

# WILDFLOWER

A non-profit organization committed to the preservation and reestablishment of native wildflowers, grasses, shrubs, and trees.

## Winter botanizing uses stems to make identification easier

I enrolled in my first college botany course during the winter. After covering plant morphology (the physical characteristics of plants) for a few weeks, I was given a plant key and told to go outside and identify as many trees as I could in 45 minutes. A plant key is a written sequence of two choices of descriptions of plant parts. I remember looking at that plant key and wondering, "How am I going to do this?" Most of the trees on campus had already shed their leaves, flowers, and fruits. After 30 minutes, when I *thought* I had identified four or five species, I found I had correctly identified only two!

Most botanists will tell you that learning to use a plant key is one of the hardest things they have ever done. Many plant keys rely heavily on identifying certain structures or characteristics, such as flower shape and color, fruit type, leaf shape, or even the smell of the flowers and crushed leaves.

But what do you do in the wintertime when leaves, flowers, and fruits are gone? Plants still have many distinguishing features, especially on the stems, that will help you identify species during the winter.

A stem is an elongate axis comprised of a sequence of *nodes* and *internodes*. A node is a point of attachment, for example, where a leaf is attached to the stem, and an internode is the space between two successive

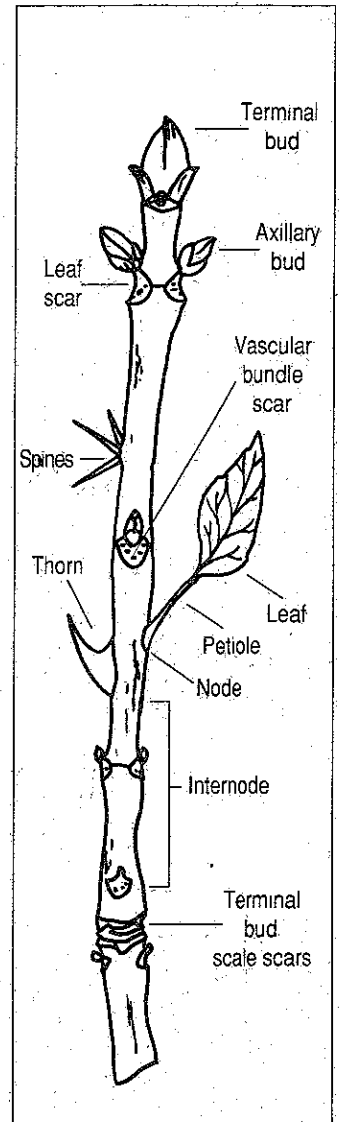
nodes. The size and shape of nodes and the length of internodes can help identify a plant.

As a plant grows every year, it leaves behind tell-tale traces of where this new growth began. The *terminal bud* is the site where this new growth occurs every year. As new growth occurs, the terminal bud scales fall off, leaving behind a scar that can be used to determine the age of a stem, as well as to help identify certain species.

When a leaf falls from the stem, it leaves a mark called a *leaf scar*. Leaf scars are often unique to a group of plants. For instance, a triangular leaf scar could indicate a certain family of trees. The arrangement of leaf scars around the stem indicates how the leaves were arranged and provides a good clue to identifying specific plants during the winter.

The type of bark also can be useful in wintertime identification, especially in older trees that are more fully developed. Bark may be smooth, fissured, cracked, scaly, rippled, or even peeling. Quite often a species will have a unique bark characteristic. Paper birch (*Betula papyrifera*), which has peeling bark, is a good example.

Some special tools will help in the identification process. A hand magnifying lens (10x) is essential to seeing some features, such as scars. A small metric ruler will help determine the spacing and sizes of some of the features. But the most useful tool is



abundant patience and a good plant key.

To enjoy a fun wintertime botanizing experience, find a good key (call a local college biology department and ask a taxonomist to recommend one) and take your hand lens and patience into the field.

John Slider  
Botany Intern  
National Wildflower  
Research Center

## Wildflower Center construction process respects land

A long time coming, but well worth the wait! That is how the Wildflower Center staff feels about the process of planning, designing, and constructing our new 42-acre facility. This willingness to be patient is one of the reasons that the end result — our new home — will be special. The entire 42 acres, including the buildings, will represent a balance between undisturbed native vegetation areas and constructed areas accomplished with as little disturbance as possible.

From the beginning of the project, we have emphasized the importance of the site's natural resources. Even before we bought the land, we commissioned geological, hydrological, zoological, and botanical studies to ensure that developing the facility would not damage critical and delicate ecosystems or compromise endangered species habitats.

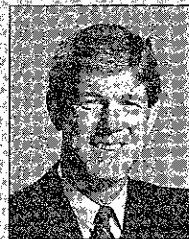
When we bought the land for

the new site, we conducted a complete tree and shrub inventory using aerial photographs and a ground survey. Information from that inventory, plus the geological and physical information gathered from earlier studies, was used to select the best site for the building, parking, and outdoor garden areas.

We decided that constructing several smaller buildings, instead of one large building, would make less of an impact on the land. The architects, landscape architects, and civil engineers worked together to position the buildings to take maximum advantage of prevailing breezes, passive winter solar heating and summer shading, reduce the need for excavation, and to balance the buildings' visual impact on the surrounding land and vegetation. We wanted to prevent the removal of significant trees and large shrubs, as well as enhance the land's native species biodiversity.

The construction firm we hired

has made a commitment to treat the land with respect. All subcontractors brought onto the site are trained to work on the land without damaging it. The contractors are not allowed on any part of the site that will not eventually be used as roads, parking areas, or structures. Because of the restricted working area, the movement of construction equipment, materials, and workers must be planned and scheduled far in advance. As a result, fewer construction activities can occur at the same time. We have installed fencing around the perimeter of the off-limits areas to make sure the contractors do not accidentally stray. If they do, a



(read on, page 6)

David K. Northington, Ph.D., is Executive Director of the National Wildflower Research Center.

## Wildflower

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Wildflower (ISSN 0898-8803)  
Published bimonthly. A portion of \$25 membership dues pays for your annual subscription to *Wildflower*, National Wildflower Research Center, 2600 FM 973 North, Austin, TX 78725-4201. Phone: (512) 929-3600. Material may be reprinted with the permission of the editor. Second class postage paid at Austin, Texas.

POSTMASTER: Send address changes to *Wildflower*, NWRC, 2600 FM 973 North, Austin, TX 78725-4201

## WILDFLOWER CENTER NEWS

In March, the Wildflower Center will co-sponsor the **1994 Wildlands Conference** in Houston. Executive Director David Northington will present a paper on "Native Plants in Planned Landscapes: A Cure With No Side Effects."

The Center's **ceremonial groundbreaking** for the new facility took place October 15, coinciding with the Board of Trustees meeting. Lady Bird Johnson turned the first shovel of earth, and was followed by trustees, major Capital Campaign donors, and architects.

The Center's **Night of the Wildflowers: Wildflowers in the Moonlight** fund-raiser in October was a smashing success! More than 600 guests enjoyed a buffet of regional Texas foods, indulged in a silent auction, and danced to the music of Jerry Jeff Walker. The Wildflower Associates, a group of Austin-based

Center members who organized the event, deserve a big *thank-you* for pulling off an event that is still talked about!

The **Colorado Native Plant Society** sponsored an October symposium on "Responsible Landscaping: An Ecological Perspective." Dr. Northington, the keynote speaker, discussed how the Center's philosophy has evolved with respect to environment, ecology, genetics, conservation, and aesthetics.

Mark your calendar for April 9 and 10. The annual **Wildflower Days Festival** promises to be even bigger and better than ever, with New York Times best-selling author **Sara Stein** as the scheduled keynote speaker.

The October issue of *Group Travel Leader* magazine featured the Wildflower Center as a possible travel destination for senior citizens' travel groups.

# New education director joins Wildflower Center staff

The Wildflower Center is pleased to welcome Julie Barrett Heffington, director of education, to the staff. The Education Director position was created in late 1993 to supervise the Center's educational activities.

"Julie brings a breadth of experience working in education programs and with volunteers. Her enthusiasm, combined with her commitment to the Wildflower Center's mission, her energy and her fresh ideas will help us develop fun, informative, and diversified programs for our new facility," says David K. Northington, executive director of the Wildflower Center.

Julie has been reviewing the Wildflower Center's current educational programs and is beginning to work on the programs that will be offered at the Center's new site when it opens in 1995.

"I'm looking forward to developing teacher-training workshops, teacher resource kits and curricula, programs for drop-in visitors, and workshops and seminars for profes-



Photo: Norm Flaigg

Julie Barrett Heffington

sionals in the native plant industry," Julie says. "I believe the education department here at the Wildflower Center has a fantastic opportunity to be a national leader in educating the public about critical native plant issues."

Julie joined the Center from the

California Department of Fish and Game, where she worked for five years as an environmental educator in the far northern region and in the Monterey Bay area. She administered educational and volunteer programs on state ecological reserves.

She also has worked as an interpretive park ranger at Redwood National Park in northern California, as a marine naturalist at the Humboldt State University Marine Lab in Trinidad, Calif., a forest interpreter at the Umpqua and Rogue River National Forests in Oregon, and as a field botanist in Alaska.

Julie has had a life-long interest in native plants, especially the roles they play in the health of ecosystems.

"I've always been inspired by the beauty in nature and consequently drawn to the richness of the world of plants. Not only are native plants beautiful, they also provide the basis of the habitats that wildlife depend on and provide great economic benefits to the home or corporate gardener," she says.

## Center teams with garden clubs to develop, distribute wildflower curriculum

The National Wildflower Research Center and the National Council of State Garden Clubs have formed a partnership to share a new curriculum with elementary and middle school science teachers across the United States.

*Take Students to the Wild... to Discover Wildflowers and Native Plants*, developed by the Wildflower Center and Dorothy Chavez, an Austin-area elementary science teacher, is designed to help teachers, Scout leaders, and outdoor education program coordinators teach students about the structure, function, and environmental and ecological importance of wildflowers and native plants.

Lesson topics include parts of the plant, flower communication, and seed dispersal. Activities, many of them hands-on, follow the format of a well-designed lesson plan and include enrichment ideas that can be

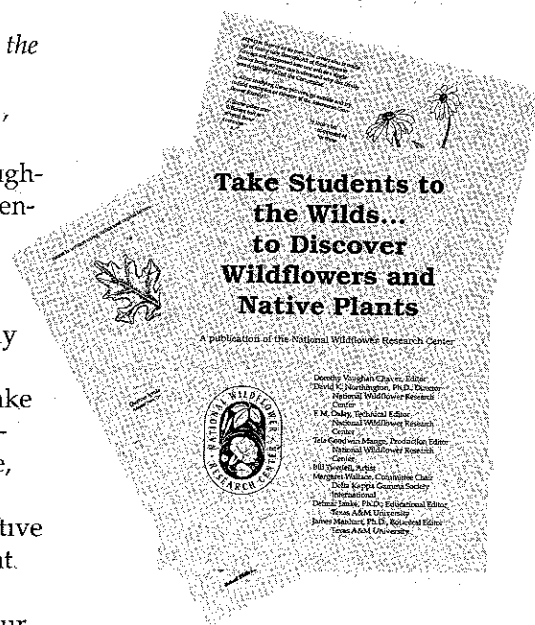
used with different age groups and learning levels. Plant trivia is included under the subtitle "Did You Know?"

State garden club presidents received copies of *Take Students to the Wild...* at the council's national conference held in Asheville, N.C., last June. Club presidents will distribute copies to chapters throughout their states to share with elementary and middle school science teachers.

*Take Students to the Wild...* will supplement materials teachers may already be using in the classroom. While many of the activities can take place indoors, teachers are encouraged to take their students outside, where they can learn about the importance of wildflowers and native plants in their natural environment.

Copies are available from the Wildflower Center for \$6. Send your

name, address, and check (made out to NWRC) to **Take Students to the Wild, c/o Clearinghouse**, at the address listed on the back page.



# Wildflower

## NOTEBOOK



**Scientific name:** *Cleome serrulata*  
**Pronunciation:** klay-OH-mee seh-roo-LAH-ta  
**Common name:** Rocky Mountain bee plant, skunkweed  
**Family name:** Capparidaceae  
**Range:** Great Plains (except southeast), Saskatchewan to

Oklahoma, west to Oregon, south to New Mexico and Arizona  
**Habitat:** Grasslands and open meadows, commonly in wash areas and disturbed areas  
**Bloom period:** June to August

Throughout the summer these bright pink flowers grow and bloom in disturbed areas, sometimes in great profusion. *Cleome serrulata*, or *waa*, its Navajo name, is sacred to the Navajo because it sustained them in times of drought. The seeds were collected and stored for food for the lean winter months.

The small flowers are densely packed on the tall stalk (15 to 35 inches tall), and after pollinated by bees, the flowers produce many seed capsules with four to six seeds per capsule. The compound leaves have three narrow lanceolate leaflets. Because of the strong smell of the crushed leaves it is sometimes called

skunkweed.

The leaves of *Cleome serrulata* have several traditional uses. Navajo weavers make a yellow-green dye from the leaves. A tea made by boiling the leaves with a nail was used to treat anemia. The leaves have been used to treat insect bites by applying a paste made by mixing crushed leaves with tobacco.

Somehow it is reassuring to know that this sacred flower is still common, still wild, and that it could produce food to sustain the Navajos through hard times. It is a symbol of hope for the future.

**Oops!Oops!Oops!**  
 The illustrations in last issue's *Wildflower Notebook* were reversed. *Wildflower* regrets the error.



**Botanical Name:** *Cleome lutea*  
**Pronunciation:** klay-OH-mee loot-EE-ah  
**Common name:** Yellow bee plant, yellow caper, golden caper  
**Family name:** Capparidaceae  
**Range:** Washington south to California and Colorado, east to southern Arizona, northern New Mexico, western

Nebraska, and Montana  
**Habitat:** Lower mountain valleys and desert plains; prefers sandy soils  
**Bloom Period:** May to September

*Cleome lutea*, or yellow bee plant, is one of approxi-

mately 200 species of subtropical, tropical, and occasionally temperate-region herbs, subshrubs, and shrubs of the same genus.

Sometimes called spiderflower, *Cleome lutea* has flowers that are said to resemble small spiders. Arranged in racemes and often producing a rank odor, the flowers are radially or bilaterally symmetrical and consist of four sepals, four petals, and six long stamens attached at the base of a jointed stalk beneath the ovary. Leaves, which are alternately arranged, are palmately compound with three to seven lance-shaped leaflets. The fruit is a pod produced on long stalks jointed in the

middle.

The genus name, *Cleome*, was first used by the Greek philosopher Theophrastus to describe a plant that resembled the mustard plant. While the flowers of *Cleome* do resemble mustard flowers, it is the ovary, positioned on a jointed stalk, and the palmately compound leaves that distinguish it as a member of the Caper family.

Although a few species are raised as ornamentals, little research has been done on the propagation and cultivation of *Cleome lutea*. Some sources report that other *Cleome* species are easily propagated from seed.

## Plan to Attend: Plant Conservation and Landscape Design Symposium, February 26 and 27

Learn more about links between California native habitats and conservation/restoration methods at a symposium sponsored by the National Wildflower Research Center and the Santa Barbara Botanic Garden, February 26 and 27.

Regional experts will discuss the vital links between native habitats, current conservation/restoration efforts, and methods for creating landscapes in a garden context using California native plants. Presentations include botanical overviews and landscaping applications for meadows, prairies, woodlands, forests, coastal habitats, deserts, and riparian ecosystems.

Registration for the conference is \$195 for Wildflower Center members and \$220 for non-members before Jan 15, and \$215 for members and \$240 for non-members after Jan 15. For more information, contact the SBBG, 1212 Mission Canyon Road, Santa Barbara, CA 93105-2199, (805) 682-4726.

## Brighten winter days with a Wildflower Center book order

Not a colorful picture today outside your window? You can fast-forward to spring with these books from the Center's products division. Members save 10 percent off the listed prices.

- *Wildflowers. How to Identify Them in the Wild and How to Grow Them in Your Garden* Rick Imes. An engaging how-to book and field guide, with additional information on site and soil evaluation, elements of a wildflower garden, and discussions of climatic conditions and wildlife attraction. 160 pages, 360 illustrations and photographs. Hardback \$24.95

- *Xeriscaping* Ellefson, Stephens, and Welsh. **New!** A comprehensive guide to water-efficient landscaping, with chapters on Xeriscape principles and extensive regional plant lists. Although Xeriscaping is not necessarily nativescaping, it can be: note the comments on the value of native plants in Xeriscaping. 323 pages, with photos and illustrations. Hardback \$30.00

- *Wild Flora of the Northeast* Anita and Spider Barbour. Organized by season, this series of natural history essays gives the reader a detailed understanding of the plant communities of upstate New York and New England — combining scientific explanations, personal observations, and stunning photographs. 200 pages, 90 color photographs. Oversized hardback. \$35.00

- *Native Plants for Southwestern Landscapes* Judy Mielke. **New!** A noted

landscape designer and teacher discusses desert ecology, provides ideas for revegetation of disturbed areas, and presents 300 native plants suited to arid landscapes. 384 pages, 350 color photographs. Paperback \$22.95

- *Wildflower Identifier* Rick Imes. Oversized guide for the novice presents 130 common North American wildflowers, plus their natural history and place in the ecosystem and our culture. 80 pages, with large color photographs of each plant. Hardback. \$16.95

- *The Wild Gardener* Peter Loewer. Author thoughtfully explores native plants and their value to your garden — with liberal sprinklings of history, folklore, oddities, and comments on which flora attract which fauna. 248 pages, 48 line drawings. Hardback. \$19.95

- *Complete Garden Guide to the Native Perennials of California* Glenn Keator. The consummate guide to growing more than 500 California species. 303 pages. Line drawings. Paperback. \$14.95

- *Native Shrubs and Woody Vines of the Southeast* Foot and Jones. Field guide to some 550 species, from eastern Texas, Arkansas, Kentucky, and West Virginia, to Delaware and northern Florida. 255 pages, 220 color photographs. Hardback. \$32.95

To place your order, please use the form below (or a copy!) and mail it to the address on the back page.

### U.S. Postal Service Statement of Ownership, Management and Circulation

On Sept. 27, 1993, *Wildflower* (0898-8803), a bimonthly publication printed six times per year, with an annual subscription price of \$25, filed its statement with the U.S. Postal Service, as required by law.

Tela Goodwin Mange, editor, is an employee of the publisher and owner, the National Wildflower Research Center. Both may be reached at the organization's headquarters, 2600 FM 973 North, Austin, TX 78725-4201.

The organization's function, purpose, and tax-exempt status have not changed in the preceding 12 months.

Average number of copies printed during the preceding 12 months: 18,185. Average number of mail subscriptions during the preceding 12 months: 17,118. Average number (total) of paid and/or requested circulation during the preceding 12 months: 17,118. Average number of free distribution during the preceding 12 months: 694. Average total distribution during the preceding 12 months: 17,812. Average number of copies not distributed: 373. Average total: 18,185.

Average number of copies printed nearest to filing date: 19,500. Average number of mail subscriptions nearest to filing date: 17,481. Average number (total) of paid and/or requested circulation nearest to filing date: 17,481. Average number of free distribution nearest to filing date: 100. Average total distribution nearest to filing date: 17,581. Average number of copies not distributed: 1,919. Average total: 19,500.

Tela Goodwin Mange certifies that these statements are correct and true.

## ORDER FORM

Use this form (or a copy) to order any of the books above. Make check payable to NWRC and mail with form to, **NWRC Book Orders, 2600 FM 973 North, Austin, Texas 78725-4201**. Or call (512) 929-3600, from 9 a.m. to 4 p.m. Central Time weekdays, for credit card orders only.

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## Resolve to travel with the Wildflower Center!

The Wildflower Center has made plans for some fabulous and educational EcoTours in 1994. Pack your bags and make your reservations today to travel with us to these unique destinations:

- Ecuador and the Galapagos Islands, March 17 to 30. Trip includes three days on the Galapagos Islands! Tour price per person, double occupancy, \$3,729. Deposit: \$500 per person.

- The Texas Big Bend, April 22 to 27. Trip includes a day in Big Bend National Park with noted desert naturalist Dr. Barton Warnock. Tour price per person,

double occupancy, \$1,279. Deposit: \$200 per person.

- Alaska, June 2 to 16. Trip includes visits to glaciers, alpine meadows, and a cruise along the scenic Inside Passage. Tour price per person, double occupancy, ranges from \$4,427 to \$5,132, depending on stateroom accommodations. Deposit: \$500 per person.

On all these trips, your deposit is your reservation, so don't delay.

For more information on the tours, prices, and registration, please contact the Travel Office at (512) 929-3600.

Happy trails!

## Director's Report,

continued from page 2

financial penalty has been included in the contract for damage to trees and grassland areas (For example, damaging a large live oak tree can cost up to \$50,000, depending on its size.)

This rigorous process means that construction will take more time than it normally might. But it's well worth the wait. We'd rather do the project right — and take care of the land — than finish it quickly.

We don't anticipate completing the new facility until early 1995, but we are looking forward to sharing it with you, our members, once it is completed. We know you will be proud of what is accomplished!

## Make a difference: Join the National Wildflower Research Center!

Members of the National Wildflower Research Center support wildflower and other native plant work across the nation. Benefits include *Wildflower*, the newsletter and *Wildflower*, the journal, 10% discount on unique Center products such as wildflower books, calendars, and T-shirts, advance notice on tours and discounts to Center seminars, free wildflower information from the Center's Clearinghouse, a membership card, and other benefits.

- \$25 Supporting Member.** All benefits listed above.
- \$50 Sustaining Member.** All the above plus a set of specially commissioned wildflower note cards.
- \$100 Key Member.** All the above plus wildflower tote bag and invitations to special events.
- \$250 Center Sponsor.** All the above plus full-color wildflower address book.
- \$500 Trust Member and \$1,000 Benefactor.** All the above plus special privileges.

• Thank you! Your contribution is partially tax deductible. Contact the Development Office for detailed information on tax deductibility.

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## Wildflowers Work!

Volume 11 Number 1 January/February 1994

Printed on recycled paper