



# Lingua Botanica

The National Newsletter for FS Botanists & Plant Ecologists



Many of you are laboring under a common mistaken belief and I'm going to clear this up once and for all. As a botanist for a major land management agency, you stand on the front lines of the battle for plant conservation. You are heavily armed with Federal law, regulation, and public opinion and you have more power than you can imagine to cultivate a future of botanical diversity on the lands of the people of the United States. But I've heard many botanists (and wildlife and fisheries biologists) talk about the importance of strong standards and guides in land management plans, planning rule language, strict NEPA compliance, and the utility of outside litigation in the fight to protect rare plants and their habitats. The mistake we too often make is to assume that the battle is won by the sword. This is a serious misconception. Just as Excalibur could not save Arthur and Beowulf died holding the broken hilt of Naegling, no blade, neither enchanted nor sacred, can by itself rend victory from darkness. No. No legal mumbo-jumbo, no order from a court, no legislative edict can assure the viability of a rare plant (or fish or critter) population. Don't get me wrong, these things can be very helpful, but each of these weapons will fail, at some point, regardless of who is swinging them. But fear not, there is an answer. There is an answer that will guarantee that the resources to which we are dedicated are protected in perpetuity. I could point you to the works of Sun Tzu ([The Art of War](#)) and Niccolo Machiavelli ([The Prince](#)) as models for "the answer," but let me give it to you straight. You are the answer. We can not depend on the agency, our partners, activists, or well-intentioned amateurs. We can not expect anyone else, not anyone, to carry the crown of protection that has been laid upon our heads. Plant conservation, the preservation of the unique and (forgive me a slight bit of hyperbole) magical organisms that are our trust, is up to each and every one of us as individuals. You must protect Pleistocene relics. I must protect edaphic endemics. We must do everything possible to convert the unwashed masses. This is a Crusade to conserve our nation's botanical heritage. We must not fail.

the editor.

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## Linkiana

**Fall Color Hotline:** Its that time of year again (oh boy!). Check in to see where the color is, or submit a report from your area.

<http://www.fs.fed.us/news/fallcolors/>

**Forest Service Centennial:** Lots of great information on the Forest Service Centennial celebration.

<http://www.fs.fed.us/centennial/>

**EFlora's Online:** Electronic version of many keys, including most of the Flora of North America. Plus, see how many North American pines grow in China!

<http://www.efloras.org/index.aspx>

**Concordance of Angiosperm Family Names:** Geeky AND interesting.

<http://www.inform.umd.edu/PBIO/usda/usdaa.html>

**Making a Big Herbarium Sheet:** the *Amorphophallus titanum* that bloomed at the U.S. Botanic Garden ended up in the Smithsonian herbarium. See how they did it!

<http://persoon.si.edu/Amorphophallus/>

**Index Herbariorum:** IR has a new URL, here it is.

<http://sciweb.nybg.org/science2/IndexHerbariorum.asp>

**NPPC News Online:** The Native Plant Conservation Campaign is now posting native plant science and conservation news.

<http://www.cnps.org/NPCC/MakeADifference.htm>

**BryoArt:** Fantastic images of European mosses.

<http://homepages.compuserve.de/milueth/Moose/BryoArt2003/bryoart.html>

**Southern Arizona Rare Cactus Photos:** Its lots of fun to click around this site. Its much much more than rare cacti (see the crypto crust shots...)

<http://www.mineralarts.com/cactus/AZRareCacti.html>

## Pacific Southwest Regional Botanist Leaves for TNC

R5 Regional Botanists, Anne Bradley, has left the Forest Service to become the Regional Fire Ecologist for The Nature Conservancy in Santa Fe, New Mexico. Anne was admired by everyone she ever worked with and has led the R5 Botany Program to many successes over the years. I, as well as the rest of the agency, will miss her greatly, but at the same time we are looking forward to working with her in her new position.

**Best of luck, Anne.**

## Visitor Herbarium on the Superior National Forest

Brandee Wenzel, Wilderness Ranger



The Gunflint Ranger District on the Superior National Forest is proud to announce the newest addition to its visitor center – a hands-on, interpretive herbarium displaying over 100 of the most common plant species in northeastern Minnesota. One of four district offices on the Forest, the Gunflint Ranger Station has between 17,000 – 23,000 people a year walk through its doors. Most of these visitors are picking up a required permit to enter the Boundary Waters Canoe Area Wilderness (BWCAW). A gem in the National Wilderness Preservation System, the Boundary Waters is a southern boreal forest characterized by lakes and wetland complexes. Information Receptionist Cathy Britton says, “You’d be surprised at how many wilderness users come in after a trip asking us about plants they’ve seen. The response has been fantastic to this display.” Some comments from visitors include, “*What a wonderful*

*contribution to the forest and its inhabitants of all kingdoms.*” – “*Interesting collection, better than a guidebook.*” - “*What a great resource, very informative and educational.*” Incorporated within the display specimens is a natural history of each plant, and a strong Leave No Trace message (#6 Leave what you find). This project has been a success in many ways for the Superior. The visitors to this Forest are learning to piece apart the green noise around them, with that we hope a respect develops for plants. The display has become a great resource for district employees to better familiarize themselves with where they work. Lastly, and probably the greatest achievement this project has generated is a connection between the “plant people” across the Forest. What started out as disjunct individuals within varying disciplines of the agency has turned into a strong cohesive unit of information sharing and cooperation.

## Free Gin for UK Juniper Spotters

Alex Kirby, BBC News Online

British conservationists are so worried about the fate of a rare plant species that they are making a tempting offer.

The first 50 people to join Plantlife International's survey of where juniper shrubs live in the UK's uplands will be offered a free bottle of organic gin.

Flavouring gin is just one of the many uses of the aromatic juniper, which is thought to be declining across the UK.

Plantlife says one cause is that many surviving bushes are over a century old and therefore little use for breeding.

The juniper, *Juniperis communis*, is one of only three native conifers in the UK; the others are the yew and the Scots pine.

It is found across most of Europe, except a few places including Crete and Sardinia, and is the only juniper species to be found in both hemispheres. It can grow on both acid and alkaline soils.

The shrub is wind-pollinated, and the birds disperse the seeds after eating the berries. The seeds take two to three years to ripen.

The oldest specimen recorded, from Teesdale in north-east England, was at least 255 years old, but a normal lifespan on southern chalk is about 100-120 years.

Plantlife says there is evidence that juniper has declined in the UK by about 70% since the 1970s.

One problem, it says, is that many surviving bushes are too old to breed easily, and any seedlings that do result are at risk from grazing animals.

Other impediments are land use change, a lack of suitable sites poor in nutrients, fires, and development.

So Plantlife is launching a survey of upland juniper, asking people to keep a look-out for its black berries and blueish-green leaves in the Highlands, north-west Scotland, Northumberland, Cumbria and North Wales.

It says no botanical expertise is needed to complete the survey, which is available from its website, or by e-mailing [juniper@plantlife.org.uk](mailto:juniper@plantlife.org.uk).

Apart from flavouring gin, the berries are often used in cooking game, and oil of juniper has an ancient reputation as an abortifacient, which perhaps explains another of its names, bastard's bane.

In Scotland the fragrant wood was the fuel of choice for illegal whisky stills, as it is said to burn with less smoke than other woods.

## **Sensitive Bog to get Protection from ATVs**

Bill Harlan, Rapid City Journal, 15 September 2004

**RAPID CITY** - For the second consecutive month, citizen complaints to the Black Hills National Forest Advisory Board and to the U.S. Forest Service itself will result in quick protection of a sensitive ecosystem from off-road vehicles.

Acting forest supervisor Brad Exton told board members Wednesday afternoon that he already had ordered staffers to determine practical, enforceable boundaries for the Black Fox Sphagnum Bog. Signs warning off-roaders away from the area could go up within weeks, Exton said.

Last month, all-terrain vehicles left deep tracks through the damp bog. Three people complained: geologist Colin Patterson of Rapid City, botanist Elaine Ebbert of Piedmont and Audrey Gable of Spearfish, who is a mycologist, an expert in fungi.

The bog is a delicate wetland near Black Fox Campground, high in the central Black Hills. Sphagnum is a kind of moss, and the bog is home to plants and fungi that are rare in the Black Hills.

Exton acted after he saw Gable's photos of the ATV tracks.

Last month, the Forest Service closed a part of South Stagebarn Canyon to motorized vehicles after similar complaints. Stagebarn Canyon is near Piedmont, and

locals call that particular section Botany Canyon. Like the bog, it is home to sensitive and rare plants.

Exton said the Black Fox bog already was one of eight botanically sensitive areas in the Black Hills. All eight were already slated for an off-roading ban. That had not happened because of disagreements over where to put the boundaries of the bog, Exton said.

Exton told the forest advisory board he hoped to have all eight areas protected by the end of this fall.

"This is fantastic," Ebbert said after Wednesday's board meeting. "Before we had the board, we didn't have many options."

Ebbert works for the Nature Conservancy, but she, Patterson and Gable filed their complaint as private citizens.

They did not limit their complaint to the Black Fox Sphagnum Bog, either. Patterson made a 15-minute presentation to the forest advisory board on Wednesday, offering quick reports on the Black Fox bog, Botany Canyon and 14 other sensitive areas that he, Ebbert and Gable say should be protected from off-roading.

Among the areas they recommend for off-roading bans:

- A tributary of South Stagebarn Canyon that has turned into a popular four-wheeling route.
- Two side canyons in Higgins Gulch, near Spearfish.
- A small, orchid-producing gulch south of Cheyenne Crossing in the Northern Hills.
- Squaw Creek and, in particular, the Devil's Bathtub area of the creek, which empties into Spearfish Canyon.
- Elk Canyon west of Piedmont.

Patterson made his presentation during the last public comment session the forest advisory board will hold on possible changes to off-roading rules in the Black Hills. That process could take two to four years, and the changes likely will depend on similar changes being considered for off-roading rules nationwide.

Meanwhile, the popularity of off-roading continues to grow n especially for ATVs, which are nimble, fast, small and inexpensive.

In fact, much of the 10 hours of public comment on the new rules has come from off-roaders themselves, many of whom spoke Wednesday.

Jeff Kearns, an avid ATV enthusiast, made a point of finding Ebbert after the meeting to explain that he and his off-roading friends support her efforts to protect the bog at Black Fox and similar areas.

"I like those areas, too," Kearns had told the board earlier.

Many off-roaders have told the advisory board and the Forest Service that they need a designated trail system, similar to the snowmobile system, so they know what the rules are.

Currently, off-roading is allowed anywhere in the Black Hills where it is not specifically prohibited. "Damaging the resource" is prohibited, but the rules are not specific on what that means.

Organized off-roaders here agree that the growth of the sport demands changes in travel management, but trailbiker Mark Howard cautioned the board, "This should be a travel management plan, not a travel elimination plan."

No one at the meeting argued in favor of off-roading through the Black Fox bog or Botany Canyon routes that organized off-roaders say only reckless or uninformed riders would use.

Patterson urged the forest advisory board and the Forest Service to act quickly to protect those two areas and other sites that might not survive four years of deliberations about new rules.

Board member Jim Scherr of Rapid City called on fellow board members to work quickly to develop recommendations for three kinds of plans:

- Quick, emergency fixes for areas like the Black Fox bog.
- Intermediate-range plans.
- Long-range plans.

The Black Hills National Forest Advisory Board does not have the power to change rules or policy. The board was created a year and a half ago as a way for members of local and state governments and interest groups to give organized comments and advice to the forest supervisor.

The board meets next on Wednesday, Oct. 13. The board will discuss the public comments that ended this Wednesday. Scherr said he hopes the board will, by December at the latest, offer the Forest Service concrete recommendations for changes to off-road travel rules.

Then, presumably, the Forest Service will start its own lengthy deliberations, which will include public comment periods.

In the meantime, everyone at the meeting agreed, four-wheelers should stay out of the Black Fox Sphagnum Bog.

### Rare Plants Stolen During Hurricane

**Using hurricane evacuation as cover, Plant thieves broke into Fairchild Tropical Botanical Garden made off with 33 priceless plants – cycads said to be nearly extinct.**

Luisa Yanez, Miami Herald, September 2004

Windy Hurricane Frances did little damage to the exotic foliage at the world-renowned Fairchild Tropical Botanic Garden.

The real blow came when plant burglars, under the cover of an evacuation order, broke in and stole 33 endangered cycads -- one of the oldest known plant groups.

"In the black market, some species of cycads are like a fine piece of art -- like a Picasso. They are priceless," said Nannette Zapata, a spokeswoman for the garden. "This is a real tragedy for the species."

Fairchild's collection of cycads, palm-looking plants with distended trunks and each with a crown of leaves, is considered one of the most important in the world.

The 33 plants stolen represented more than 20 species. Some were 10 feet tall. Many had called Fairchild home the past 50 years.

The heist, Coral Gables police say, took place between Sept. 3 and Monday, when the neighborhood was evacuated for Hurricane Frances. There was little traffic along Old Cutler Road, where Fairchild is situated.

The thieves apparently jumped the fence and scoured the 83-acre garden. They uprooted and carted off specimens they apparently selected with care. Then, they tried to cover their crime by filling the gaping holes left in the soil, hoping the curators wouldn't notice.

But when Fairchild reopened Monday, the plant thievery was quickly discovered.

"For [the workers], the grounds are like your closet. They know where things are and they know when something is missing," Zapata said.

It's not the first time Fairchild's cycads have been hit: In August 2002, poachers took 40 cycads from the conservatory and the rain forest exhibit.

"Thieves pick on botanical gardens because they have the oldest cycads; not anything you can buy at Home Depot," said Jason Kubrock, lead gardener at Quail Botanical Gardens in Encinitas, Calif., which last year briefly lost 21 rare cycads to thieves. "It's all about their trunk, and the older a cycad is the more unusual the trunk is."



*Encephalartos cerinus*  
Rare South African Cycad at FTG

Currently, 95 percent of cycad species are near extinction. The species are native to South America, tropical Africa, southern Africa and Australia.

Not all cycads are created equal.

Keith Weyrick, owner of Quail Roost Nursery in Southwest Miami-Dade, sells them. "Depending on their size and species and genus, they can sell for anywhere from \$5 to thousands of dollars for the mature ones," Weyrick said.

Coral Gables police are trying to get to the root of the Fairchild cycad heist. One thing they know is that the thieves had sophisticated green thumbs.

How do detectives track stolen plants? "We need the public's help," said Gables police spokesman Sgt. Michael Frevola.

Fairchild is offering a reward for information leading to the arrest and conviction of the people involved in the theft. National and international naturalists are cooperating with the investigation.

Anyone with any information should call Coral Gables police at 305-460-5434 or Mike Maunder, Fairchild's director, at 305-667-1651, ext. 3333.

The theft will damage "Fairchild's work in conserving endangered cycads," said Maunder, Fairchild's director. "These plants are even more threatened than the giant panda."

What made Fairchild's cycads so special, added Zapata, was their age and their role in keeping the species alive.

The species "have been on earth 200 million years and this crime has the potential of helping cause their extinction," she said.

## South Africa's Rare Plants Disappear

Ilse Arendse, 31 August 2004

**Cape Town, South Africa** - Rare and endangered cycad plants, often referred to as living fossils, are being stolen in South Africa at an alarming rate, with at least two species from Limpopo province having disappeared completely.

The thefts are not just confined to the wild populations; according to the National Botanical Institute (NBI), the country's botanical gardens are also being targeted by cycad poachers.

In its latest annual report, tabled at Parliament on Monday, the institute said the numbers of these rare plants "continue to decline in the wild and to disappear from national collections".

This is despite what it calls "substantial efforts" to conserve them.

Contacted for comment, the NBI's John Donaldson, chair of the Cycad Specialist Group, said even the institute's flagship Kirstenbosch National Botanical Garden (NBG) had lost a cycad to plant thieves.

This was a rare Albany cycad, which was big enough for the thieves to have needed at least a wheelbarrow to remove from the garden.

The Lowveld NBG had also "lost quite a few cycads over the past few years".

Donaldson said the rate of decline of some species of cycad in the wild was "substantial".

A helicopter survey in Limpopo province during the 1980s had revealed there were 700 specimens of one particular species of cycad. When researchers repeated the survey recently, using the same counting method, only 100 remained.

Further, two other species of rare cycad had disappeared completely from the province, one of which was endemic to the region.

Donaldson said poachers in the Eastern Cape had halved the wild population of Albany cycads over the past decade - the number had dropped from more than 100 plants to about 50 individuals.

In the United States, collectors paid up to \$20,000 for an Albany cycad.

Asked if the electronic identification chip inserted into many wild cycads in recent years in an effort to stop them being removed had not made collectors hesitant to steal the plants, Donaldson said such measures were "only as good as the law enforcement".

"So much money is being made, the poachers have worked out a way to get the chips out. I've heard they even X-ray the plants to find the chip, and then dig it out."

Donaldson said South Africa's cycads had existed, little changed, for 30 to 40 million years.

According to the NBI report, a technique has been developed to "fingerprint" the DNA of cycads and so improve law enforcement.

"This technology provides new tools for identifying illegal plants in trade and for improving the success of in situ conservation projects," the report states.



## **Genes From Engineered Grass Spread for Miles, Study Finds**

Andrew Pollack, New York Times, 21 September 2004

A new study shows that genes from genetically engineered grass can spread much farther than previously known, a finding that raises questions about the straying of other plants altered through biotechnology and that could hurt the efforts of two companies to win approval for the first bioengineered grass.

The two companies, Monsanto and Scotts, have developed a strain of creeping bentgrass for use on golf courses that is resistant to the widely used herbicide Roundup. The altered plants would allow groundskeepers to spray the herbicide on their greens and fairways to kill weeds while leaving the grass unscathed.

But the companies' plans have been opposed by some environmental groups as well as by the federal Forest Service and the Bureau of Land Management. Critics worry that the grass could spread to areas where it is not wanted or transfer its herbicide resistance to weedy relatives, creating superweeds that would be immune to the most widely used weed killer. The Forest Service said earlier this year that the grass "has the potential to adversely impact all 175 national forests and grasslands."

Some scientists said the new results, to be published online this week by the journal *Proceedings of the National Academy of Sciences*, did not necessarily raise alarms about existing genetically modified crops like soybeans, corn, cotton and canola. There are special circumstances, they say, that make the creeping bentgrass more environmentally worrisome, like its extraordinarily light pollen.

Because Scotts has plans to develop other varieties of bioengineered grasses for use on household lawns, the new findings could have implications well beyond the golf course. And the study suggests that some previous studies of the environmental impact of genetically modified plants have been too small to capture the full spread of altered genes.

Scotts says that because naturally occurring bentgrass has not caused major weed problems, the bioengineered version would pose no new hazards. And any Roundup-resistant strains that might somehow develop outside of intentionally planted areas could be treated with other weed killers, the company said.

In the new study, scientists with the Environmental Protection Agency found that the genetically engineered bentgrass pollinated test plants of the same species as far away as they measured -about 13 miles downwind from a test farm in Oregon. Natural growths of wild grass of a different species were pollinated by the gene-modified grass nearly nine miles away.

Previous studies had measured pollination between various types of genetically modified plants and wild relatives at no more than about one mile, according to the paper.

"It's the longest distance gene-flow study that I know of," said Norman C. Ellstrand, an expert on this subject at the University of California, Riverside, who was not involved in the study but read the paper.

"The gene really is essentially going to get out," he added. "What this study shows is it's going to get out a lot faster and a lot further than people anticipated."

One reason the grass pollen was detected so far downwind was the size of the farm - 400 acres with thousands of plants. Most previous studies of gene flow have been done on far smaller fields, meaning there was less pollen and a lower chance that some

would travel long distances. Those small studies, the new findings suggest, might not accurately reflect what would happen once a plant covers a large area.

"This is one of the first really realistic studies that has been done," said Joseph K. Wipff, an Oregon grass breeder. Dr. Wipff was not involved in the latest study but had conducted an earlier one that found pollen from genetically engineered grass traveling only about 1,400 feet. That test, though, used less than 300 plants covering one-tenth of an acre.

The effort to commercialize the bentgrass has attracted attention because it raises issues somewhat different from those surrounding the existing genetically modified crops.

It would be the first real use of genetic engineering in a suburban setting, for example, rather than on farms. And the grass is perennial, while corn, soybeans, cotton and canola are planted anew each year, making them easier to control.

Bentgrass can also cross-pollinate with at least 12 other species of grass, while the existing crops, except for canola, have no wild relatives in the places they are grown in the United States. And crops like corn and soybeans have trouble surviving off the farm, while grass can easily survive in the wild.

The bentgrass, moreover, besides having very light pollen - a cloud can be seen rising from grass farms - has very light seeds that disperse readily in the wind. It can also reproduce asexually using stems that creep along the ground and establish new roots, giving rise to its name.

Because of the environmental questions, the application for approval of the bioengineered bentgrass is encountering delays at the Department of Agriculture, which must decide whether to allow the plant to be commercialized.

After hearing public comments earlier this year, the department has now decided to produce a full environmental impact statement, which could take a year or more, according to Cindy Smith, who is in charge of biotech regulation.

Ms. Smith, in an interview yesterday, said the new study "gives some preliminary information that's different from previous studies that we're aware of." But more conclusive research is needed, she said.

Bentgrass is already widely used in its nonengineered form by golf course operators, mainly for greens but also for fairways and tee areas, in part because it is sturdy even when closely mown. It is rarely used on home lawns because it must be cared for intensively. And creeping bentgrass does not cross-pollinate with the types of grass typically used on lawns, scientists said.

Executives at Scotts, a major producer of lawn and turf products based in Marysville, Ohio, said the genetically engineered bentgrass would be sold only for golf courses. They said golf courses cut their grass so often that the pollen-producing part of the plants would never develop.

And because nonengineered creeping bentgrass has not caused weed problems despite being used on golf courses for decades, they said, the genetically modified version would pose no new problems.

"There has been pollen flow but it has not created weeds," Michael P. Kelty, the executive vice president and vice chairman of Scotts, said in an interview yesterday. He said Scotts and Monsanto, the world's largest developer of genetically modified crops, had spent tens of millions of dollars since 1998 developing the bioengineered bentgrass.

The questions about the grass come after Monsanto, which is based in St. Louis, said earlier this year that it was dropping its effort to introduce the world's first genetically engineered wheat, citing concerns by farmers that its use in foods might face market opposition.

Scotts is also developing genetically modified grass for home lawns, like herbicide-tolerant and slow-growing types that would need less mowing. But those products still need several more years of testing, Dr. Kelty said, adding that the company would avoid types of grass that could become weeds. "We don't want to put a product out there that is going to be a threat," he said.

Scotts and Monsanto have received some support for their argument from the Weed Science Society of America, a professional group, which conducted a review of the weed tendencies of creeping bentgrass and its close relatives at the request of the Department of Agriculture.

"In the majority of the country these species have not presented themselves as a significant weed problem, historically," said Rob Hedberg, director of science policy for the society, summarizing the conclusions of the review. He said that because people have generally not tried to control bentgrass and similar species with Roundup, known generically as glyphosate, "the inability to control them with this herbicide is a less significant issue."

Still, the society's report noted that bentgrass could be considered a weed by farms that are trying to grow other grass seeds. And the Forest Service, in comments to the Agriculture Department earlier this year, said that bentgrass has threatened to displace native species in some national forests.

John M. Randall, acting director of the Invasive Species Initiative at the Nature Conservancy, said bentgrass and related species had been a threat to native grasses in certain preserves that the group helps manage, including a couple near Montauk Point on eastern Long Island.

Other opponents of the genetically modified grass seized on the results. "This does confirm what a lot of people feared - expected, really," said Margaret Mellon, director of the food and environment program for the Union of Concerned Scientists in Washington. "These kinds of distances are eye-popping."

The new study was done by Lidia S. Watrud and colleagues at an E.P.A. research center in Corvallis, Ore., who were trying to develop new methods to assess gene flow, not specifically to study the bentgrass.

They put out 178 potted and unmodified creeping bentgrass plants, which they called sentinel plants, at various distances around the test farm. They also surveyed wild bentgrass and other grasses. They collected more than a million seeds from the plants, growing them into seedlings to test for herbicide resistance and doing genetic tests.

The number of seeds found to be genetically engineered was only 2 percent for the sentinel plants, 0.03 percent for wild creeping bentgrass and 0.04 percent for another wild grass. Most of those seeds were found in the first two miles or so, with the number dropping sharply after that. Still, said Anne Fairbrother, one of the authors of the report, finding even some cross pollination at 13 miles "is a paradigm shift in how far pollen might move."

## American Prairie Overlooked No More

Stephen Kinzer, New York Times, 24 June 2004

**WILMINGTON, Ill.** - Ever since European pioneers first saw North America's midsection more than 200 years ago, most people have considered its vast expanse of prairie to be "the great American desert," a barren landscape meant to be either crossed or plowed under.

More than 90 percent of it has been turned into farms, towns and commercial developments. Even many environmentalists working to protect spectacular mountain ranges, wild rivers and old-growth forests have viewed the prairie as little more than empty land.

That perception is rapidly changing. Across the Midwest and beyond, projects to preserve or restore prairie landscapes are winning broad support. Environmental groups are investing millions of dollars in them. When naturalists who run prairie preserves call for volunteer help, they are often overwhelmed by the number of people who turn up.

On a recent morning here at the country's newest prairie preserve, the Midewin National Tallgrass Prairie, Bill Glass, an ecologist who is helping to plan its future, strolled like a proud father among long rows of wild quinine, porcupine grass and other native plants.

"We'll use seeds from these plants to restore a beautiful prairie covering thousands of acres," Mr. Glass said. "This has become a major field of interest for environmental scientists, but what's really amazing is how many ordinary people also want to be part of it. Somehow, this landscape touches people."

Midewin (pronounced mih-DAY-win) is the first federally designated, government-owned native-grass preserve in the United States. Five thousand acres of it opened in early June, and all 20,000 acres, with 48 miles of hiking and bicycle trails, are to be accessible within a decade or two. Because the preserve is barely an hour's drive southwest of downtown Chicago, its supervisor, Logan Lee, an officer of the United States Forest Service, says she expects it to draw large numbers of visitors.

"The amount of enthusiasm and commitment has been a phenomenal eye-opener to me," Ms. Lee said. "People may not have appreciated this landscape in the past, but what I'm seeing tells me that attitude has changed completely."

Scientists and others who have watched this surging interest in prairie landscapes say it has several causes. Some see it as stemming from broader trends, including nostalgia for the Great Plains that is fed by everything from fascination with the Lewis and Clark expedition to films like "Open Range" and "Dances With Wolves." In recent years, many Americans have also become interested in cultures of the Plains Indians.

Because about 40 percent of North American bird species are native to the prairie, many people who enjoy bird-watching also support restoration projects. So do those who see tourist potential in restoring the landscape that existed here before European settlers arrived.

"People are leaving small towns, communities are declining, and the depopulation of the Great Plains is accelerating," said Rob McKim, a vice president of the Nature Conservancy, which owns the country's largest network of prairie preserves and is spending more than \$15 million this year to maintain and expand them. "So now people

are looking at buffalo grazing, eco-tourism and other ways to conserve and restore what was once the American Serengeti."

Some specialists believe that people who join this growing save-the-prairie movement are responding to primal urges.

"Grasslands are tattooed on our genes," said James R. Petterson, a spokesman for the Nature Conservancy. "Our ancient ancestors evolved on the high, grassy plains of East Africa. We humans are programmed to prefer parklike vistas and wide-open, sunlit spaces."

Others have a more pragmatic explanation.

"This landscape has been on the brink of disappearing," said Harvey Payne, director of the 39,000-acre Tallgrass Prairie Preserve in Oklahoma. "The general public, academic specialists and our political leaders are sensing that if we don't do something now to protect it, we aren't going to have any left."

In May, the Tallgrass Prairie Preserve opened a new research station that includes classrooms, laboratories and space for specimen storage.

"It's just amazing, the number of people who want to learn about the prairie," Mr. Payne said. "Even people who live here, people who in the past took this landscape pretty much for granted, are holding the prairie more dear to their hearts."

A task force appointed by Gov. Kathleen Sebelius of Kansas recommended in early June that plans to erect turbine towers for generating wind power should be limited so they do not mar the landscape of the Flint Hills, home to two-thirds of the country's surviving tallgrass prairie. The task force also urged state agencies to begin promoting tourism in the area.

One major scientific breakthrough of modern prairie studies has been the discovery that two practices - buffalo grazing and periodic burning - are essential to the health of prairies. At many preserves, buffaloes, which eat prairie grasses and so keep them from overwhelming leafy plants, either have been introduced or are to be introduced. And controlled burns, which allow prairie plants to renew themselves, take place several times each year, often attracting crowds of spectators.

Four years ago Jan Jantzen, a former college administrator who lives near Emporia, Kan., started a company that offers horseback tours of the prairie. He also gives visitors a chance to witness and help manage controlled burns. At the last one, in April, he offered to accommodate 20 people, but ended up with 60 over a two-day period.

"The interest people have in the prairie from all over the country - really from all over the world - is becoming quite extreme," Mr. Jantzen said. "Tourism out here is still a new idea, but as soon as some of us guys start driving new pickups and our neighbors realize that we didn't make the money from running cattle or raising crops, their interest is really going to pick up."

The cachet of this landscape has become so strong that thousands of businesses across the Midwest now use the word "prairie" in their names. Lincoln, Neb., has a Prairie Dental Clinic, and Grandview, Mo., a Prairie Framing Company. In Coralville, Iowa, there is Prairie Auto Sales.

When a housing development in northern Illinois called Prairie Crossing is completed in a couple of years, it will have 362 homes clustered near a restored 190-acre prairie.

"Our first development manager didn't want to use the name 'Prairie Crossing,' because he said it sounded unkempt," said Victoria P. Ranney, president of the development company. "But it has turned out to be a very big plus, because now there are so many people who are realizing how beautiful this landscape can be.

"People are so excited when they see what comes up after a prairie burn: the grasses and herbs and flowers, plus all the birds and butterflies and other kinds of wildlife. It's something that makes ordinary people into-I don't want to use the word 'fanatics,' but incredibly committed advocates for this environment."

Artists have also begun to discover the prairie, and "prairie art" is emerging as a new genre. A show of this art called "Homage to the Flint Hills" was unveiled at the State Capitol in Topeka, Kan., in March and is to move to various locations around Kansas in the next two years.

"Because the prairie is very stark, paintings of it tend to convey an abstracted feel of color and light," said Joan Parker, one of the artists represented in the show. "They're a middle ground between landscape and contemporary abstraction."

Publishing houses are also taking advantage of growing public interest in the prairie landscape. This spring the University of Iowa Press reprinted the 1982 book widely credited with setting off the modern fascination with prairies, "Where the Sky Began: Land of the Tallgrass Prairie," by John Madson.

The same press has also just published "Prairie: A North American Guide," which describes prairie preserves in 10 states and 2 Canadian provinces. Later this year the University of Nebraska Press will publish "Encyclopedia of the Great Plains," a six-pound reference volume with contributions from more than 1,000 scholars.

"Our aesthetic is changing," said Stephen R. Jones, co-author of "The North American Prairie," a new 510-page field guide that is the most comprehensive catalog of prairie landscapes ever published for a general readership. "We're suddenly discovering that we value native landscapes, and that has led to a groundswell of interest in prairies.

"I see it everywhere I go. Seventeen years ago I wrote another book on this subject, and I can assure you there's been a quantum leap since then."

## **A Plea for Nature's Pollinators**

Garden's Exhibits Highlight Need to Protect Crucial Creatures

Ariella Levin Becker, Washington Post, 29 August 2004

Put down those pesticides. Stop sweeping away the beetles. And don't worry about that bat in the attic. Be grateful for it.

So says the North American Pollinator Protection Campaign, the United States Botanic Garden and their collaborative exhibit, "The Great Pollinator Partnership." With 12 small gardens, each showcasing a different type of pollinating insect or animal, the exhibit is designed to highlight the importance of the creatures who haplessly spread pollen from plant to plant, a process vital to plant reproduction and \$40 billion in U.S. agricultural products.

Or, as one placard at the outdoor exhibit reads, "Why your future, the global economy, and the survival of fine dining depends on pollinators."

The exhibit spans the outside of the Botanic Garden, at the foot of the Capitol, with clusters of potted plants that attract particular pollinators and placards explaining

their contributions to the ecosystem. It was prompted in part by what NAPPC fears is a disappearance of pollinating species in recent years, said Kimberly Winter, NAPPC's coordinator, who hopes the displays will catch the attention of individual gardeners and policymakers.

To do so, the Botanic Garden is hosting several events at the exhibit next month, including a "Pollination Celebration" on Sept. 18, at which children can learn the waggle dance that bees use to communicate and adults can get tips for making sanctuaries for non-stinging bees in their yards.

If pollination dredges up memories of high school science lessons on bees and flowers, think again, say Winter and Dayna Lane, who organized the exhibit.

Bees do pollinate, but so do bats, butterflies, moths, lemurs, the wind and the most prolific pollinators, beetles.

And the sometimes annoying critters are part of a plant mating process responsible for, among other things, attractive flowers, pest control and crops that produce goods ranging from chocolate and coffee to latex and tequila, Winter said.

NAPPC, a collection of more than 80 scientists, government agencies and environmental organizations, has been concerned about noticeable declines in pollinating species, particularly bees, Winter said, but it does not have the funding for an overarching study to determine how threatened they are.

Placards at some gardens suggest strategies for helping pollinators, from expanding butterfly gardens to attract flies and bees, to implementing economic growth strategies and border patrol policies that control what plants enter the country.

Eighty percent of the world's food plant species depend on pollination, according to the exhibit, which emphasizes the fact frequently.

Other gardens are for social bees, solitary bees, moths and bats, who, Winter said, eat as many as 10,000 mosquitoes a night. The ones in the United States aren't harmful, Winter said, and can be lured to roost by providing shelter or "bat boxes."

"We shrink at the thought of them, but they are very important for pest control," Lane said.

The "unusual pollinator" garden demonstrates the importance of honey possums and bland white ruffed lemurs, who pollinate trees in Australia and Madagascar.

Inside the Botanic Garden, a photography exhibit offers evidence of pollination in action. There's a close-up shot of a bat, its face covered in pollen as it slurps nectar from a banana flower. Bats are good pollinators, Winter explained, because they usually get pollen all over their bodies while eating and inadvertently spread it when they go elsewhere.

Another photograph shows a researcher in Montana who is experimenting with bees to defuse land mines. By training bees to associate the scents of plants they typically feed on with the smell of land mines, researchers hope the bees will flock to land mines, making it easier for humans to find them.

In case photos of cute bats and factoids about foods dependent on pollination are not enough to spur a pollinator-protection movement, Winter and Lane are hosting tours for congressional staff members and employees from other government agencies.

Steve Eichenauer, a Senate staff member, took the tour last week, hoping to gain insight on environmental policy. Afterward, he said he understood the importance of keeping a balance between development and pollination needs.

"From a political standpoint, the most important thing is what we can do to manage growth and development so we can sustain pollinating species . . . at the same time we grow our economy," he said.

Eichenauer also had a personal motive for visiting. He has a butterfly garden in his back yard but is moving to a new home in Bethesda. For a new garden, he said, he might consider adding plants to attract some of the less admired insects.

## **Cancer-causing Chemical from Bracken Found in Water Supplies**

Kate Ravilious, The Guardian, 9 September 2004

Bracken, the common green fern that smothers many British hillsides, may be contaminating water supplies with a chemical that could cause cancer.

It has long been known that eating bracken is associated with an increased risk of gastric and oesophageal cancer, but according to research being presented today at the British Ecological Society meeting in Lancaster, it is possible that carcinogenic compounds are also leaching into water supplies.

Lars Holm Rasmussen, of the Royal Veterinary and Agricultural University in Denmark, has measured extremely high levels of the chemical, ptaquiloside (PTQ), in water from wells on Danish and Swedish farms. In some cases the levels were 20,000 times higher than the suggested tolerable levels for environmental carcinogens.

He believes that high levels of PTQ in water could explain hotspots of gastric and oesophageal cancer all over the world. In the UK he thinks that bracken may be responsible for an increased incidence of gastric cancer during the 1980s and 1990s in Gwynedd in North Wales.

Meanwhile, Venezuelan scientists have noticed a clear link between high levels of stomach cancer and bracken-covered hillsides in the western Venezuelan highlands. For farms and villages that source their water from a single well or borehole, PTQ poisoning could be a serious problem.

Changes in farming practices over the last 100 years mean that bracken has become much more prevalent. "Overgrazing, forest clearing and the trend to change from farming cows to sheep in Britain have all helped to increase bracken growth," said Mr Holm Rasmussen. As a result it appears that some water supplies are being overloaded with PTQs.

In some countries, such as Japan and Brazil, young bracken fronds are a delicacy.

Normally PTQs are locked up in the plant, particularly in the young green fronds, but when it rains the PTQs can be leached into the soil and make their way to the groundwater.

"PTQs dissolve easily, just like sugar," said Mr Holm Rasmussen. The worst leaching occurs during summer rainstorms in sandy soils with a high water table.

PTQs can also be transferred into milk when cows nibble bracken, but only a small number of supplies are affected and are diluted when different milk sources are mixed together. However, for families who live on bracken infested farms and drink the milk from their own cows, this could have serious consequences.

Bracken is difficult to get rid of and the most effective mechanism is to spray with pesticide, which also may enter the water supply. However, the risk from PTQs is

minimal as water suppliers source their water from a wide area and any water with high levels of PTQ would be significantly diluted.

Dr Elizabeth Wellington of the department of biological sciences, University of Warwick, said the research sounded convincing.

"It is quite common for toxins from things like fungi to get into water supplies, but it is a little unusual for a toxin to get from a plant through the root and into groundwater."

## **Nike, Others Urge Protection of Forests**

Associated Press, 12 May 2004

**GRANTS PASS** - Arguing that leaving forests standing is good for their business, major manufacturers of outdoor gear, including footwear giant Nike, are urging the Bush administration to drop efforts to open roadless areas of national forests to logging.

Organized by environmental groups, Oregon-based Nike, Adidas, Columbia Sportswear and others sent a letter this week to Agriculture Undersecretary Mark Rey urging him to retain the Roadless Area Conservation Rule put in place by the Clinton administration that bars logging on 60 million acres of undeveloped national forest.

The Bush administration has exempted the Tongass National Forest from the rule to settle a lawsuit by the state of Alaska and has proposed giving governors power to exempt their states from the rule.

"The modifications to the 2001 Roadless Area Conservation Rule have the potential to negatively impact our nation's natural resources, our citizens' outdoor experience and ultimately, our industry's financial health," the May 7 letter said.

The letter to Rey came on the heels of a similar campaign by the Outdoor Industry Association of Boulder, Colo.

"The economic issue is very real for our industry," said Menno van Wyk, CEO of Montrail, a hiking shoe company based in Seattle. "We are an \$18 billion industry. We have over 1,000 companies distributing, manufacturing, supplying and or retailing our products to millions of consumers. The reason we are a big and growing industry is a reflection of the fact that people are choosing to spend a significant amount of their free time enjoying these wild places."

Jay Ward, conservation director of the Oregon Natural Resources Association, one of the organizers of the Rey letter, said from Portland it represents a broadening of the environmental lobby.

Rey said that the administration wants to protect roadless areas, but is left with legal uncertainty since the Roadless Rule has been challenged by nine separate lawsuits, including one in Wyoming that resulted in a federal court injunction setting it aside nationwide.

The latest effort to leave the existing rule in place, but give governors the option to seek exemptions, has been complicated by the uncertain legal standing of the rule, Rey added.

Acknowledging that some fundamental differences exist between what different interests want to see done in roadless areas, Rey said he thought larger areas of agreement could be worked out.

Chris West, vice president of the American Forest Resources Council, said the timber industry no longer viewed the issue of logging on national forests as one of jobs versus the environment.

“We are talking about the future of forests, wildlife and watersheds,” West said. “As we saw in the Biscuit fire (which burned 500,000 acres in southwestern Oregon in 2002), whether it’s roaded, unroaded or wilderness, catastrophic fire sees no boundary and destroys millions of acres of critical wildlife habitat and key watersheds.”

## **Architect of Northwest Plan Calls for End to Old Growth Harvests**

Natalie M. Henry, Land Letter, 12 August 2004

**PORTLAND, Ore.** -- The primary architects of the Northwest Forest Plan do not profess a love for old or very large trees. In fact, many say that in its first 10 years, the plan failed communities by not delivering a stable timber supply from federal lands, including old-growth stands. But now at least one of the plan's original drafters says the era of cutting old growth has passed.

Norm Johnson of Oregon State University is one of the "Gang of Four" who laid out the three drafts that ultimately led to the final NWFP in 1994. Speaking at a meeting here of the Ecological Society of America last week, Johnson outlined suggestions for the plan's future, including eliminating the harvest of old-growth trees.

"The time has come to conserve old-growth forests and trees across the landscape," Johnson said.

Johnson offered many reasons to protect the long-lived trees:

- Old-growth stands are increasingly seen as reservoirs of biodiversity.
- Northern spotted owls, which depend on mature forests, are still in decline.
- Most people want to save the old trees for posterity.
- The Northwest timber industry is no longer dependent on their harvest.
- It is extremely costly to develop federal timber sales in old growth and the success rate is low.
- Harvesting old growth erodes the public's trust in land managers, thus impeding foresters from taking other actions that are more important such as thinning.

"In sum, the 10-year-old Northwest Forest Plan that envisioned some old-growth harvest has been overcome by events legal, political, social, scientific and economic, and it's time to bring to a close the harvest of old growth," Johnson said.

The trouble is, few people, including the drafters of the NWFP, can agree upon what old growth is. "The battles are over for cutting old growth, but the notion of what they are will remain contentious," Johnson said.

Some people define old growth as any stand over 120 years of age. But others say that definition is too narrow, excluding certain forests that are important old-growth stands, such as the western Willamette National Forest in northwest Oregon where forests 80 to 120 years old support species that depend on mature trees.

While those interpretation battles are sure to continue, Johnson suggested the plan's future depends on preserving early and mid-successional forests that will later become old growth and can replace older stands taken out by catastrophes like uncharacteristic

wildfires, fires that burn where they shouldn't or burn at a higher intensity than they did historically. He suggested including some of the federal tree plantations in the "late successional reserves," often dubbed old-growth reserves.

In addition, land managers need more freedom, according to Johnson. To that end, he supports the removal of the "Survey and Manage" program from the plan, which he said was never part of the framers' original vision. The program called for the Forest Service and Bureau of Land Management to survey and manage the populations of more than 300 species before allowing any timber sales, but the Bush administration eliminated it earlier this year.

Dominick DellaSala of the World Wildlife Fund said he could support eliminating the Survey and Manage provisions in tandem with terminating the logging of old growth, but he criticized the administration for not doing the latter.

"When you say we don't need Survey and Manage and we need to protect old growth, the administration hears, 'We don't need Survey and Manage.' They don't hear the other part," DellaSala said. He added that he could support giving land managers more freedom, but not if that freedom opened up loopholes for the agencies.

Johnson also said some aspects of the NWFP have not been implemented as envisioned, particularly the provisions pertaining to the Aquatic Conservation Strategy and adaptive management areas.

At the same time that it eliminated the Survey and Manage requirements, the administration rewrote ACS, removing a requirement that the federal government identify short-term effects of timber projects on salmon-bearing streams.

Adaptive management areas are stands of trees up to 80 years old, where the agencies are allowed to harvest trees to help stands develop into old growth more quickly. Six percent of federal forests in the Northwest were designated AMAs, but land managers either did not understand what they were supposed to do or were shackled into inaction. As such, AMAs essentially became equivalent to old-growth reserves.

"We've squandered one of the boldest learning opportunities ever created on federal land," said Hal Salwasser, also of Oregon State University. Resurrecting AMAs would require the agencies to regain the public's trust, in part by bringing together different stakeholders to form a common vision, he added.

Overall, Johnson said there needs to be a new paradigm for federal lands. The new model should combine a commitment to conserve old forests with increased freedom for land managers, he said.

"We're recommending cutting young trees and letting the old ones grow. That's a big change. It used to be the opposite," he said.

## **Continuing Education News**

The FY2005 Continuing Education schedule is now available for your browsing pleasure at < <http://www.fs.fed.us/biology/education/>>. You can even see a calendar of classes at < <http://www.fs.fed.us/biology/education/workshops/calendar.html>>.

**Contact:** Shelly Witt, National Continuing Education-WFW Program Leader  
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## National Botany Program Highlights

What's going on with Botany in the Washington Office?

- Forest plan appeals (ad naseum)
- Attended Plant Conservation Alliance meetings
- Attended Federal Partners Plant Conservation meeting
- Met with the Center for Plant Conservation
- Conducted a second internal review of the draft native plant material policy

### Federal Botany Jobs

Check for these and other jobs of interest to botanists at <http://usajobs.opm.gov/>.

Remember, botanists make excellent leaders!

As of 21 September 2004, there are 19 open Forest Service line officer positions

Sep 15, 2004	<a href="#">Botanist</a>	Interior, US Fish and Wildlife Service	US-AZ-Yuma
Aug 26, 2004	<a href="#">VEGETATION MANAGEMENT TEAM LEADER</a>	Agriculture, Forest Service	US-OR-HINES
Aug 23, 2004	<a href="#">PROGRAM MANAGER</a>	National Science Foundation	US-VA- Alexandria, Arlington & Falls Church
Aug 19, 2004	<a href="#">ID PLANNER</a>	Agriculture, Forest Service	US-Throughout The Nation
Aug 19, 2004	<a href="#">ID PLANNER</a>	Agriculture, Forest Service	US-Throughout The Nation
May 21, 2004	<a href="#">BOTANIST</a>	Agriculture, Forest Service	US-CA-ARCADIA, CA
Apr 12, 2004	<a href="#">BOTANIST</a>	Agriculture, Forest Service	US-CA-EUREKA, CA
Oct 1, 2003	<a href="#">BOTANIST</a>	Navy Field Offices	US-Southwestern States
Oct 1, 2003	<a href="#">BOTANIST</a>	Navy Field Offices	US-Western & Pacific States

### Banner Plant: *Cucurbita okeechobeensis*

Each month, a different plant graces the banner of *Lingua Botanica*.

This month's image is courtesy of the Southwest Florida Water Management District

The natural history of the Okeechobee Gourd is from the [Center for Plant Conservation](#).

*Cucurbita okeechobeensis* ssp. *okeechobeensis* (Okeechobee Gourd) is a wetland gourd, growing fairly commonly as a vine in the bottomlands of the St. John's River and the southern shore of Lake Okeechobee. Gourd seeds probably germinated during the dry season, when lower water levels exposed rich swampy soils. Over the summer, the heart-shaped leaves and cream-colored flowers covered the pond apple trees, which were

natural trellises for wild gourds. The vines continued to climb during the wet season. Protected above the rising water level, the flowers developed into orange-sized gourds, light green with faint stripes. The gourds floated on the receding waters of the winter dry season, until they came to rest on exposed soil. And the cycle started again.

As of 1930, at least 95% of the forests where this species once commonly occurred had been destroyed for agriculture and water-level regulation. This species is now found only in two disjunct populations, threatened with continued water-level regulation practices and invasion of its habitat by non-native invasive species. While this species of gourd is not edible, it is particularly important to study it and maintain it in the wild, as it is resistant to many of the diseases that affect economically important crops, including the cucumber mosaic virus, powdery mildew, and squash mosaic virus.

### **After-Image: Flowers Everywhere!**

Image courtesy of [Worth1000.com](http://Worth1000.com)

Stressed out? Need a little laugh? Visit [Worth1000.com](http://Worth1000.com) and browse any one of several galleries containing photoshopped images of flowers, plants, trees (and just about anything else). Its good clean (and creative) fun.



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"If stupidity got us into this mess, then why can't it get us out?" Will Rogers

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