



Lingua Botanica

The National Newsletter for FS Botanists & Plant Ecologists



‘The joy of the flower is immense. Her secrets might never be fully known, but through her, one can know the beauty of the infinite mystery.’

Essayist and author Andrei Condrescu wrote this elegant declaration (paraphrased here) for Giacomo Casanova in a recent novel (*Casanova in Bohemia*, Free Press, 2002). They are charming words penned by a modern subversive, attributed to one of history’s more infamous subversives. Some of the most beautiful words and images ever put to paper, and some of the most impassioned and inspirational ideas ever conceived have flowed from the minds of subversive men and women. You need not agree with the lifestyle of people like Casanova (or Picasso, Kahlo, John Lennon, Colette...) to appreciate the brilliance of their artistic and intellectual accomplishments. But isn’t subversion a bad thing? Absolutely not. Dangerous? Yes, but definitely not bad. Subversion is a strategy we must sometimes ply, when the *old* way of doing things isn’t working and there appears to be no conventional path around an untenable problem. Of course, being a subversive and a loyal, dedicated part of the team can be a difficult balancing act. Difficult but not impossible. Can you design a subversive timber sale? Damn straight. Can you subvert the old seed mix and eliminate sericea and smooth brome? Others have, you can too! The only sure way around this conundrum is to throw yourself, heart and soul, into the system you hope to subvert and make your subversion an act of love. Of course, you have to be in the right place at the right time to commit your acts of subversive love. Ask yourself today, are you a subversive at heart, and if you are, are you in the right place to move Mohammad’s mountain or are you doomed by your situation to Sisyphusian frustration? It’s not enough to have good ideas, its not enough to have an active imagination, its not enough to know better than someone else. You have to be able to materialize your dreams, to bring your particular subversion into the world so that everyone, or at least we all can enjoy the immense joy of the blossoms of your ideas. There are no comfortable or sedentary subversives.

the editor.

In this Issue

Vol. 4, Issue 4 2003

Linkiana.....	2
Your Botany Stories are Still Needed!	2
NatureServe and the Forest Service Sign National MOU	3
Wildlife Habitat and Plant Management Workshop.....	3
Reader Contribution – The Hand of Man.....	4
Listed Species News	5
California Fires Threaten Endangered Butterflies.....	7
Rare Plants Damaged in Croatan (North Carolina).....	8
Military Gets Break from Environmental Rules.....	9
Orchid Grower Indicted!.....	11
<i>Carex acutiformis</i> – Cryptic Invasive Sedge.....	12
Curb on GM Crops in Europe.....	15
Old Maids and Bumblebees.....	16
Computer Age at National Botanic Garden.....	16
Bryo-book Bonanza at NYBG.....	16
Moss Bank Prepares for First Withdrawl.....	19
Boom in Use of Natural Products.....	20
Plants as Symbols	22
National Botany Program Highlights.....	23
Federal Botany Jobs.....	24
Banner Plant: <i>Ribes sanguineum</i>	2x
After-Image: Some fungus, huh?.....	2x

Linkiana

New Employee's Orientation: New to the Forest Service? Know someone that is? Do yourself or them a favor and direct your browser to http://fsweb.wo.fs.fed.us/hrm/ct/neo_home

Native Seed Network: Advocates for native plant materials.
<http://www.nativeseednetwork.org/home/index.php>

Wildland Shrubs of the United States: The best single source for natural history and growing requirements for just about any shrub you can think of. It's encyclopedic!
http://www.fs.fed.us/global/iitf/wildland_shrubs.htm

Nature Conservancy Magazine: Selections from the print edition of TNC's magazine. The Winter issue features a photo essay on prairies.
<http://nature.org/magazine/index.html#>

Lewis and Clark as Naturalists: Lewis and Clark's contribution to natural history
<http://web4.si.edu/lewisandclark/index.html?loc=/lewisandclark/home.html>

Checklist of Japanese Lichens: Can you say circumboreal distribution? Check it out.
<http://home.hiroshima-u.ac.jp/lichen/cklist.htm>

IUCN Red-List Now Includes Lichens: Including two North American species.
<http://www.iucn.org/themes/ssc/RedList2003/English/profilesEn.htm>

Invaders Database: Find out which invasive species live near you! Plus dozens of other uses, check out the invaders database today.
<http://invader.dbs.umt.edu/query1.asp>

Your Botany Stories Still Needed!!

An upcoming issue of *Lingua Botanica* will be dedicated to your stories about botany, about botanizing, about your motivation to become a botanist, and about the wonders you've encountered while doing your botany job. Stories are one of the most important ways that we transfer knowledge and understanding, and they are the best way to explain to others the pleasure and awe we share for plants.

You need not be a Forest Service botanist to contribute. If you've had an enlightening or transformative or just funny experience related to botany, we want to hear about it. You don't have to be an eloquent writer to participate, just be honest.

Keep it clean (this is a family publication), pseudonyms are acceptable if you prefer, make sure anyone mentioned in your story is okay with what you say about them (don't slander or embarrass anyone), and your stories may be used in other FS publications. There is no minimum size, but try to keep your tales to less than two pages.

Submit your stories to the editor wowen@fs.fed.us

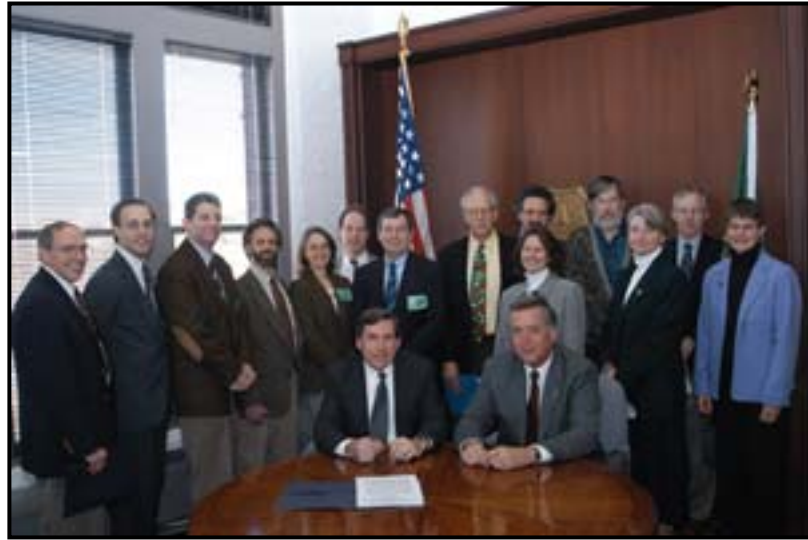
Forest Service Chief Signs First National MOU with NatureServe

<http://www.fs.fed.us/news/2003/releases/12/nature-serve.shtml>



On Friday, 12 December 2003 Forest Service Chief Bosworth and NatureServe President Mark Schaefer signed a memorandum that defines the cooperative relationship between the Forest Service and NatureServe, the organization that encompasses State Natural Heritage programs throughout the U.S. and the rest of the Americas. In remarks preceding the signing, Chief

Bosworth spoke about the value of the information resources that NatureServe brings to Forest Service work and planning. President Schaefer expressed thanks to the entire Forest Service organization for more than 25 years of support for NatureServe and the Heritage Programs. Forest Service botanists are encouraged to go out and hug their local Heritage botanist!



Wildlife Habitat & Plant Management Workshop

Shelly Witt, 435-753-4838 or switt@cc.usu.edu or switt01@fs.fed.us

Did you hear? The dates are moved from fall to spring for the *Wildlife Habitat & Plant Management* workshop – hosted this year at Northern Arizona University (Flagstaff AZ). It is now **March 23-April 1, 2004!** It has received great reviews. Dr. Carol Chambers & Cadre make sure everyone has fun & learns! Field trips actually relate to the topics – a weekend trip to the Grand Canyon (optional) – interactive learning (not talking heads). For details (agenda, travel info, etc) visit the workshop website: <http://www.fs.fed.us/biology/education/workshops/WHPM/index.html>

The tuition is \$2,200 (includes lodging, meals, materials, travel to Grand Canyon, etc.) It sounds expensive, but break down the numbers and it is a screaming deal. Sign up now! Bring a colleague from another agency.



From the Brunswick (MD) Herald Newspaper, 23 October 1903
Chestnuts are coming into town from the mountains, somewhat wormy, but selling at 3 quarts for 25 cents, very readily.

The Hand of Man

David R. McAdoo, Native Orchid Conference

Over the years there have been many articles written about the impact that man has had on orchid habitat and populations. There is no question that plowing mid-western prairies into wheat fields, strip mining for coal in the mountains of eastern Kentucky, or draining the costal plains of North Carolina for golf courses are examples of the negative. But believe it or not, there are times when the “hand of man” can help to provide a habitat that encourages our native orchids to grow. This is the case of an area in North Carolina near Grandfather Mountain.



About six or seven years ago the side of a small mountain was cut away in order to make room to build a shopping center. The cut-away slope behind the grocery store that was built there is a hundred feet or so high.

I had been told by a friend that



this hillside was so covered with *Spiranthes cernua* that when he first saw it he thought that there was a frost on the ground! This year (2003) we have had a great year of rain after several drought years, and it has led to a great year for blooms. In spite of that, I was a little skeptical about his report. The friend (who shall remain nameless) has been known to exaggerate.

As you can see from the pictures included with this article, I should have had more faith in my friend. He was right about the massive blooming!

Apparently the habitat created by the construction has been favorable for the plant. I suspect that over future years as the vegetation gets denser the population will decline, but in the meantime, this is a glorious sight to see. I didn't do a very scientific count of the plants, but I suspect that there were several thousand of the orchids in bloom during this mid October visit to the man-made hillside.

Threatened *Eriastrum hooveri* Recovered

http://www.ca.blm.gov/bakersfield/hover_s_woolly-star.html

Hoover's woolly-star (*Eriastrum hooveri*) – a California native plant listed as a threatened species for 13 years – has been recovered and no longer needs the protection of Federal law, the U.S. Fish and Wildlife Service announced today.

This action is based on the discovery of new populations of Hoover's woolly-star and recovery actions that contributed substantially toward meeting delisting criteria. Recovery criteria for Hoover's woolly-star were outlined in the "Recovery Plan For Upland Species of the San Joaquin Valley, California," released in 1998.

The management practices of, and commitments by, the U.S. Bureau of Land Management – on whose land a substantial number of the new populations have been found – will afford adequate protection to the species upon delisting. Following delisting, BLM will designate Hoover's woolly-star as a "sensitive species" to provide for continued protection and monitoring of the species on BLM lands.

"Only those species needing protection should remain on the Federal list of threatened species," said Wayne White, field supervisor of the Sacramento Fish and Wildlife Office. "We are working with the BLM to ensure that this plant never needs to be listed again."

Hoover's woolly-star is an annual herb in the phlox family with gray fuzzy stems and tiny white to pale blue flowers, which are nearly hidden in tufts of wool-like hair. These plants can grow up to 8 inches tall. Hoover's woolly-star tends to prefer open areas with low plant density in silty to sandy soils. Populations of this plant in the San Joaquin Valley occur along the valley's hilly margins, at elevations of between 300 and 3,000 feet.

When it was listed in 1990, Hoover's woolly-star was known to exist at only 19 sites in San Luis Obispo, Kern, Fresno, and Santa Barbara counties in California. Over the last decade, biologists working on recovery for the species succeeded in locating additional populations in Kings, Los Angeles and San Benito counties.

Recovery efforts have also resulted in the discovery that the plant is more resilient and less vulnerable to disturbance activities than previously known. And protection has been achieved through the cooperation of Federal, State, and private entities that own more than 286,000 acres of Hoover's woolly-star habitat.

The Hoover's woolly-star delisting is a final action. The Service proposed the delisting on March 6, 2001, and solicited scientific peer review of the proposal. The Service based the final decision on the best available scientific information.

***Lesquerella filiformis* (Missouri bladderpod) Downlisted**

http://midwest.fws.gov/angered/plants/mo_blad/bladderp_recfs.html

Once a species facing extinction, the Missouri bladderpod now has a bright future due to efforts by concerned people.

The Missouri bladderpod, named for its bladder-like seedpods, was listed as endangered in February 1987. Progress toward recovery led to its reclassification to threatened in September 2003. It is a short (about 8 inches high) annual plant with

beautiful yellow flowers that bloom from April through May. The bladderpod survives hot Missouri summers as seeds that germinate in fall when the temperature drops. The plant spends winter as a small cluster of leaves. In spring, stems and flowers develop, seeds are produced and shed, and the life cycle starts over again.

Missouri Bladderpod and Glades

The Missouri bladderpod is a species that inhabits glades. The word glade comes from the Old English word “glad,” meaning a shining place. In the Ozarks, glades are truly “sunlit islands” in the forest. A parklike bench on a hillside where the bedrock is exposed or nearly so, a glade resembles a miniature prairie perched among the hills. The old-timers referred to a hilltop glade, or “knob,” as a bald, a word that describes the glade’s most recognizable characteristic: treeless and brushless.” (Modeland, P. R. Glades: Sunlit Islands in the Hills. <http://www.runningriver.com/>)

In Missouri and Arkansas there are six different types of glades depending on the underlying bedrock: limestone, dolomite, sandstone, chert, igneous rock, and shale. The Missouri bladderpod is found primarily on limestone glades (although there is one collection from a dolomite glade in Arkansas).

Because glades tend to be hot and dry, some of the animals and plants found there are more typical of southwestern deserts including scorpions, tarantulas, collared lizards and prickly pear cacti. Other plants inhabiting glades include those that are more typical of prairies, such as big and little bluestem, Indian grass, Indian paintbrush, prairie larkspur, purple coneflower, and blazing stars. Historically the open nature of glades was a result of being frequently burned by lightning-caused fires or fire set by Native Americans. Today, glades must be actively managed to maintain their unique plant and animal communities.

Typical of most endangered species recovery efforts, conservation of the Missouri bladderpod results in conserving the natural community and habitat associated with this species. The species occurs primarily on limestone glades that have a varied array of plant and animal life.

***Berberis sonnei* (Truckee barberry) Delisted**

http://sacramento.fws.gov/ea/News_Releases/Truckee_Barberry_Delisting.htm

Truckee Barberry (*Berberis sonnei*) is a small, colonial evergreen shrub in the barberry family and is known from one location along the Truckee River in the town of Truckee in Nevada County, California. The U.S. Fish and Wildlife Service listed the Truckee barberry as an endangered species on November 8, 1979, citing urbanization, further modification of streamside habitat, removal of plants for ornamental use and low seed set and seed viability as major threats to the plant's continuing existence.

However, recent work by plant taxonomists indicates that this species is not distinct from a common variety of barberry that ranges from the mountain of southern California north to British Columbia and Alberta and east to the Great Plains. Various recovery activities have taken place including propagation in a botanic garden and the taxonomic evaluations that resulted in its being considered as "synonymous" with the more common barberry.

California Fires may Threaten Endangered Butterflies

Robert Jablon, Associated Press Writer, San Francisco Gate, 7 November 2003

The wildfires that ravaged San Diego County have proven deadly to some of its smallest inhabitants -- fragile, endangered butterflies that live in the coastal regions and mountains and virtually nowhere else.

Probably thousands of butterflies were killed in the fires because they were in the egg or larval stage and unable to fly away, researchers said. The populations were already squeezed by development, and whether the fire will become a path to extinction for the insects or a chance to expand into new habitat is still unknown.

State and federal wildlife officials are only now beginning to canvass the huge burn areas to see if anything survived. It could take a year or two to determine whether the butterfly populations can rebound.

"It's just kind of a wait-and-see. ... There's just a huge amount of area that's been burned," said Dan Marschalek, a University of California, San Diego, graduate student working with the state Department of Fish and Game.

Would losing a species or two matter? It would to butterfly lover and biologist Michael Klein, who visited the area on Friday. It would be tragic, Klein said, because butterflies are beautiful.

"Ask that question to an architect," he said. "'Well, it's only the Eiffel Tower. So what if it gets knocked down?'"

The fires charred some 400,000 acres of trees, chaparral and coastal sage scrub, but wildlife officials hope the fires burned in a typical mosaic pattern, leaving islands of vegetation.

"That is likely to serve as a refuge for species until new plant growth begins in the winter and spring," said Chamois L. Anderson, a spokeswoman for Fish and Game. "We have high hopes that they're going to be OK."

But entomologist David Faulkner said he saw only desolation on a recent visit to a fire site.

At one site, a federally listed endangered variety called the Quino checkerspot was hit with a "double whammy" when crews set a backfire in an effort to halt the wildfire.

"Don't step on that butterfly.' I'm sure you're going to tell that to a firefighter or someone who's home is threatened," Faulkner said.

Out of San Diego County's 150 varieties of butterflies, the main threat is to a few that have limited ranges.

The Thorne's hairstreak, an inch-wide brownish butterfly that gleams with blue-green iridescence in sunlight and has two hair-like extensions to its hind wings, is found only on Otay Mountain, which straddles the Mexican border.

Almost the entire mountain was burned, and with it the Tecate cypress trees the insect needs. The trees have evolved to release large quantities of seed after blazes, but the butterflies use only mature trees.

Klein visited the 2,600-acre Crestridge ecological preserve near El Cajon on Wednesday. It was home to 400 Hermes copper butterflies.

"Nothing," he said. "It's gone."

The small brownish-yellow insect lays eggs on only one kind of plant, the spiny redberry, and makes its home only in the county and parts of neighboring Baja California. Before the fires, less than a handful of colonies, with perhaps 10 butterflies each, had been found on public lands outside of the wildfire areas.

"I'm guessing up to 90 percent of the Hermes copper population got destroyed in the fires," Klein said. "It's scary."

Even if they survive, it could take 25 years for the populations of the two species to rebound, Klein said.

Butterflies whose homes weren't burned aren't out of danger, though. The Harbison's dun skipper likes drainage areas and feeds on a sedge plant. Deer and cattle whose regular rangelands burned may turn to the sedge, or the plant could absorb fire ash or toxins and become deadly to caterpillars, experts said.

On the other hand, scorched areas often rebound with lush growth of local plants, and butterflies such as the gray hairstreak that eat a variety of annual plants could thrive.

"They have over 200 species of plants that they use," Klein said. "They could even be rebounding and doing well."

Rare Plants Damaged in Croatan

Patricia Smith, New Bern Sun Journal, 1 November 2003

<http://www.newbernsunjournal.com/Details.cfm?StoryID=11940>

Miscommunication between the Croatan National Forest and the North Carolina Wildlife Resources Commission led to the disturbance of rare plants on a state Natural Heritage site this past spring.

Forest officials do not know how badly the plants were affected by the disc plowing that occurred, but they are working on a restoration plan, said Croatan District Ranger Lauren Hillman.

"This in no way happened intentionally," Hillman said. "Basically we had two agencies making different assumptions on the same two acres."

The Wildlife Resources Commission had been working with the National Wild Turkey Federation to plant turkey forage in a power line right of way in the Croatan, said Kate Pipkin, commission public information biologist. The commission had a written plan for the activity that it at least thought Croatan officials had signed off on, she said.

"We didn't know that underneath the power line was a Natural Heritage site," Pipkin said.

The site, about two acres near Little Road on the northern side of the forest in Craven County, contained three types of plants listed as state protected species, but not considered federally threatened or endangered. The yellow fringeless orchid is considered more imperiled than the other two plants, Hooker's milkwort and coastal plain false-foxtail, said Forest Service ecologist Mike Brod.

"We really don't know right now exactly how badly these plants were affected," Hillman said.

Croatan officials are hammering out a recovery plan that calls for first monitoring the site to determine the abundance of the rare species, then cultivating seedlings of the rare plants that can be set back out to grow, Brod said. After these populations have been

re-established, forest officials will then burn the area to reduce the non-native species and provide more favorable conditions for the native ones, he said.

The Wildlife Resources Commission has also obtained maps of the state's Natural Heritage sites, Pipkin said.

Both agencies are working cooperatively to investigate the matter, said Wib Owen, chief of the Wildlife Resources Commission's Land Management Section.

"We'll figure out exactly what happened so it won't happen again," Owen said.

Scot Waring, staff ecologist with the Southern Appalachian Biodiversity Project, called the Croatan plan a step in the right direction, though it would have been better if the plants had been protected before the disc plowing happened.

"As far as we can tell right now the population has been, if nothing else, set back," Waring said.

If the plants were not protected because of a misunderstanding, then the recovery plan should include guidelines for communication between agencies, Waring said.

Hillman said that because the plants are not federally protected species, no penalties apply.

Military gets Break from Environmental Rules

Brad Knickerbocker, Christian Science Monitor, 24 November 2003

With two wars in two years and the threat of terrorism likely to continue, the US military wants all the help it can get in protecting national security. It is an ideal time, supporters say, to reduce the government regulations that can make it harder to be "mission-ready."

For others, however, this politically popular goal conflicts with long-standing values. Specifically, the Department of Defense authorization bill that President Bush is scheduled to sign Monday eases the military's responsibility under two important environmental laws.

The bill allows the Navy to redefine "harassment" under the Marine Mammal Protection Act, making it easier to use low-frequency sonar suspected of harming whales and dolphins. The Pentagon's \$401 billion authorization bill for the 2004 fiscal year also exempts military bases from stringent habitat-protection requirements under the federal Endangered Species Act.

In addition, the Pentagon, as it has in the past, is seeking exemptions to the Clean Air Act, the Resource Conservation and Recovery Act (which governs hazardous waste), and the Superfund Act responsible for cleaning up toxic-waste sites around the country. Last year, an exemption to the Migratory Bird Treaty Act was granted the military as well.

The scope of the issue is enormous. The Defense Department oversees some 25 million acres of military bases and other training facilities. The military's pollution problems - including corroding bombs and rockets, and old chemical munitions now outlawed - date back over a century.

Over the years, military facilities have come to include 131 hazardous-waste sites on the federal Superfund priority list. They are also home to more than 300 threatened or

endangered species. Ironically, the pressures of nearby urban development (especially in places like southern California) have turned military ranges into prime habitat.

"As a member of the Armed Services Committee I have heard many times how endangered species affect the activities of our military," says Sen. James Inhofe (R) of Oklahoma, who also chairs the Senate Environment and Public Works Committee. The US Marine Corps' Camp Pendleton in southern California, for example, is home to 18 listed species - from the bald eagle to the Riverside fairy shrimp.

Meanwhile, officials say, newer war-fighting equipment, like aircraft and tracked vehicles, and modernized force structure - part of the much-vaunted "military transformation" - demand more space to practice combat.

In congressional testimony, senior military commanders and Pentagon civilians have warned that combat units are finding it harder to "train like we fight" - the military mantra for achieving readiness. This year, Defense Secretary Donald Rumsfeld warned lawmakers that without waivers to environmental laws, "We're going to end up sending men and women into battle without the training they need."

Lawmakers asked the General Accounting Office, Congress's investigative arm, to look into the issue. The result of that study, according to the GAO, "showed that very few units reported being unable to achieve combat-ready status due to inadequate training areas." Still, the GAO cautioned, "Over time, the impact of encroachment on training ranges has gradually increased ... exacerbated by population growth and urbanization."

That increasing encroachment on military training ranges - especially at a time when US military men and women are being killed and wounded in Iraq - is a strong argument for lawmakers who have been wanting to weaken or even do away with the Endangered Species Act.

Making a case for giving the Navy a break under the Marine Mammal Protection Act may be harder. Many marine biologists believe that the Navy's powerful sonar systems seriously affect and in some cases permanently damage the animals' means of communication and navigation, sometimes driving them into a frenzy in which they beach themselves and die.

Three years ago, 16 beached whales were found in the Bahamas after the Navy conducted sonar exercises in the vicinity. Seven died - apparently the victims of severe sound pressure that caused cranial hemorrhaging. Whales also beached themselves shortly after exercises in Greece, California, and the Canary Islands.

"Exempting the Pentagon from these laws will allow the military to threaten whales, dolphins, and other marine mammals with sonar and underwater explosives, and destroy the habitat of the endangered birds and mammals that live on the 25 million acres it controls across the country - with next to no environmental review," says Karen Wayland of the Natural Resources Defense Council.

In recent years, the Defense Department has spent billions cleaning messes and adjusting its way of doing things to account for a new environmental ethic. "To its credit, the Defense Department has a leadership record in several areas of endangered-species conservation," says John Kostyack, senior counsel with the National Wildlife Federation. "It can build on that record without altering the Endangered Species Act, while fulfilling its primary mission without compromise."

Orchid Grower is Indicted

Associated Press , 2 December 2003

Tampa, Florida - One of the most prized orchid discoveries in years has led to a federal smuggling indictment of the southern Fauquier County (Virginia) nursery owner who brought the flower into the United States.

After a year-long investigation, a Tampa grand jury indicted James Michael Kovach of Goldvein (Florida) on charges of smuggling and illegally possessing a rare Peruvian orchid now named for him: *Phragmipedium kovachii*.

Kovach, 48, has not been taken into custody. His mentor, Miami orchid expert Lee Moore, said Kovach was unaware of the Nov. 19 indictment. A woman who answered the phone last Thursday at Kovach's home in Goldvein declined to comment and hung up.

If convicted, Kovach could face up to six years in prison and fines of up to \$350,000.

The indictment against Kovach marks the first criminal charges in the investigation, launched soon after Marie Selby Botanical Gardens in Sarasota, Fla. trumpeted Kovach's find in June 2002.

"It's a rich, brilliant red purple. Big, round, well-shaped -- it apparently has no odor -- and one flower per stem seems to be the rule," the gardens' curator described the new find at the time.

The indictment said that Kovach transported, concealed and sold one or more protected orchid specimen, specifically of the genus *Phragmipedium*, commonly known as Tropical lady's slipper orchids. Those species are protected under the Convention on International Trade in Endangered Species of Wild Fauna and Flora.

Although the indictment says Kovach's documents did not include the required permits for endangered plants, former Selby employee John Atwood said, "We were satisfied his paperwork was in order."

According to an account Kovach wrote for an orchid collector newsletter, he spotted the new species at a roadside stand at a crossroads called El Progreso, near Myombomba in northern Peru.

Moore called it "the Holy Grail of orchids." He said he advised Kovach to take the discovery to Selby without the special permits required to ship rare and endangered flowers across international borders.

Kovach flew to Miami with the orchid in his luggage and drove to Sarasota on June 5, 2002. There, according to the indictment, Selby employees "accepted one or more" specimens from Kovach and agreed to name it for him.

A Selby spokeswoman said that board members had not seen the indictment.

Selby employees rushed into print a scientific description of the plant, winning worldwide publicity in orchid circles. The staff also beat a rival, former Selby employee Eric Christenson, who was on the verge of publishing his own description of the flower.



***Carex acutiformis* – Dominance of a Cryptic Invasive Sedge at Ottawa**

Paul M. Catling and Brenda Kostiuk, Agriculture and Agri-Food Canada, catlingp@agr.gc.ca

How would anyone know that a solid stand of sedge was entirely alien? After all, there are relatively few invasive alien sedges, and many native sedges do form more or less monospecific stands. Furthermore how many field biologists can recognize sedges? Even experts are less likely to recognize a species that is unknown in their region and consequently not covered in regional literature. European Lake Sedge (also called Lesser Pond Sedge, *Carex acutiformis* Ehrh.) is a case in point. It was first noticed in Canada when a specimen originally misidentified as *Carex aquatilis* was correctly identified by sedge expert A.A. Reznicek (Univ. of Michigan). This plant was collected in the Stony Swamp near Ottawa on 10 June 1987 and again at the same location on 6 June 1989 (specimens in the Agriculture and Agri-Food Canada herbarium, Central Experimental Farm, Ottawa).

A rare introduction in North America, European Lake Sedge was one of a number of invasive aliens of the Ottawa District highlighted during the Ottawa workshop on invasive species hosted by the Ottawa Stewardship Council in May 2003. It was highlighted as a serious invasive from Europe that is unique in Canada to the Ottawa District. It is also known from six states in the northeastern U.S. (Reznicek & Catling 2002). During the workshop one of the important points that emerged was that people need information in order to participate in the monitoring and management of invasive alien plants. The most needed information is how to identify the invasive plant and this is particularly important for species that may be readily mistaken for natives. Next is the location and how much of it there is as well as biological information on spread and dominance. This kind of information has been requested on several recent occasions for the European Lake Sedge at Ottawa. Since it is an alien that could be easily overlooked, and may even now be more prevalent than we realize, the following information may be useful anywhere in North America.

Identification of European Lake Sedge

Among the large group of sedges (genus *Carex*), European Lake Sedge is distinctive in its possession of more than one spike on a stem, 3 stigmatic branches, and 3-sided fruits within a non-hairy perigynium and a persistent style at the top of the fruit. The perigynia are coarsely 12-18-nerved, 3-4.5 mm long, with a beak 0.3-0.6 mm long and teeth 0.2 mm long. The upper spikes are either entirely staminate, or pistillate at the base and staminate above. European Lake Sedge differs from other members of its section Paludosae in its combination of smooth (instead of hairy) perigynia, leaves moderately broad, 5.5-15 mm wide (instead of less than 5 mm wide) and perigynia relatively short being 3-4.5 mm long (instead of longer).

Of course sedges are notoriously difficult to identify, but some are easier than others. European Lake Sedge is relatively easily identified if one knows what to look for. At close range, it bears a general resemblance to only a few native species. It differs from the Beaked Sedges (*Carex rostrata* Stokes and *Carex utriculata* Boott) in having perigynia with much shorter beaks (less than $\frac{1}{4}$ the length of the perigynia), and the leaves are plicate (M-shaped rather than V-shaped in cross-section) and often only obscurely septate-nodulose (instead of strongly so). This latter term refers to partitions in

the tissue that become raised bumps when the tissue dries out or is compressed). In northeastern North America, European Lake Sedge most closely resembles Tussock Sedge (*Carex stricta* Lam.) and Aquatic Sedge (*Carex aquatilis* Wahlenb.) but differs markedly from both of these in having strongly nerved (instead of nerveless) perigynia (the sac enclosing the fruit of a sedge), three-parted stigmas and three-sided fruits called achenes (instead of a 2-parted stigmas and a two-sided, lenticular fruits). At a distance it also resembles a stand of Lakebank Sedge (*Carex lacustris* Willd.). It differs from Lakebank Sedge, and from other species in its section Paludosae, in its hairless and relatively short perigynia, and moderately broad leaves (5.5-15 mm wide).

Although it appears that it is not yet spreading aggressively in North America, it clearly has the potential to be a very serious invasive and its general resemblance to the native species could allow it to go undetected long enough to become increasingly well established and to initiate a stage of much more rapid spread. Identification and control are thus important issues. Already it may have been overlooked to a degree. Another very helpful clue to recognizing this invasive on the landscape is the fact that the leaves remain green long after the first frost and later in the fall than those of many native sedges. This is a general characteristic of plants of European origin that is shared with other northeastern invasives such as Glossy Buckthorn (*Frangula alnus* Miller) and European Weeping Birch (*Betula pendula* Roth).

Impact and dominance

The 1989 specimen label notes that this alien species "was dominating several acres of moist, open area." In 2003 we visited the site to further evaluate its dominance. It dominated an area of approximately 6 acres of moist open marsh with scattered trees of Tamarack, Eastern White Cedar, White Birch, and American Elm. Along a 3 m wide transect 215 m in length, representing 645 m² quadrats, the sedge had a frequency of 100% and of its surface area (cover) was 100 to 500% of the surface area of each quadrat, with an approximate average of 200%. The very extreme dominance of European Lake Sedge is clear from the frequency and cover values of the native species. A general survey confirmed that the sampled area was representative of the 6 acre stand. In general native species were either trees or confined to more recent mounds produced by ants. Ferns were often present on new currently used ant mounds, and Cinnamon Fern (*Osmunda cinnamomea* L.) appeared to be able to maintain a place on these mounds and possibly to resist encroachment by the sedge as a result of its extensive and dense rhizome development.

An adjacent area of similar elevation and tree cover on the edge of the stand has a diverse natural plant association with many codominants including: *Athyrium filix-femina* (L.) Mertens var. *angustum* (Willdenow) G. Lawson (Northern Lady Fern), *Boehmeria cylindrica* (L.) Sw. (False Nettle), *Calamagrostis canadensis* (Michx.) P. Beauv. (Blue-joint Grass), *Carex* spp. (Sedges), *Cornus sericea* L. (Red-osier Dogwood), *Onoclea sensibilis* L. (Sensitive Fern), *Parthenocissus quinquefolia* (L.) Planchon ex DC. (Five-leaved Virginia Creeper), *Solidago canadensis* L. (Canada Goldenrod), *Solidago rugosa* Aiton ssp. *rugosa* (Rough Goldenrod), *Symphotrichum puniceum* (L.) Löve & Löve (*Aster puniceus* L. var. *puniceus*, Purple-stemmed Aster), and *Thelypteris palustris* Schott var. *pubescens* (Lawson) Fernald (Marsh Fern).

The native species present in the stand of European Lake Sedge are also present in this adjacent diverse native plant association and are likely remnants of this association which was probably displaced by the alien sedge. At least it seems likely that this diverse native association would be present were it not for the dominance of the alien sedge.

Although much of the area it dominates is relatively uniform as described above, the European Lake Sedge at the Stony Swamp site has a remarkable ecological amplitude. It grows in hummocks around open water up to 1 m deep. Here the rhizomes grow out into the water and extend the hummock. There is some evidence that European Lake Sedge may be controlled in wetlands by reduction in water level (Kazda 1995), but at the Stony Swamp site it grows in some relatively dry semi-open areas where the vegetation is dominated by an old field association of *Daucus carota* L. (Wild Carrot) and *Poa compressa* L. (Canada Blue Grass). In these areas the sedge is 100% cover or less, but still dominant up to the edge of the more diverse association.

European Lake Sedge is unusual among sedges in its high canopy and large amount of leaf area (Aerts & DeCaluwe 1994). This allows both photosynthetic carbon gain and suppression of other species in the competition for light. It is a highly productive species in its native range and is characteristic of eutrophic wetlands. Its leaf litter decomposes more slowly than that of other species of sedge (Aerts and DeCauwe 1997). The litter immobilizes more N and P for longer periods than the litter of other species (Corona and Verhoeven 1999). The characteristic dense cover of the current year growth as well as the dense accumulation of litter forming a dense subcanopy were characteristic of the Stony Swamp population. The extreme dominance of this introduced sedge may be attributable to a combination of successful competition for nutrients and competition for light as a result of both dense green cover and smothering by persisting dead leaves from the previous year. The effect of litter accumulation may be greater in base-poor waters (more acid waters over granite or sandstone) due to slower cellulose decay than occurs in base-rich waters (Verhoeven & Arts 1992).

Origin and dispersal

It seems most likely that European Lake Sedge arrived at the Ottawa site in hay from Europe. A number of farms existed in the immediate vicinity which may have introduced hay from Europe. Another more frequent introduced sedge, *Carex flacca* Schreb. (Heath Sedge) occurs nearby in drier pasturelands with many other introduced species. The Stony Swamp area is one of the botanically richest areas of the Ottawa district (Brunton 1982). Substrates include limestone, sandstone and glacial till. The population of European Lake Sedge is on top of a rolling sandstone-capped plateau. It is fruiting abundantly and it appears to be capable of spread of perigynia by both adhesion to a variety of mammals such as beaver and muskrat and ingestion by waterfowl. Since it occurs along a major road in the ditch and along the ditch banks, another potential method of spread is transport of root masses and rhizomes by road maintenance vehicles.

References

- Aerts, R. & H. DeCaluwe. 1994. Effects of nitrogen supply on canopy structure and leaf nitrogen distribution in *Carex* species. *Ecology* 75(5): 1482-1490.
- Aerts, R. & H. DeCauwe. 1997. Nutritional and plant mediated controls on leaf litter decomposition of *Carex* species. *Ecology* 78(1): 224-260.

- Brunton, D.F. 1982. *Stony Swamp Life Sciences. Conservation Studies 5*, National Capital Commission, Ottawa.
- Corona, P.M.E. & J.J.A. Verhoeven. 1999. Biomass allocation and phosphorous productivity of *Carex* species in relation to soil phosphorous status. *Israeli J. Plant Sc.* 47(2): 97- 102.
- Kazda, M. 1995. Changes in alder fens following a decrease in the ground water table: results of a geographical information system application. *J. Applied Ecology* 32(1): 110-120.
- Reznicek, A.A. & P.M. Catling. 2002. *Carex* Linnaeus sect. *_Paludosae_*. Pp. 302-306 in *Flora of North America north of Mexico*. vol. 23. Oxford University Press, New York.
- Verhoeven, J.T.A. & H.H.M. Arts. 1992. *Carex* litter decomposition and nutrient release in mires with different water chemistry. *Aquatic Botany* 43(4): 365-377.

Curb on GM Crop Trials after Insect Pollution

Robert Uhlig, Daily Telegraph; 14 October 2003.

Stringent new rules for trials of genetically modified crops are to be imposed after Government researchers found that insects carried pollen more than six times the distance previously known.

They also found one sowing of GM crops could contaminate non-GM and organic crops for more than 16 years.

The research, published by the Department for Environment, Food and Rural Affairs, came as thousands of people protested in London against GM crops and delivered a 70,000-signature petition to Downing Street yesterday.

On Thursday the Government will publish results of field-scale trials of GM crops. They are expected to show a deterioration in farmland biodiversity among at least two of the three GM crops.

Meanwhile, the row between Europe and America over GM crops moved up a gear yesterday when Margot Wallstrom, the Environment Commissioner, accused US biotech companies of "trying to lie" and "force" unsuitable GM technology on to Europe.

She said public suspicion and fears about the technology had been fuelled by US lobbying tactics.

Whitehall sources said the Government was concerned at a public backlash should it decide to commercialise GM crops after considering the results of the farmscale trials.

Yesterday's findings by Government scientists give further cause for concern as well as grounds to back down on the Prime Minister's favoured plan of licensing GM crops next year.

Scientists at the Central Science Laboratory found that GM oilseed rape had cross-pollinated with non-GM oilseed rape plants more than 16 miles away.

A second study by the Scottish Crop Research Institute found that if farmers grew GM oilseed rape for one season it would take 16 years for contamination by wild GM plants produced by seed from the first planting to fall to below one per cent contamination.

Even at this level, the contamination would not be sufficient for a farmer to sell his crop as GM-free or organic, qualities that demand less than 0.9 and 0.1 per cent contamination respectively.

Pete Riley, GM campaigner at Friends of the Earth, said: "If GM contamination cannot be controlled on test sites, what hope is there if GM crops are widely grown?"

The findings played a part in leading the Government to stipulate new restrictions on test plantings after a biotech company supplied impure, genetically-modified oilseed rapeseed at 12 trial sites.

Elliot Morley, the environment minister, said: "We are determined to have effective systems in place to ensure consumer choice whatever the future of GM in this country."

Old Maids and Bumblebees

A posting from Bryonet by A. Ceska

I heard this bumblebee story attributed to Darwin, but it was not situated in Borneo, nor the Galapagos, but in the Old Good England. Here is the literary rendition of Darwin's findings:



"Well, I suppose your mind will be at rest now," said Felicity. "What's that you have in your buttonhole?"

"That's a four-leaved clover," answered Peter exultantly.

"That means good luck for the summer. I found it in Markdale.

There ain't much clover in Carlisle this year of any kind of leaf. The crop is going to be a failure. Your Uncle Roger says it's because there ain't enough old maids in Carlisle. There's lots of them in Markdale, and that's the reason, he says, why they always have such good clover crops there."

"What on earth have old maids to do with it?" cried Cecily.

"I don't believe they've a single thing to do with it, but Mr. Roger says they have, and he says a man called Darwin proved it. This is the rigmarole he got off to me the other day. The clover crop depends on there being plenty of bumble-bees, because they are the only insects with tongues long enough to--to--fer-- fertilize--I think he called it the blossoms. But mice eat bumble-bees and cats eat mice and old maids keep cats. So your Uncle Roger says the more old maids the more cats, and the more cats the fewer field-mice, and the fewer field-mice the more bumble-bees, and the more bumble-bees the better clover crops."

"So don't worry if you do get to be old maids, girls," said Dan. "Remember, you'll be helping the clover crops."

Source: The Golden Road by Lucy Maud Montgomery (Chapter 16 - Aunt Una's Story)

Computer Age Arrives at National Botanic Garden

Computers controlling gardens' climates allow for horticultural diversity

Sarah Bouchard, The Hill, 7 October 2003

<http://www.hillnews.com/news/100703/garden.aspx>

Rare and diverse plants are sprouting for the first time at the U.S. Botanic Garden because of new technology that automatically controls their environments.

Holly Shimizu, the garden's executive director, estimated that the collection has "increased and improved" by 60 percent since it reopened in December 2001 after a four-

year, \$33.5 million renovation. She called the new computer system “the greatest success of the entire project.”

The Argus Control System-brand technology, which cost about \$300,000, individually controls temperature, light, heat, airflow and humidity in the 11 garden rooms.

The tailor-made environments allow the garden to “grow plants from literally every part of the world,” Shimizu said, adding that before the renovation “we had more common things.”

Formerly, the gardeners “couldn’t be as horticulturally adventurous,” said Christine Flanagan, manager of public programs. She added that the system has “changed our master plans in terms of what we want to grow.”

The garden can now house, for example, a collection of rare and endangered plants from Hawaii, an exhibit that will be on display until Nov. 23. There are also new rooms devoted to medicinal plants and orchids.

Shimizu said she thinks the jungle room and primeval garden, a room featuring ancient plants, are the conservatory’s most improved features.

To create the unique environments, the building responds to several hanging, cylindrical, white sensors in each of the glass-enclosed rooms. When the climate deviates from the pre-programmed norm, the computer turns on a misting system, deploys sun-shielding curtains or increases the room’s temperature as necessary.

Previously, the staff had to perform the same tasks manually. To increase temperature or airflow, the staff had to open the windows with a huge antique crank. For shade, the staff had to paint the outside of the glass roof with whitewash; to remove it, they scraped it off.

“It was a very labor-intensive job,” said John Gallagher, the garden’s operations manager.

Now the 29 person horticultural staff concentrates on more complicated designs and arrangements, Shimizu said. The staff also waters the plants by hand because the garden deliberately lacks an automated watering system.

“We wanted them to have hands-on interaction,” Gallagher said. “We never lost that.”

The staff spent the first year with the computer system learning about the new microclimates within each greenhouse and how to move the plants around accordingly. Staff members now spend a good deal of time grooming, cleaning and washing the plants, Shimizu said.

The computer “doesn’t make their work any less,” she emphasized. “It enables them to work smarter and give more attention to the huge variety that we’re growing.”

Further improving the collection, a new water-conditioning system creates “bottled water” for the plants by sending the hard city water through an ultraviolet filter, Gallagher said. Formerly, the unfiltered water left a “white film buildup ... on everything,” he said.

Alec Mackenzie, manager of the British Columbia-based Argus, said there about 3,500 major conservatories in the country are using similar technology. The U.S. Botanic Garden is in the “top 50 by any measure,” he added.

Argus started developing greenhouse control systems in 1978, and precursors to the garden's system were available in 1985. The Botanic Garden has a fairly recent version, Mackenzie said.

He added that the Washington conservatory differs from most others because it opted for a wireless, Internet-like system that enables staff to walk around the facility with a tablet personal computer and control things on the move.

Argus designed and configured the system at its Canadian offices. When the technology was first installed, Botanic Garden horticultural staff members entered general parameters for the climate of each room into the computer. After about seven months of tweaking, Argus and the garden staff fine-tuned the various environments.

"It's not an off-the-shelf system," Gallagher said.

Argus took about a week to teach the garden staff to use the computer system, but "informally they get little bits of training whenever they need it," Mackenzie said, adding that the technology comes with lifetime support.

"We can call into their system, examine what is going on historically and at present, give horticultural advice and help them make changes," Mackenzie said.

So far, Gallagher said there have been no catastrophic computer failures. He said several functions have had minor problems, but "if you take one out of the system, it's not going to cause a downstream effect" because the functions stand alone.

In case of a power outage, the facility has a large-capacity generator that the staff tests every month. The garden has not had an unscheduled power failure since the renovation, even during Hurricane Isabel, Gallagher said.

The small desktop computer into which all the system processors feed resides in Gallagher's office, which is located in the new office suite at the back of the conservatory. The various processors, which control individual functions such as humidity, air and shade, are located in gray boxes on the sides of the garden's two new wind tunnels.

The east and west tunnels, which narrow to 6-foot-diameter tubes, aerate the plants from the ground through vents. The building's utility wires also run through the tunnels, as opposed to being buried underground, allowing the maintenance crew to see everything, Gallagher said.

"This is something no one sees or knows, but this adds a lot of cost to the job," Gallagher said as the wind whipped through his hair in the east tunnel.

The garden's first greenhouse was constructed in 1842. Since 1849, the garden has been located at the eastern end of the Mall. It has been administered through the Office of the Architect of the Capitol since 1934.

Bryo-book Bonanza from NYBG

Jim Shevock – Posted on Bryonet

For those of you who have or are about to get the bryo bug the following announcement should be of interest. The New York Botanical Garden is drastically reducing the price of several of their bryological publications. You can see the entire listing at <http://sciweb.nybg.org/science2/PressHome.asp>

Anyway, the monumental two volume, profusely illustrated, Moss Flora of Mexico by Sharp, Crum, and Eckel (1994), that retails at \$195, is now going for only FIFTY dollars. The illustrations alone are worth this price. For those of you wanting to learn about CA/NV mosses, this book is definitely a great investment, and the further south you live (toward Mexico) the greater value it will be. In the forthcoming Catalogue of California Mosses and Keys to species (to appear in Madrono 2004 as issues 1 & 2), Dan Norris and I reference bryological publications that offer outstanding illustrations for mosses occurring in California. We cite Sharp, Crum, and Eckel (1994) frequently. So if you are interested in building up a bryoflora library with great illustrations (looks like the Intermountain Flora), this is the moss flora to acquire. At \$50, the backlog availability of this publication of 1,113 pages will not last long! Snooze and you will lose.

You can order directly from NYBG Press via the web cited above or phone at 718-817-8721.

Moss Bank Prepares for First Withdrawals

Frozen plants could replenish endangered wild species.

John Whitefield, Nature News Service, 11 September 2003

British researchers have developed the first tissue bank for conserving rare moss species. They have built up a collection of frozen plants, with the goal of reintroducing them to the wild.

Europe's first reserve for mosses, lichens, ferns and fungi opens next Tuesday. It will double as a testing ground for returning lab-grown moss to natural conditions.

"We've just started thinking about reintroductions - it's taken us three years to get this far," says Margaret Ramsey, a specialist in plant culture and preservation at the Royal Botanic Gardens in Kew, near London.

The UK's damp climate has blessed it with about 1,000 species of moss and their close relatives, liverworts. "Britain is probably the most important country in Europe for mosses and liverworts," says moss expert Alistair Headley of the University of Bradford. "We have a large number of species that are only found here."

Many mosses live at only one or a few sites, making them vulnerable to fires, floods and chemical spillages. Others are being harmed by air and water pollution, habitat loss, and changes in the management of farmland and moorland. "The reservoir at Kew is a very important insurance policy, in case species decline or disappear," says Headley.

Reintroduction studies will soon begin in the new Francis Rose Reserve at the Royal Botanic Garden's site at Wakehurst in West Sussex. Other countries are becoming interested in developing moss banks, says Ramsey: "We've had a lot of international interest."

Making a deposit

Before the mosses are frozen they are treated with chemical pesticides and grown in sterile conditions, to prevent bacteria or fungi from gatecrashing the tissue bank. "It's a fine line between removing contaminants and killing the plant," Ramsey told this week's British Ecological Society annual meeting in Manchester.

Small moss samples, rather like plant cuttings, are then put into suspended animation by plunging them into liquid nitrogen at -196 °C.

The Kew team has frozen, thawed and regrown a dozen British mosses in the lab, including five threatened species. The aim is to bank of all Britain's 50-odd endangered species.

So far only drought-tolerant mosses have responded to treatment - the pre-freezing procedure removes water from the cells, to prevent ice crystals from forming. Ramsey's team is trying to work out how to chill moisture-loving species without killing them.

Boom in Use of Natural Products Leads to Overharvesting

Dawn Fallik, Knight Ridder News Service, 8 December 2003

Mason Vollmer, a gardening teacher at the Kimberton Waldorf School in Pennsylvania, checks on the progress of medicinal plants grown at the school.

Times are good for the botanical industry, what with all the sandalwood soap, cherry-bark conditioner and ginseng gum on store aisles these days.

But all that essential oil and tree bark has got to come from some place, and those places are disappearing as the demand grows.

So in an herbal love triangle, industry, government and academia have come together to teach those at the bottom of the herbal chain -- the pickers and growers -- how to keep their products alive.

Aveda, an Estee Lauder business unit whose hair and cosmetic products are created from flower and plant ingredients, has hired American Indian communities to plant sage and cedar where none existed. A Rutgers University professor is teaching Madagascar farmers about overharvesting. And the U.S. Forest Service has implanted thousands of tracking chips into ginseng plants to prevent poaching.

"These plants have been used for thousands of years. What's made it different is globalization," said James Simon, the Rutgers plant science professor, who spoke at a recent medicinal- and aromatic-plant conference in Philadelphia. "There's a \$17 billion trade in natural products; it's a consumer-driven phenomenon."

Even children are learning the values and needs of medicinal plants. The Kimberton Waldorf School in Chester County, Pa., is working with American Indian herbal specialist Tis Mal Crow, of Cherokee and Hitchiti descent, to plant a 2-acre medicinal and aromatic garden.

"The goal of the garden is first to acknowledge that these plants are valuable and potentially endangered, and by protecting them, they have something to teach us," said Mason Vollmer, the gardening teacher at the school, which received a \$20,000 federal grant for the project. "But he gave me a list of 300-some plants. Some he can send me, but others I have to find, and I'm a little overwhelmed."

Stripping it bare

The overharvesting problem started in the late 1980s when sales of organic and herbal products began to boom, said Wayne Owen, national botany program leader for

the U.S. Forest Service. Saint-John's-wort was in demand for depression, then ginseng for energy and echinacea for colds.

As demand went up, so did the price for the raw goods. At the extreme end, wild ginseng roots, often found in the forests of Pennsylvania and West Virginia, fetched \$400 a pound at market as recently as 1998. Poachers began stealing roots, and many gardeners who had plots started digging up roots without replanting seeds.

Over the past decade, many of the wild roots have disappeared -- leaving only cultivated roots, which sell at a much lower price.

"I spend a lot of time worrying about ginseng conservation. There's so much less and less than there was," Owen said. "In the parks in Tennessee and North Carolina, the foresters have gone so far as to electronically tag individual plants in the forest" to catch poachers.

The problem is exacerbated on a global scale because many of the raw materials are picked by poor people. When company X needs plant Y for its product, harvesters may strip plants bare to bring in the most money.

Organic industries create additional demand because their products need to be certified. Some crops, such as coffee beans, also receive a "Fair Trade" certificate. Some communities cannot handle these additional demands and must sell to middlemen, who handle the certification process, for a lesser price, environmental officials said.

"In the forest service, the marketing and harvesting of trees is very strict. There's a very small chain from the people who chop the tree to the company," Owen, the U.S. Forest Service botany program leader, said. "In this industry, there's a much longer chain, and everyone wants their cut."

Tracing a product's source

Aveda President Dominique Conseil said there were only a few products for which his company can oversee the process, literally, down to the roots.

"With the geranium oil that we use in our color conserve, we get that from South Africa. And there is a batch number on the bottle so we can go back and find out which farm and which field, and even which harvesting team," he said.

Such a direct connection is rarely available, he said, repeating a commonly voiced frustration that middlemen often block company officials from working directly with the growers and harvesters.

That's why, when the company wanted to start an "indigenous line" based on American Indian herbs, it hired American Indian communities in New Mexico, Montana and Canada to plant the cedar, sage and sweet grass used in the products.

"It's not just about the biodiversity of the plants, but about the social and cultural issues as well," Conseil said.

Ultimately, sustainability is up to the consumer, Conseil said. There's only so much a company or a governmental agency can do if the consumers don't demand and pay for the extra steps sustainability demands.

"Big companies can go to smaller communities, poor communities, and say 'We'll buy your product, but only if you do it organically, environmentally,'" Simon, the Rutgers professor, said. "But the challenge is that it's really difficult to organize those practices and to monitor them. And sometimes, the right way to do things isn't clear."

Plants as Symbols

Editorial, Plant Talk, January 1999

The turning year reminds us that plants retain an ancient place in contemporary ritual.

Those of us who dwell in the temperate and boreal zones are all too conscious of nature's enforced winter rest. The various forms of vegetation remain recognizable, even if much of their flora has vanished from view. Fortunately for our peace of mind, and unlike our fearful and superstitious ancestors, we rest assured that greenery and flowers will return with the migrant birds in spring. After all, seeds and resting buds are among the natural world's most elegant and wonderful phenomena. Alas, our science-based view of nature does entail some spiritual loss. For plants are potent symbols of regeneration, a reminder of the stream of life flowing for eternity.

At the Solstice, with winter (or at least its enveloping gloom) at last turning a corner towards spring, evergreen leaves long ago took on a special significance. Greenery brought indoors in the depths of winter became a symbol of continuing growth and rebirth. For many people today in the materialistic cultures of the North, greenery in the house over the Christmas festival is a welcome contact with a more spiritual, metaphysical, world. Two of the commonest seasonal symbols, holly and ivy, are among the wild plants most powerfully steeped in folklore, certainly in Britain. Holly, like the Robin, that cheery red-breasted bird – possessor of an unmistakable creamy warble even in winter – that accompanies it on Christmas cards, is a symbol too of one of the most profound of all mysteries of rebirth, renewal and immortality. Holly and robins are links with Easter, the Christian spring festival of rebirth, for both were traditionally seen to be stained with Christ's blood at the crucifixion.

The most magical of all Winter Solstice plants, the parasitic Mistletoe (*Viscum album*), had to the ancients the unearthly property of remaining green on a bough from which all life had seemingly vanished. The mystique of that strange, disembodied greenery remains today. The ritual of kissing under the mistletoe at Christmas is of the few surviving plant rituals in Europe akin to, say, the ceremonies with hallucinogenic plants in the New World tropics. It has become trivialized, but maybe a little of the magic remains. At least it is a ritual that brings a wild plant back into many people's lives.

These charismatic plants of the Solstice, with their ancient lineage of folklore, became wrapped up in even more powerful seasonal myths. In the 14th century an obscure poet, living in then wild country in Cheshire, northern England, wrote his haunting version of the epic of Sir Gawain and the Green Knight; of how Sir Gawain left King Arthur's court on a strange midwinter quest that tested to destruction his courage, loyalty and morality. The fearsome figure of the Green Knight, who "held a holly cluster in one hand, holly that is the greenest when groves are gaunt and bare", becomes one with the Green Man, mysterious incarnation of emerging springtime, who turns up elsewhere in folk-dance and medieval church carvings.

Plants interact with people and animals too in midwinter festivities. St Nicholas, a 4th century bishop of Myra in SW Turkey, has been snatched from his sunny Mediterranean diocese and, arrayed in the trappings of an arctic shaman, transfigured via North American popular culture into "Santa Claus". His red-and-white costume perhaps reflects the ritual consumption of the hallucinogenic Fly Agaric (*Amanita muscaria*) fungus, the peyote of the native peoples of the northern Eurasian conifer forests. So,

Christians and godless alike in Europe and North America recreate around their winter firesides the snowy spruce forests, reindeer and ancient pagan ritual of arctic tribes.

The use of plant symbols is deeply ingrained within each of us, but still needs to be succoured. The spiritual symbolism and psychological healing properties of plants are arguments, like their aesthetic appeal (see Editorial in Plant Talk 7) that conservationists do still seem to be unwilling to employ – in the mistaken belief that science is the only way of looking at the world in which we live. Plants lie at the centre of our daily lives, as objects of beauty, as icons and as items of considerable commercial value. The feature on the tropical *Paphiopedilum* slipper-orchids (Plant Talk, January 1999, pp. 23–26) illustrates the desirability of some plants, both exotic and lucrative.

Two years ago Richard Mabey astonished the publishing world with his runaway best-seller *Flora Britannica*. Tens of thousands of households now own a treatise on contemporary European ethnobotany. Mabey and his correspondents and collaborators have raised awareness even within the botanical world of how, beneath the surface of a developed, sophisticated and crowded nation like Britain lurks an ancestral view of plants. Not just healing plants or poisonous plants or decorative plants, but symbolic plants, imbued with much magic and mystery. It is therefore excellent news, as Paul Alan Cox reports in his stimulating article on Carl Linnaeus as ethnobotanist (Plant Talk, January 1999, pp. 33–36), that Swedish researchers are to embark on a similar study to *Flora Britannica*, taking in animals as well as plants. Plant stories, lore and legend, like those associated with the woodland greenery we bring indoors for the Winter Solstice, uplift us all.

National Botany Program Highlights

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

- ☀ I attended the R5 Regional Botany Program Meeting. Thanks to Anne Bradley for the gracious invitation.
- ☀ Attended (and help plan) the Industrial Leadership in Medicinal and Aromatic Plants symposium in Philadelphia.
- ☀ Attended a meeting on Genetic Ecology and Native Plant Materials meeting in Portland, Oregon.
- ☀ Attended the signing ceremony for the first National MOU between NatureServe and the Forest Service (see article on page 3).
- ☀ The NRIS Plants Module is under development! Will be testing the first version next summer. I also went to a demonstration of the geospatial technology that will drive the system. It is fantastic. Thanks to everyone at NRIS!
- ☀ Attended Plant Conservation Alliance meetings
- ☀ Working with the Wildlife Management Institute to plan the invasive species media tour in conjunction with next spring's 69th annual North American Wildlife and Natural Resources Conference in Spokane, WA.
- ☀ Survey and Manage...
- ☀ Attended a reception for the North American Pollinator Protection Campaign.
- ☀ I've ordered the Celebrating Wildflowers seed packets for next year.
- ☀ We have started working on a national native species policy.

Federal Botany Jobs

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

Remember, botanists make excellent leaders!

As of 19 December 2003, there are 5 open Forest Service line officer positions

Dec 19, 2003	BOTANIST Open to all qualified applicants. This is a seasonal 13/13 Term position; it is full time for 13 pay periods, and then as needed for up to 13 more pay periods within a year. The position may be extended in various increments up to but may not exceed a total of 4 years by law. The position is with the Ashland resource area Medford, OR. ... [more]	Interior, Bureau of Land Management	US-OR-Medford														
	Vacancy Ann.#: BLM/OI-04-003CVA Who May Apply: Public Pay Plan: GS-0430-09/11 Appointment Term: Term Appt - NTE 4 yrs Job Status: Full Time Closing Date: 1/13/2004 Salary: From 38,936.00 to 61,248.00 USD per year																
Dec 8, 2003	BOTANIST <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>Vacancy Ann.#:</td><td>FS184044 DEA</td></tr> <tr><td>Who May Apply:</td><td>Public</td></tr> <tr><td>Pay Plan:</td><td>GS-0430-07/09</td></tr> <tr><td>Appointment Term:</td><td>Term Appt - NTE 13 mos</td></tr> <tr><td>Job Status:</td><td>Full Time</td></tr> <tr><td>Closing Date:</td><td>12/30/2003</td></tr> <tr><td>Salary:</td><td>From 31,830.00 to 38,936.00 USD per year</td></tr> </table>	Vacancy Ann.#:	FS184044 DEA	Who May Apply:	Public	Pay Plan:	GS-0430-07/09	Appointment Term:	Term Appt - NTE 13 mos	Job Status:	Full Time	Closing Date:	12/30/2003	Salary:	From 31,830.00 to 38,936.00 USD per year	National Park Service	US-CA-YOSEMITE, CALIFORNIA
Vacancy Ann.#:	FS184044 DEA																
Who May Apply:	Public																
Pay Plan:	GS-0430-07/09																
Appointment Term:	Term Appt - NTE 13 mos																
Job Status:	Full Time																
Closing Date:	12/30/2003																
Salary:	From 31,830.00 to 38,936.00 USD per year																
Dec 5, 2003	BOTANIST Vacancy Ann.#: CK183661CB Who May Apply: Public Pay Plan: GS-0430-09/11 Appointment Term: Permanent Job Status: Full Time Closing Date: 1/2/2004 Salary: From 38,936.00 to 61,248.00 USD per year	National Park Service	US-MO-REPUBLIC														
Dec 5, 2003	BOTANIST <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>Vacancy Ann.#:</td><td>CK183662CB</td></tr> <tr><td>Who May Apply:</td><td>Status / Federal Civil Service Employees</td></tr> <tr><td>Pay Plan:</td><td>GS-0430-09/11</td></tr> <tr><td>Appointment Term:</td><td>Permanent</td></tr> <tr><td>Job Status:</td><td>Full Time</td></tr> <tr><td>Closing Date:</td><td>1/2/2004</td></tr> <tr><td>Salary:</td><td>From 38,936.00 to 61,248.00 USD per year</td></tr> </table>	Vacancy Ann.#:	CK183662CB	Who May Apply:	Status / Federal Civil Service Employees	Pay Plan:	GS-0430-09/11	Appointment Term:	Permanent	Job Status:	Full Time	Closing Date:	1/2/2004	Salary:	From 38,936.00 to 61,248.00 USD per year	National Park Service	US-MO-REPUBLIC
Vacancy Ann.#:	CK183662CB																
Who May Apply:	Status / Federal Civil Service Employees																
Pay Plan:	GS-0430-09/11																
Appointment Term:	Permanent																
Job Status:	Full Time																
Closing Date:	1/2/2004																
Salary:	From 38,936.00 to 61,248.00 USD per year																
Nov 28, 2003	Botanist Vacancy Ann.#: RM-006-04 Who May Apply: Status / Federal Civil Service Employees	Agriculture, Forest Service	US-MT-Missoula														

Pay Plan: GS-0430-09/09
Appointment Term: Permanent
Job Status: Full Time
Closing Date: 12/29/2003
Salary: From 38,936.00 to 50,617.00 USD per year

Nov 27, 2003	BOTANIST Serves as Assistant Field Supervisor with responsibility for supervising and directing Ecological Services activities for the north/central coast or south coast/desert sub-ecoregions in California. ... [more]	US Fish and Wildlife Service	US-CA-VENTURA COUNTY														
	<table border="1"> <tr><td>Vacancy Ann.#:</td><td>FH-04-PS-181832</td></tr> <tr><td>Who May Apply:</td><td>Public</td></tr> <tr><td>Pay Plan:</td><td>GS-0430-13/13</td></tr> <tr><td>Appointment Term:</td><td>Permanent</td></tr> <tr><td>Job Status:</td><td>Full Time</td></tr> <tr><td>Closing Date:</td><td>12/19/2003</td></tr> <tr><td>Salary:</td><td>72,099.00 USD per year</td></tr> </table>	Vacancy Ann.#:	FH-04-PS-181832	Who May Apply:	Public	Pay Plan:	GS-0430-13/13	Appointment Term:	Permanent	Job Status:	Full Time	Closing Date:	12/19/2003	Salary:	72,099.00 USD per year		
Vacancy Ann.#:	FH-04-PS-181832																
Who May Apply:	Public																
Pay Plan:	GS-0430-13/13																
Appointment Term:	Permanent																
Job Status:	Full Time																
Closing Date:	12/19/2003																
Salary:	72,099.00 USD per year																

Nov 3, 2003	BOTANIST THIS VACANCY ANNOUNCEMENT HAS BEEN AMENDED TO EXTEND THE CLOSING DATE TO 1/2/04. ... [more]	Agriculture, Natural Resources Conservation Service	US-LA-Baton Rouge														
	<table> <tr><td>Vacancy Ann.#:</td><td>NRCS 04-098A</td></tr> <tr><td>Who May Apply:</td><td>Status / Federal Civil Service Employees</td></tr> <tr><td>Pay Plan:</td><td>GS-0430-12/13</td></tr> <tr><td>Appointment Term:</td><td>Permanent</td></tr> <tr><td>Job Status:</td><td>Full Time</td></tr> <tr><td>Closing Date:</td><td>1/2/2004</td></tr> <tr><td>Salary:</td><td>From 56,463.00 to 87,289.00 USD per year</td></tr> </table>	Vacancy Ann.#:	NRCS 04-098A	Who May Apply:	Status / Federal Civil Service Employees	Pay Plan:	GS-0430-12/13	Appointment Term:	Permanent	Job Status:	Full Time	Closing Date:	1/2/2004	Salary:	From 56,463.00 to 87,289.00 USD per year		
Vacancy Ann.#:	NRCS 04-098A																
Who May Apply:	Status / Federal Civil Service Employees																
Pay Plan:	GS-0430-12/13																
Appointment Term:	Permanent																
Job Status:	Full Time																
Closing Date:	1/2/2004																
Salary:	From 56,463.00 to 87,289.00 USD per year																

Nov 3, 2003	BOTANIST THIS VACANCY ANNOUNCEMENT HAS BEEN AMENDED TO EXTEND THE CLOSING DATE TO 1/2/04. ... [more]	Agriculture, Natural Resources Conservation Service	US-LA-Baton Rouge														
	<table border="1"> <tr><td>Vacancy Ann.#:</td><td>NRCS 04-098B</td></tr> <tr><td>Who May Apply:</td><td>Public</td></tr> <tr><td>Pay Plan:</td><td>GS-0430-12/13</td></tr> <tr><td>Appointment Term:</td><td>Permanent</td></tr> <tr><td>Job Status:</td><td>Full Time</td></tr> <tr><td>Closing Date:</td><td>1/2/2004</td></tr> <tr><td>Salary:</td><td>From 56,463.00 USD per year</td></tr> </table>	Vacancy Ann.#:	NRCS 04-098B	Who May Apply:	Public	Pay Plan:	GS-0430-12/13	Appointment Term:	Permanent	Job Status:	Full Time	Closing Date:	1/2/2004	Salary:	From 56,463.00 USD per year		
Vacancy Ann.#:	NRCS 04-098B																
Who May Apply:	Public																
Pay Plan:	GS-0430-12/13																
Appointment Term:	Permanent																
Job Status:	Full Time																
Closing Date:	1/2/2004																
Salary:	From 56,463.00 USD per year																

Oct 1, 2003	BOTANIST Vacancy Ann.#: SW0430	Navy Field Offices	US-Southwestern States
-------------	--	--------------------	------------------------

year

Oct 1, 2003	BOTANIST Vacancy Ann.#: SW0430 Who May Apply: Status / Federal Civil Service Employees Pay Plan: GS-0430-05/15 Appointment Term: Permanent Job Status: Full Time, Part Time Closing Date: Open Continuous Salary: From 23,442.00 to 126,255.00 USD per year	Navy Field Offices	US-Western & Pacific States
Apr 28, 2003	BOTANIST ... [more] Vacancy Ann.#: DEMO R505NP-062DP-03T Who May Apply: Public Pay Plan: GS-0430-09 Appointment Term: Temporary Job Status: Full Time Closing Date: 12/31/2003 Salary: 18.49 USD per hour	USDA, Forest Service	US-CA-Siskiyou County

Banner Plant: *Ribes sanguineum*

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

This month's image is courtesy of http://www.gartenspaziergang.de/pf_zierjoh.html

This month's commentary courtesy of **Ketzel Levine**, National Public Radio

<http://www.npr.org/programs/talkingplants/profiles/ribessanguineum.html>

When I was young, whether it was true or I imagined it, I often felt that my mother didn't give much credence to my opinions or observations until they were legitimized by an outside source. Consequently, I have an inordinate fondness for plants I believe have suffered similar fates.

Consider, for instance, our Northwest native **winter currant**, *Ribes sanguineum*, a complete joy throughout the unspoiled region for who-knows-how-many centuries. Studded with capbursts of color at a botanically bereft time of year, *R. sanguineum* has undoubtedly been celebrated by indigenous people up and down the Northwest coast.

But it wasn't until the arrival of the Scots that true legitimacy was conferred on the species: "discovered" (don't you hate that?) in 1793 by Archibald Menzies during his voyage with Captain George Vancouver; introduced into British commerce in 1817 by Scotsman David Douglas; popularized throughout England and cultivated into tamer forms, such as 'King Edward VII'; finally reintroduced to the United States where it won acceptance as a titled and worthy garden plant.

After-Image: “Some fungus, huh?”

Image courtesy of Leah Burgess

Wendy Haas (botanist on the Medicine Bow – Routt National Forest and Thunder Basin National Grassland) sent me this picture of herself with a giant (>17 inches diameter) puffball fungus (*Calvatia* spp.) that was found by her co-worker Leah Burgess (Range technician). **I hope your holidays bring you all treasures as fun and luscious as this!**



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. *The flower is the poetry of reproduction. It is an example of the eternal seductiveness of life.* J. Giraudoux
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>.

