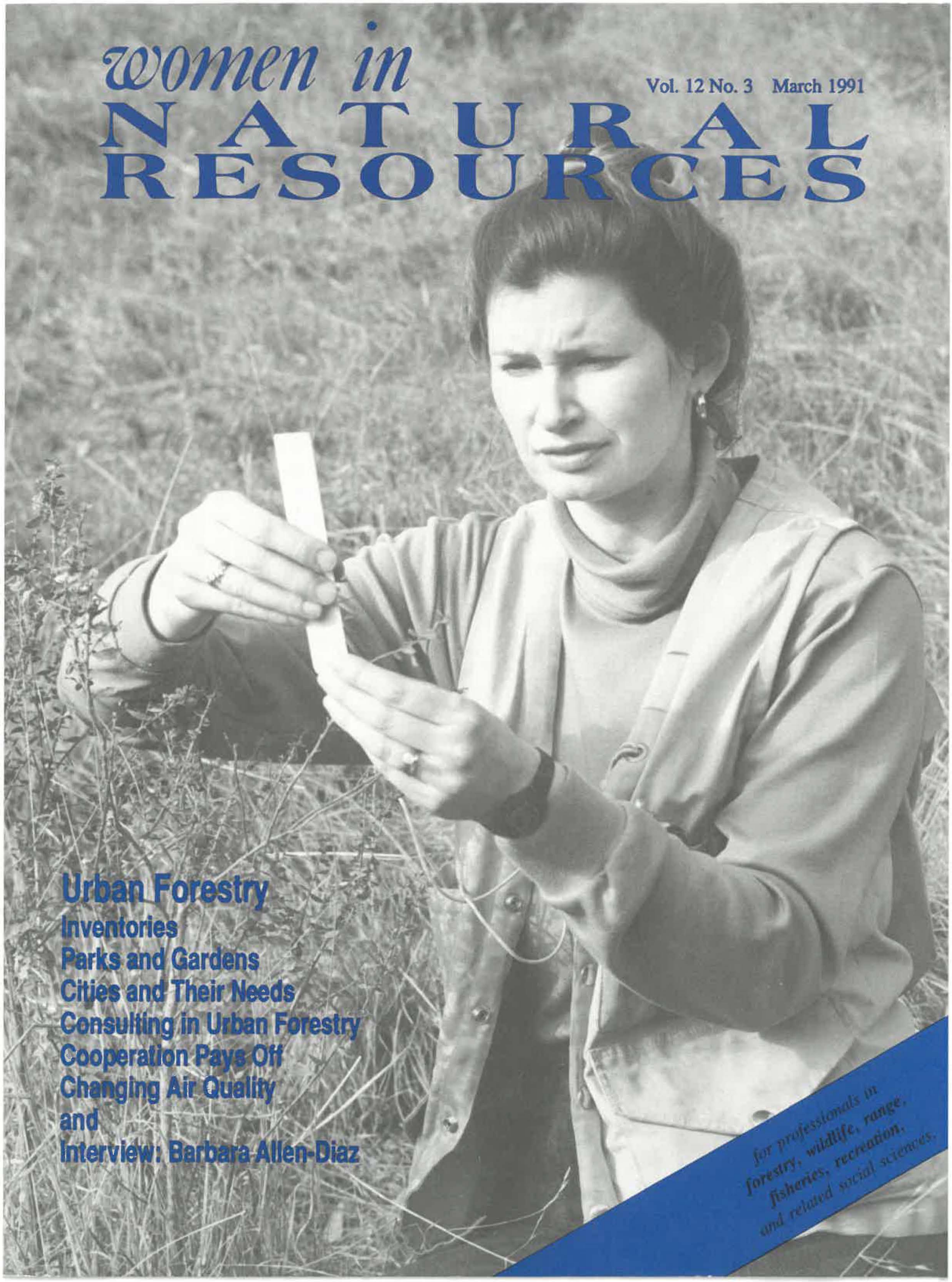
women in NATURAL RESOURCES

Vol. 12 No. 3 March 1991



Urban Forestry

Inventories
Parks and Gardens
Cities and Their Needs
Consulting in Urban Forestry
Cooperation Pays Off
Changing Air Quality
and
Interview: Barbara Allen-Diaz

for professionals in forestry, wildlife, range, fisheries, recreation, and related social sciences.

Editorial

Reinee Hildebrandt

Urban Forestry

This issue, *Women in Natural Resources* focuses on those who work in the urban forests of our country. The 1990's may offer professionals in natural resource fields such as forestry, horticulture, and landscape architecture with expanding opportunities in urban forestry. Several events and issues are coming to fruition which could potentially provide much needed support for the urban forestry profession.

The passage of major legislation in 1989 will prove to have a significant impact on the urban forestry profession. In November 1989, H.R. 2144 was passed. This Act was designed to improve forest management in urban areas and other communities. This bill voices concern about the declining health of forests in urban areas and communities. It emphasizes the importance of forests, shade trees, and open spaces for improving the quality of life for residents, enhancing the economic value of residential and commercial property, and aiding in the reduction of carbon dioxide emissions, mitigating the heat island effect, and reducing energy consumption. This bill further encourages tree planting and protection of open spaces. Finally, it calls for a strengthened effort in research, education, technical assistance and public information. An urban and community forestry competitive grants program for the support and implementation of urban and community forestry projects was also included with $2.8 million of funding from the Interior Appropriations Bill being used to support the competitive grants program.

Earth Day 1991 could also be used to impact our urban forestry programs. One of the components of Earth Day is the planting of trees. This international event will provide a natural linkage between urban forestry departments and schools, youth groups, and adult groups with an interest in the natural resources. It provides a tool for motivating the general public to take action to improve our urban natural resources.

Today, we have a variety of professionals working together to support the urban forests of our nation. Urban foresters/ municipal arborists manage our forest resources in the complex urban ecosystem. They are often faced with the political public relations tasks of maintaining the health of the urban forests in cooperation with the private landowners, utility companies, and other public agencies. Their job focuses on multi-tree vegetation management.

Commercial arborists or individuals with arboriculture skills such as tree planting, tree pruning, cavity repair, single tree maintenance and limb or tree removal assist in single tree care. They are instrumental in maintaining the health and vigor of individual trees.

Landscape architects assist in the design of our parks and streetscapes. Their contribution makes city areas more aesthetically pleasing and functional.

Volunteers add their own professional expertise and personal energies in promoting and supporting the development of our urban environment and support system. Without their assistance many urban foresters would have a much harder time getting and maintaining public funds to support the urban tree resources.

Today's urban forester must be versed in many of the same areas as rural foresters. These areas include: tree care, tree physiology, tree root morphology, environmental education, waste and water systems, computers, and windbreak management.

Given the diversity of professions and professional interests within the urban forestry arena, the current federal allocation of $2.8 million that has been spent annually on urban forestry will no longer suffice. The passage of the new bills in 1989, hold promise for improving the forest resources that impact all of us. The urban tree resources provide numerous benefits. The shading, cooling effect, windbreak, aesthetic, and therapeutic benefits are just a few. Economic benefits include more taxes paid into a community via a higher property assessment (27 percent higher for wooded parcels); real-estate values for property owners increase as much as 20 percent with the addition of trees.

After analyses, the American Forestry Association estimated that a 50 year old tree provided a total of $273 worth of benefits annually in the way of air conditioning ($73), soil erosion and storm water control ($75), wildlife shelter ($75), and air pollution control ($50).

It is time that forestry research and forestry expenditures be used to support the over 55 billion dollar resource that exists in and around our nation's population centers. We have tended to neglect the urban resources which impact our lives daily. The 1990's holds promise of reversing this phenomena and providing the urban environment with a new emphasis politically and economically.

Reinee Hildebrandt

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WOMEN IN NATURAL RESOURCES

March 1991

Volume 12, Number 3

FEATURES

DEPARTMENTS

The cover photo is of
Barbara Allen-Diaz
Assistant Professor of Range Management
University of California Berkeley

FEATURES

LETTERS & OPINIONS

The article in your last WiNR (Volume 12 No. 2) about BLMs horse and burro program can be updated with the news that BLM now has new rules which allows the agency to repossess immediately any animal from an adopter who is not providing proper care. The adopter then has the right to appeal these decisions to the Interior Board of Land Appeals. This is good news for those of us who thought that existing regs were sort of toothless when it came to the animals' rights.

Jayne Edson, Portland, Oregon

For two years I have been working on a monography Women and Hunting—The Huntress in Past and Present and I would like to ask you (and your readers) for any help on the following points:

1) Are there any ladies holding a professional hunter's license or acting as hunter's guides in your state who would answer some of my questions? 2) Are there any historic huntresses? 3) If individual hunting ladies would like to participate I would like to hear from them. 4) Is there a regional hunting magazine I should contact?

So far 160 huntresses of 19 countries have contributed information and I have been able to discover 98 historic personages as enthusiastic huntresses. My approach is scientific and I am also a huntress myself. Please send information to: Monika Reiterer, Professor, A-8010 Graz, Evangelimanngasse 13, AUSTRIA.

Thanks for Daina Dravnieks Apple's interview with BLMs Susan Lamson. She's interesting and talented and the way she came to her political appointment status was new to me—very informative. She complemented nicely some of BLMs other managers featured in WiNR, pointing up the fact that it takes a lot of talent these days to make a multi-focused agency tick over.

Paul Richards, Hartford, Connecticut

Have you noticed that at last, at last, your authors are writing about themselves and other professionals who are mature, who have progressed way past beginner's luck, who have gotten promotions, who have been posted a few places, and who are no doubt being paid well? Thanks for Tamm, Douthit, Boykin, Brondson and all the others you've highlighted in your last issue that BLM had the good sense to employ and promote.

You've championed and showcased all of us at whatever level in whatever employment and it must make all of you at *Women in Natural Resources* feel proud to know you've played a part in our success. Many of your newer readers may not know how influential your magazine has been on our behalf over the last decade and how many shakers and movers read it. I know how widely read and respected it is in my town.

Here's to all of you at WiNR and to all of us who are continuing to work in professions we love.

B. D. Smith-Wilson, Washington DC.

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A Commitment to Excellence...
With Women an Integral Part of that Commitment

The U.S. Forest Service, an action-oriented agency with a commitment to protect, improve, and wisely use the Nation's forest and range resources is equally committed to a highly skilled and diverse workforce that includes women at every level. To address a consent decree our firm has been engaged to refer top candidates for California locations as:

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Pamela A. Wright and Donald W. Floyd's study on recruiting natural resource students into the School of Natural Resources at Ohio State University in Volume 12 No. 2 had real meat in it and some good suggestions on how to get women and minorities flowing into these programs.

I wonder, however, if another remedy might move things along faster. For example, a group of "disenfranchised" women ought to look into suing the Society of American Foresters, the American Fisheries Society, the Wildlife Society, Society of Range Management, and/or others who do the accrediting in those places of higher learning, to force denial of accreditation of any program until their faculties are integrated. This is not as Draconian as it sounds, because universities know when their reviews come up, and they know what will be looked at. They also have time allotted to correct deficiencies, or they can choose to ignore accreditation standards and lose it. They should not get accreditation until women faculty are well represented and earn as much as males. They should not get accreditation until women and minority graduate students receive their share of grant monies and stipends. They should not get accreditation until there is integration of the undergraduates. In Colleges of Natural Resources, the Societies should put them on notice that Department Heads, Deans and Directors ought to be diverse.

Natural resources departments will miraculously find a method to fight their way into the 20th Century and get a diverse faculty, administration, and student body when that happens.

Toby Green, San Francisco

Your cover photos are great. I keep seeing the names of women who have been on your cover in "just promoted" contexts all over the place. The ones who write articles for you seem to attract the right attention, too, because I notice their names on promotion lists. I've been a reader for years--now I think I'll start writing to see if a promotion will strike me. I need one.

Ann C. Renton, Lakewood, Colorado

We have formed an ecofeminist network here in Tasmania: TERRA (Tasmanian Ecofeminist Resource/Research Alliance). We may wish to subscribe to your journal, but our information is dated. Do you still exist? Please be in touch. Janis Birkeland, 21 Delungra Rd. Trevallyn, 7250, Tasmania, AUSTRALIA.

Eds. Note: We are sharing this message (and the address) with those of you who also may wish to contact her.

The March 1991 *Journal of Forestry* contains 58 full-face portraits of Society of American Foresters (SAF) Fellows elected in 1990 (pages 48-49). I ask the classic question: what is wrong with this picture? And provide the classic answer: there are no women in it. As a society and a Society, we are past the time when this can continue to be countenanced. It is particularly unfortunate that this appeared in the same issue with "Women in the Forest Service: The Early Years." It is the responsibility of each Chapter to address this gender gap in future nomination and election procedures. Need more be said?

Sarah T. Warren, Morrilton, Arkansas

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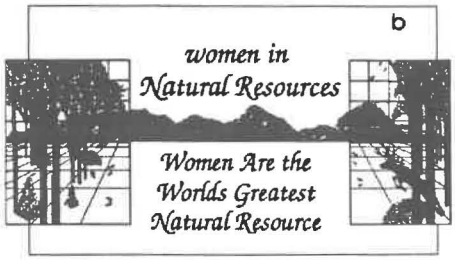

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QUERY

Editor Lisa Stein asks:

IN ADDITION TO ARBOR DAY, WHAT OTHER ACTIVITIES OR PROGRAMS, IN YOUR EXPERIENCE, HAVE PROVED USEFUL TO FOSTER PUBLIC PARTICIPATION IN URBAN REFORESTATION?

JOAN LIONETTI
Executive Director
Tucson Clean and Beautiful
Tucson, Arizona.

Under the auspices of the Tucson Clean and Beautiful organization, Trees for Tucson, the local chapter of The American Forestry Association's Global Releaf program was formed here in Tucson a few years ago. Our chapter was voted number three in the nation by the American Forestry Association for its success in motivating the public to get involved in urban reforestation.

Arbor Day, as you mentioned, is a good starting point for such programs. It was celebrated on February 8th in Tucson. We had a tree maintenance workshop, aimed at attracting members of neighborhood organizations, especially those that hope to receive grants from our Tree Bank. (The Tree Bank is a receptacle for donations of trees, money for tree purchases, etc. from various citizen groups, such as apartment dwellers, who want to do their part for reforestation, but have no place of their own to plant trees.) Also, this year we attached even more meaning onto the act of planting trees through our program created in conjunction with Davis-Monthan Air Force Base in Tucson. Through our Hope and Peace program, a person purchases a tribute tag for a serviceman or woman stationed in the Persian Gulf and the base donates the tree which will then be planted at designated locations on the base itself. With this simple act of planting a tree, people who otherwise feel helpless in a situation such as this can feel powerful, if only in this symbolic way. A commemorative tree was planted by the General on the morning of Arbor Day and then the others were to follow. This ceremony was also accompanied by the presentation of $350 to the Trees for Tucson program by a troop of girl scouts from the base.

During the rest of the year, we try to keep the Tucson public reminded of our program in other ways. A team of a half-dozen professionals—botanists, water conservationists and others—donated 400 hours to an informational campaign that was recently released in the local paper, *The Arizona Daily Star*. A list of 54 low-water, desert-adapted trees was compiled by this group. For each species on the list, a descriptive, ad-sized piece was created to be run in the paper, with the cost for the ad being absorbed by the newpaper itself. The piece includes a sketch of the tree, its scientific and common names, and five distinctive characteristics. These will be rotated on a space-available basis. The list of trees has also been incorporated into a booklet made in conjunction with the Arizona Native Plant Society, and is available for sale, along with a poster of the trees, from our organization.

Many citizens aren't aware that the Farm Bill passed by Congress last fall actually carried with it the provisions for a foundation from which funding is available for tree-planting and water conservation programs. Trees for Tucson is an official model program for such funding, and we are doing everything in our power to get the public involved.

BRENDA KEYSER
Executive Director,
Denver Urban Forest
Denver, Colorado.

At present, Denver Urban Forest is experiencing a reorganization, and with it, a resurrection of sorts. Historically, we have had a mission that is largely educational, leaving most of the actual tree planting to city workers. We hope to continue this in the future. Up to now, our membership has consisted largely of a volunteer board of directors—with people from other like-minded organizations helping out with special projects when needed. One of our immediate goals now, however, is to gain a permanent membership of our own, with an organized corps of volunteers to be recruited from among these members. So, in answer to your question, we feel that it is important to get the public directly involved. They tend to care more about a project if they can react to it personally—such as planting a tree in their own yard, or at least, learning how to take proper care of the trees they already have there.

Another immediate goal is to revamp our newsletter. Until now, it has appeared rather sporadically, once or twice a year. We have recently renamed it *Tree Lines*, and plan to get it out to the membership on a regular quarterly basis. Newletters are very useful tools for soliciting public involvement.

Denver Urban Forest was formed at a time when many of the old sprawling elm trees that graced our roadsides were succumbing to Dutch Elm Disease. One of our first projects was to create an informational leaflet on this disease and its effects. Also, the city fathers who overplanted the city with these large, water-dependent trees

had not accounted for the arid environment in which Denver is located. Many of the other species of old trees were also dying from lack of water. Therefore, our organization wanted to make sure Denver would remain green, despite all these factors. Its founders realized that once in existence, the grand old trees, while using water themselves, were important to the city's water conservation as a whole, by preventing runoff and erosion. And, they were, of course, very important in countering the effects of pollution.

During the organization's early days a tornado rolled through Denver and wiped out even more trees. Denver Urban Forest's greatest moment to date, perhaps, was in rallying all the environmental organizations of the city, city workers and the general public together to give the time and money necessary to replant all these dead and dying trees.

These efforts of the past are supplemented today with the distribution of educational materials on trees. For Denver's Arbor Day celebration this year entitled "Denver Digs Trees", we will have pamphlets available on how to plant and take care of a tree. Also we have launched an educational campaign in the city school system for third- through sixth-graders called "Tree Trunks." Twelve kits put together by Denver public school science teachers will feature posters of tree types, musical tapes about trees, identified tree trunk cross-sections, games, and puzzles.

As the new director of this organization, I fully realize the hard work that lies ahead. We must succeed at involving the public in our efforts, because our continued success demands it.

KATIE LIPKIS
Vice President
Tree People
Los Angeles, California.

At Tree People, our whole purpose is to get the public involved. We are out to get them where they live—in the cities. Then we train and educate them about trees and usually, the end result is that they are planting them on their own.

We want to create activists of people at every age and in every walk of life. Mostly, we do this through education programs conducted at our headquarters, which is a 45-acre park owned by the city of Los Angeles. During a recent school year, we entertained 107,000 children at the center, teaching them about recycling, tree-planting, and tree-nurturing. Each child went home with this additional knowledge and a seedling of his or her own to make the cause a personal one. Junior high and high school students participate in our Campus Forestry Program in which we form an environmental group of the students themselves. We educate them about trees and tree care and instill in them the desire to beautify their own campuses or neighborhoods by planting trees there together.

Adults participate in Citizen Forestry Training, in which they are taught how to become active in tree-planting in their neighborhoods. They learn to gather assistance from the neighbors around them, both physical and financial, for such programs. They also learn how to place the trees on a proper maintenance schedule and to take turns providing this care.

My husband Andy, the founder of Tree People, and I recently co-authored a book on the subject that came out last fall. Entitled *The Simple Act of Planting a Tree,* we wrote it in hopes of sending our message to an even larger audience than the one we are reaching in Los Angeles.

Tree People came into existence 20 years ago and is LA's hometown environmental association. We were environmentalists when that was still a dirty word. But we are fiercely middle-of-the-road; we don't deserve the stigma attached to angry activists, because we simply aren't that. Our job is to educate the public, to guide and coach them wherever we possibly can.

JENNY SCHROEDER
Urban Forestry Specialist
City of Cincinnati
Cincinnati, Ohio.

Being a part of city government, we do have many programs to instill interest in citizens regarding tree-planting, but, in a way, we simply **make** them like it. We do this by starting where there is naturally the most interest, in the neighborhoods. We make kind of a deal with them which goes like this: the City will plant 600 trees in your neighborhood to beautify it, if you'll come up with enough volunteers to plant 50 more. In fact, we even make them sign a contract to this effect, to convey to them just how serious we are. And, when a resident calls in to report a vandalized tree, we encourage them to attend to it themselves. They will then feel more in a position of responsibility, and will, perhaps, take the measures necessary to see that it doesn't happen again.

We also do our best to remain in the public eye and to keep citizens informed; we staff a booth at most public functions—parades, festivals, etc. Currently, for example, there is a Home and Garden Show running at the convention center. We are giving out 12,000 pine seedlings and to do this, it was projected that we would need approximately 100 volunteers. We easily got them by dropping a note in the mail to area citizens. And, for Arbor Day each year, we give out tree seedlings through the public library when a reader checks out a book on trees or tree care, or one on some other environmental subject. This program has been very successful and very well-received.

We present programs in the schools that we feel are effective also. We have a mascot named "Mr. Tree," dressed in a costume complete with birds in the hair, sticks for hands, largely made up of green burlap. He is incredibly popular at schools and at all of our public functions. Other than the appearance of "Mr. Tree," our school programs are designed individually to meet the needs of the specific group of students and their teacher. Teachers, too, are a very important part of the process. We staunchly support the national program known as "Project Learning Tree" and present workshops for teachers twice a year through the program. This program has been very successful in getting trees into the public school curriculum.

Although a lot of our time is spent in the field planting and maintaining trees, I feel that educating the public about their care is vital to the ultimate success of our urban forestry programs.

MAINTAINING THE URBAN FORESTS IN DOWNTOWN SEATTLE IS A DEMANDING JOB, REQUIRING THAT HUMAN AND NEIGHBORHOOD NEEDS ARE RESPONDED TO WITH UNDERSTANDING.

SEATTLE URBAN FORESTRY: A NEIGHBORHOOD PERSPECTIVE

ELIZABETH E. ELLIS

When the City of Seattle, Washington was incorporated in 1869, there was hardly a trace within the city limits of the old growth Douglas Fir forests that had once existed. Early photographs show rows of houses situated in an almost treeless landscape. This situation continued until 1903 when the Olmsted brothers were commissioned to draft a plan for what is now the heart of a mature network of almost 32 miles of boulevards and 54,000 acres of park lands.

Today, the responsibility for Seattle's public trees is divided between the Parks Department (which maintains parks and boulevards). Seattle City Light, whose jurisdiction is line clearing and landscape maintenance around the substations, and the Engineering Department, which maintains the street rights of way including street trees, medians, and landscapes.

In 1968, the Engineering Department started taking an active interest in street trees with the planting of 15,000 trees. During the 1970s, the Department planted another 20,000 street trees and landscaped more than 50 new green spaces under "Operation Green Triangle." With an emphasis on maintenance in the 80s, the number of street trees planted each year declined dramatically. In 1989, for example, the Engineering Department Gardeners planted 300 trees, most of which were replacements.

The city's various departments are not the only ones planting trees. Neighborhood associations can apply to the Office of Neighborhoods for matching grants; in 1991, individuals may obtain a planting permit from the City Arborist and receive a Seattle Releaf coupon to help pay for their tree.

Jerry Clark is the City Arborist and his office is in the Engineering Department. His staff consists of an Arborist and a part time office assistant. He serves as an administrative link between the Landscape Crew, the public, and the City Council. Seattle does not have an Urban Forester to coordinate the tree-related activities of all the departments. There is, however, a street tree advisory board that represents the spectrum of governmental and citizen interests. The Board's function is to raise funds for the Seattle Releaf program, educate the public about our urban forest, and to set policy and planning guidelines for all departments.

Citizens in Seattle are very interested in the condition and health of their trees; Seattle has been recognized for several years as a "Tree City" by the Arbor Day Foundation for promoting tree planting and tree related educational activities. Last year, the City Arborist and the Center for Urban Horticulture, for example, presented Arborfest '90, a week of tours, workshops, and hands-on demonstrations designed to involve people in our city's tree heritage.

Public street trees are planted and maintained by the Landscape Crew of the Engineering Department. The city is divided among seven District Gardeners who typically work with one or two Assistant Gardeners. In addition, we have a tree trimming crew of two who work from a large hydraulic cherry-picker truck. Our crew is supervised by its own Arborist and a Grounds Maintenance Crew Supervisor. For 1990, we had an annual budget of $750,000 with half spent on street tree maintenance, leveling paver blocks, expanding tree pits and grates, weed control, pruning low or broken branches, and root pruning. The other half went towards maintaining 50 acres of landscaped areas throughout the city. The on-going maintenance keeps us busy year around: tree planting, dormant pruning, annual color installation, lawn mowing, and there are always weeds to pull no matter what the season.

I am the District Gardener for Downtown. I have 3,500 street trees and 25 landscapes within the downtown core of the city which includes the International District, the Pioneer Square Historical District, the Elliott Bay waterfront, and main arterial streets that approach downtown from all directions. It is a colorful, varied area that gets a lot of pedestrian, bicycle, and automotive traffic.

One of my neighborhoods is experiencing gentrification. Many of the older buildings are being converted to condominiums and there is an increasing demand for safe, clean streets. This area of town has historic value and is further distinguished by its street trees which were selected to create an urban arboretum. It incorporates an unusual blend of street art with Incense and Weeping Alaskan Cedars punctuated by purple leafed maples and flowering plums. The art reflects the talents of artists in the neighborhood with quarried stone sitting spots, sculptural tree protectors, and painted cardboard houses hung in the trees. I recently limbed up the

cedars so that pedestrians can walk under trees and have greater visibility at night. Although I didn't change the attitude some people expressed that the cedars should be replaced with "real"—meaning deciduous trees, most people felt safer and pleased with the overall effect.

Interaction with our natural surroundings in the city is very important and I encourage people to touch, smell, and to be a part of a brief horticultural experience whether they are dashing across the street for coffee, planting flowers in a tree pit, or waiting for a bus. I plant colorful annual and perennial flowers mixed with pungent herbs and soft, fuzzy ground cover. When I work up the soil in the spring, I'll dig in chicken manure as an organic amendment to benefit the soil, but also as a reminder to those who pass by that not everything in our urban environment is instant and sterile but that we are linked to a natural process.

I came from a small island north of Seattle that has a strong sense of community. It is important to encourage this neighborhood pride in large cities, too. I do this by letting the residents and business people know that I am *their* gardener and their neighborhood needs or desires are a priority for me. Whenever possible, I'm there to help them out. In a large city like Seattle people welcome the opportunity to avoid bureaucratic runaround. I would rather limb-up a tree in front of someone's business than have them vandalize the tree out of frustration that no one has responded to their complaints.

Some of my landscapes were initially designed 20 years ago as traffic diverting islands viewed from passing cars. In trying to make these more accessible to people I have encountered a maintenance dilemma. Homeless people are using sheltered areas for campgrounds, turning landscapes into what can be called the "shruburbs." I have gotten to know some of these people, and while treating them with respect, I am nevertheless in the position of having to develop landscapes that discourage campers while encouraging other uses. The accumulation of garbage and use of landscapes in lieu of restroom facilities presents a public safety concern. The city has a policy of not evicting people without first posting a notice for 48 hours. I choose to manage these areas by eliminating hidden sites under shrubs and installing garbage cans.

Anyone who truly likes his or her job watches with interest as managers struggle to reshape and redefine priorities. Seattle is a rapidly growing city experiencing the problems of water quality, mass transit, affordable housing, and pressures to develop our greenbelts and open spaces. If Seattle would view all of its public lands as part of our urban forests and pull departmental interests together under a new Urban Forester position, we would benefit through increased efficiency and a broader perspective. I would like for managers to be thinking of the city in terms of its forests and not just the trees.

Downtown Seattle neighborhood

Elizabeth E. Ellis has been the Downtown District Gardener for the Engineering Department in Seattle for five years. Before this work, she raised cattle and grew organic produce in the San Juan Islands, Washington. In addition to memberships in AFA and SAF, she is a board member of the Association for Women in Landscaping. Her Bachelor's (in 1981) is in Agriculture from Washington State University.

THE EFFECT OF POLLUTION ON VEGETATION HAS ALWAYS BEEN AN IMPORTANT PART OF AIR-QUALITY RESEARCH. IT WAS THE RECOGNITION OF DAMAGE TO CROPS IN THE LOS ANGELES BASIN THAT IDENTIFIED OZONE POLLUTION.

CHANGING AIR QUALITY AND OUR URBAN FORESTS

DEBORAH WOODCOCK

Air quality in our cities has changed significantly over the past several decades, and so have the pollutants themselves which cause scientists the greatest concern. The questions that we should be asking ourselves are the basic ones:

- what are the major pollutants?
- what is their effect on vegetation?
- what are the trends in pollutant levels since 1975?
- what is the relationship of air quality to the greater problem of waste disposal (particularly policy regarding landfills and incineration)?
- what will be the effect of current and pending air-quality legislation on the EPA and states?
- how can we assess the effect of air pollution on urban trees and the status of current research efforts?

Major pollutants and their effects upon vegetation.

The pollutants of greatest concern at the present time are ozone, nitrogen and sulfur oxides, and volatile organic compounds. *Ozone* is taken up by leaves, leading to chlorosis, tissue damage, and reduced rates of photosynthesis; root growth is also adversely affected, with an increased susceptibility to weather extremes and water stress (Johnson, 1989). *Sulfur oxides* (SOx) and *nitrogen oxides* (NOx) are associated with premature leaf senescence and can act additively with ozone to damage trees (Krause and Prinz, 1989). Both ozone and inputs of acid-rain pollutants (SOx and NOx) can result in leaching of nutrients from leaves and soil (Krause and Prinz, 1989). *Volatile organic compounds* (VOCs) constitute an array of chemical species that can be present at high concentrations in urban areas. These substances are sometimes referred to as natural pollutants since they include complex hydrocarbons, such as terpenes, produced by vegetation; however, many volatile organics are released to the atmosphere as a result of industrial activity. In general, the effect of VOCs, and their secondary compounds, on vegetation is not well understood; one exception is ethylene (or ethene), which in addition to being a pollutant is a naturally produced plant hormone and has a variety of effects on plant growth, including acceleration of aging processes (Taylor, 1984).

Other compounds that can injure vegetation are fluoride, chlorine, ammonia, boron, hydrogen sulfide, and mercury. Some of these substances are considered to be *air toxics* because of their adverse effects on human health. A summary of the symptoms and thresholds for injury to vegetation for some major pollutants is presented in Table 1. Some would regard these figures as conservative estimates;

Table 1. Damage to Vegetation and U.S. Air Quality Standards for Several Major Pollutants[1]

Pollutant	Symptom	Exposure	U.S. Standard
Ozone	Fleck, bleaching, bleached spotting, growth suppression. Browning and necrosis of tips of conifer needles.	.03 ppm over 4 hr	.12 ppm over 1 hr[2] .12 ppm over 1 hr[3]
SOx	Bleached spots, bleached areas between veins, chlorosis, growth suppression, yield reduction	.03 ppm over 8 hr	.14 ppm over 24 hr[2] .50 ppm over 3 hr[3]
PAN	Glazing, silvering or bronzing of lower leaf surfaces	.01 ppm over 6 hr	-
HF	Tip and margin burn, chlorosis, dwarfing leaf abscission, lower yield	.0001 ppm for 5 weeks	-
Cl_2	Bleaching between veins, tip and leaf abscission	.01 ppm for 2 hr	-
Ethylene	Withering, leaf abnormalities	.05 ppm for 6 hr	-

[1]Plant effects data from Hindawi (1970) and Seinfeld (1986).
[2]Primary standard, designed to protect human health.
[3]Secondary standard, based on damage to vegetation and environment.

ambient levels approach or exceed these values in many areas.

Trends.

Figure 1 shows trends in U. S. pollutant emissions since 1970. Some success stories are evident: both particulates and lead have declined significantly. Sulfate emissions have decreased and should continue to decline as the use of high-sulfur coal is phased out and emissions controls on utilities are made more stringent. NOx and VOC emissions have not changed substantially from 1975 to the present. Efforts to control ozone, on the other hand, have met with only moderate success.

Ozone is the major pollutant of interest since it is an oxidant and is active biologically, causing damage to human health as well as vegetation. Ozone concentrations are high in many urban areas, and this pollutant serves as a generalized indicator of air quality. A secondary rather than primary pollutant, ozone is produced in the presence of NOx and VOC's, with production a complex function of the NOx/VOC ratio. Control stategies have been complicated by uncertainties as to whether to focus on NOx or VOCs, both of which are present in auto exhaust. One result of early attempts to control VOC emissions from automobile engines in the Los Angeles area was that NOx levels increased significantly. Controlling ozone is difficult because of the complexity of the reactions involved, difficulties in assessing the relative importance of natural vs. human-related sources of VOCs, and incomplete information about levels and sources of VOCs.

Other factors influencing air quality.

Air quality is directly linked with the larger problem of waste disposal since the atmosphere is one of the three major repositories for waste materials (together with earth's waters and land surface). Thus trends in air quality, to some extent, can be explained by reference to trends in waste disposal. Through the 1970s and 80s, hazardous waste sites and leaking landfills became recognized as a problem nationwide. Many sites were closed, and public opposition to landfills—the "not in my backyard" syndrome—grew. As a result, many volatile substances that might have been disposed of in landfills were released to the air. The major regulation of this activity at the federal level is a reporting requirement: manufacturing facilities with more than 10 workers are required to report the amount of hazardous substances they release to the air.

In 1989, *USA Today* published data on releases of toxic substances that they obtained by means of the Community Right-to-Know Act (EPA, 1988). These figures showed that 15 billion kilograms of toxic chemicals were released to the air, water, and land surface in 1988, an amount much greater than previous estimates. Emissions to the air were also greater than had been thought. Kansas City, for example, included the following among its emissions data: 4×10^6 kg of xylene and 2×10^6 kg of methyl isobutyl ketone from an automobile manufacturing plant; 9×10^5 kg of trichloroethylene from a telephone company; and 9×10^5 kg of toluene from a manufacturer of greeting cards. These substances are used mainly as solvents in manufacturing processes. Many of these industries are attempting to reduce emissions, but in most cases in response to publicity and the pressures exerted by local environmental groups and governmental entities rather than by direct rule of federal or state law.

Another development with consequences for air quality is the move to incineration as an alternative to landfills. Once a very common method of waste disposal, the majority of small incinerators were shut down in 1970 when laws regarding particulate emissions were passed. Now as landfills fill up or are closed, an increasing amount of material (including municipal, hazardous, and hospital waste) is being incinerated, much of it in large, commercial facilities.

The problems associated with incineration relate to the release of hazardous substances to the air, particularly heavy metals and compounds containing chlorine. Safe incineration requires high temperatures to assure complete combustion, cooling of effluent to below the volatilization point, and efficient removal of substances from the airstream by means of precipitators or scrubbers. Municipal waste is inhomogeneous and variable in water content and thus difficult to burn completely. It also contains complex hydrocarbons like benzene that require very high temperatures for complete combustion and substances such as mercury and some chlorinated compounds that have very low volatilization points and are thus difficult to remove from effluent.

Increased levels of mercury in regions that have begun to burn municipal waste have been reported recently; one of these areas is southern Florida, where high levels of mercury have been found in fish and in the tissues of dead panthers (*Orlando Sentinel*, June 25, 1989). Other dangers associated with incineration are emissions of products of incomplete combustion and chlorinated compounds (such as dioxins) that can be produced when materials with high chloride content such as plastics are burned. Many environmentalists question whether existing technology is capable of dealing with these problems and have fought incinerator projects, preferring to back recycling to reduce the amount of municipal waste.

Regulation.

The Clean Air Act, which was passed in 1963 and amended in 1965, 1970, and 1977, established air quality standards for six pollutants—ozone, carbon monoxide, NOx, SOx, particulates, and lead. These standards are designed primarily to safeguard human health and secondarily to protect crops, wildlife, visibility, and the environment. The federal goverment also sets standards for emission of VOCs and NOx from new cars. States exceeding federal air-quality standards have the responsibility to take action to improve air quality, which, in most cases, has involved controls on industrial emissions of NOx and SOx and automobile emissions of NOx, CO, VOCs, and lead. Much of the state of

California exceeds federal standards, but this state also has the most active program of regulations with respect to air quality, including regulations on industrial emissions of VOCs that do not exist in other parts of the country.

The new version of the Clean Air Act that will be enacted in 1991 will undoubtedly mandate stricter standards for SOx and NOx levels and thus involve tighter emissions controls on industry and automobiles. Other issues that may be dealt with in this bill are VOC emissions from stationary sources (industries and consumer products) and toxic substances. The latter include minerals (asbestos), metals and metal compounds, brominated and chlorinated hydrocarbons, aromatic hydrocarbons, polycyclic aromatic hydrocarbons, and other volatile organic compounds that are designated as toxic because of their known or suspected action in causing cancer, genetic mutations, or birth defects. Some of these substances, particularly the metals, are known to be toxic to plants. The EPA will probably be charged with working with industry to establish control technologies for about 200 hazardous substances, which will mean that they will identify the best existing technologies for controlling emissions and work with industry to implement them.

One bright note is the requirement that industries report their inventories of toxic substances and the devlopment by the EPA of a mass-balance monitoring technique that will allow the agency to keep track of these materials from manufacture to disposal. As a result, the uncertainty about the magnitude of releases to the air, waters, and land surface should be decreased.

The Role of EPA.

The EPA was created in 1970 to consolidate all the pollution-control programs existing in various parts of the federal government. Through the years, its mandate has shifted back and forth between environmental protection and protection of human health (Landy et al., 1990). During the Reagan years, much of the responsibility for regulation was transfered from the federal government and the EPA to the states. The Community-Right-To-Know Act of 1988, which allowed citizens to obtain information about emissions of toxic substances in their communties, can in this context be seen as part of the transfer of responsibility for environmental quality to local citizens, public interest groups, and local and state governments. In states like California, air quality is a high priority of state government. In other areas (such as Kansas City), minimal involvement exists on the part of local government; local activists have tried to keep attention focused on the issue and are confronting large emitters and actively fighting incineration. Yet elsewhere, air quality is not an issue, perhaps due to the complexity of the problem, perhaps because of overshadowing by other environmental concerns.

The EPA also experienced severe budget cuts during the 1980s, affecting its ability to regulate and prosecute, to aid in formulating national environmental policy, and to support research. EPA-funded research on atmospheric chemistry, air quality, and air toxics also decreased during the 1980s in terms of both numbers of federal scientists working on these problems and external research grants. As with regulation, research activity has shifted to the states. California, which has the most pressing air quality problems, supports a large program of air-quality monitoring, research, and control. In addition to research into photochemistry and automobile-linked pollution, it has taken the leading role in the area of air toxics by supporting research on identification, setting of ambient standards, and development of control technologies. California is also a leader in research into the effect of pollutants on plants, not surprising in view of the dollar losses to pollution experienced by California agriculture (estimated at $150 million to $1 billion annually; California Air Resources Board, "Facts about the effect of smog of plants.")

In view of the lack of progress in controlling ozone levels in our cities, it seems clear that trees in many urban areas will continue to be exposed to elevated concentrations of ozone, its precursor substances, and the many by-products involved in the reactions that create photochemical smog, as well as other substances of varying toxicity. If the level of regulation that existed through the 1980s were to continue, estimates are that NOx levels would more than double and VOCs increase by 25 percent over the next 40 years (MacKenzie and El-Ashry, 1989).

Status of current research.

Air pollution undoubtedly contributes to the high mortality rates of city trees. Establishing cause and effect is difficult, however. Consider, as an example, the decline of the spruce-fir forests of New England, which began in the 1960s. The decline was originially attributed to acid deposition. Further research established that stand dynamics are at least part of the explanation. Recent suggestions have been that winter damage to needles and buds initiated the damage but that pollution, in the form of ozone, may increase these trees' susceptibility to winter stress (Johnson, 1989; Becker et al., 1990). Assessing the effect of pollution on city trees is even more problematic since urban trees have an even wider array of variables acting on them and may also be affected by different types of pollutants, and pollutants present at higher concentrations, than those affecting our forests.

There are several points to note in evaluating the significance of air quality standards for urban trees. First, air quality standards are set largely with respect to protection of human health. In some cases, notably ozone and SOx, vegetation displays greater sensitivity, showing damage at even lower concentrations than those affecting humans (Table 1). Second, effects on vegetation, where they have been established, are in general for herbaceous plants. Trees may exhibit different degrees of sensitivity and different types of synergistic responses. For example, trees may accumulate pollutants and show long-term effects not seen in short-lived plants.

Research relevant to pollution and urban trees continues on the following fronts:

1) Identification of pollutant-resistant species and varieties of trees.

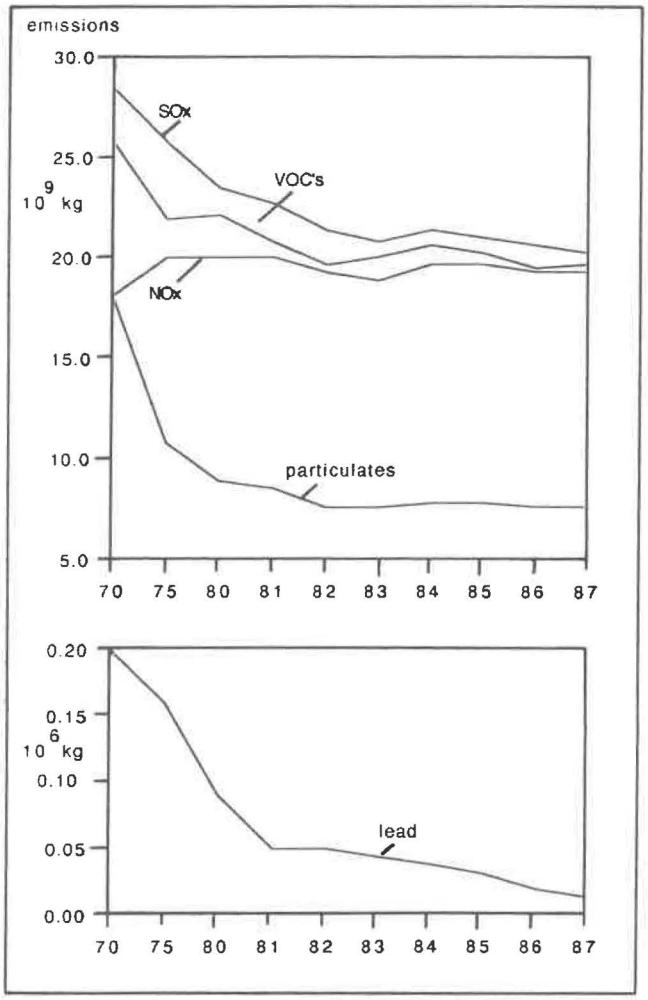

Fig. 1. Emissions trends from 1970 to 1987 (EPA, 1989). Data are estimates. The category of VOC emissions does not include methane or emissions from natural sources.

2) Establishment of the physiological basis of trees' reponse to pollution.

3) Evaluation of *production* of VOCs by vegetation in urban areas. Chameides et al. (1988) demonstrated that wooded tracts within the city of Atlanta may have a significant effect on air quality through the production of VOCs.

4) Evaluation of the efficacy of vegetation in *removing* pollutants. Some herbaceous plants commonly grown as house plants (spider plants, for example) remove organic compounds from the air (Raloff, 1989). Trees may also function in this way, although long-term physiological effects are largely unknown. In addition, pollutants taken up by plants may then be recycled through ecosystems, with unknown consequences.

5) Identification of plants that can be used as indicators of pollution stress.

The effect of pollution on vegetation has always been an important part of air-quality research. It was the recognition of damage to crops in the Los Angeles Basin in the 1950s that lead to identification of ozone as a serious pollutant. The idea that plants can serve as air-pollution markers continues to receive attention. Identification of pollution bioindicators in the forests of the eastern United States was the subject of a recent study by the National Academy of Sciences (NAS, 1989). A similar approach could be used in our cities. European researchers have looked at accumulation of pollutants in bark and leaves of urban trees and monitoring of peroxidase levels as an indicator of pollution stress (Steubing and Jager, 1982). The Netherlands has set up a pollution-monitoring system that involves standardized vegetation tests and allows concentrations of ambient pollutants and vegetation effects to be followed concurrently (Posthumus, 1981). Two types of plants are used: indicator plants, which exhibit visible effects of pollution, and accumulator plants, which accumulate pollutants in their tissues. Dose-response relationships can in many cases be established, and any additive or synergistic effects are included in the vegetation response. An international network of monitoring systems of this sort may soon exist in Europe.

Although the use of plants to safeguard human health could provide justification for research into vegetation-pollution effects, recent critics of the EPA (Landy et al., 1990) would dispute this sort of rationale. They make the case that a focus on human health does not provide a clear mandate since, as shown by risk analysis, atmospheric pollution has, in general, less effect on human health than other factors (smoking, diet, etc.). These authors argue that quality of life should instead be the major consideration. If the debate were phrased in these terms, much of the polarization that exists regarding environmental issues might be surmounted. Establishing the meaning of quality of life would necessitate debate among all members of society. Assessment of the importance of trees and forests would be an important part of this process, with the emerging consensus providing a basis for regulation and setting of research priorities.

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PEOPLE

An innovative guide for managing scenic resources along State Highway 140 in the Winema National Forest has received national recognition in the 1990 national design awards competition from the American Society of Landscape Architects (ASLA). The award was among 10 selected from 108 entrants in the land planning and analysis category. **Christina Lilienthal** (from the Winema National Forest) served as project manager and **Lee Roger Anderson** (Environmental Consulting, Planning and Design) wrote the guide for a cooperatively developed State Highway 140 Viewshed Implementation Guide. Both of the landscape architects led an interdisciplinary team of Forest Service wildlife biologists, foresters, silviculturists, and other specialists in developing the guide along the major two-lane route crossing the southern Oregon Cascades between Medford, Klamath Falls, and Lakeview. The guide addresses a viewshed of some 50,000 acres encompassing national forest lands on both sides of Highway 40. The two authors have received over 60 requests to review the plan. Lilienthal graduated from Washington State University with her degree in Landscape Architecture. She and her husband Sid also raise llamas and have organized and chair the Klamath Basin Llama Association.

View of Mt. McLoughlin from State Highway 140

Sharon Haines was recently appointed Chair of the Society of American Foresters Forest Science and Technology Board. She has been employed in the Land and Timber Division of International Paper in Bainbridge, Georgia since 1977. She served as an associate editor for the *Southern Journal of Applied Forestry* and has held offices in the SAF Soils Working Group. Haines' degrees are a Bachelor's in Biology from Pfeiffer College, a Masters in Soil Science, and a Ph.D. in Forestry and Soil Science from North Carolina State University.

Former First Lady **Rosalynn Carter** has been named distinguished fellow of the Emory Institute of Women's Studies at Emory University in Atlanta. The Institute has created the Rosalynn Carter Honorary Fellows in Public Policy and Global Affairs Program as well as an intern program and lecture series in her honor to support the study of public policy and social issues affecting women. **Elizabeth Fox-Genovese** is the Institute's Director.

Susan Rutherford (National Leader for Trails, Caves, and Dispersed Recreation) is the new program leader for the USDA Forest Service's new national program Leave No Trace. The program's goals are to involve land-managing agencies, equipment manufacturers and distributors, media, user groups, and conservation organizations.

The Society of American Foresters announced that 58 forestry professionals were elected to the status of Fellow of the SAF. These individuals exemplify outstanding service to the profession and fewer than five percent of the membership have been elected. One woman was among the 58 elected, **Christy T. Hauge** of Wisconsin.

Susan R. Schrepfer of the Rutgers University History Faculty, has won the Forest History Society's Theodore C. Blegen Award. Her article Establishing Administrative Standing: The Sierra Club and the Forest Service, 1897-1956 appeared in the *Pacific Historical Review.*

Barbara Giesecke became the Fish and Wildlife Service's first woman hatchery manager when she took over duties at Mescalero National Fish Hatchery, a trout-rearing facility in the forested high country of the Mescalero Apache Indian Reservation in south central New Mexico. Prior to this promotion she worked at Fort Worth State Hatchery (Texas), Tishomingo National Fish Hatchery (Oklahoma), and as a fishery biologist at Alchesay-Williams National Fish Hatchery in Whiteriver, Arizona.

Sharon Dolliver, co-coordinator of Georgia Project Learning Tree recently received the Georgia Wildlife Federation Conservation Educator of the Year award.

There is a newly appointed Wild Horse and Burro Advisory Board, created to advise the Secretary of the Interior and the Secretary of Agriculture on issues concerning the management and protection of wild free-roaming horses and burros on public lands. Out of the nine positions, two women were appointed: **Mary Ann C. Simonds,** Director of the Whole Horse Institute (Walnut Creek California) and **Karen Ann Sussman**, President of the International Society for the Protection of Mustangs and Burros (Scottsdale Arizona).

Barbara Weber became the new Acting Director of the Pacific Southwest Station (USDAFS) in Berkeley, California. She began her career as a researcher with the Forest Service in 1975 and since 1986 has held various staff positions in the Chief's Office in Legislative Affairs and Research. Most recently she was Staff Assistant to the Deputy Chief for Research. Weber has a Master's from the University of Minnesota and a Ph.D. in Entomology from Southern Illinois University.

Joan M. Comanor, the new Director for Land Management Planning for the National For-

ests, began her career with the Bureau of Land Management in 1985. After transferring to the Forest Service, she has worked in the Chief's Office in Range Management and State and Private Forestry. Her degree is in Natural Resource Management from the University of Nevada.

Mary Jo Lavin is the new Assistant Director of Fire and Aviation Management for the Forest Service. Her previous work included Deputy Supervisor of Resource Protection and Services with the Washington State Department of Natural Resources in Olympia and most recently, Deputy Regional Forester for USDA Forest Service in Portland Oregon. Two of Lavin's degrees are in English and her doctorate is in Higher Education Administration from the University of Colorado.

Marge Holdaway, mathematical statistician for **Rolfe Leary**'s forest modeling project in St. Paul, is trying to develop mathematical tools to help the Forest Service estimate monthly precipitation and temperature of the past for locations in northern Minnesota many miles from weather stations. To do this, Holdaway takes monthly precipitation and temperature data from the nearest weather stations, and the directions these stations are from each other. Then she goes through a technique called "kriging" named after a man who pioneered the technique in mining. Kriging is the main branch of a new field called "geostatistics" which is rooted in geology and geography.

Holdaway analyzes these available weather data to estimate the "semivariogram." When graphed the semivariogram tells in the language of mathematics how much influence an observation at one place—say, of monthly precipitation—has on an observation of monthly precipitation at another place 50 or even 100 miles away. After the spatial structure between the existing weather stations has been "pictured" by the monthly semivariograms, kriging is used to estimate missing values by weighting the data from nearby weather stations. Thus temperature and precipitation in places without a weather station nearby can be estimated by interpolation. Researchers hope to be able to estimate temperature and precipitation at any plot location as far back as 1900. They also hope to get an idea how forests of the northern Lake States would react under global warming.

Frances Anne Prince of Omaha, Nebraska is the Chair for Arboriculture of the National Council of State Garden Clubs. She was also named as a Member, Plant a Legacy Section, Commission for the Bicentennial of the Signing of the U.S. Constitution. She has been hard at work since 1986 on the BiCentennial years' celebrations: for the signing of the Constitution (1987), the first Presidential election (1988), the seating of the President and Congress (1989), the organization of the Supreme Court (1990), and the Bill of Rights (1991).

Prince urges everyone during the Bicentennial year left to plant a living legacy to remind each of us of our Constitution which has endured these 200 years—and remained strong. Renovate a park, a city grove or forest, a botanic or other special garden, or an arboretum-type planting. A landscape architectural plan would be a fitting legacy.

Prince advises: Go to your city administration, your newspaper, and other community resources such as a city forester, arborist, landscape architect, and business leaders for suggestions on what could be done. Break the project into tasks, decide who will do each, note them on a plan sheet, and set time frames for task completion. Have progress meetings. Take pictures of your project before and after completion and during work. Feature in some way, the indigenous, woody species native to the area, some of which may have been growing when the constitution was signed.

The only living witnesses to the debates and signing of the Constitution are trees. What more fitting community reminder could we have of its durability and strength—and its ability to nurture our descendants as it has nurtured us—than planting trees in the Constitution's name.

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AN EFFECTIVE INVENTORY IS ACTUALLY MORE OF A TREE CENSUS RESULTING IN THE CREATION OF A DATABASE ABOUT VITAL TREE POPULATION CHARACTERISTICS; THESE CHARACTERISTICS GIVE A MANAGER THE DATA HE OR SHE NEEDS FOR DECISION-MAKING.

TREE INVENTORY OVERVIEW

CLAY MARTIN AND
MARY DALE

INTRODUCTION

Effective tree management begins with knowing the composition of the community forest. This is best achieved with an accurate and up to date tree site inventory including as much vital information about each site as possible. A simple count of the trees in a city is useful, of course, but knowing the species, maturity, condition, growing space, and maintenance requirements helps the urban forester effectively and economically manage the current forest and plan for the future. (The more information required, of course, the more costly the inventory will be. Throughout California, most firms charge between $1.35 and $2.00 per tree site to inventory, whether a site is filled with a tree or is vacant.)

INVENTORY FUNCTION

The decision regarding what tree characteristics are vital depends on the objectives of the tree manager. Many tree managers now want to achieve, for example, a tree population *density* of 100 percent of available sites. This is becoming particularly important since trees in cities are believed to affect favorably carbon dioxide pollution and global warming.

Density can be determined in two ways. First, most cities have spacing criteria for street trees. If this spacing is, say, one tree every 40 feet, a city with 10 linear miles of street (20 linear miles of parkway) would need approximately 2,600 trees. Another, more accurate method, compares the number of sites occupied by trees versus the number of vacant planting sites. Eighty planted trees and 20 vacant sites in a given area would be equivalent to an 80 percent density depending upon the *growing space* available for each site. Decisions about the criteria of the inventory and how it is to be used define the kind and way the data are collected. These decisions need to be made early.

Population Size and Location

Often, the most surprising information obtained from an inventory pertains to the location of trees and a count of the total trees or tree sites. Tree managers have grown accustomed, through necessity, to making educated guesses at the number of trees for which they are responsible. Most underestimate this critical figure. Knowing how many trees are out there and where they are located allows a manager to plan the size and movement of crews, evaluate bids from contractors, and to budget more appropriately.

Species Composition

Species compostion has become one of the most important data elements of an inventory—judging by the lessons learned from fighting Dutch elm disease. In California, two newly introduced pests, the longhorn eucalyptus borer and the ash whitefly, have reemphasized the basic concepts of pest control through species diversity. Most pests attack specific species. An inventory identifies these species for inspection and analysis along the rapidly expand ing border of the pest's range. High concentrations of any of the affected species either by population percentage or localized area indicates a potential problem. In these areas and areas where a problem already exists, decisions can be made using inventory information to schedule and prioritize pest control management practices (cultural, chemical, or biological).

Relative Maturity

Managers need to know the relative maturity of a population. This information can be obtained through an analysis of the diameter, height, and canopy spread once the species composition is known. Characteristically large, medium, or small trees have known landmarks of growth that are indicators of maturity. Inventory data analysis can provide information that will help prepare a tree manager for large scale removals if the tree population is overmature or large increases in maintenance demands if the population is young. The distribution of relative maturity can be monitored and adjusted to prevent these potential budget and manpower problems.

Condition

Condition is often one of the inventory data elements for which tree managers already have a good feel. However, specific information pertaining to the factors responsible for a less than perfect bill of health can provide clues for management priorities. High winds are a periodic problem in many communities, for example, so the collection of crown damage information by species and location during an inventory allows a tree manager to determine if a particular species or location has a problem. This has implications toward the frequency of maintenance for those species or locations. In addition, it can act as an indicator of species not well suited to the environment of a particular community.

Available Growing Space

The most limiting factor on tree growth is the amount of available growing space at an individual site. Available growing space does not only apply to the soil area available, but includes clearance restrictions for vehicle and pedestrian traffic, buildings, and utilities. This information has a tremendous impact on whether a particular species of tree is appropriate for a particular site. Collecting data for parkway and well size, hardscape damage, clearance needs, and utilities for existing trees can indicate areas where high maintenance costs need to be factored in. For example, the presence of many young Liquidambar spp. in a narrow parkway targets an area for future concrete repair and perhaps replacement with another species over a long period.

Maintenance Requirements

Finally, organizing systematically the current maintenance status for each tree provides a benchmark for tree management in a community. Information regarding removals (tree and stump),

hazardous conditions, and staffing and training programs allows the community quickly to change over from reactive management to scheduled management. Scheduled and consistent management is more effective, but also demands that the information in the inventory stays absolutely current. Data management software that has been tailored to fit the needs of tree managers provides this service efficiently.

DATA MANAGEMENT

Once an inventory is completed, data management software can be applied to facilitate inventory updates and to provide information for decisions. Such software helps make these decisions quickly and accurately. It does not (and should not) make decisions for the urban forester.

There are many software programs on the market (see listing). When choosing, clearly the resources and needs of the tree care department should be compared to what the software has to offer. Some of the features to look for: search capabilities, updating ease and procedures, tree care program reports.

Most programs will call to the screen or generate to print tree listings by location, species, and maintenance requirements. A few will also generate these listings on maps. This ability to search the data is invaluable when responding to citizen requests. Knowing the tree a caller is referring to and being able to provide work histories and schedules can boost the confidence of both the community forester and the caller who feels the tree care department is on top of things.

Data management programs usually can update tree inventory information daily or by batch. The amount of time required for this function can be critical to its being handled on a timely basis. Dedicating time for routine inventory updates is the single most important data management function—all decisions made regarding tree care are of lesser value if the information they are based on is inaccurate. Generally, the process should require approximately two hours per week.

As work is scheduled, most data management programs will allow a work order to be generated by tree or block to be distributed to crews or contractors. These forms should also allow for inventory update information that can be filled out on site. Work histories—by block or by tree—ensures tracking to help plan budgets and estimate contract work. Finally, reports generated from data management software can act as invoices for contract work.

CASE STUDY

The City of Irvine, California has begun to take advantage of the information available from its recently completed inventory of public trees. The inventory identified 34,987 tree sites, of which, 30,065 were filled with trees and 4,922 were vacant and available for planting. Irvine anticipates putting this information to use in many areas such as contract preparation, customer service, and long range planning because the majority of Irvine's tree maintenance is handled through contract. Contracts are now specific, contractors prepare bids without guesswork, the city's staff time and costs also decrease.

Access to inventory information through data management software should improve customer service as well. Often, a question or request could be handled over the phone without need for a field inspection, another reduction in staff costs while presenting a positive image to the community.

Long range planning is critical to maintaining a high service level. Inventory information that can be continually updated through data management software can identify trends in the tree population. Irvine's inventory revealed that their population of trees is young so much is planned to take advantage of that.

In the future, cities like Irvine should look at improved mapping, aerial photography, computer modeling, total tree inventories (public and private), and shared information. This last element is perhaps the most important since tree management on a regional or urban scale best provides for healthy trees able to withstand the urban environment. Advances in both urban forestry and computer technology create a bright future for the urban environment.

Clay Martin is the Urban Forester for the City of Irvine, California responsible for developing a comprehensive urban forest master plan. He works with community associations to develop individually tailored community forest management plans, interacts with urban planners, and manages Irvine's greenwaste recycling program. His Master's is from Texas A & M University in urban forestry. Prior to that he worked for Golden Coast Environmental Services, Inc., an urban forest management consulting firm.

Mary Dale is Senior Data Processing Specialist, Professional Service Industries, Inc., and also worked at Golden Coast Environmental Services where the two authors first collaborated on this manuscript. Dale's Bachelor's is in Ornamental Horticulture from Cal Poly, Pomona, and her Master's is in Horticulture from the University of Nebraska.

Computer System Providers

Alabama Street Tree Inventory
513 Madison Ave. Montgomery, AL 36130 (205-9360)

Community Forestry Inventory
Colorado State Univ., Ft. Collins, CO 80523 (303-491-6303)

Compu Tree
Systernics, 1380 Mission Valley Blvd. Nokomis, FL 34275 (813-488-1430)

TreBase
University of Wisconsin, Stevens Point, WI 54481 (715-348-4189)

Tree Keeper
Golden Coast Environmental Service, Sky Park Circle, Ste. 225, Irvine, CA 92714 (800-648-7337)

Tree Master
Urban Forestry Consultants, P. O. Box 100, Orinda, CA 94563 (415-222-6278)

Tree Manager
ACRT, P. O. 219, Kent, OH 44240 (216-673-8272)

Urban Tree Management System
University of Washington, 17076 10th St. NW, Seattle WA 98177 (206-546-8251)

Urban Tree Inventory Program
Oklahoma Dept. of Ag. Forestry Division, 2800 N. Lincoln Blvd., Oklahoma City, OK 73105 (405-521-3864)

From E. T. Smiley. 1990. *Tree Management Computer Systems.* Proceedings of the Fourth Urban Forestry Conference. *No endorsements of products listed in this article is intended, nor is criticism implied of similar products that are not mentioned.*

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No Woman Tenderfoot: Florence Merriam Bailey Pioneer Naturalist

By Harriet Kofalk

Texas A & M University Press 1989

Reviewed by Alan Contreras

I thought the sparrow's note from heaven,
Singing at dawn on the alder bough;
I brought him home, in his nest, at even;
He sings his song, but it cheers not now,
For I did not bring home the river and the sky;—
He sang to my ear,—they sang to my eye.
Ralph Waldo Emerson, *Each and All*

Anyone interested in the natural history of the west cannot help but be impressed by the career of Florence Merriam Bailey (1863-1948), an American ornithologist born at a time when young ladies did not, by and large, study birds in the more rugged parts of this country. She was the first woman to become a Fellow of the American Ornithologists' Union (AOU), an honor earned by her contribution to knowledge of bird behavior and distribution, especially in the American southwest.

She went to Smith College in Massachusetts in 1882, but did not receive her degree until much later (class of '86, awarded in 1921 retroactively). Merriam's years at Smith were devoted to both the study and protection of birds. She organized women against wearing hats with birds or feathers, and she persuaded the well-known nature writer John Burroughs to take Smith women on interpretive bird walks. Her own diaries capture for us the picture of 40 of them "with gossamers and raised umbrellas" starting out with Burroughs at 5:30 on a rainy morning.

From Smith, Florence, along with her brother, U.S. Biological Survey head C. Hart Merriam, and other leading naturalists of the day, helped establish what would become *Audubon* magazine. At 26, in 1890, she published her first book, *Birds Through an Opera Glass*, a compilation of early essays and articles on studying birds without harming them. Another early book, *A-Birding on a Bronco*, appeared after two western trips, and included notes on Pahinopepla. Some of those notes also appeared in *The Auk*, then and now the premier journal of North American ornithology. The illustrator for *A-Birding* was Louis Agassiz Fuertes, then a college junior, whom Florence had met when he was a boy, and whose name would become so synonymous with excellence in bird illustration that his work would be reprinted nearly a century later in *American Birds*.

She married longtime western mammalogist Vernon Bailey and they often worked together. Seemingly inexhaustible energy (even into her 70s) was poured into exploring, protecting, and publicizing the natural world. One of Bailey's last books, *Birds of New Mexico* (1928), stands as her most significant single publication. It reports her horseback trip across the entire state, doing field work on a scale rarely undertaken today. Her many single articles and notes in a variety of publications were equally impressive: her plumage description of the Black Swift, a notoriously difficult bird to observe because of its chosen nesting site on sheer cliffs near or behind waterfalls, was published in *The Murrelet*, a regional journal of northwest science. That work was quoted verbatim by Jewett et.al. in their 1953 book *Birds of Washington State*. Gabrielson and Jewett's 1940 *Birds of Oregon* (still the only full-scale book on Oregon birds) contains many references to Bailey's early scientific contributions.

Although Bailey did not oppose collecting for some purposes, she was key to instituting the study of what birds *do* in the context in which they do it—as opposed to what birds *are*—which required shooting bags of them to carry back to a museum. Author Kofalk cites Bailey's description of a female hummingbird building a nest:

The peculiar feature of her work was her quivering motion in moulding. When her material was placed, she moulded her nest like a potter, twirling around against the sides, sometimes pressing so hard she ruffled up the feathers of her breast.... To round the outside, she would sit on the rim and lean over, smoothing the sides with her bill, often with the same peculiar tremulous motion...

Bailey not only mingled with Burroughs and Fuertes, but with other naturalists including botanist Alice Eastwood, entomologist Mary Treat, artist Ernest Thompson Seton, and ornithologists Olive Thorne Miller, Robert Ridgway, Althea Sherman, Margaret Morse Nice, and others. Her interactions with the few other women with substantial reputations in ornithology were especially important to her, although she was always very independent. She took great pride in her friend Nice's election (for her work on the Song Sparrow) as a Fellow of the AOU, the first time any nominee was selected on the the first ballot.

Author Kofalk has provided excellent notes, a bibliography of Bailey's work, and a thorough index. I used all of these to cross-check things that interested me, and found what I wanted each time, a thoroughness and ease of use toward which many so-called indices could strive. In addition to its portrait of the natural history of the American west from the late 1800s through the 1940s—replete with Kaibab squirrels, obscure shrews, and other minutiae—*No Woman Tenderfoot* offers the bonus of the early history of the U.S. Biological Survey. This additional theme does not distract a reader from the focus on Florence Merriam Bailey, but rather is a natural outgrowth of the discussion of much of her work.

I recommend this book to anyone whose interest in birds and natural history reaches beyond the next Rare Bird Alert. She summed up its value herself: "A list of species is good to have, but without a knowledge of the birds themselves, it is like Emerson's sparrow brought home without the river and the sky."

Alan Contreras works for the Missouri Coordinating Board for Higher Education. He has served as editor of Oregon Birds *and as a member of the Oregon bird records committee. His writing on birds of the American west has appeared in* American Birds, Western Birds, Oregon Birds, *and other publications.*

MANAGING PARKS IN THE 1990'S WILL NOT BE EASY GIVEN THE DEARTH OF FUNDING AND THE INCREASING NUMBER OF VISITORS. PRACTICAL PLANNING AND CONSISTENT MANAGEMENT IS THE KEY.

BOSTON TAKES STOCK

ELLEN J. LIPSEY

The 1990s offer an important vantage point for taking stock of older open spaces in the United States. Boston, a city known for its historic resources, is doing just that.

Our city has—as do many North American cities—a park system that is around 100 years old and in need of comprehensive care. We should spend money on the usual things, vegetation and structures, but also on policy guidelines to mitigate stress factors. Boston invested in historic park master planning in the 1980s and now needs to change gears, to reinforce the planning commitment by implementing sound capital and operating activities.

Like other regions of the country, New England experienced in the 80s a decade of economic prosperity. Now, however, in Massachusetts, anticipated capital improvement funds for parks have vanished as the state economy has slowed and a large state deficit has accumulated. The 1990s are thus a pivotal time for examining the management of historic urban parks. Boston is facing the challenge with a combination of creative and practical mechanisms aimed at making the most of available resources.

General challenges confronting keepers of city parks are:

Wear. Urban historic park lands are heavily used by both residents of the area and by tourists and visitors. Parks provide active or passive recreational spaces, and they may be places for large celebrations as well as daily activities.

Care. In every budget crunching session, parks are weighed against basic human services like housing, police and fire protection, education, and welfare services. The outcome for open space will depend on the value assigned to parks in a given city, state, and region at any given time. And it does change.

Land use pressures. These are hardly new: land use pressures threatened the survival of Boston Common as open space soon after it was created in the 17th century. Probably, greenspace always will be eyed for development, or at least to serve nearby growth. Adverse effects from development can be insidious: winds and shadows increased by nearby highrises, utility lines dug through parks, street widenings nibbling away at park land, non-park related structures such as bus stops and parking facilities.

Environmental impact. This includes air pollution which can directly affect both vegetation and park visitors, water pollution, water needs versus water conservation issues, the above-cited wind and shadows, effects from below-ground structures such as a subway or garage, and noise whether it is from amplified sound within the park or from adjacent vehicular traffic. The survival of quality open space in our cities depends on our ability to mitigate these impacts.

In light of the above issues, all of Boston's park protection and preservation projects have two underlying goals:

•First, each project provides a "bible" to guide the city's park administrators, to assure long-term consistency in terms of capital improvement projects, ongoing management, and maintenance activities.

•Second, each project seeks to build a broad and deep base of public awareness to ensure ongoing stewardship even as city administrations come and go.

The three projects examined below are the Boston Common Management Plan, the Emerald Necklace Maintenance Operations Plan, and the Historic Burying Grounds Initiative. Each was conceived for different types of resources, given separate political and economic situations. Each project attracts a different level of public concern. Therefore, various approaches regarding planning, design, and implementation were undertaken.

Boston Common Management Plan

The least traditional of Boston's current historic open space planning efforts is the Boston Common Management Plan. Although it encompasses a physical master plan, the graphic illustration of that plan shows only subtle changes, mainly to reclaim lawn area from paving and to replace trees lost from age and disease. What is new are the safeguards that accompany the physical plan: guidelines for ongoing maintenance, administrative policies to govern use, plus strategies to build general community awareness and public/private fiscal support.

The Common Management Plan depends on the city's, its consultants', and the community's understanding of the historic evolution of Boston Common. In 1634, four years after the Massachusetts Bay Colony moved to the Shawmut Peninsula (the natural land mass of Boston proper), the citizens were assessed six shillings per household for the purchase of a town common. Born because of the tradition of English commonnage, Boston Common soon evolved to fit the needs of a new democracy. Early on, town fathers decreed that the land could not be subdivided or sold except by vote of the majority of citizens. Other restrictions stipulated the number of cows and sheep per household and gave only 70 prominent householders pasturage privileges. Grazing co-existed with training of the patriot militia, children's play, public stocks and hangings, and evening promenading. Dumping was prohibited by law.

The Common's landscape evolved as the city filled in, and it expanded upon marsh land to the Common's west and south. The colonists had already finished what native populations had started, cutting down forest to produce firewood, building materials, and to clear the land. The British encamped on the Common for eight years during the Revolution, taking remaining trees and wood fences for firewood (or vengeance).

After the Revolution, pathways which developed around and across the Common became formal tree-lined pedestrian avenues. Cows were banned in 1830. They were by then anachronistic to the sophistication symbolized by the Charles Bulfinch-designed State House built overlooking the Common (1795-98) and also to the institution of the Boston City Charter (1822).

In the 19th century Boston Common gained the park landscape that still identifies it today. The Frog Pond turned into a formal pool with a central water jet. A decorative cast iron fence surrounded the property's perimeter. The Common's topography was "civilized" as some of the hills were cut down to fill some of the depressions. It became an urban and urbane, gently rolling park land-

Boston Parks & Recreation Department staff discuss capital and maintenance priorities for Public Garden (est.1837): from left, Michael Connor, General Superintendent of Maintenance; Frances Beatty, Landscape Architect for Historic Parks; Ellen Lipsey, Senior Planner for Historic Parks.

scape of shade trees over lawns, complemented with paved paths over-arched by mature trees, and furnished by benches, fences, fountains, and formal monuments. On the 1851 plan, trees numbered 1,255, largely composed of shade species.

Throughout its life span, the Common has built a legacy of gatherings and celebrations that reflect events important to Boston, the state, and the nation. The Common is a stage for history-in-the-making, as it has been for 356 years: Abolitionist rallies, Civil War recruiting drives, WWI and WWII Victory Gardens and Liberty Bond sales offices, a VJ Day celebration, and demonstrations against the Vietnam War. Celebration of the sacred has included Pope John Paul II's first North American Mass to an audience of 400,000. Today preachers use the Common to prosletize as they always have. Others who have spoken here include George Washington and Lafayette as Revolutionary War heroes, President John Adams, President Franklin Roosevelt, Charles Lingbergh, and Martin Luther King. Sports and recreation and holiday activities have included hot-air balloons, sledding, ball tournaments, a baked bean dinner for thousands, and the return of cows at an annual Dairy Festival.

Thus the Common Management Plan is set in a context of the history and significance of the property, both physical and ephemeral. It addresses the city's responsibility to safeguard the country's oldest public park space—a fragile 48 acres in the heart of downtown Boston.

The Parks Department started by compiling its Statement of Purpose and documenting present practices regarding use and regulations, maintenance, planning, and programming. Then the city turned over this material to a landscape design consultant, the Walker Kluesing Design Group, with a mandate to shape a clear and comprehensive plan protecting Boston Common into the 21st century.

Before putting pen to paper to draft plans and recommendations, the Parks Department and its consultants invited the public to participate in four "Boston Common Forums." At the start of the process, these evening panel and audience discussions served to articulate what is essential to Bostonians' perception of the Common, to verify what was seen as sacred and what was considered profane. The answer was clear and simple: Strengthen the existing park-like nature--that is, shade trees over grass; reduce hard and built surfaces and non-park encroachments such as paving and structures; ensure that the Common is safe and clean as well as green.

An overview was shaped into four Working Papers. These were widely circulated for public input. Two items elicted the best dialogues internally in Parks and in the community: maintenance and administration. One triumph measures in inches—getting the grass cut higher. Others are bigger: Returning at least one acre of hard surface to turf, limiting large gatherings to 10,000 people, limiting both the frequency and placement of certain types of activities including active sports and vendors as well as special events, and barring some activities entirely. The plan includes a tree planting concept which reinforces the groves and avenues and increases species diversity of deciduous shade trees. A tree care and turf care program will raise the level of standard care.

Discussions regarding freedom and use led to the realization that the Common can be some things to most people, but not all things to all people. Where the rights of one person or group impinge upon the enjoyment of another, regulation is needed. This extends from loud speakers, to the visual and environmental effects of nearby development, to commercial vending activities, to events that cause major stress to turf, and to the exclusive use of a part of the Common by one group.

The Boston Common Management Plan was finalized and adopted by the Parks Commission, fall 1990. In summary, it is a commitment to responsible park management that only begins with planning, design and physical rehabilitation. Its larger goals are protective municipal and community stewardship and above-standard maintenance.

The Emerald Necklace

The aim of the Emerald Necklace Maintenance Operations Plan is to accomplish smart, ongoing care. It grew out of a master plan created for an ambitious—and in today's Massachusetts fiscal climate—a far-away goal of implementing about $70 million worth of capital outlay projects for Boston's five Frederick Law Olmsted parks: the Back Bay Fens, the Riverway, Olmsted Park, Jamaica Pond, and Franklin Park. These parks, established in the last quarter of the 19th century, connect by design to Boston's older parks—the Common, Public Garden, and Commonwealth Avenue Mall. Together they ring the city with a chain of greenspace, hence the name, Emerald Necklace.

The master plan was generated by a state-wide Olmsted Landscape Preservation Program, implemented by the Massachusetts Department of Environmental Management. (Consultants were Walmsley/Pressley joint venture and The Halvorson Company.) Olmsted masterplanning included a very

thorough maintenance plan which presumed that a magic wand had passed over the land and that the proposed capital items were all in place. When the state discovered in the fall of 1988 that its fiscal surplus had given way to a serious deficit, many state programs were "frozen," Olmsted among them. The City of Boston then took up the charge, which is fitting, as the city owns and manages Boston's Olmsted parks.

The Maintenace Operations Plan (MOP) is seen by Boston Parks as an immediate and continuing approach. It starts with existing conditions and existing workforce and equipment resources and aims to achieve master plan goals incrementally. MOP translates the academic planning approach to field operations. It marries both the master plan and Parks staff (who include maintenance, planning, programming, and administrative personnel) to an annual planning cycle for field work. Community park partners are key participants to complete the network.

Each year for each park, a set of tasks is mapped out for Parks' traditional maintenance crews, supplemented by non-traditional crews (such as prison inmates) who cut invasive plants: Phragmites (aquatic reeds) and Japanese Knotweed. Park Partner groups add their projects, such as care of shrubs and trees along the water line at Jamaica Pond.

Annual goals include ways to upgrade baseline maintenance practices and to complete special projects according to the master plan, such as reinstating the understory. Scheduling and coordination between agencies and organizations will become automatic. This should end the days when one group plants daffodils and another mows them down!

The Maintenance Operations Plan is now in its second year. While continually being improved, it is already making progress, especially in overcoming some perceptual barriers. Parks Planning and Maintenance personnel are talking and listening to each other to break traditional book-learning versus hands-on learning barriers. Change and new ideas from one group no longer threaten the other.

Similar barriers between the city and community are coming down with MOP. Long resigned to a generation of government apathy on open space issues, park constituents acted independently. When the Parks Department resumed its responsibilities and authority in 1987, some citizen groups felt disenfrancished.

The Emerald Necklace Maintenance Operations Plan is a pragmatic vehicle for positive change. It institutionalizes an annual maintenance planning cycle and a mechanism for communication among all parties with active park involvement. It accomplishes visions with an alternative to large capital outlays, in a slower way, but one that is steady and very visible.

Claudette Bailey, Affirmative Action Manager, talking to minority contractor rebuilding Cemetary Wall.

Historic Burying Grounds

Boston has 16 historic burying grounds established between 1630 and 1841. Ten are colonial: of these, seven are from the 17th century; three of them attract up to 5,000 visitors daily, largely tourists, walking the Freedom Trail. Of the 16, six are open daily. Most of those in neighborhoods—as opposed to downtown—are locked for security reasons, except for pre-arranged visits.

The Historic Burying Grounds Initiative (HBGI) is a traditional open space master plan, with a guiding set of preservation principles, and with maintenance guidelines. Elements of the approach and the complex resource package apply to many public landscape situations.

The Parks Department in 1983 created a separate maintenance crew for the historic burying grounds, chiefly to avoid further scarring of gravestones by lawnmowers. That same year, the city started a stone-by-stone inventory. But more was clearly needed to responsibly address the effects of more than 300 years of wear, neglect, vandalism, and even short-sighted preservation efforts. In 1985-86 with public and private grant funding, the master plan was prepared. William Pressley and Associates and Structural Technology, respectively, examined each site's existing landscape and structural conditions. They then prepared recommendations, with priorities and itemized costs.

The landscape architect created maintenance guidelines with schedules for ideal turf and tree care and infrastructure needs such as cleaning catch basins, plus suggestions for a cemetery keeper for the Freedom Trail sites to perform litter pick-up and other daily tasks. The master plan was accompanied by a pilot stone conservation report prepared by the Center for Preservation Research which focused on conditions and treatments for the oldest downtown site, King's Chapel Burying Ground, established 1630. A prototype sign program was designed as well.

With the inventory, master plan, maintenance guidelines, stone conservation report, and signage design in place, funding and implementation became priorities. An advisory group that formed during the master planning turned its attentions to continuing support for individual sites, with the result that half of the cemeteries have Friends groups. They may provide assistance for funding, maintenance, and programming. Corporate, non-profit, community advocacy, and special interest groups and neighbors all participate.

To date the Historic Burying Grounds Initiative has accomplished almost 40 percent of an estimated $6.1 million capital outlay program with public and private dollars in partnership. The priorities have been on public safety, such as rebuilding 18th and 19th century walls, entrances, and tombs—and on historic resource protection especially for grave markers and decorative iron work. Planting and landscape care will complete the site work.

The philosophical underpinnings of the Historic Burying Grounds Initiative include retaining what is significant to each site: grave markers, tombs, fences, trees, grass, paths, and so forth, whether original or from a later date. Generally, adding elements which never existed such as lighting or benches is discouraged; so is removing stones wholesale, even to a museum.

(continued on page 23)

THIS SEASONED FORESTER TOOK EXPERIENCE GAINED FROM PUBLIC SECTOR WORK IN THE SOUTH AND PUT IT TO THE TEST IN HER OWN BUSINESS.

SUSAN KLETO: CONSULTING URBAN FORESTER

CONNIE HEAD

Challenge—that's what Susan Kleto says she enjoys most about her work in caring for and preserving the health of the urban forest. Five years ago Kleto left the security of a position with the South Carolina Forestry Commission to start her own business as a consulting urban forester. She operates her business from Madison, Florida, and works throughout north Florida, south and middle Georgia.

Kleto's interest in trees, and urban forestry, began in Asheville, North Carolina, in the wooded neighborhood where she grew up. There she saw that "trees and buildings are supposed to go together, compatibly." Her interest in trees became her profession in 1979 when she graduated from North Carolina State University with a degree in Forest Management.

After graduation, Kleto worked briefly as a right-of-way agent for Carolina Power and Light. But her first exposure to urban forestry did not come until she left the power company in 1980 and accepted a position with the South Carolina Forestry Commission as a Resource Conservation and Development Forester in Walterboro, South Carolina. "One of the needs that was seen for the seven county area I worked in was some urban forestry assistance in Beaufort, South Carolina, and Hilton Head Island. I convinced the group supervising my position to let me do one day a month of urban forestry, and that kicked off the urban forestry program there."

Susan worked for the Commission for six years. She next became a County Forester in Kingstree, South Carolina, assisting landowners with forest management activities. She then accepted an option to transfer into an Urban Forestry Program in Columbia, South Carolina. "This time, I had full-time responsibilities in urban forestry, assisting homeowners, industry—whomever. The more I got involved with it, the more I liked it, especially trying to save trees on construction sites."

During the time Susan worked for the Commission, she met her husband, Pete Kleto (also a forester), at a Regional Society of American Forester's meeting. After they were married, Pete started his own consulting business in Forest Management and Soils. Pete travelled, sometimes working 10-day stretches, coming home for four day intervals. Although their relationship had always been long-distance, when Pete was awarded a long-term contract in North Florida, they decided to move, and settled in Madison, Florida, a small town about 50 miles east of Tallahassee.

Kleto looked at her employment options in and around Tallahassee (population 130,000 people). She considered working for the forest industry, or for the State of Florida, but for various reasons, including the facts that she enjoyed the urban forestry work and wanted to stay in one location for awhile, she decided against both those options. With the experience she had gained, with the confidence that she exhibits in most everything she does, and with Pete's encouragement, Susan chose to start her own consulting business.

Susan Kleto

Kleto talked first with the Small Business Administration (SBA), getting advice on the most positive approaches to starting a business. SBA advised her that it is difficult for someone entering the consulting business to secure a business loan. So, using her savings, and counting on Pete's income to cover household expenses, Susan began taking the initial steps to set herself up as a Consultant. She hired a graphics design firm to design a business logo and print business cards, letterhead, and a brochure that would represent her company. Pete had purchased a truck for his business, so Susan appropriated the couple's Isuzu Trooper as her business vehicle, affixing her logo on the side with a removable magnetic sign. The office is at home, shared with Pete. This arrangement not only eliminated the expense of office rent, but the two foresters are able to share office equipment, such as a typewriter, computer, printer, software, phone, and answering machine. The additional equipment that Susan purchased included a drafting table and drafting equipment (for modifying blueprints), surveying equipment, additional file space, and a Polycorder data recorder for tree inventories. At some time in the future, depending on the volume of work, Susan expects to purchase a Fax machine. Additionally, since she used to wear a uniform every day, start-up expenses included clothes, which had to be upgraded to meet with engineers, architects, and city officials.

When I asked Susan what was the most difficult part of starting her own business, she answered with characteristic directness: "Finding a client. I had to educate the potential clientele in Tallahassee about what I could do for them and why they should hire me. I sent out letters, I followed the letters up with phone calls, and asked for appointments. Some engineering and architectural firms allowed me to come in and explain to them what I could do for them, and why they needed to hire me on their projects."

While she was waiting for her business to take off, she also did some contract forestry work unrelated to urban forestry. And for someone thinking of starting their own business, Kleto advises: "Any consultant

needs to keep their options open on what they're willing to do if they want to make a living the first few years." Within months, her start-up efforts began to pay off, and she was hired to work on several large construction projects.

One project that Susan has been involved with is the construction of the new headquarters building of Waste Management, Inc. of Leon County. The structure is located on a site that was formerly wooded. Kleto's responsibilities included working with the landscape architect in the selection of the forest trees that would eventually be used to landscape around the building, and then protecting those trees as they were moved into an on-site nursery and held during construction. She then supervised the transplanting of the trees to their permanent locations around the completed building. Forty-two trees were transplanted, with the largest tree an approximately 40 foot tall, 5-1/2 inch diameter magnolia. "That's stretching the limits of what you can do, but we managed to keep it in such good condition it never dropped a leaf!" Susan continued to protect the trees during their first year while they were becoming firmly established in their new locations.

Another project that Susan has managed is the protection of some 22 major trees, mostly live oaks and magnolias, on the construction site of the new headquarters of the Florida Department of Law Enforcement in Tallahassee. "They had a lot of beautiful trees on the site so they (the landscape architect and engineer) decided to try to save as many of them as possible. The building was going to have three courtyards in it, and two existing trees—one a 52-inch live oak and the other a 48-inch live oak—were to remain in two of the three courtyards." In addition to an irrigation system and protective fencing around all of the trees, the trees were fertilized and mulched. The two courtyard trees were also root pruned and top pruned before construction.

With the downturn in the economy, Susan has seen a decrease in the amount of construction-related urban forestry work being offered in her area, so she has become active in doing street tree inventories. She has completed an inventory for the city of Albany, Georgia, and has completed the first year inventory in a three-year inventory program for Columbus, Georgia. "That's another aspect of urban forestry that looks to be gaining more momentum, and it's a very possible source of employment. As I said, when you're a consultant, you need to be flexible in what you do."

Kleto feels very qualified to do inventories. She talked, for example, with Albany, Georgia about what they needed, and then developed an inventory that would satisfy their needs. She offered her services to them in the form of a bid. For small projects Susan often gives the prospective client a verbal estimate for her services, but about 75 percent of the time, she submits a formal, written proposal, or bid. She admits to having made some bidding mistakes when she first started out. "You can't always know how long something will take, and it's different going from a paid salary to doing it all yourself. It costs more because you're on your own."

Costs for her services are generally embodied in the form of a total project price. This total project price is based on an hourly rate for her estimated time, and includes expenses for supplies, travel expenses (meals and hotel), and any services that she may need to subcontract. For construction projects, Kleto generally does most of the work herself. But, depending on the needs of the particular contract, she will subcontract out anywhere from zero to 80 percent of the work. "I subcontract for whatever level of services the contract requires: field labor, landscaping, additional registered foresters, whatever."

Susan also retains an accountant for assistance in handling her business finances. Although not absolutely necessary, with two businesses in the family, plus combined household finances, she says "It's just easier." She has also consulted with lawyers on several occasions, but does not retain one long-term. And, in addition, Susan carries professional insurance—general liability, and errors and omissions coverage.

Susan also maintains her professional associations: Forestry Registration in both South Carolina and Georgia; a member, and Vice Chairman, of the Georgia Urban Forestry Council which actively supports tree and forest protection, care, and management in communities throughout Georgia. She's been an active member of the Society of American Foresters since 1979.

One of the advantages that Susan feels results from owning her own business is the flexibility she has in scheduling her time. "I have the luxury of saying I will do this work or I won't do this work. I try to establish a work schedule that allows me to accommodate everything. Technically, you can set up your own hours and take vacations whenever you want, but..." she laughs, "it never works out that way."

Kleto knows that she has done well for being in business five years—that it says something that she's still at it. But she doesn't feel she's "arrived" yet. Two years ago, when daughter Niki was born, Susan made a conscious decision to work part-time. So, even though she sees additional opportunities to increase the volume of work, because of her commitment to raising a family she has about the level of work that she wants at this point in her life. She expects to continue part-time for another 10 years or so, but during this time she plans to be active both in the market and consulting in the profession of urban forestry. "I do like the freedom. I like being my own boss. I would find it very difficult to go back and work for anybody else now."

Author Connie Head operates her own consulting business in Ashburn, Georgia and is currently assisting Susan Kleto in the City of Columbus, Georgia street tree inventory. She worked for Procter & Gamble Cellulose (formerly the Buckeye Cellulose Corporation) for seven years in Research managing P&Gs Pest Management and Tree Improvement Research Programs in Perry, Florida. She transferred to the company's Flint River Operations in 1986 as a Land Management Forester, then became the Lands and Timber Accounting Manager. Head's Bachelor's degree in Forest Resources and Conservation is from the University of Florida.

Attention

The Directory of women who work in urban forestry has been delayed.

It will be printed in *Women in Natural Resources'* next issue (Vol. 12:4). We are still receiving business cards and notes from those who want to be included. We encourage those who have not sent in their names to do so to:

WiNR Directory
PO Box 3507
Moscow, ID 83843

Jessie A. Micales

Research In Progress

Focus on two aspects of urban forestry: economics and disease

ECONOMIC BENEFITS

Reinee Hildebrandt

The economic impact of tree planting programs is an important aspect of urban forestry. Such programs are usually assessed by examining plantings in parks, leisure areas, and greenbelts. I am currently coordinating a project that evaluates the economic benefits of tree planting in downtown business areas. The study covers five states, and includes cooperators from the South Dakota Division of Forestry, the Colorado State Forest Service, the Nebraska Forest Service, the Kansas State Forestry Division, and the Wyoming Division of Forestry.

The project has several objectives:

• to quantify the long-term economic advantages gained by business districts that participate in community forestry programs, including the benefits of exhibiting well-selected and properly maintained trees and landscape vegetation

• to determine the community's expenditure for tree planting and landscaping programs in business districts

•to provide scientifically based information to city leaders and local citizens in order to help them decide whether participation in community forestry programs would best fit their needs.

A series of surveys was sent to communities within the five-state area. The first survey was mailed to all communities with populations below 25,000. The city clerk was asked to describe the town's population, the existence of a mainstreet area, the involvement or lack of involvement in a community forestry or "Tree City U.S.A." program, and whether any renovations had been made within the past 10 years. Responses were divided into categories based on the existence of community forestry programs, recent renovations of the downtown district, and population size (2000, 4000, and 10,000). From these categories, certain communities were selected for further evaluation.

Reinee Hildebrandt at work on the project in Valley Center, Kansas

Additional information was requested from key contacts within the selected towns. This included:

• the community's municipal budget

• the total community forestry expenditure

• a breakdown of the community forestry expenditure by residential and business districts for tree planting, tree removal, tree maintenance, equipment and facilities, and administrative costs.

• the per capita expenditure on community forestry projects in the business area

• the community's willingness to increase urban forestry expenditures

• regulations and policies used by city officials in making urban forestry decisions

The final stage of the project involved on-site visits to each community. This occurred from June to October 1990. Project investigators surveyed both business people and consumers. Consumers were asked their reasons for patronizing the business area, their attitudes towards the existence of well maintained vegetation in the business area, and their opinions of renovation. Indicators of consumerism were also collected. The business survey resembled the consumer survey except that questions related more to business operations. Rent figures for the past 10 years were also requested during the business survey. While on-site, project investigators evaluated downtown tree plantings using the International Society of Arboriculture's tree evaluation formula. Photodocumentation was also established.

The surveys are currently being evaluated. The results will be presented at the Nebraska Tree City U.S.A. program, the Ohio Shade Tree Conference, the American Forestry Association Conference, and will be published in *Women in Natural Resources* in the upcoming months.

Reinee Hildebrandt is an Assistant Professor specializing in park and urban forest resource management in the Department of Forestry at Kansas State University. She is the Society of American Foresters Urban Forestry Working Group Newsletter Editor and serves on the National Task Force on Urban and Community Forestry Training and Continuing Education. From 1988 to the present she has served on numerous other urban forestry national committees. She is a Section Editor for WiNR.

DEATH OF THE DOGWOOD?

Margery L. Daughtrey

The flowering dogwood, *Cornus florida,* is an extremely popular landscape tree throughout the eastern United States. During the late 1970s, the species started to decline in the northeast. In 1983, my colleague Dr. Craig Hibben of the Brooklyn

Botanical Garden Research Center and I reported a lower branch dieback disease afflicting flowering dogwood in New York, Connecticut, New Jersey, and Pennsylvania. We have continued to study this disease, and have been able to identify its cause, describe its symptoms, trace its spread, and recommend possible control measures.

An as yet unidentified species of the anthracnose fungus genus *Discula* was consistently associated with diseased trees. This same fungus was also found on declining western flowering dogwoods (*Cornus nuttallii*) in Washington, Oregon, Idaho, and British Columbia. The disease was therefore renamed "dogwood anthracnose." Symptoms include necrotic spots, scorch, and blight of leaves, the development of branch and stem cankers, the formation of epicormic branches (or "watersprouts") at the base of the tree, and dieback of the lower branches. The fungus forms massive numbers of spores that presumably are spread by the wind during cool, wet weather. Migratory birds may be responsible for long-distance spread. Dogwoods that are artificially inoculated with these spores become diseased, thus proving that *Discula* sp. is the pathogen. The disease has spread extensively since it was first reported. It is now present in Massachusetts, Connecticut, New Jersey, Pennsylvania, Delaware, Maryland, West Virginia, Virginia, North Carolina, South Carolina, Georgia, Alabama, Ohio, and Tennessee.

Landscape trees tend to survive dogwood anthracnose more frequently than woodland trees. Fungicide trials were conducted to try to find a preventative treatment. The application of chlorothalonil (Daconil 2787) and mancozeb (Manzate 200) at 10-day intervals during leaf expansion in the spring reduced foliar symptoms. Fungicide application should be continued throughout the summer for highly valued landscape trees.

Cultural practices can also help control dogwood anthracnose. Dead twigs and leaves should be removed to eliminate fungal inoculum. Epicormic branches should be pruned to help prevent the spread of cankers. Vigorous, healthy trees can best survive anthracnose infections. Trees should be watered in times of drought, properly fertilized in the spring, protected from dogwood borer, and mulched to reduce root stress and lawnmower injuries.

Studies such as these have helped us better understand dogwood anthracnose. Such knowledge can help save the dogwood from the fate of the elm and chestnut.

Margery Daughtrey is a Senior Extension Associate with the Cornell University Department of Plant Pathology. She received her B.S. from the College of William and Mary, and her M.S. from the University of Massachusetts.

Boston Parks (*continued from page 19*)

Addressing visitor needs is necessary for the heavily trafficked sites, including orientation signs and wheelchair accessible entrances and paths. However, historic sites tell their stories by looking venerable and retaining some complexities accrued through the layering of time. Over simplification and over interpretation are not encouraged.

The decision was made to implement as quickly as possible many capital improvements that were long deferred in the historic cemeteries. Policies regarding use and physical preservation have been instituted. The Historic Cemetery Maintenance Crew is well-established. With help from the tree and turf crews, the Boston Parks Department is working toward the ideal levels of care outlined by the Master Plan.

Finally, the Historic Burying Grounds Initiative promotes public awareness, education, and support with a manual summarizing the master plan, with a brochure, with Boston Park Ranger tours daily in the Granary during summer months, with school programs such as at Halloween and Arbor Day, and by assisting and promoting Friends' efforts. Parks and some Friends groups also fund-raise continually to complete the capital program.

Conclusion

Those of us who are schooled preservationist or in-the-trenches "parkies," are inside parks and open spaces looking out. As our communities and visitors look in at what we do, we need to pay attention to the basics:

- Establish a common set of goals to protect historic sites and address community needs.
- Start the public dialogue early, listen, and keep communications flowing.
- No matter what else, make all parks safe, clean, and green.
- Establish a consistent level of good care.
- Use funding wisely to protect resources while clearly addressing people's needs as park users.

Ellen Lipsey is Senior Planner for Historic Parks at the City of Boston's Parks and Recreation Department. She oversees short- and long-term planning activities for the Emerald Necklace park system of approximately 1,100 acres. She joined the department to develop the Historic Burying Grounds Initiative in 1985 for the rehabilitation of the city's 16 historic cemetaries. She has worked in preservation planning since 1973.

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AFA'S GLOBAL RELEAF PROGRAM

DEBORAH GANGLOFF

Global ReLeaf is an international public education and action campaign begun by the American Forestry Association (AFA) to increase awareness about constructive actions that people can take to help mitigate the root causes of global environmental problems, including the global warming threat. The spelling, R-E-L-E-A-F, focuses squarely on and emphasizes the fact that the earth needs more and better leafy biomass—trees and forests—for a healthier environment.

As the campaign's sponsor, AFA has four primary areas of action:

•an accelerated international information and educational campaign that tells people about global environmental problems, their causes, and suggestions for action

•a referral service that helps people connect with sources of technical assistance, planting materials, or organizations doing similar work in their own area

•direct assistance—largely through grants—to help conservation happen through tree planting and improvement programs

•national coordination for the U.S. policy reform effort, aimed mainly at federal laws, programs, and budgets.

Global ReLeaf is about partnerships formed between individuals, corporations, government and local citizen groups. Hundreds of corporations and thousands of individuals have already made a commitment.

AFA began its national leadership program in Urban and Community Forestry in 1981, providing technical assistance and action information to interested groups and individuals. In 1988, the ReLeaf program began, based on the premise that professionals who work in the urban forest need the help and interest of citizens—and conversely, citizens who care, need to work with local, state, and national professionals to improve and expand the "forest where we live."

There is a country-wide network of Global ReLeaf enthusiasts who give form and shape to all projects.

•*Coordinators* for projects are usually identified by state foresters to work in each state. Ron Gosnell of the Colorado State Forest Service, Dan Weller of the New York State Department of Environmental Conservation, Jim Geiger of the California Department of Forestry, and Norm Lacasse of the Pennsylvania Department of Environment (Resources/Forestry) come quickly to mind as proactive Coordinators who have made a difference for their states.

•Local non-profit tree groups and municipal government agencies have signed on as Global ReLeaf *Cooperators.* Coordinators actively encourage the Cooperators to participate and then assist them by providing technical assistance and resources. We began reaching out to Global ReLeaf Cooperators in June 1989 and have over 400 local tree groups, individuals, small businesses, and schools or classrooms participating. Some examples are Trees Atlanta, Trees for Houston, TreePeople, Friends of Trees (Portland, Oregon), the Environmental Action Coalition (New York) and Lowcountry ReLEAF (Charleston, South Carolina). To answer the need for improved communications and assistance, specifically to local non-profit tree groups, we have announced plans to also form a Global ReLeaf *Coalition* of these groups.

•Another important element in the network are the Global ReLeaf *Corporate Partners* who range from TVs Discovery Channel and Bull Information Systems, to Texaco, Mr. Coffee, and McDonalds. They make a long-term commitment: to support our program with financial assistance, to mobilize their employees to plant trees in local campaigns, to educate their consumers, and to use their names as sponsors.

•In another category, national non-profit organizations with potentially active members or chapters can become *National Partners* for Global ReLeaf.

I have been with AFA for nine years and am now AFA Vice President in charge of Program Services. My main responsibility for Global ReLeaf is to facilitate the necessary mix of citizens, professional coordinators, and corporate representatives--and to maintain the integrity of tree-related projects. We want the corporation and the local group to be proud of the project and to be able to return to the project sites years from now and see healthy trees.

There is very little bureaucracy involved in our effort. When Mr. Coffee wanted to support projects in Colorado, for example, Coordinator Ron Gosnell then requested project proposals from Colorado Cooperators to meet all our requirements: it must be technically and scientifically right, environmentally sound, and have community involvement. We then worked to match their corporate needs to specific projects. Once we had a match—and I had made responsibilities clear to all parties—Gosnell worked directly with representatives of Mr. Coffee to complete the program. In this case, the corporation announced its support for Limon, Colorado in October 1990 and, in addition to reforesting public places, will make a gift of a tree to each household at a community tree planting. (Limon had lost 1,200 trees in a devastating tornado in June 1990.) Further, Mr. Coffee will begin a spring 1991 national awareness campaign on the importance of trees.

For another major partner, the procedure was broadened: when AFA implemented Texaco projects for Global ReLeaf, we went to Coordinators Gosnell for Denver, Ed Barron of the Texas Forest Service for Houston, and Paul Orr of the Louisiana Forestry Commission for New Orleans. Texaco allocated $540,000 for tree planting and care in these cities in 1990. In addition to financial support, Texaco employees were trained to participate in the tree planting projects, thus becoming long-term advocates for trees. The corporation's employees became familiar with the work of local groups implementing the planting projects, another bonus.

Other nationally known businesses, like Quintessence, maker of Aspen perfume, and the Winery of Ernest and Julio Gallo, each underwrote a series of important tree projects in cities across the country.

The Global ReLeaf Heritage Forest program, which allows corporations to underwrite rural reforestation projects on abused public lands, has attracted additional major corporations such as Aveda and Ralston-Purina and over 220,000 trees have been planted in Global ReLeaf Heritage Forests. In terms of urban forestry, nearly 100 local tree projects have been supported by over $750,000 through Global ReLeaf ventures and the Global ReLeaf Fund.

With AFAs 115-year history of credibility and expertise in forestry-related issues (urban, rural, and tropical), Global ReLeaf was destined to become all the AFA stands for. The full experience and expertise of AFAs staff—technical forestry, program administration, communications, public relations, policy work—have been devoted to Global ReLeaf. After all, citizen involvement in environmental improvement through trees and forests has been AFAs mission since 1875.

Deborah Gangloff is Vice President, Program Services for the American Forestry Association, Washington DC, and oversees all corporate ventures. Her previous positions with the Association included Director of Communications and Director of Conservation Programs. She began with AFA in 1982 after working at the National Academy of Sciences on the National Research Council and teaching anthropology at Rutgers where she is finishing her doctorate in Anthropology. She has worked as an archaeologist on a variety of cultural resource management projects in six states.

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PROFILES: WHO BECOMES AN URBAN FORESTER? WHAT DO THEY DO?

JILL BUTLER

The California Department of Forestry and Fire Protection (CDF) operates an urban forestry Forest Pest Management (FPM) Program that conducts a variety of activities throughout the state. A staff of ten oversee pest management efforts in offices in Northern California, the Sierras, the Southern California mountains, and the Los Angeles basin.

The San Francisco Bay Area FPM Program, my jurisdiction, has its roots in a Dutch Elm Disease Control Project that has been in operation since 1975. The project was originally organized as a short-term eradication effort overseen by the California Department of Food and Agriculture. By the time Dutch elm disease (DED) was discovered in California, the disease was well-entrenched and hundreds of trees were infected; approximately 1,000 elms were removed the first year of the project—trees that had shaded for decades the streets of small towns such as Kenwood and El Verano in Sonoma County's Valley of the Moon. Local residents protested the mass removals; the need for public relations work was immediately recognized as a key tool in the battle against DED. As a result, elm inspectors went door-to-door throughout areas of infestation looking for elms, inspecting the trees for disease symptoms, and talking with residents about the goals of the project.

Those who work in Forest Pest Management in other parts of California—northern California, for example—focus primarily on pests and diseases of commercial timber non-urban species: black stain root disease, Port Orford cedar root rot, and *Annosus* root disease are persistent problems. Five consecutive years of drought in California have also created unprecedented killing of conifer trees due to bark beetle attacks. These problems are particularly acute in the Sierras and also in the southern California mountains, notably where housing developments have been established on existing forested lands in the "urbanizing forest."

Over the years, in our San Francisco area, it became apparent that Dutch elm disease would be our main on-going problem, and the project was reorganized and transferred to the California Department of Forestry and Fire Protection (CDF) in 1982. The scope of the program has gradually enlarged in response to growing public awareness of the importance of the urban forest and tree health, and now addresses the full spectrum of urban forestry issues including proper care and maintenance of elms and other large shade trees, tree hazards, appropriate tree species selection, planting procedures, and management of common insect and disease pests of shade trees.

Years of consistent effort to keep the public informed, combined with free removal of privately-owned diseased trees at state expense, have defused the original controversy over tree removal and turned the vast majority of Bay Area residents into strong supporters of the project. Out of roughly 80,000 property inspections made in 1990, only one homeowner has refused to allow sampling of symptomatic elms. (That case was referred to the County Agricultural Department, the agency responsible for enforcement of the plant quarantine aspects of DED control.)

As the FPM Program Coordinator, my job is primarily administrative, managing a $1.2 million budget and overseeing the 40 full-time and seasonal employees who work in our three field offices. My 12 years in the agency includes nine years work in the FPM lab. In 1987, I transferred to CDF's Forest Practice Program for two years; this experience in traditional forestry enabled me to pass the licensing exam to become a Registered Professional Forester (a requirement for CDF's foresters who wish to promote to supervisory positions). I was then eligible to return to FPM as Program Coordinator, the position I have held for the last two years.

Our program represents a fraction of one percent of the budget and staff for CDF as a whole; 90 percent of the department is devoted to wild-land fire fighting. As an urban forest pest management program in what is essentially a very large fire department, keeping management informed about what we do is clearly a critical part of our program's long-term survival. I meet with my immediate supervisor at least weekly, and publish monthly and annual reports that are distributed to upper management in our Region's office and Sacramento. I also

Left to right, Leslie Markham, Jeanette Needham, Linda Blair, Jill Butler

participate in some of our public outreach activities, such as staffing booths at fairs and giving an occasional interview for the media.

The constant struggles to deal with the bureaucracy and maintain public services in the face of on-going cuts in budget and staffing—50 percent reductions in the last two years—are the most difficult aspects of my job. My typical work day includes at least one staff meeting; keeping up to date on activities throughout our work area and coordinating upcoming projects are my top priorities. Personnel transactions and finance/budget concerns occupy a great deal of my time because of the staff reductions.

My three field offices are located in Palo Alto, San Ramon, and Santa Rosa to service nine Bay Area Counties (Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma Counties). The Program also has its own laboratory facilities located in Santa Rosa. The recent discovery of Dutch Elm Disease in Sacramento is expected to require establishment of a field office there in the spring of 1991. We schedule intensive, in-house, one-week training sessions each season to acquaint new seasonal employees with the technical aspects of DED control and our procedures.

Most of our field work is done in the urban and suburban sections of the Bay Area and approximately two-thirds of staff time is devoted to DED control. Project activities include inspection of elms, sampling of trees showing DED symptoms, laboratory diagnosis for all symptomatic trees, and coordination of removals of diseased elms. Other pest control work includes detection of Eucalyptus longhorned borer and pitch canker of pine, both relative newcomers to the Bay Area.

The program also responds to "sick tree calls" received from the public; these involve a range of pests of horticultural and commercial species including beetle attacks on Monterey pine; oak problems, including *Armillaria* root disease and oak decline; Monterey cypress canker; madrone canker; tree hazards; and tree selection, planting, and maintenance questions. Program staff surveyed approximately 2.3 million acres and performed 2,000 service calls in 1990. To do all this, we have considerable "assets": a fleet of 63 vehicles, which includes five aerial lift trucks, three dump trucks, one knuckle-boom truck, four brush chippers, a stump grinder and a trencher. The program also maintains a well-stocked library of reference books and audio-visual materials covering the fields of entomology, pathology, and arboriculture.

Public relations are still a key element of the program, although budget cuts no longer finance sufficient staff to make the extensive "front-door" contacts emphasized in the early years. Information is now disseminated primarily through public forums during Arbor Day and Tree City USA events, county fairs, and meetings with neighborhood and school groups. Approximately 20,000 public contacts were made by this means in 1990. There is intense interest in tree planting in the Bay Area and staff are actively involved in providing technical and logistical support to tree-planting organizations, notably California ReLeaf. CDF also provides funding for community greening projects through an urban forestry grant program.

This diversification of focus has been the life-blood of the program; diversity is also reflected in the program staff (see below). Even in the early years, the staff encompassed a healthy mixture of employees representing a range of ethnic, age, and gender groups. The present year-round staff is 35 percent female.

Linda Blair has been the Santa Rosa field office technician for two years. Her job consists primarily of handling personnel transactions and finances for the entire program, but she also spends time editing informational handouts and fielding routine elm questions from homeowners who call or drop by the office. Linda's previous work experience included personnel, finance, and business services duties. She feels her background and experience dovetailed well with her current position, which she has occupied about two years.

Dr. Alleah Haley has been with FPM ten years, and has one of the most demanding and diversified positions on the program. As Program Pathologist she performs lab diagnosis on approximately 700 samples submitted each year for DED determination and also performs field diagnosis for a variety of insect and disease problems. In addition,

Joline Resavy, left, and Alleah Halley

Rose Lua

she oversees FPM activities in Santa Clara County, which include the full spectrum of program activities: inspecting and sampling elms for DED, arranging for removal of diseased elms, applying herbicides and pesticides as needed, acting as liaison with cooperating (and non-cooperative) agencies, evaluating trees for hazard, making Arbor Day and Tree City USA presentations, preparing and editing educational handouts on DED and general tree care, and coordinating pitch canker and eucalyptus longhorned borer control. She has a two-hour commute each day to the San Ramon field office or the lab in Santa Rosa.

Haley's PhD is in Plant Pathology from UC Berkeley, she has five years of research experience with vascular wilts, and eight years of work with disease resistance. Despite her qualifications and experience, she is pessimistic about her promotional opportunities, as her background and current duties do not provide the traditional forestry skills generally needed to advance in CDF.

Rose Lua has worked in the Santa Rosa field office since 1978. She does word-processing: informational hand-outs and office correspondence. She also handles routine phone inquiries: on DED, other elm tree pests such as elm leaf beetle, and disposal of elm prunings. She also fills in as needed in other areas, on elm surveys and staffing booths for fairs. She applied for an inspector position in 1978 armed with a high school diploma and no formal work experience. She found, however, that the years spent at home with the family gave her the organizational and "people" skills needed for her job. Hers is a high-volume workload of repititous materials, producing special projects on short deadlines, and working with the public.

Leslie Markham has been with the program 10 years. Her main responsibilities include processing all samples and performing field and laboratory diagnosis for urban forestry diseases, primarily DED, pitch canker, and oak and cypress diseases. Leslie receives shipments of samples from all three Bay Area FPM offices as well as occasional "special project" samples from other parts of

the state. She runs approximately 30 samples per week during her active season (May-September). She is also involved in public outreach activities such as Project Learning Tree, talks for school children, Arbor Day presentations, and staffing informational booths at fairs.

Markham has a BA in Social Sciences (Elementary School) and an MS in Plant Pathology; she is also a Certified Arborist. Her experience was primarily in laboratory diagnosis (virology, mycology, and electron microscopy), greenhouse work, field diagnosis, and research. Her background was sufficient preparation for the laboratory aspects of her present job, but she knows she would have benefited from more academic exposure to traditional forestry and forest pathology in addition to her training in agricultural pathology. While Leslie's job title is Field Plant Pathologist, she spends most of her time in the lab and wants more field time.

Jeanette Needham has worked for the program three years and presently coordinates field activities in Napa, Solano, and Sonoma counties. Her duties include planning elm survey and sampling work, overseeing seasonal crews, coordinating tree removals, and resolving conflicts with citizens and public agencies. Confiscating elm firewood is a sanitation measure intended to prevent spread of the elm bark beetle, but many individuals have a "big brother" image of government employees, and consider a visit from someone in uniform to be an invasion of their privacy. Needham generally tries to establish a personal rapport with residents and listens carefully to the individual to clarify their concerns, emphasizing that the individual is not being singled out, that control policies have worked successfully for the past 15 years, and that the individual's efforts will help to protect the healthy elms left in the community. CDF is not the agency responsible for enforcing the DED quarantine. This allows her to stay in a non-threatening role, but leaves open the option of referring the occasional refusal to the County Agricultural Commissioner.

Linda Romero

Jeanette is also involved with outreach activities including urban forestry presentations for school groups and assisting homeowners and cooperating agencies with information on tree care, appropriate species selection, pest identification. She is the artist for informational handouts.

Jeanette has a Bachelor's in Forestry with special concentration on resource management; she also completed coursework in Native American studies (which she incorporates in some of her work with children). Her previous experience includes timber inventory work for the Bureau of Land Management and two seasons of fire-fighting. She has pursued additional training: on DED, arboriculture, urban forest pests encountered in the Bay Area's horticultural species, the use of heavy equipment (aerial lift trucks and chippers).

Joline Resavy has also been with the program for three years. She performs a variety of duties in the San Ramon field office including entry of elm survey information into a computer data base; survey, sampling and removal of elms; public outreach work such as classroom presentations, booths at fairs, presentations for Arbor Day and Tree City USA awards; and serving as Smokey-the-Bear for most public relations events in the East Bay.

Resavy grew up on a small farm and received training in horticulture and agriculture through groups such as 4-H and Future Farmers of America. She studied investments and management in college. Farm work prepared her to use chain saws and heavy equipment. In general, her background did not prepare her for the technical aspects of her job, and she has had to pursue studies in urban and traditional forestry on the job.

Linda Romero started with the program in 1984. Her present duties include tree sampling, climbing, and felling; training seasonal crews on sampling, pruning, and tree care; staffing booths for fairs; making Arbor Day presentations; and responding to homeowner questions on insects, diseases, and arboriculture problems.

Romero's Bachelors is in wildlife biology, with graduate work in natural science (focused on science education). She is also a Certified Arborist. Her work experience included a variety of environmental education activities and conservation projects. She has found that her previous jobs provided good preparation for some of the physical aspects of her present position, such as developing physical stamina, running a chainsaw, and driving heavy equipment. She draws heavily on her environmental education background in her public outreach work. Her college coursework gave her a firm foundation in relevant subjects such as entomology and plant taxonomy and laid the groundwork for pursuing later studies in arboriculture and urban forestry on her own. She developed her writing skills while doing graduate work; her thesis was never completed.

The women who work for the FPM Program reflect the wide diversity of activities encountered in urban forestry work. While they come to their present positions from a broad range of educational and experiential backgrounds, their responses to the question, "what advice would you offer women entering the urban forestry field?" were quite consistent.

All felt that urban forestry was a good career choice, "a promising field, tailor-made for women" where one can "use all your abilities, from your muscles to your intelligence."

Women considering careers in urban forestry are advised to research the field and pursue a broad-based curriculum, including arboriculture, horticulture, urban planning, silviculture, landscape architecture, and construction practices. Computer and interpersonal skills were felt to be very important. Acquiring hands-on experience to learn what tree species and maintenance techniques work best in a given area was also encouraged. None of the women working for FPM had formal coursework in urban forestry before entering the field, a reminder that the lack of education or experience shouldn't stop women who think they would enjoy this line of work.

Author Jill Butler worked for state parks for two seasons after getting her degree in biology. She joined the DED Project in 1977 as an elm inspector.

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MANAGERS ABSOLUTELY MUST OBTAIN GOOD SAFETY TRAINING FOR EMPLOYEES. LIABILITY IS THE OPERATIVE WORD HERE.

SAFETY IN THE URBAN FOREST

H. DENNIS P. RYAN III

Paying attention to safety considerations in the urban forest translates into liability reduction. There are two main categories. First is municipal or agency liability as it affects the public, and second is worker safety. In both cases, problems and the resulting legal liabilities can be reduced by using only professionally trained persons; amateurs doing inventory work or aerial pruning should be avoided.

AGENCY LIABILITY

In the book, *Trees, People and the Law* (1988), author Walter S. Barrow warned that an agency can be held liable for injury or damages under certain broad categories:

•**Responsibility.** If an agency can be shown to have an obligation to a property, tree or client, then they have the duty to keep that site safe or to inform the proper authority of a hazardous condition.

•**Breach of Responsibility.** If the agency fails to perform this obligation or an agency's employee fails to warn of a potential hazard, then she/he has breached his/her responsibility and are negligent.

•**Damages or Injury.** There must be an injury or damages to property as a result of the breach of responsibility.

The above conditions must be proven for an agency to be held liable, but with new court rulings, proving the responsibility will be easier than it was in the past. Federal and state agencies can also be liable under the same conditions. The Federal Tort Claims Act of 1946 holds that the federal government could be liable for any loss of property, injury, or death which was caused by the negligence of any government employee working within the scope of a particular job. Most states now have similar laws.

What this means is that tree managers and agencies are accountable not only for what they do, but what they fail to do.

POTENTIAL TREE HAZARDS

In their book *Detection and Correction of Hazard Trees,* authors Lynn J. Mills and Kenelm Russell note: "A hazard tree contains some form of structural defect, a peculiar location or combination of both, giving it a high possiblity of failing and causing personal injury or property damage. For a hazard to exist, there must be a valuable target: buildings, cars, or people within close proximity of the tree. A rotten tree deep in the forest and away from people is not a hazard because there is no target. However, a rotten tree near a view point, interpretive sign, or campsite is a hazard since people have been invited there."

A tree in a city park, along a street, or in a school yard has the potential to be labeled a hazard if it has a structural defect. Agency arborists therefore should re-evaluate their inspection process to see if they are leaving themselves open to potentially serious liability.

Some common arboricultural problems:

•**Dead Trees.** These trees, dead limbs, and die back all have to be considered a potential problem. The courts have ruled in several cases that if the tree has been dead for more than a year and there are damages as a result, then there is probably liability involved.

•**Weak Crotches.** Split, tight, and weak crotches or limbs have long been recognized as a problem. The standard practice has been to brace or cable these weak areas. This is still accepted, but the manager must realize that by cabling a weak limb he/she is acknowledging that there is a problem. Weak crotches should be removed, or if cabled, inspected frequently.

•**Decay.** Structural weakness due to decay, target cankers, or splits must be inspected closely. When in doubt as to the tree's soundness, remove the hazard.

•**Construction damages.** Site conditions and alterations to the site due to construction create some of the most dangerous trees in the human-controlled tree environment. Root cuts, high water tables or ledges, all increase the likelihood of wind throw. This wind throw is

most likely when surrounding trees have been removed, as on a new play ground.

•**Root problems.** Root rots, girdling roots, and backfilled trees can all create hazardous situations. Each of these problems exhibits its own symptoms and park inspectors should be familiar with each.

•**Lightning.** Trees struck by lightning can be extremely dangerous. Each year thousands of trees are hit, but many could be protected with professionally installed lightning protection systems. Eleven percent of house fires are caused by lightning striking trees. Protection codes require the protection of any tree taller than a house and within 10 feet of the house. Many trees should be protected and installation and grounding must be correct; failure to do so may produce a serious condition and the possibility of liability.

•**Storm injury.** Following storms that had the potential to do injury to trees, all agency property and high-use park areas should be inspected. Check especially for breakage and hangers.

•**Pruning.** Poor pruning practices, especially topping, can lead to potentially dangerous situations. If topping has occurred, the tree should be inspected frequently for poor growth and decay patterns.

Several other factors should be considered while making a hazard tree inspection. Consider the species, size, location, likelihood of becoming a hazard, or likelihood of defect. Obviously, a large diameter willow with a weak crotch in a children's playground is more dangerous than a young oak in a back lot. Inspectors must decide how hazardous a tree is for each particular situation and proceed accordingly.

When thinking of correcting hazards by removals or pruning, it is imperative that National Arborist Association standards be followed at all times. The best insurance a municipality can have is to employ a qualified professional. Failure to follow established standards could place your agency in a serious liability situation in case of accident. If you should find that your agency will not allow a hazardous situation to be corrected, put your recommendations in writing, and keep records to protect yourself from liability.

WORKER SAFETY

Those who are concerned about worker safety in the urban forest should concern themselves with many safety issues such as equipment and handling skills and protective clothing, but problems associated with electricity is clearly the major one. During the 80s, there were 109 deaths in the tree care industry and 44 percent of them were from one cause—electrocution. Most of these deaths could have been prevented if employers had required their employees to be properly trained in the hazards of working near utility wires as is required by law. The American National Standard Z-133.1-1988 is very explicit:

3.1.3 Employers *shall* instruct their employees in the proper use of all equipment provided for them and *shall* require that safe working practices be observed. A job briefing, work procedure, and assignment shall be worked out carefully before any tree job is begun.

Teaching electrical safety has been somewhat difficult in the tree industry because there was not a recognized training program. To remedy this, the National Arborist Association has recently released the Electrical Hazards Awareness Program (EHAP) so that employers may do the safety training and receive the certification that is required by Z-133.1-1988. There are several steps in this certification:

1. The employer, or recognized instructor, must certify in writing, that the trainee has viewed Electrical Hazards and Trees, and Aerial Rescure (NAAs two video training programs).

2. The trainee must complete the four-part EHAP Home Study Program (with a grade of 85 percent or better for each part). Tests are mailed to the NAA office to be graded.

3. The employer or recognized instructor must certify, in writing, that the trainee has satisfactorily completed a rope and saddle aerial rescue from a height of 35 feet or more, in four minutes or less.

4. The trainee must provide evidence to the NAA office that he or she has successfully completed a Red Cross CPR program or equal.

After meeting all of the above requirements, the National Arborist Association will issue a Certificate of Completion and a wallet-sized card, valid for one year.

Any natural resource person (and those employeeing them) who are considering a career in urban vegetation management should also take advantage of the information sources provided by the International Society of Arboriculture. With professionals managing our urban resources, we will have a safer and greener environment, free of tree *and* legal hazards.

Pertinent Information Sources

American National Standard for Tree Care Operations-Z-133.1-1988. American National Standard Institute, Inc., 1430 Broadway, New York, New York 10018.

Barrow, W. 1988. *Trees, People and the Law*. ARBORAGE, Vol. 8, Nos. 2 and 3.

Mills, L. and K. Russell. 1981. Detection and Correction of Hazard Trees. DNR Report No. 42. Olympia, Washington, Department of Natural Resources.

National Arborist Association. Meeting Place Mall, Route 1, P. O. Box 1094, Amherst, New Hampshire 03031-1094.

International Society of Arboriculture. P. O. Box 71, Urbana, Illinois 61801.

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How much do you really know about investing? Be honest.

Fear of the unknown in the investment world—not knowing where to go and what to do with investment cash—can lead to procrastination which can mean indecisions or no decisions at all. Therefore, your investment cash is not doing for you what you need it to do for you—grow and earn more money. Money is a resource that needs attention, understanding, and nurturing in order to preserve it and make it productive for you.

Barbara Ogden

Don't let investing boggle your mind. Take it step by step. Ask yourself: how much risk can I afford? Do I need income now? Do I need more growth and income or only growth right now? Do I feel more comfortable with stocks, bonds, or U.S. Government securities? Set some goals and guidelines for yourself. Take your time and make educated decisions—decisions you will feel comfortable with and that suit your needs. Pick up a copy of an investment magazine or at least read the financial articles periodically in women's magazines. Do some research, be curious, ask questions, talk to friends. Call a few mutual funds (most have 800 numbers), request information on their services and ask for a prospectus on their stock fund, bond fund, and a money market.

A prospectus is a document required by the Securities and Exchange Commission, describing the objectives of a fund, financial history, expenses, fees, loads, dividends and distributions, minimum investments, redemption requirements, fund management, and miscellaneous related information. A prospectus contains virtually everything you need to know before investing. The only thing it will not tell you is the performance of the fund within a certain time frame. Reading it will be time consuming, tedious, intimidating, and overwhelming. Do not let it get the better of you. You do not have to read it cover to cover. It is simply a legal document produced for your benefit and protection.

You will find mutual funds conducive to your investment needs and a good starter investment. They have a simple concept of investing, are time efficient, paper efficient, and have a low minimum investment requirement. They provide the opportunity to achieve safety, liquidity and/or yield. Basically, a mutual fund is a portfolio of securities, a basket of stocks and/or bonds. It is formed by pooling investors' money. Once the money is pooled in the fund, a professional portfolio manager purchases specific securities depending on the objectives of that particular fund. Often for as little as $1000, an individual investor has access to a broad range of securities in that each share of the fund represents ownership of a portion of each security in the fund. A common stock fund may be composed of a group of natural gas companies and, in essence, you own a small portion of each of them, sharing the income and price appreciation with other fund share holders. A bond fund may be made up of all U.S. Government bonds and treasury bonds whose objective is the ultimate in safety of principal and income. This broad, diversified exposure provides a measure of protection from market volatility and swings.

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The fee—8.5 percent to 0 percent—to purchase a mutual fund, is called a load. It may be charged as you purchase (a front end load) or as you redeem your shares (a back end load). The fund that has a 0 percent charge is called a no load therefore 100 percent of your money is invested and working for you immediately.

Once you know where you wish to invest, your next step is to open an account. If dealing with a no load mutual fund family, call their 800 number and request a new account application. Return it with a check specifying your fund choice. Your account will be opened the day the check is received and the fund purchased at the close of business that day. The day following the purchase, the fund will mail you a confirmation of the trade. You will then receive a monthly or (at least) quarterly statement of your account. Always look at them carefully for errors and if you find one correct it immediately. Do *not* hesitate to call the fund's investor relations department if you have any questions about the fund, your deposits, purchases, or dividends.

If you are working with a brokerage firm buying load mutual funds, stocks or bonds, call a representative and ask about the firm's requirements to open an account and their time frame for delivery of money. Your representative will take down the pertinent information, open the account, and place the purchase order. Again you will receive a confirmation in the mail as well as monthly statements. If you are dealing with a brokerage firm, you will be paying sales charges or commissions, so be sure to check your confirmations and statements for correct amounts.

Don't feel stuck once you decide where you want to place your cash. You can move your money any time you want to, especially if you have chosen a mutual fund with exchange privileges. Remember, no load funds have no sales charges to buy, sell or exchange. While you are doing your investigating, also be sure you keep your cash in an interest-bearing money market with free unlimited check writing privileges.

For further information and where to begin, feel free to write or call me. I am anxious to help *Women in Natural Resources* subscribers get started. I also welcome suggestions for future discussion.

Barbara Ogden has been a Registered Representative (for 10 years) with The Rushmore Group, a family of no-load mutual funds. She gives seminars and speaks at conferences in the Washington DC area. Prior to her current position, she worked with clients at Merrill Lynch and Dean Witter. Contact her at Rushmore Group, 4911 Fairmont Avenue, Bethesda, MD 20814 (800-343-3355/301-657-1500).

INTERVIEW

BARBARA ALLEN-DIAZ

Interview by
Daina Dravnieks-Apple

WiNR: Many of the women we interview have gotten interested in a natural resource field because as children, their parents saw to it that they were taken along on camping and hunting trips. Is this the case with you?

Allen-Diaz: Yes. My love of the environment started when I was very young. I grew up north of Seattle in a family that did a lot together outdoors. Almost every weekend, we got in the car and headed out to my Dad's favorite fishing spot, steelhead trout fishing, or out in Puget Sound for salmon fishing. If it was storming, we went to the ocean to see the waves and to collect glass balls if we could find them. Our family dog was a hunting dog, and we would go to eastern Washington to hunt pheasants. I also grew up in an environment where my parents encouraged me to be whatever I wanted to be.

WiNR: Would you say that your school atmosphere encouraged that too, or was it largely your family?

Allen-Diaz: Primarily my family. But there was one history teacher in highschool, a Ph.D. from Yale, who, at age 50 chose to teach at Edmonds High in the 1960s and 70s. She was the advanced placement history teacher and was an absolute wonder in demanding individuals to fully develop their intellect and to adhere to high quality standards in their work. Up to that point I had had a relatively easy time in school. She was a tremendous motivator in terms of instilling in her students the philosophy of excellence and urging them to use the gifts they had to make something of their lives—to contribute, in other words. Don't just slide by, but be the best that you can be, she would say. She and my mother were the most influential when it came to academic goals.

WiNR: Having role models in the early 70s was a gift because it was rare for young women to get that.

Allen-Diaz: What was interesting was that all through high school and college my mother supported my academic work, and in fact worried that I might not finish my college degree at the University of Washington when I decided to get married at age 20. But by the time I was working on my Ph.D., she turned around 180 degrees and then said: "When are you ever going to quit school, settle down, and have children?" So even that encouragement had it's limits!

WiNR: Did you finish at the University of Washington?

Allen-Diaz: I was within six months of graduating from UW when my husband was accepted for graduate work at the University of California, Berkeley, and rather than separate for six months, I enrolled there too. I was told that I had not completed the freshman English 1A and 1B sequence requirement. Now mind you, I was a graduating senior with a 3.8 GPA. Furthermore, they would not allow me to complete my double major; but I did finish my degree in Physical Anthropology.

WiNR: Everyone who transfers college credits has horror stories. It doesn't matter where you are transferring from—the receiving college treats you as if you just got off the bus from Bozo College and are trying to trick them with your sleazy, second-rate coursework.

Allen-Diaz: That may be overstating it, but I know what you mean. I still didn't want to give up my applied Biology/Ecology background. So for two more quarters, I attended Berkeley in a limited student status to complete my Biology degree while I looked for a niche in Applied Ecology.

WiNR: What were you planning to do with that combination?

Allen-Diaz: I planned to study human evolution and how people as groups in society evolve over time. And I wanted to study the kinds of things we human beings were doing to the earth—how plants, animals, soils, and people interacted.

WiNR: How did you end up in Range?

Allen-Diaz: It took a while to get there. I first went back to the Anthropology Department but there was nothing there for me and there were few women in the graduate program. Then I went to the Biology Department where I talked to Zoologists, Botanists, and Molecular Biologists, but none of them was applying ecological principles to land management. Well, after being shunted around from person to person, I met Harold Heady in the College of Natural Resources Dean's Office. After listening to me passionately describe my desire to be in the field of applied ecology and then contribute to proper land management and resource use, he asked me if I had

ever heard of the profession of Range Management. I told him no, and he proceeded to tell me all about the various kinds of rangeland, shrublands, grasslands, savannahs of the world, and that 50 percent of the terrestrial world is range. He then asked me to come back the next day with my transcripts and paperwork. I did, he looked at them, and asked me if I wanted to be in the Range Management Graduate Program. It was three weeks already into the quarter, but in the space of three days, I went from drifting from professor to professor to meeting someone who took the time to talk with me and find out what I was interested in. The following year, I finished the Master's and went directly into the Ph.D. work under Jim Bartolome, whose major professor had been Harold Heady.

WiNR: What was your dissertation topic.

Allen-Diaz: I looked at the impact of cattle grazing in mixed conifer forests, the use of livestock as a tool in plantation management, livestock effects on meadows that are in forest systems, and how forest management affects understory species distribution and supply for grazing animals such as cattle and deer. This was the first research done on forest grazing in California.

WiNR: What did the Ph.D. research tell you about grazing then, and what are you finding now?

Allen-Diaz: Livestock grazing is a useful tool in plantation management in specific circumstances. Those circumstances include the presence of palatable species, available water, available animals familiar with forest grazing, and cooperation between forest range livestock managers. The use of livestock as a tool requires more coordination than, say, using herbicides or manual methods of meeting plantation vegetation management objectives. Initial interest from forest managers came especially when the use of herbicides on Forest Service managed lands in California was banned in 1978. Biologically, livestock grazing is a good tool in many situations. Many plants are adapted to grazing. Sociologically, however, largely because of poor livestock management practices, there are some problems.

WiNR: What kind of problems?

Allen-Diaz: Public perception problems and some bad livestock management examples. The result is that livestock operators and public land managers are faced with a growing anti-grazing sentiment in general. But it doesn't need to happen. Livestock grazing in the mountains (summer forage) has a long-time tradition. Ranchers have moved their animals to seasonal forage for over 100 years here-- for centuries in different parts of the world—and they've done it successfully. This current sentiment arises from the public seeing or hearing about the results of poor livestock management practices: degraded meadow and riparian resources, diseases passed on to bighorn sheep, predator-removal programs targeting wolves and coyotes—these examples come to mind quickly.

WiNR: Can the anti-grazing sentiment be met head on?

Allen-Diaz: Sure, but before it can happen it will take better livestock management and increased sensitivity to land management objectives to correct practices like the ones I just mentioned. The public also wants to see riparian resources protected for specific wildlife species. To do all these things we've got to bring together people with disparate backgrounds and philosophies. We need them to solve particular land management and allocation issues and to coordinate the management and planning processes. The result should be an increased understanding of the ecological role of grazing animals in the ecosystem.

WiNR: To return to your chronology, after you finished your Ph.D., where did you go then?

Allen-Diaz: I finished the doctorate in 1980 and the Forest Service recruited me as a GS-11 into the Regional Office in San Francisco. The first two and a half years I was the Range Management Staff representative on the Planning Team and provided range input to the Forest Land Management Plans. At the same time, I gave input to and critiqued the ecology effort going on in the Region. I worked with a team developing an ecological classification program. Then I applied for and got the Regional Ecologist position and began the actual implementation for the Ecological Classification Program. I still was involved with the forest grazing program and worked with the silviculture group on the potential use of livestock for plantation management since there was a ban on herbicide use in Region 5. During this period, I finished my silviculture certification and maintained other research projects.

Barbara Allen-Diaz is an Assistant Professor, teaching and researching in Range at the University of California Berkeley

WiNR: The Ecological Classification Program was controversial in the beginning. Why?

Allen-Diaz: Well, it is a different way of looking at the land by first classifying the ecosystems. We look at units of land based on all the vegetation and soils on a site as opposed to a system that looks at its function. For example, in the old system a forester considers the forest cover type, range managers divide land by understory characteristics, or wildlife biologists divide it up based on which animal it will support (deer, squirrels, spotted owls). During the land management planning process, it became evident that we had the land carved up and labeled with all these different unit names. Resource specialists were calling the same piece of ground different names and calling

different pieces the same names. Instead, Region 5 needed a consistent classification system to make all these unit measurements compatible. Resource managers can then aggregate the classification units in different ways to meet different functional objectives. It's an enormous job and it's still going on. Habitat Typing was not new, however: Region 1 and Region 6 already had similar programs.

WiNR: How did Forest Service personnel react to expert advice from a green Ph.D. from the Regional Office who hadn't even been in the field?

Allen-Diaz: Ralph Cisco, Supervisor on the Cleveland National Forest, Fritz deHoll, (Los Padres), Lynn Sprague (Modoc) and Tom Fulk (A&FM), to name a few, were great sources of support for me. But the Staff Director, who was my boss, was always ambivalent when he dealt with me because I had not gone the traditional route—I hadn't even started on a Forest! I was by then a GS-13 Program Leader, with a budget of half a million dollars and had pretty good support from the field and District Ranger level for what I was hired to do.

WiNR: Did his ambivalence bother you?

Allen-Diaz: Of course. To combat it, I agreed to go on a three-month District detail. I worked on an archaeological dig, on a fisheries stream survey, and on a timber sale among others. I enjoyed the work and learned a lot about Forest Service people.

WiNR: Such as...?

Allen-Diaz: The usual things. People at the District level think they are the only ones doing real work; they think that Supervisor's Office people are useless, and the people in the Regional Office are even more useless, and the Washington Office you can forget about entirely. This attitude helps bring the "family" together at the District level, but pits them against the broader Forest Service goals and objectives.

WiNR: What did the District people make of you?

Allen-Diaz: They knew I was from the Regional Office, had been sent there to be "educated" but no one asked what I did and I didn't volunteer it. On my last day there, someone from the District Newsletter came to interview me, sat down, and asked: "Well, what and who are you?" I told him I was a GS-13 Program Manager and he abruptly swerved his chair away from me, said "Really?" and got up and left. I assume he was embarrassed because he had been patronizing to me earlier. In another instance, a young woman who was laying out roads on the District told me I probably wouldn't make it in the Forest Service. She said she knew that I was from the RO and had come on this detail to try to get the experience to rise in the organization but she wanted me to know that she didn't think it was going to happen. I said "Don't you think that people from different backgrounds and different educational experience and different training can contribute to this organization without starting out as a GS-2?" She said: No.

WiNR: What improvement did it make with your colleagues at the Regional Office? Did anyone want to know what you had gotten out of all the money invested in sending you out for three months?

Allen-Diaz: It did change the Staff Director's attitude about my non-traditional deficits. When I saw him at his retirement party, he told me he was sorry he had opposed my efforts to be promoted to Regional Ecologist and that he was wrong in doing that. I suggested to him that it was people like him that made it difficult for women and minorities to get jobs, then get promoted, without first going through traditional, and not always relevant, career paths. But no one else ever asked me about my detail. No one. So I started telling managers what I had seen and heard, anyway. And I told them it was disappointing that I had not been asked to contribute ideas, policy, or given an opportunity by the Ranger and his staff (who did know who I was) for input at all.

WiNR: You described this tension between the field, the Supervisor's Office, and the Regional Office as "usual." Did you also see tension between technicians and professionals?

Allen-Diaz: Yes. Technicians perform valuable work and many of them do the jobs of professionals but are not qualified academically to be promoted into managerial positions—a sure scenario for tension between the groups. It's been an historical problem for individuals and for the agency. But we can't leave this subject without me saying that the people I worked with on the detail were wonderful, technically solid people who got the Forest Service's work done competently. I was just there at a time before the agency's culture began to change.

WiNR: It's amazing that the early 80s were such a short time ago. Over the years, some of the things contributors to WiNR have told us would make your hair curl.

Allen-Diaz: All of us from that period have war stories. I remember being sent to a national meeting in 1982, the only woman out of 70 attending. By this time I was used to it, but I could never prepare for the rudeness and harassment I suffered. At this particular meeting, one of the men stood behind me, for example, and tried to disrupt our workgroup by mocking me when I spoke, criticizing the pitch of my voice. I had to work on many occasions with another manager who openly ridiculed and yelled at me in front of staff, belittling my credentials and my program. One time after this behavior, when we were in the car, he told the driver to stop, they left the vehicle without saying a word to me, and walked away leaving me sitting there for a long time. When they returned they were eating ice cream cones. They got in the car and we went back to the Supervisor's Office as though nothing had happened. Another manager told me he would never hire me despite my qualifications because his wife would never put up with it. And so it went.

WiNR: Did you ever file complaints?

Allen-Diaz: No. There were a number of occasions when I avoided confronting an issue, but as I get older and also see it happening in the university setting, I do speak up, because if I don't, it just keeps happening. We can't continue to stand by and see others treated as we were and in some cases still are; we have to confront that behavior now.

WiNR: Why did you leave the Forest Service?

Allen-Diaz: I left because I wanted to do science, do the research myself. By staying in the agency, I would quickly become a people manager relying on other people to do the science. I wasn't ready to give that up. So when a position opened at Berkeley I applied. Eighteen months later I was offered the position.

WiNR: Isn't eighteen months a long time to wait for news?

Allen-Diaz: I wasn't initially offered the position; it was offered to a man. I wrote a letter, however, asking why I had not been hired instead of this person. I was told that if everything else is equal, and affirmative action is compared to inbreeding, a department does not have to pursue affirmative action goals. The university re-evaluated the applicants, however, which resulted in me being offered the position. At that time, Berkeley had only one woman faculty member in the Forestry and Resource Department. Now we have four women; things are changing at universities, too.

WiNR: What are gender relations like in university settings?

Allen-Diaz: I can only speak about Berkeley, but I would say that each faculty member is such an individual—and encouraged to be that way—that there are no coalitions built on gender differences. There are factions, of course, but they are usually based on areas of expertise or interest.

WiNR: Is there a need to coalesce as women?

Allen-Diaz: Yes, there is a need. The university does not have a good track record in promoting women into the senior ranks. We women faculty need to continue to work on that. I belong to the Association of Academic Women and attend meetings as frequently as I can. I am not as active now, because of my focus on attaining tenure.

WiNR: Is university life less political or just different from life in the Forest Service? What do you need to do to get ahead?

Allen-Diaz: It's different. One of the places where politics is important is in advancement. And one of the criteria for advancement is being published, but there are no written rules about publications: how many, their quality, in what journals. A secret committee evaluates one's publication record and decides if it is good enough. That's why you see lawsuits by women who are denied tenure; they are saying that their case was not handled the same way as that of a male colleague who got tenure. I'm going to have my case be as strong as possible by having publications that are of good quality in refereed journals, by maintaining quality teaching, and by continuing professional and public service. I should then have no problems. If I do have a problem, I will evaluate my options and then proceed.

WiNR: Is there a sort of "fortress" or "circle the wagons" mentality taking over faculties? The criteria for beginning positions has loosened somewhat for women and minorities, but the nitpicking "standards" for promotions and tenure are beyond belief.

Allen-Diaz: I disagree that the criteria, meaning quality, for beginning positions has loosened. More women and minorities are selected because of consent decrees, lawsuits, and a general fear of legal actions, true, but more women and minorities are competing for beginning jobs because of their own skills. And, because there are now women, minorities, and some men who are in positions of power to recruit and hire women and minorities, it should become somewhat better. On the other hand, I know personally of several examples in my own profession of quality women who were offered "courtesy" appointments, adjunct or research or lecturer appointments instead of tenure-track jobs. To me, this does reflect a kind of fortress mentality—lip service to affirmative action without allowing entry into the club. I am waiting to see how "nitpicking" the rules for promotion and tenure are. Hopefully I will get my turn to serve on these secret review committees.

WiNR: I'm reminded of a letter Stephanie Bird wrote recently. She is President of American Women in Science and she noted that, compared to males, even after earning a doctorate, women scientists and engineers have a two to five times higher unemployment rate; once women find a job at a university, they are more than twice as likely to be non-tenured and/or on a nontenure track. Those are not encouraging figures at all for would-be PhDs.

Allen-Diaz: No they are not. These retention/promotion issues are critical for women in the university setting. If they are not in the track, that means that they are employed on funded research projects (often short term) or teaching contracts which are renewed at the whim of departments year to year. If they are in the tenure track and are denied tenure, they must leave within a proscribed period. However, since I am not tenured yet, I am not party to conversations in committees evaluating individuals for promotion. I can only observe the number of women who have had to fight hard for it.

WiNR: Are there many women professors in Range Management? It appears that natural resource faculties in general are still making a poor showing in recruiting women—compared to, say, the Forest Service.

Allen-Diaz: I know of four women assistant professors in Range in the whole country. I know of three other women in Range Management who have lectured or have been offered courtesy research appointments at universities. Not a very good picture. And quite apart from the struggle for women to get these positions for themselves, it isn't even sensible to talk about what that lack says to students—both male and female—in terms of role models.

WiNR: Universities also require public service from their faculties. What do you do in that regard?

Allen-Diaz: I've been able to participate in the evolution of the Society for Range Management. I think it's fair to say SRM now recognizes the need to foster an environment where all people interested in the protection and use of rangelands are welcome. I was elected recently to the Governing Board of Directors for SRM; it is an honor, and I was pleased by it. It will be interesting to represent a clientele within SRM who haven't had much attention from older male colleagues in the past. You can sense change in the organization.

WiNR: As one individual in a university setting, what are you doing to prepare women and minorities to enter natural resources fields.

Allen-Diaz: Let me duck a direct answer and say that I have some good news and I have some bad news for you. The good news is that our Forestry and Resource Management Department has more women than men studying natural resources: forestry, wildlife, range, forest sociology, genetics, so we're doing well in that area. That is not true of minorities. We need to recruit minority men and women at the high school or junior high school level. I used to ride the bus a lot, and I met people who had never heard of the Forest Service, who have never gone camping, who are appalled by someone who would go out and deliberately get dirty and sleep on the ground where there are bugs. It made me realize how separated our cultures have become between people who live in urban areas and rural environments. I'm not sure how to counter that as an individual.

WiNR: That dichotomy is not likely to change, either. What is the university doing to recruit the ethnically diverse professionals the country will soon need?

Allen-Diaz: Our College of Natural Resources has initiated a minority recruitment program for undergraduate and graduate students. I am chair of the departmental committee with the same function. The University has proposed a program where faculty members are linked up with faculty from the State University system to improve outreach to minorities. The state system has larger numbers of minorities than the University of California system has. State colleges are also located in both urban and rural areas, so we can reach people with this linkage who have never been exposed to natural resources careers. Under this program, the State faculty member is charged with identifying potential students for graduate admissions to Berkeley.

WiNR: Are you sure you aren't trying to force a fit where there may not be one?

Allen-Diaz: I think it's a matter of making sure the opportunity is there for the minority student to experience and learn about the field. The student can make the final choice. We need to develop a pool of interested people to whom we can offer these opportunities and I don't think the agencies or the universities know how to do that yet. We're now starting out at a very elementary level by giving talks to high schools and handing out literature in the hopes of spreading interest in natural resources.

WiNR: In the field of Range Management, enrollments have declined, have they not?

Allen-Diaz: Yes, they have. I think the declines that have occurred are part of the general decline in natural resource enrollment. Enrollment has always been cyclical, but I think that the tremendous decline in the 80s is related to the lack of jobs in public land management, and the fact that the ones that are available are relatively low paying. We have seen a cycle of students interested in high paying careers with lots of opportunities for advancement. Enrollments appear to be increasing again, and I think that the profession will actively recruit more students from diverse backgrounds. And there may be a problem with the name "Range" itself which is not very descriptive of what we do, nor, perhaps, is it appealing to urban people. Rangelands are 50 percent of the terrestrial world, however, with a myriad of issues and problems having to do with those lands: recreation, housing development encroachment, wildlife habitat, pastoralism, grazing management, and biological diversity. These management issues continue to require bright, creative professionals. That's the message we need to get across.

WiNR: On a more personal note, what does your husband do?

Allen-Diaz: My husband David is an ecologist and is also a colleague. I'll anticipate your next question and tell you that we mutually support each other in our work and at home.

WiNR: What tradeoffs have you made in your life choices while pursuing your career?

Allen-Diaz: While I have focused clearly on my career throughout the years, there are times, like now, when I think about having a child. David (my second husband) would be supportive of us having one too; he has three grown children from a prior marriage, and we have a five-year-old grandchild who is a delight to us both. Up to now, I have not been willing to wrestle with the daycare issue. I see many friends who are balancing careers, husbands, and children, and I admire them and wonder how they keep their sanity. I guess if we have a child, I'll find out.

WiNR: What do you see in your immediate future?

Allen-Diaz: My immediate goal is to get tenure; I should know about that soon. After that, what happens will depend also on our dual career opportunities. David's opportunities for promotion would most likely involve moving. I can take a sabbatical to accompany him and perhaps work for the BLM or Forest Service. But I would come back to Berkeley because I love teaching and research. And I like the opportunity I have as a teacher to positively influence women students to develop their full potential—and to influence them to not give up. Young freshman women come in and say "I can't do math; I can't do science." If I can show them they can and encourage them to try, I'd feel I had succeeded. I also want to see all students develop a sense of ethics—of caring and courteous behavior toward others.

WiNR: For our last question, I want to ask an open-ended, tough one. Can you summarize your own career?

Allen-Diaz: It's not that tough, because I know I've done some good research on forest grazing, plant community classification, and vegetation change. All my work has focussed on understanding how plant communities change in response to grazing, how changes in plant community composition, structure, and productivity are related to site, and whether these changes are predictable. Add to that the fact that I have been able to work with quality students, guiding them through the Master's or PhD programs. I've influenced them to critically examine land management myths and facts, and apply ecological principles to the evaluation of current land management issues. This is an exciting time in resource management. What we do will help resolve issues facing politicians, scientists, and managers as we all deal with the health of the entire planet.

Daina Dravnieks Apple recently joined the USDA Forest Service Information Systems Staff, Washington DC, as Alternate Regulatory Officer and Directives Analyst. Her previous positions include serving as Program Analyst (1988-90) for the Regional Engineering Staff, Region 5, San Francisco; Regional Appeals Coordinator (1986-88) in Region 5, San Francisco; Economist (1976-84), Pacific Southwest Research Station, Berkeley, where she published studies on public involvement in planning, designed administrative systems, did organization analyses, and strategic workforce planning.

Her Bachelor's is in Political Economy of Natural Resources, and her Master's (1980) in Geography—both from UC Berkeley. She has served as President of Phi Beta Kappa for Northern California, and as National Secretary (1985-88).

PUBLICATIONS

Elaine Zieroth has a few copies left of her well received guide titled K-V Opportunities for Wildlife which explains how to apply for and use K-V funds collected from timber sales. She also will have available soon copies of a draft handbook she's written called Public Participation: Working with the Citizen/Owners of the National Forests. This is a light-hearted and basic guide to techniques of working with the public, holding public meetings, and resolving public conflicts. For copies, write to Elaine Zieroth, District Ranger, USDAFS, P. O. Box 466, Tonasket, Washington 98855.

From 1978 to 1987, the number of women filling administrative posts at state and land-grant institutions increased by less than one percent, from 21.3 percent to 22.3 percent. Reported in Assessing Change: A Profile of Women and Minorities in Higher Education Administration at State and Land-Grant Universities, other data show a one percent increase in women who are chief executive officers, from 1.6 percent in 1978 to 2.6 percent in 1987. Women were 13.5 percent of the chief academic officers and 17.7 percent of the academic deans in 1987. Black women and Hispanic women fared considerably worse in percentages. For the report, write National Association of State Universities and Land-Grant Colleges, One Dupont Circle, NW, Suite 710, Washington DC 20036, Attn: Julia Stewart.

In the December/January 1991 issue of AFAs *Urban Forests,* there is a story about Chapel Hill, North Carolina's success with a Tree Protection Ordinance. Copies of the ordinance entitled appropriately, Chapel Hill Tree Ordinance, can be had from AFA (PO Box 2000, Washington DC 20013) for $5 or a free copy can be obtained via computer and modem by calling TreeNet, 919-489-7521.

There is a job applicant interview guide available—It's All in What You Ask: Questions for Search Committees to Use—which is designed to help campus search committees determine whether prospective employees are supportive of issues that affect women. (The 69 questions would be useful generally for any interviewer who wants to find out whether a job applicant is "good" on women's issues.) Sample questions: How would you work to achieve equity for women scholars in terms of promotion and salary?; How have you demonstrated your commitment to women's issues on your campus?; In what ways have you mentored, supported, or encouraged women on your campus?; What scholarship about women have you read lately? For the guide, send $2 to Project on the Status and Education of Women, Association of American Colleges, 1818 R St., NW, Washington DC 20009.

Grounds: Maintenance is published monthly and is free to those in landscaping and design work. For others, it costs $30 per year and can be obtained from Intertec Publishing Corp., 9221 Quivira Rd., Overland Park, Kansas 66215.

The National Science Foundation (NSF) has published a report that examines the effectiveness of its Research Opportunities for Women (ROW) program in encouraging female scientists and engineers to initiate research careers. Begun in 1985, ROW provides an alternative entry point for proposals to NSF from women seeking their first federal research grant. Sixty percent of the ROW applicants in 1987 had never applied to NSF and 83 percent had never been funded as a principlel or coinvestigtor on any federal grant. *NSF's Research Opportunities for Women Program* (Report NSF 90-13) is free from Forms and Pubs, Room 232, NSF, 1800 G St. NW, Washington DC 20550

The Ecological Society announces a new quarterly journal *Ecological Applications* ($60) to address research: application of ecological principles to environmental problem solving, experimental applied ecology, and the use of policy and decision making in the ecological arena. The journal seeks manuscripts worthy of publication which can be sent to Editor Simon Levin c/o the Ecological Society, Center for Environmental Studies, Arizona State University, Tempe, Arizona 85287-1201. Of the 29 members of the editorial board, only three are women: Katherine C. Ewel, Jane Lubchenco, Rebecca Sharitz.

The Park Builders: A History of State Parks in the Pacific Northwest by Thomas R. Cox (1988 University of Washington Press) describes the strong grass roots efforts in Washington, Oregon, and Idaho to get their own state parks. The book describes the leaders who obtained that support during the Progressive era, forging political solidarity from chambers of commerce and other citizen groups to save the best of the local scenic attractions. There is a bibliography and helpful notes for scholars.

An astonishing fact noted by Harvard study author Donald Walton in *Are You Communicating?* (McGraw-Hill) is that for every person who is fired for incompetence, two people are fired for personality factors—usually because they do not have communications skills.

There are several publications for those interested in exploring the international job market. *International Jobs: Where They Are and How to Get Them* (Addison-Wesley 1989); *Teaching Abroad: Opportunities for Educators Worldwide,* (IIE 1987); *International Careers* (Williamson Publishing 1987); *Making It Abroad: The International Job Hunting Guide* (Wiley & Sons 1988). *Work, Study, Travel Abroad: The Whole World Handbook* (St. Martin's Press 1990-91).

Women in the World of Work by Shirley Nuss, Ettore Denti, and D. Viry (International Labor Office [ILO]) contains 41 charts and other data collected to illus-

(continued on page 43)

COALITIONS OF AGENCIES AND ORGANIZATIONS PROVIDE SOLUTIONS TO FORESTER'S CONCERNS ABOUT THE GROWING NUMBERS OF PEOPLE AND HOMES IN MOUNTAINOUS SUBDIVISIONS.

THE WILDLAND URBAN INTERFACE

MARY STUEVER

The Sandia and Manzano Mountains lie on the eastern edge of Albuquerque—New Mexico's largest city at half a million people (in the metropolitan area). Former city dwellers have been moving into these mountains in a four-county area (called East Mountain by locals) at a rapidly increasing rate over the past two decades. East Mountain residents regularly struggle with long commutes, inclement weather, and limited access to the amenities of city living, but they have fresh, clean air, starlit nights, and inspiring scenery.

These relatively new-to-the-forest dwellers are only now becoming aware of the subtle influences their lifestyles have on the forest and on foresters like me who work in these woods. But they are following a national trend as a growing number of residences are being established in formerly wild lands. Natural resource managers have dubbed this situation "the wildland-urban interface" and are trying to devise ways to protect the habitat while protecting the newcomers as well.

My District, the Bernalillo District, is one of six field offices for the New Mexico Forestry and Resources Conservation Division. Division responsibilities include fighting forest fires on all state and private lands and providing technical forestry advice to private landowners. The District's three foresters are responsible for over six million acres of area in eight counties, including the four counties containing the mountainous suburbs next to Albuquerque.

As one of the foresters on the Bernalillo District, I'll admit that the problems associated with both forest management and wildland fire protection for the East Mountain area had overwhelmed and baffled us for years. Events during the dry summer of 1989, however, finally provided the impetus for our office to foster two new organizations to address our forest and fire management concerns in the East Mountain area. That year we had an unprecedented migration of black bears from the mountains into Albuquerque. In addition, a series of disastrous fires, especially the Raven and Coyote Fires, raised the public consciousness about the effects of human development in the forests. By the end of the year, the Backyard Tree Farm program and the East Mountain Interagency Fire Protection Association were created to help prevent more crises in the East Mountain community.

From Crisis to the East Mountain Interagency Fire Protection Association

On May 24, 1989, a missile fired from Kirtland Air Force Base ignited what was to be the 600 acre Coyote Fire. About the same time, several miles to the south, a house fire near Raven Road ignited the surrounding forest and threatened several nearby structures. As the smoke plumes rose and merged, the confusion surrounding the fires increased. Initially, county engines were battling crowning trees incongruously with structural fire-fighting techniques while wildland firefighters were puzzling over flames threatening a propane tank. Meanwhile radio frequencies buzzed with confusion as firefighters tried to find quick ways to communicate with each other. Traffic jams developed on roads congested with emergency vehicles and evacuating residents.

Although only the original home that ignited the Raven fire was lost, firefighters found they had clearly stretched their levels of expertise. "We had been hearing about the wildland-urban interface concerns for years," District Fire Management Officer Louie Casaus said, "but until the Raven Fire, we just didn't understand the practical applications."

The East Mountain Interagency Fire Protection Association (EMIFPA) resulted from the frustration and confusion. EMIFPA is comprised of 13 county fire departments, two wildland fire fighting agencies, and the local county sheriff departments. The goal of the organization is to facilitate cooperation on wildland fires, especially where homes and lives are at stake. The organization has actively taken on three main program areas: training, public information and communication.

Training. In the past year and a half, the organization sponsored six trainings with emphases on wildland firefighting techniques and using the Incident Command System (ICS). ICS is a national management strategy originally developed for wildland firefighting but applicable in emergencies of all kinds.

The highlight of these trainings was "Operation Mockingbird." Initial attack on a mock fire was made by a helitack crew, with tanker drops and helicopter bucket drops following. Trainees implemented the Incident Command System, and proceeded to deal with simulated escaped fire, injuries, evacuations, and involved structures. After the exercise, firefighters critiqued the event before they were demobilized. For many volunteer firefighters this was their *first* experience with applying ICS to wildland firefighting.

Public Information. The EMIFPA public information program has several objectives. In addition to letting the public know about the organization's programs, the goal is to educate homeowners, builders, and developers on ways to reduce the threat of wildfire to structures. A flyer depicting 15 correct household practices to reduce wildland fire threat was published spring 1990 and distributed to area residents. School programs sponsored by the county and wildland firefighting agencies emphasize fire prevention, and plans are currently under way to notify area residents and visitors of high fire dangers through the use of red flags and fire danger rating billboards.

Communications. The primary hurdle to get over for the communications group was to provide association members access to common radio frequencies. An important result has been the establishment of several mutual aid agreements to legally allow the entities in EMIFPA to cooperate. Due to these agreements, any wildland firefighting agency can access personnel and equipment from a county fire department by working through the Forestry Division. The ultimate communication goal is to set aside a frequency which can be used on any ICS event.

The short fire season of 1990 provided successful tests of the new organization: firefighters from various agencies worked together smoothly on two fires on the Cibola National Forest. Although neither fire directly threatened structures, the Forest Service

used the improved access to personnel and equipment from the county fire departments. Another bonus has been that even though EMIFPA was originally developed to address wildland fires, the organization has provided the environment to manage for other disasters, including hazardous material spills and rescue operations.

Sandia/Manzano Chapter of the Backyard Tree Farm Program

The summer of 1989 saw the emergence of another Forestry Division program for the East Mountain area. The New Mexico Tree Farm Committee approached the Bernalillo District with a new idea for developing an information network among forest landowners within these subdivisions. The arrival of an unprecedented number of black bears in Albuquerque and surrounding communities triggered the public's concern for the urban sprawl's effect on the surrounding forests. Participation in the newly formed Sandia/Manzano Chapter of the Backyard Tree Farm program grew rapidly. Soon, the program had developed a large cadre of interested and concerned homeowners actively improving wildlife habitat.

Traditionally, Tree Farmers are landowners with at least 10 acres of properly managed forest land who are recognized in a program sponsored by the American Forest Council. The new program allowed in properties of fewer than 10 acres, generally managed by more urban folks. Participants still learn the fundamentals of forestry, reducing soil erosion, and providing wildlife habitat by applying on-the-ground management activities in their own backyards.

The New Mexico Tree Farm Committee is the primary sponsor of the Backyard Tree Farm program. Along with New Mexico Forestry and Resources Conservation Division, the technical co-sponsors include the Soil Conservation Service and the New Mexico Cooperative Extension Service. These agencies provide land management advice for property owners in the East Mountain area. As acreages are subdivided, the numbers of homeowners expecting services from these agencies expands exponentially. The Backyard Tree Farm program provides a common medium for the technical co-sponsors to share their very limited resources with a larger group of landowners.

The organization is managed by three elected officers and the sponsors. A $25.00 annual fee includes a subscription to the *American Tree Farmer* magazine. Local mailings include notices of upcoming events as well as informational literature specific to the area. The officers of the organization manage the mailing list, and handle postage and mailing with their own budget collected from dues. With relatively little cost, resource managers can support the program by providing technical information through workshops, pamphlets, and on-the-ground tours.

Although the membership generally defines interest areas for programs (see sample program), resource managers find a receptive audience for non-requested information. Members are quick to spread news throughout their neighborhoods on issues of interest to this urban forest fringe on ways homeowners can reduce the threat to wildlife and the risk of wildfire damage.

Mary Stuever (at right with her son Roland Shaw [photo by Jim Dickey]) has been a forester on the Bernalillo District, New Mexico Forestry and Resources Conservation Division for four years. In addition to managing the timber program, Stuever is a firefighter, Project Learning Tree and Project Wild facilitator, and program director for the New Mexico Forestry Camp—a one-week workshop for teenagers. She and her husband Dan Shaw own Seldom Seen Expeditions, Inc., a natural resource consulting firm specializing in environmental education. Her Bachelor's is in Forestry from Oklahoma State University. Stuever is currently the secretary for the F-3 Education and Communications Working Group of the Society of American Foresters.

Sandia\Manzano Chapter 1990 Backyard Tree Farm Events

January Tree Planting Panel at Tijeras Community

Speakers addressed a crowd of 70 residents. Topics included tree selection, tree planting, tree care, weed control, animal control, and drip irrigation.

FebruaryTour of Established Tree Plantings

Ten vehicles toured 40 miles with over a dozen stops at previous tree planting projects. Participants determined on the ground the strengths and weaknesses of each planting.

April Tree Planting Project

Over a dozen Backyard Tree Farmers turned out to help Tree Farmer John Reynolds plant 700 seedlings on his five acre property. Foresters and Tree Farmers gave advice for improving tree survival.

June Property Tour & Thinning Discussion-Part 1

Participants met at Backyard Tree Farmer Hal Vaile's property to discuss thinning trees for tree improvement. Foresters and landowners explored thinned and unthinned forest stands and noted differences in tree health between the areas.

July Property Tour & Thinning Discussion-Part 2

The Annual July Tree Farm tour was held at the Ballinger Ranch where Tree Farmer Vern Wood has undertaken a holistic tree thinning program. During the thinning process branches from the pinyon and juniper trees are chipped on site and returned to the forest floor.

September Chainsaw Worshop

Experts from a local saw shop, foresters, and participants reviewed chainsaw operation and safety to ensure commitment to safer woods operations.

October Ground Covers & Native Plants Seminar

The Backyard Tree Farm seminar featured a seasoned panel of experts with ideas to aid homeowners in beautification and soil erosion control.

THE CORPS OF ENGINEERS SET OUT TO MAKE TWO COMMUNITIES HAPPIER WHEN THEY TRADED TWO FREE FLOWING RIVERS FOR SLACKWATER. THE RESULT: A BEAUTIFULLY DESIGNED AND WELL USED PARK SYSTEM.

PARKS AND LEVEES: ANOTHER ODD COUPLE?

PHILLIP HIXSON

In 1975, the Corps of Engineers—usually known as builders of dams and hydroelectric systems—finished rough construction on what was to become one of the most beautiful park systems in the country. Lewiston, Idaho and Clarkston, Washington, the site of the park system, are at the upstream end of Lower Granite Lake on the Lower Snake and Clearwater Rivers of west central Idaho and eastern Washington.

When the lake was filled behind the new Lower Granite Dam for the first time in February 1975, two levees totaling eight miles in length had been constructed to provide flood protection for Lewiston and North Lewiston. Their most unique feature is undoubtedly the beautification project resulting in a park like atmosphere along 2.5 miles of one of the levees. These levee parks then tie into another 17 miles of walking and bicycle paths which run parallel to and within a few feet of the two rivers--at that point, slackwater rivers.

In the late 1960's, many of the citizens of Lewiston and Clarkston (populations totaling some 55,000 in the area) were familiar with the levee system created 20 years earlier along the Columbia River in the Tri-Cities area of central Washington. Those levees served the purpose of protecting nearby communities from flooding, but they resulted in a rather sterile, uninviting shoreline feature which was not usable for most recreationists. The Lewistonians and Clarkstonites decided to make their voices heard through public meetings and during the Corps of Engineers master plan process. They said: We want our levees to be inviting places that draw people to our waterfront in pursuit of recreation.

The result was that the Corps of Engineers landscape architects and outdoor recreation planners developed a parkway on the Lewiston levees. Eventually, most of the shoreline around Lewiston and across the river in Clarkston, Washington would be devoted to recreation facilities.

The Corps' most perplexing question was: How to turn a flood control levee into a parkway? Levees traditionally are sloped away from the river. Normally they are fairly devoid of vegetation. Trees and shrubs are never allowed to grow on levees because after dying, their roots rot, leaving channels in the soil through which water can flow—not a desirable situation for a structure designed to hold water. Grasses may be planted to help stabilize the slope, but they are not generally manicured in such a way that they could be used as park-like lawns.

Since a desired feature in most parks is trees, we solved the tree situation on the levees by planting them in large (8' diameter by 4' deep) concrete tubs with walls 4" thick. These tubs have a small drain hole perpendicular to the river which allows water to drain to the

surface on the backslope of the levee. Eight inches of gravel covers the bottom of each tub to facilitate drainage. A sheet of fiberglass matting was placed on top of the gravel to keep soils from sifting into the gravel and to keep roots from growing into it (see figure 1).

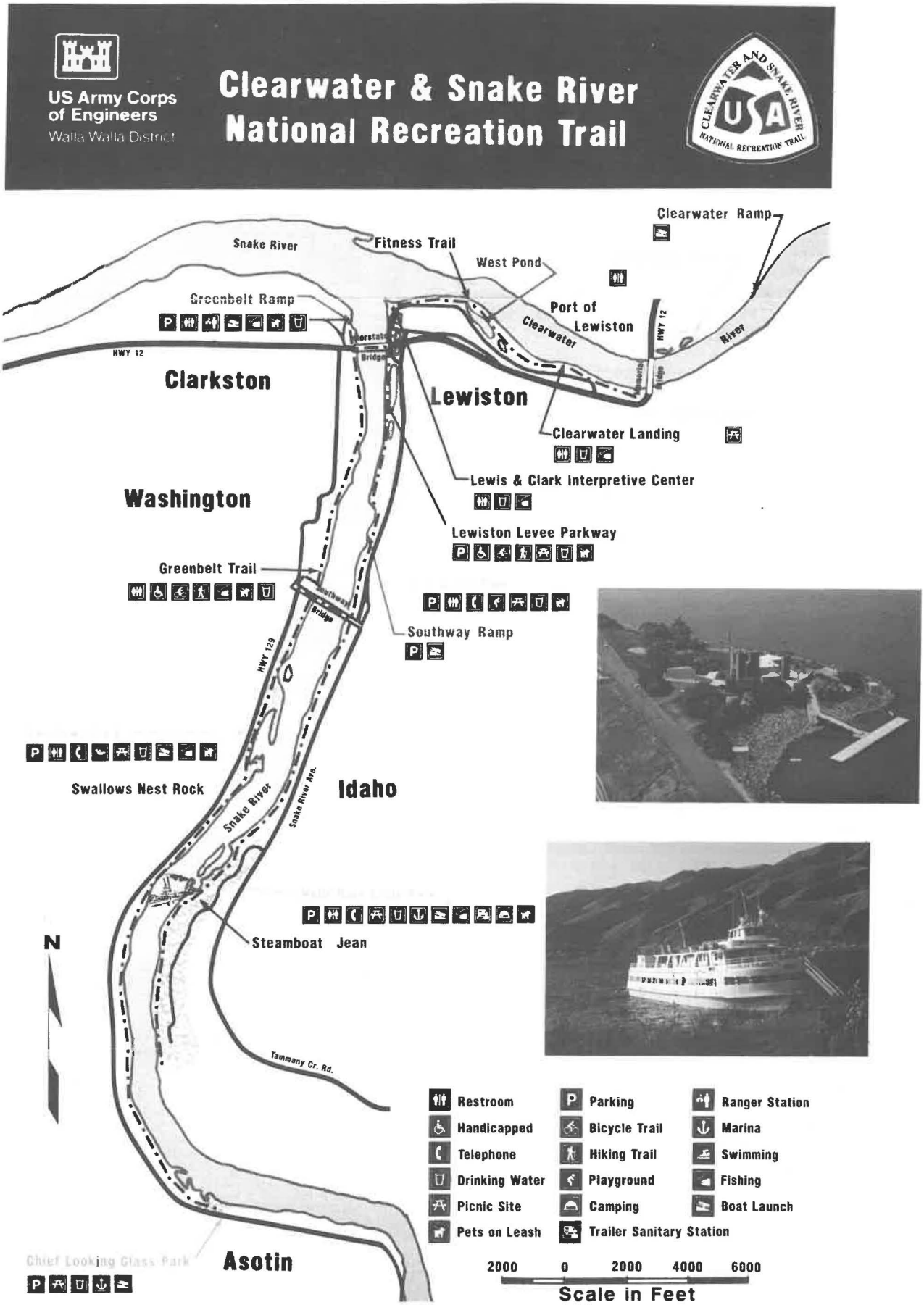
The criteria for selection of the species of trees to be planted in the tubs included: 1) must be fairly small and shallow rooted; 2) must be light tolerant as there would be no forest canopy over them; 3) must be capable of surviving winters with sub-freezing temperatures and summers with temperatures which sometimes exceed 100 degrees Fahrenheit. Preference was also given to trees with showy flowers, fruits, and/or foliage and those which would provide wildlife food and cover. (Table 1 lists the diversity of trees selected for inclusion in the final design while Table 2 provides a list of the shrubs.)

The grassed areas were divided into three categories. Lawn grasses are irrigated and manicured as in most city parks. Meadow grasses are irrigated, but are left unmowed throughout the growing season of April through October. The dryland grasses are neither irrigated nor mowed. (Species used are cited in Table 3.)

The soils usually incorporated into a levee are mixtures containing a considerable amount of rock and gravel. In order to consider planting grasses, it was necessary to add a layer of topsoil to the backslope. And since we only receive 10-14 inches of precipitation each year, we had to install an irrigation system. Skeptics asked: What if the high-power irrigation lines broke and washed a hole in the levees? While minor washouts have occurred, we required that safeguards were built into the system and that someone always be on site observing while it is in operation.

As the dryland and meadow grasses were planted, wildflower seeds were also sown. Unfortunately, some of the wildflower mixtures contained seeds of deep rooted plants such as sweet clover and alfalfa which were not acceptable. In the process of eradicating the undesirable flowering species over the years, we lost most of the desirable ones. We are now in the process of trying to locate pure seed sources in hopes of re-establishing the levee wildflowers. This was a particularly appreciated aspect of the beautification which we are anxious to pursue at the earliest possible date.

While the vegetation schemes were being designed, the outdoor recreation planners developed innovative plans to be merged with that of the landscape architects. Levee systems generally have roadways associated with them for maintenance purposes; the planners argued, why not pave some of those roads and use them


US Army Corps of Engineers
Walla Walla District
Clearwater & Snake River National Recreation Trail
CLEARWATER AND SNAKE RIVER
USA
NATIONAL RECREATION TRAIL
Clearwater Ramp
Snake River
Fitness Trail
West Pond
Greenbelt Ramp
Port of Lewiston
Clearwater River
HWY 12
Interstate Bridge
Clarkston
Lewiston
Clearwater Landing
Lewis & Clark Interpretive Center
Washington
Lewiston Levee Parkway
Greenbelt Trail
Southway Bridge
Southway Ramp
HWY 129
Swallows Nest Rock
Idaho
Snake River
Snake River Ave.
Steamboat Jean
N
Tammany Cr. Rd.
Chief Looking Glass Park
Asotin
Restroom
Parking
Ranger Station
Handicapped
Bicycle Trail
Marina
Telephone
Hiking Trail
Swimming
Drinking Water
Playground
Fishing
Picnic Site
Camping
Boat Launch
Pets on Leash
Trailer Sanitary Station
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for a bikepath system? We did, and the public fell in love with them, enticing 500,000 visitors annually, running, walking, rollerskating, and bicycling.

Several boat docks have been provided along the face of the water-side face of the riprapped levees so that boaters can also access the recreation facilities; restrooms and picnic tables are available and there are two open air interpretive centers. One of these, the Lewis and Clark Center, relates the human history of the area and features The Tsceminicum Sculpture (created by Nancy Dreher of White Bird, Idaho). It depicts flora and fauna referred to in Indian legends of both the Snake and Clearwater regions. The Clearwater Landing Center concentrates on the boating history of the Snake and Clearwater Rivers.

The City of Lewiston owns and operates Kiwanis Park along the levees in West Lewiston. This park blends in with the landscaping and bikepaths on the Lewiston Levee Parkway in such a way that most people are not aware that they are two separate parks run by two different agencies.

A necessary feature of any flood control levee is a system of ditches and ponds to collect surface and ground water that flows downhill but is then trapped behind the levees before it can reach the river. Our ditches have been landscaped with small shrubs in some areas and left open in others. The largest of the six ponds along the parkway contains two landscaped islands adding a pleasant esthetic touch which helps to break up the monotony of the levee shape. Many people find the levee ponds a fun place to fish. Idaho Fish and Game has stocked the ponds with a variety of game fish over the years. Others have contributed their own "wildlife" to these ponds by turning loose pet ducks, geese, goldfish, and turtles. While the goldfish and turtles are not problems, the domestic geese and ducks attack people on occasion and destroy vegetation leading to erosion.

Most levees usually are not the kind of place one would go to for the purpose of observing wildlife. The ditches, ponds, and vegetation along the parkway, however, have attracted a variety of watchable wildlife: Canada geese, mallards, pintails, buffleheads, widgeon, gadwall, and seagulls are all fairly common sights on the ponds. One can often find a number of wood ducks between the islands and the levee. Great blue herons are seen frequently and an occasional green heron or bald eagle might also appear. Some of the rarer species seen on the levees include garter snakes, mink, weasels, river otter, and moose.

Although the parkway does not extend into North Lewiston, the levee bikepath does and connects with the south end of Memorial Bridge which crosses the Clearwater River. At the north end of the bridge, the trail picks up again and continues up the north side of the Clearwater River for about eight more miles. Near the beginning of this section of the bikepaths, the Corps developed two baseball fields in adjacent flood control basins. Leased to the City of Lewiston, they are used extensively for little league and softball programs. Between the two North Lewiston ball fields is the only birling pond ever constructed by the Corps of Engineers. This is a sport of particular interest here in the Pacific Northwest; the Lewiston Department of Parks and Recreation provides summer classes for beginners and several national champions have been known to practice here.

Beyond the Lewiston Levee Parkway at each end of the levee system, launch ramps are available for the many people who enjoy boating, fishing, and water skiing on the rivers. Parking lots here and at four other locations along the levees provide jumping off points for the thousands who walk, jog, skate, bicycle, skateboard, or run on the levees each day. A skywalk allows visitors at the confluence of the Snake and Clearwater Rivers to cross Highway 12 for easy access to the bikepaths.

The bikepaths passing through the Lewiston Levee Parkway do not end at the park's boundary. Besides the connection to the North Lewiston bikepath alluded to earlier, the paths also connect to Hells Gate State Park four miles to the south of Lewiston. Via two bridges crossing the Snake River into Washington, they connect with Swallows Park and the landscaped Greenbelt (both operated by the Corps) in Clarkston and with Asotin Washington's Chief Looking Glass Park six miles south. In April 1988, we were successful in designating the 21 miles of connected bikepaths in the valley as the "Clearwater and Snake River National Recreation Trail." Although the Corps of Engineers developed all of these trails, portions are now managed by nine different agencies through leases, easements, or transfer of ownership. There have been modifications over the

(*continued on page 51*)

Table 1 **TREES**

Common Name	Scientific Name
Amur Maple	Acer ginnala
Boxelder	Acer negundo
Norway Maple	Acer platanoides
Columnar Norway Maple	Acer plantanoides erect
Red Maple	Acer rubrum
Silver Maple	Acer saccharinum
Common Horsechestnut	Aesculus hippocastanum
Red Alder	Alnus rubra
River Birch	Betula nigra
Eastern Redbud	Cornus florida
Redflowering Dogwood	Cornus florida rubra
Pauls Scarlet Hawthorn	Crataegus oxyacantha pauli
Double White Hawthorn	Crataegus oxyacantha plena
Washington Hawthorn	Crataegus phaenopyrum
Moraine Honeylocust	Gleditsia triacanthos inermis
Eastern Black Walnut	Juglans nigra
Rocky Mountain Juniper	Juniperus scopulorum
Panicled Goldraintree	Koelreuteria paniculata
Water Laburnum	Laburnum watereri vossi
American Sweetgum	Liquidambar styraciflua
Wild Sweet Crabapple	Malus coronaria nieuwland
Katherine Crabapple	Malus katherine
Lemoine Crabapple	Malus purpurea lemoine
White Mulberry	Morus alba
Austrian Pine	Pinus nigra
Scotch Pine	Pinus sylvestris
London Plane Tree	Platanus acerifolia
Bolleana Poplar	Populus alba bolleana
Common Chokecherry	Prunus virginiana
Common Douglasfir	Pseudotsuga taxifolia
Norther Red Oak	Quercus borealis
Black Locust	Robina pseudoacacia
Japanese Pagoda Tree	Sophora japonica
European Mountain Ash	Sophora mountainash
Japanese Tree Lilac	Syringa amurensis japonica

Table 2 **SHRUBS**

Common Names	Scientific Names
Saskatoon Serviceberry	Avalanchier alnifolia
Japanese Barberry	Berberis thunbergi
Japanese Flowering Quince	Chaenumeles japonica
Cornelian Cherry Dogwood	Cornus vas
Gray Dogwood	Cornus racemosa
Redoiser Dogwood	Cornus stolonifera
Cranbery Contoneaster	Cotoneaster apiculata
Warminister Broom	Cytisus praecox
Winged Euonymus	Euonymus alatus
Border Forsythia	Forsythia intermedia
Early Forsythia	Forsythia ovata
Common Witchhazel	Havameus virginiana
Shrubalthea	Hibiscus syriacus
Snowhill Hydrangea	Hydrangea arborescens
Pfitzer Chinese Juniper	Juniperus chinensis pfitzer
Sargent Chinese Juniper	Juniperus chinensis sargenti
Savin Juniper	Juniperus sabina tamarix
Tatarian Honeysuckle	Lonicera tatarica
Star Magnolia	Magnolia stellata
Oregon Grape	Mahonia aquifolium
Tree Paeonia	Paeonia suffruticosa
Sweet Mockorange	Philadelphus coronarius
Littleleaf Bush Cinquefoil	Potentilla fruiticosa
Common Buckthorn	Rhamnus cathartica
Smooth Sumac	Rhus glabra
Staghorn Cutleaf Sumac	Rhus typhina laciniata
Rose Acacia	Robina hispida
Father Hugo Rose	Rosa hugonis
Japanese Rose	Rosa multiflora
Rugosa Rose	Rosa rugosa
Cutleaf Blackberry	Rubus laciniatus
American Elder	Sambucus canadensis
Vanhoutte Spirea	Spiraea vanhouttei
Common Snowberry	Symphoricarpos albus
Common Lilac	Syringa vulgaris
European Cranberrybush	Viburnum opulus

Table 3 **DRYLAND GRASSES**

Common Names	Scientific Names
Whitmar Beardless Wheatgrass	Agropyron inerme
Sodar Streambank Wheatgrass	Agropyron riparium sodar
Siberian Wheatgrass	Agropyron sibericum
Nordam Crested Wheatgrass	Agropyron desertorum
MEADOW GRASSES	
Creeping Red Fescue	Festuca rubra
Ruben Canada Bluegrass	Poa compressa ruben
LAWN GRASSES	
Fylking Bluegrass	Poa pratensis fylking
Pennlawn Fescue	Festuca rubra pennlawn

PUBLICATIONS
(continued)

trate the imbalance imposed by centuries of discrimination against women in the workplace. In the publication, ILO disputes past measurements of women's work on the basis of the conventional definition of the labor force. This undercounting contributes to the lack of status of the world's women workers.

...

Reweaving the World: Emergence of Ecofeminism edited by Irene Diamond and Gloria Orenstein (Sierra Club Books 1990) contains 320 pages of essays by 26 different authors. Most of the essays originally were presented as papers at a 1987 conference at the University of Southern California.

...

The Federal Law Enforcement Training Center produced *Assault on Time* a video tape costing $45 for VHS, or $110 for 3/4" video. The subject is the destructive impact on our nation's cultural heritage caused by the looting and vandalism of archeological sites. A rich diversity of past lifeways is shown preserved in the archeological record. Laws aimed at protecting this national heritage are also discussed. To get ordering options, call 301-763-1896.

...

Gershen Kaufman and Lev Raphael wrote a book for children *Stick Up for Yourself—Every Kid's Guide to Personal Power and Positive Self-Esteem* (Free Spirit Publishing, Inc., Minneapolis). The authors encourage kids—and want parents to encourage kids—to keep an I-did-it list which is a list of things they did that made them feel good about themselves. These lists show they solved problems, had successes, and highlights the activities they take part in.

...

In *Julian Block's Year-Round Tax Strategies for the $40,000-Plus Household* (St. Martin's Press) the author, among other things, insists that we leave our heirs a letter of instruction to ease execution of wills. These letters should include: assets and liabilities lists of stocks, bank accounts, insurance, real estate, art, debts; location of important documents such as birth certificates, will, marriage license, tax records; assets that pass outside the estate including jointly owned bank accounts and real estate; personal requests not in the will such as pet care, funeral preferences; earned benefits like social security, work related- and veterans-benefits. Revise this letter yearly and after major changes in your life (new job, marriage). Give copies to spouse, adult children, close friends, lawyers, and executors.

...

Eating trigger foods are dangerous because these foods set off a dangerous cycle of compulsive eating. There is no such thing as eating these in moderation. Trigger foods vary by individual but usually fall into one of four groups: fat, sugar, cholesterol and/or salt. David Liederman in *David's Delicious Weight-Loss Program* (St. Martin's Press) advises us to identify the trigger foods and never, never start on them.

...

Faculty Salaries in Perspective is a new research brief by Holly Hexter published by the American Council on Education (ACE). The well-known salary differences between men and women (13.1 percent at full professor rank) can be attributed to several factors: lower tenure rate for women (46 percent versus 69 percent for males); scarcity of women in the highest-paying fields and in the highest-paying institutions (i.e., independent research universities); concentration of women in lower ranks. This brief is part of the ACE Research Brief Series, a collection of short papers exploring higher education issues, published eight times per year at $50. Write Division of Policy Analysis and Research, ACE, One Dupont Circle, NW, Suite 800, Washington, DC 20036.

...

Enrollment of women in universities and colleges increased 93 percent between 1970 and 1987, while enrollment of men was up only 22 percent for that time period and has not increased significantly since 1976. Part-time enrollments increased about 70 percent between 1970 and 1987, and stood at 43 percent of total enrollments in 1987. In 1987, nearly 43 percent of enrolled students were over 24 years old, including 28 percent who were age 30 or older. These statistics and others are available in a report entitled Fall Enrollment in Institutions of Higher Education, 1987, (published 1989) by calling the US Department of Education at 800-424-1616. Ask for NCES 89-319.

...

The National Range Data System (NRDS) provides storage, rapid retrieval, and analysis of rangeland data collected for 35 years by the Soil Conservation Service. The National Computer Center in Ft. Collins, Colorado maintains this system for SCS. Information from over 8,000 sites is stored in NRDS, one of the largest data systems of this type.

...

The National Wildlife Federation (NWF) has a Citizen's Guide to Community Water Conservation and charges $3 for copies. Write NWF 1400 16 St NW, Washington DC 20036.

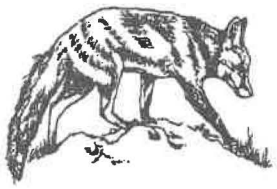
The State of Iowa is expending $200 million in state funding for natural resource improvements under the Resource Enhancement and Protection (REAP) Act. Some of the funds went toward producing a six-part videotape entitled Better Land, Better Water targeted for ranchers, farmers, conservationists and others. Contact the Iowa State University Cooperative Extension Service, the Iowa Dept. of Natural Resources, the Soil Conservation Division, SCS, or the Iowa Association of Soil and Water Conservation Districts.

...

Various manuals, brochures, and audio-visual programs are available from the Council of Tree and Landscape Appraisers. There is, for example a Manual For Plant Appraisers, Landscape Appraisal Court Cases, Guide for Establishing Values of Trees and Other Plants, and a video Tree Casualty Puzzle. For prices, forms, and information contact CTLA at 1250 Eye Street NE, Suite 504, Washington DC 2005.

...

The International Society of Arboriculture Research Trust has a video about tree/utility line conflicts. The program costs $25 and was developed by William Wheeler, forester for the Louisville Gas & Electric Company and Mark Timmons an independent horticultural expert. Write ISA at PO Box 908, Urbana, Illinois 61801.



REFORESTATION ON A SMALL SCALE IS A GRAND IDEA.

URBAN FORESTRY: A GARDEN DESIGN

RUTH PARNALL

There is a new planting project in Northampton, Massachusetts. It is a native woodland, filled with spring wildflowers, dappled sunlight, the rich autumn colors of gold and scarlet, the pattern of tree trunks shadowed across the bright snow, squirrels and birds foraging in the leaf litter. The plant list reads like a northeast woodland replication project: sweet birch, amelanchier, sassafras, quaking aspen, pagoda dogwood, witchazel, pinxterbloom azalea, blackhaw, mayapple, ferns, phlox, columbine, foamflower, thyme, and a score of others.

Is this an urban park of many acres? No. It is the 2,400 square foot front yard of a high density urban residential lot.

Originally, it was a yard similar to the neighbors'—foundation plantings, street trees, grass, and asphalt. It had become the daily depository for the neighborhood dogs and seemed always to be crammed with bicycles and cars. The owners, an architect and interior designer with young teens, were close to being finished renovating the huge late-Victorian house and turned their attention to the problems of the front yard: puddles, cracked paving, disorganization, and abuse.

They wanted a flower garden, and their first thought was a fenced yard. It would be in the Victorian style to keep dogs, basketballs, and bikes from intruding on the flowers. But fencing meant separating the tiny yard into even smaller pieces by outlining the "garden" in patches.

With reforestation always on my mind as a design objective, I was certain that the character and detail of a young native wood's edge association would suit the purpose. The combination of tree trunks and tall ferns act as a subtle fence between the sidewalk and the inner yard and keep the kids from running through. The ground layer, filled with the informal array of the forest floor, doesn't suffer in appearance if a few plants are crushed by a basketball, a garden cart, or a wood delivery. As a matter of fact, common thyme fills the spaces between the paving stones and smells wonderful when trodden.

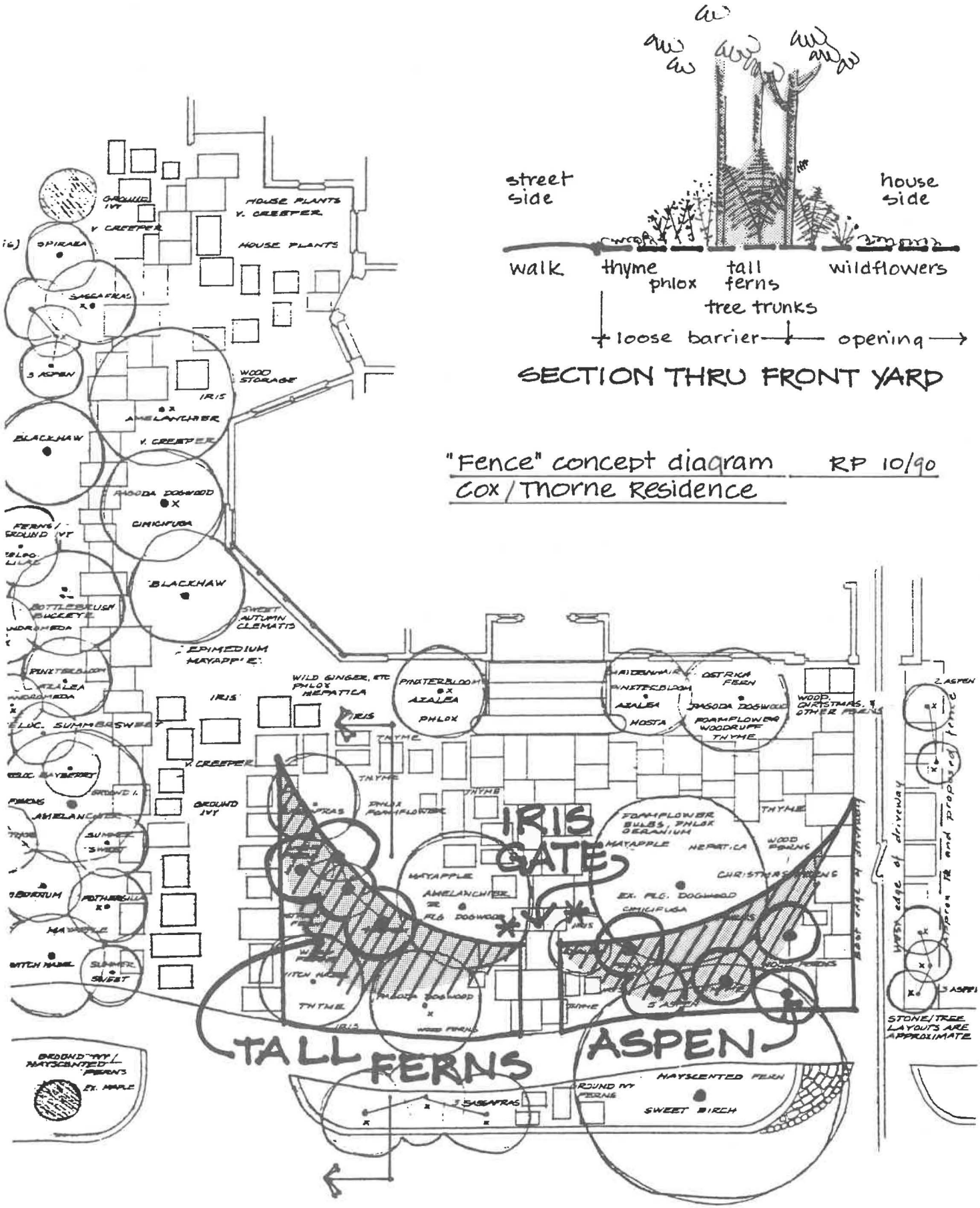
As the ferns and shrubs grow, this is becoming less comfortable a spot for dogs to stop (and it actually doesn't matter too much if they do). When the leaves fall, they needn't be raked; the decomposition has begun to enrich the organic layer of the soil, and the ferns and wildflowers are spreading to cover the ground.

The yard feels bigger now, because the edges of the yard, which were cut off by the driveways and the public sidewalk, are included in the woodland planting scheme. Neighbors feel now as if they are briefly entering the garden when they walk by, and they often stop to see how the plants are doing.

Most of the trees in the yard have the woodland edge character—understory height, small leaves, airy growth habit, closely spaced. They were chosen so they would not grow to cast dense shade nor be too competitive with a 30-inch sugar maple growing at the street edge (for this reason they were also planted with very small root balls).

Many of these trees and shrubs fill the yard with flowers, fragrance, berries, and fall color in nature's unending cycle of interest. And that's the best part of this garden. Everyone who worked on it or sees it now has learned something about the plant community of the native woods.

Ruth Parnall's degree in Landscape Architecture is from the University of Illinois. She has worked for the City of Indianapolis (Planning and Zoning), for a civil engineering firm, and as a principle in Conway Design Associates, landscape architects. Parnall is now sole proprietor of an office under her own name. Her ongoing emphasis in each project is environmental education of clients and/or users.


street side
house side
walk
thyme
phlox
tall ferns
wildflowers
tree trunks
loose barrier
opening
SECTION THRU FRONT YARD
"Fence" concept diagram RP 10/90
Cox / Thorne Residence
IRIS GATE
TALL FERNS
ASPEN
STONE/TREE LAYOUTS ARE APPROXIMATE

FAIRFAX, VIRGINIA HAD ONE OF THE EARLIEST TREE PRESERVATION PROGRAMS IN THE COUNTRY.

EVOLUTION OF A TREE PRESERVATION ORDINANCE

JESSIE STROTHER

In the early 1970s, tree preservation ordinances were almost unheard of, even though the media was full of stories of outraged citizens complaining about denuded building sites and once-green-turned-to-barren construction projects. At that time, the northern Virginia suburbs near Washington DC were experiencing this same indiscriminate tree clearing for new developments. In response to the destruction, concerned citizens, with the help of Fairfax County staff, developed a tree preservation ordinance that fell eventually under the county's erosion and sedimentation laws. The County Board of Supervisors adopted the ordinance in 1973 and soon thereafter, the Office of the County Arborist was established within the Fairfax County Department of Environmental Management.

Staffing for the office grew slowly. By 1984, when I was hired as an inspector, the office consisted of six inspectors, a field supervisor, two plan reviewers, and a branch chief. The six of us, two women and four men, were responsible for 400 square miles of mixed suburban and rural countryside. We received several weeks of training, a Telxon hand-held computer to log inspections, an ordinance book, a vehicle, and a large section of that 400 square miles to cover.

Our primary responsibility today, as it was for staff in the beginning, is to protect trees from becoming casualties of development. Using approved engineering and landscape plans, we enforce ordinances: native trees must be properly protected; landscape plant materials must be installed correctly; dead and hazardous trees must be removed.

To do that, the County turns to the Arborist plan review staff who review the building contractors' engineering plans for design conformance to the ordinances. The builder or developer posts conservation deposits and performance bonds—the key to providing teeth to the ordinance.

A number of on-site inspections and consultations are needed from the beginning to the end of a project in order for final approval and the monies to be released back to the builders and developers. In our county, there are an average *each year* of 3,000 such plans reviewed with about 10,000 inspections performed just in our branch. Staff size tripled at one point, then shrank back in response to development activity. We have found sophisticated computer software indispensable to accomplishing the work.

In 1990, the Virginia State Legislature passed enabling legislation allowing (requiring) a certain amount of tree cover to be provided on new developments. Builders and developers can comply by landscaping, or preferably, by preserving existing vegetation. In Fairfax County, where the legislation was adapted into a new ordinance, it primarily affects subdivisions under development. Previously, only industrial, commercial, or townhouse development had been required to provide a certain amount of landscaping. For other categories, tree preservation was at the sole discretion of the builder or developer. Today, builders of individual homes must comply, too, with the same options—landscaping or preserving native species or a mix of the two—to meet the tree cover requirements. The tree cover ordinance is definitely a plus and would have been extremely useful in the early years. Other states and localities experiencing development pressures can benefit from adopting a similar ordinance and legislation.

My work is very interesting, but there are a couple of things which puzzle me about the business. One of them is that I have noticed that very few women are employed or are a part of the construction and land development scene except as engineers or landscape architects. At the same time, the number of women hired by various government entities as arborists and urban foresters, however, continues to increase. Another observation is that after scrambling over thousands of construction sites, and discussing problems and procedures with hundreds of contractors and workers, it became clear to me that most people know very little about the biology of trees and how these living things respond to construction damage and arboricultural practices.

And finally, on the positive side, many of us in the urban forestry and arboriculture profession were—and still are—learning from our hands-on experiences and the research being developed. The networking and sharing of information, the new publications and national promotions focusing on urban situations, have been invaluable in our efforts to maintain and preserve a healthy urban forest.

Jessie Strother is an Assistant Arborist, reviewing plans and assisting with the management of the urban forestry program in Fairfax County, Virginia. She also chairs the Urban Forestry Committee with the National Capital Society of the American Foresters. Her Bachelor's is in Natural Resource Management (Interpretation) from West Virginia University's School of Forestry.

EACH COOPERATOR WILL HAVE THEIR OWN AGENDA AND MOTIVE FOR ENTERING INTO AN AGREEMENT. AS LONG AS THESE ARE COMPATIBLE WITH PROJECT GOALS, GO FOR IT.

COOPERATIVE VENTURES IN URBAN FORESTRY: A CASE STUDY

SUE ANN FUNK

The Center for Urban Horticulture at the University of Washington, the Washington State Department of Natural Resources, and Puget Sound Power and Light Company entered into a cooperative venture in 1989 to co-sponsor a student internship to develop and present a product useful to those working in municipal urban forestry. After the product—in this case a notebook—had been finished, these three cooperators then sought out a fourth partner, Davey Tree Expert Company, to help them introduce public employees to the fundamentals of urban tree care as found in the notebook.

As these cooperators were to find out, there are many advantages to participating in a cooperative venture. Limitations of personal expertise within individual organizations can be overcome. If one agency has funding but no expertise, or limited experience in a particular area, by joining with another organization that has these characteristics, voids can be filled. In addition, duplication of efforts can be reduced. If two groups have similar interests, they can work together on one high-quality product, instead of two marginal products. In the end, the intended audience benefits from a more complete product at an affordable rate.

The following is a description of the project to illustrate the advantages of cooperative ventures.

James Clark, Associate Professor of Environmental Horticulture at University of Washington's Center for Urban Horticulture, and John Goodfellow, corporate forester for Puget Sound Power and Light Company (Puget Power) recognized a need for a comprehensive guide to urban tree planting. They decided to work together to create such a guide. Puget Power was especially interested in expanding an existing booklet to reach a new audience: the municipal employee. The rationale for this was that municipal employees have a vital role in the urban forest. In many smaller municipalities in western Washington, there is no staff arborist and communities cannot afford to hire an arboricultural consultant. Municipal employees are asked to work with the public trees as part of their duties, but these employees have little, if any, knowledge of trees. To meet the need for additional information, the Urban Forestry Notebook was conceived.

The Urban Forestry Notebook (in its finished form) was divided into three sections: trees, issues, and references. The tree section included information on 65 species of trees. The species represented a wide range of tree types: large native trees because of their prevalence in the urban landscape; medium-sized trees suitable for park plantings; and smaller trees appropriate for planting near power lines. Information on each tree page included culture requirements,

ornamental features, pests, drought tolerance, and common cultivars.

The issues section included one page summaries on a variety of topics confronted by the municipal employee: planting techniques, effective irrigation methods, mulching materials, as well as the elements of an effective tree ordinance. A glossary, a mature tree size index, and lists of addresses of regional and national organizations which support urban forestry programs were all included in the reference section.

As the project evolved, each partner brought assets to the partnership which helped ensure the success of this project. The Center for Urban Horticulture, a part of the College of Forest Resources at the University of Washington, is dedicated to studying people/plant interactions in the urban environment. The Center provides a gathering place for the exchange of information related to the urban environment and in this capacity, it is able to bring together unlikely partners to work toward a common goal. In addition, the Center has an extensive continuing education/public outreach mission and the notebook project fit the type of public outreach envisioned. At the same time the project provided benefits to the Center. Municipalities, the targeted recipients of this project, were a new audience for the Center. Because it was of small size and was relatively new, the Center also lacked the financial resources to complete a project of this scale on its own. Thus, it actively searched for cooperating partners, as all successful university outreach programs do.

The Department of Natural Resources (DNR) became involved with the Urban Forestry Notebook through its urban forestry program initially funded by small grants from the United States Forest Service. The grants, $30,000 to $35,000, are awarded on a matching-funds basis allowing DNR to assist five to seven public agency or private landowner forestry projects per year. In 1989, the Urban Forestry Notebook project received $6800 which provided the student internship.

The Center for Urban Horticulture and the Washington State Department of Natural Resources were natural allies in an urban forestry project. The unlikely partner in the venture was Puget Power. Ten years ago, power companies and other utilities would not have been considered leaders in tree care, but today, across the nation, utilities are becoming more involved with proper tree selection and care. They are educating their own employees as well as being involved with public outreach efforts.

Puget Power brought many advantages to the partnership. Aside from financial resources, they are one of the more visible links with the urban forest in western Washington. Goodfellow estimated that Puget Power spends eleven million dollars on tree work per year. This is far more than most other agencies combined.

Goodfellow also believed that spending money to provide educational opportunities to communities will prove less expensive for the corporation in the long run than correcting mistakes made later. For example, the uninformed individual is more likely to plant the wrong tree near power lines than a well informed one. Once the wrong tree is established, the public is more likely to complain when power crews must prune the tree as it grows into the lines, and even resist removal of the tree when it is out of control. By providing information about the appropriate trees for beneath power lines, many of these problems can be avoided, making Puget Power's job easier and less expensive. In addition to averting potential problems, Puget Power wanted to become involved in educational projects to establish credibility with the public. When asked about the correlation between power companies and trees, the general public would probably respond with a negative reply that power companies prefer to top trees. By becoming involved with respected agencies on cooperative ventures, the corporation believed public opinion can be changed.

The contributions made by each cooperating partner were significant. The DNR provided a salary for the intern to complete the project. Puget Power supplied a graphic artist and paid for the production of the notebook. The Center provided a graduate student, faculty/staff resources, and expertise to ensure the quality of the product.

As the notebooks were being completed, planning began on an event with two purposes: to distribute the notebooks in a general meeting of interested municipal employees, and to provide an introduction to urban forestry in western Washington. The goal was to feature prominent national and local leaders in the hope of increasing awareness of urban forestry and encouraging interest in learning more about the trees in the city. The Urban Forestry Forum "Your City Trees, Asset Not Liability" was planned to achieve this goal. In order to mount this kind of introduction, however, more funds would have to be found.

Davey Tree Expert Company had been involved in cooperation with the College of Forest Resources and had shown interest in the programs of the Center for Urban Horticulture. When approached about the idea of the Urban Forestry Forum, they were willing to supply a generous gift of $5000 which underwrote the costs of the speaker, lunch for the 150 attending, and other associated expenses of the day.

The keynote address was given by Robert Skiera, the City Forester of Milwaukee, Wisconsin, on protecting the urban forest. Other subjects were automation, hiring a consultant, public relations, and managing urban greenbelts. Each person in attendance received an Urban Forestry Notebook and a short introduction to the Notebook and its most effective use. Evaluations were distributed the day of the Urban Forestry Forum; those who responded indicated an interest in learning more about urban forestry. The evaluations also provided ideas for future programs.

The key to this successful cooperative effort was communication. Frequent meetings and updates were essential so that details did not go unattended. In general, early in such a project, ideas and intentions must be honestly discussed by the cooperators so that there won't be a later misunderstanding.

In any project, each cooperating organization will have its own motives for becoming involved. As long as these are compatible with the project goals, they should not cause concern. In this case, the "private agendas" of the four cooperators—increased publicity, educational opportunity, increased credibility, and public relations—were integral to its success.

Sue Ann Funk was the graduate student intern preparing and organizing the Notebook for the cooperators. Her Bachelor's is in horticulture from Kansas State University and her Master's is in urban horticulture from the University of Washington. Funk currently lives in Topeka, Kansas.

The author would like to acknowledge the assistance of Dr. John Wott, Dr. Jim Clark, Dr. Gordon Bradley, and Mr. John Goodfellow in the preparation of the Urban Forestry Notebook and the preparation of this article.

NEWS & NOTES

Paying a Debt and Earning Respect

The crimes committed by the inmates in the Women's Correctional Facility of the Utah State Prison vary as do their sentences. Last year, a group of young, capable women inmates expressed an interest in creating a conservation crew similar to the one from the men's facility. In 1990, the Fallen Angels (their own name for the crew) started a physical training program to qualify them as firefighters. They were given first aid and CPR training and 30 hours of chain saw training. Crew members have worked hard. They've earned respect and trust: "We want this to work—for us and for the next girls on the crew," said Debby. "We're grateful for this opportunity and we depend on each other to make it successful." There is a high turnover rate, however, because for a woman to be on the crew, she must have not more than 36 months of imprisonment left. Another qualifier for joining the crew is to be at the prison's Level 5, showing they have demonstrated responsible behavior, can be trusted, and deserve to earn money from newly learned skills.

Lynette Davis, Intermountain Reporter, January 1991

American Women in Science Organisation is Concerned About the Status of Women

Role Models for young women in science are sorely lacking. According to a 1989 report, the increase in the number of women earning degrees in the natural sciences and engineering has slacked off. At least part of the reason for the declining interest can be found in the treatment of women scientists in the labor force.

The unemployment rates of women doctoral scientists and engineers are two to five times higher than those of men. Having obtained a doctorate, women have more difficulty attaining a first position than men do. Once women find a job, that job is less likely to be in their field, and if they are in academe, they are more than twice as likely to be non-tenured and/or on a nontenure track than their male colleagues, a difference that has not changed in the past 10 years. Furthermore, women scientists are paid only 71 percent of their male colleagues' salaries.

Stephanie J. Bird, undated letter to AWIS members

The Japanese Want Out of U.S. Real Estate Market

Kumagai International USA (KI), the U.S. subsidiary of Kumagai Corporation, holds Y200 billion (US$1.6 billion) in U.S. real estate. But KI is having difficulty recouping its investment due to the decline in the U.S. real estate market. So it is selling off its holdings as quickly as possible. Other companies in the same bind are taking the same way out. Unfortunately, most U.S. companies are strapped for cash and Japanese companies are not as eager as they once were to buy U.S. real estate. KI and others may not succeed in selling their holdings.

Nihon Keizai Shimbun, *Look Japan*, January 1991

New Decade Began Badly for Women

The low percentage of women with real political power in the U.S. is an offense to democratic ticket-balancing. Two senators out of a hundred; three governors out of 50; six percent of the seats in the House; and in cities with populations over 30,000, according to the Center for the American Woman and Politics, only one mayor in six is female....

Progress is much too slow because women of every political stripe—at home and around the world—are letting down their own sexual side by not demanding more female candidates and by not supporting them when they run. Granted, universal suffrage came to politics late; yes, women who are activists often turn off inactivists; sure, sex is not the main qualification for office. But now is now, women are voting—and not enough women are candidates and too few of those are winning. Why?

The power of incumbency is an excuse, as is the tug of tradition and the demands of rearing children. The reason, however, is a dismaying lack of assertiveness of group identity. "Vote as you shot" rallied veterans; "he's one of our own" pulled out ethnic and minority support; "no quotas"attracts whites. All other things on issues being roughly equal, women should strongly support women as women until some parity is reached. Then, secure in a system in balance, they can throw the rascals out regardless of sex. "I used to look at the papers," says an 88-year-old Englishwoman of whom I have long been fond, "and see Maggie right there, a splash of color in the middle of a bunch of men. Now all I see is a gray bunch of men."

William Safire, columnist for the *New York Times* in *Lewiston Morning Tribune*, December 23, 1990.

When a Woman Speaks, Does Anybody Listen?

Women and men use language differently and often misunderstand each other as a result....Women are much less comfortable with the idea of hierarchy. They use language to achieve rapport; they want to get their way, but they prefer to get their way by having everyone agree. They don't like to pull rank.

Linda Camras's research on kids' interactions showed that when girls are in the high-status role in a social group, they're more polite. Knowing they have the position, they bend over backwards not to act bossy. Which is why you get this frequent accusation by men that women are manipulative: because they are trying to get them to do something without making demands. Whereas to women, it's just not being bossy.

Suppose a female boss needs to tell her male subordinate that she wants a report sooner

than he's planning to give it to her. She might approach it by saying, "Do you think you could give me the report by the 8th rather than the 15th? Now that leaves him open to say, "No, I won't have time to get it done by then," and to feel she's given him the option of saying that. And when it becomes clear that she's annoyed that she didn't get it by the 8th, he'll say, "Why didn't you tell me?" Whereas a woman would appreciate having the request phrased that way—and would get the report done sooner.

A woman prefers to make herself clear, then give the other person the option of making the decision. This indirect style works perfectly with someone who's playing by the same rules. But people who are not accustomed to indirectness miss the point. They feel manipulated, that something is wanted of them but they don't know what, that they're being asked to play the heavy.

Again, there are cultural difference, but in general, when something is wanted from women, they want to do it, and when something is wanted from men, they want not to do it.

Now, when there's a clear hierarchy, a man will accept that he has to do what the boss says. But when there's indirection, he may well figure, "She wants it by the 8th, but she doesn't really need it then, so this would be a good place to exercise my independence and not do it."

Men and women seem to have almost exactly opposite feelings about when it's OK to boast about their achievements....In public women tend to speak about their achievements in a self-deprecating way....Boys' social groups are large and hierarchical, while girls' are small and egalitarian. So boys are expected to boast in order to establish their place in the group, whereas for girls boasting violates the group's egalitarian ethics. Self-deprecation becomes a ritual way of getting information out without appearing to boast. But men often take women's conventional modesty as a genuine lack of self-confidence.

Many women say they have a hard time getting, and keeping, the floor when they're in predominantly male meetings....Women speak briefly, phrase as questions, speak at a low volume and a high pitch. Men speak at length in a loud, declamatory voice—his message is the same, but the metamessage is different: "This is important."

Boys' experience is to use language to establish their position in a large group—girls' experience is to maintain intimacy.

Women tend to avoid conflict because they see it as much more negative than men do. In general, men see conflict as a necessary and impersonal part of social relations; women tend to take it quite personally.

Even when kids talk, the boys give orders. In Jacqueline Sachs's research....the boys say "Stand there! Don't touch that!" This pattern has been found even in two-year-olds.

Lee A. Lusardi interviewing Deborah Tannen, *Working Woman*, July 1990

Congress Funds Urban Forestry Better in 1991

Three initiatives introduced last year and earlier this year became law, promising to increase the size and quality of the nation's urban and community forests. They include the Forestry Title of the 1990 Farm Bill (S.2830), the Fiscal Year 1991 Interior Appropriations Act (H.R. 5769) and the Small Business Act (H.R. 4123). The three packages of legislation provide the most funds ever allocated to urban forestry.

Tova Spector, *Urban Forests*, January 1991

College Science Classrooms Are Unfriendly Places for Women

Researchers at the University of Michigan have completed a 1987-89 study of the university's undergraduates that analyzes the factors that determined their choice of an area of concentration. The study is based on 420 college seniors' responses to a wide range of questions about what may have influenced their choice of major. Seventy percent of the survey respondents were female.

A key finding of the study, conducted by Jean Manis, Barbara Sloat, and Cinda-Sue Davis, is that the college science classroom is perceived by women as an unfriendly place. Women seem to be more uncomfortable than their male classmates when working in the intensely competitive environment that characterizes many introductory science classes. This unease may contribute to the higher attrition rate among women considering a science major.

The questionnaire also elicited information on high school and college experiences as well as career plans, discriminatory attitudes, influence of parents, impact of other significant relationships, and students' evaluations of their own talents and interests.

The authors offer a set of recommendations....: "develop new courses or incorporate within existing courses more cooperative and interactive modes of learning," and that courses be developed to "link scientific knowledge more closely to important societal issues." In addition, the researchers believe that increasing internship opportunities and research projects available to women would provide the positive role models and practical experiences that can make the critical difference to women students pursuing scientific careers. Finally, the report reiterates the need to recruit more women faculty members and researchers in the sciences.

On Campus with Women (Association of American Colleges) Summer 1990.

Dairy Farm Fights Pollution

Solon and Sally Spencer's dairy farm is located within the city limits of Gresham, Oregon and they've been in operation for 30 years. By 1983, there were apartments, trailer units, and duplexes bordering the dairy pastures. At such close quarters, sometimes it wasn't possible for urban neighbors to enjoy the tranquil country setting without noticing the unpleasant farm odors. The farm was also a potential polluter of a nearby creek. The Spencers turned to the Soil Conservation Service and the Agricultural Stabilization and Conservation Service for assistance. With the cooperation of neighbors and city officials, Spencer was able to install a line from his milking parlor to the city sewer. In addition to structural practices that

Research Biologist

The Intermountain Research Station, USDA Forest Service, is recruiting a Research Biologist to be located at the Forestry Sciences Lab, University of Montana, in Missoula, Montana.

Job responsibilities involve planning and conducting independent research designed to improve ecosystem management in wilderness areas.

Starting salary is $31,116 to $48,481 depending on qualifications and experience.

Qualified individuals should send resume and statement of research interests to

Dr. David Cole
P. O. Box 8089
Missoula, Montana 59807

A job vacancy announcement will be sent to respondents.

USDAFS is an equal opportunity employer.

control runoff and facilitate handling and removal of dairy waste, their plan calls for intensive pasture management to improve yields and further reduce the possibility of erosion and runoff.

Shirley Boothby, Soil and Water Conservation, January-February 1991

Wilderness Funding Up

The FY 1991 budget for wilderness management is $22.7 million, up from $17.4 million in 1990. The greatest priorities at the National level are to provide training to line officers, writing Wilderness Implementation Schedules, and getting more field folks out in the wilderness.

Anne S. Fege, News from the Wilderness Desk, November 30, 1990

NIH Starts a Women's Health Office

The National Institute of Health (NIH) announced in September 1990 the creation of an Office of Research on Women's Health, following criticism of its neglect of women's health concerns, and frequent exclusion of women from research study populations. The creation of the new office was announced at a meeting between officials of NIH and Rep. Patricia Schroeder (D-CO), Sen. Barbara A. Mikulski (D-MD), and Rep. Constance A. Morella (R-MD)....Ruth L. Kirchstein, interim chief of the new office, said scientists proposing to study only men in their research will now have to provide "compelling justification" for not including women. The office will also provide money to fill gaps in scientific knowledge created by previous research that did not include women.

Eileen Nehme, Association for Women in Science *Newsletter,* November/December 1990.

Corps of Engineers Park System

(*continued from page 42*)

years. A physical education instructor from Lewis Clark State College approached us, for example, concerning development of a fitness trail around a couple of the ponds. His class subsequently designed the trail and the Corps then installed the exercise structures associated with it. (More parks, a golf course, a museum, some other developments are being considered by local citizens for adjacent lands which will tie in to the original Corps extended park concept.)

During the past twelve years, numerous organized groups have taken advantage of the bikepaths for a variety of fun runs, bikeathons, skate-athons, and similar activities. Some non-profit organizations have used these events as fund raisers while other groups hold them for the fun of it. Due to the linear nature of the Lewiston Levee Parkway, it is an excellent viewing site for two special valley events each year, the Fourth of July fireworks display and the Christmas Boat Parade. Both events attract thousands of viewers to the levee each year.

Whenever you invite large numbers of people into a park, there are always going to be certain problems that must be dealt with. Any problem that can occur elsewhere in the city or in a city park can also occur on the levees. For this reason, we have park rangers who regularly patrol the bikepaths on bicycle. Their contacts with the public not only provide a means of enforcing regulations, but they also afford the opportunity for positive encounters with visitors. Many times the feedback we receive from the park users is of great help to us in managing the park. During the summer recreation season when more park visitors are on the levees, we contract with the Lewiston Police Department to assist with our enforcement efforts.

The Lewiston Levee Parkway was an experiment in environmental engineering that has served well as a prototype for other developments across the country. The park

designers met the challenge of blending the necessary flood control aspects of a levee system with the pleasurable and esthetic features we look for in a park. Recognizing the success of the levee beautification efforts in Lewiston, and subsequently in other parts of the country, the Corps published a technical report in 1985 entitled *Environmental Features for Streamside Levee Projects.* It is an excellent reference for others desiring to provide for recreation and wildlife habitat enhancement in similar situations.

Phil Hixson is the Corps of Engineers Natural Resources Manager for the Granite-Goose Project on the Snake and Clearwater Rivers in Washington and Idaho. His major responsibilities include operation and maintenance of the Lewiston levees, parks and recreation management, a juvenile fish collection/transport program, and an extensive wildlife habitat mitigation program. He is a 1969 graduate of Fresno State College where he earned a Bachelor's degree in Biology. As a teaching intern in California, he earned an elementary teaching credential and later obtained both secondary and administrative credentials. He was actively involved in an environmental education program for six of his eight years of teaching. He was a seasonal park ranger with the National Park Service at Lava Beds National Monument and at Crater Lake and Kings Canyon-Sequoia National Parks. He began his federal career with the Corps of Engineers on California's Kings River.

Rest Stop along top of levees.

KIOSK

Human Resources/Natural Resources: Diversity for Success is the title of the Midwest Regional Conference, to be held April 23-25, 1991 at the Holiday Inn, Stevens Point, Wisconsin.

In April 1987, the midwest regional conference "Women in Natural Resources: Moving Toward the 90s was held in St. Paul, Minnesota. This conference brought together natural resource professionals from across the country to discuss issues raised by the integration of women into traditional natural resource professions.

Now, four years later, a second midwest leadership conference is planned to address unresolved issues related to the integration of women and people of diverse racial and ethnic backgrounds into natural resource professions.

This conference will be particularly important to administrators, professionals and future leaders of the upper midwest. It will seek to build a broader base of support and understanding, as well as explore some of the opportunities diversity offers the natural resources professions.

General and concurrent sessions will address questions of ethics in the workplace and environmental ethics; leadership and administration issues such as sexual harassment, retention, and managing change; tools for dealing with entrenched systems (conflict management, communication, moving into leadership), and career and family balance.

The conference is sponsored by the University of Wisconsin-Stevens Point College of Natural Resources and Continuing Education and Extension. Co-sponsors include the Wisconsin, Michigan, Minnesota and Iowa Departments of Natural Resources, USDA Forest Service, UW-Madison, and the University of Minnesota.

To receive more information about the conference, call or write: University of Wisconsin-Stevens Point, Continuing Education and Extension, 2100 Main, Stevens Point, Wisconsin 54481 (715-346-3717).

The Institute for Environmental Studies at Louisiana State University in Baton Rouge has an assistantship (starting in the Fall) available for a student wishing to pursue a Master's Degree in Environmental Toxicology. Interested students or mentors should call Dr. Barbara S. Shane, Associate Professor of Toxicology, Institute for Environmental Studies, LSU, Baton Rouge Louisiana 70803 (504-388-4302).

To assist academic departments in their search for women and minority faculty candidates, the Iowa State University Affirmative Action Office has compiled the names of more than 2,500 women and minority persons enrolled in advanced degree programs. More than 100 universities and colleges cooperated in the development of one or more of the four directories. The directories are designed to facilitate early identification of prospective female and minority employees by listing names, addresses, telephone numbers, majors, minors, major professor's address, projected date of graduation, dissertation title, etc. Prices for the directories are: Life Sciences, $15; Education and Professional Fields, $20; Biological Sciences, Physical Sciences, Social Science and the Humanities, $20. Contact Affirmative Action Office, 214 Beardshear, Iowa State University, Ames Iowa 50011.

The 20th Annual Conference of the North American Association for Environmental Education (NAAEE) in cooperation with the Midwest Environmental Education Consortium will be held in Saint Paul September 27 through October 2, 1991. For information contact NAAEE at PO Box 400, Troy, Ohio 45373 (513-698-6493).

Watershed 91 is the conference title for a USDAFS sponsored meeting on stewardship of soil, air, and water resources to be held in Juneau Alaska April 16-17, 1991. Contact Max Copenhagen USFS-LMW, PO Box 21628, Juneau Alaska 99801.

L. Thomas Chancey, a Fort Lauderdale landscape architect and tree preservationist has started TREE BANK, a registry of trees. He matches people who need trees with those who have them to give away. Those who need trees removed from their property call TREE BANK and arrange for the donation. Those who are in need of trees register for what is available and get the added benefit of mature trees—a win-win situation.

The 7th Women and Work Conference will be held April 25-26, 1991 in Arlington Texas. Topics are workforce diversity and workplace diversity. Contact Coordinator Silvia Lesko, University of Texas at Arlington, Human Resources Center, Box 19197, Arlington Texas 76019-0197 (817-273-2581).

Women in Communications, Inc. (WICI) announces the Vanguard Award. Entries may be submitted by an organization, company, or individual, and should reflect activities instituted or underway to assist women on or before April 12, 1991 which is also the due date for entries. Entrants are asked to describe the nature of the organization, the programs/procedures implemented to advance women to positions of equality within the organization, and the results to date. Entry fee costs $100 and should be sent to Laura Rush, WICI, 2101 Wilson Blvd., Suite 417, Arlington Virginia 22201 (703-528-4200).

The International Canada Goose Symposium to be held in Milwaukee April 23-25, 1991 is sponsored by a number of Canadian and U.S. agencies and citizen councils. Contact Donald H. Rusch, 226 Russell Labs, University of Wisconsin, Madison, Wisconsin 53706 (608-263-6882).

The American Fisheries Society convention will be held in

San Antonio September 9-11, 1991. The theme is Habitat: A Place for Fish, A Place for Fishing, A Place for Fisheries. Contact AFS 5410 Grosvenor Lane, Suite 110, Bethesda, Maryland 20814-2199.

A new National Park and Wilderness Fire Management course designed for managers and planners will be held April 29-May 3, 1991 at the National Advanced Resource Technology Center in Marana Arizona. For further information call 202-447-2422.

The Fourth North American Symposium on Society and Resource Management is scheduled to meet in Madison on May 17-20, 1992. It will focus on the integration of social and biological sciences as they together address natural resource and environmental issues. Contact Donald R. Field, Program Chair, School of Natural Resources, 1450 Linden Drive, Madison Wisconsin 53706.

The Society of American Foresters Convention will be held in San Francisco August 4-7, 1991 and has a theme Pacific Rim Forestry: Bridging the World. For information contact Richard Reid at SAF 5400 Grosvenor Lane, Bethesda Maryland 20814 (301-897-8720).

The Rocky Mountain Association of Environmental Professionals will meet in Vail Colorado May 29-31, 1991. Sessions focus on Toxic Waste Management and Environmental Remediation. Contact them at PO Box 46171, Denver Colorado 80201 or call Don Van Buskirk 505-884-0950.

The Oregon Department of Forestry has a new free brochure designed to help educate the public on the hazards of wildfire to homes in the rural/forest interface. The Department also has a video program depicting the Awbrey Hall fire ($20) which destroyed 22 homes on the outskirts of Bend. For a copy of either, contact the Public Affairs Office, 2600 State St., Salem, Oregon 97310 (503-378-2562).

The National Conference on the Economic Value of Wilderness gathers in Jackson Wyoming May 9-11, 1991. Co-sponsors are SAF, Wilderness Society, BLM, USDAFS and others. Contact Claire Payne, Forestry Sciences Lab USDAFS, Carlton St., Athens, Georgia 30602.

The American Horticultural Society meets in Birmingham on April 17-20, 1991. Contact Pat Connaughton or Liz Smith, AHS, 7931 E. Boulevard Drive, Alexandria, Virginia 22308 (800-777-7931).

The American Association of Botanical Gardens and Arboreta Annual Meeting will be held June 19-23, 1991 in the Minnesota Landscape Arboretum in Minneapolis. Contact Susan H. Lathrop, the Association's Executive Director, 786 Church Rd., Wayne Pennsylvania 19087 (215-688-1120).

The International Society of Arboriculture will have their annual conference and trade show August 11-14, 1991 in Philadelphia. For information contact Mark Herriott, ISA, Box 908, Urbana, Illinois 61801 (217-328-2032).

The Asian Institute of Technology in Bangkok, Thailand offers four-month teaching and research positions to faculty seeking sabbatical opportunities. Stipends of up to $3,000 are available. Contact the Coordinator, Natural Resources Program, Asian Institute of Technology, GPO 2754, Bangkok 10501, THAILAND (Phone 66 2-529-0100).

The World Fisheries Congress meets in Athens, Greece April 14-19, 1991. Contact the American Fisheries Society, 5410 Grosvenor Lane, Bethesda, Maryland 20814 for more information.

Washington State University and the University of Idaho will co-sponsor a NATO Advanced Study Institute for postdoctoral scientists June 23 to July 5, 1991. For more information, contact Gary Thorgaard, Department of Zoology, WSU, Pullman, Washington 99164-4220 (509-335-7438).

The Return of the Forest: The 10th Anniversary of the Eruption, Mount St. Helens is a special educational poster produced by the Weyerhaeuser Co. It is 22 x 37 inches and full color—and free to teachers in Washington and Oregon from the company. For others, Project Learning Tree is charging $2.50 payable to American Forest Foundation, 1250 Connecticut Avenue NW, Suite 320, Washington DC 20036.

The American Forestry Association's National Urban Forest conference will be held November 13-17, 1990 in Los Angeles. For further information, contact AFA organizers at PO Box 2000, Washington, DC 20013.

The National Arbor Day Foundation is beginning a new Arbor Day Institute. Short courses on arboriculture, tree hazards, and building around trees without killing them are among the topics that will inaugurate the first training session. Dr. James Fazio is the new Director of the Institute. To get a complete course schedule contact them at PO Box 81415, Lincoln Nebraska 68501-1415 (402-474-5655).

The Social Ecology Conference June 7-9, 1991in Marine on St. Croix, Minnesota has a number of topics focusing on women, political action, community responses, and theory. For information contact Kelly Cain, University of Wisconsin, 302 Agricultural Sciences Bldg., River Falls, Wisconsin 54022 (715-425-3729).

Bureau of Land Management

Supervisory Forester (GS-460-11)

Closes May 17, 1991

This is a career-conditional (permanent), full time position located at Tillamook, Oregon.

Durties: Perform as the Forest Management Specialist for the Tillamook Resource Area with direct responsibility for the overall development, implementation, and administration of the Area's timber management program.

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Salary: $31,116 per annum.

To obtain a copy of the vacancy announcement and required forms, call 503-280-7235 (refer to CVA-91-10).

Submit Applications to:

Bureau of Land Management, Branch of Personnel Management, PO Box 2965, Portland, Oregon 97208.

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Women in Natural Resources
Quarterly

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To Submit Full Length Manuscripts: Because of the variety of professions represented, the journal solicits full length manuscripts in the style dictated by the leading journal in your own profession, or the *Chicago Manual of Style*. Clarification of style is the prerogative of the editors. Manuscripts should be sent on a Mac disk formatted in Microsoft Word, (unless arrangements have been made with the editor), but should include hard copies as well. All graphs should be camera-ready. Average manuscript length is 10 to 20 pages (space and a half). Include non-returnable black and white photos (action shots, please), and a short biographical sketch similar to those included in this issue.

Women in Natural Resources will provide letters confirming refereeing as needed.

To Submit Short Department Items: Copies or originals with author, source, date, and submittee are all that is required.

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