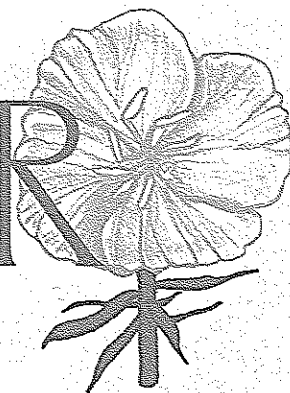


WILDFLOWER



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

Researching Wildflower Seed Quality

Most agricultural seed sold in the United States is carefully regulated. There are specific requirements for how the seed should be labeled, the kind or variety, lot number, net weight, germination test, date of test, name and address of seller, and the amount and kind of noxious weeds in the crop seed. This protects consumers by assuring that they receive the quality of seed for which they pay.

At present there are no regulations

covering the information to be provided with the sale of wildflower seed. The National Wildflower Research Center recognizes that the quality of this plant material is important in determining its success in landscapes. The Wildflower Center is actively investigating how wildflower seed quality can be established and maintained.

Legislation appears to be the logical approach to ensure that only high-quality seed is sold. However, native

seed by its definition fits less easily into traditional agricultural standards. Like traditional ornamental flower seed, wildflowers are grown for show, rather than for food or fiber. As in lawn grass seed, wildflower seed is planted in bulk outdoors, not in greenhouse production like many traditional flower species. Wildflower seed falls into its own category and does not easily fit into agricultural seed definitions for which most of the seed laws have been designed.

Quantifying wildflower seed quality: What the Wildflower Center has learned

Determining the quality of wildflower seed poses its own challenges. Point of origin of the seed is an important consideration. Has this seed been grown as a crop, farmed or cultivated, or has it been collected directly from the wild? It is now technically possible to do both.

As wildflower seed is wild, having had no intentional selection or breeding (with several exceptions), the seed does not always mature simultaneously. A higher proportion of the seed is immature when harvested. This is one reason for poor germination test results. In addition, many wild seeds are often highly dormant, a characteristic that has been bred out of traditional flower species. This can also complicate germination test results.

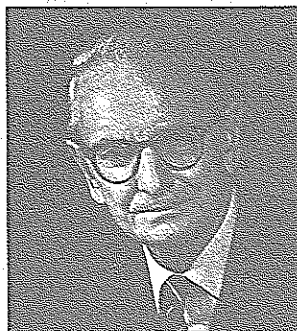
(Continued on page 2)

Wildflower Center Receives \$500,000 Gift

Laurance S. Rockefeller, one of the founding trustees of the National Wildflower Research Center and one of the nation's most respected and admired conservationists, has made the largest gift to the Wildflower Center since its establishment. Mr. Rockefeller's generous \$500,000 donation honors Lady Bird Johnson and her many years of work in conserving and enhancing America's natural beauty, including its wildflowers.

Mrs. Johnson said that over and above the importance of the gift itself, Mr. Rockefeller has given the Center "a great and important vote of confidence." She said, "Laurance Rockefeller and his family have written a unique record in preserving the American environment. His

grandfather, John D. Rockefeller, as well as his father, John D. Rockefeller, Jr., gave generously of their personal resources to preserve some of our most priceless scenic lands and historic sites. Laurance follows in the tradition established by his grandfather and his father, and our country is the better for it."



Laurance S. Rockefeller

Photo by KARSH, Ottawa © 1979

Director's Report

The Wildflower Center receives thousands of inquiries each year from a broad spectrum of the public interested in learning about and establishing wildflowers and native plants. The majority of these requests are answered by our Clearinghouse staff and volunteers. Most people want to know where to buy seed, which species to plant in their area of the country, and when and how to plant. Other questions include wanting to know of native plant landscaping or wildflower identification reference books, needing propagation information or habitat requirements of a given species, requesting locations to view established wildflower plantings and native plant landscaping projects, and names of people and organizations near them who have local expertise. We also receive many requests for educational materials appropriate for a variety of grade levels and interests.

Clearinghouse Coordinator Annie Paulson and Resource Botanist Beth Anderson have developed over 250 fact sheets addressing the above questions by state or region. They keep reference material on these topics in a computerized data base where information can be readily updated and improved as we learn from our own work and that of others around the country.

Thanks to generous grants from the Robert J. Kleberg Jr. and Helen C. Kleberg Foundation and the American Conservation Association, we have accumulated an excellent

reference library of over 400 technical and popular books and reports. This has proved to be a valuable reference for our staff and many different visitors who are researching information for publications, presentations, landscape plantings, and wildflower identification.

A new and rapidly growing part of our Clearinghouse is a slide library of photographs of native wildflower areas, landscape plantings, and individual wildflower and native plant species. Over 7,000 slides are already cataloged and new donations from talented photographers from around the country continue to be screened and processed. As our collection continues to improve for all areas of the country, we hope that in the future we will offer affordable sets of slides for purchase, in addition to the reference services currently offered through the Clearinghouse.

With continued dedicated efforts of our excellent volunteers, Betty Scace, Sydney Kilgore, Lil and Norm Flaigg, Bill and Dolphia Bransford, Dorothy Knickel, Margery Odgen, Linda Shepperd, Betty Ripperger, Melanie Gaylord, Mae Hernlund, Mary Lou



Annie Paulson, Clearinghouse Coordinator (left) and Beth Anderson, Resource Botanist (right).

Steingasser, Anne Beck, Verna Joines, Christine Woytkins, Jane Leff, Belinda Hare, and Fiona Otten, Annie and Beth expect to continue the rapid expansion, breadth, and usefulness of Clearinghouse information. Of course that information is available free to members, who also receive priority handling of their requests.

If you have never used our Clearinghouse services, drop us a note to request information for your area of the country. Non-members must send a self-addressed, 9-by-12 inch envelope with 75 cents postage. Guided by this information, we encourage you to plan a wildflower planting or native plant landscape effort this year.

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

Seed Quality...

(Continued from page 1)

Wildflower seed comes in many shapes and sizes and is often difficult to clean. As a result the seed often has a higher proportion of inert matter, especially if it has been collected in the wild. Test results on measures of purity will reflect this.

Quantifying wildflower seed quality at all is a challenge. Seed testing laboratories try whatever means they have available to germinate seed. There are few species for which a standardized testing protocol has been established. In addition to laboratories using different testing

procedures, no minimum germination or purity standards have been established for most wildflower species. No standards exist for landscape architects or developers to use in their specifications.

It is apparent that more research and investigation must be undertaken before wildflower seed can be quantified, which will allow consumers the option to comparison shop for seed.

There are many appropriate uses for native species in ornamental landscapes and reclamation sites. The Wildflower Center recognizes that using such seed requires the creative development of quality measures and

workable seed laws. While promoting and educating both consumers and producers on the benefits of using wildflowers, the Center would like to facilitate in the process of quality control. By working with seed producers and test laboratories, as well as conducting experiments, the Center's researchers would like to act as the liaison organization in solving wildflower seed regulation problems for the future. Staff botanists would like to hear your questions or comments concerning wildflower seed quality.

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

Sand County Revisited

There are some who can live without wild things and some who cannot. These essays are the delights and dilemmas of one who cannot.

These words are the opening paragraph of *A Sand County Almanac* by Aldo Leopold, one of the foremost conservationists of this century. His essays have been widely quoted and he is often called a twentieth-century Thoreau. Leopold is one of those rare authors whose eloquent style elevates ecology to philosophy and literature. His writing helps to translate personal feelings and experiences into words with which one can identify; a truly inspirational companion for sojourns into the wilderness.

A Sand County Almanac was published posthumously in 1949 and had only modest sales for two decades. During the environmental awakening of the late 1960s the *Almanac* topped the best seller list. Leopold, due to the lack of easily accessible information about him, had slipped into obscurity and perhaps never received the historical recognition that he deserved. The 1980s find him revered in the smaller circles of environmentalists and naturalists, but unfortunately he has not become a household name as have some of his predecessors, such as Thoreau or John Muir.

A commemorative issue of *A Sand County Almanac* was published in 1987 to honor the one hundredth anniversary of his birth. Perhaps this marks a time to renew the spirit of Leopold by again reading his essays, especially since what he said of American conservation in the 1940s could be said of it today.

He was born Rand Aldo Leopold in 1887 in Burlington, Iowa. He became interested in nature at an early age and accompanied his father on numerous hunting trips. His brother, Frederic, is quoted as saying, "He seemed to have gotten the love of the outdoors from Dad." At an early age he decided to pursue a career that would allow him to be outdoors.

He received a forestry degree at Yale University and his first professional position was with the Forest Service in Arizona and New Mexico. While in New Mexico he emerged as a pioneer in wilderness management,

defining wilderness long before Congress gave it protection. He was among the first to promote the then novel idea that wild game could be managed like timber, as a renewable resource. He became a persuasive spokesperson for conservation and eventually convinced the Forest Service to designate 500,000 acres of the Gila National Forest in New Mexico as a roadless, undisturbed wilderness. This happened 40 years before the Wilderness Act of 1964!

He left the Forest Service in 1928 and later accepted a professorship in wildlife management at the University of Wisconsin, a position created for him and the first such position to be established by any university.

In 1935, to satisfy his curiosity about nature, he bought 80 acres of badly eroded farmland along a bend of the Wisconsin River. The only remaining building was a henhouse, which Leopold converted into a cabin and later called "the shack." After purchasing the farm, the Leopolds began restoring and managing the land to allow its self-healing properties to develop. Seed from remnant prairie species was found and gathered from unmowed cemeteries and railroad rights-of-way. Thousands of pine seedlings were also planted. The farm became the family retreat and classroom, and was also the setting in which *A Sand County Almanac* was written. It is his last statement about conservation and many ethical questions were asked.

The land ethic simply enlarges the boundaries of the community to include soils, waters, plants and animals or collectively: the land.

This sounds simple: do we not already sing our love for and obligation to the land of the free and the home of the brave? Yes, but just what and whom do we love? Certainly not the soil, which we are sending helter-skelter downriver. Certainly not the waters, which we assume have no function except to... carry off sewage. Certainly not the plants, of which we exterminate whole communities... Certainly not the animals, of which we have already extirpated many... A land ethic of course cannot prevent the alteration, management, and use of these "resources," but it does affirm their right to continued existence, and, at least in

spots, their continued existence in a natural state.

In short, a land ethic changes the role of *Homo sapiens* from conqueror of the land-community to plain member and citizen of it. It implies respect for his fellow-members, and also respect for the community as such.

One of the few monuments to Aldo Leopold is a bronze plaque in the Gila National Forest. A small number of biographies have been written about him. What is most important, when one thinks of him, is his philosophy. His farm is now a 1,200 acre reserve, but not open to the public. The Leopold Memorial Reserve is a place where the rights of the land are preeminent.

Like winds and sunsets, wild things were taken for granted until progress began to do away with them. Now we face the question whether a still higher "standard of living" is worth its cost in things natural, wild, and free.

So begins the second paragraph of the *Almanac*. One hopes that Leopold's words will go beyond the basic teachings of ecology and initiate a change in society's values towards land conservation.

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A commemorative edition of *A Sand County Almanac* is available for purchase through the Wildflower Center. Contact Alane Snider at (512) 929-3600 for details.

Annie Paulson is Clearinghouse Coordinator and a resource botanist at the National Wildflower Research Center.

Illinois: At Forefront of Wildflower Preservation

Mention the word Illinois, and the image that immediately comes to mind is corn – acre after green acre. The heart of the Midwest, Illinois is one of the breadbasket states, owing its rich fertility in part to glacial debris spread across the state thousands of years ago by the movement of massive ice flows. Prairie grasses further enriched the soils, giving the region its high productivity, so prized by farmers. With the loss of the grasslands to the plow, however, the landscape changed dramatically. Almost 30 percent of the present Illinois flora is naturalized. Non-native plants, though not all invasive, have gradually replaced the once-balanced prairie ecosystem. Illinoisians, who are proud of their heritage, are energetically attacking these foreigners with innovative planning and perseverance. The combined efforts of public and private sectors make Illinois a role model for successful preservation and restoration of native habitats.

Within the realm of government, the Illinois Department of Transportation (IDOT) deserves an ovation for its conscientious planting along state highways. Following a typical pattern, IDOT became aware of the need for more efficient maintenance with the financial pressures of the energy crunch in the early 1970s. In 1968 over 500,000 acres were mowed annually, at a cost of over \$5 million.

By 1974 IDOT managed to cut the acreage to less than 200,000. IDOT began experimenting with native plantings at that time, primarily as decorative reminders of its prairie state status.

Compacted roadside soils can be one of the poorest habitats for vegetation due to debris, bad drainage, pollutants, and a high salt content from winter deicing. Native grasses were found to have a higher tolerance for such adverse conditions than non-natives. Over the next ten years, IDOT seeded native grasses and forbs along major highway systems. "Economically, the cost of native plants compares favorably to bids for traditional landscaping plant materials," says Larry Stinton, chief of roadside maintenance. "The real advantage in using natives is that once they're established, they keep the roadsides clear of invasive weeds and woody vegetation. The sad part is that the highway system is, for the most part, complete, so the opportunity to use native plants is rather limited. I just wish we could have started such plantings fifteen years ago instead of five!"

In establishing natives, the highway department usually begins with a cover crop of rye grass and seed oats for erosion control, intermixed with native grasses and wildflowers, which eventually outcompete the

former. With the aid of Northrup King Seed Company, IDOT is currently working on developing a high salt-tolerant grass mix. Other testing involves the planting of buffalo grass, which can withstand extreme fluctuations of heat and cold. As buffalo grass reaches a height of only about 6 inches, it makes an ideal turf grass for high use areas.

Unique among highway departments, IDOT has used local seed sources from the start. Community groups and state agencies alike have given the highway department tremendous support. The Garden Club of Illinois donates hundreds of dollars each year for seed and plant materials, while the Illinois Department of Conservation often provides IDOT with excess prairie forbs from their state nurseries.

Aside from the small contributions to the highway department plantings, the Department of Conservation deserves a round of applause for its own efforts in native landscaping. In 1983, the Seedling Needs Committee of the state-owned nurseries decided to stop producing exotic plant materials if native plants could be substituted (Harty, 1986). Today the nurseries propagate 52 species of native trees and shrubs for landscaping state parks and conservation

(Continued on page 6)

Wildflowers Across America by Lady Bird Johnson and Carlton Lees Special Offer to National Wildflower Research Center Members

Wildflower Center members may order advance copies of this lavishly illustrated book (over 300 color photographs) written by Lady Bird Johnson and renowned horticulturist Carlton Lees. Mrs. Johnson's writings cover her role in the beautification movement and her life-long love affair with wildflowers, which culminated in her founding the National Wildflower Research Center. Mr. Lees has added immeasurably to the body of wildflower literature in this country by his contribution to this edition.

Wildflowers Across America is being offered for a limited time to Wildflower Center members for \$33.95, a 15% discount off the suggested retail price of \$39.95. To order your copies, please complete this form and return it to the Center. All orders must be postmarked by May 15, 1988. Limit of five copies per member please.

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Please make checks payable to NWRC and mail to: NWRC, Products, 2600 FM 973 North, Austin, Texas 78725-4201. Orders must be postmarked by May 15, 1988 to receive this special offer. Please allow 4 weeks from receipt of order for delivery. The National Wildflower Research Center will benefit from royalties from the sale of this book.

Rhododendrons Mark Spring and Summer

Rhododendrons symbolize spring and summer for many gardeners. There are hundreds of cultivated varieties, and native species are found on every continent except Africa and South America. Native rhododendrons grow in temperate and colder regions of the United States, where the soil is moist and slightly acidic. Their profusion of blooms can be seen covering hillsides from April through June in the Southeast, as well as in the Northwest.

The genus *Rhododendron* is in the Ericaceae or heath family. There are over 800 species of *Rhododendron*, ranging from small shrubs to trees, and from deciduous to evergreen varieties. Flowers are either funnel-form or tubular with five lobes. They vary in color from white to purple, red, or yellow. The name *Rhododendron* comes from the Greek, meaning rose-tree. There are many common names for *Rhododendron* such as laurel, honeysuckle, and bay. The genus *Rhododendron* includes azalea, which is considered a subgenus. Although there are no constant botanical differences between the two, gardeners consider them to be different.

Rhododendrons and azaleas are common landscape plants. *R. austrinum*, or flame azalea, is a deciduous shrub native to the mid-Eastern United States. It is grown in gardens from Pennsylvania to Kentucky and in abundance in northwest Florida. The flame azalea grows best in loose, moist, acidic, sandy soil. It requires a good deal of sun to bloom well. This species is available in the nursery trade. *R. canescens*, or wild honeysuckle, is a

deciduous shrub native to the South, growing in shady locations along sandy creeks from North Carolina to Texas. It can be grown in full sunlight or shade, but blooms poorly in shade. The soil must be moist, well-drained, and acidic.

Deciduous and evergreen rhododendrons set the following year's flower buds in mid-summer. The best rule is to prune them after they have bloomed in the spring or early summer. Do not prune after they have set buds. Rhododendrons should be pruned selectively a little each year rather than drastically. Fertilize the plants from late winter until early summer. All rhododendrons require well-drained, acidic soil. Soils with a pH above 6 will require special treatment with soil acidifiers and possibly iron chelate applications.

Several species in the genus *Rhododendron* and other genera in the family Ericaceae are state wildflowers. *Rhododendron maximum*, or great laurel, is the state flower of West Virginia. *Rhododendron macrophyllum*, also called *Rhododendron californicum* or rosebay, is the state flower of Washington state. *Kalmia latifolia*, mountain laurel, also in the Ericaceae family, is the state flower of both Pennsylvania and Connecticut.

Although the majority of rhododendrons found in gardens are cultivated varieties from Asian species, there are many beautiful native rhododendrons that will add great diversity and beauty to the garden.

Elinor Crank is a research horticulturist at the National Wildflower Research Center.

From the Field

April 22 - May 29, 1988 *Wildflower Photography Workshops*; Austin, Texas. Workshops on six weekends (all have same content) led by John Smithers, photographer for the National Wildflower Research Center seedling identification project. Learn via lectures and fieldwork. Workshops are for both amateurs and professionals. **Contact:** John Smithers, DeHart Media, 1214 Baylor #201, Austin, TX 78703 (512) 476-4999.

May 6 - 8, 1988 *Wintergreen Spring Wildflower Symposium*; Wintergreen Resort Community, Wintergreen, Virginia. Spend a weekend at this magnificent Blue Ridge Mountain resort on field trips and at lectures, with expert instructors covering eastern wildflowers. **Contact:** Wintergreen, VA 22958 (804) 325-2200.

May 7 - 8, 1988 *Annual Native Plant and Seed Sale*; Brandywine River Museum Courtyard, Chadds Ford, Pennsylvania. Plants on sale were grown from cuttings or seeds, none were collected from native populations. **Contact:** F. M. Mooberry, Brandywine Conservancy, P.O. Box 141, Chadds Ford, PA 19317 (215) 388-7601.

May 11 - 14, 1988 *1988 Annual Meeting of Botanical Gardens and Arboreta*; Phoenix, Arizona. Topics cover horticulture, university gardens, and education. **Contact:** AABGA, P.O. Box 206, Swathmore PA 19081 (215) 328-9145.

June 5 - 7, 1988 *National Landscape Design Symposium*; Louisiana State University, Baton Rouge. Topics cover various ways to design landscapes, especially with natives. **Contact:** LSU Short Courses and Conferences, Baton Rouge LA 70803 (808) 225-5578.

June 6 - 9, 1988 *Ecosystem Management: Rare Species and Significant Habitats*; State University of New York, Syracuse. Topics include: habitat management and restoration techniques, public involvement and education, legal aspects of ecosystem management. **Contact:** ESF Continuing Education, SUNY College of Environmental Science and Forestry, Syracuse NY 13210-2784.

Artist: B.H. Daniller

Wildflower

Executive Director: David K. Northington
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Illinois...

(Continued from page 4)

areas. Originally concentrating on woody plants, the Department of Conservation began experimenting with big bluestem and Indiangrass in 1977. The nursery system has subsequently added the production of prairie forbs, averaging about 25 species a year.

One recent project on designing with natives within the private sector is the site of the new McDonald's Corporate Campus, in Oakbrook, Illinois. Plans by Chicago's Lohan Associates call for the existing vegetation and natural grades to be disturbed as little as possible on the

83 acre tract of land. With architecture designed to blend in with the prairie-woodland setting, the office complex will be an island far-removed from the concrete forest of downtown Chicago.

With such efforts in rural, urban, and roadside settings, the fragmented character of Illinois is returning to its former prairie self. Dr. Robert F. Betz, a top authority on prairie ecosystems, and creator of a large reconstituted tall-grass prairie at the Fermi National Accelerator Laboratory near Batavia, Illinois, summarizes the philosophy behind the prairie impetus. "Prairie plants have the ecological edge over others, and combine that with fire - and give

them time - and they'll defeat just about anything. The weeds are the sprinters, and their quick head start discourages people who want 'instant prairie'; but the prairie plants are long-distance runners, and they prevail" (Nelson, 1987).

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

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