



NATIONAL WILDFLOWER RESEARCH CENTER

SOON TO BE THE LADY BIRD JOHNSON WILDFLOWER CENTER

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DESIGNING WITH NATIVE PLANTS: POTENTIALS & CHALLENGES

The new, or newly revived, interest in designing with native plants -- trees, shrubs, vines, wildflowers, ferns, and grasses -- presents a new series of challenges to the landscape architect. In this article, we will talk about some of the differences between traditional landscape design and new forms of design that rely more heavily on the use of native vegetation and natural processes. We will also look at ways in which naturally evolving landscapes may serve as models for designing landscapes that are both ecologically sound and aesthetically satisfying.

CURRENT PRACTICES

Designing with plants -- whether in a traditional mode or in the alternative native landscape approaches -- involves two major components: selection of plants and placement of them in the landscape.

Plant selection. In typical contemporary landscape design, plant selection is primarily influenced by:

1. Aesthetic characteristics such as the forms, textures, and seasonal color characteristics of plants.
2. Functional capabilities such as the capacity of plants to provide shade, windbreaks, enclosure, visual screens, and erosion control.

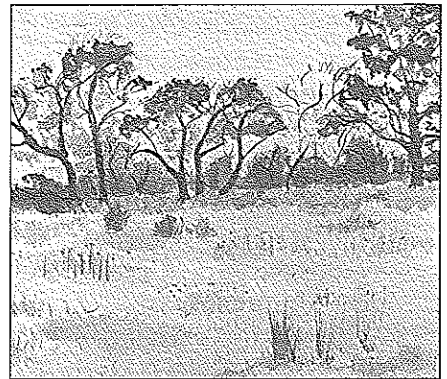
3. Environmental tolerances such as cold hardiness; drainage requirements; sun, shade, and wind tolerance; and, in some urban areas, the ability to survive the effects of pollutants in the soil and atmosphere.

Moisture requirements are characteristically given only secondary consideration because of the relative ease of providing supplemental water.

4. Commercial availability. A very real consideration in plant selection is the availability of plant species. Plant producers, especially the large nurseries, tend toward mass-producing large quantities of a relatively small number of well-known and reliable species. They typically include both native and exotic species, as well as hybrids and cultivars.

Similarly, there is in typical landscape design today little attempt to select a native over a non-native species, if both have similar aesthetic attributes or functional capabilities. For example, if designers were looking for a canopy tree with showy yellow fall foliage for a site in hardiness zone 4, they are probably as likely to select a *Ginkgo biloba* (gingko) from eastern China as a *Fraxinus pennsylvanica* (green ash), whose natural range is central and eastern

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Watercolor of natural areas at the Wildflower Center.

A Rose By Any Other Name . . .

To our valued members: On October 4, 1997, the Board of Directors voted to change the name of your organization from the National Wildflower Research Center to the Lady Bird Johnson Wildflower Center. This name change honors our founder and leader whose profound vision is vitally important to the future of our country, our continent, and, indeed, our world.

Mrs. Johnson founded the Center in 1982 as a means to preserve and extend the use of native plants and wildflowers, the foundation of all conservation efforts. With her vision and leadership, the Wildflower Center has become the strongest national organization dedicated exclusively to

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DIRECTOR'S REPORT: New Year's Resolution

The other day I was listening to a national radio program about environmental issues. At one point, the announcer broke away from the news stories for a feature about tree planting. Although the speaker extolled the virtues of trees generally, the concept of native trees was never mentioned. In fact, the tree planted during the broadcast recording was an Asian species. Unfortunately, it is common that gardening with native plants is often not seen as an environmental issue, even within the environmental community. And although all trees help clean our air, give us shade, and many provide a variety of commercial products, native trees give us something more.

Native trees (and native landscapes generally) link city dwellers to nature in a way few experiences can. As more of us

find ourselves living in the urban environment, native plantings of trees and shrubs (wildflowers, grasses, and vines) become increasingly important. Conversely, as humans change their environments, knowing the natural history of one's region becomes increasingly challenging. What are the native tree species? What animals rely on their fruits and nuts for food, cavities and branches for nesting and cover? What type of soils do the tree's roots grow in and seek nutrients from; what rock formations lie below?

Learning to become native to one's own place on the planet is a worthy new year's resolution. And, native landscapes are the most visible manifestation of that place. Growing a native landscape is certainly one of the best tools of the environmental steward -- be it on an apartment

balcony or a 10,000-acre ranch.

This new year, consider learning more about your place on the planet. Enroll in a natural history course at your junior college. Visit your local library or bookstore and browse the nature and native gardening sections for inspiration. Or invest your time in a docent training course at your nearby nature center.

Native landscapes are a critical part of a healthy environment. Native trees give us more than wood and shade. Native plants are more than just roots, stems,

leaves, and flowers. Native plants deliver nature to our doorsteps.



Julie Barrett Heffington,
Director of Education
and Gardens

The purpose of the National Wildflower Research Center is to educate people about the environmental necessity, economic value, and natural beauty of native plants.

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Wildflower Center News

3M awarded a grant continuing its support of the Center's teacher training and curriculum program, *Exploring the Native Plant World*, for a third year. Our National Intern Program received a generous grant from the Bamberger Ranch Conservancy.

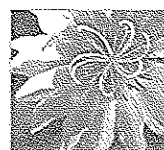
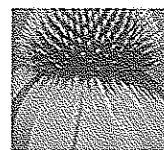
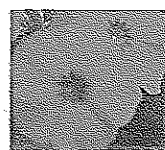
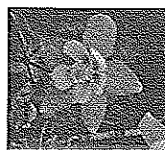
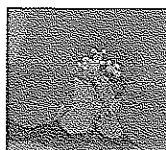
Spring is almost here! So, mark your calendar for the Wildflower Days Festival, April 18 - 19. This year's theme is "The Nature of America" and will feature nationally known speakers and exciting educational activities for native plant lovers of all ages.

Membership reached an all time high of 25,000 with a sixty percent renewal rate. The Wildflower Center's charming and gregarious gatehouse attendants were responsible for signing up 1,500 new members in 1997.

The Wildflower Center has experienced truly phenomenal growth since moving to the new facility. More than 100,000 people visited last year, an increase of 40 percent. According to the Austin Convention & Visitors Bureau, the Wildflower Center is the third most visited facility in Austin.

The education staff presented four papers at the annual meeting of the National Association for Interpretation (NAI) held in Beaumont, Texas. The Wildflower Center placed third in the Media Awards for its brochure promoting the American Association of Botanic Gardens and Arboreta Southeast/Southwest Regional Conference.

The Wildflower Center would like to extend additional end-of-year thanks to the *Austin American-Statesman*, etc. magazine, Above & Beyond Travel, Omni Southpark Austin Hotel, HomeGate Studio & Suites, The Dow Chemical Company, Papa John's Pizza, and *New Texas Magazine* for their generous contributions to the success of the 1997 Wildflower Days Festival. KVUE 24 TELEVISION captured the imagination of the Austin public with their creative public service announcements for the BIG BUGS exhibit. MIX 94.7 and Austin Monthly also contributed to the success of the exhibit, which attracted more than 13,000 students and teachers. Both events generated greater public awareness of the Wildflower Center.



Design Challenges *continued from page 1*
North America.

Generally, when selecting mid-story trees and shrubs, there is a tendency to select plant species with at least one outstanding aesthetic attribute, such as showy flowers, brilliant fall color, or conspicuous fruit. Evergreen shrubs are particularly valued. This is evidenced by the numbers of conifers such as *Juniperus chinensis pfitzeriana* (Pfitzer juniper); *Taxus cuspidata* (Japanese yew) in designed landscapes in different parts of the country.

Similarly, in the selection of groundcovers, there is a strong tendency to choose repeatedly a few species that are green all year round. One of the most widespread groundcovers in designed landscapes is *Hedra helix* (English ivy). Other frequently selected groundcovers include *Vinca minor* (periwinkle or myrtle) and *Pachysandra terminalis* (Japanese spurge). All were introduced from Europe or Asia more than a century ago. Increasingly, there is recognition that many of the traditionally used introduced groundcover plants are invasive species, and hence are a threat to natural diversity when they spread beyond the sites where they were planted.

Of course the most widely used groundcover plants in contemporary designed landscapes are the sod-forming lawn grasses, which are almost without exception exotic species and typically maintained with substantial inputs of fertilizers, herbicides, water, and energy.

Color at the groundlayer level is typically provided by seasonal displays of bulbs and annuals.

Plant placement. Just as plant selection tends toward simplicity and order, so do the current practices of plant distribution or placement in designed landscapes.

Trees are often planted as individual specimens in lawns, or in rows that reflect the geometry of surrounding buildings and streets in urban areas. In larger parks and on institutional grounds, they may be grouped in borders and islands, often spaced regularly at 25 to 30 feet apart, with all trees in a group of a single species and size.

Shrubs may be used singly as accents, or more frequently, they are grouped with other members of the same species and size, equally spaced in rows or mulched beds.

Groundcovering plants are generally spaced closely, at six to twelve inches apart, for a quick, uniform cover. Again, one species is typically used within a specific area in such plantings. Beds of groundcover

plants are usually clearly differentiated from lawn areas and other groundcover.

Bulbs and annuals, when used, are characteristically planted as solid masses for maximum color effect.

Contemporary traditional landscape management is geared to leaving both the species composition and distribution patterns of plants unchanged. Invading plants are removed, and reproduction of the initially planted individuals is inhibited.

Existing trees are often preserved and incorporated into designed landscapes, sometimes at great expenditures of effort and money. Such trees tend to provide a link with the region's natural environment.

Interestingly, though, where groups of trees are preserved, there is a strong tendency to clear out middle-story and groundlayer species, replacing them with the "cleaner" look of lawns, mulch beds, or blankets of groundcover such as English ivy.

Differences in cold and heat tolerance lead to some variations in the palette of plants used in different regions. Differing moisture requirements, on the other hand, are often accommodated through irrigation, making it possible to grow plants from a moderate to high rainfall region in an arid or semi-arid environment, or to grow plant species from natural lowland habitats in upland situations.

In summary, one of the effects of much of the current practice in planting design is to produce landscapes that have less and less resemblance to the natural landscape of the region in which they occur. At the same time, the designed landscape of one region tends to resemble more and more the designed landscapes of other regions.

Aesthetically, the landscapes that have resulted from the above practices tend to be predictable expanses of smooth green lawns with clearly defined plant beds bordering them, and trees planted as individual specimens within them.

However, during the last decade there have been signs of greater diversity and color and textural richness in designed landscapes. The trend has been stimulated by the work of

Jim van Sweden and Wolfgang Oehme of Washington, D.C., whose "New American Garden" includes lush expanses of perennials and grasses. This work, as illustrated in the books, *Bold Romantic Gardens* and *Gardening with Nature* have provided inspiration and a new aesthetic model of rich color and texture for designed landscapes, albeit ones which include both natives and imported species. Meanwhile, landscape architect Steve Martino has demonstrated that a rich aesthetic can be achieved with a totally native plant palette in his Arizona desert gardens.

NATURAL ALTERNATIVES

As designers explore ways in which native plants can be used in designed landscapes, it may be helpful to portray a continuum of activity. Along that continuum, there are a series of steps which increasingly depart from the status quo, toward the use of native vegetation and natural processes. These are: 1) substitution of native species for frequently used exotics; 2) diversification of species, especially at the groundlayer level; 3) abstraction or stylization of native plant communities; and 4) ecosystem restoration.



Natural landscapes exhibit greater variety than many designed landscapes.

Substitution of native species for the more commonly used mix of natives, exotics, and cultivars represents a first step in the continuum. For example, this might suggest using a native *Viburnum* species in place of the exotic *Photinia* species in a shrub group, or a native *Amelanchier* species in place of an Oriental cherry. With this approach, plant selection has been modified, but placement is similar to that in a

conventional design. There is a tendency to have greater continuity with the surrounding natural landscape of the region because of the repetition of similar species. Furthermore, if the plants are placed in appropriate microhabitats, there is less need for supplemental watering, feeding, and protection from temperature extremes than there would be for many of the introduced species.

The ecological design may also be the most artful

The next step might be the introduction of a diverse mix of native groundlayer species in appropriate microhabitats, replacing the mulch beds, groundcover, and annual flower beds that are so abundantly used in standard landscape design today. The forms of mulch or groundcover beds might remain very much the same, but the species makeup would change. For example, in a shaded area English ivy might be replaced by a mix of ferns and woodland wildflowers; in a sunny flower bed, a mix of native meadow or prairie perennials might replace the sequence of spring bulbs, summer annuals, and fall chrysanthemums. Finally, the exotic irrigation-requiring lawn might be replaced by a native sod-former, such as *Buchloe dactyloides* (buffalo grass) in some of the Great Plains states. Again, even though the design form may not differ significantly from that in conventional, contemporary landscape design, the groundlayer planting will bear some relation to the region's natural landscape and should result in reduced input of water, fertilizer, and specialized management and maintenance procedures.

A third level of complexity along the continuum of alternatives to traditional landscape design is the replication and/or stylization of native plant communities in designed settings. While such designs are, of necessity, somewhat simplified distillations, they must be based on solid knowledge of natural models. To convey the essence of a unique native landscape type, the characteristic plant species of that community need to be incorporated with the characteristic soil and rock color, spatial quality, and the patterns that occur there. The author's design of a stylized granitic outcrop garden at the Atlanta Museum of History provides an example of this

approach. The color and texture of the native granite, the form of the ephemeral pond, and the plant species occupying the openings between the stones are all characteristic of natural granite outcrops of the region. Yet, rather than being a copy of a specific outcrop, it is clearly an adaptation, designed to fit into a circular island in an urban entrance court.

The colors and textures of natural landscapes are often more subtle and diverse than those of the standard designed landscape. Flowers in nature usually do not occur in the solid masses that tulips or geraniums occupy in the designed landscape. Except in a few cases, several species usually occur together in nature, as in a prairie, where the bold colors of the forbs' flowers are filtered and made more subtle by the linear leaves of grasses. More seasonal changes of color occur in the natural landscape than in the traditionally designed one. Texturally, the natural landscape exhibits greater variety than many designed landscapes because of the fine textures of ferns, grasses, sedges, and rushes and the bare twigs of deciduous shrubs, sometimes occurring as clumps or thickets.

Community dynamics. One of the most important lessons that can be learned from observing natural landscapes is that they are always changing. There are often long-term successional changes occurring almost imperceptibly, but also short-term changes resulting from phenomena such as an individual tree falling in the forest, an animal building a mound of fresh soil out

side its burrow, or water changing levels in a marsh. Each of these phenomena provides information we need to know to design and manage natural landscapes.

CONCLUSION

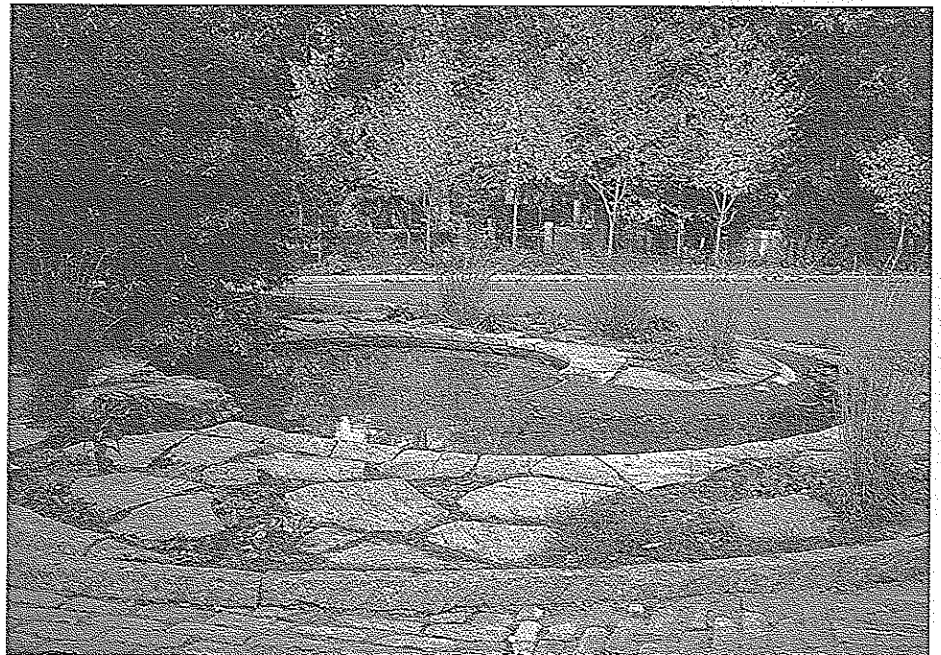
In this article, I've tried to compare standard approaches to planting design with a series of alternative approaches and also to suggest that the best classroom for learning how to design with native plants and plant communities is the natural landscape itself.

The design, installation, and management of naturally based landscapes holds great potential to provide a greater variety of designed landscapes that are resource-conserving and perpetuate regional differences. To be successful, it is essential that designers understand not only the artistic principles, but also natural forms and processes. In the end, the ecological design may also be the most artful.

Darrel Morrison, FASLA

Mr. Morrison is recognized as one of the foremost experts in the area of environmentally sensitive landscape design, emphasizing regionally native plants.

If you would like to receive a list of the references used to prepare this article, send a SASE to: Editor, National Wildflower Research Center, soon to be the Lady Bird Johnson Wildflower Center, 4801 La Crosse Avenue, Austin, TX 78739.



A stylized granitic outcrop garden at the Atlanta Museum of History.

An Undiscovered Jewel

In gray winter, looking back to October, I am reminded that it is an undiscovered jewel.



Its golden days are some of the best of the year. At my little house in Austin, I had a stand of goldeneye growing wild around the hills when I first moved in about ten years ago. They are alive with a million small flowers in the fall that practically shout to be admired and enjoyed!

At the Wildflower Center, a variety of plants bloomed. The first that met my eyes on a mid-month visit were a sprinkling of bright Maximilian sunflowers punctuating the grasses in one of our "wild" areas and draping themselves around the stone wall on the path to the demonstration gardens. And what fun to see an enormous grasshopper (courtesy of the BIG BUGS exhibit) in their midst!

As I proceeded on to the gardens, I was greeted by pink pavonia, purple liatris, and still blooming broomweed, so well-liked as a filler in bouquets by our volunteers, who create flower arrangements every week of the year for the tables at the Wildflower Cafe, the reception desk, and several other locations at the Center. These hard workers even go out to the old site for their harvest.

Indigo salvia, the red of tropical sage, fall asters, and the big muhly grasses were eye-catchers, as well as a stand of goldenrod intertwined with Maximilian sunflowers gaily waving a welcome. And important in this month, as Monarch butterflies migrate, are butterfly milkweed and lantana which attract them.

More than five inches of rain was the gift that made such scenes possible.

But even for this native plant lover, the bounty of rain and beauty

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From the FIELD

NEW ENGLAND

Framingham, MA: *Plant Communities, 4 Tuesdays: January 6, 13, 20, 27, Contact:* The New England Wild Flower Society, 180 Hemenway Road, Framingham, MA 01707, (508) 877-7630 ext. 3303.

Framingham, MA: *Making the Most of Your Garden, January 7, Contact:* The New England Wild Flower Society, 180 Hemenway Road, Framingham, MA 01707, (508) 877-7630 ext. 3303.

Framingham, MA: *Designs for Ecology and Beauty, January 14, Contact:* The New England Wild Flower Society, 180 Hemenway Road, Framingham, MA 01707, (508) 877-7630 ext. 3303.

Framingham, MA: *Winter Detectives, January 20, Contact:* The New England Wild Flower Society, 180 Hemenway Road, Framingham, MA 01707, (508) 877-7630 ext. 3303.

Framingham, MA: *Winter Botany in Northwest Connecticut, February 7, Contact:* The New England Wild Flower Society, 180 Hemenway Road, Framingham, MA 01707, (508) 877-7630 ext. 3303.

SOUTHEAST

Athens, GA: *Family Gourdcraft, January 17, Contact:* The State Botanical Garden of Georgia, 2450 South Milledge Avenue, Athens, GA 30605, (706) 542-6151.

Athens, GA: *Wildflower Symposium, January 28, Contact:* The State Botanical Garden of Georgia, 2450 South Milledge Avenue, Athens, GA 30605, (706) 542-6151.

Athens, GA: *Free Trees!, February 18 - 20, Contact:* The State Botanical Garden of Georgia, 2450 South Milledge Avenue, Athens, GA 30605, (706) 542-6151.

Athens, GA: *Winter Tree Identification, February 18, Contact:* The State Botanical Garden of Georgia, 2450 South Milledge Avenue, Athens, GA 30605, (706) 542-6151.

Athens, GA: *Trees . . . Partners in Our Lives, February 21, Contact:* The State Botanical Garden of Georgia, 2450 South Milledge Avenue, Athens, GA 30605, (706) 542-6151.

MID-ATLANTIC

New Brunswick, NJ: *Urban Forestry, January 9, 16, 23, 30 & February 6, Contact:* Susan Hack, Office of Continuing Professional Education, Cook College, Rutgers: The State University of New Jersey, P.O. Box 231, New Brunswick, NJ 08903-0231, (732) 932-8451.

OKLAHOMA/TEXAS

Edinburg, TX: *General Meeting of the Native Plant Project, January 9, Contact:* Native Plant Project, Box 1433, Edinburg, TX 78540.

Houston, TX: *Arbor Day Celebration, January 17, Contact:* Houston Arboretum & Nature Center, 4501 Woodway Drive, Houston, TX 77024, (713) 681-8433.

Edinburg, TX: *General Meeting of the Native Plant Project, February 13, Contact:* Native Plant Project, Box 1433, Edinburg, TX 78540.

NORTH CENTRAL/MIDWEST

Woodstock, IL: *Wildflower Preservation & Propagation Committee Natural Landscaping Seminar, February 28, Contact:* McHenry County Defenders, 132 Cass Street, Woodstock, IL 60098, (815) 338-0393.

ROCKY MOUNTAINS

Salt Lake City, UT: *Meeting of the Utah Native Plant Society, 7:30 p.m., January 7, Utah Department of Transportation Auditorium, 1636 West North Temple.*

Salt Lake City, UT: *Meeting of the Utah Native Plant Society, 7:30 p.m., February 4, Utah Department of Transportation Auditorium, 1636 West North Temple.*

CALIFORNIA

Sacramento, CA: *Working with Wetlands & Wildlife (registration deadline: January 5), January 27 & 28, Contact:* Wildlife Habitat Council, 1010 Wayne Avenue, Suite 920, Silver Spring, MD 20910, (301) 588-8994.

Jewel continued from page 5
 came very close to being upstaged by another of the BIG BUGS: a spider in a gigantic willow wood web, which stretched across the large arbor at the far end of the demonstration gardens. It cast the most intriguing shadows (Did you know there are 71,000 species of spiders in North America?).

Bluebonnets, harbingers of spring 1998, were germinating in one of the gardens, their heads just emerging from the ground.

This past year, the Texas Hill Country was one of the most glorious in memory, and October its star.

Lady Bird Johnson

A Rose By Any Other Name . . .

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the appreciation, preservation, and utilization of wildflowers and native flora.

The Board of Directors also voted to drop the word "Research" from our name. We will continue to be involved with research and attempts to advance knowledge about wildflowers and native plant propagation. However, our primary focus will continue to be education and the dissemination of knowledge.

We also decided to omit the word "National" from our name. With our award-winning web site, the Internet, and opportunities for distance learning, our information and education service knows no national boundaries and serves the world. Our Board members from Canada have a much broader perspective than just a national one and we ultimately hope to include representation from other countries. The word

"national" also caused confusion among people who thought they were visiting a federally funded park site, which is certainly not the case.

Finally, calling ourselves "national" does not make it so. We will be judged as a national organization by what we do to carry our message to the nation and beyond. Dr. Breunig, our new Executive Director, is charged with leading the effort to develop our strategy to do just that.

For years now, I have identified the Center as "Lady Bird Johnson's" Wildflower Center. It gives me a great deal of pride and pleasure on behalf of the Board, to announce to you, our dear members, that this spring your organization will be officially known as the Lady Bird Johnson Wildflower Center.

*Ellen Temple, President
 NWRC Board of Directors*

Join Us! with the form below, you may join as a new Member, renew your Membership or give the gift that lasts a full year. Simply fill out the form below, and mail with a check or your credit card information. Members receive many benefits, but most importantly, Membership supports the many education programs at the Center.

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Grow Native

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