Sometimes you can’t help it; sometimes you’re compelled to do what you have to do. Why? Because you feel it in your bones, like salmon racing upstream, like a Verbascum blooming between the railroad tracks. There is a biological imperative at play. Sometimes you do what you have to, not because it is easy, but rather because you wouldn’t be you if you didn’t. I’ve spent years breeding a particular variant of the common Mirabilis jalapa and I’ve just started working on a cast-iron Tagetes that I collected from a plant growing in a sidewalk near my home. Four o-clocks and marigolds are nothing special, but I play with them in order to have something special, something that I crafted myself and appreciate because they are unique, because they mean something to me. I like to think that my tastes in art, music, reading, etc. are driven by this desire for the out of the ordinary. I’d also like to think that this appreciation for the out of the ordinary is why I am, and you are, a botanist. We have an appreciation for each of those Astragalii; we value a forest because of its component diversity rather than its economic potential; we are happy to give our time and talent to the community by talking to kids and leading wildflower walks even though a cost/benefit analysis suggests that the time is better spent elsewhere. Good for you. Good for us. I’ve even heard of botanists leaving their jobs because they were unable to do the work they set out to accomplish—unable to give what they have to give. It is always a shame to see one of our botanists leave, although I can totally understand how frustrating it can feel to be hung out like a decorative bundle of herbs, pointed to as a nice flourish but never getting into the soup. I’ll tell you what, you should be the very essence of the soup. You deserve to be savored and appreciated for the work you are making happen and the perspective you bring to the job rather than pointed at as some sort of token, trophy, or Happy Meal toy. Grab the ladle boys and girls, and stir it up! The Forest Service needs you now more than ever.

the editor.

In this Issue

Vol. 5, Issue 2 2004

Celebrating Wildflowers Every Day!!!

Linkiana ........................................................................................................................... 2
Three Stores from Botanists ........................................................................................................ 3
New Regional Botanists in PNW and Eastern Region ............................................................... 6
The Secret Garden .................................................................................................................. 7
Endangered Cactus May be Common ...................................................................................... 9
Miami Blue Butterfly Release ........................................................................................................ 13
Florida Nurseries Confirm SOD ............................................................................................. 14
Lichens and Wyoming Elk Deaths ........................................................................................... 16
Virginia Ginseng Sting ............................................................................................................. 17
Crataegus Trivia .................................................................................................................... 20
Cultivating an Ethical Flower Trade ......................................................................................... 21
Chocolate War in Ivory Coast ................................................................................................... 24
Botany and Beauty Coalesce .................................................................................................... 25
Madonna’s Botany Lesson ....................................................................................................... 26
Viennes Veggie Orchestra ......................................................................................................... 27
The Easter Onion ................................................................................................................... 29
Forest Service Competitive Sourcing Flaws ............................................................................ 29
Forest Service Botanists Win Windler Award ........................................................................ 31
Continuing Education News .................................................................................................... 32
National Botany Program Highlights ...................................................................................... 32
Federal Botany Jobs ................................................................................................................ 32
Banner Plant: Abronia umbellata ............................................................................................ 33
After-Image: Sleeping with Abronia ........................................................................................ 34
Linkiana

Washington Office LRMP Appeals and Litigation: Ever wonder what happened to all those appeals of your new forest plan? This is where you can find out.
http://www.fs.fed.us/emc/applit/nhappdec.htm

Flowers in Ultraviolet: A new way to see the world around us.
http://www.naturfotograf.com/UV_flowers_list.html#top

Infrared Photographs of Plants and Forests: Another new way to see the world.
http://wharvey.homedns.org/wharvey/ir_photos.html

National Registry of Big Trees: Bow down and praise the wooden monsters!
http://www.americanforests.org/resources/bigtrees/

Common Plants of British Habitats: Take a virtual tour of the Island Kingdom and discover the natural history of British plant life.
http://www.bbc.co.uk/nature/animals/wildbritain/look_around/plants/3a.shtml

Error, Accuracy, and Precision: A great primer on these important statistical parameters from the University of Texas and the University of Colorado.
http://www.colorado.edu/geography/gcraft/notes/error/error_f.html

Images of Fur Trade History: A fun page of old images, very useful for making better powerpoint presentations.
http://www.xmission.com/~drudy/mtman/images.html

Remote Sensing Application Center Image Archive: Find remote images of almost every national forest in the system (plus adjacent lands). Very interesting.
http://rsac.gsc.wo.fs.fed.us/imageArc/index.php-cgi

California Plant Names: This site provides an extensive listing of Latin name derivations, including short bio’s of the people for whom many plants are names. Very educational and entertaining and is useful far beyond California. By Michael Charts.
http://www.calflora.net/botanicalnames/index.html

Thomas Jefferson and the Garden Plants of Lewis and Clark: From the Monticello horticulture newsletter (Twinleaf) and garden director Peter Hatch.
http://www.twinleaf.org/articles/treasures.html

The Original Distribution of Bois D’Arc: A very interesting biogeography of *Maclura pomifera*, one of America’s most interesting trees.
http://www.smu.edu/anthro/collections/boisdarc.html

Plant Stamps: Beautiful flowers on postage stamps, an excellent gallery.
http://aildoux.tripod.com/
Stories from *Lingua Botanica* Readers

**Oregon Botanist Learns to Love Botany**  
Ann Risvold, North Zone Botanist, Mt. Baker-Snoqualmie National Forest

Some of us are slower than others. It took almost 10 years of working for the Forest Service to realize that I had ended up in a part of the organization that was just not for me. I had graduated from forestry school and landed with the Forest Service as a Co-op Ed student. The first few years were pretty good, working in recreation and eventually trails, but an abrupt right-hand career turn put me into the Lands and Minerals program. For the next 9 years I became mired in the gory details of mineral law and policy, access and rights-of-way, and special uses. I became pretty good at it, but **BOY** was it dry stuff! Then three things happened (but not quickly – this is the slow part I mentioned previously): #1 I became aware of how unhappy I was, #2 I figured out why I was so unhappy, and #3 I did something about it.

It’s easy to complain about the Forest Service, and in many cases the criticism is deserved, but in this case the agency gets high marks because it sent me back to school to get a degree in botany. Despite the fact that I still have nightmares about chemistry class, it was one of the best moves I ever made. I’m now doing something I have a passion for, and I get paid for it!

There is still plenty of time spent in the office, shuffling paper or sitting in nearly pointless meetings. But those times are more than made up for by recalling the high points, such as:

- the perfect summer day spent doing botanical surveys at a ridge saddle when the wildflowers were in full bloom and the only sounds were the wind and bees,
- or the time spent watching a hawk ride the thermals on another perfect summer day,
- or having the whole lake basin to myself
- or the time I came crashing through heavy brush into a classic, beautiful sphagnum bog and landed on my face inches from a Sensitive plant

How could it get any better than that?

**A Day in the Field**  
Tracy Fuentes, South Zone Botanist, Mt. Baker – Snoqualmie National Forest

Here is a description of collecting soil samples for a seed bank study I did as part of my master’s work a few years ago. *Iliamna longisepala* (Malvaceae) is a rare, fire adapted species that has long-lived seed banks. This endemic occurs in north central Washington state, with most populations on the Okanogan-Wenatchee NF.
Field work, like all labors of love, offers both joy and tedium. The following instructions were my attempt to explain to family and friends exactly what I do all day when I am "out there in the woods." Yes, I really do mean that I spent "day after day collecting dirt and putting it into bags."

**A Day in the Field**

Imagine pounding a rinky dink soil sampling tube into the ground with a rubber mallet, and then yanking it back up without spilling all the soil out the bottom. Divide into 3 depths; place soil from each depth interval into a separately labelled baggie… Repeat 3 times… Wonder if you should get into your lunch yet… Have some water… Swat, uselessly, at medium to large fly flying in circles around your head for no reason at all… Hit hand with mallet -- poor aim… Lose a pen and a sharpie. Vow to paint all paintable objects orange to prevent further losses. Vow to place red duct tape on all unpaintable objects… Eat part of your lunch… Fall down steep, sandy hill… Reapply sunscreen… Worry about ticks… Climb up hill to staging area… Remember plot of last movie you saw… Wonder whether rumor about actor in movie is true… Remove boot… Remove irritating foreign plant organ(s) from sock… Replace boot… Go back down hill to find clipboard dropped when you fell down the hill… Repeat second and third paragraphs 34 times… Repeat remaining paragraphs at least 34 times… Gather and pack all equipment and samples… Have key panic. Pull packed bag apart… Panic… Pull other packed bag apart… Remember that keys were placed in safe place so that they wouldn't get lost… Repack… Head back to truck… Readjust poorly balanced load… Load truck… Remove boots and socks… Put on Tevas… Eat a Power Bar… Drink a half liter of water with one breath… Breathe… Drink rest of water… Admire view… Be smugly satisfied that you got REAL work done.

---

**Two remarkable botanists: Askell and Doris Love*  
Bill Reid, Chihuahuan Desert Network Inventory Coordinator**

I first met Askell Love when I decided to quit designing rocket engines and become a biologist. As I entered the University of Colorado, the eminent and irascible Robert Pennak was a bit outraged that I wanted to enter the Department of Environmental, Population and Organismic Biology with only 8 hours of biology classes and a low undergraduate GPA in mechanical engineering. He sent me to the department chair, Dr. Askell Love.

I went to the EPOB** office and was ushered in to the see the man. Askell, with his boldly gaunt face and Einstein-like hair, asked me a few questions. Then he said, “I
will take care of this; you will come to my laboratory.” I was in. What I did not know, then, was that this great botanist from Iceland had the tribal view of that wonderful people: There was us and them. For some reason I was instantly one of us. Also, he saw himself as chair of the department in the European sense, a position on the right hand of God.

I worked in his lab for two years and had free access to two wonderful Zeiss microscopes, one an Ultraphot. I spent much time looking at chromosomes, including some very disrupted ones of *Pinus longaeva* at the Schulman Grove. Late one night, and working alone, I took the stiff rotating stage apart and showered any number of loose ball bearings over the floor. Hours later, I had gathered them all, cleaned off the old grease from them and the races, and put it back together. Askell never knew that. I also read many of his works, including the under appreciated one showing that Linnaeus used what we have come to call the biological species concept of Du Reitz, Dobzhansky and Mayr. I also heard a very great deal about chromosomes and polyploidy! The productivity of Askell and Doris Love is astounding. Askell, then, had 1,600 publications, including a dozen books. Doris had, I guess, a couple hundred.

I was stunned when I was invited to go with Askell and Doris to Slovenia. The night I arrived there on a Yugoslavian plane piloted by an ex-fighter jet pilot, we went to a country inn and ate cold roast pork and raw onions washed down with a liquor made from straight juniper berries. The next day Askell and Doris took me to the Slovene forest, filled with spring flowers, and pointed things out with a speed comparable to an automatic weapon—this is..., that is..., do you see...? After an hour of this Doris said, “Do you know the flora now?” My head was spinning!

I could write pages about Slovenia, but suffice it to say that Askell and Doris worked all day in the herbarium at the university in Ljubljana and at home. From this later came their massive *Cytotaxonomical Flora Of Slovenia*. At the end of the summer we went home together, stopping for a day in Copenhagen. There, we went to the Royal Botanical Garden. One amazing sight was, as we moved between buildings, a dozen garden personnel, some in flowing lab coats, running over the lawns, leaping bushes and hedges, and all carrying a book. They were all coming to Askell to get his north European flora autographed. I watched their joy-filled faces as he signed each book. Here, in America, botanists are widely regarded as weird or quaint, unless the call themselves range scientists for foresters. In Europe people know where the food chain starts, and they are respected, almost revered.

Many people know that Askell was later vilified and forced out of the University of Colorado, and I’ve shared thoughts on that with Bill Weber. But knowing Askell and Doris Love was a remarkable life changing experience. Since then, I’ve, unfortunately, drifted a long way from botany, but it is still close to my heart—and my :”real” work.

**In 1969 EPOB was a wonderful department in ferment. The university had hired nationally recognized biologists like Askell and Hobart Smith, the herpetologist, along with young lions from Berkeley and Davis, including Carl and Jane Bock and Yan Linhart. The department had 80 majors per faculty member, and the busy, new people were in constant battle with the Old Guard. From here in Texas, the institution seems much quieter, now. Askell and Doris have passed on, and Jane Bock, my major professor later, is Emeritus, but Hobart tells me he still works at school seven hours a day.**

* See the obituary for Doris Love in BEN #242 at [http://www.ou.edu/cas/botany-micro/ben/ben242.html](http://www.ou.edu/cas/botany-micro/ben/ben242.html)
the obituary for Askell Love in BEN #139 at [http://www.ou.edu/cas/botany-micro/ben/ben139.html](http://www.ou.edu/cas/botany-micro/ben/ben139.html)
PNW Fills Regional Botanist Position – Welcome Russ Holmes!

Russ received B.S. and M.S. degrees with concentrations in botany from East Carolina University in Greenville, NC. He studied phosphorus cycling in an alluvial swamp forest for his thesis research. After two and half years of teaching introductory biology in South Carolina, He began his federal career by accepting a botanist job with the BLM in Rawlins, Wyoming and transferred to Roseburg, Oregon as a BLM District botanist in 1981. In February 2002 he transferred to Portland, Oregon to work in the Survey and Manage Program and accepted the job as regional botanist for Region 6 on May 3, 2004. He is delighted to get back into botany program and looks forward to the challenges and opportunities that lay ahead and to working with all of the great people in the Forest Service.

Departing R6 Regional Botanist Sheila Martinson Says
“Farewell and good luck to Botany!”

I have enjoyed the past six years working with Botanists. I particularly liked working with the energy and passion that Botanists have for their work. It makes work more like creative play. Not that there were not serious issues to overcome. There were. And we did. If I had only one thing to offer to botanists, it would be this thought: The hardest question to answer is “What do I want?” In the work setting, it becomes “What do WE want? … to create, to be, to do??? A collective vision of a desired outcome makes that thing happen; even over seemingly insurmountable odds. We now have a real live botanist working as our Regional Botanist! We did it! I wish you all the very best on your journey. I will be around as the R6 Regional Geneticist working on two key issues: 1) restoration of white pine ecosystems, and 2) adaptive variation of native plants for revegetation projects. Feel free to call upon me as needed. Happy trails.

R9 Makes it Official: Nancy Berlin is New Regional Invasive Species and Botany Program Leader

My interest in plants started early...I was intrigued that my grandmother knew the names and uses of "all" the plants when we hiked around her northwoods cabin. My degree is in Field Biology with a minor in Art and my interests have always balanced the two. My first day as a Wildlife Technician (25 years ago - ee gads!) I asked for the District plant list and was stunned to learn that none existed. Later that year though, I couldn't believe that I was paid to work with a local garden club to develop a wildflower trail. I was proud to be part of the first rare plant surveys on both the Superior and Chippewa National Forest. At this same time I monitored arctic disjuncts for TNC on islands in Lake Superior - my idea of heaven. Since then, I have worked in a variety of roles including Supervisory Biologist, Public Affairs and FLT Team Leader and I came to the Regional Office in Milwaukee in 2001 to work as the Regional Threatened and Endangered Species Biologist. To me, rare plants and animals are treasures at the end of an adventure, usually in beautiful places - their life histories some of the greatest stories.
And invasives, well, they are what threaten those stories. I am delighted to have been able to focus my career towards these interests and look forward to making a difference at a regional level for botany and invasive species. When I am not busy with the Forest Service or my family (Pete 60, Nick 18, Ali 16 and Davyd 4) I enjoy drawing/painting, kayaking, hiking and exploring new places.

The Secret Garden

Washington's rarest flower - *Hackelia venusta*, or showy stickseed - grows nowhere else in the world.

The last remaining specimens in the wild - more than 600 at last count - cling to the steep, rocky slopes of a Cascade Mountain canyon, above the Wenatchee River in Central Washington.

Federal officials added showy stickseeds to the list of plants protected under the Endangered Species Act two years ago and at the same time refused to map the 2- to 3-acre site where it grows.

Ted Thomas, the Lacey-based U.S. Fish & Wildlife Service ecologist who prepared the listing documents, said he decided not to identify its precise location to safeguard the flower. In a sense, that makes the flower's home a virtual state secret, known only to a discreet group of people who are unlikely to tell.

Besides Thomas, the group consists primarily of professional botanists and government land managers. One of them, botanist Robert Carr, a retired Eastern Washington University professor and a stickseed expert who first visited the site in 1967, estimates that 30 people know where the plant grows.

"We're pretty gun-shy with showy stickseed - even looking at it is a problem," said botanist Terry Lillybridge, who works for the Wenatchee National Forest.

Lillybridge, Thomas and other botanists trying to save the stickseed said they don't want other people to know where it grows because they don't trust others to keep their hands off. Plant lust is tops among threats to the flower's survival, they said.

"People want to have a showy plant on the table at dinner time," Thomas said.

Although it's illegal to remove plants from federal lands, government officials said they believe people will disregard the law and pick the plant to death. They also worry that people might unwittingly trample the stickseeds by dislodging rocks that could crush or bury young plants, Lillybridge said.

Thomas recalled watching a motorist steal the rare flower one day in May six years ago. At the time, Thomas and others were taking a showy stickseed census. (The current population of about 600 is up from a low of 150 plants in 1995.)

"The photographer who was with us yelled out, and we looked up and saw a woman running across the road with a plant in her hand, getting into her car," Thomas said. Plant survey crew members didn't try to intervene, he said.

"It happened in a flash. She was in the car and we were on foot," he said.

Because the showy stickseed grows in loose rock and gravel, it's especially vulnerable, he said.

"It's very easy to take the whole thing out, roots and all," Thomas said.
The showy stickseed doesn't stand out when it's not in bloom, but when it does, its inch-wide white flowers can be stunning, said Carr. Together, the blossoms resemble phlox.

He said he was flabbergasted when he saw a different woman stop her car to grab a bouquet. Nobody knows whether those two women realized that the flowers they took are nearly extinct. Yet government officials purposely decline to use signs to remind visitors not to take plants, Thomas said.

That's smart, said Sarah Reichard, a University of Washington conservation biologist helping to devise a plan to revive showy stickseed. "You don't call attention to something that's rare. It brings out the lust in people," she said.

To learn more about that obsession, Reichard suggested reading, "The Orchid Thief," Susan Orlean's book about a Florida plant dealer arrested for poaching. Although only a small percentage of plant lovers steals vulnerable species, it can be enough to destroy them.

"If it's something that's pretty and rare, it's gone," Reichard said.

Ed Guerrant, a botanist who works for the Berry Botanic Garden in Portland - which preserves Hackelia and other rare seeds, also said that "no picking" signs are counterproductive - and not just because of poaching.

Guerrant said the Endangered Species Act listing in itself sometimes turns plants into targets of malicious destruction. He said he knows of two places in Oregon where landowners purposely bulldozed out populations of rare plants, apparently because they resented the prospect of land-use restrictions. In one case, the target was the Western lily. In another, it was Bradshaw's lomatium.

"Many people feel threatened by the (act) and the way it's been applied," Guerrant said.

Maybe so, but Dave Werntz of the Northwest Ecosystem Alliance is skeptical about the motives of those who try to keep the stickseed site a secret. If government officials don't map the flower's habitat, they aren't obliged to protect it, he said. Moreover, "any intelligent person would easily find this population" by reading the federal register, he said.

Botanists first labeled the showy stickseed rare more than 30 years ago. But scientists don't know what accounts for its decline or why it is only found in one place, Reichard and others said.

Carr believes the plant is dying out because its natural habitat is disappearing. He speculates that the showy stickseed probably evolved 15,000 years ago during the last period of glaciation. The flowers are adapted to the unstable rocky soils left in the glaciers' wake.

"They live in the extremes of where vegetation can survive," he said. And when other plants move in, stickseed disappears.

The flower, which belongs to the borage family, grows on sunny slopes blanketed by heavy snow in winter. Historically, the area was regularly scorched by wildfires, but fire suppression over the past hundred years has allowed trees to fill in, Carr said. To conserve the flower and reduce the shade, four years ago workers cut down more than 35 nearby trees.
Meanwhile, at the UW's Center for Urban Horticulture, Jeanie Taylor, one of Reichard's graduate students, is trying to figure out how the plants pollinate and germinate. The center houses about 100 showy stickseeds grown from cuttings - technically, tissue cultures.

"We've got the only ones in captivity that I know about," Reichard said, but they aren't easy keepers. "Every year in the pots, they look a little worse for wear."

To draft a species recovery plan, scientists need more information about the plant's needs. That's why earlier this month a team of researchers scoured the forest landscape, and searched for previously undiscovered plants.

The plant hunters turned up 120 additional plants not far from the previously identified population, said Thomas, who was buoyed by the news.

"That's an increase in population by 20 percent just like that," he said.

When the stickseed joined the endangered species list two years ago, his population estimate was 500.

Sheryl McDevitt, a veterinarian who lives in Leavenworth, is one of a few outsiders who share the secret of the showy stickseed's home. As a volunteer for Rare Plant Care and Conservation, a program sponsored by the Center for Urban Horticulture, McDevitt helps monitor some of Washington's most uncommon plants. For two years, she kept count of showy stickseed blooms, stems and seeds.

"They kind of just wanted another set of eyes," she said of the officials charged with the plant's protection.

A Wenatchee National Forest botanist showed McDevitt the site. Nobody had to ask her to keep quiet about it - "that's kind of a given," she said.

McDevitt said she has never seen anyone steal a stickseed, but she's seen the result of a similar theft. McDevitt once visited a spot in the Columbia Basin where rare hedgehog cactuses grow. The hedgehog is one of two native cactuses believed vulnerable to extinction in Washington. Later, McDevitt returned to see the blooms, but was disappointed to notice shovel holes where someone had dug out the cacti.

"The really sad part is those plants probably won't survive," she said.

That's why, when it comes to the showy stickseed, secrecy is key, McDevitt said.

"No matter how far out in the toolies they are, there will always be people who want to take them. Their protection is really in their isolation."

---

'E endangered' cactus may really be prolific
Mitch Tobin, Arizona Daily Star, 9 May 2004

The Pima pineapple cactus may not really be endangered.

In 1993, the government declared the tiny plant at risk of extinction. It has since preoccupied developers, environmentalists and county officials because it lives on Tucson's quickly expanding southern fringes.

The inconspicuous cactus is usually found on ridgetops and flat land that's not too rocky - perfect places for building homes. It has therefore shaped the county's Sonoran Desert Conservation Plan, and helped decide the content of $174 million worth of open-space bonds voters that will decide on May 18.
Botanists, however, continue to clash over whether the cactus was properly classified as a separate subspecies. Some think it should be lumped together with other varieties of pineapple cacti that are more numerous and stretch all the way to Texas. That's how the new edition of the influential Flora of North America deals with the situation, though other books stand by the existing labels.

"The jury's out. There are people who fall on both sides of the fence," said Philip Jenkins, curatorial specialist at the University of Arizona herbarium. "Somebody needs to do some genetic, molecular studies. The proof is in the DNA."

A few biologists go a step further, arguing that the sparsely distributed cactus is far more common than first believed.

"The more research you do on this plant, the less endangered it appears," said biologist Bob Schmalzel, a consultant to developers whose work concludes that there are 100,000 to 150,000 Pima pineapple cacti.

No effort is under way to de-list the cactus, and challenges have yet to be published in peer-reviewed science journals.

"We'll see," said Sherry Barrett, assistant field supervisor for the U.S. Fish and Wildlife Service. "The rigor of the science will be crucial."

Whatever comes of the plant's legal status, it has already made its mark on some of the county's fastest-growing areas.

The cactus may force one prominent builder to raise the price of 72 homes by $1,181 each. In the mid-1990s, the cactus threatened to add $10 million to the cost of a proposed 650-acre reservoir on the Southwest Side for the Central Arizona Project. The proposal was later shelved.

Blading and grading have, in turn, taken a toll on the cactus, with an untold number of plants lost before they were identified and listed. Fish and Wildlife has recorded just 3,800 plants in the wild and says all but 1,500 have been wiped out, though only 10 to 15 percent of the plant's range has been surveyed.

"The cactus occupies the same property people like to live in," said Mima Falk, plant ecologist for the agency.

In an effort to let Tucson grow while protecting the cactus, a grand experiment is under way. The basic idea: Let some cacti and their habitat be bulldozed, in places like the Southeast Side, in exchange for protections elsewhere, like the Altar Valley south of Three Points.

That bargain lies at the core of Pima County's Sonoran Desert Conservation Plan. The county is seeking a special permit from Fish and Wildlife that will sanction some harm to listed plants and animals so long as the overall species' chances of survival aren't compromised. That's done by buying sensitive habitat, slapping conservation easements on other lands to limit development, or imposing regulations that require set-asides of open space.

Details of the plan remain sketchy, but the May 18 bond election is the first step in paying for it. Nearly two-thirds of $174 million is devoted to habitat protection for the pineapple cactus and 54 other species, some listed as threatened or endangered, others considered imperiled by biologists and maybe headed toward federal listing.

"The real trick of this exercise is for the county to strike that balance for all the species being considered, and that's no small challenge," said Rob Marshall, director of
science for The Nature Conservancy of Arizona and a member of the open space bonds acquisition committee.

The desert plan was spurred by years of controversy over another endangered species - the pygmy owl - which stalled building on the Northwest Side.

It may be a stretch to call the pineapple cactus Tucson's next pygmy owl. For starters, plants receive far less protection under the Endangered Species Act. It's a federal crime to kill, harm, harass or pursue an endangered animal, but those prohibitions don't apply to someone who digs up a listed plant on their land, though they may run afoul of a state's native plant laws.

Still, the owl and cactus "really are the two endangered species that are right in the path of the bulldozers," said Carolyn Campbell, executive director of the Coalition for Sonoran Desert Protection.

And the cactus can prompt the same type of government review the owl triggers if a development involves federal funding or needs a federal permit. That's common with large-scale projects, since construction in washes requires approval by the Army Corps of Engineers.

Fish and Wildlife has reviewed about 20 projects so far. Some developers have set aside parts of their land; others bought habitat off-site from the state's first conservation bank.

With 260 cacti, the Sycamore Canyon project will leave 70 percent of its 1,600 acres as open space, but can still have up to 1,320 homes in the Santa Rita foothills. "Due to the size and concept of our project, the impact is lessened when compared to smaller developments that need to yield a certain housing density to be commercially viable," said developer Jamie Argueta.

Smaller subdivisions can now buy credits of cactus habitat at the Palo Alto Ranch, south of Three Points. The ranch, in turn, agrees not to develop the land and the money also funds monitoring and erosion control.

Without the conservation bank, homes could be built on the 1,400 acres, and probably without federal review, said Ross Humphreys, a Tucson publisher who paid $2 million in 2000 for the ranch.

"It wouldn't be million dollar houses," he said. "It would be more Three Points."

Humphreys and wife Susan Lowell, author of the popular children's book "The Three Little Javelinas," don't apologize for trying to make money from the deal, though they doubt it will be very profitable. "No margin, no mission," said Lowell.

"There's not enough money in the world to protect all of the open space in public and private hands today," Humphreys said. "We believe - to our toes - that private citizens can be a cost-effective solution to open- space protection."

The conservation bank's first customer was Safeway, whose new shopping center in Sahuarita destroyed one cactus and 12.6 acres of habitat.

Environmentalists give qualified support to conservation banks, which have been used widely in California.

It might be acceptable for developers to buy credits if they're harming "tiny, fragmented, otherwise nonviable populations of cacti," said David Hogan of the Center for Biological Diversity. "But it's not going to be acceptable for a developer to destroy a prime population in exchange for buying into that mitigation bank."
One problem with protecting the cactus: It's sparsely distributed, with densities typically less than one plant per acre.

"You need a big piece of land to protect the population because it's so dispersed. You can rarely stand at a plant and see another one," said Mark Dimmitt, director of natural history at the Arizona-Sonora Desert Museum. He is finishing a study of the plant funded by the Desert Diamond Casino, which was built in cactus habitat along Interstate 19.

Some suspect that the cactus keeps its distance from others because of parasites. Others say it's an adaptation to fire, with plants found only where the ground isn't too rocky, but also not full of flammable grasses.

One of the densest known populations of the cacti is on 19 acres in Corona de Tucson, where Canoa Homes will build 72 houses. Across from the Santa Rita Golf Club, amid beer cans and glass shards, 64 cacti dot the parcel. If they weren't flagged with fluorescent tape, you could easily step on some.

Canoa Homes is buying seven acres at the Palo Alto Ranch for $35,000 to offset its impact. Company President John Shorbe Sr., who also leads the Southern Arizona Homebuilders Association, said the bank can be a good tool. But he said a developer's "snail's pace" dealings with the government over the cactus eventually hits the pocketbooks of Tucson homebuyers.

Protecting the cactus on-site forced Canoa Homes to scale back the Mirasol project by five lots and incur some $50,000 in costs for surveys and consultants. Divide the total cost of dealing with the cactus - $85,000 - by 72 lots and the cost per home comes to $1,181.

"These costs will be pushed on straight to the homeowners," Shorbe said. "For that, a homeowner would much rather put in an upgraded carpet or sound system, rather than paying for something that's not endangered in the first place."

Classification of plants and animals protected by the Endangered Species Act is contentious. Taxonomy is especially muddled for cacti, chollas and agaves.

Plants can interbreed and form hybrids that have qualities of both parents. Cacti are physically difficult to preserve for study and may vary a lot within a subspecies. Many Southwestern plants have been collected and named by amateur botanists around the world.

"Most of these cacti seem to have a dozen or more names and these names were published in all kinds of journals in all kinds of languages," said Steve McLaughlin, curator of the UA herbarium.

One school of thought says the Pima pineapple cactus is just an extension of other varieties whose distribution extends into West Texas. In what biologists call a cline, the plant's appearance varies gradually as one moves across the landscape, without discrete groups to mark the subspecies.

But Marc Baker, adjunct professor of botany at Arizona State University, said his initial studies show the cactus is sufficiently distinct in appearance to call it a subspecies. Baker has examined more than 450 plants and measured 15 to 20 characteristics, such as the length and curvature of spines. Statistical tests show that the Tucson cacti stand out when compared with others found farther east.

"We can tell them apart, something like 95 percent of the time or more," said Baker, who notes that he was "on the opposite end of opinion" with the endangered
Arizona agave. His genetics work helped prove the plant is a hybrid, and federal officials are now moving to de-list it.

The last time an Arizona plant was de-listed was in 1993, when the Tumamoc Globeberry was found to be far more numerous after biologists surveyed the route of the Central Arizona Project.

Something similar may happen with the pineapple cactus, said consultant Schmalzel, who favors the open space bonds and has studied the plant for seven years. Based on 99 surveys, Schmalzel and staff at WestLand Resources have concluded that less than 5 percent of the plants have been lost to development.

"It's still not a high density," he said, "but it's not a population I'd go to bed worrying about."

---

**University of Florida Scientists Release Rare Miami Blue butterflies in Effort to Revive Species**
*By David Fleshler, Miami Sun Sentinel, 27 May 2004*

About 500 caterpillars of the rare Miami Blue butterfly were released Wednesday at Everglades and Biscayne national parks, in a major effort to restore a species once thought extinct in Florida.

Scientists from the University of Florida brought the half-inch caterpillars to the parks in Styrofoam containers. Using forceps and artists' brushes, they transferred them to plants they use for food. Within two weeks or so, if everything goes as planned, the caterpillars will turn into butterflies, helping reestablish an insect that could have profound significance for the state's ecological health.

"Last year the entire Miami Blue population was down to about 50 adults, and their habitat was restricted to Bahia Honda State Park in the Florida Keys," said Thomas Emmel, director of the university's McGuire Center for Lepidoptera and Environmental Research, in a statement. "We hope the release will establish a new, self-sustaining colony that will eventually increase in number and repopulate other areas of South Florida."

Barely the size of a quarter, the Miami Blue once occupied a range from Key West to near Orlando. The species began to disappear in the 1980s, possibly because of a combination of urban development, mosquito spraying and the decline of native ants that had protected them from predators. The last known holdouts, confined to a few islands in Biscayne Bay, were thought to have been swept away in 1992 by Hurricane Andrew.

But in 1999, an amateur butterfly enthusiast discovered a colony of them at Bahia Honda, sparking an effort by volunteers, scientists and government officials to save the tiny butterfly. The Florida Fish and Wildlife Conservation Commission issued an emergency endangered-species protection order, making it a felony to harm them. And scientists at the University of Florida received permission to take some of the eggs to establish a captive colony.

Jaret Daniels, the University of Florida scientist in charge of the project, harvested 100 of the pinhead-sized eggs from the park and brought them to the laboratory in Gainesville. The scientists raised 13 generations of the short-lived butterflies, generating
a total of 9,000 individuals, as they waited for permission from the federal and state
governments to return some to the wild.

They chose four sites at Everglades and Biscayne national parks, looking for open
upland areas with nickerbean and balloon-vine, as well as nectar-bearing flowers, Emmel
said. They kept the exact locations confidential, a common practice among scientists
working with rare butterflies or plants that could be snatched by unscrupulous collectors.

Scientists will monitor the caterpillars over the next few weeks. They plan to
release more caterpillars at 10 other sites. After that, Emmel said they may release some
in urban areas, in ball fields, parks and vacant lots. Emmel said the tiny butterflies could
play an important role in the Florida ecosystem by defending the state against fire ants, a
non-native species from South America that has overwhelmed native ant colonies and
killed ground-nesting birds, lizards and many other animals.

Miami Blues have a mutually beneficial relationship with two species of native
ants. Worker ants find Miami Blue larvae, stand over them and stroke them with their
antennae, inducing the larvae into emitting a sweet fluid that the ants drink and carry
back to their nests. The ants take turns stroking the larvae. And if a wasp or yellow-jacket
tries to attack the larvae, the ant rears up on its hind legs to defend it. So returning the
Miami Blues will provide nutrition for native ants, helping them hold their own against fire
ants, and thus preventing fire ants from
eating baby birds and other animals.

"There are a lot of ripple effects on
the ecosystem," Emmel said. "It seems like
an innocuous little butterfly. It has some
extraordinary features of its life history that
may play a bigger role in the ecosystem than
we realize."

Florida nurseries find California oak killer
The deadly organism turned up in Tallahassee and the Jacksonville area.
Jerry W. Jackson, Orlando Sentinel, 2 April 2004

A mysterious tree disease that has ravaged thousands of oaks in California is now
in Florida.

Florida agriculture inspectors worked Thursday to map a strategy for rooting out
the malignant disease from a nursery in Tallahassee, where giant oak trees shade the
Capitol and fill neighborhoods with a leafy, green canopy.

Two more nurseries in the Jacksonville area also were confirmed to have the tree-
killing organism on at least one plant imported from California, where the disease known
as sudden oak death has felled thousands of coastal live oaks and other trees since the
mid-1990s.

So far, there is no evidence of the disease in Central Florida nurseries.
Although the disease is not harmful to humans or animals, experts fear it could spread east from California and threaten forests in many states, infecting several varieties of vulnerable eastern oaks.

"It's a serious pathogen, and we're doing everything we possibly can to eliminate it," said Paul Brock, an owner-partner in Tallahassee Nurseries, one of the area's oldest and largest retail nurseries, just north of town.

The disease is the subject of intense research in California, where a task force is mapping its spread and working to coordinate the control effort. Large sections of about a dozen counties along central California's scenic coast are pockmarked by dead or dying trees.

Researchers have found that the organism spreads in the wild from spores moved by the wind or water, latching onto trees and creating open, cankerous sores that lead to death within three to five years.

But the organism also can spread more rapidly and longer distances when people carry host plants from location to location. The fungus-like organism can lurk on the leaves of certain susceptible plants, such as camellias and azaleas, as well as in the soil in pots and around the roots.

Tree lovers fret that the disease could get a foothold and mar the landscape. "I'm overly concerned," said Dave Bridges, 77, a retiree in rural Osceola County who planted oaks on his 5-acre home site in the late 1980s. "They're beautiful trees."

One of the 40-foot oaks recently died, Bridges said, and although experts say that the disease has not been found in the wild in Florida, the thought of a mass die-off has people worried here and in many other states.

Agriculture officials in Georgia and Maryland said Thursday that they have suspect nursery-plant samples that are in the final stages of testing, and could join Florida as victims of the breakout from Southern California nursery suppliers.

"We've got some strong suspects," Georgia Agriculture Commissioner Tommy Irvin said. "We have some beautiful oaks in Georgia. We're very concerned."

All the nurseries where the suspect plants have been found are under quarantine. The businesses still are selling plants, but some restrictions on sales and shipments are in place.

More than a dozen states, including Florida, Georgia and Maryland, as well as Canada, have banned some or all of California's foliage plants after two Southern California nurseries were found to have the disease in early March.

Brock, co-owner of Tallahassee Nurseries, said that only a single camellia plant that his nursery purchased from Monrovia Nursery in California tested positive. It will be destroyed by state inspectors along with an undetermined number of nearby plants that have been held under quarantine since mid-March.

Camellia plants imported from Monrovia also tested positive for the disease at Phillips Garden Center in Jacksonville and Pat's Nursery in Green Cove Springs near Jacksonville, the Agriculture Department said. Those nurseries will be visited today to develop a protocol, or plan, for ensuring the disease is eradicated, said Denise Feiber, a spokeswoman for Agriculture Commissioner Charles Bronson.

Consumers who may have recently purchased susceptible plants from the three Florida nurseries -- such as camellias, azaleas and viburnums -- are asked to look for any signs of disease, such as leaf spots and blotches, and report to the Agriculture Department.
help line at 1-888-397-1517. Plants should not be moved from yards or returned to the nurseries.

More than 160 samples analyzed from nurseries from throughout the state have been cleared, Feiber said, but at least seven more still are being processed from various locations.

Feiber said it is too early to draw any conclusions about the level of concern based on the early finds in North Florida, where oaks are widespread and the weather is a bit cooler, more closely matching California and Oregon, where the disease also has killed trees.

A U.S. Forest Service expert on sudden oak death said the Appalachian region is a highly vulnerable area, based on the volume of oaks, other susceptible trees and shrubs and the climate. But a small section of the Florida Panhandle west of Tallahassee and a small part of nearby states on the Gulf Coast also are considered a high-risk area, said Kurt Gottschalk, a research forester in West Virginia.

England also is battling the disease, *Phytophthora ramorum*, which scientists have said is related to the pest that caused the infamous potato blight in Ireland.

**Lichens and Wyoming Elk Mortality**

Rick Gerhold, Southeastern Cooperative Wildlife Disease Study Briefs, University of Georgia, April 2004

Unusual wild elk mortality that began in late January to early February 2004 in the Red Rim area southwest of Rawlings, Wyoming, has been preliminarily diagnosed as lichen (*Xanthoparmelia chlorochroa*) toxicosis. The first affected elk were found on February 8, 2004, and since then over 300 elk have died or have been euthanized due to this previously unrecognized cause of elk mortality. Numerous agencies cooperated in the disease investigation, which was led by the Wyoming Game and Fish Department and the Wyoming State Veterinary Laboratory.

The affected elk were afebrile, had progressive weakness, and usually were found down and unable to rise. The elk appeared to be in good body condition and were alert and reactive, but they became moribund as the disease progressed. All affected elk either died or were euthanized, and it appears that elk cannot recover after the onset of clinical signs. Postmortem examinations revealed a consistent lesion of degenerative myopathy; however, it was unknown whether these lesions represented a primary effect of the disease agent or were lesions of exertional myopathy secondary to struggling. Diagnostic testing ruled out infectious agents such as viruses, bacteria, fungi, parasites, and prions leading investigators to suspect toxins and noninfectious etiologies as the cause of the mortality. However, results of toxicologic tests on elk tissue and blood samples were consistently negative for multiple organic toxins, heavy metals, common plant toxins, trace minerals, and vitamin imbalances.

Investigators found large quantities of *Xanthoparmelia* lichen in areas where affected elk were found, as well as in the rumen contents of elk at necropsy. Literature from the 1950s suggests that this lichen could cause similar syndrome in cattle and sheep. In the absence of other significant necropsy findings, the lichen was suspected as a possible cause of the epidemic. *Xanthoparmelia* lichens contain usnic acid, an unique compound previously believed to have been associated with degenerative myopathy in
cattle and sheep. It is not known if usnic acid is the toxic compound involved in the elk mortality. In order to test the theory that lichen toxicosis was the cause of the mortality, Xanthoparmelia lichen was fed to healthy elk captured from outside the Red Rim area. Clinical signs and muscle lesions similar to those seen in field cases developed in 2 of 3 experimental elk within 7 to 10 days.

The circumstances leading to the elk mortality at Red Rim are not completely understood. Possible explanations include the growth of more lichen than in other years, production of higher amounts of usnic acid or other toxic compounds by the lichen, or greater consumption of the lichen by elk, perhaps due to environmental factors. Wyoming and many other parts of the West have been suffering a severe drought for several years. Wyoming Game and Fish Department personnel have been compiling data on the mortality event, including GPS coordinates of the affected elk, date found, age, and sex of the elk, in order to create a more complete epidemiological picture.

Although lichen toxicosis previously has been seen in sheep and cattle, caribou and reindeer that often consume large quantities of lichen apparently are not affected. It is hypothesized that these animals have specialized rumen microorganisms that neutralize the toxic compound. In the Red Rim area, morbidity and mortality were not observed in other species, including horses, cattle, deer, and pronghorns. It is unknown whether these animals consumed the lichen or had some type of resistance to it. One theory is that animals in the Red Rim area were somewhat resistant to the effects of the toxic compound because of repeated exposure to it and elk that were affected may have been migrating through from another area. Investigators will continue to piece together various aspects of the epidemic in an effort to understand all the factors contributing to the outbreak.

**Virginia Sting Targets Trade in Bear Parts, Ginseng**

Peter Whoriskey, Washington Post, 1 June 2004

His wife had been stricken with breast and colon cancer, and in August 2002, Soo Kil Seo turned hopefully to the possibilities of Asian folk medicine.

The 59-year-old Alexandria dry cleaner drove to a rural hunting store that had advertised bear for sale in Korean newspapers, paid $1,200 for two bear carcasses and removed the prized and supposedly curative gallbladders for his wife.

The home-style prescription proved far more costly, though, than he had ever imagined.

Seo and dozens of other Koreans from the Washington area have been charged with multiple felony counts for alleged violations of wildlife protection statutes, all swept up in a sting operation run from a sham hunting supply store in the Shenandoah Valley.

Investigators say they were aiming to stem the illegal trade in wild ginseng and black bears.

Because the sting targeted readers of Asian newspapers and played on a cultural belief in the medicinal properties of black bear and ginseng, defense lawyers and leaders of some Korean civic groups say the operation was unconstitutional and unfair.

Among the defendants are the pastor of a Korean American church in Northern Virginia; at least one other man who said he was buying for a gravely ill relative; and
several owners of small shops that are the mainstay of the Korean immigrant community. Most of their purchases were small and, apparently, for personal use.

"My mom had been really sick," said Seo's son, Sang Seo, 31, between customers at the family's dry cleaning shop. "My father was worried about it so much. It doesn't seem fair."

Sang Seo credits the bear gallbladder with improving his mother's health. But now he fears that his father, who is a legal permanent resident but not a citizen, might be deported.

"My father has been here almost 20 years and never broke the law," said Seo, whose father is awaiting trial. "Now he might be kicked out of the U.S.A."

Rockingham County Commonwealth's Attorney Marsha Garst said that although she was sympathetic to the medical needs of Soo Kil Seo's wife, "there are prescription alternatives that have the same purported effects of bear galls. Why deplete natural resources?"

Operation Viper, as the sting was known, was conducted by the National Park Service and the Virginia Department of Game and Inland Fisheries.

Nearly all the people arrested in the sting were Korean immigrants, many of whom speak little English. Some could receive jail sentences, though thus far the punishments have largely consisted of a felony conviction, probation and fines.

Skip Wissinger, supervisory special agent with the National Park Service, said the defendants knew their purchases were illegal. Surveillance tapes showed that the undercover officer operating the store had warned buyers that the purchases were illegal, albeit in English.

Moreover, Wissinger said, a state judge and a federal judge have rejected arguments that the sting was unfair.

"These are serious environmental crimes that these people are involved with," Wissinger said. "They have a serious impact on the wildlife and plant resources within Virginia and Shenandoah National Park."

Several of the defendants, however, maintain that they did not willfully break the law.

"Please don't break our happiness of the family," Neung Woon Kim, a tailor, told the court recently through an interpreter. "Please give me a chance. I really didn't know that it was illegal to purchase the gallbladder." Kim is awaiting sentencing.

Wild ginseng, which has been harvested and exported from the United States to Asia for more than 200 years because of its purported health benefits, has grown scarce in many states. It fetches as much as $350 a pound, and a recent study at Shenandoah National Park suggested that the number of ginseng plants might have dropped as much as 75 percent over the past 30 years.

The majority of charges arising from Operation Viper, however, have involved the sale of black bear or black bear parts. And, in contrast to the ginseng problem, the black bear population in Virginia has been deemed healthy enough that in recent years state officials have expanded hunting to control it.

The laws prohibiting the sale of black bear are intended to stifle poaching by eliminating the commercial incentives.

"Although the full extent of the trade is unknown, research projects suggest only minor bear losses due to illegal harvest," said the state's 2002 black bear management
plan. "It is doubtful that poaching is having a significant impact on the statewide population."

To ensure a healthy population, National Park Service and state game officials initiated Operation Viper in July 2000. It followed leads developed during Operation Soup, which targeted the illegal hunting of black bear and in 1999 led to the arrests of about three dozen people.

For Viper, the agencies rented a storefront in Elkton, just outside Shenandoah National Park, for $1,200 a month for three years. The full costs of the investigation have not been released.

From previous probes, law enforcement officials knew that at least some bear parts and ginseng were being sold among the Washington area's Asian population, they said.

"We had previous knowledge" of the Asian market, Wissinger said. "It wasn't something we just made up."

Upon opening the Elkton storefront, dubbed Rock's Dixie Emporium, the investigators began to advertise. About half their newspaper ads ran in English, in general-circulation local papers, investigators said. The other half ran in the Korea Post, Korea Times and other Korean publications. The ads also appeared in a Vietnamese paper, according to the investigative records.

Records provided by defense attorneys, however, suggest that the explicit solicitation for black bears appeared in the ethnic papers, but not in the English publications.

Some ads said: "For Sale: Wild Mountain Ginseng And Bear."
Others said: "For Sale: Wild Fresh and Dried Mountain Ginseng and other Supplies to Meet Your Cultural Needs."

Over time, more than 40 Koreans made the trip to the sporting goods store in the Shenandoah Valley, bartering with the folksy man behind the counter and going home with ginseng, or whole bears, or their coveted gallbladders.

The language barrier proved a constant challenge during the deals. The undercover officer did not speak Korean; the English of the Korean immigrants was limited.

"Now, let me ask you, since we talked on the phone, are you interested in the bear?" the undercover agent asks Kim, the tailor, and his friends, according to the surveillance tape. They were.

"But one thing," the undercover officers says, approaching the counter confidentially.

"Do you understand English?" he asks each of the men individually. They nod or say yes.

"If you're interested, we could go to jail for that -- just like this. . . . You could go to jail. You could go to jail."

The friends nod.

"I mean they'll do like this," the undercover officer then says, walking away from them with his hands behind him as if in handcuffs.

"I know jail -- like this," one of the men says, putting his hands in front of him in imitation of cell bars.
They are now facing charges more serious than those faced by many first-time drug buyers.

"There is something inherently wrong in pursuing a criminal prosecution this way," said John C. Holloran, Kim's attorney. "They advertised in a newspaper. They had a nice store. Why would someone think it's illegal? And even if it occurred to you that it might be illegal, why would it be anything more serious than a parking ticket?"

In recent weeks, as news of the arrests has filtered out, various Korean American groups have criticized the sting, the arrests and the fact that those arrested are facing felony charges.

Julie Park, president of the Washington Chapter of the Korean American Coalition, said any advertising in Korean media should have been spent on educating immigrants. She called the sting "culturally insensitive."

"They were practically drawing them in by their cultural tastes -- it's like 'come and get it,' " said Park, who emphasized that she was speaking for herself only. "That's why it's wrong."

---

**Crataegus Trivia**

Submitted by Dean Elsen, National Forests I Mississippi, from www.mothernature.com

Where did the ship that brought the pilgrims--the Mayflower--derive its name?

British call the hawthorn plant:  the mayflower, mayblossum, haw, bread& cheese tree, etc.

What medicinal uses has hawthorn been used for?

Many, going back to the 1st century.  Best known for flavonoids effect on cardiac arrhythmias, etc.  Hawthorns in folk medicine "move the blood".  It has a vasodilatory effect that dilates vessels.  Self-treatment for heart disease is a bad practice however.  American Indians used bitter fruits to improve circulation, relieve cramps, etc.  Also leaves were poultice for wounds.

Any other uses in historical times?

It was cultivated to serve as a natural fence for German & British herdsman.  American Indian used hawthorn images as art to decorate pottery.  Hawthorns are common in many folklore stories.  The trimethylamine odor of its flowers reminds some of death and superstitions were to not bring a hawthorn flower in the house or it would result in a person's death.  Irish believed hawthorns are a favorite place for fairies and other woodland creatures.  Some think hawthorn was the source of Christ's crown of thorns.  It is the badge of the Ogilvie Clan.
Cultivating an ethical flower trade
Richard Black, BBC, 10 March 2004

A new fair trade system for flowers is due to begin later this year. Called FFP - Fair Flowers and Plants - it will be introduced first in Europe, but aims to become a global system.

Environmental and social campaigners say it will help to eliminate abuses in the global flower industry, such as overuse of pesticides, child labour, and discrimination.

"We have a saying in Holland; when you buy flowers, you are buying emotion," Kees Hoek, one of the architects of FFP, told BBC Earth Files.

"And you want to have a nice feeling about a bunch of flowers, not for example that it's covered in pesticides."

Environmental cost
Hoek runs a group called OLAA - De Organisatie Latijns Amerika Activiteiten - which campaigns for workers' rights on Latin American flower farms.

"When you talk with workers on flower farms, you get an amazing amount of complaints," he says.

"One of the main issues is freedom of association and collective bargaining.

"In some countries there is no trade union involvement in the flower industry; decent living wages and hours, health and safety; and we would like to ban all kinds of discrimination."

In countries like Kenya where the industry has expanded rapidly in recent years, environmental degradation is also an issue.

Earth Files went to one of the principal growing centres, Lake Naivasha, to speak with Andrew Enniskillen, chair of the Lake Naivasha Riparian Association.

"I came here about 20 years ago, when the flower industry had started but was not nearly as prolific as it is now," he told us.

"The floating weed covering the lake has gone, the bass fish population has completely gone - the opacity of the water is now such that they cannot feed - and if the flower industry was not here, the water level in the lake would be about three metres higher than it is today."

Industry codes
The flower industry has received some unwelcome publicity in recent years, as activists have raised these issues in the West.

As a result, there has been an explosion in codes of practice for growers and exporters.

The Kenya Flower Council, or KFC, the principal trade body for growers in Kenya, has one such code. The council's chair, Erasmus Mureithi, told Earth Files what farms must do if they want to join.
"First and foremost, you must look after your workers. If they are using chemicals, you must clothe them properly so that water does not penetrate; you must give them masks to protect themselves.

"You must give them subsidised medical care, and make sure they do not overwork. And there must be no sexual harassment - in fact sexual harassment means instant dismissal."

But farms which do not choose to join KFC's system can escape scrutiny altogether.

"Many of them are not a member of anything; and with those we have no idea what they do because they don't even allow us to go to their farms," said Mr Mureithi.

"We should let people have a level playground; so that if I incur so much cost by helping protect the environment, and by helping my workers, then let everybody do it."

**Flower power**

Other codes of practice are international, the best known being the Dutch MPS (Milieu Programma Sierteelt).

And in the UK, many supermarkets now buy directly from growers, and demand adherence to yet more sets of ethical standards.

Because of this plethora of codes, some farms may subscribe to three, four, or even more different sets of standards, which growers say is confusing and wasteful.

Despite the advent of direct buying for supermarkets, the bulk of the world flower trade - perhaps 60% - is channelled through auction houses in Holland.

They process around 40 million blooms a day, taking them in from Dutch growers, and from exporters like Kenya, Zimbabwe, Israel, Colombia, and Ecuador.

Earth Files visited the biggest Dutch auction house, Bloemenveiling Aalsmeer, which during the course of its three-hour trading morning processes 19 million flowers.

Palettes of flowers are wheeled in front of the buyers on an automated monorail.

A giant clock face displays the price of the current batch, in Euro cents. The price steadily falls, and when one buyer decides it is right, he presses a button and the flowers are his.

**Blooming dodgems**

There are several hundred buyers in the hall, all male. In addition to information displayed on the clock face, they listen to descriptions and ratings of the blooms from the auctioneer, and can access additional information on laptops.

Outside the auction hall, in a giant warehouse, trains of palettes are pulled around by electric carts like a surreal version of fairground dodgems.

Buyers can decide to buy ethically at this stage, because the clock face displays the MPS rating of the blooms on offer.

In theory, the MPS status can be passed on from buyer to wholesaler to retailer to customer; but in practice, it rarely happens, meaning that outside of the supermarkets with their own codes, customers are unable to make the choice of buying ethically.

"If the consumer is not aware of these issues and these abuses, there is no incentive for the producer to take care of the environment or establish proper labour standards," comments Kees Hoek.

The FFP scheme should change all that.
**Dutch influence**

Consumers will see a logo on FFP flowers demonstrating that they have been grown sustainably.

FFP will also seek to unify all the existing codes of practice, making life simpler for growers and traders.

The first FFP flowers are due to go on sale later this year in Germany, Austria and Switzerland. Stage two will involve other European countries, and the eventual hope is that it will end up as a global standard.

Bringing FFP in this year depends on obtaining seed money from the European Commission. But even if the EC does not produce the cash, FFP will begin in two years' time, because the enormously powerful Dutch flower industry has decided to bankroll it.

Some growers in Kenya are enthusiastic about FFP. "At the moment, there is not a level playing field for producers because different farms and different countries operate under such different codes," said Ron Fasol, managing director of the Oserian flower farm on Lake Naivasha.

"If the consumer is not aware of these issues and these abuses, there is no incentive for the producer to take care of the environment or establish proper labour standards," comments Kees Hoek.

The FFP scheme should change all that.

---

"If we're going to have an industry which is here for many years to come, we need to adhere to standards which allow us to continue drawing on the resources which have made us successful so far."
Chocolate war erupts in Ivory Coast
Civil conflict is over but hundreds are dying in cocoa feud.
Rory Carroll, The Guardian, 14 May 2004

The killers struck just before midnight. With speed and method, they went from house to house smashing open doors and windows and shooting families in their beds. Weeks later, blood remained visible on the walls as the village of Broudoume mourned its 12 dead and tended its wounded. A martyrs' cemetery was dug and there was talk of vengeance.

It could be any one of Africa's wars where political and ethnic tension is stoked by competition for natural resources. Except that this is Ivory Coast and the fight is not for gold or diamonds or timber or oil. It is for chocolate.

Cocoa plantations from this west African state supply the raw ingredient for almost half the world's chocolate, worth an estimated $350m (£198m) a year, which means there is wealth and power to be reaped from the yellow, green and red pods.

Officially, the civil war which flared in September 2002 is over: rebels and government forces have signed a ceasefire and agreed to rule jointly until elections next year. To cement the deal thousands of United Nations peacekeepers are due to deploy this month. But across much of the cocoa belt, overlapping micro-conflicts are pitting indigenous farmers against settlers from the north and neighbours such as Mali and Burkina Faso.

By regional standards the body count is low - probably in the hundreds, according to Human Rights Watch - but thousands have been displaced and aid workers warn of potentially much worse to come, and with it disruption of the cocoa supply. "Look what they did," said Jean Philippe Zahui, pointing to bullet holes in the bedroom of his brother, Mathieu, who was one of those killed in the March 4 attack on Broudoume. "It was savage."

Several wounded remain in hospital; others limp around the village. "We're too afraid to work in the fields. There could be another attack," said a neighbour, Isaac Zoboua, 42.

Mayhem

This village, three hours' drive west from the commercial capital, Abidjan, is a study in how the region's most prosperous, stable nation slid into mayhem. For four decades the indigenous Bete tribe welcomed and worked alongside the migrants and foreigners who helped clear the forest to plant cocoa.

But in the 1990s prices fell, and as the forest thinned, so did the welcome. A longstanding government policy to give land to those who cultivated it changed when President Laurent Gbagbo, a Bete from near Broudoume, declared that the settlers did not own it after all. "The foreigners thought the land belonged to them but the indigenous people had rented it, not given it," said Dano Djedje, the national reconciliation minister.

There are two versions of what then happened in Broudoume. Patrice Ouraga, 44, the headman, said that last October a settler woman was discovered taking sand from a sacred forest for witchcraft. "So we decided to drive them out." All 816 settlers packed and left, leaving just Bete. Proving just how treacherous they were, the expelled settlers...
returned to murder their former neighbours in the March attack, said Mr Ouraga. Nobody interviewed in Broudoume wanted them to return.

The other version is that the Bete, encouraged by the government, found a pretext to ethnically cleanse their neighbours and harvest their cocoa. "The indigenous wanted to take back their land, so they tried to find a reason," said the director of a cocoa cooperative in nearby Gagnoa.

Though the Bete deny touching the settlers' crops, many became rich through the double harvest, he said. Last year's bumper harvest fetched record prices. Jean-Marie Badiel, a foreign trader based in Gagnoa, said greed had partly motivated the expulsions. "It is when the harvest is good that the indigenous become jealous."

Settlers from two other villages, Badiepa and Pissekou, said 700 of them had been expelled on the eve of the harvest by neighbours who cited the rebellion as justification. "They said we were killing their people, that we brought the war, that we should leave," said Yaya Kone, 55.

Mr Djedje has negotiated the return of some communities, often after they agreed to pay rent to Bete neighbours, but some settlers say that with the police and army against them it is better to flee. Two camps shelter 7,600 displaced cocoa workers but aid workers estimate that thousands more are seeking refuge in cities and across the border. Since their revenge raid on those who evicted them, the settlers from Broudoume are hiding from security forces who allegedly dragged immigrants from buses and executed them in reprisal for the attack.

To the relief of chocolate makers such as Nestlé and Cadbury Schweppes, the cocoa war has not dented Ivory Coast's output - last year it harvested 1.4m of the world's 3m tonnes. But that may change. The director of the cocoa cooperative in Gagnoa said yields were down this year because indigenous farmers were unable or unwilling to replace the arduous labour of those expelled. "They don't have the experience to maintain the plantations."

Botany and Beauty Coalesce
Robin Laurence, Straight.com, Vancouver, British Columbia, 29 April 2004

Darren Waterston is best-known for an ongoing series of romantic oil paintings that juxtapose a modernist love of mark-making with a postmodern interest in the politics of the body, the cultural construction of nature, and the metaphorical landscapes--both interior and exterior--of mutation and change. His work typically combines passages of gestural abstraction with layers of washy colour and recurring motifs such as scrolls and tendrils, leaves and flowers, birds and butterflies, fruit and viscera, and clusters of amoebic or cell-like forms.

Recently, the San Franciscobased artist took a break from painting and launched himself into a project of automatic drawing (working spontaneously from his unconscious) in watercolour on the pages of an antique folio
of botanical specimens. An amateur German botanist gathered its leaves, small branches, flowers, and seed heads, which have been pressed and notated, in Italy, Switzerland, Serbia, Turkey, and Palestine between 1873 and 1875. Twenty altered pages are on view here.

Waterston's long-standing preoccupations with natural forms and biological cycles, his fascination with flux, growth, and transformation, are evident in this work. So, too, is a sense of instability and ephemerality appropriate to the found material. His marks and motifs are both a formal and a psychological response to the fragile nature of the folio pages (discoloured, worm-eaten), the specimens (faded and desiccated, sometimes broken or crumbled out of their mounts), and the unnamed botanist's elegant, calligraphic handwriting (in ink that has transmuted from black to purple).

Using a palette that ranges from raw umber and olive green to acidic orange and raspberry, Waterston both mimics the faded colours of the specimens and challenges their--and our--drift toward the nostalgic. In some cases, the artist has reiterated the shape of a pressed leaf, flower, or stem, drawing ghostly shadows on the page. (Sometimes, too, the specimens themselves have cast permanent, pale shadows of themselves onto the paper, through subtle changes of chemistry.) In other instances, he has imposed horizontal or vertical jots and dashes of colour, rainy sprinkles, cursive scrolls and loops, spidery webs of slender lines, and blots, burrs, and concentric circles that suggest life at a cellular level: the unseen inner universe of each specimen.

Waterston's altered folio pages, his collaborations with the long-dead botanist, project a wonderful energy and immediacy, partly having to do with their subject matter, partly their intimate size, and partly the automatic nature of their creation. They neatly deconstruct 19th-century Europe's compulsion to classify and control, to colonize nature along with Asia, Africa, and the Americas. They also, paradoxically, manifest a contemporary form of colonization, in which the artist appropriates another's forms, materials, and categories to express his own sensibilities and impulses. A new vision of nature has replaced the old, in a compellingly beautiful way.

**Botany Lesson at Madonna's 'Keep off My Land' Inquiry**
Lesley Richardson, Press Association News, UK, 7 May 2004

The planning inquiry hearing Madonna’s appeal to ban ramblers from walking across parts of her £9million country retreat today turned the spotlight on the botanical make-up of the land.

The singer and her film director husband Guy Ritchie claim around 100 acres of land at their 1,200 acre Ashcombe House estate, on the Wiltshire-Dorset border, has been inaccurately classified as open country and that the public should not be allowed access.

The Countryside Agency, which is charged with mapping areas of England to implement the Countryside Rights of Way Act, 2000 (CROW), has classified 12 plots as “down” on a provisional map.

Under the CROW Act, people will have the right to access any land registered on the final map as open country – mountain, moor, heath or down.
But Mr and Mrs G Ritchie, as they are listed in legal papers relating to the case being heard at the Royal Chase Hotel in Shaftesbury, Dorset, are appealing against the Agency’s decision.

Dr Alan Jones, an ecological expert, conducted a botanical survey on the estate in July 2003 to classify grasslands.

He concluded five of the 12 disputed plots were not down and should not be mapped as open land.

They included Rifle Range, Silver Coomb, Rookery, Quarry Bottom and Ashgrove Bottom.

Dave Elvin QC, representing the celebrity couple, has argued that the land was farmland, as opposed to open country, because it contained semi-improved grassland and not semi-natural grassland.

Dr Jones, who is director of environmental sciences at the RPS planning, transport and environment consultancy, told the inquiry: “There is no sharp divide between unimproved and semi-improved grasslands; botanical composition will usually be the over-riding criterion for distinguishing unimproved and semi-improved grasslands.”

There were no distinct boundaries between improved and unimproved grassland as it was a transitory process, Dr Jones added.

The Countryside Agency therefore had to exercise judgment when making a distinction and this would be open to challenge.

“The Countryside Agency is drawing the distinction between semi-improved and unimproved grassland in the wrong place. The test is whether grassland is unimproved or not, whether it is akin to unimproved.

“The Agency’s approach will clearly result in much grassland which is in fact semi-improved being wrongly classified as unimproved.”

Specifically, Dr Jones criticised the timing of the Countryside Agency’s survey, and the time taken over the survey.

Mr Elvin has also argued that allowing public access to the estate would breach the couple’s human rights to the undisturbed possession of property and the protection of private and family life, home and correspondence.

Madonna and Ritchie did not attend the third day of the week-long inquiry. She is currently preparing for her world tour which starts in Los Angeles on May 24.

Viennese Veggie Orchestra Makes Sweet Music

Reuters, 24 May 2004

HAMBURG, Germany - The sound of 90 pounds of finely tuned cucumbers, leeks, potatoes, radishes, peppers and other vegetables entertained a German audience at a weekend concert by the Viennese Vegetable Orchestra.

The nine-piece orchestra plays a range of original compositions on instruments constructed from vegetables -- including a flute made from a carrot, a saxophone carved out of a cucumber and a pumpkin converted into a double bass.

"I would never have thought you could get sound out of a cucumber," a young woman at the concert said. Others commented on the raw vegetable aroma accompanying the melodies.
The Austrian ensemble, three women and six men, said their instruments are freshly sliced and put together only an hour before each performance to enhance the sound. Size, texture and water content are vital to achieving the correct sound.

"Ordinary vegetables work better together than organic vegetables," said Matthias Meinharter, who plays a violin fashioned from leeks.

The musicians must also work against the clock. To protect their instruments from drying out during the performance, they place damp cloths around the vegetables when they're not in use.

At the end of the performance, the instruments were turned into soup.

Kids Love Celebrating Wildflowers Seed Packets!

Image Courtesy Hannah Campbell
The Easter Onion
by Johnny Russell

Years gone by, still they gather
Tribute to a heritage, gloried past
Easter onions, in Appalachia called ramps
Family, friends, people from far and wide.
On Coal River, up Peachtree to Pine Knob
This time of year, everyone a memory to share
Good music, preaching, and food; thank you, Lord
The sun warming, trees making horizons green.
Blooms hanging heavy, petals fall like snow
With the spring, hope springs like flowers
Time to come together, everyone welcome
Fill your plate, come and set a spell.

A time to reminisce, spin a tall tale or two
Cars line the dusty lane, even a politician feels at home
The pungent smell gives way, heaven in the taste
In His infinite way, the Lord gave us the ramp.
A Savior risen, and so is the ramp
Food for the heart, food for the soul
Hopes renewed, yet another season
I awake each year, and spring's Easter onion.

Johnny Russell is a coal miner from Montcoal, West Virginia. He wrote this poem in 1996. The Easter Onions are *Allium tricoccum*, also known as ramps.

Forest Service Admits Flaws in Job Competition Effort
Amelia Gruber, Government Executive, 26 May 2004

The Forest Service has acknowledged several significant shortcomings in its competitive sourcing program that were uncovered in a congressional report, and is working with the Office of Management and Budget to correct them. In the meantime, agency officials have decided to hold off on initiating any new public-private contests in fiscal 2004.

A bipartisan congressional report issued Tuesday revealed a variety of flaws in the Forest Service's implementation of President Bush's initiative to let contractors compete for federal jobs. In fiscal 2002 and 2003, the agency ran a large number of small-job contests at a high cost, investigators from the House Appropriations Subcommittee on Interior and Related Agencies found.

These contests damaged employee morale and failed to achieve savings, at least in the short term, according to the congressional research, requested by Reps. Charles Taylor, R-N.C., and Norman Dicks, D-Wash. In a separate report detailing competitive sourcing efforts across the government, also released Tuesday, the Office of Management and Budget cited similar concerns about the Forest Service's program.
The Forest Service will compile more consistent inventories of jobs eligible for outsourcing and concentrate on larger studies, said David Heerwagen, the agency's associate deputy chief for business operations. The congressional report is accurate, he said, but doesn't reflect ongoing improvements.

"We learned a lot of things out of the first year," Heerwagen said. "We would have liked [the appropriations subcommittee] to do a review after we learned all these lessons."

Last year, the Forest Service classified 79 percent of its full-time-equivalent jobs as commercial, according to the congressional report. Under the 1998 Federal Activities Inventory Reform Act, agencies can designate some of these commercial jobs as "unsuitable" for competition. But the Forest Service did not take advantage of this flexibility in 2003, the research found.

Agency officials wanted to protect some commercial jobs from outsourcing, but "ran out of time" to justify exemptions after waiting for OMB guidelines on completing FAIR Act inventories, Heerwagen said. In the future, the agency will start compiling its annual FAIR Act list earlier, he said.

The Forest Service will also work to stay within a $5 million cost limit for competitive sourcing, imposed by Congress in the Interior department's fiscal 2004 appropriations act, Heerwagen said. The agency is focusing on completing competitions already under way and overseeing those finished, he said.

In fiscal 2002 and 2003, the Forest Service initiated 171 job competitions and spent roughly $23.6 million, the congressional investigators found. The agency has estimated about $5 million in annual savings from these efforts.

Costs outweighed savings partly because the agency initiated many small contests that failed to engender much attention from the private sector, the congressional report found. Of 169 competitions completed by February 2004, agency employees won 161, or 95 percent.

Seventy-eight of the studies finished involved fewer than two full-time equivalent positions. Of these, 36 involved only a fraction of a single full-time-equivalent position. "Forest Service officials acknowledged studying such small numbers contributed to unrealistic competitions and made it unlikely that private sector providers would submit bids," the congressional investigators reported.

The Forest Service also grouped positions together in smaller studies in a manner that made it difficult to compare the cost of keeping the work in-house to that of outsourcing it. "In some cases where work was not fragmented, private sector interest was low because the Forest Service grouped activities in ways that work would not normally be provided by the private sector," OMB officials explained in their report.

Not only were job competitions at the Forest Service expensive, but they lowered morale and distracted employees from their normal responsibilities, the congressional report concluded.

"The employees complained that the Forest Service did not do the necessary upfront planning nor provide sufficient guidance to ensure [competitive sourcing] was implemented efficiently and effectively," the report stated. "As a consequence, they noted there was frustration, duplication of efforts, and time diverted from accomplishing their work."
The agency had to postpone some projects in fiscal 2003, including a $300,000 effort to redesign Newberry National Volcanic Mountain visitor center in Oregon, partly because of the demands of competitive sourcing, according to the congressional report. "The employees also reported increased stress and more overtime, limited managerial time spent on strategic planning and oversight, as well as deferred or incomplete maintenance," the investigators noted.

"These findings absolutely concern us," said an OMB official who asked to remain anonymous. "By failing to initiate competitions in a thoughtful and reasoned fashion, the Forest Service missed opportunities to improve performance and save taxpayer dollars."

Forest Service Botanist Wins Coveted Windler Award

The Richard and Minnie Windler Award was established in 1990 at the annual meeting of the SABS by Dr. Donald R. Windler of Towson University as a memorial to his parents. The award is presented annually to the author or authors of the best systematic botany paper published in *Castanea* during the previous year. The eligible papers may fall into the broad area of plant systematics, including floristic, experimental, revisionary, and nomenclatural studies. Each year the recipients of the award receive a framed certificate and a monetary prize. The monies are provided by an endowment managed by the society. The papers receiving the award are chosen by a committee comprised of *Castanea* systematic botany editors after they have completed their terms as editors.

The 2003 Windler winners are Phil Hyatt (USDA Forest Service, Southern Regional Office) and Rob Downer for their paper “RG Downer, and P E Hyatt. 2003. Recommendations Concerning the Identification of Carex retroflexa and Carex texensis (Cyperaceae; Section Phaestoglochin Dumort) Castanea 68: 245-253”

Find out about other Windler Award winners at: http://www.newberrynet.com/sabs/Awards/WinAwd.htm
Continuing Education News

Continuing Education for Natural Resource Professionals
The annual spring nomination period is underway! Visit the program website for detailed workshop information, contacts, downloadable brochure and formal announcements. http://www.fs.fed.us/biology/education.

Hard copies are in the mail to Line Officers with routing slips. Please help spread the word -- rumor has it that some people have never heard about this program! Hard to believe.

Contact: Shelly Witt, National Continuing Education-WFW Program Leader
Phone: 435-753-4838
Email: switt@cc.usu.edu (read daily) switt01@fs.fed.us (read weekly)

National Botany Program Highlights
What’s going on with Botany in the Washington Office?

.rectangular icon The Forest Service Washington Office Botany Program has been transferred from the Watershed, Fisheries, Wildlife, Air and Rare Plants Staff to the Range Staff.
.rectangular icon The annual meeting of Regional Botany Program Leaders was held in San Diego, California along with the national wildlife and vegetation ecologists meeting.
.rectangular icon Attended the Remote Sensing Service Center annual meeting.
.rectangular icon Attended Invasive Species Issue Team meetings.
.rectangular icon Attended Federal interagency Plant Conservation Alliance meeting.
.rectangular icon Hosted the leadership of the Garden Club of America meeting with Forest Service Chief Bosworth.
.rectangular icon Assisting APHIS with information related to petition to deregulate genetically modified Agrostis stolonifera.
.rectangular icon Trudging through another Forest Plan Appeal Review…
.rectangular icon Participated in GAO Audit related to invasive plant species.
.rectangular icon Still working on the Draft National Native Plant Materials Policy.
.rectangular icon Am working with the Wildlife Management Institute on invasive plants.
.rectangular icon Met with the Native Seed Trade Association
.rectangular icon Met with National Network of Forest Practitioners.
.rectangular icon Made a Celebrating Wildflowers presentation at the US Botanical Garden.

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 June 2004, there are four open Forest Service line officer positions

<table>
<thead>
<tr>
<th>Date</th>
<th>Job Title</th>
<th>Agency</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jun 14, 2004</td>
<td>BOTANIST</td>
<td>Agriculture, Forest Service</td>
<td>US-FL-SILVER SPRINGS, FL</td>
</tr>
<tr>
<td>Jun 14, 2004</td>
<td>BOTANIST</td>
<td>Agriculture, Forest Service</td>
<td>US-FL-SILVER SPRINGS, FL</td>
</tr>
</tbody>
</table>

32
<table>
<thead>
<tr>
<th>Date</th>
<th>Position and Title</th>
<th>Service</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jun 10, 2004</td>
<td>BOTANIST</td>
<td>Agriculture, Forest Service</td>
<td>SPRINGS, FL</td>
</tr>
<tr>
<td>Jun 10, 2004</td>
<td>BOTANIST</td>
<td>Agriculture, Forest Service</td>
<td>US-OH-PEDRO, DC</td>
</tr>
<tr>
<td>Jun 8, 2004</td>
<td>Botanist</td>
<td>Army Corps of Engineers</td>
<td>US-LA-New Orleans</td>
</tr>
<tr>
<td>Jun 8, 2004</td>
<td>Botanist</td>
<td>Army Corps of Engineers</td>
<td>US-LA-Lafayette</td>
</tr>
<tr>
<td>Jun 1, 2004</td>
<td>Threatened, Endangered and Sensitive Plant and Animal Species Program Manager (Interdisciplinary)</td>
<td>Agriculture, Forest Service</td>
<td>US-UT-Ogden</td>
</tr>
<tr>
<td>May 21, 2004</td>
<td>BOTANIST</td>
<td>Agriculture, Forest Service</td>
<td>US-CA-ARCADIA, CA</td>
</tr>
<tr>
<td>May 20, 2004</td>
<td>BOTANIST (NATIONAL ECOSYSTEM PLANNING SPECIALIST)</td>
<td>Agriculture, Forest Service</td>
<td>US-DC-Washington</td>
</tr>
<tr>
<td>Apr 28, 2004</td>
<td>District Resource Officer (Interdisciplinary)</td>
<td>Agriculture, Forest Service</td>
<td>US-CA-Los Angeles County</td>
</tr>
<tr>
<td>Apr 28, 2004</td>
<td>District Resource Officer (Interdisciplinary)</td>
<td>Agriculture, Forest Service</td>
<td>US-CA-Los Angeles County</td>
</tr>
<tr>
<td>Apr 12, 2004</td>
<td>BOTANIST</td>
<td>Agriculture, Forest Service</td>
<td>US-CA-EUREKA, CA</td>
</tr>
<tr>
<td>Feb 5, 2004</td>
<td>BOTANIST</td>
<td>Agriculture, Forest Service</td>
<td>US-CA-YREKA, CA</td>
</tr>
<tr>
<td>Oct 1, 2003</td>
<td>BOTANIST</td>
<td>Navy Field Offices</td>
<td>US-Southwestern States</td>
</tr>
<tr>
<td>Oct 1, 2003</td>
<td>BOTANIST</td>
<td>Navy Field Offices</td>
<td>US-Western &amp; Pacific States</td>
</tr>
</tbody>
</table>

**Banner Plant: Abronia umbellata**

Each month, a different plant graces the banner of *Lingua Botanica.*
This month’s natural history comes primarily from CalFlora.net

* Abronia umbellata* was the first plant described from the west coast of North America (1791). Beach sand verbena is a prostrate, somewhat succulent perennial with few to many slender, glabrous to glandular-hairy stems and opposite, ovate to diamond-shaped leaves on stems ± as long as the leaf blades. A member of the coastal strand plant community, sand verbena is typically found on beaches and sand dunes near the coast from San Diego Co. north to British Columbia. The flowers are in clusters subtended by 5-8 rose-colored lanceolate bracts. There are no petals, and the five calyx lobes are in turn cleft into two lobes, making it appear that the plant has ten petals. The limb of the perianth is rose to bright magenta with a central whitish spot and the tube is green or red and glandular-pubescent. The one pistil and three stamens are included within the tube. *A. umbellulata* hybridizes with several other species of *Abronia*, including *maritima*
After-Image: Sleeping with Abronia
Image by Andrew Kratz, from Torrey Pines State Park, California, April 2004

A former field botanist shares a special moment with a gentle and understanding Abronia.

The opinions expressed in Lingua Botanica are not necessarily those of the USDA Forest Service or the editor. The USDA prohibits discrimination in all its programs and activities. Share your copy of Lingua Botanica with your friends and family. Contributing submissions are always welcome.

Share your knowledge. It’s a way to achieve immortality.

Lingua Botanica is archived at http://www.fs.fed.us/biology/resources/pubs/plants/index.html
The Forest Service National Botany Program is at http://www.fs.fed.us/biology/plants/index.html
To subscribe to the Lingua Botanica, send an email to Wayne Owen at <wowen@fs.fed.us>.

ॐ