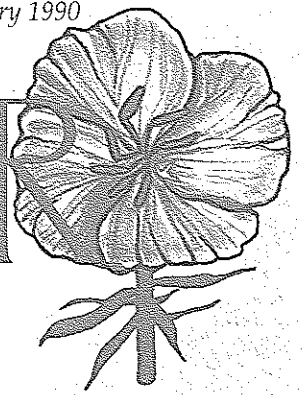


# WILDFLOWER



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

## Congress Eyes Larger Issue

Spawmed by the ecology movement of the '60s, public awareness of environmental issues increased dramatically in the '80s, climaxing in the outrage over last year's Valdez oil spill in Alaska. Not only did the oil tanker crack-up in Prince William Sound kill cherished wildlife, it fouled the habitats of plant and animal species.

As 1990 opens, "Think globally, act locally" is the battle cry of organizations and grassroots politicians urging immediate action to protect the environment from the pollution and habitat destruction we have long been inflicting. Because of the severity of the damage, they demand

action at the highest levels, especially by the federal government.

Evolving as a key environmental issue for the public and Congress is the need to preserve biodiversity —

### Biodiversity has only recently become an issue in the political arena.

the essential variety of plants, animals and other organisms and the ecosystems they are a part of. Up to now, there has been special concern for individual species — gray whales in Alaska, pink lady slipper orchids in northeastern forests, agaves in the Southwest. But no species exists in a vacuum. Every organism is part of the complex, interactive system called Earth, and alterations of the smallest components can ultimately affect the balance of the whole planet.

U.S. House and Senate members have begun to push forward bills mandating that, as a nation, we take steps to conserve biodiversity. Reps. James H. Scheuer (D-NY) and Claudine Schneider (R-RI) are advancing the National Biological Diversity Conservation and Environmental Research Act (H.R. 1268). The bill was approved in 1989 by a subcommittee of the House Science Committee, then slated for the House Committee on Merchant Marine and Fisheries and, sometime in 1990, the full Science Committee. Sen. Albert Gore (D-TN) reportedly may author a similar bill.

As an example of biodiversity legislation, the bill backed by Scheuer (read on, page 4)

## RESEARCH U.P.D.A.T.E

Indian paintbrush or *Castilleja* spp. seed is the most expensive wildflower seed on the market. This widespread genus — which grows in habitats ranging from prairies to high rocky slopes in North America — has upwards of 150 species.

But researchers know little about its natural history or how to commercially propagate the plants, which have such vivid red, purple, orange or yellow blooms. To facilitate commercial production of paintbrush seed, the National Wildflower Research Center designed a multifaceted study of one species, *Castilleja indivisa*.

Wildflower Center researchers will examine:

- ♦ factors related to germination, such as cold and moisture;
- ♦ time required for germination in the field;
- ♦ plant density and seed production in paintbrush stands growing in the wild;
- ♦ germination and growth of *Castilleja indivisa* with and without companion species (some *Castilleja* species have been shown to be parasitic on other species).

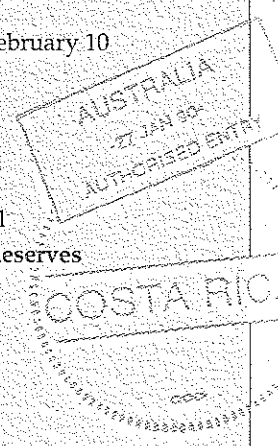
The information the Center gains should be applicable in wildflower seed production for the western two-thirds of the United States, the primary range of Indian paintbrush. The study is funded by the Texas Department of Agriculture and conducted with the cooperation of a major, Texas-based, commercial seed producer.



### Call of the Wild

Experience deserts in bloom. Note the variety of orchids native to the tropics. Marvel at mountain wildflowers. The National Wildflower Research Center announces its Wildflower and Naturalist Tours for 1990. Center members will be mailed a brochure for each tour. For reservations, call SelecTours at 1-800-759-7727 when the brochure arrives. Tours in 1990 include:

- Australia  
January 27 to February 10
- Costa Rica  
March 18-24
- Big Bend, Texas  
April 24-29
- Vancouver, B.C.  
June 23 to July 1
- African Game Reserves  
September 8-25
- New Guinea  
October
- New Zealand  
November



# Director's Report: '90s To Be Decade of Repair

As we look back on the history of our concern about Earth's environmental problems, it becomes clear we are progressing through stages. The '60s were a decade of environmental concern, but only on the part of the relatively few who perceived the problems. The '70s were a decade of environmental protection through government regulations, and the '80s were a decade of broad public awareness of the environment and education on the problems. Recognizing those stages is critical to avoiding future mistakes with far-reaching consequences. But first we must solve the problems we have now. The stage is set: the '90s must be a decade of environmental repair.

We have altered our native flora too extensively to simply step back, let nature take its course, and assume the end result will be natural revegetation and renewed stability of our ecosystems. Fully 90 percent of our arable land has been put into cultivation. Even if we take some land out of cultivation, we *must* have native seed to revegetate it.

Estimates are that every hour, over 200 acres of native vegetation are still being removed by agriculture,

industry or urban development. Few, if any, natural habitats still exist that have not been affected by human activity. Compounding the problem is the replacement of native plants with nonnatives — cultivars and introduced exotics. At best, those plants merely take up space that could be occupied by native species. At worst, nonnative plants become overly successful, even aggressive, spreading rapidly and dominating other components of the ecosystem.

For example, *Pueraria lobata* (kudzu), a plant native to Japan, was introduced in this country to stabilize road cuts and prevent soil erosion. But it grew so successfully in the Southeast it wiped out thousands of acres of native vegetation.

The good news is that, unlike the flora of tropical rain forests, where removal of vegetation is even more rapid and little is known about what species are present, the flora of North America is well-known and ecosystem interactions are fairly well-understood. In addition, research on propagating, establishing and managing native wildflowers, grasses, shrubs and trees is resulting in new information that enables us to reestablish native

flora in planned landscapes. Parallel with this new information is a burgeoning interest among home and business owners, landscape architects, parks directors, highway staff and others in replanting native flora for environmental benefits.

However, replanting native species provides benefits beyond ecological stability. Their colors, textures, seasonal changes and natural beauty cannot be duplicated. The monetary savings that can be realized through reduced needs for water, maintenance, fertilizer, and replanting are another compelling reason to plant natives in landscapes.

Most importantly, the decade of environmental repair is something in which we can all participate. It is not enough to let government and advocacy groups institute protective measures. Inadvertently, (read on, back page)

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



## Wildflower

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## WILDFLOWER CENTER NEWS

Calling all conservation organizations, environmental agencies, restorationists, nurseries and seed companies! The Wildflower Center is compiling information for the next edition of its *Wildflower Handbook*, (Texas Monthly Press, 1989), a source book of places to find wildflower and native plant information and buy plants and seed. The Center is especially interested in receiving names and addresses of groups and businesses not listed in the first handbook edition. Those listed in the first will receive a survey form to update.

To broaden its membership base, the Wildflower Center exchanges names of members and donors with similar organizations on a limited basis. If you prefer that your name not be exchanged, just clip the mailing label from this newsletter and send it with a note expressing your preference to NWRC Preference Service, 2600 FM 973 North, Austin, Texas 78725-4201.

Last summer the Wildflower Center helped fund a U.S. National Arboretum college student internship. Intern Jeanne Desmukes reports she learned plants native to the East, habitats they prefer, and their potential in controlling run-off.

## Carlton B. Lees

Carlton B. Lees, a founding trustee and Senior Vice President of the Board of Trustees of the National Wildflower Research Center, passed away recently. He was a past editor-in-chief of *Horticulture* magazine, retired senior vice president of the New York Botanical Garden, and the author of several books. He also coauthored *Wildflowers Across America* with Lady Bird Johnson. The Center has established a Carlton B. Lees Memorial fund at his family's request. Donations honoring Mr. Lees may be sent to the Center at the address on the back page.

# Make Fibers Bloom with Natural Dyes

As a botanist-turned-weaver, I am beginning to collect and store odd things in my closet. Walnut hulls are suddenly valuable sources of brown dye, and sumac twigs are a source of fixative. Before taking up weaving, I would never have guessed, for instance, that wool dyed with *Atriplex canescens* (four-wing saltbush) comes out a bright yellow. Spinners, weavers, knitters and crocheters have all enjoyed this aspect of native plants for years.

Natural dyes are found in all kinds of plant parts — roots, bark, twigs, leaves, flowers, and seed. The art of using natural dye is knowing which plants and plant parts to use, how much to use, when to harvest and where to find the plants. It is also important to use restraint in collecting plants for natural dyes.

Native Americans developed a wide knowledge of North American native plant dyes, but European settlers in North America tended to rely on familiar imported materials rather than experiment with native plants. After synthetic dyes became commercially available in the late 1800s, native plant dyes were nearly forgotten, but they have become popular again among craftspeople.

Plant material can be used fresh, frozen or dried, depending on the species. *Betula lutea* (birch) leaves can be used fresh or dry, for example.

Often, timing is important in collecting plant material. *Coreopsis* spp. flowers should be collected at the time of peak bloom or "just before the petals fade," writes Rita Buchanan in *A Weaver's Garden* (Interweave Press, 1987). The bark of many trees is a source of brown dye and should be collected in fall or winter.

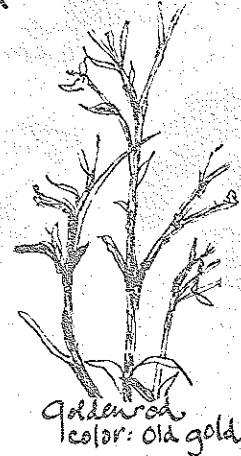
Often, fibers are first treated with a mordant, a chemical that makes pigment adhere to fiber. Varying the mordant gives a range of color.

How successfully a dye "takes" depends on the fiber used. Wool is widely available and the easiest fiber to work with.

Here's a sample dye recipe: *Half a peck of Rhus glabra (sumac) berries will dye one pound of wool dark yellow. Simmer fiber and berries together 1-2 hours. Let cool overnight.*

For a free fact sheet on native plants as natural dyes, write the Wildflower Center (address on back page). If you're a nonmember, enclose a mailing label and \$1.

Katy Kramer McKinney  
Wildflower Center Research Botanist



## Use these species to dye wool fiber these colors:

<i>Quercus rubra</i> (red oak), bark	Tan
<i>Populus tremuloides</i> (aspen), twigs	Yellow, brown
<i>Sambucus</i> spp. (elder), berries	Plum, lavender

## Wildflower Bestsellers: The Top Ten List

As Longfellow said, there are favorable hours for reading a book. A lot of them seem to fall in the wintertime, so here's a list of bestsellers from the Wildflower Center. To order, use form on back page.

1. *Wildflower Handbook*. National Wildflower Research Center. Includes a 50-state directory of places to buy native plants. 337 p. Paperback. \$9.95.



2. *Wildflowers Across America*. Lady Bird Johnson and Carlton B. Lees. Captures the beauty and importance of wildflowers. 288 p., 300 color photos and illustrations. Hardback. \$39.95.

3. *The Butterfly Garden*. Mathew Tekulsky. Tells how to attract butterflies through design and plant selection. 146 p. Paperback. \$8.95.

4. *Growing and Propagating Wildflowers*. Harry Phillips. Offers advice based on pioneering research at the North Carolina Botanical Garden. 331 p., 260 illustrations. Paperback. \$14.95.

5. *Texas Wildflowers*. Campbell and Lynn Loughmiller. Handy field guide, color photos. 271 p. Paperback. \$11.95.

6. *Photographing Wildflowers*. Craig and Nadine Blacklock. A workshop by

two famous nature photographers. 64 p., 56 color photos. Paperback. \$10.95.

7. *Growing California Native Plants*. Marjorie G. Schmidt. Learn to identify, evaluate and propagate over 350 species. 366 p. Paperback. \$9.95.

8. *Landscaping with Wildflowers and Native Plants*. Ortho Books. Create a prairie, wildflower, alpine or desert garden. 96 p. Paperback. \$6.95.

9. *Gardening with Native Plants of the Pacific Northwest*. Arthur R. Kruckeberg. Here's a well-written guidebook for gardening in the Northwest. 264 p. Hardback, \$27.50. Paperback, \$22.50.

10. *Southwest Landscaping with Native Plants*. Judith Phillips. Includes irrigation, nutrition advice, sample designs. 142 p. Paperback. \$17.95.

# WILDFLOWER OUTLOOK

Goats could be a defense against *Pueraria lobata* (kudzu), the fast-growing introduced plant species that threatens to consume the Southeast! A University of Georgia researcher advises that method of control, according to a National Public Radio report. Kudzu, native to Asia, was introduced in the Southeast to stabilize soil but has choked out numerous native plants.



The Greater Yellowstone Coalition, a nonprofit organization aimed at preserving and protecting the Greater Yellowstone ecosystem, has compiled an ecosystem-wide inventory of rare plants. The computerized information will be used to alert government agencies about rare plants and possible consequences of proposed land management.



California conservationists are concerned about the diminishing occurrence of *Quercus lobata* (native valley oak). Auspiciously, The University Arboretum of the University of California, Davis, has received a conservation grant from the Institute of Museum Services in support of the arboretum's California native plant collection. That will include pruning and shaping the arboretum's native valley oaks to increase the species' chance for survival.

## Biodiversity Becomes an Issue in Political Arena

(continued from page 1)

and Schneider features these objectives:

- make conserving biodiversity a national goal and develop a national strategy to do it;
- explicitly direct that environmental impact statements made for roads, dams and other projects requiring federal permits consider biodiversity;
- create a National Center for Biological Diversity and Conservation Research. The Smithsonian in Washington, D.C., is a possible home for the Center, which would be a central "database of databases" for information on plant and animal species, as well as a source of research funds.

The crux of the bill is its emphasis on a holistic approach to preserving species and ecosystems, rather than just stressing individual species.

Although politicians are becoming more aware of the need for a clean, healthy environment, concern about the loss of biodiversity has been a recent addition to the political arena, observes Dr. David E.

In 1989, Missouri became the 41st state to license landscape architects. Efforts to institute licensure had been ongoing for about 25 years, reports *Landscape Architecture News Digest*.



Garden in the Woods, the botanical garden of the New England Wild Flower Society, is accepting applications for its annual Horticultural Internship Program for native plant horticulture. Interns help maintain and develop various habitat gardens — woodland, rock, wetland and meadow — and assist with propagation. The emphasis is on learning to identify native plants and understand their cultural requirements. The Garden in the Woods is in Framingham, Mass. The paid internships are from March 27 to August 29. To apply, send a resume and three references by March 1 to:

David Giblin, Horticulturist  
Horticultural Internships  
Garden in the Woods  
Hemenway Road  
Framingham, Mass. 01701



Beryl Simpson, Ph.D., botany professor at the University of Texas at Austin, has been elected president of the Botanical Society of America.

Blockstein, a former Congressional Science Fellow who worked closely on writing H.R. 1268. "That biological diversity is a necessity, rather than a luxury has yet to be impressed upon politicians," Blockstein wrote in a 1988 issue of the journal, *Conservation Biology*.

At press time, the bill had garnered over 140 cosponsors — about two-thirds are Democrats and one-third Republicans — from states in diverse areas. Scheuer's Washington office lists the National Audubon Society, American Institute of Biological Sciences and Sierra Club as among the bill's supporters. Opposing it, the office says, are some industry representatives and several administrators in the U.S. Forest Service and other agencies.

Explains Mit Parsons, staff assistant at the Forest Service's Legislative Affairs Office, "Biodiversity can't be effectively assessed and managed as a single entity. Choices must be made on what components to stress."

Beth Anderson  
Wildflower Center Resource Botanist

## From the Field

Twenty-first Annual International Erosion Control Association Conference & Trade Exposition February 14-17, Washington, D.C. Conference features technical papers, symposia, and field trips. Contact: Ben Northcutt, (303) 879-3010.

Wildflower Photography Workshop March 1,3,4, Desert Botanical Garden, Phoenix. Polish photography methods and composition in a workshop cosponsored by the Wildflower Center. Contact: (602) 941-1225.

Michigan Wildflower Conference March 19-20, East Lansing, Michigan. Open to all, the conference covers topics from conservation to gardening. Contact: Louis Twardzik, Dept. of Park and Recreation Resources, Michigan State University, 131 Natural Resources Building, East Lansing, Michigan. 48824.

Fifth Annual Landscape Ecology Symposium March 21-24, Miami University, Oxford, Ohio. Will focus on practicing landscape ecology in relation to public policy, resource management, regional planning and land use design. Contact: James F. Thorne, (215) 898-5784.

## Coming Up!

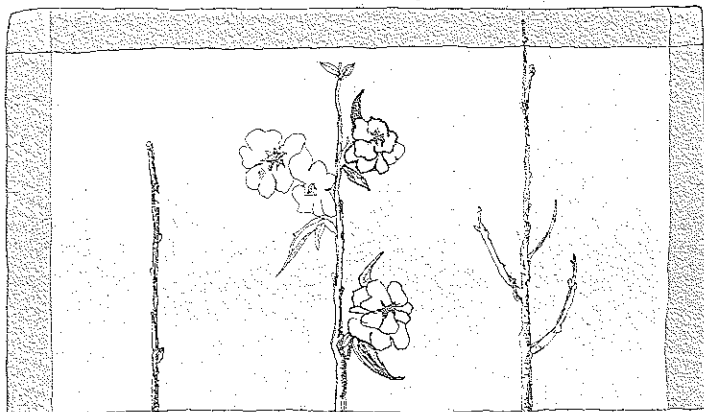
Watch *Wildflower* newsletter and other publications for details about the following events...Second Annual Conference of the Society for Ecological Restoration in Chicago in May...Wildflower Photography Workshops in May at the National Arboretum in Washington, D.C., and at the Royal Botanical Gardens in Hamilton, Ontario.

# Nip in Air Signals Pruning Time

Most native tree species, no matter where they grow except in the tropics, have something in common: winter dormancy. During winter, trees enter a state of no-growth or dormancy for protection from freezing. Winter or early spring is a good time to prune many species.

• **Evergreen conifers**, such as pines and spruces, are apt to undergo supercooling in northern areas. In warmer climates, conifers may simply slow their growth. Prune conifers just before early spring growth begins.

well-established natives, can suffer freeze damage in conditions of severe cold. Remember, soil that is moist and firm absorbs more solar energy and heat during the day than dry, loose soil, and also radiates more heat back into the air at night. Moist soil provides frost protection to above-ground vegetation and insulates and protects roots.



Spring-flowering plants bloom from buds formed year before (left), then shoots grow (center). Dormant flower buds form on shoots, overwinter (right) and bloom next spring. Prune in warm weather after blooms fade, fruit sets.

• **Broadleaf evergreens**, such as evergreen magnolias and oaks, usually slow their growth during winter. Prune them in the spring as the weather warms, just before rapid growth.

• **Summer- or fall-bloomers**, such as sumacs and some hawthorns, can be pruned anytime in

## Winter Transplanting

There are certain advantages to winter transplanting. Plant activity is reduced during winter, so transplanting is less intrusive. Also, cool temperatures are not as stressful to transplanted trees as is summer heat. In moderate, temperate climates, trees can be transplanted throughout the winter. In severe cold — where soil remains frozen for days or weeks, for example — transplanted trees may be injured by the cold.

Elinor Crank  
Wildflower Center Research Horticulturist

Trees have developed various mechanisms to maintain winter dormancy — shedding their leaves, “supercooling” (allowing tissue to freeze at a controlled rate), “drying down” (decreasing the water present in tissue), and others. The mechanism utilized determines the time to prune.

Here are some guidelines on when to prune various trees:

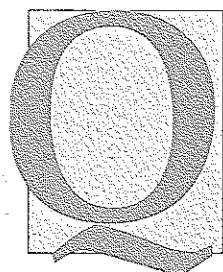
• **Deciduous trees**, such as deciduous oaks and ashes, shed their leaves in winter. Prune anytime during the dormant season — from leaf-fall to spring growth. Trees that bleed heavily, such as birches, elms, and maples, should be pruned in early winter.

winter before spring growth begins. Moderate-to-severe pruning encourages larger blooms and flower clusters. *Caution:* watch for dormant flower buds, generally present on species that bloom in early spring. Do not prune early-spring bloomers until after they bloom (top illustration).

**Preventing Freeze Damage**  
All plants, even



Spring- or fall-flowering plants bloom from buds that form on spring shoots (left and center). Overwintering twigs have dormant leaf buds (right). Pruning some leaf buds away in winter will not affect next season's fruit.



Your yard or garden can be where the wild things are. Here's what to do to attract them. For free wildflower information, a benefit of membership in the Wildflower Center,

write to the Clearinghouse at the National Wildflower Research Center, 2600 FM 973 North, Austin, Texas 78725-4201. Nonmembers are requested to enclose \$1 and a self-addressed label or 3-by-5-inch card.

**Q. What can I do to encourage wildlife in my yard?**

**A.** The basic needs of wildlife are food, water and shelter. To meet them, your yard should offer some combination of meadow, wooded and wet areas. You may need to neglect your yard — dead trees and logs make good nesting sites, fallen nuts and seedheads provide food, and long grass protects shy creatures. The more diverse the selection of native plants in your yard, the greater the variety of wildlife you'll have.

**Q. My area is the winter habitat for many birds. How can I attract them to my yard?**

**A.** Winter birds need trees and shrubs for nesting, resting and protection from cold and predators. Conifers are a good choice for both cover and food. Berries, nuts and seeds provide nourishment, also. Let some fallen branches lie, since when they decay they attract insects, which in turn attract birds. Try to keep an ice-free supply of water, too, for birds to drink and bathe in.



## Wildflower Tribute

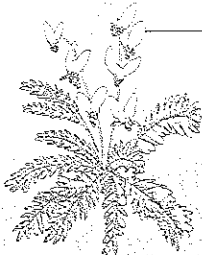
The Wildflower Center has created a tribute package for you to use to remember family and friends with a donation to the Center in their honor. Donations support the Center's efforts to conserve our heritage of wildflowers and other native plants. A specially designed card will be mailed to the person(s) you designate, notifying them of your gift. To request a tribute package, write Tributes, NWRC, 2600 FM 973 North, Austin, Texas 78725. Or call (512) 929-3600.

**Director's Report** (cont. from page 2) we have all been part of the problems affecting our existence. It is now up to us all to be part of the solution. Planting even one native tree or shrub, or a patch of wildflowers and native grasses can be a part of the solution. There are so many ways to participate; waiting for the next generation to act is no longer an option.

## Ten Wildflower Bestsellers for Winter Reading

Use this form to order any of the books on page 3. Make out your check for the total to NWRC and mail with form to: NWRC Book Orders, 2600 FM 973 North, Austin, TX 78725-4201. Or call (512) 929-3600, from 9 a.m. to 4 p.m. weekdays.

Book Title(s) \_\_\_\_\_



Total price of book(s) \_\_\_\_\_  
 Less 10% membership discount - \_\_\_\_\_  
 Texas residents add 6% sales tax + \_\_\_\_\_  
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## For Perennial Benefits: Join the National Wildflower Research Center!

Members of the National Wildflower Research Center support wildflower 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; special advance notice on tours and discounts to Center seminars; free wildflower information from the Center's Clearinghouse; a membership card signed by Lady Bird Johnson; 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 garden apron and invitations to special events.
- \$250 Center Sponsor. All the above plus wildflower poster.
- \$500 Trust Member and \$1000 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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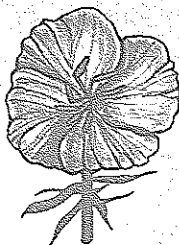
- Make your check payable to: NWRC
- Mail to: Membership, National Wildflower Research Center, 2600 FM 973 NORTH, AUSTIN, TX 78725-4201 7/1

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