. David Northington  
Associate Director: Carolyn Curtis  
Editor: Mae Daniller

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.

## Portola Valley Ranch—Country Living in the West

Portola Valley Ranch is an innovative housing development situated on 450 acres of gently rolling hills with majestic oaks in Portola Valley, California, about 30 miles south of San Francisco. This environment offers the unique blend of grassy open space and enduring woodland. This "forest edge" quality attracted Joseph Whelan, the developer of the site when he purchased the property in 1974.

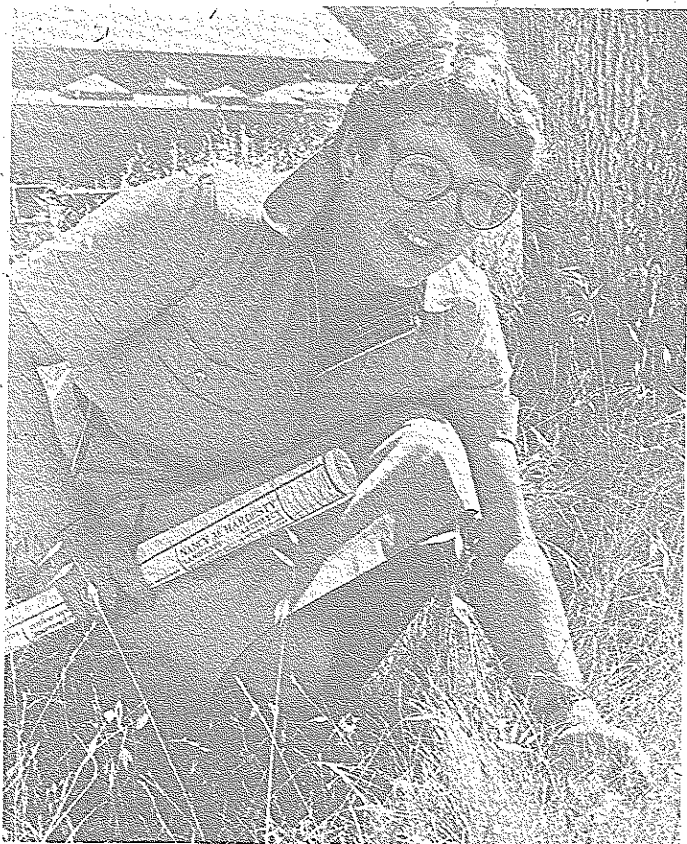
Portola Valley Ranch was first proposed in 1975 when the environmentally sensitive Whelan approached the town detailing plans to develop a residential community blending in with and leaving the natural landscape as untouched and open as possible, and following the guidelines of the Portola Valley General Plan. Eight years of trend setting planning efforts followed this initial discussion involving a multidisciplinary team of landscape architects, land planners, architects, attorneys, economists, geologists, engineers, and naturalists.

The collective efforts of land owner, town planners, and consultant team have produced an award-winning planned community involving 205 single-family homes. These homes are situated on seventy-six acres with the remaining 375 acres of pristine oak woodlands designated as open space. The oak woodlands remain the dominant environmental factor in site planning and design.

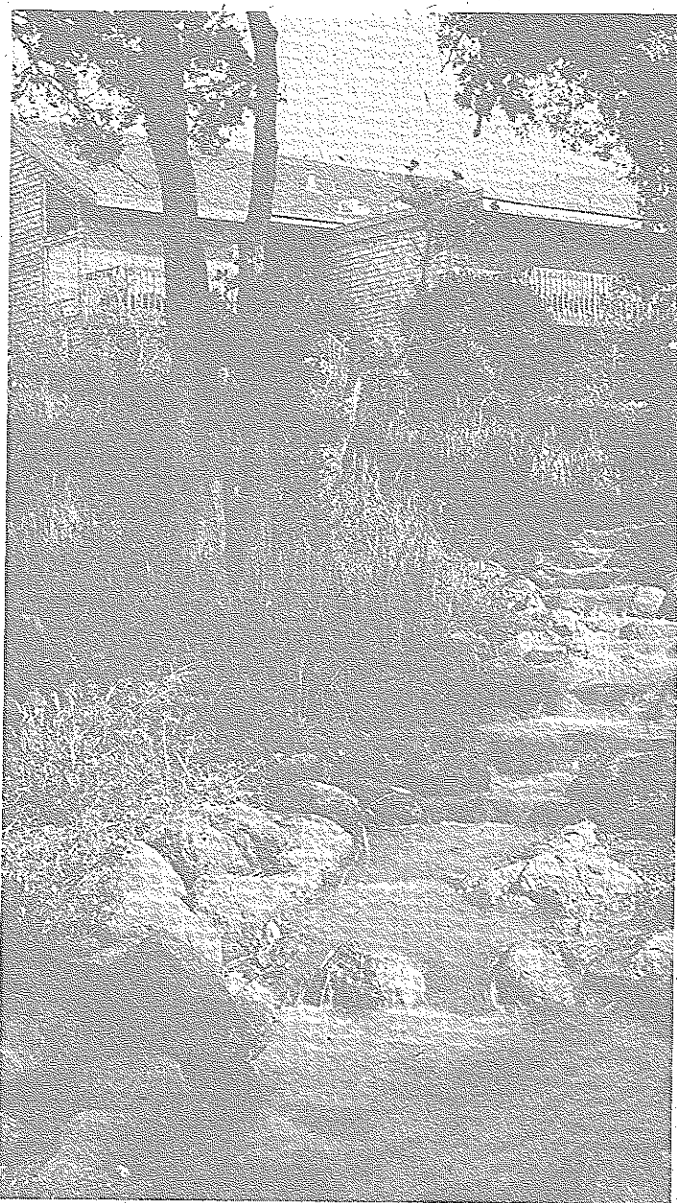
The half-acre residences are clustered into cul-de-sacs, below the view ridge line. This leaves 156 acres of open space flowing between the homes. The remaining open space is administered by the homeowners association as a nature preserve, with 17 miles of hiking, jogging, and biking trails winding throughout the shared undeveloped area.

The idea of the project is for the homes to coexist in harmony with nature. Streets and houses were sited before property lines were laid, allowing them to fit comfortably among the big oaks, rock outcrops, and other local landmarks. Only native California plants may be used for landscaping, with planting to follow the natural habits of nature. Trees are planted in groves, shrubs in natural groupings, crossing property lines without fence lines or hedges.

Each homeowner received a landscape plan from landscape architect Nancy Hardesty, which is suited to the individual site and the availability of native plants in Bay Area nurseries. Homeowners have been further assisted in managing their landscapes with "Nature Notes," a unique quarterly communique containing environmental information, planting techniques, and fire management design criteria.



Nancy Hardesty, landscape architect for Portola Valley Ranch.



A view of Portola Valley Ranch.

Drip irrigation systems are encouraged to support newly planted natives for their first few years, and water figures indicate that the consumption of these homes is about one third of the area norm for homes of that size. Rainwater is diverted into natural or developed streams, rather than using storm sewers. Midstream plantings of willow and alder, and mini-dams and broken rock, break the flow and encourage water to seep down into the soil, replenishing the subsurface water table. For fire safety, a 30 foot zone around each home must be mowed or drip irrigated during the spring-to-fall dry season.

Several other limitations protect the natural setting: no toxic sprays, no watering under existing oaks, all non-native plants must grow in containers and hanging baskets. Since native plant foods are preserved, and water is available in ponds and streams, the wild birds and animals remain part of the scene. Families are asked to keep only one pet, and bells on cats give birds fair warning!

At this time approximately 170 homes have been completed. The community's natural appearance makes it seem that very little was disturbed to create peaceful country homes for modern families. The project's long term goals include good planning, preservation, and construction techniques, sound ecosystems management, satisfied homeowners, and a satisfied town. In this community the view corridors have been preserved, poppies and lupines abound every spring, and acorns are germinating into seedlings under the heritage oaks.

# Wildflower Center Invites You. . .

## Membership Stretches Nationwide

Many of you may have received an invitation in the mail to become a member of the Center this past month. If you are already a member, we hope you have passed it on to an interested friend, and in that way helped us to "spread the word." Please note that the benefits offered in the direct mail packet are only available to those who respond to that special offer. All other respondents will receive the Center's usual benefits for the various levels of membership, which begin at \$25. We hope this membership drive will add substantially to the 3,000 loyal supporters who have joined the Center, many of whom have also renewed their membership for a second year.



National Wildflower Research Center sweatshirt.

## Say it with Wildflower Gifts

If you wish to give a special gift this year, why not consider a National Wildflower Research Center T-shirt or sweatshirt, both emblazoned with a riot of showy pink primroses, or a set of specially commissioned wildflower notecards by artist Rose Baxter? T-shirt and sweatshirt are available in sizes small, medium, large, and extra-large—please specify the size you require. The notecards come in packets of ten.

- T-shirts—\$12
- Sweatshirts—\$19
- Notecards—\$5

The above prices include postage and handling. All orders received by December 9 will be fulfilled by Christmas, and we will try our best to mail orders received after that date before December 25. Please send orders to: National Wildflower Research Center, attn: Nikki Kriss, 2600 FM 973 North, Austin, TX 78725.

National Wildflower Research Center invites you to honor special friends with *Gift Memberships*.

We will acknowledge your gift and notify your friends of their membership. Return to: Membership, National Wildflower Research Center, 2600 FM 973 North, Austin, TX 78725.

*Gift Giver*

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Phone Number (\_\_\_\_) \_\_\_\_\_

*Gift Recipient*

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Address \_\_\_\_\_

City/St/Zip \_\_\_\_\_

Phone Number (\_\_\_\_) \_\_\_\_\_

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| <input type="checkbox"/> \$100 Key Member       | <input type="checkbox"/> \$250 Center Sponsor   |
| <input type="checkbox"/> \$500 Trust Member     | <input type="checkbox"/> \$1000 Benefactor      |

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

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All gift memberships received by December 9 are guaranteed acknowledgement by Christmas and we will try our best to acknowledge all gifts received after that date before December 25.

Your membership donation is tax deductible to the extent allowed under Federal and State Laws.

*National Wildflower Research Center Invites You to Become a 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.

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| <input type="checkbox"/> \$250 Center Sponsor   | <input type="checkbox"/> \$500 Trust Member     | <input type="checkbox"/> \$1000 Benefactor |

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From: *Title/Name*  
*Address*

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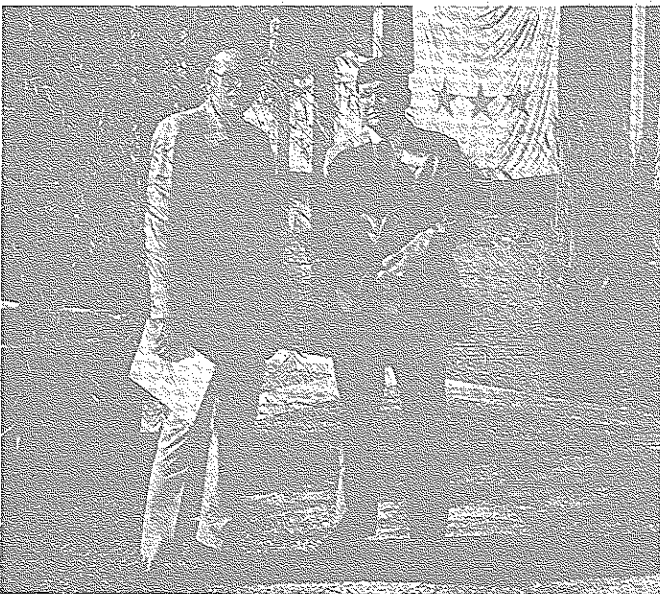
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## Washington Weekend of Wildflowers

### *All Eyes on Wildflowers*

A coalition of seven groups interested in wildflowers and native plants co-sponsored a symposium, *All Eyes on Wildflowers*, at the National Arboretum in Washington, D.C. on September 28, for approximately 150 interested participants. NWRC trustee Bob Lederer, Vice President of the American Association of Nurserymen, organized the all-day symposium which featured: Barbara Emerson past-president of Garden Writers' Association of America; Dr. David Northington, Executive Director, National Wildflower Research Center; Dr. Linda McMahan, Coordinator, Plant Conservation Program, the World Wildlife Fund—U.S.; Carlton Lees, the Horticultural Society of New York; Gordon W. Chappell, the Colonial Williamsburg Foundation; and Cole Burrell, Curator, the Fern Valley U.S. National Arboretum.

Each speaker covered different issues concerning wildflower use, cultivation, and research in the northeast. Establishing a wildflower landscape in that area of the country requires special techniques and species selection. Northeastern meadows are best when composed predominantly of perennials. Various approaches to annual mowing were discussed, as well as management techniques used to control the invasion of woody plants. The need for more research was stressed in every presentation.



Carlton Lees and Gordon Chappell, speakers at "All Eyes on Wildflowers," Washington D.C. September 28, 1985.

## Highways and Byways

Look out for abundant displays of wildflowers along the roadsides next spring in Virginia. Last spring and summer the state—best known for flowering dogwood—bloomed with crown vetch on the hillsides, coreopsis, dainty Queen Anne's lace, and purple loosestrifes.

The policies that are responsible for these lush displays began with the encouragement and hard work of "Operation Wildflower," a project of the Virginia Federation of Garden Clubs. Its members sowed seed in plots along selected highways in the mid-seventies, then left the state responsible for a maintenance program of spreading wildflowers along all the state's highways.

The highway department's policy is to cut the turf only at the immediate edge of the highway in a strip 4 to 6 feet wide. The remaining area of the rights-of-way is allowed to bloom into full wildflower beauty, with minimal use of herbicides to treat only the most invasive imported species. The entire rights-of-way are cropped in autumn, to redistribute seed and keep out numerous weedy trees. Keep an eye on Virginia, their deliberate management of wildflowers is sure to create a finer colony of wildflowers each season!



"An Afternoon in the Country," Middleburg, Virginia, September 29, 1985. From left to right: Mr. & Mrs. Bob Schieffer, Lady Bird Johnson, Mr. & Mrs. Fritz Korth.

### *An Afternoon in the Country*

Secretary of Transportation Elizabeth Dole and Senator Robert Dole, Senator and Mrs. Lloyd Bentsen, Senator John Warner, Governor and Mrs. Charles Robb and over 300 others enjoyed *An Afternoon in the Country* at the Middleburg, Virginia home of Governor and Mrs. Averell Harriman on September 29. The benefit for the National Wildflower Research Center was organized by co-chairmen Mrs. Bob Schieffer and Mrs. Fritz Korth and coordinated by trustee Bess Abell. On the spacious grounds were tents filled with displays of wildflower theme gifts and tables set with cloths of wildflower fabric by Harry Hinson. Master of ceremonies for the event was Congressman Jake Pickle, who expressed the appreciation of the assembled people for the work Lady Bird Johnson is doing to bring the use and appreciation of wildflowers and native plants into focus. Proceeds from the event are expected to be approximately \$50,000.

## From the Mailbox

### *Conferences, workshops, meetings, symposia*

- January 15-17, 1986—"The Role of Landscape Heterogeneity in the Spread of Disturbance" at the University of Georgia, Athens, Georgia. Contact: Dr. Monica Goigel Turner, Institute of Ecology, University of Georgia, Athens, GA 30602 (404) 542-2968.
- January 1986 (date TBA)—Joint Meeting of New Jersey Native Plant Society with the American Society of Landscape Architects/New Jersey Chapter. Contact: New Jersey Native Plant Society, P.O. Box 129512, Morristown, New Jersey 07960.
- February 27 & 28, 1986—"Erosion Control, Protecting our Future" at the Doubletree Hotel, Dallas, Texas. Contact: International Erosion Control Association, P.O. Box 195, Pinole, CA 94564-0195 (415) 223-2134.
- April 5, 1986—Wildflower Gardening Symposium at Bentley College, Waltham, Massachusetts. Contact: New England Wildflower Society, Hemenway Road, Framingham, MA 01701.
- May 25-28, 1986—National Council of State Garden Clubs Spring Convention, Chicago, Illinois. Contact your local chapter for more information.
- June 22-26, 1986—North American Prairie Conference at Texas Women's University, Denton, Texas. Contact: Native Prairie Association of Texas, Texas Women's University, P.O. Box 22675, Denton, TX 76204.

Please submit information on your wildflower event to the Editor, *Wildflower*, National Wildflower Research Center, 2600 FM 973 North, Austin, TX 78725.

## Xeriscape—the new word in Landscaping

by Pam Dwiggins

Maintaining beautiful landscapes is important to most home and business owners, so is reducing water and energy costs. Guidelines for achieving both simultaneously have now been brought together in a new program called "Xeriscape," stemming from the Greek word "xeros" meaning dry. City water departments and concerned action groups around the country have been adopting the program in an effort to educate citizens in methods of conserving water and energy through creative landscaping practices.

Water shortages are not indigenous to the southwestern United States alone. Rapid population growth has created water demands that exceed the amount of water than can be treated and distributed even in areas of the country where reserves are adequate; and eliminating wasteful water usage makes good sense for all regions of the country.

Estimates show that between 40 to 60 percent of summer water usage is dedicated to landscape maintenance. Waste can be eliminated by adapting these basic Xeriscaping principles into landscaping practices:

- use of more effective and efficient irrigation systems and watering methods. To prevent excessive evaporation, water only in early morning or late evening hours. By using drip irrigation systems, less water is lost to evaporation and wind, and if used correctly, wasteful puddling and run-off can be eliminated. Soil basins around the base of plants help hold water where its needed most.

- soil preparation to condition the soil and increase its ability to retain water. Clay soil has a low water holding capacity because its particles are tiny and tightly packed, impeding the flow of water to the plant root systems. These soils can be loosened by working sandy loam topsoil or organic materials into the ground. These materials are composed of larger, looser particles that help the water percolate down to root systems and retain it, preventing run-off and waste.

- use of mulch also helps soil retain water. Materials such as gravel, straw, and bark chips applied in a 3 to 4 inch layer on the soil surface will not only reduce evaporation but will also inhibit weed growth, reserving water for desired plants.

- use of low water demanding plant materials. Native trees, shrubs, grasses, and wildflowers are good choices because they are adapted to the natural rainfall of the area and require less supplemental watering once they are well established. Other varieties of non-native, water-efficient plant materials are available at local nurseries. A common concern is that a Xeriscape will have an arid, desert appearance. Not so, all of these plants provide a variety of color, texture, size, and adaptations that can be easily utilized in beautiful, lush, creative landscape settings.



*The Xeriscape Landscape of Steve Katz, Austin, Texas.*

Water savings of up to 60 percent have been reported for established lawns that are predominantly Xeriscaped. Thirty percent savings are reported from homeowners who have practiced only marginal Xeriscape techniques. Participants have been delighted with both the savings and the appearance of their landscapes.

Involved groups help spread the word in such ways as planting public demonstration gardens, sponsoring city-wide Xeriscaping contests, providing additional information on specific maintenance techniques and recommending species of low water usage plants suited for a Xeriscape landscape.

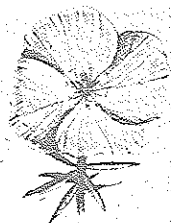
The program was originated by the Denver Water Department and has since spread nationwide to other states including California, Nevada, Oregon, New Mexico, and Texas in the west, and reaching to New York and Florida in the east. Ken Ball heads up the Denver program and if you would like more information on how you or your community can become involved, write to him at:

Conservation Program  
Denver Water Department  
P.O. Box 80254  
Denver, CO 80254

*Pam Dwiggins is a research botanist at the National Wildflower Research Center.*

### National Wildflower Research Center

2600 FM 973 North  
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