



WILDFLOWER

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

Night of the Wildflowers a Tremendous Success

Hundreds of guests enjoyed delectable Texas cuisine, danced to the music of rising country music star Kelly Willis, and participated in live and silent auctions at the annual *Night of the Wildflowers* fund-raiser held by the Wildflower Associates. The highly successful event, held at the unique outdoor amphitheater at the Backyard at Bee Cave, raised over \$60,000 toward Center education programs

A team of hardworking Associates descended upon the oak-filled Backyard and bedecked it in white linen, burlap, tulle, and, of course, wildflowers galore. The bright, colorful blooms were accentuated by hand-cut wildflower luminarias and sparkling lights.



Creed and Lynn Ford were the lucky bidders on the LBJ Stetson, donated to the Live Auction by Mrs. Lyndon B. Johnson.

The evening was highlighted by a live auction featuring a champagne hot-air balloon ride for two, a weekend at the Sunset House on the LBJ Ranch, and an original LBJ Stetson stamped with the President's initials. Silent auction highlights included autographed books by Liz Carpenter, wildflower china from Fitz & Floyd, and round-trip

tickets from Southwest Airlines.

The Wildflower Center would like to thank all the Wildflower Associates for their hard work on the event! It takes the dedication of many diligent volunteers to launch an event with this level of success, and our Associates were certainly up to the task.

CONGRESSMEN PICKLE AND ANDREWS HONORED AT WILDFLOWER GARDEN PARTY

A host of Washington, D.C., dignitaries and friends gathered at the Finnish Embassy to honor Congressmen and Wildflower Center Board members J. J. "Jake" Pickle and Mike Andrews during the Pickle-Andrews Wildflower Garden Party. The event, sponsored by a variety of corporate and individual donations, raised more than \$42,000 toward the establishment of the **Pickle-Andrews Overlook Garden of Native Plants**, a main attraction at the new Wildflower Center facility.

Also honored at the fund-raiser were Wildflower Center founder Lady Bird Johnson and Jack and Laura Lee Blanton. The Blantons, Co-Chairs of the Wildflower Center Capital Campaign, were recognized for their tireless work raising funds for the new Center facility.

The fund-raiser took place at the recently completed Embassy of Finland which Finnish Ambassador Jukka Valtasaari and his wife Etel graciously made available. Wildflower Center Board members

Beth Gibbens (Arlington, Virginia) and Dorothy McSweeney (Washington, D.C.), together with their able event committee, were instrumental in planning the fundraiser.

Other special guests on hand to honor Congressmen Pickle and Andrews included Lynda Bird Robb, Secretary of the Treasury and Mrs. Lloyd Bentsen, the Honorable and Mrs. Russell E. Tran, Mr. and Mrs. Jack Josey, the Honorable and Mrs. Russell B. Long, Mr. Jack Valenti, Mr. and Mrs. Joe Allbritton, and the Honorable Lindy Boggs.

Vive la Difference!

Biodiversity is a word often heard but seldom understood. Coined by Harvard Professor Edward O. Wilson, biodiversity means biological variety, that is, the variety of the species on Earth, the genetic variations within a species, and the diversity of the ecosystems they inhabit.

Let's take **species diversity** first. Species are the basic units we use to classify living things. For plants in North America, this means an incredible variety of algae, mosses, ferns, cone-bearing, and flowering plants growing from sea to shining sea. We believe there are about 25,000 different kinds of native plants growing in the U.S. alone!

Genetic diversity refers to the differences between any two individuals of the same species — one prairie goldenrod might be slightly taller or more deeply

rooted than the one growing next door. Anyone with children can attest to the fact that no two individuals from the same gene pool are ever exactly alike! That's genetic diversity at work.

Last, but certainly not least, **ecosystem diversity** refers to the whole shebang. The plants. The soil. The wildlife. The rocks. The rainfall. The nutrients cycling through it, round and round. In North America, we have an incredible diversity of ecosystems, housing a vast array of species, with each and every individual unique.

The basis for any healthy ecosystem is its plant community. In fact, the very words forest, prairie, or desert, evoke visual images from either our travels and experiences, television programs such as *Northern Exposure*, or movies such as *Last of the Mohicans* and *A River Runs Through It*. With the possible excep-

tion of heavily urbanized areas, we cannot think of our country without thinking of the plant communities which define a particular region.

The importance of these plant communities cannot be overestimated. Native plants make our planet habitable — they produce oxygen, clean the air we breathe, filter and store water, protect us from flooding, prevent soil erosion, monitor pollution levels, modify our climate, filter noise, and provide all these same services for wildlife. Beyond that, their beauty and unique character provide

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WILDFLOWER CENTER NEWS

The Wildflower Center represented the Central Texas region, together with many other organizations, cities, and agencies, at the **National Tour Association's** fall exchange October 29 - November 4 in Dallas, Texas.

The Wildflower Center's new facility is being listed as a destination in several publications in 1995: *Day Trips from San Antonio & Austin*, *Frommer's Travel Guide: San Antonio & Texas*, the *Smithsonian Guide to Natural America*, and the February issue of *HOME* magazine. Look for more mentions like this and drop us a note or clipping if you see something published.

Country Living magazine is featuring one of our most popular Center Gift Shop items — the wildflower mailbox — in its holiday issue. More

than 100 of these have been sold this season. Supplies are limited, though, so be sure to order soon!

The **events booking calendar** at the new facility is already filling up! After the Grand Opening April 8-9, there are 5 motorcoach tours, 3 luncheons, 2 weddings, 1 formal dinner, a class reunion, and a dedication ceremony for the Seed Court Garden funded by the National Council of State Garden Clubs.

Clearinghouse botanists and volunteers responded to more than 7,000 inquiries in 1994. About 1,000 of these requests received personal responses.

The Prairie: A Sea of Grass

"To those first European explorers and colonists, grassland probably meant snug meadows, deer parks, and pastures safe behind fence and wall. They had no basis for even imagining wild fields through which a horseman might ride westward for a month or more, sometimes traveling for days without sight of trees."

—John Madson
"Where the Sky Began"

Grassland ecosystems are among the largest and most productive in the world. In addition to supporting a wide diversity of plant life, including many kinds of wildflowers, desert plants, and even trees, grasslands provide food and shelter for a variety of wildlife.

All North American grasslands share certain characteristics. They generally occupy flat or rolling terrain and have incredibly fertile soils which are organically rich. Several important factors play a role in determining the characteristics of grasslands. For example, the amount and timing of precipitation can be a critical factor. The average annual rainfall in most American grasslands ranges between 10 and 39 inches. Most of this rainfall occurs during peak periods throughout the year and, as a result, grasslands go through periods of drought. In warmer, drier grasslands, a large percentage of the annual rainfall evaporates, leading to drier conditions.

The intensity and duration of a sometimes continuously blowing wind is another factor affecting grasslands. Blowing across a landscape with few windbreaks, the wind evaporates water from the surface, intensifying already dry conditions.

The wind also plays a big role in the spread of periodic fires. With few rivers and acres of dead and decaying plant material, fire tends to move quickly through a grassland. This is not necessarily a bad thing. Regardless of how they start, prairie fires provide an important service to the grassland ecosystem. Fire cleans up dead plant material, kills or weakens invading tree species, returns nutrients to the soil, and may even break the dormancy of seeds of grassland species so they can begin to germinate. Fire helps a grassland stay a grassland.

Seven American grassland communities are recognized by biologists (this, of course, can vary depending on who you're talking to). They are: tallgrass prairie, midgrass prairie, shortgrass prairie, desert grasslands, intermountain grasslands, California grasslands, and Eastern grasslands. A huge region, extending from the Appalachian Moun-

tains west to the Rocky Mountains, is composed of three grassland communities: the tallgrass prairie, midgrass prairie, and shortgrass prairie. The tallgrass prairie, the wettest of three grasslands, supports grasses over five feet tall. Grasses between two and four feet in height characterize the midgrass prairie, while grasses less than two feet tall dominate the shortgrass prairie, the driest of the three grasslands.

Grasses define a grassland, and have evolved adaptations to help them survive in the grassland environment. Narrow leaves allow them to maximize photosynthetic activity, while their arrangement along the stem minimizes the amount of water lost from the leaf surface.

The root systems of grasses make up a large percentage of their biomass. Mature plants have huge, extensively branched root systems which can sometimes be twice as deep as the shoot is tall. This type of root system has several advantages. In areas where rainfall is negligible, the roots can reach the deeper, moister layers of soil and sustain the plants during dry periods. Larger root systems also offer some protection against the effects of grazing and fire. The roots contain stored energy which can be used

to reproduce new growth when the above ground portions of the plant are removed or destroyed.

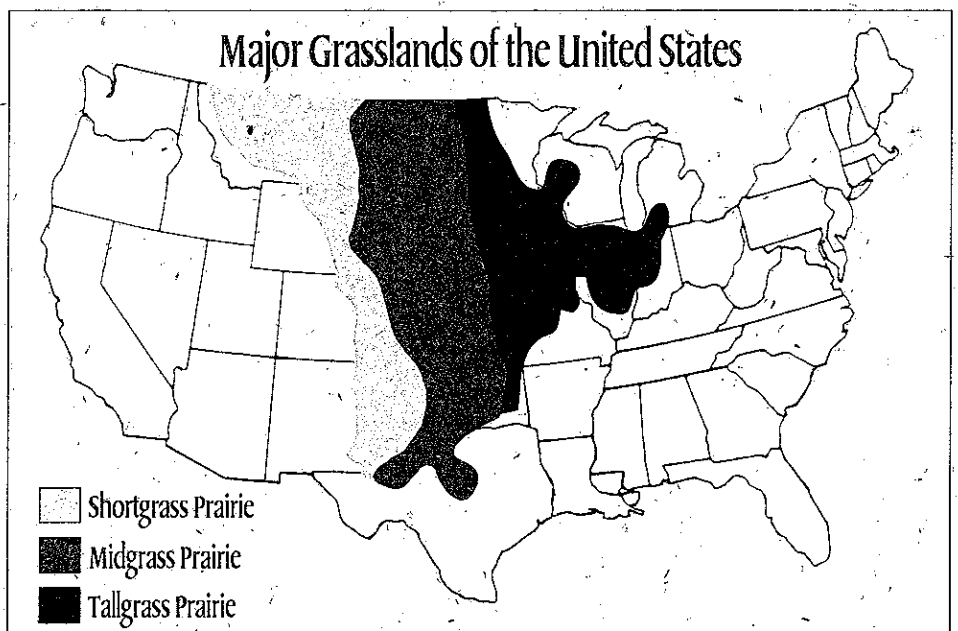
Many prairie grasses produce side shoots, called runners, which travel, either above ground as stolons or below ground as rhizomes, before leafing out. Grasses that produce runners form a dense sod which, in addition to anchoring them firmly to the ground, also out-compete other plants for available space and resources.

While most prairie grasses are perennials, annuals are also an important component of the prairie plant community. When the prairie is disturbed, annuals often emerge. In spite of shallow root systems, annual grasses are also uniquely adapted to the grassland environment. They germinate quickly after a rain, grow rapidly, and set seed while there is still enough moisture available. It doesn't matter if the soil dries out, there is still a huge seed bank available for the next year.

Wildflowers are also an important part of the grassland community and have some of the same adaptive features, as well as some that are uniquely their own. While the leaves of prairie wildflowers are often broader than those of the grasses, presenting a larger surface area for evaporation, they are covered with hairs and have a stiff, leathery texture to protect them from drought and grazing.

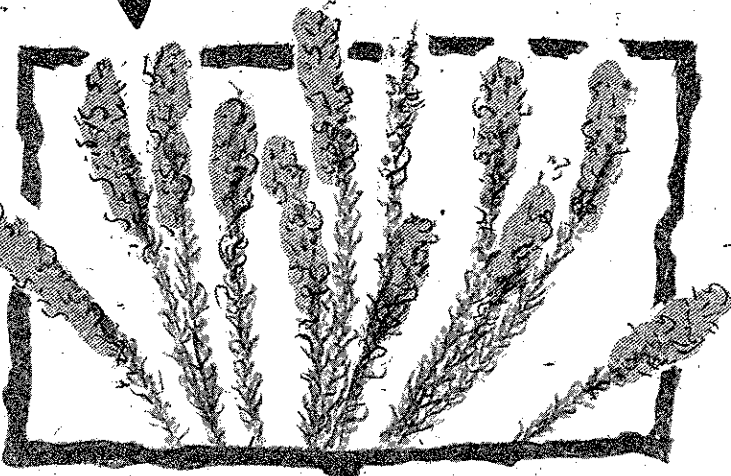
The root systems of prairie wildflowers are also adapted to the grassland environment. Instead of fibrous root systems, wildflowers have deep taproots with several branches and can grow as deep as 20 feet, to reach deeper levels of moisture. In times of severe drought, these deep root systems enable certain species of wildflowers to outlive the

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Wildflower

NOTEBOOK



Botanical Name: *Liatris punctata*
Pronunciation: Lye-a'-tris punc-ta'-ta
Common Name: Gayfeather, blazing star, dotted gayfeather, button snakeroot, starwort
Family Name: Asteraceae

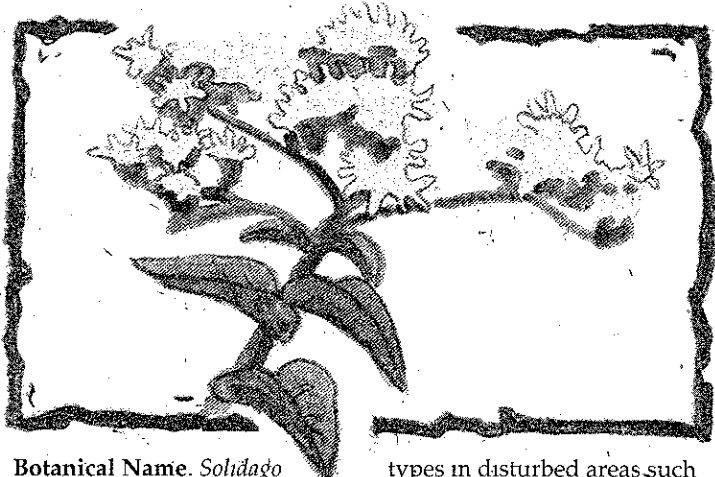
(Sunflower Family)
Range: Central Texas and New Mexico, north to Canada, east to Michigan, west to Wyoming
Habitat: Prairies and native pastures
Bloom Period: September through October

As you wade through the grassy waves of the tallgrass prairie, the hushed sound of the wind whispers its secrets to you. One of the stars of this sea of grass is gayfeather (*Liatris punctata*). Regarded as an enduring survivor, this North American beauty is grown commercially all over the world.

Gayfeather is a drought resistant perennial herb averaging 1 to 3 feet in height. Stems number anywhere from 1 to 15 per root system, sometimes giving it a crowded appearance. The slender rough leaves are alternately arranged on its woody stems and are speckled, explaining its specific epithet, *punctata*, which is Latin for dotted.

The flowers have pointed, tubular petals, roughly 1/2 inch in length, with a violet-pink to bluish-purple hue. They are arranged as flower heads, or spike-like tufts, at the end of the stems and resemble a feather duster. The flowers turn to dandelion-like seed puffs in the fall, and are scattered to the four winds.

Known among the Omaha, Ponca, and Pawnee tribes as "medicine plant" or "round medicine," gayfeather was used to cure headaches and bladder infections, ease sore throats, and relieve upset stomachs. The opalescent brown roots were also used as an emergency food source during times of drought.



Botanical Name: *Solidago rigida*
Pronunciation: Sol-i-day'-go rig'-i-da
Common Names: Stiff goldenrod, rigid goldenrod, gray goldenrod
Family Name: Asteraceae (Sunflower family)
Range: Widely distributed throughout eastern and central U.S.
Habitat: In a variety of soil-

types in disturbed areas such as abandoned fields, roadsides, meadows, dry prairies
Bloom Period: August through October

As cool weather heralds the approach of fall, the vibrant colors of summer change to the sullen shades of tan and brown. During this time you will notice the golden blossoms of *Solidago*

rigida casting their brilliant light among the muted autumn tones.

Standing as tall above ground as if grows deep below, stiff goldenrod can grow to a height of 5 feet. Below the soil, thick fibrous roots enable the goldenrod to compete with the dominant fall grasses for moisture and nutrients.

Above ground, a stout, unbranched stem supports sparsely-toothed leaves. These leaves, alternately arranged along the stem, vary in shape and attachment. Near the base, leaves are oval and long-petioled, changing to small, ovate leaves without a petiole at the apex. Small hairs cover the vegetative parts, producing a pale-green or grayish tint.

Crowning the stem is a golden halo created by 20 to 30 bright yellow, bell-shaped

flowers, each only 1/3 inch in length. Allergy sufferers dread the appearance of goldenrod, mistakenly blaming it for their agonies. However, the real culprit is ragweed (*Ambrosia* spp.) which blooms at about the same time.

Great for landscaping and gardening, the goldenrod is a food source for bees and butterflies. No need to fear bees visiting the flowers, though, since a lotion can be made from the flowers which soothes their stings. Propagation by seed is simple: sow seeds in fall or early spring while the soil is cool. If planting in spring, seeds require cold stratification for 30-60 days at 33-38° F. Plan carefully where to place the goldenrod, as it is aggressive and can inhibit growth of other plants.

FROM THE FIELD

Northeast

Seekonk, MA: *Plants to Dye For*, Jan. 28, Contact: Rhode Island Wild Plant Society, 12 Sanderson Road, Smithfield, RI 02917-2606, (401) 949-0195.

New Haven, CT: *Local Heritage in the Changing Tropics. Innovative Strategies for Natural Resource Management and Control*, Feb. 10-12, Contact: Andi Eicher, Yale School of Forestry and Environmental Studies, 205 Prospect Street, New Haven, CT 06511.

Smithfield, RI: *Parasitic Plants of Rhode Island*, Feb. 11, Contact: Rhode Island Wild Plant Society, 12 Sanderson Road, Smithfield, RI 02917-2606, (401) 949-0195.

Southeast

Atlanta, GA: *Unity in Diversity*, Feb. 16-21, Contact: American Association for the Advancement of Science (AAAS), 1333 H Street, NW, Washington, D.C. 20005, (202) 326-6450.

Midwest

East Lansing, MI: *Wildflower Association of Michigan Spring Conference*, March 5-6, Contact: Cheryl Tolley, 60 Cumberland Ave., Lowell, Michigan 49331-9780, (616) 897-5014.



Prairies

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grasses. In addition, by utilizing different types of root systems, the grasses and wildflowers are able to effectively divide and use the resources available in the grassland ecosystem.

There was a time when prairies really were an endless sea of grass. It has been estimated that prairies once covered over 250 million acres of land and supported huge herds of bison. They were periodically cleared by prairie wildfires, scoured by ferocious winter blizzards, and, over millions of years, slowly built up the richest, most fertile black soil known.

By the late 1900s, the prairie was on the brink of destruction. The invention of the steel moldboard plow made it easier to turn the sod and the prairie quickly turned into valuable cropland. By the late 1860s, the tallgrass prairie in Illinois, Indiana, Ohio, and Iowa had disappeared.

Today, true native prairies are extremely rare and are the second most endangered habitat in North America, after wetlands. Estimates indicate that less than one percent remain and these are often in small, broken tracts of lands. Increasing use of irrigation for cropland, heavy mowing and grazing, and herbicide and pesticide spraying continue to adversely impact the prairie ecosystem. Non-native forage grasses, as well as a host of exotic weeds, compete with native species for available resources.

Like the old song says, "Don't it always seem to go, that you don't know what you've got till it's gone." This certainly applies to North America's vanishing grasslands. Today, conservation and restoration efforts are underway and many small tracts of grasslands have been set aside in preserves. By continuing these efforts and dedicating ourselves to the reestablishment and preservation of these vast grasslands, we may once again stand on the shore of a sea of grass.

F M Oxley

Resource Botanist

National Wildflower Research Center

Just For Young Botanists

Botany for Beginners

Do you know that some flowers change colors when the pollution level changes? Do you know that over 200 medicines are made from the roots and bark of common plants and trees? Plants and the study of plants (botany) are an important part of life you might not normally think about unless of course your mom is serving spinach for dinner! Without plants, we would be in bad shape. We would not have air to breathe, food to eat, houses to live in, or clothes to wear. Our very lives depend on plants. But do we treat them with the respect they deserve? Not! Each year hundreds of plants completely die out (become extinct) leaving thousands of animals homeless and without food.

By teaching people about the importance of native plants, the National Wildflower Research Center is working hard to prevent the problems from becoming worse. But we need your help! You have the chance to change the world and make a better place by becoming involved. It's as simple as planting native wildflowers in your backyard, picking up trash at a park, or starting a native plant garden at your school.

This activity sheet will help you increase your knowledge of plants. It has all kinds of information and games to challenge you. Have fun with these botanical brain teasers!

Sepals, Styles, and Stigmas

Do you know the parts of a flower? Match the words listed below to the parts in the diagram. *sepal, pistil, anther, petal, style, stigma, filament, ovary, stamen.*

Wildflower Word Search

20 words hidden in this wildflower illustration. The words read forward or backward, up, down, or across. One word is hidden in the center.

A	M	E	N	T
W	E	R	E	R
K	Y	E	S	E
T	L			

SEPAL, PISTIL, STAMEN, POLLEN, STIGMA, RECEPTACLE, STYLE, SEED

Crossword Puzzle

Down

1. The seeds of plants are found in the fruit. I want the lives of other people to be better.

2. Sometimes parts of plants look like people.

3. Some seeds are the fruit of a flower. Some seeds are the fruit of a flower.

For the budding botanist in your life, the Wildflower Center has created a children's activity sheet. These plant puzzlers and botanical brain teasers are a great way for children to learn about plants and the role plants play in the environment. For a free copy, please send a stamped, self-addressed envelope to:

Activity Sheet, National Wildflower Research Center,
2600 FM 973 North, Austin, Texas 78725-4201.

Editor's Note: Beginning with this issue, the feature education article as well as the *Wildflower Notebook* will be devoted to an exploration of the many ecosystems of North America: their ecology, native vegetation, and their current status. We hope you will enjoy this look at the many adaptations shown by native plants across the continent.

Education Director's Report

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an anchor to who we are and where we fit in an ever changing and seemingly interchangeable world.

Have you ever had the experience of momentarily forgetting where you were and not finding any clue in your surroundings? It's a sad state of affairs when everything looks identical, from retail stores to our front yards. Biodiversity helps keep ecosystems, and the planet at large, healthy and stable. During stressful times such as a drought or an unusually hard freeze, a diverse ecosystem is more likely to contain species able to cope and survive. It is the differences between individuals that may

provide this. But what about the ecosystems themselves? Are they surviving the onslaught of urbanization and culture? Do we remember that buffalo roamed the prairies that are now Chicago and that grizzly bears roamed the San Francisco Bay wetlands?

A first step in preserving biodiversity is understanding what it means to you, in your home region. I have found most school children know far more about the rainforest ecosystem than they do about the hardwood forest or oak savanna that once dominated their school yard.

To start off the new year, *Wildflower* begins a series featuring the major ecosystems spanning North America. Read on about your land, do a little research at libraries, local natural history museums, and nature centers (It's encouraging that arboreta and botanic gardens are beginning to feature local ecosystems!) Knowledge about our environment can help us make informed decisions and take responsible actions that can influence both our local and global communities. The Wildflower Center staff hopes you enjoy and learn from these articles.

Happy New Year!

Resolve to Promote Wildflowers: 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:

- ❖ Free admission for you and your immediate family to the Wildflower Center's new gallery and gardens
- ❖ *Wildflower*, the award-winning newsletter
- ❖ A 10% discount on unique Center products such as wildflower books, calendars, and T-shirts
- ❖ Advance notice of tours and discounts for Center seminars
- ❖ Discounts on information from the Center's Clearinghouse
- ❖ A membership card

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- ❖ *Special Activity Sheet*, page 5

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Wildflowers Work!

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