Lingua Botanica

A Journal for FS Botanists & Plant Ecologists

Among the things I love about winter is the coming of the seed catalogs. It typically starts with the arrival of the Thompson & Morgan catalog, followed shortly thereafter by many other old friends. In addition to the simple pleasure of hours of browsing through plants familiar and exotic, these catalogs give us a chance to dream about the future of our gardens. Whether your garden is a cluster of terra-cotta, or a hectare of woodland, we all have visions of what that green space could look like, what we'd like it to look like in the future. I recently saw a spreadsheet that had me wondering about the future of botany in the Forest Service. As of September 2001, there were 128 people in the agency in the botany series; a couple years ago there were barely a hundred of us. Although this may seem like a good thing, it isn't necessarily a reason to celebrate. Let me put our happy band of a hundred and a quarter in perspective. In FY01 the agency hired over a hundred foresters, bringing their total in the agency to 2922. The Forest Service has 714 wildlife biologists and more than 350 public affairs specialists. There are more real estate specialists in the agency than botanists! Is this the agency of your dreams? If not, let me be your Thompson & Morgan. Sally Claggett just took a job coordinating watershed restoration projects in the Chesapeake Bay region. Lisa Croft, one of the founders of the Celebrating Wildflowers Program, is now in regional strategic planning. Anne Fege and Jeanine Derby, forest supervisors of the Cleveland and Los Padres National Forests began their careers as botanists. Associate Regional Forester Bertha Gillam was once a botanist. Regional Forester Harv Forsgren began his career doing botany surveys in Alaska. Botany is clearly the best job in the agency; there are no specialists as dedicated to their profession and their resource as botanists. Can you imagine Real Estate Specialists making a similar claim? And yet we languish at one sixth the level of the wildlifers, and a third the level of public affairs specialists. Why? Because so few of us have been willing to "take one for the team." Who sets the agency's agenda? Who makes personnel and hiring decisions? Who has the power and authority to determine which projects are implemented, which risks to take? Until more of us are willing to step aside, to make room for a new crop of young botanists, it will not be us. It will be them. There are eleven ranger and Forest supervisor jobs open right now. Which one is yours? the editor.

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(extended) Useful URLs

Terrestrial Ecosystems of the World: Courtesy of the World Wildlife Fund, this interactive map lets you cruise around the world and visit 867 different ecosystems. Each info pop-up contains an image and interesting facts. An excellent educational tool.
http://www.nationalgeographic.com/wildworld/terrestrial.html

The AgroArt Festival Gallery: The AgroArt Festival occurs each September in Auburn, California. Visit their gallery to see to new and creative uses for *Cucurbita pepo*!
http://www.agroart.org/gallery/

Earth and Sky Programs: Heard on Public Radio stations around the nation, Earth and Sky provides interesting information on a broad range of science topics. Earth and Sky has been partnering with the USDA Forest Service for the development of natural resource related topics. Browse the show's archives and stream past Forest Service stories about such topics as Venus flytraps, tallgrass prairies, or candystick plant.
http://www.earthsky.com/Shows/Browse/

The American Prairie: Although the National Wildlife Federation seriously missed an opportunity to talk about the place of native plants in prairie restoration, this state-by-state assessment of prairie/grassland conditions is still worth a read
http://www.nwf.org/grasslands/americanprairie_release.html

Native Plants Network – Propagation Techniques Database: Ever wonder how to start *Andropogon* or *Astragalus* seeds? Have you been looking for a forum to share what you've learned about germinating restoration seeds? The Native Plants Network Propagation Database is just what you've been looking for. Go there now!
http://nativeplants.for.uidaho.edu/network/general.asp

Medicinal and Aromatic Plant Symposium: Organized by the MPWG, this group of experts from the fields of conservation, cultivation, industry, pharmacognosy, and native culture will discuss the status and future of the medicinal and aromatic plant industry.
http://www.plantconservation.org/mpwgconference/

U.S. Nontimber Forest Products Database: This database lists nearly 900commercial and non-commercial non timber forest product species and is intended to help in the identification, development and conservation of NTFP species in your region.
http://ifcae.org/ntfp/

Southern Forest Resource Assessment: The result of more than two years work, this report has caused much controversy from all quarters. Click on the link below to see a truly interdisciplinary-interagency assessment of forestry in the southeastern U.S.
http://www.srs.fs.fed.us/sustain/

BLM National Photo Database: Looking for another source for digital imagery?
http://www.photos.blm.gov.

ERRATA

The Afterword section of the last edition of ***Lingua Botanica*** featured a plant that had been tentatively identified as *Cassythia filiformis* (Lauraceae). That ID was incorrect. It has been determined to be *Cuscuta japonica*. This species was first collected in 1941 in Texas (on kudzu), it parasitizes a wide range of woody species, and its seeds are used medicinally in the Far East. The tree in the image published in the autumnal ***Lingua Botanica*** has since died of its infection.

C. japonica flower image courtesy of Mary K. Ketchersid and Monique Dubrule Reed, Texas A&M University.

Injuries due to falling coconuts

P. Barss, 1984. Journal of Trauma v 24(11):990-991 (abstract)

Falling coconuts can cause injury to the head, back, and shoulders. A 4-year review of trauma admissions to the Provincial Hospital, Alotau, Milne Bay Province, Papua New Guinea, revealed that 2.5% of such admissions were due to being struck by falling coconuts. Since mature coconut palms may have a height of 24 up to 35 meters and an unhusked coconut may weigh 1 to 4 kg, blows to the head of a force exceeding 1 metric ton are possible. Four patients with head injuries due to falling coconuts are described. Two required craniotomy. Two others died instantly in the village after being struck by dropping nuts.

Further Spread of Kudzu in the Pacific Northwest

Greg Haubrich, Washington State Department of Agriculture

It is with great sorrow that I report that Kudzu was found in Washington State for the first time this year. To date, it has been found at only one site. Four plants were found on private property near Vancouver. The above ground portions of the plants were removed by hand and the cut stems treated at the root crown with Garlon 4 by the Clark County Noxious Weed Control Board. Surrounding properties were surveyed with no additional infestations found. Survey work will be expanded this spring and of course the site will be monitored for all eternity most likely.

Image courtesy of PLANTS

Native Plant Materials and the Forest Service Nursery Review

In mid-July 2000, and interdisciplinary group convened in Reno, Nevada to assess the future of Forest Service Nurseries. That team included:

Bill Timko, Team Leader, Deputy Director, WO-FM
Alan Newman, Forest Supervisor, Ouachita N.F., R-8
Frank Burch, Reforestation/FS Nursery Specialist, WO-FM
Teresa Prendusi, Botanist and Rare Plants Specialist, R-4 R.O.
Glenda Scott, Regional Reforestation Specialist, R-1 R.O.
Brian Ferguson, Regional Silviculturist, R-4 R.O.
John Fiske, Regional Reforestation and TSI R-5 R.O.
Fred Zensen, Regional Reforestation and Nursery Specialist, R-6 R.O.
Tom Tibbs, Regional Geneticist, R-8 R.O.
Dick Tinus, Plant Physiologist, SRS, Flagstaff, AZ

An (slightly) edited version of the Executive Summary from their report is presented below:

Reforestation programs have declined markedly on National Forests due in large measure to sharp reductions in the timber sale program. This decline is projected to continue over the next 3-5 years. At the same time, the Natural Resource Agenda promotes ecosystem restoration and enhancement opportunities on NFS lands. This report provides an estimate of traditional and non-traditional plant material needs for the next 5 years and provides management options and recommendations to support the continued operation of the 6 remaining FS nurseries (the Ashe Nursery has been approved to cease producing tree seedlings at the end of CY 2000 and is not examined in this review).

Specific objectives of the Review were to: 1) evaluate the current role and mission of Forest Service nurseries in providing needed plant materials in support of reforestation, re-vegetation, and restoration efforts under the Natural Resource Agenda; 2) develop one or more options exploring increased utilization of Forest Service nurseries to provide for anticipated plant material needs over the next five years on National Forest System (NFS) and other public lands; 3) identify legal, administrative, economic, and operational barriers to options developed under Objective # 2 and recommend actions to overcome these barriers; 4) assess the probable impact of any recommended policy changes on non-Forest Service nurseries; 5) recommend needed changes to maintain state-of-the-art capabilities, including requisite skill levels, in growing high-quality seedlings of both traditional and non-traditional plant materials at Forest Service nurseries; and, 6) promote consistent use of Working Capital Funds (WCF) and other funding sources in financing Forest Service nursery operations under FFIS.

The core team developed four management options to foster increased utilization of FS nurseries. These include: 1) providing additional funding support using funds other than Working Capital Funds (WCF) to provide for continued operation of all 6 nurseries; 2) centralizing the management and administration of the nurseries; **3) expanding production of non-traditional plant materials at these facilities;** and 4) offering unused space at these facilities to outside interests. A description of each option, barriers to implementation, needed actions to overcome these barriers, and an assessment of impact to non-FS nurseries is included for each option.

The core team recommends implementation of Options #1, #2, and #3; however, the core team strongly recommends that Option # 4, offering unused space to outside interests, NOT be adopted.

The role of Forest Service Nurseries was once clear, though today that focus has diversified. Our nursery system provides for emergency needs for plant materials arising from large wildfires, replanting for areas devastated by insect and disease, wind-throw, and ice storms. They are uniquely positioned to play a crucial role in providing the restoration plant material needs of the agency with locally-native stock. Forest Service nurseries also provide plant materials that are not available in the commercial trade and are therefore strategically important to the conservation mission of the agency.

The report identified several management options to promote increased utilization of Forest Service Nurseries. I've excerpted below, the suggested option pertaining to native plant material production:

Option 3 -- Expand production of non-traditional plant materials at FS Nurseries

Description
This option emphasizes the increased production of non-traditional plant materials at FS nurseries in addition to traditional commercial tree species. Currently these facilities have assisted the national forests by growing a variety of non-traditional plant materials but this has been provided primarily on an entrepreneurial basis and dependant on the capability of each individual nursery. Many forests do not take advantage of this service in part because they are not aware of the nursery capabilities. Nurseries are capable of providing plant materials and technology transfer for restoring ecosystems and ecosystem components at risk.

In this role nurseries can:

- Provide leadership by developing a knowledge base and cultural practices for a variety of plant materials.
- Grow plant materials that are not available through commercial or state sources. This can involve providing plants ready for out-planting or expanding the initial collection, which can then be grown at private or state nurseries.
- Provide additional emphasis on growing sensitive species and plant materials associated with unique and rare plant communities.
- Provide plant materials to help achieve restoration and ecosystem management goals such as road decommissioning, restoration of ecosystems at risk (for example, sagebrush, southern oaks, wetlands, prairies), mine reclamation, watershed restoration, and systems affected by noxious weed invasions.
- Provide materials for restoration on BLM and other federal and State agency lands particularly in shared ecosystems.
- Develop partnerships to increase knowledge, support and production of plant materials with local businesses, Society of Ecological Restoration, The Nature Conservancy, universities and similar organizations. This would encourage public participation, research, and stewardship of public lands.

Barriers to Implementation

1. The enabling legislation for Forest Service nurseries focused on tree seedling and range forage production, which was the Forest Service mission at the time. The 1997 Interim Policy for Production of Plant Materials recognized the need to expand the role of nurseries in the production of non-traditional plant materials to meet ecosystem or restoration goals.
2. Currently there is no national policy for the use of non-traditional plant materials. Some Regions have adopted regional policies and these Regions are more apt to emphasize use of non-traditional plants in their restoration activities. There are other program specific guidance such as the Invasive Species Issues Team findings that provide recommendations for the use of non-traditional plant materials; however, this guidance is not integrated.
3. Restoration activities are not well coordinated among resource staffs at the WO and Regional levels. This results in inefficiencies and makes it difficult to implement restoration activities benefiting multiple resources.
4. Recent funding levels have not been sufficient to encourage Forest Service nurseries to grow more non-traditional plant materials.
5. There is inadequate knowledge, experience and staffing in restoration ecology at field units. There are insufficient skills,, experience, and staffing in restoration ecology and silviculture at all levels of the organization.
6. There is a lack of knowledge on seed collection and preparation, genetic adaptability, and seed transfer guidelines to develop appropriate prescriptions for seed mixtures and plant preferences.
7. Generally, small nurseries lack sufficient flexibility to expand into non-traditional species programs on a large operational basis. Flexibility is limited by small staffs, lack of on-site expertise, and infrastructure to rapidly expand into new programs.

Recommendations to Overcome Barriers:

1. Seek legislation to expand the current authorities of Forest Service nurseries to include production of all plant materials to meet broad ecosystem management restoration objectives.
2. Develop a national policy and guidance that integrates program areas into a cohesive policy on the use of non-traditional plant materials.
3. Conduct an agency-wide program Review of restoration activities.
4. Establish an agency-wide restoration coordination and funding method.
5. At the regional level, develop a comprehensive and integrated restoration program across program areas. Implement an integrated budget structure to fund restoration work.
6. Obtain needed restoration ecology skills and train existing staff in restoration activities. There is potential to expand the duties and skills of ecologists, botanists, and silviculturists in restoration. Partnerships with research units, professional restoration organizations and universities will help in closing these knowledge gaps.
7. Invest in genetic expertise and research similar to that developed for commercial tree species for non-traditional plant materials. (e.g. Make increased use of the NFGEL Lab in Placerville, CA and fund Regional Geneticists to develop and provide guidance.)

8. Support research in the development of native plant propagation techniques and assure there is staffing and skills at the nurseries to reflect changing nursery cultural practices.
9. Develop facilities and obtain equipment enabling Forest Service nurseries to grow a wider variety of needed plant species/ecotypes and materials.

Effects on non-Forest Service Nurseries
No significant adverse effects to non Forest Service nurseries are anticipated, so long as FS Nursery activities are not perceived as reducing the market share of State and private nurseries. This can be achieved by establishing partnerships with these nurseries to take advantage of their ability to grow certain desired species at agreed-upon production levels. The overall objective is to gain efficiency by utilizing all parties to provide the best plant materials at reasonable costs.

The most surprising information contained within the report is to be found in the responses of nursery managers and users to a series of business-related questions. I've selected a few of those questions and displayed the responses to highlight what can only be called a troubling lack of interest or awareness in the needs and potential of native plant propagation.

What services DO Forest Services nurseries provide which the region feels are indispensable?

Summary based upon 159 responses from 67 administrative forests.

- 56 responses (36%) Seed extraction, testing, and storage services.
- 35 responses (23%) Excellent customer service and technical assistance.
- 18 responses (11%) High-quality seedlings grown to meet local needs.
- 11 responses (8%) Competively-priced tree seedlings.
- **7 responses (5%) Non-traditional plant materials.**
- 5 responses (3%) Flexibility
- 2 responses (1%) Commitment to reforestation success.
- 2 responses (1%) Technical training
- 2 responses (1%) Program continuity
- 21 responses (13%) Other factors including: seedling delivery, tree improvement, rust resistance screening, assistance in dealing with surplus seedlings, cooler storage space, everything, site visits, user meetings, summer stock, strategic assets, land, facilities, plant and seed inventories, dedicated employees, "know-how", insurance policy against inability to secure plant materials from private sources, ability to grow bare-root oak seedlings, worry-free source of seedlings, no contracting responsibilities.

What services do Forest Service nurseries NOT provide which the region feels are needed?

Summary based upon 50 responses from 44 administrative forests.

- 17 responses (34%) None. FS nurseries provide all needed services.
- 9 responses (18%) Expanded containerized seedling production.
- **7 responses (14%) Expanded non-traditional plant material production.**
- 2 responses (4%) Lower, more competitively–priced seedlings.
- 15 responses (30%) Other factors including: seed transfer guidelines for non-traditional plant materials, containerized summer planting stock, field visits by nursery personnel, computer

access to seed inventory, assistance with seed collection, coordination with Research on selected species, more expertise in non-traditional plant materials, quality transplant stock, Internet ordering capability, combine nursery and seed extractory at same location (R-6), seed services for minor species, SPA's for native grasses and non-traditional plant materials, improved germination for selected species, seed cleaning services.

What services could be eliminated with little or no impact to product quality, quantity, and/or reforestation success?

Summary based upon 48 responses from 46 administrative forests.

- 39 responses (81%) No services could be eliminated.
- **4 responses (8%) Non-traditional plant material production.**
- 5 responses (11%) Other services including: white pine seed orchard at Coeur d' Alene, close Chico Genetic Resource Improvement Center as a production nursery, stop using wax boxes, stop producing bare-root conifer seedlings, stop collecting and processing selected seed species.

What opportunities do you see to help reduce costs and promote the overall efficiency in the USFS nursery program?

Summary based on 62 responses from 46 administrative forests.

- None (11 responses)
- **Expand production of non-traditional plant materials (7 responses)**
- Reduce staff or overhead (7 responses)
- Allow FS nurseries to be more competitive with private-sector (2 responses)
- Allow greater creativity in contracting (2 responses)
- Other comments included: reduce seed inventories, develop regional seed bank, increase mechanization, increase reforestation programs, contract some aspects of nursery operation, ship in smaller, re-usable boxes, use district personnel, centrally locate resources to respond to forests with greatest demand, maintain cost-efficient nurseries, evaluate cost effectiveness of producing selected species, consolidate facilities, zone, define what you mean by efficiency, meet customer needs, produce a quality product, custom grow stock, grow seedlings for private sector, discourage use of private nurseries, grow plant materials for other agencies, pull out of WCF, take FS nursery managers off forest leadership team, diversify products, lease unused space, rely on less costly stock types, specialize, develop true comparison of public vs. private, consolidate Bend extractory, increase minimum lot sizes, base charges on actual yield.

This lack of focus on the opportunities that reside in native plant materials is highlighted by the projected future needs highlighted in the following series of tables extracted from the report.

Do any forests within the Region have current or anticipated future needs (by FY 2005) for other plant materials (i.e. – plant materials other than those listed on Table 1, such as so-called NATIVE PLANTS?

A total of 57 administrative forests (48%) responded with estimates of current and/or anticipated future needs. The following table summarizes the number of responding forests by region:

Region	Number of Responding Administrative Forests

1	7
2	4
3	10
4	9
5	7
6	12
8	4
9	2
10	2

Table 2A – NFS Non-traditional plant material needs by Region and Species Group
FY 2000 through FY 2005
(in thousands of seedlings and pounds of seed)

Fiscal Year	Species Group	Region 1	Region 2	Region 3	Region 4	Region 5	Region 6	Region 8	Region 9	Region 10	Grand Totals
FY 2000	**Conifers (M seedlings)**	6	1	0	0	0	0	0	7	0	**14**
	Hardwoods (M seedlings)	16	3	0	0	5	38	12	0	20	**94**
	Woody shrubs (M seedlings)	53	10	0	23	70	0	0	0	0	**156**
	Herbaceous species (M seedlings)	0	0	0	2	40	0	12	0	0	**54**
	Total	**75**	**14**	**0**	**25**	**115**	**38**	**24**	**7**	**20**	**318**
FY 2000	**Conifer seed (pounds)**	0	0	0	0	0	0	0	100	0	**100**
	Hardwood seed (pounds)	25	0	0	0	0	0	0	0	0	**25**
	Woody shrub seed (pounds)	0	50	0	0	0	0	0	0	0	**50**
	Herbaceous species (pounds)	1,016	1,500	0	110	500	8,970	100	0	7	**12,203**
	Total	**1,041**	**1,550**	**0**	**110**	**500**	**8,970**	**100**	**100**	**7**	**12,378**
FY 2001	**Conifers (M seedlings)**	10	5	0	0	0	0	0	7	0	**32**
	Hardwoods (M seedlings)	12	6	5	5	0	132	24	20	20	**224**
	Woody Shribs (M seedlings)	70	4	0	49	50	0	0	0	0	**173**
	Herbaceous species (M seedlings)	0	0	0	2	20	0	12	0	0	**34**
	Total	**92**	**15**	**5**	**56**	**70**	**132**	**36**	**27**	**20**	**453**
FY 2001	**Conifer seed (pounds)**	0	0	0	0	0	0	0	0	0	**0**
	Hardwood seed (pounds)	0	0	0	0	0	0	0	0	0	**0**
	Woody shrub seed (pounds)	10	50	0	0	0	0	0	0	0	**60**

	Herbaceous species (pounds)	3,021	1,840	5	504	500	7,903	140	0	8	**13,921**
	Total	**3,031**	**1,890**	**5**	**504**	**500**	**7,903**	**140**	**0**	**8**	**13,981**

Fiscal Year	**Species Group**	**Region 1**	**Region 2**	**Region 3**	**Region 4**	**Region 5**	**Region 6**	**Region 8**	**Region 9**	**Region 10**	**Grand Totals**
FY 2002	**Conifers (M seedlings)**	5	10	0	0	0	0	0	3	0	**18**
	Hardwoods (M seedlings)	52	20	0	5	15	175	12	0	20	**299**
	Woody shrubs (M seedlings)	135	4	0	50	50	0	0	0	0	**239**
	Herbaceous species (M seedlings)	0	0	0	0	20	0	12	0	0	**32**
	Total	**192**	**34**	**0**	**55**	**85**	**175**	**24**	**3**	**20**	**588**
FY 2002	**Conifer seed (pounds)**	0	0	0	0	0	0	0	0	0	**0**
	Hardwood seed (pounds)	10	0	0	0	0	0	0	0	0	**10**
	Woody shrub seed (pounds)	20	50	0	0	0	0	0	0	0	**70**
	Herbaceous species (pounds)	7,763	1,840	0	897	500	10,293	240	0	9	**21,542**
	Total	**7,793**	**1,890**	**0**	**897**	**500**	**10,293**	**240**	**0**	**9**	**21,622**

FY 2003-FY2005 (annually)	**Conifers (M seedlings)**	5	10	0	0	0	0	0	3	0	**18**
	Hardwoods (M seedlings)	52	21	5	5	15	128	12	0	20	**258**
	Woody shrubs (M seedlings)	245	4	0	65	50	0	0	0	0	**364**
	Herbaceous species (M seedlings)	0	0	0	0	20	0	12	0	0	**32**
	Total	**302**	**35**	**5**	**70**	**85**	**128**	**24**	**3**	**20**	**672**
FY 2003-FY2005 (annually)	**Conifer seed (pounds)**	0	0	0	0	0	0	0	0	0	**0**
	Hardwood seed (pounds)	10	0	0	0	0	0	0	0	0	**10**
	Woody shrub seed (pounds)	20	150	0	0	0	0	0	0	0	**170**
	Herbaceous species (pounds)	4,900	5,590	5	777	500	20,853	400	0	8	**33,033**
	Total	**4,930**	**5,740**	**5**	**777**	**500**	**20,853**	**400**	**0**	**8**	**33,213**

So how can we, as Forest Service botanists and plant ecologists, support an increased agency focus on the production and purchase of native plant materials?

The Forest Service spends a little more than half as much as the BLM on native plant materials according to an interagency report to be published in 2002. There is clearly room for additional appropriations in this area and the word should come from the bottom of the agency up through the top to the people that control the purse-strings that more money is needed. This is especially critical as the agency continues to increase its

emphasis on habitat restoration and prescribed fire.

Most Regions have a Forest Service Nursery that they do business with (e.g., Herbert J. Stone, Lucky Peak), or a relationship with a NRCS Plant Materials Center. It's been my experience that many of the plant people at these institutions are interested in experimentation. If you haven't already, make a friend, build a relationship, and seek opportunities to use their expertise and resources to accomplish our goals.

It's up to us to make certain that the demand for native plant material grows. Without a dependable and sustained rise in demand, no supplier is going to risk an investment in infrastructure to produce native plant materials. At least not on the scale that would bring prices down to levels comparable to those charged for non-natives.

One important way we can improve demand is to make sure we go out of our way to provide input on KV plans. Millions of KV dollars go unused annually and are simply returned to the Treasury. Those funds represent opportunities lost. Your Forest wildlife program is probably fully integrated into the KV process. You should be too.

The WO has allocated $4 million in FY01 funds to implement a long-term native plant program, $2.5 million of which is specifically slated to the six Forest Service Nurseries (this funding was requested by Tom Peterson, formerly of the WO timber staff, currently Director of Timber in Region 8). Unfortunately, this money is still (as of 16 December 2001) tied up in the budget pipe-line and has not yet been allocated to the field.

Native plants are not the answer to every plant materials question. In many instances, short-lived introduced species are the best tool to accomplish a resource objective. Similarly, there are many cases in which the Forest Service has thrown lots of seed on the ground when it isn't needed, where there is an adequate native seed bank or seed rain. So lets not be in the business of telling people that native plant materials are the answer to all problems. However, in those cases where the use of native plant materials are in the best interest of the resource, let us be strong in insisting on their use.

Ecological benefits of myrmecochory for the endangered chaparral shrub *Fremontodendron decumbens* (Sterculiaceae)

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American Journal of Botany. 2001 v88:234-241

Fremontodendron decumbens grows in a single county in central California, USA. Prior research showed that its elaiosome-bearing seeds are dispersed by the harvester ant *Messor andrei.* I tested several hypotheses regarding the positive role of ant-mediated dispersal to *F. decumbens*: (1) Does ant-mediated seed dispersal facilitate seed escape from rodent predation?; (2) Does ant processing of seeds stimulate germination?; (3) Are ant middens more suitable microsites for seed or seedling survival in unburned chaparral areas?; and (4) Do survival benefits of dispersal occur post-fire in the form of differences in seedling survival probabilities and, if so, why? Results of tests of each hypothesis were: (1) similar percentages of seeds placed on ant middens and under *F. decumbens* shrub canopies were destroyed by rodents, but seeds from which elaiosomes had been removed were more likely to escape rodent predation; (2) seeds processed by ants did not germinate more readily than seeds removed directly from shrub branches; (3) seedling predation was a major cause of mortality in unburned chaparral on both ant middens and under shrubs, and overall seedling survival did not differ between the two microsites; (4) post-burn seedling survival was significantly greater for seedlings dispersed away from *F. decumbens* shrub canopies, because dispersed seedlings were both less likely to be killed by predators and more likely to be growing in a gap created by the fire-caused death of an established shrub. I concluded that the major ecological benefit to *F. decumbens* of ant-mediated seed dispersal was elevated post-fire seedling survival resulting from enhanced escape by dispersed seedlings from both predation and competition.

Full text available at http://www.amjbot.org/cgi/content/full/88/2/234

Agency halts moss harvesting
Forest Service will study impact of moss gathering

Brian Bowling, 30 October, 2001, Charleston Daily Mail

Even a stationary stone has trouble gathering moss in Monongahela National Forest, so the U.S. Forest Service has placed a moratorium on moss harvesting.

Jan Garrett, a botanist and ecologist for the U.S. Forest Service, said mature log moss has grown so rare in the forest that commercial harvesters have switched to rock moss.

"Probably less than 5 percent of what you see is ready to harvest," she said of the log moss.

About 81 percent of the estimated 300,000 pounds of moss harvested from the forest comes from the Gauley Ranger District near Richwood.

"It's sold to florists, and they use it in hanging baskets and things like that," she said.

When it's not decorating flower arrangements, moss helps break down logs and rocks into nutrients while slowing down storm runoff and providing a habitat for several plant and smaller animal species. Garrett said the Forest Service is particularly worried about the impact that moss gathering is having on the endangered Cheat Mountain salamander and the Appalachian oak fern.

About two-thirds of the moss is already harvested illegally, meaning the gatherers didn't purchase a $10 permit for every 1,000 pounds of moss they gathered.

The permit program was meant to help the Forest Service monitor the harvest and check proposed harvest sites to ensure the moss could be taken without environmental damage, she said. The $980 raised for the 98,000 pounds that was legally harvested by about 70 people, however, wouldn't begin to cover the cost of the additional personnel the agency would need to actually stay on top of the harvest, Garrett said.

Now Garrett and other researchers are putting together a field study of how moss populations are affected by commercial harvesting. The moratorium will give them time to do the study.

"We need to just have a little time to gather that information," she said.

A press release from the forest service says the moratorium will last at least a couple of years, but Garrett said the moratorium could be modified along the way as researchers gather data.

Violating the moratorium is a misdemeanor punishable by up to $5,000 in fines and six months in jail.

Epiphytes and Forest Management

Bruce McCune, Oregon State University, Corvallis, OR
http://ucs.orst.edu/~mccuneb/epiphytes.htm

We have learned a lot in the last ten years about how forest management practices are likely to affect lichens in the Pacific Northwest of North America. The purpose of this web site is to help communicate those findings in a question-and-answer format.

Although the web site is targeted toward botanists and forest managers in the Pacific Northwest, and draws primarily on the literature from North America, the questions (and perhaps some of the answers) are universal among forested areas of the world:

Which epiphytic lichen species are rare?
Which species depend on old forests?
Which species depend on riparian areas?
Can we accelerate the development of old-growth associates in young forests by thinning or other management techniques?
Do remnant trees promote maintenance of old-growth associated lichens?
Should remnant trees be left clumped or dispersed to favor species at risk?
How can we recognize hotspots of lichen diversity and abundance?
What should we do to protect known populations?

A glossary and bibliography are included. Comments, corrections, and suggestions are welcome (mccuneb@bcc.orst.edu).

Native Plant Conservation Campaign

The NPCC is a Project of the Center for Biological Diversity (CBD) and the California Native Plant Society (CNPS) that commences in January 2002. It plans to develop a network of collaborating botanical organizations and individual botanists in most U.S. states. The NPCC will invite cooperation from national and international scientific and conservation organizations such as Sierra Club, Botanical Society of America, Natural Resources Defense Council, Center for Biological Diversity, Society for Conservation Biology, Ecological Society of America, Planta Europa, and the World Wildlife Fund and will form a scientific advisory committee of professional ecologists and botanists

The Mission of the NPCC is to promote appreciation and conservation of native plant species and communities through education, law, policy, and land use and management. The general goals of the NPCC are:

- Increase coordination and communication among individuals, groups and policymakers working to conserve native plant species and communities within the U.S. and internationally
- Increase awareness of the importance of native plant species and communities among public, media, legislators, agency leaders, and wilderness and wildlife conservation groups
- Increase awareness of decline of and threats to native plant species and communities among same groups
- Improve implementation of laws and policies affecting conservation of native species and ecosystems
- Improve K-12 and university level education on native plants and ecosystems
- Increase involvement in native plant conservation advocacy by scientists, scientific societies (including non botanical societies), universities, wildcrafters, and the botanical medicine industry
- Increase awareness of threats posed to native ecosystems by weeds and other invasive non native organisms

Researchers discover farming methods ineffective in improving biodiversity

Margie Mason, 16 October 2001, Associated Press

Twenty years of farming methods believed to be environmentally friendly have actually led to a decrease in wildlife and plant diversity, a study conducted in the Netherlands found. The findings suggest that the health and diversity of wild plants and animals are not improved if farmers wait to mow fields and use less fertilizer than conventional farming.

"Why bother?" said author David Kleijn of Wageningen Agricultural University in the Netherlands. "It's much more wise to find out why these schemes are less effective before we spend more money on them."

Kleijn's findings were reported in this week's issue of the journal Nature.

So far, the European Union has spent $1.5 billion a year since 1992 on this type of farming. The Dutch system began in 1981.

The farmers practiced what is known as agri-environment farming. It is the same as conventional farming, except farmers are paid to use less chemicals and to wait until June or July to cut their fields so that birds have more time to nest and hatch their chicks.

It is different from organic farming, which does not use chemicals at all and is much more highly structured, involving stringent rules requiring such things as the planting of trees and shrubs.

The Dutch study evaluated plants, birds, hover flies and bees in 78 pairs of fields. In each pair, one field was farmed conventionally, and the other was farmed according to agri-environment principles.

The environmental farming produced decreases in some types of birds. However, hover flies and bees showed slight increases.

Kleijn said he suspects the decreased use of fertilizer limited the abundance of worms in the soil needed for some birds.

He said his study is meeting resistance from some farmers who are being paid to follow such practices and from nature conservation groups that simply do not believe the findings.

Organic farming may be a better alternative, said John Reganold, a professor of soil science at Washington State University. He said studies have proved that removing all chemicals is helpful in enhancing diversity.

"It's harder to do. It's much more information-intensive. You have to be thinking months and months ahead," he said, "but once farmers get the hang of it, they love it."

Reganold also noted that the Dutch researchers looked only at plants and wildlife. They did not look at the effects on soil or the overall environment.

Upcoming Meetings and Events

2002 Andrews Foray

The 27th annual A. Leroy Andrews Foray will be held September 13-15, 2002 in York County, Maine. Lodging will be at Oceanwood in Ocean Park, ME. The main site will be the

Massabesic Experimental Forest, a large and varied area including an Atlantic white cedar swamp and many wetland and upland habitats. There will also be visits to a raised bog and a coastal wetland/barrier beach. The official Foray mailing will go out in May 2002. If you are not on the current mailing list and would like to be, notify me at newcomer@loa.com.

Polytrichum image courtesy of Karen Renzaglia, Southern Illinois University

Ecology and Management of Rare Plants in Northwestern California

Announcing "The Ecology and Management of Rare Plants of Northwestern California," a symposium scheduled for February 6-8, 2002 in Arcata, California and organized by the North Coast Chapter of the California Native Plant Society (CNPS). Please see www.northcoast.com/~cnps for full details and registration information (early registration deadline is December 31, 2001).

This symposium will provide current information to enhance rare plant management in northwestern California and southwestern Oregon. Invited speakers will deliver overviews of major taxa and issues in three main areas: Autecology and Life History, Survey and Monitoring, Conservation, Management, and Restoration

Contributed oral and poster presentations will offer perspectives on new research and findings as well as illustrate examples of successful programs, approaches, and case studies. In addition, the symposium will provide an opportunity for biologists, natural resource professionals, planners, and policy-makers to share their concerns and knowledge about rare plant issues and to formulate research and education needs.

Dr. Bruce Pavlik will be the keynote speaker. Other presenters, their topics (including speakers' abstracts), and full schedule details of this important conference can be viewed at the North Coast CNPS website: www.northcoast.com/~cnps

Wildland Shrub Symposium XII: Seed and Soil Dynamics in Shrubland Ecosystems

University of Wyoming, Laramie, August 12-16, 2002

Wildland Shrub Symposium XII: Seed and Soil Dynamics in Shrubland Ecosystems will be held at the University of Wyoming Student Union, Laramie, Wyoming on August 12-16, 2002. A meeting agenda, the call for papers/posters, field tour descriptions, a registration form, and housing information can be found on the meeting website: http://uwadmnweb.uwyo.edu/renewableresources - Scroll down and click on Symposiums. For additional information, please contact the Symposium Chair, Dr. Ann Hild, University of Wyoming at 307.766.5471 or AnnHild@uwyo.edu

National Invasive Weed Awareness Week Conference

February 25 – March 1 2002, Washington, DC

"National Invasive Weeds Awareness Week 2002" (NIWAW III) will be held in Washington, DC the week of February 25th to March 1, 2002 so that people and groups from across the country can focus national attention on the severe problems created by invasive weeds. Individuals and organizations with an interest in this issue are invited to participate in this event that will build on the foundation and successes begun with NIWAW 2000 and 2001. NIWAW III events are designed to focus on the important and critical role that the Federal government must play to help the U.S. deal with the problem

of invasive weeds. Additional information will also be posted on the NIWAW website at www.nawma.org/niwaw.htm_

Oregon tree to grace U.S. Capitol in 2002

Randi Bjornstad, 3 December 2001, The Register-Guard

ROSEBURG - A year from now, for the first time since the tradition began in 1964, Oregon will provide the Christmas tree that will decorate the west lawn of the U.S. Capitol Building in Washington, D.C.

The tree will be 70 feet tall and will come from the Umpqua National Forest, U.S. Forest Service spokeswoman Rochelle Campman said. "The Umpqua National Forest made its offer to provide the tree in 1984, and it's taken this long to get an answer. We're really excited to be chosen, and we have a lot to do between now and then."

The tasks include amassing a collection of at least 4,000 donated ornaments from individuals, businesses and organizations, although the Capitol Holiday Tree 2002 Committee hopes to collect closer to 6,000. The tree also will be festooned with 10,000 lights.

The ornaments should be 8 to 12 inches long, weatherproof and lightweight and should represent the spirit of Oregon, Campman said.

"We have one person who owns a kite shop on the Oregon Coast who's providing a kite ornament, and someone else has provided a covered wagon," she said. "We're hoping to receive ornaments with all kinds of (themes) - cones, salmon, agency logos, even some more traditional designs - anything that depicts the history or character of the state."

Donated ornaments should have a 5-inch hanger so they're ready to put on the tree when it's decorated in Washington, D.C. They should be boxed sturdily and mailed - to Capitol Holiday Tree 2002, Umpqua National Forest, P.O. Box 1008, Roseburg, OR 97470 - with information tucked inside about who made the ornament and the giver's city and county of residence.

The holiday tree committee also will be carrying out a variety of fund-raising efforts during the next year, hoping to collect enough money to send a delegation of school children, choral groups and others back to the Capitol to participate in the lighting ceremony a year from now.

Some of the money-making activities will include the sale of T-shirts bearing the Capitol Holiday Tree 2002 logo, ornaments with the logo cast in St. Vincent De Paul of Lane County's Aurora Glass factory, and lapel pins.

Once the tree has been cut next fall, it will be trucked across the country, taking a route that at some points follows portions of the historic Applegate and Oregon trails.

After next year's holiday season ends, the tree will be taken down and mulched for use in the landscaping on the Capitol grounds. The ornaments will be given to children in the Washington, D.C. area.

In Memoriam - June McCaskill

UC Davis Division of Biological Sciences, Spring-Summer 2001

June McCaskill, who spent nearly 40 years as curator of the John M. Tucker herbarium at UC Davis, died May 9 following a heart attack. She was 70.

McCaskill built a reputation as an expert in identifying weeds, advising physicians, veterinarians, farmers and environmentalists as well as aiding police investigations. In 1971, her identification of weeds on a grave site helped the investigation into the murder of 25 field hands near Yuba City. She regularly worked with the California Veterinary Diagnostic Laboratory to identify poisonous weeds and was a co-author of the Grower's Weed Identification Handbook.

"Everybody loved her," said Ellen Dean, the current directory of the herbarium. "She was a really knowledgeable, much honored person."

John Tucker, director of the herbarium from 1949 to 1986, described McCaskill's appointment as the best decision he ever made. "Her expertise came to be valued up and down the state,' he said. She became widely and affectionately known as "the Weed Lady," said Tucker,

"She was very generous of her time, very helpful with anyone who asked," Tucker said. She developed lifelong friendships with students working at the herbarium, who would send her postcards from around the world.

McCaskill was a founding member of the Davis Herbaria Society, now the Davis Botanical society, and an active member of the Friends of the Arboretum. As trips organizer for the Friends she organized visits to countries including Costa Rica, Canada, and New Zealand. She enjoyed gardening and travel.

In 1989, she recorded her experiences with plants and people for the regional oral history office at the Bancroft Library at UC Berkeley.

In 1991, McCaskill was honored with the Award of Distinction from the College of Agriculture and Environmental Sciences, the highest honor bestowed by the college.

McCaskill was born in Altadena and raised in Pasadena, where her father ran a camellia nursery. A camellia variety, the "June McCaskill," was named for her by her father. She began work at the US Davis herbarium in 1953 after graduating from Mills College, and retired in 1991.

Editors note: While attending graduate school, I spent many many hours in the UC Davis herbarium keying grasses and Astragali and counted June as one of my most important teachers. The luckiest among us have had a chance to interact with such generous and supportive people. We'll miss you Junie!

Federal Botany Jobs

Check for these and other jobs of interest to botanists at http://usajobs.opm.gov/.
Remember, botanists make excellent rangers, planners, staff officers, and Forest Supervisors.

Position: ASSISTANT ECOLOGIST Salary: $40,236 GS-0430-11/11 Closing: Dec 31, 2001
Agency: USDA, Forest Service Announcement #: R509-04-02R B
Open to Federal employees
Location: Alturas, CA, CA

Position: BOTANIST Salary: $61,749 -80,279 GS-0430-13/13 Closing: Dec 26, 2001
Agency: US ARMY CORPS OF ENGINEERS Announcement #: X-CP-02-3339-JP
Open to Everyone
Location: COE, NEW ORLEANS, LA

Position: BOTANIST Salary: $35,808 GS-0430-09/11 Closing: Jan 8, 2002
Agency: USDA, FOREST SERVICE Announcement #: R614-0045-02S

Open to Federal employees
Location: PENDLETON, OR

Position: BOTANIST Salary: $29,273 -35,808 GS-0430-07/09 Closing: Dec 28, 2001
Agency: USDA, FOREST SERVICE Announcement #: 2002-095
Open to Everyone
Location: TROUT CREEK, MT

Position: BOTANIST Salary: $33,254 - 33,254 GS-0430-09/09 Closing: Jan 2, 2002
Agency: USDA, FOREST SERVICE Announcement #: R617-022-02
Open to Federal employees
Location: Leavenworth, WA

Position: BOTANIST Salary: $33,254 -33,254 GS-0430-09/09 Closing: Dec 26, 2001
Agency: USDA, FOREST SERVICE Announcement #: R617-022-02DEMO
Open to Everyone
Location: Leavenworth, WA

Position: BOTANIST Salary: $27,185 - 52,305 DB-0430-02/ Closing: Feb 28, 2002
Agency: US Army Corps of Engineers Announcement #: DSA002B6
Open to Everyone
Location: Vicksburg, MS, MS; Champaign, IL, IL; Hanover, NH , NH

Position: BOTANIST Salary: $35,808 GS-0430-09/ Closing: Jan 4, 2002
Agency: USDA, Forest Service Announcement #: R620-008-02G
Open to Federal employees
Location: KLAMATH FALLS, OR

Position: BOTANIST Salary: $37,783 -71,224 GS-0430-09/ Closing: Dec 27, 2001
Agency: US Army Corps of Engineers Announcement #: FSU200326
Open to Everyone
Location: New York, NY, NY

Position:BOTANIST INTERDISCIPLINARY)* Salary: $43,326 -56,322 GS-0430-11/11 Closing: Dec 26, 2001
Agency: USDA, FOREST SERVICE Announcement #: R9-141A-02G
Open to Federal employees
Location: JONESBORO, IL

Position: BOTANIST (INTERDISCIPLINARY)* Salary: $35,808 -56,322 GS-0430-09/11 Closing: Dec 26, 2001
Agency: USDA, FOREST SERVICE Announcement #: R9-141A-02D
Open to Everyone
Location: JONESBORO, IL

Position: BOTANIST (SUPERVISORY ECOSYSTEM PROGRAM MANAGER) Salary: $51,927 - 51,927 GS-0430-12/12 Closing: Jan 16, 2002

Agency: USDA, FOREST SERVICE Announcement #: R912-002-02G
Open to Federal employees
Location: TELL CITY, IN

Banner Plant: *Leitneria floridana*

Each month, a different plant graces the banner of *Lingua Botanica*.
Leitneria info courtesy of FNA, Natureserve, and Southwest Missouri State University.

Leitneria floridana is the only member of the family Leitneriaceae, and the also the sole member of the Order Leitneriales. This is the only Order and the only family entirely endemic to the United States. The species is endemic to the southeastern United States. It occurs in fewer than 25 counties in five states and its relictual distribution is scattered. Flowering occurs in late winter-early spring with fruiting following in spring-summer. L. floridana habitats include open or forested swamps, wet thickets, roadside ditches, saw-grass-palmetto marshes, estuarine tidal shores. Threats include land clearing and draining of swamps. Plants are intensely clonal, so some occurrences may represent a single genotype. The common name of this species, corkwood, is a reference to its very low specific gravity (0.207). Only balsa is lighter than corkwood.

Afterword: Punkin' Chunkin'

http://www.worldchampionshippunkinchunkin.com/

I have a secret desire, I want to see pumpkins flying like fat orange geese. I want to travel to the Delaware seashore to see the World Championship of Punkin' Chunkin' (see the URL above). This annual event/contest pits catapults and cannons, modern and archaic, to see how far our favorite seasonal cucurbit can be hurled. Its hard to imagine how far pumpkins can fly. For example, this year's record chunk was 3911.02 feet. Thanks not a typo, its nearly four thousand feet, most of a mile. One of the most attractive machines at the annual Chunk is the Trebuchet, an example of which is seen in the image below. The trebuchets are not so good at distance, but they can hurl incredible weights (there is a Buick-tossing trebuchet in Texas). If you liked the potato canon in last winter's *Lingua Botanica*, you'll love Punkin' Chunkin.

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. Pass your copy of *Lingua Botanica* around to all your friends. Contributing submissions are always welcome.

A crash reduces, your expensive computer, to a simple stone (haiku from Sundial Services Intl.)

To subscribe to the *Lingua Botanica*, just send an email to Wayne Owen at <wowen@fs.fed.us>.

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