Lingua Botanica

The National Newsletter for FS Botanists & Plant Ecologists

This is the last edition of *Lingua Botanica* in its current form. Your botany program newsletter is going on hiatus for a short period of time, but it will be back soon. It has been a labor of love for the last five years. *Lingua Botanica* has never tried to be a mouth-piece for happenings in the Forest Service. Instead, I have tried to make it a means by which readers can become better botanists through exposure to the breadth of our discipline (the art as well as the science). In particular, I've used this particular space in each issue of LB to cheer for each and every one of you and the work that you do. Sometimes that encouragement has been fairly whimsical, at other times my tone has drifted more toward the belligerent, but in every instance I've tried to share my sense of wonder and joy in the natural world – no hocus pocus magic crystal bologna please. I can only assume, based on the email I get from LB readers, that many of you share my sense of awe when I look at and try to understand the living world. That bit of tedious history aside, I am grateful to have one last opportunity to say my piece, and here it is. Once a botanist, always a botanist. And because you are botanists to the bone (heartwood?) it's important that you each take an active role in reforming the current state of plant conservation in America (heavy on disembodied fact and manipulative fallacy; embarrassingly weak on substantive meaning). The current problem is not with a particular Federal agency, and neither is it wholly the result of the current cultural war against the environment. Most of the largest and most influential environmental groups in the U.S. are pursuing a cynical agenda of confrontation that serves to trivialize and marginalize conservation action (especially for native plants). The persistence of the American flora is our hands alone until we build a righteous and powerful constituency for botany and plant conservation. It's a quest of epic and heroic proportion – not merely for the physical comfort of future generations of humanity, but because it is our species' purpose to understand and marvel at the infinite variety of life that is the manifestation of the basic principles that govern our universe. the editor.

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http://www.tartans.com/articles/mistletoe.html

State of Denial: Change your life – read this!
http://www.sacbee.com/static/live/news/projects/denial/

Report on Intelligent Consumption: After State of Denial, go here
http://www.wisconsinacademy.org/programs/icp/index.html

Deadwood: It's not just for the Washington Office…
http://www.panda.org/downloads/forests/deadwoodwithnotes.pdf

Epiphytic Macrolichens of Arizona: Download the keys in any of several versions.
http://ces.asu.edu/ASULichens/plb400/laboratory/keys/az_macrolichen_key.html

Remote Sensing of Rare Plants: Fun for techno-bots. This web page may be restricted to people with access to the FS network. If you can't access it, drop me a note and I'll email the .pdf directly to you.
http://fsweb.rsac.fs.fed.us/documents/4007-RPT1.pdf

Society for Economic Botany: Where you can read *Plants and People.*
http://www.econbot.org/home.html

Botany for Kids: Helpful resources for your next Celebrating Wildflowers event.
http://www.nbii.gov/disciplines/botany/science.html

Titan Herbarium Sheets: How to smash an *Amorphophallus*
http://persoon.si.edu/Amorphophallus/

Partnership Resources: Some helpful information over here…
http://www.partnershipresourcecenter.org/

National Register of Big Trees: Handy for pub bets…
http://www.americanforests.org/resources/bigtrees/

Ecology Data for Download: Some exciting NatureServe data products here.
http://www.natureserve.org/getData/ecologyData.jsp

Private Forests: Resources for private landowners, from TNC.
http://privateforest.org/

Ignobel Prizes for 2004: Advances (?) in weird science, from Harvard University
http://www.improb.com/ig/ig-top.html

Wallace Stegner's Wilderness Letter

Los Altos, Calif.
December 3, 1960

David E. Pesonen
Wildland Research Center
Agricultural Experiment Station
243 Mulford Hall
University of California
Berkeley 4, Calif.

Dear Mr. Pesonen:

I believe that you are working on the wilderness portion of the Outdoor Recreation Resources Review Commission's report. If I may, I should like to urge some arguments for wilderness preservation that involve recreation, as it is ordinarily conceived, hardly at all. Hunting, fishing, hiking, mountain-climbing, camping, photography, and the enjoyment of natural scenery will all, surely, figure in your report. So will the wilderness as a genetic reserve, a scientific yardstick by which we may measure the world in its natural balance against the world in its man-made imbalance. What I want to speak for is not so much the wilderness uses, valuable as those are, but the wilderness idea, which is a resource in itself. Being an intangible and spiritual resource, it will seem mystical to the practical minded--but then anything that cannot be moved by a bulldozer is likely to seem mystical to them.

I want to speak for the wilderness idea as something that has helped form our character and that has certainly shaped our history as a people. It has no more to do with recreation than churches have to do with recreation, or than the strenuousness and optimism and expansiveness of what the historians call the "American Dream" have to do with recreation. Nevertheless, since it is only in this recreation survey that the values of wilderness are being compiled, I hope you will permit me to insert this idea between the leaves, as it were, of the recreation report.

Something will have gone out of us as a people if we ever let the remaining wilderness be destroyed; if we permit the last virgin forests to be turned into comic books and plastic cigarette cases; if we drive the few remaining members of the wild species into zoos or to extinction; if we pollute the last clear air and dirty the last clean streams and push our paved roads through the last of the silence, so that never again will Americans be free in their own country from the noise, the exhausts, the stinks of human and automotive waste. And so that never again can we have the chance to see ourselves single, separate, vertical and individual in the world, part of the environment of trees and rocks and soil, brother to the other animals, part of the natural world and competent to belong in it. Without any remaining wilderness we are committed wholly, without chance for even momentary reflection and rest, to a headlong drive into our technological termite-life, the Brave New World of a completely man-controlled environment. We need wilderness preserved--as much of it as is still left, and as many kinds--because it was the challenge against which our character as a people was formed. The reminder and the reassurance that it is still there is good for our spiritual health even if we never once in

ten years set foot in it. It is good for us when we are young, because of the incomparable sanity it can bring briefly, as vacation and rest, into our insane lives. It is important to us when we are old simply because it is there--important, that is, simply as an idea.

We are a wild species, as Darwin pointed out. Nobody ever tamed or domesticated or scientifically bred us. But for at least three millennia we have been engaged in a cumulative and ambitious race to modify and gain control of our environment, and in the process we have come close to domesticating ourselves. Not many people are likely, any more, to look upon what we call "progress" as an unmixed blessing. Just as surely as it has brought us increased comfort and more material goods, it has brought us spiritual losses, and it threatens now to become the Frankenstein that will destroy us. One means of sanity is to retain a hold on the natural world, to remain, insofar as we can, good animals. Americans still have that chance, more than many peoples; for while we were demonstrating ourselves the most efficient and ruthless environment-busters in history, and slashing and burning and cutting our way through a wilderness continent, the wilderness was working on us. It remains in us as surely as Indian names remain on the land. If the abstract dream of human liberty and human dignity became, in America, something more than an abstract dream, mark it down at least partially to the fact that we were in subdued ways subdued by what we conquered.

The Connecticut Yankee, sending likely candidates from King Arthur's unjust kingdom to his Man Factory for rehabilitation, was over-optimistic, as he later admitted. These things cannot be forced, they have to grow. To make such a man, such a democrat, such a believer in human individual dignity, as Mark Twain himself, the frontier was necessary, Hannibal and the Mississippi and Virginia City, and reaching out from those the wilderness; the wilderness as opportunity and idea, the thing that has helped to make an American different from and, until we forget it in the roar of our industrial cities, more fortunate than other men. For an American, insofar as he is new and different at all, is a civilized man who has renewed himself in the wild. The American experience has been the confrontation by old peoples and cultures of a world as new as if it had just risen from the sea. That gave us our hope and our excitement, and the hope and excitement can be passed on to newer Americans, Americans who never saw any phase of the frontier. But only so long as we keep the remainder of our wild as a reserve and a promise--a sort of wilderness bank.

As a novelist, I may perhaps be forgiven for taking literature as a reflection, indirect but profoundly true, of our national consciousness. And our literature, as perhaps you are aware, is sick, embittered, losing its mind, losing its faith. Our novelists are the declared enemies of their society. There has hardly been a serious or important novel in this century that did not repudiate in part or in whole American technological culture for its commercialism, its vulgarity, and the way in which it has dirtied a clean continent and a clean dream. I do not expect that the preservation of our remaining wilderness is going to cure this condition. But the mere example that we can as a nation apply some other criteria than commercial and exploitative considerations would be heartening to many Americans, novelists or otherwise. We need to demonstrate our acceptance of the natural world, including ourselves; we need the spiritual refreshment that being natural can produce. And one of the best places for us to get that is in the wilderness where the fun houses, the bulldozers, and the pavement of our civilization are shut out.

Sherwood Anderson, in a letter to Waldo Frank in the 1920s, said it better than I can. "Is it not likely that when the country was new and men were often alone in the fields and the forest they got a sense of bigness outside themselves that has now in some way been lost.... Mystery whispered in the grass, played in the branches of trees overhead, was caught up and blown across the American line in clouds of dust at evening on the prairies.... I am old enough to remember tales that strengthen my belief in a deep semi-religious influence that was formerly at work among our people. The flavor of it hangs over the best work of Mark Twain.... I can remember old fellows in my home town speaking feelingly of an evening spent on the big empty plains. It had taken the shrillness out of them. They had learned the trick of quiet...."

We could learn it too, even yet; even our children and grandchildren could learn it. But only if we save, for just such absolutely non-recreational, impractical, and mystical uses as this, all the wild that still remains to us.

It seems to me significant that the distinct downturn in our literature from hope to bitterness took place almost at the precise time when the frontier officially came to an end, in 1890, and when the American way of life had begun to turn strongly urban and industrial. The more urban it has become, and the more frantic with technological change, the sicker and more embittered our literature, and I believe our people, have become. For myself, I grew up on the empty plains of Saskatchewan and Montana and in the mountains of Utah, and I put a very high valuation on what those places gave me. And if I had not been able to periodically to renew myself in the mountains and deserts of western America I would be very nearly bughouse. Even when I can't get to the back country, the thought of the colored deserts of southern Utah, or the reassurance that there are still stretches of prairies where the world can be instantaneously perceived as disk and bowl, and where the little but intensely important human being is exposed to the five directions of the thirty-six winds, is a positive consolation. The idea alone can sustain me. But as the wilderness areas are progressively exploited or "improve", as the jeeps and bulldozers of uranium prospectors scar up the deserts and the roads are cut into the alpine timberlands, and as the remnants of the unspoiled and natural world are progressively eroded, every such loss is a little death in me. In us.

I am not moved by the argument that those wilderness areas which have already been exposed to grazing or mining are already deflowered, and so might as well be "harvested". For mining I cannot say much good except that its operations are generally short-lived. The extractable wealth is taken and the shafts, the tailings, and the ruins left, and in a dry country such as the American West the wounds men make in the earth do not quickly heal. Still, they are only wounds; they aren't absolutely mortal. Better a wounded wilderness than none at all. And as for grazing, if it is strictly controlled so that it does not destroy the ground cover, damage the ecology, or compete with the wildlife it is in itself nothing that need conflict with the wilderness feeling or the validity of the wilderness experience. I have known enough range cattle to recognize them as wild animals; and the people who herd them have, in the wilderness context, the dignity of rareness; they belong on the frontier, moreover, and have a look of rightness. The invasion they make on the virgin country is a sort of invasion that is as old as Neolithic man, and they can, in moderation, even emphasize a man's feeling of belonging to the natural world. Under surveillance, they can belong; under control, they need not deface or mar. I do not believe that in wilderness areas where grazing has never been permitted, it

should be permitted; but I do not believe either that an otherwise untouched wilderness should be eliminated from the preservation plan because of limited existing uses such as grazing which are in consonance with the frontier condition and image.

Let me say something on the subject of the kinds of wilderness worth preserving. Most of those areas contemplated are in the national forests and in high mountain country. For all the usual recreational purposes, the alpine and the forest wildernesses are obviously the most important, both as genetic banks and as beauty spots. But for the spiritual renewal, the recognition of identity, the birth of awe, other kinds will serve every bit as well. Perhaps, because they are less friendly to life, more abstractly nonhuman, they will serve even better. On our Saskatchewan prairie, the nearest neighbor was four miles away, and at night we saw only two lights on all the dark rounding earth. The earth was full of animals--field mice, ground squirrels, weasels, ferrets, badgers, coyotes, burrowing owls, snakes. I knew them as my little brothers, as fellow creatures, and I have never been able to look upon animals in any other way since. The sky in that country came clear down to the ground on every side, and it was full of great weathers, and clouds, and winds, and hawks. I hope I learned something from looking a long way, from looking up, from being much alone. A prairie like that, one big enough to carry the eye clear to the sinking, rounding horizon, can be as lonely and grand and simple in its forms as the sea. It is as good a place as any for the wilderness experience to happen; the vanishing prairie is as worth preserving for the wilderness idea as the alpine forest.

So are great reaches of our western deserts, scarred somewhat by prospectors but otherwise open, beautiful, waiting, close to whatever God you want to see in them. Just as a sample, let me suggest the Robbers' Roost country in Wayne County, Utah, near the Capitol Reef National Monument. In that desert climate the dozer and jeep tracks will not soon melt back into the earth, but the country has a way of making the scars insignificant. It is a lovely and terrible wilderness, such as wilderness as Christ and the prophets went out into; harshly and beautifully colored, broken and worn until its bones are exposed, its great sky without a smudge of taint from Technocracy, and in hidden corners and pockets under its cliffs the sudden poetry of springs. Save a piece of country like that intact, and it does not matter in the slightest that only a few people every year will go into it. That is precisely its value. Roads would be a desecration, crowds would ruin it. But those who haven't the strength or youth to go into it and live can simply sit and look. They can look two hundred miles, clear into Colorado: and looking down over the cliffs and canyons of the San Rafael Swell and the Robbers' Roost they can also look as deeply into themselves as anywhere I know. And if they can't even get to the places on the Aquarius Plateau where the present roads will carry them, they can simply contemplate the idea, take pleasure in the fact that such a timeless and uncontrolled part of earth is still there.

These are some of the things wilderness can do for us. That is the reason we need to put into effect, for its preservation, some other principle that the principles of exploitation or "usefulness" or even recreation. We simply need that wild country available to us, even if we never do more than drive to its edge and look in. For it can be a means of reassuring ourselves of our sanity as creatures, a part of the geography of hope.

Very sincerely yours,
Wallace Stegner

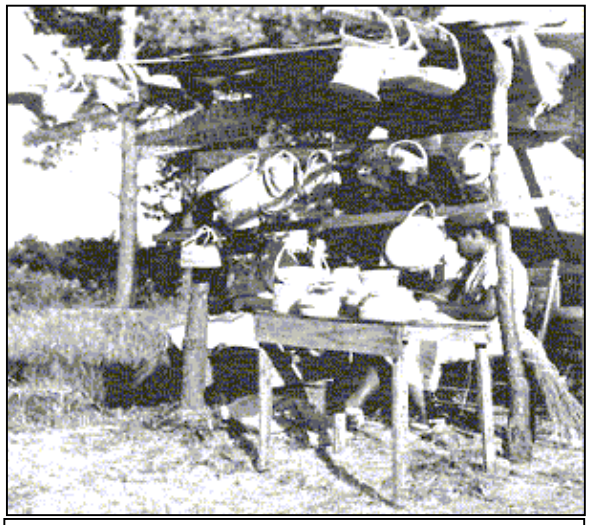
Restoring Sweetgrass to the South Carolina Lowcountry

Marianne Burke, Southern Research Station, 19 August 2004

Coiled baskets made from sweetgrass have been an important source of income for the Gullah community around Charleston, South Carolina for over a century. Descendants of West Africans brought in as slaves, Gullah artisans now find a comfortable livelihood threatened by dwindling supplies of the native grass they have long used to make baskets.

In 2002, the USDA Forest Service Southern Research Station (SRS) and the College of Charleston, with funding from the South Carolina Sea Grant Consortium, set up a study designed to involve basket makers in finding solutions for the scarcity of the native coastal plant. The findings are covered in a recent article in the journal *Economic Botany*.

Marianne Burke (research ecologist with the SRS unit in Charleston), Angela Halfacre (associate professor of political science, College of Charleston), and Zachary Hart (at the time of the study a student at the College of Charleston, now working for the Trust for Public Land) interviewed 23 Gullah basket makers between June 2002 and January 2003. Tapes of the interviews were transcribed and then analyzed to identify common views and practices to inform a long-term management plan for sweetgrass. "This is an environmental issue that directly affects local Gullah people and could impact one of the oldest traditional art forms practiced in the lowcountry," says Burke. "The situation offers a great opportunity to learn more about involving the public in making decisions about managing natural resources."



Early basket stand with artist working inside. 1938. Photo credit: USDA Forest Service.

Lowcountry sweetgrass baskets have been made by the Gullah people for almost three centuries. Documented as early as 1730, the distinct form of basketry was first practiced almost exclusively by men. Women took over the craft in the1920s, when many of the men left the area to serve in the military or look for jobs. Though new forms have evolved in the work of individual artists, the basic designs have remained the same throughout time. The coiled seagrass baskets, now highly prized as works of art, represent a major source of income for the community.

Sweetgrass (*Muhlenbergia filipes*), a long-bladed grass restricted to the coast of the southeastern United States, grows in clumps along the second dune line of the beach, in the boundaries between marshes and woods, and in wet savannahs. This "muhly" grass is not to be confused with the true sweet grass (*Hierochloe odorata*) used by Native American basket makers. Although three other plants - palm, longleaf pine, and black rush - are also used in South Carolina lowcountry baskets, the primary material is *Muhlenbergia filipes*. Needed in the greatest quantity, sweetgrass has become the most

difficult material to obtain, with basket makers now paying gatherers who travel as far as Florida .

"Fire suppression may have played a part in the decline of sweetgrass habitat, but residential development is the major cause," says Burke. "The coastal savannah habitat has disappeared from much of this land, and areas where sweetgrass still grows cannot be accessed because of private property restrictions. There is a real possibility that this culturally and economically significant art form may disappear if basket makers cannot find a reliable and affordable source."

The researchers interviewed basket makers at home or at the roadside stands where they sell their wares, asking open-ended questions designed to identify common views about sweetgrass use and management. All the survey responders were women; the eldest respondent was 78 and the youngest 41, with a mean age of 44.

"We identified seven views and practices common to all of the basket makers," says Halfacre. "Most had purchased sweetgrass from collectors, and they all identified residential development as the reason the grass has become unavailable." The high price basket makers pay the gatherers not only raises the prices of baskets; it also affects the legacy of the craft. Basket makers can no longer afford to give their children sweetgrass to play with when they first express interest in making baskets.

"The key findings from the survey are that the basket makers support several different management alternatives," says Halfacre, "and that they are willing to contribute to management efforts." One proposed alternative is to set aside land dedicated specifically to growing sweetgrass. The ownership of the land was not as important to the basket makers as access: solutions ranged from a "farm" to home cultivation. Respondents expressed a need for education about cultivating and maintaining sweetgrass populations to help those who would like to grow it in their own yards.

"An idea that could improve supplies that has not been addressed is working with the residents of nearby islands - where the grass grows abundantly but is off-limits - to enable access," says Burke. "The willingness of the basket makers to open these lines of communication and to learn to manage the sweetgrass themselves opens up more possibilities for managing this resource in the future."

Full text of the *Economic Botany* article: http://www.srs.fs.usda.gov/pubs/viewpub.jsp?index=6947

At Home Among the Rushes and Roses

For peripatetic curator of western plants, it's all botany, all the time

Cathy Cockrell, UC Berkeley News, 16 September 2004

A crowd of plant enthusiasts, sporting sunhats and knapsacks, has gathered at plot 25, lot 24, of Oakland's Mountain View Cemetery to contemplate an unmarked grave. Here, at the final resting place of Albert Kellogg — a self-taught botanist and a founder of the California Academy of Sciences — tour guide Barbara Ertter pauses to download a gigabyte of data from her brain: the politics behind the California Geological Survey of 1860; Kellogg's plan to name the giant sequoia after George Washington; a description of Kellogg, from the foreword to his illustrated guide to trees: "His whole soul breathed into plants and flowers…."

Ertter is cut from similar cloth. She makes her living as curator of Western North American flora at Berkeley's University and Jepson Herbaria. But matters botanical, invasive as vetch, have crept into every corner of her life.

"I did a family geneaology; the next logical step was to trace botanical ancestors," she explains, as she leads members of the California Native Plant Society to the interred remains of James Graham Cooper — before paying visits to Crocker, Pardee, Lemmon (Mr. and Mrs.), Carr, LeConte, Rattan. "Some would call this 'weird,'" she admits. "I say, 'how fun!'"

Productivity personified

So, too, is a dizzying schedule of botanically related pastimes: Showing local residents the California native plants found on Albany Hill. Re-tracing the collecting route of the 19th-century botanist C.A. Purpus through four western states and Baja California. Creating an annotated checklist of East Bay flora (known as a bible for native plant enthusiasts intent on protecting local biodiversity). Delivering luncheon remarks and learned lectures (in Baltimore, Corvallis, New York, Prague, El Cerrito, Tehran…). Converting the hillside behind her Berkeley home to native riparian habitat. Botanizing for rare or interesting plants (she recorded her first field specimen in 1972; at last count she was up to 18,496).

Botanist Barbara Ertter is working to restore the native vegetation that at one time populated the banks of Blackberry Creek behind her Berkeley home. Once the native plants take hold, native animals should follow. "My goal is to eventually bring back the frogs and sticklebacks," she says.

Ertter's monumental, exhaustively detailed c.v. is a testament to, and itself an example of, her remarkable energy and focus. "She's got an incredible ability to be productive," says Joanne Kerbavaz, a California State Parks naturalist who has known the botanist in many ertterations — among them native-plant advocate, land-management consultant, and enthusiastic co-author of the revised edition of *The Flowering Plants and Ferns of Mount Diablo California.* ("A great hoot," Kerbavaz calls their outings on the prominent East Bay mountain. "It's a state park person's dream — searching the diverse habitats of Mt. Diablo for rare plants with someone who has an encyclopedic knowledge of the flora.") "Some of us go home at night and watch reruns of *The West Wing,*" Kerbavaz says. "I don't think Barbara does that. I think she goes home and writes more talks on the history of botany in California."

Within her profession, Ertter considers herself part of the "loyal opposition." Traditional field botany — as practiced by Kellogg, Purpus, and Ertter herself — is being eclipsed by new forms of inquiry like bioengineering and cladistics (which uses computer

technology to identify probable evolutionary relationships between species). Fine tools, in Ertter's book, but no substitute for intimate knowledge of a plant in its native habitat — what she calls "listening to the organism." She worries that, while the new trends get ink and funding, "we still have five percent of the nation's flora undescribed, and therefore not getting the conservation attention it deserves."

Getting hooked

Ertter's fascination with plants dates back to childhood. She grew up the "middlest" of five children in Boise, spending summer weekends at a family cabin in the mountains. There, she says, she entertained herself by visiting the golden bells and primroses to see how they changed from year to year. "There's a photo I lifted from my parents' slide collection that has me at about two, bending over and looking at flowers."

The clincher came in college, during a field trip to a place in eastern Oregon called Leslie Gulch. "It turned out to be one of these hotspots that hadn't been botanized before," recalls Ertter. "Maybe six plants new to science came out of this one gulch!" She got to name two of them; a botanical expert whom they consulted about their finds named another of the new species *Senecio ertterae*.

"Getting a plant named after me, and having other plants that I got to name, all from this same little flurry, definitely got me hooked!" She went on eventually, to study for a Ph.D. under the renowned Arthur Cronquist of the New York Botanical Garden, who believed, as she does, that to understand plant taxonomy you have to understand the related geography and geology.

"In the western United States," she says, "you have a form of island biogeography, in which the 'islands' are the mountain ranges. During the Pleistocene, large lakes filled the broad basins between the ranges, leaving plants isolated from each other on the tops of mountains…. I'm trying to understand the West's modern plants by understanding their evolutionary background."

Her focus on Western flora (with a specialty in native roses, rushes, and buckwheat) has for many years piqued an interest in the plants of Central Asia — "the part of the world that is most comparable to the western U.S. They have climate, geography, evolutionary history, and plant groups in common." Finally, in 1999 and again this summer, she got the chance to visit the region, as part of a scholarly exchange initiated by Dr. Fosie Tahbaz, a colleague at the herbaria. Along with Iranian and American scientists, Ertter donned the requisite headscarf and robe to go botanizing in the countryside — where, as promised, both landscape and plant life closely resemble those found in the American West.

"In Iran," she says, "you've got 10,000 years of grazing and other land-management practices in an ecosystem that is totally comparable to here. Half our weeds are native to that part of the world." Questions naturally arise from the similarities and differences: Why is sagebrush converting so rapidly into monocultures of cheatgrass in the western U.S. deserts, but not Iran? Why have conifers disappeared from the Iranian mountainsides? What's the susceptibility of our own conifers to a similar demise?

"The comparative possibilities are definitely worth following up on," Ertter says — her wheels turning as visions of future projects take first form.

Burnt-out Bush Reveals Rare Flower

News Interactive (Australia), December 12, 2004

A flourishing community of a rare native Australian wildflower has been discovered in Australian high country savagely burnt out by bushfire two years ago.

The flower, *Dampiera fusca*, had previously been known from only three small communities in the high country of New South Wales and Victoria.

The latest discovery, of many hundreds of the plant, were found in the Namadgi National Park in the ACT (Australian Capitol Territory) - the first found in the territory.

The discovery was made by walkers from the Australian Native Plants Society, said Environment ACT plant ecologist Sarah Sharp.

It was subsequently identified by Australian National University botanist Steve Douglas.

"It's always very exciting when you do find new plants," Ms Sharp said.

She described Dampiera fusca as having very attractive, small bluey-purple flowers, and standing about 30cm tall.

"What we're speculating is that the clearing of the vegetation as a result of the (January 2003) fire has probably meant that it is, at least, a lot more noticeable, making it easier to find," Ms Sharp said.

"It's just relief from the competition from other plants.

"A population found in the Tinderry (Ranges) was the last one to be found, in the late 1990s, and there were only about 20 plants there.

"As far as we can ascertain, from what we've been able to see of this one, there's hundreds and hundreds of plants.

"They may have been there before the fire but they just weren't noticeable in the undergrowth."

She believed there may be other isolated populations around.

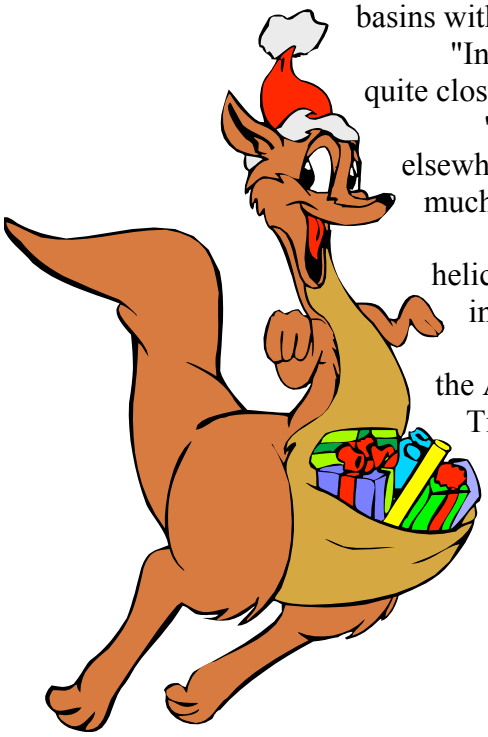
"We went around in a hired helicopter, because the Dampiera occurs on quite high altitudes, on top of granite peaks that are outcrops, and they occur in the shallow basins within those outcrops which are terribly hard to get to.

"In the helicopter we did find another population on another peak, quite close by.

"But I don't think there'd be anything to suggest they're not elsewhere, which is why you'd consider them rare until you'd know much more about them.

"But it's going to be very hard to find them without a helicopter because some of these peaks are really quite inaccessible."

The other populations are in the Kybeyan Range, south of the ACT, Nunniong Plateau in north-east Gippsland, Victoria, and Tinderry Range Nature Reserve, east of the ACT.



Moss Hunters Roll Away Nature's Carpet, and Some Ecologists Worry

Joshua Tompkins, New York Times, 30 November 2004

While a rolling stone may gather no moss, what Dr. Robin Wall Kimmerer wants to know is how quickly a stationary stone can collect it. Specifically, how quickly moss, when stripped from boulders or tree trunks or the forest floor, will grow back.

Dr. Kimmerer, a professor of environmental and forest biology at the State University of New York College of Environmental Science and Forestry, is one of a growing number of researchers and land managers who are worried about the effect of commercial moss gathering.

She has seen the aftermath of such gathering firsthand, having once bushwhacked her way up a muddy hillside in western Oregon, following the trail of harvesters to a grove of maple trees hiding in the mist.

Winded by the climb and bloody from thorn scrapes, she took in the scene, described last year in her book "Gathering Moss." On the far side of a stream, the trees were swaddled in moss, its lush fabric wrapped around the trunks in woolly pelts and hanging from the branches like green gossamer beards.

But on her side of the water, the maples were bare. Their moss had been torn off, stuffed into burlap sacks, and hauled back down the hill. Frowning at a cigarette package left by one of the harvesters, Dr. Kimmerer marveled at how they had gotten their heavy prize through the salmonberry bramble and wondered if they knew what they had plundered. "What it was, of course, is a living carpet that might have been a hundred years old," she said recently in a telephone interview.

Her frustration stresses the contradictory relationship humans have with moss, an ancient, primitive plant whose role in forest ecology is still just partly understood. Overlooked in its habitat - or even mistaken for a blight - moss is nevertheless sought for its aesthetic value at nurseries, craft stores and floral shops around the country, lining baskets and adorning wreaths.

With gatherers roaming public and private property for fresh pickings, the loosely regulated industry faces scientific scrutiny as biologists and businesses clash over research findings and land managers struggle to enforce collection policies across huge tracts with scarce personnel.

Last year, harvesters in the United States bagged as much as 17 million pounds of moss, according to an estimate by Dr. Patricia Muir, a professor of botany and plant pathology at Oregon State University. Most of the moss is from the Pacific Northwest and Appalachia, where moderate winters and abundant rain allow moss to thrive.

Gatherers favor a few popular species, none of them endangered or threatened (no mosses are), pulling them from rocks and logs in the East and hardwoods in the West. Harvesters use bare hands and an occasional rake or ladder, but sometimes they get brazen: Oregon officials once saw harvesters who had strung a cable down a small valley and strapped a shopping cart to it to hoist moss up to the road.

The question is how soon new moss can take its place. A tree shrouded in moss may have needed decades or longer to get that way, and after harvesting, regeneration is even slower. Dr. Kimmerer's study of an experimentally harvested area found in some cases a recovery rate of only 1 percent per year. "You're looking at 100 years to get back

to the initial volume," she said. "Yes, it's a renewable resource, but not on any meaningful time scale."

Land managers in the Pacific Northwest and Appalachia are trying to curtail legal and illicit gathering. The Monongahela National Forest in West Virginia has ceased issuing collection permits, and the Siuslaw National Forest in Oregon limits the amount of moss that can be taken each year -a few thousand pounds in some districts - but many gatherers flout restrictions.

"It's a continuous problem," said Rich Babcock, the special forest products coordinator for the Hebo District in Siuslaw, the busiest collection area. "You see a lot of moss going down the road in the late evening, and you really don't know where it's coming from."

At Washington's Olympic National Park, where no commercial harvesting of any forest product is allowed, Dan Pontbriand, a ranger, said moss poachers were venturing farther and farther onto the property for their quarry.

Gathers will often pile bags of moss in a secluded location and haul it away under cover of darkness. He estimates that for every arrest forest officials make, confiscating the crop and issuing a $250 fine, another 10 harvests go unnoticed.

For years, the moss industry itself went largely unnoticed as well. Last spring, Dr. Muir finished the first comprehensive survey of the American moss harvesting industry in a report to the Fish and Wildlife Service and the United States Geological Survey.

Questioning dozens of botanists, land managers and moss dealers, she calculated that 10 million to 40 million pounds of moss had been collected annually nationwide in recent years. Accurate figures are impossible because many land managers still allow unlimited harvesting. Furthermore, Dr. Muir said: "You've got a permit, let's say, for 200 pounds. Nothing's going to stop you from harvesting 10 times that much."

Laws in some states say otherwise. In Washington and Oregon, the small storehouse operations and larger forest-product distributors that buy moss from harvesters are required to check the seller's permit for each haul. Yet whether or not the moss came from the area designated by the permit is practically impossible for buyers to know.

The Forest Products Packaging Company of Independence, Ore., buys more than 300,000 pounds of moss from harvesters every year. Its owner, Dick Reinhard, said the burden of obtaining permits and avoiding prohibited areas has forced many smaller gathering outfits out of the business. He also says he believes moss grows back faster than scientists claim. After an area is picked clean, with adequate shade and moisture it "will be regrown within five years to the point where you can't tell," he said.

At retailers, moss can fetch as much as $5 for a four-ounce bag, and much of it is sold on the Internet. Moss export figures are compiled by the United States Department of Commerce, but domestic sales are not. Dr. Muir puts total annual sales anywhere from $6 million to $165 million. The market has fluctuated sharply in the last decade, dropping off in 2001 but doubling last year.

If harvesters and wholesalers regard moss as a commodity, many park visitors don't notice it at all. Flourishing in the shadowy boscage of old-growth forests, moss is nature's wallpaper, with all the lack of sexiness that implies. And though its perseverance can evoke a kind of meditative sympathy - the poet and occasional gatherer Theodore Roethke wrote of the guilt he felt after "pulling off flesh from the living planet"- the

experts calling attention to the plight of moss realize it hardly possesses the majesty of a humpback whale or the pathos of a harp seal pup.

"We conservation biologists think of those as the charismatic megafauna," Dr. Kimmerer said. "I like to think of the mosses as charismatic microflora, but you have to look close."

Indeed, under the magnifying glass the seemingly featureless facade becomes a tiny forest unto itself, a microcosm of stalks and leaves. Without roots, seeds or a vascular system, moss works hard to build this infrastructure, enduring a two-stage reproductive cycle that sends millions of spores out a few inches to start new growth. Only a tiny fraction succeed, though moss can also clone itself with nearly any piece: a broken-off shoot or leaf can foster a whole new plant.

Trees and logs are the most hospitable substrates, though some moss species have learned to conquer the barren surfaces of rocks, where spores face astronomical odds of success.

Harvesting removes more than just moss. The coral reef of the forest, it's the home of dozens of tiny creatures - mites, springtales, microscopic rotifers, and others. Dr. Neville Winchester, an entomologist at the University of Victoria, has counted more than 300 species in some tree canopy moss colonies. And the marbled murrelet, an endangered seabird, flies miles inland to nest on moss mats.

Moss also retains several times its weight in water, serving as a humidity regulator for the forest. A descendant of early algae, moss was the first plant to migrate from water to land as life on earth was first brewing, and it still depends on copious moisture for its survival, with tiny sperm fanning out in search of eggs on a delicate, interstitial film of liquid. No surprise, then, that moss lies dormant in the warm, dry summer, when most harvesting takes place, and begins growing with the first rains of fall as the trees shed their leaves and sunlight trickles down to start photosynthesis.

Concerns about the sustainability of wild moss lead to one question: can it be raised instead? Though bryology, the study of mosses, lichens, and liverworts, has been around for centuries, virtually nothing is known about cultivation. "It really is time that we start learning how to farm them just like we do corn and tobacco and everything else," said Dr. Nalini Nadkarni, a forest ecologist at Evergreen State College in Olympia, Wash.

Predicting that moss's low-key nature would be well suited to the prison setting, where horticulture has become a popular rehabilitation therapy, Dr. Nadkarni began a moss program last fall at the nearby Cedar Creek Corrections Center in which about a half-dozen inmates experiment with different growing methods. Despite promising results, Dr. Nadkarni realizes that even a large commercial moss farm or two will barely dent the market. "It might start out as a boutiquey thing," she said, hoping eco-conscious consumers may go for hand-tended moss the way they have flocked to cachets like green timber products and shade-grown coffee. "If we don't come up with ways to provide an alternative, then we're stuck with naked branches."

Thieves Targeting Gardens With Rare Plant

Ben Fox, Associated Press, 12 December 2004

COSTA MESA, Calif. - The thieves struck at night and knew just what they were after. In minutes, they ripped two plants from the lavish landscaping at a home in this Los Angeles suburb, then fled when the homeowner woke up and turned on a porch light. Total haul: $3,500.

The thieves were after cycads, palmlike plants so prized that a rare specimen can fetch $20,000 or more on the international black market. Some species have been around since the time of the dinosaurs but are now close to extinction.

The plants have been targeted in a wave of thefts in California and Florida, provoking anger and a little paranoia among collectors and staff at botanical gardens.

"No one talks about what they have anymore because they are just afraid," said Tom Broome, a nursery owner in Polk City, Fla., and president of the Cycad Society. The organization, with 500 members in 20 countries, promotes efforts to save the plants.

Some nurseries and gardens have added security, but homes are vulnerable. The thieves who struck in the Orange County city of Costa Mesa only had to enter the front yard to get the pair of cycads from a collection of some 50 species on the property.

One, valued at $2,000, was an obvious target: a 4-foot-tall cycad (pronounced 'sigh-cad') from southern Mexico with a knobby, barrel-shaped trunk that resembled a giant pineapple with emerald frond-like leaves.

The owner doesn't want his name disclosed because he fears thieves will return, especially for an African specimen that he hopes will finance a year of college for one of his kids.

"If someone found out I had it here they'd do anything to get it," he said.

Nearly everyone involved with cycads has a story of theft. One nursery owner in the San Diego area, who also spoke on condition of anonymity, said he's been hit twice in the past 18 months and has had to add $50,000 worth of security.

In September, thieves broke into the Fairchild Tropical Botanic Garden in Coral Gables, Fla., taking advantage of the evacuation for Hurricane Frances, and stole more than 30 cycads. "In the black market, some species of cycads are like a fine piece of art — like a Picasso," garden spokeswoman Nannette Zapata said at the time.

It's gotten bad enough that some have given up on the plants, which despite their palmlike appearance are more closely related to pine trees.

"You're just growing them up for someone else to steal and make a profit," laments Arthur Gibson, director of a botanical garden at the University of California, Los Angeles, which stopped acquiring cycads after someone pilfered part of its collection. "It's really depressing."

There are about 300 species of cycad, and most are threatened with extinction. They are generally tropical or subtropical — with some of the most coveted found in southern Africa, Australia and South America.

Imports are restricted under an international treaty. Some species are essentially priceless and, if stolen, couldn't be displayed.

"It would be like having a stolen Picasso. Everybody would know that plant," said Julian Duval, executive director of Quail Botanical Gardens in Encinitas, which locked its most precious cycads in a greenhouse after a theft nearly two years ago.

Mike Maunder, director of Florida's Fairchild garden, suspects that thieves may be stealing to fill orders for an international black market most active in supplying collectors in the United States, Mexico, the Bahamas and South Africa.

"There are people who want to collect the rarest of the rare, and they are willing to support an illegal market so they can get the stuff that they ordinarily wouldn't be able to get," he said.

"Cycads are just the hot, trendy plant right now," said Jason Kubrock, a horticulturist at Quail Botanical Gardens.

Quail now features security cameras, guards and regular patrols by the sheriff's department.

And in Costa Mesa, the private collector has moved his most prized plants out of sidewalk view and is much more cautious about showing off his yard.

"It's a shame, because I'm in it for the beauty of the plants," he said.

Orchid Thief Sentenced in Florida

An orchid thief was sentenced yesterday in federal court to two years probation and a $1000 fine for illegally importing an endangered orchid, according to the St. Petersburg Times, 11/2. Michael Kovach brought an orchid into the United States from Peru that had never before been identified by science. He brought the orchid to the renowned Selby Botanical Gardens in Sarasota, FL. Both the gardens and one of their experts also had to pay fines and were sentenced to probation.

Climatic Warming and Decline of Arctic – Alpine Plants

Excerpt from: From: Lesica, P. & B. McCune. 2004. Decline of arctic-alpine plants at the southern margin of their range following a decade of climatic warming. Journal of Vegetation Science 15 (5): 679-690. (From BEN 338, 2004)

Climate change is thought to drive extirpation and migration of species, especially at range margins. Thus, populations of arctic-alpine plants at the southern periphery of their range should respond rapidly to projected global warming. We monitored the abundance of seven arctic-alpine vascular plants at or near the southern limits of their ranges at three sites in Glacier National Park, Montana from 1989 through 2002. We also recorded canopy cover of all plant species in sample plots once at the beginning and again at the end of the study.

For many species, detecting long-term population trends is confounded by short-term variation. Our study design employed temporal resampling of permanent plots and a multivariate repeated measures model that accounts for the effects of high frequency variation and allow assessment of the significance of long-term trends. Statistical analysis compares site-specific estimates of annual mean density between two time periods and uses between-plot within-site within-year variation to estimate error. Mean summer temperature during this period averaged 0.53 deg. C higher than the previous four decades.

Results of ordinations with non-metric multidimensional scaling suggested that vegetation moved toward the dry end of a moisture gradient at two sites during the course

of the study. At the same time none of the peripheral arctic-alpine indicator species increased, but the density of *Draba macounii* rosettes declined by 64% (P=0.026); the number of *Euphrasia arctica* plants declined by 65% (P<0.001); the density of *Gentiana glauca* rosettes declined by 44% (P=0.048); and the number of *Kobresia simpliciuscula* tussocks declined by 31% (P<0.001).

We cannot rigorously infer causality from our descriptive study; however, changes in both indicator species and the vegetation matrix were consistent with predictions of climate-induced extirpation of high-elevation species and the northern migration of floras. Our results also suggest that species responded to the decade of warming individualistically with little relationship to growth form.

Congress Passes Legislation Designating the Oak Tree America's National Tree

Oak is a Part of Our National Heritage

Kathryn Rexrode, Office of Congressman Goodlatte (VA), 24 November 2004

Washington, DC: The U.S. Congress passed the FY 2005 Appropriations Conference Report, which includes legislation introduced by Congressman Bob Goodlatte that officially recognizes the oak tree as America's National Tree. The legislation passed the House of Representatives by a vote of 344-51.

Once the Appropriations Conference Report is signed into law by President Bush the Oak will become America's National Tree.

During a four-month-long open voting process sponsored by the National Arbor Day Foundation, the oak tree earned the title of America's Chosen National Tree. Congressman Goodlatte's legislation make's official that recognition.

"As Chairman of the House Agriculture Committee, I appreciate how trees and forests enhance the environment, add recreational opportunities and provide for the livelihoods of millions of individuals in the forest industry," Goodlatte said. "Whether enjoying a product generated from a forest like paper, beautifully crafted furniture, or an ornate window framing, or the simple satisfaction of lying under a shaded giant, trees contribute to all Americans."

The Sixth District (of Virginia), which Goodlatte represents, is heavily forested and includes many oaks. It includes the George Washington and Jefferson National Forests. The oak itself is found in all 50 states*.

The strong and stately oak tree is of particular importance in America's history and culture. The oak helped our founding fathers establish a new nation, supplying building materials for the ever-expanding thirteen original colonies. It served as a familiar sight to pioneers as they forged across the new republic to the west coast. Abraham Lincoln used the Salt River Ford Oak as a marker in making his way across a river near Homer, Illinois. The Richards White Oak in Maryland served as a landmark on a 1681 map used by William Penn. Andrew Jackson took shelter under Louisiana's Sunnybrook Oaks on his way to the Battle of New Orleans. And perhaps most notably, "Old Ironsides," the USS Constitution, earned its nickname from the strength of its live oak hull, famous for easily repelling British cannonballs.

"The oak has long been an enduring and mighty tree," Goodlatte said. "It is truly a part of our national heritage and it merits the formal distinction of America's National Tree."

"The oak, with its beauty and strength, is a fitting symbol for all of America's trees," said John Rosenow, President of The National Arbor Day Foundation. "Today, as in our country's very beginnings, trees are vital to our health, comfort, prosperity, and well being. Through this legislation, Congress has acted on the wishes of the hundreds of thousands of citizens who voted at arborday.org to choose the oak as America's National Tree. We're especially grateful to Congressman Goodlatte and Senator Ben Nelson for championing this symbolically important legislation."

"I am impressed with the Foundation's work in promoting trees in our communities across the country," Goodlatte said. "Chosen by the American people in a broad-based election, the oak tree represents the true characteristics of this great nation: strength, beauty and endurance."

Goodlatte has been a member of the National Arbor Day Foundation for 18 years.

* There are three states that lack native oak species; Idaho, Hawaii, and Alaska (editor)

Black & Decker Outdoor Products Sponsors National Garden Month

National Gardening Association Press Release, 13 December 2004

South Burlington, VT – The National Gardening Association (NGA) is pleased to announce that Black & Decker Outdoor Products is sponsoring National Garden Month this April. The call to action for this year's National Garden Month campaign, April 2005, is "Give a Garden – Add Beauty to Life" and encourages everyone to get out and plant to help beautify our communities. Educational activities, public events, government proclamations, and garden center seminars all help build a steady stream of increased awareness and participation from coast to coast.

"National Garden Month is National Gardening Association's vehicle to raise public awareness by bringing together non-profit organizations and corporations that embrace plant-based education as a tool to better every aspect of our lives," says Mike Metallo, President, NGA.

"Black & Decker is excited to sponsor National Garden Month as part of our effort to appeal to gardeners with our line of environmentally friendly yet powerful products. We support the goal to inspire more people to get out into their yards and gardens to experience the physical, emotional, and environmental benefits of gardening," says Mike Wohltmann, director of Black & Decker Outdoor Products.

"Because our cordless and corded outdoor products run on electricity. You don't have to worry about fumes, harmful emissions or trips to the gas station. This allows you to take full advantage of being outside in the beautiful surroundings of your yard or garden. We hope that this year more and more people will become involved with National Garden Month," added Wohltman.Larry Sommers, Vice President, NGA states, "The National Gardening Association is pleased to partner with Black & Decker Outdoor Products because the company's products offer sound environmental benefits and deliver great performance."

Black & Decker Outdoor Products include both corded and cordless electric string trimmers, hedge trimmers, edgers, pruners, lawn mowers, blower vacs, pressure washers and more. These products' innovative features, such as pivoting handles, automatic feed spools, articulating power heads, slide pack batteries and more, make them easy to use to help you keep your yard and garden looking its best.

Visit the National Gardening Associtiona at www.garden.org

Mutant Poppy Makes Safer Drugs

Alok Jha, The Guardian, 23 September 2004

Scientists have discovered a poppy that does not produce addictive drugs - and are using it to make safer painkillers.

Poppies are used to make the pharmaceuticals morphine and codeine, which act as painkillers but are also the raw ingredients for illicit drugs such as heroin and opium.

Philip Larkin, of Australia's Commonwealth Scientific and Industrial Research Organisation, and colleagues describe a mutant poppy that produces neither of these addictive chemicals in today's Nature.

The biochemical pathways normally present in poppies that produce these chemicals are blocked in the naturally occurring mutant, known as top1.

This leads the plant to accumulate related chemicals, thebaine and oripavine, which can be extracted and made into non-addictive painkillers.

Dr Larkin said painkillers such as buprenorphine were inherently safer because they limit their own activity in the brain at high doses - in other words, it is hard to overdose on them.

In Tasmania the mutant is being used to produce around half of the poppy crop.

Continuing Education News- Upcoming Courses

Conservation Biology and Restoration Ecology (CBRE)

Objectives: explain legal and policy implications of conservation biology and restoration ecology. Describe underlying ecological processes and apply concepts from theoretical ecology, habitat fragmentation, population viability analysis, restoration as mitigation, and exotic species invasions. Discuss temporal and spatial scales of ecosystems. Apply current concepts for conserving biological diversity and ecological relationships throughout the landscape. Apply, accept, and accommodate information uncertainties. Discussions and field trips address Forest Service activities, and incorporate applicable advances in Conservation Biology and Restoration Ecology from National and International examples. Interactive discussions, activities, and field trips will focus on the perspective of participants. Participants are expected to have a basic knowledge of conservation biology. http://cbre.ucdavis.edu

Tuition $900
March 28 – 31, 2005 **UC Davis, CA**
(Lodging and meals NOT included)

Contact: Dr. Michael L. Johnson, John Muir Institute of the Environment,
University of California-Davis, Davis, CA 95616
mbjohnson@ucdavis.edu 530-752-8837 Fax: 530-754-9141

Plain & Simple! Document Writing (PSDW).
Objectives: write clear, concise analytical documents readily understood by the average reader; effectively communicate technical and scientific information to a variety of audiences. Participants use laptops simulating current editing practices. Designed for natural resource professionals writing letters, analytical documents, biological assessments and evaluations, NEPA documents and other types of documents, but **open to everyone**. During the workshop participants edit their and fellow participants' examples, leaving with an improved product. Interactive lecture with activities and exercises. Bring a laptop.
In collaboration with the USFS Ecosystem Management Coordination staff.

Tuition $180
February 8-10, 2005 **Albuquerque, NM**
April 19-21, 2005 **Portland, OR**
(Lodging and meals NOT included)

Contact: Dr. Jud Monroe, Environmental Planning & Documentation,
10 Stone Court, San Anselmo, CA 94960
jmonroe@pacbell.net 415-453-6546

Policy and Legal Aspects of Endangered Species Management (PLA).

Objectives: explain policy and legal aspects of managing threatened, endangered and sensitive species; integrate into management practices with special emphasis on agency consultation and recovery obligations under Section 7 of the ESA. Focus on the law, policies and administrative practices from the perspective of field biologists and other specialists. **Intro** - regular workshop. **Advanced** - More in-depth and specific than 'Intro' with application to home unit projects. Must attend 'Intro' before attending Advanced. Interactive lectures, discussions, and activities allow participants to learn from each other as well as leading experts.

Tuition $850 (intro) or $750 (advanced)
Lewis and Clark Law School & College
October 25-28, 2004 (intro) **Lewis and Clark Law School, Portland, OR**
March 7-10, 2005 (advanced) **Lewis and Clark Law School, Portland, OR**
(Lodging and meals NOT included)

Contact: Janice Weis, J.D., Director, Environmental and Natural Resources Law Program,
Lewis & Clark College, 10015 SW Terwilliger Blvd., Portland, OR 97219-7899
jweis@lclark.edu 503-768-6649
Administrative Contact: Linda D'Agostino lindad@lclark.edu 503-768-6784

Leadership and Communications (LAC). Objectives: explain and discuss value systems of colleagues, the agency and publics; demonstrate essential communication skills; practice negotiation techniques; and plan for personal and professional growth. Everyone can be a leader, even if they are not in a supervisory or decision maker position.

Tuition $2400
February 1-10, 2005 **Blacksburg, VA**
Travel on January 31st & February 11th.

Contact: Dr. Steve McMullin, Department of Fisheries and Wildlife Science,
Virginia Polytechnic Institute and State University, Blacksburg, VA 24061-0321
smcmulli@vt.edu 540-231-8847

Program Management (PMB). Objectives: demonstrate skills to effectively develop and implement a Program Plan on participant home units. Participants draft a Program Plan covering goals, objectives, elements, personnel development, budgeting, marketing, and tiering to Forest Plans. Draft plan is handed in for review at the end of workshop. Focus on motivating people to think programmatically. Target audience is journey-level biologists responsible for program development.

Tuition $375
April 4-8, 2005 **Utah State University, Logan, UT**
(Lodging and meals NOT included)

Contact: Shelly Witt and Dr. Jeff Kershner, Aquatic, Watershed and Earth Resources Department, Utah State University, Logan, UT 84322-5210
switt@cc.usu.edu 435-753-4838 (Witt) FAX: 435-755-3563

Wildlife Habitat and Plant Management (WHPM). Objectives: explain habitat issues and concepts that shape resource management at the national, regional and local levels; apply habitat concepts and management in light of recent theory, technology and research findings; and apply new knowledge to situations and actual problems encountered in resource management.

Tuition $2300
March 15-24, 2005 **Blacksburg, VA**
Travel on March 14th & 25th

Contact: Dr. Steve McMullin, Department of Fisheries and Wildlife Science, Virginia Polytechnic Institute and State University, Blacksburg, VA 24061-0321
smcmulli@vt.edu 540-231-8847

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 December 2004, there are 9 (nine) open Forest Service line officer positions

Opening Date	Job Summary	Agency	Location
Dec 21, 2004	Botanist **Vacancy Ann.#:** FWS2-04-097 **Who May Apply:** Status Candidates **Pay Plan:** GS-0430-11/12 **Appointment Term:** Permanent **Job Status:** Full Time **Closing Date:** 01/05/2005 **Salary:** From 48,947.00 to 76,261.00 USD per year	Interior, US Fish and Wildlife Service	US-TX-San Marcos
Dec 20, 2004	BOTANIST **Vacancy Ann.#:** DS-5-03-152741-BM **Who May Apply:** US Citizens **Pay Plan:** GS-0430-09/09 **Appointment Term:** Permanent **Job Status:** Full Time	Interior, US Fish and Wildlife Service	US-WI-Madison Metro area, WI

	Job Status: Full Time **Closing Date:** 12/27/2004 **Salary:** From 40,454.00 to 52,591.00 USD per year		
Dec 20, 2004	Bonanist **Vacancy Ann.#:** 24-57-113 **Who May Apply:** Public **Pay Plan:** GS-0430-11/11 **Appointment Term:** Permanent **Job Status:** Full Time **Closing Date:** 01/18/2005 **Salary:** From 48,974.00 to 63,629.00 USD per year	Agriculture, Agricultural Marketing Service	US-NE-Gastonia
Dec 13, 2004	BOTANIST DO NOT USE OPM's Resume Builder. This position is being advertised through Avue Digital Services (ADS), an on-line applicant assessment system. You must click on the link below to apply for this posit ...[more] **Vacancy Ann.#:** ADS05-R5BDFSJ-0447D **Who May Apply:** Public **Pay Plan:** GS-0430-09/11 **Appointment Term:** Term **Job Status:** Full Time **Closing Date:** 12/27/2004 **Salary:** From 43,792.00 to 52,985.00 USD per year	Agriculture, Forest Service	US-CA-IDYLLWILD, CA
Dec 10, 2004	Botanist, GS-0430-09, KM-DEU **Vacancy Ann.#:** ER-2005-0069 **Who May Apply:** Public **Pay Plan:** GS-0430-09/09 **Appointment Term:** Term **Job Status:** Part Time **Closing Date:** 12/23/2004 **Salary:** From 41,815.00 to 54,360.00 USD per year	Interior, US Geological Survey	US-MD-Prince George County
Dec 8, 2004	BOTANIST DO NOT USE OPM's Resume Builder. This position is being advertised through Avue Digital Services (ADS), an on-line applicant assessment system. You must click on the link below to apply for this posit ...[more] **Vacancy Ann.#:** ADS05-R9CN-FL-0320DP **Who May Apply:** Public **Pay Plan:** GS-0430-07/09 **Appointment Term:** Permanent **Job Status:** Full Time **Closing Date:** 01/04/2005 **Salary:** From 33,071.00 to	Agriculture, Forest Service	US-WI-FLORENCE, WI

52,591.00 USD per year

Dec 8, 2004	BOTANIST DO NOT USE OPM's Resume Builder. This position is being advertised through Avue Digital Services (ADS), an on-line applicant assessment system. You must click on the link below to apply for this posit ...[more] **Vacancy Ann.#:** ADS05-R9CN-FL-0320G **Who May Apply:** Status Candidates **Pay Plan:** GS-0430-07/09 **Appointment Term:** Permanent **Job Status:** Full Time **Closing Date:** 01/04/2005 **Salary:** From 33,071.00 to 52,591.00 USD per year	Agriculture, Forest Service	US-WI-FLORENCE, WI
Dec 6, 2004	SPVY. BOTANIST This position is being advertised in the following series. Submit only one application for this announcement and indicate which series you wish to be considered for. GS-401 Spvy. Exotic Plant Mana ...[more] **Vacancy Ann.#:** APC-05-04-KH-M **Who May Apply:** Status Candidates **Pay Plan:** GS-0430-11/12 **Appointment Term:** Permanent **Job Status:** Full Time **Closing Date:** 1/3/2005 **Salary:** From 50,593.00 to 78,826.00 USD per year	Interior, National Park Service	US-DC-Washington
Dec 6, 2004	SPVY. BOTANIST This position is being advertised in the following series. Submit only one application for this announcement and indicate which series you wish to be considered for. GS-401 Spvy. Exotic Plant Mana ...[more] **Vacancy Ann.#:** APC-05-05-KH-D **Who May Apply:** Public **Pay Plan:** GS-0430-11/12 **Appointment Term:** Permanent **Job Status:** Full Time **Closing Date:** 1/3/2005 **Salary:** From 50,593.00 to 60,638.00 USD per year	Interior, National Park Service	US-DC-Washington
Oct 1, 2004	BOTANIST **Vacancy Ann.#:** SW0430 **Salary:** From 23,442.00 to 126,255.00 USD per year **Appointment Term:** Permanent **Job Status:** Full Time, Part Time **Closing Date:** 09/30/2005	Navy Field Offices	Throughout The World

	Closing Date: 09/30/2005 **Salary:** From 23,442.00 to 126,255.00 USD per year		
Apr 12, 2004	BOTANIST DO NOT USE OPM's Resume Builder. This position is being advertised through Avue Digital Services (ADS), an on-line applicant assessment system. You must click on the link below to apply for this posit ...[more] **Vacancy Ann.#:** ADS04-R5SRSO-567DTA **Who May Apply:** Public **Pay Plan:** GS-0430-09/09 **Appointment Term:** Temporary **Job Status:** Full Time **Closing Date:** 12/31/2004 **Salary:** From 40,454.00 to 52,591.00 USD per year	Agriculture, Forest Service	US-CA-EUREKA, CA

Banner Plant: *Phoradendron leucarpum* – American Mistletoe

Each month, a different plant graces the banner of *Lingua Botanica*.
This month's image of American mistletoe is from Linda Lee and the South Carolina Plant Atlas
Mistletoe natural history from Mary Welch-Keesey, Purdue University and Martha Bailey

Mistletoe is the common name for shrubs in the *Viscaceae* family, most of which are parasitic. The ancients considered the plants to be mystical because mistletoe would suddenly appear in trees and did not have roots. They did not realize that fruit-eating birds distributed mistletoe seed by rubbing their beaks against the trees and via their droppings. The plant was considered sacred in pre-Christian Europe. It was variously credited with curing diseases, rendering poisons harmless, and protecting the house from ghosts. It became associated with the Christmas season because the Druids were said to welcome the new year with branches of mistletoe. Over the centuries the berries have had medicinal uses; the Native Americans used the shrub long before the Europeans arrived in America. However, THE BERRIES ARE TOXIC IF THEY ARE EATEN.

American mistletoe (*Phoradendron leucarpum*) and English mistletoe (*Viscum album*) are similar in appearance. The American generic name is based on the Greek Phor meaning "thief" and dendron meaning "tree" because it steals the life juices from the host tree. The English generic name refers to its sticky white berries. The American mistletoe is the plant which is available in North American holiday markets.

Mistletoe forms a drooping yellowish evergreen bush about 2-3 feet long on the branch of a host tree. It has thickly crowded, forking branches with oval to lance-shaped leathery leaves about 2 inches long, arranged in pairs, each opposite the other on the branch. The flowers, in compact spikes, are bisexual, unisexual, or regular. They are yellower than the leaves and appear in the late winter; they soon give rise to one-seeded, white berries, which when ripe are filled with a sticky, semi-transparent pulp.

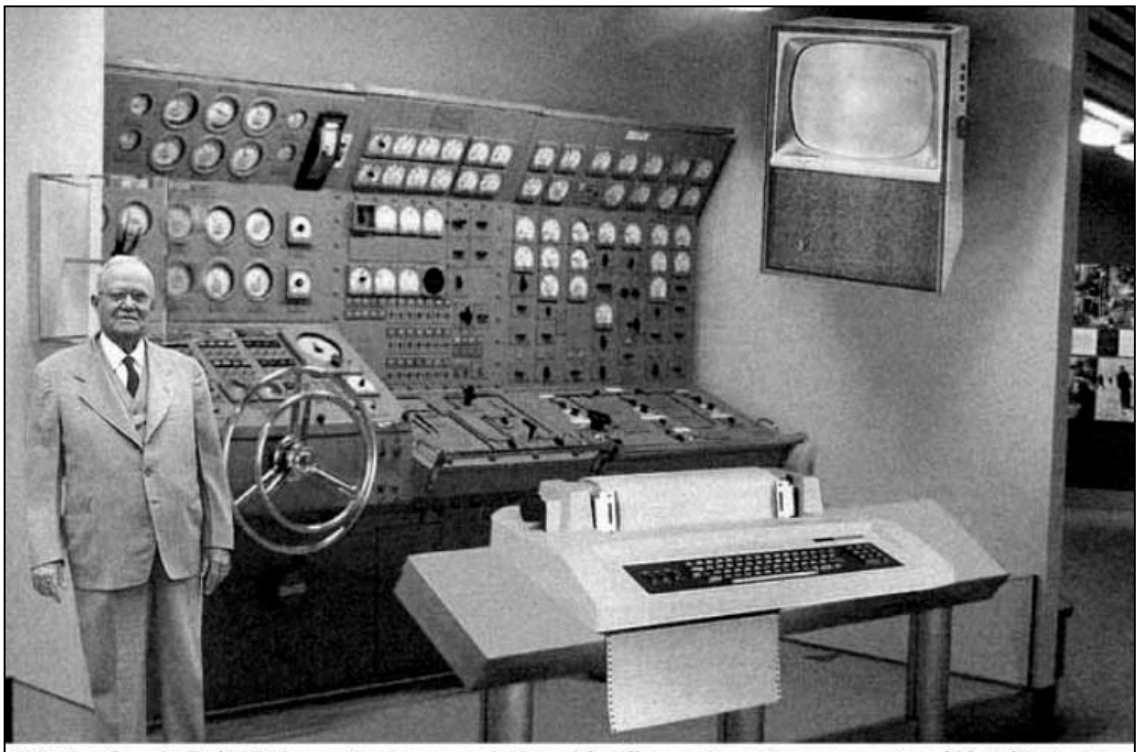
After germination a modified root penetrates the bark of the host tree and forms a connection through which water and nutrients pass from host to parasite. Mistletoes

contain chlorophyll and can make some of their own food. Species in America parasitize many deciduous trees, including oaks. Mistletoes are slow-growing but persistent; their natural death is determined by the death of the hosts. They are pests of many ornamental, timber, and crop trees. The only effective control measure is complete removal of the parasite from the host.

One custom which the English and Americans share is that of kissing under the mistletoe, a practice that originated in England in the 19th Century. Since the berries are toxic, it is wise, when bringing a spray into the house, to hang the plant high enough that children cannot reach it. BERRIES OF ALL MISTLETOES CONTAIN TOXIC COMPOUNDS THAT ARE POISONOUS TO ANIMALS AND HUMANS. Often, plastic berries are substituted for real ones to prevent poisoning and increase shelf life.

After-Image: NRIS TES Plants WorkStation

Image courtesy of Popular mechanics, 1954



Scientists from the RAND Corporation have created this model to illustrate how a "home computer" could look like in the year 2004. However the needed technology will not be economically feasible for the average home. Also the scientists readily admit that the computer will require not yet invented technology to actually work, but 50 years from now scientific progress is expected to solve these problems. With teletype interface and the Fortran language, the computer will be easy to use.

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Chaos, panic, and disorder - my work here is done.

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