

*women in*

Vol. 10, No. 4 June 1989

# NATURAL RESOURCES

**In the Beginning...  
There was a Need  
Early Nurturers for WiNR**

**Looking to the Future**  
Planning Expert Systems  
Improved Funds for Fisheries  
White Pelicans  
A Butterfly Gardener  
Gender in Communication  
Risk Recreation for the Elderly

**Special Tenth  
Anniversary Issue**

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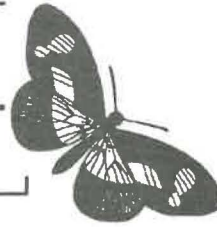
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*Cover photo of Leslie A.C. Weldon by Geoffrey J. Sutton.  
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# QUERY



Each issue, Query Editor Florence Stump asks the same question of several readers chosen from WINR's subscription list. Here are their replies to the question:

**What memories do you have of the beginnings of WINR ten years ago. Has it met your expectations?**



**Susan Odell**

**H**eraclitus said, "Nothing is permanent but change." Just look what we've done in ten years! At first glance, so much has changed from the production of a simple photocopied newsletter, *Women in Forestry*. *Women in Natural Resources* is now a polished journal, with artwork, photo contests, advertisers, and extremely diverse contributors and readers. The underlying goal, however, of the original effort has remained con-

stant: to build a communication and support network. The network was designed to counteract the feelings of isolation and powerlessness that many women in the natural resources management field were feeling in the 70s. Through improved information and communication, both women and men now benefit from the growth of the original idea conceived in the Forest Service workshop at Portland, Oregon in October 1979.

Just like a baby conceived by loving parents, those of us in the original network (nuclear family) felt great pride and affection for our (brain) child. In the short span

of three days, we built strong feelings for each other accompanied by heartfelt commitments to nurture this new effort. Although we named this newcomer *Women in Forestry*, we had every intention to reach beyond the single profession into the practice of forest management and to people associated broadly with natural resources. Within a few short weeks, we had extended our family from 35 to 50 for the mailing of the first issue. And now, of course, we continue to discover more long lost relatives as time progresses.

As one of the sisters, I contributed to the support of our brain child by writing articles, doing book reviews, and finding choice bits of information on women's issues to share. Many others did the same, and we managed to produce a newsletter that was the first of its kind—one that supplied nurturing to the women resource managers and others who became part of the family.

At one point, we almost lost the newsletter when the original editor, Linda Donoghue of the North Central Research Station found she couldn't care for our growing child by herself any longer. So Aunt Dixie Ehrenreich and Aunt Molly Stock at the University of Idaho adopted the newsletter and got it through its adolescence. They, and later, Aunt Lei Bammel at West Virginia University, molded it into a journal with human resource concerns highlighted. And just like good parents and caring relatives, we all helped our offspring into adulthood with a name change—*Women in Natural Resources*—to better describe the family it belongs to: Natural Resource Managers.

There is another part to this story and that is, as the newsletter grew, so did we—the women who first extended ourselves to form the network. We continued to extend ourselves in our professional and private lives. Many of us are no longer in the same Region of the Forest Service, few are in the same job. Some of us have lived through changes in our own family structures and personal relationships. One of the original objectives of the newsletter was to provide

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a forum featuring these changes in a professional's life that no one else furnished—WiNR still does just that. Where else can we find a publication that provides technical, cultural, and personal support for women in the resource management field?

As we grew, our needs changed and the journal has kept pace with us. We are more polished, more confident of our place in the world. We have learned to integrate our ideas and values with those of people from other backgrounds, with men as well as women. We continue to care about the human resources at our workplaces as well as the natural resources. We've become change agents, yet continue to value our roots. This issue of WiNR celebrating its 10th anniversary underlines the fact that the journal has supported us in these momentous changes and this gathering of testimony indicates that we continue to support our child.

The only advice I offer to the current WiNR readers and staff is to be open to the needs of others and to continue to provide support for those needs. If the original group had not been willing to share their concerns and dreams, listen to each other, then take action based on felt needs, WiNR would not exist today.

We must not hold too tightly to our individual dreams, but use the forum WiNR provides to share and renew our vision of what our family can achieve. There are women still who feel isolated and "outside" the traditional culture so those of us who have assisted our agencies, universities, or businesses make the culture change to incorporate our skills and talents must not forget what we went through just a few short years ago.

WiNR is not the only network or source of support, but it is a significant link to distant relatives. It is a healthy, productive member of my family, and to all of my relatives who nurture it—as contributors and editors—I say thank you.

*Susan Odell recently became a Staff Assistant in Recreation, Chief of the Forest Service Office, Washington DC. She was (for five years) District Ranger on the Big Bear Ranger District, San Bernardino National Forest. Prior to that, Odell was Ranger on the Mariposa District (four years), Sierra National Forest—the second woman to become a District Ranger. In addition to those assignments, she has been (in her 16 years with the Forest Service), a Public Information Specialist, a Pre-sale Forester, and a Recreation/Timber Technician in Oregon and Virginia.*

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### Andrea Warner

As I was reading through my collection of material to do this Query reply, a wave of nostalgia swept over me. I have all the first *Women in Forestry* Newsletters, the listing of the women who attended that "seed" workshop in October 1979, and the mailing list from the first mailout of the Newsletter. So much has changed in the past 10 years—for us as individuals and the Forest Service organization. Many memories surfaced and a feeling of accomplishment and loss. Accomplishment because some of those women are still in the Forest Service in positions with decision-making responsibilities. They continued their career in spite of some difficult years as the Forest Service struggled with the acceptance of "female foresters." The loss comes from knowing that some of these women chose to quit rather than persevere. There is still another group: some of the names from that list sound faintly familiar and I wonder where some of these women are and what they are doing.

#### The Catalyst and Bootlegging

In the late 70s, Linda Donoghue was conducting extensive research on organ-

izational barriers to professional women as part of her Ph.D. program. In addition to working on her Ph.D., Linda was also a research forester for the North Central Station in East Lansing, Michigan. She was basically interested in knowing whether her research findings were reflected in the experiences of professional women in the Forest Service. She focused on foresters since we had very few women professionals in other disciplines during this time period. Her concern was that in the Forest Service's emphasis to recruit and hire minorities and women, the organization might be inadvertently neglecting the needs of women in non-traditional jobs who were already employees.

Somehow Linda got my name as a contact and we discussed these issues. At that time, I was a Civil Rights Specialist at the Pacific Northwest Experiment Station in Portland and the Station's Federal Women's Program Manager. Mary Albertson, who was a Civil Rights Specialist and the Regional Federal Women's Program Manager for the Pacific Northwest Region (Region 6) discussed with me how to set up a meeting to deal with Linda's ideas. We knew we would run into some roadblocks. Mary knew that we couldn't have a separate conference because these

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Forest Service meetings have to be scheduled and approved on a Regional Training Calendar. A management conference was already scheduled to be held in Portland, October 4-7, 1979, co-sponsored by the Institute for Professional and Managerial Women and Portland State University. Linda was scheduled to attend this conference, and Mary decided that the only way we would get this meeting together was to tie it in to this conference—or as I term it, bootleg it.

#### The Attendees

There were 38 attendees, primarily foresters, from Region 6 and the Pacific Northwest Station. The age-spread was interesting: except for five of us (two resource professionals, three adminis-

trators), everyone was 30 or younger. Our meeting objectives were to 1) define and discuss barriers faced by women in professional positions, 2) propose solutions, and 3) recommend formal and informal outlets for this information. A lot was covered in a short time because this was the first time a meeting to discuss these issues had been held and everyone had much to contribute. It was evident at that meeting that we had a need to share information and establish some type of support network. That was how the *Women in Forestry* newsletter and network began. Linda solicited articles from some of the 38 attendees, then compiled and photocopied the first newsletter in December 1979. Mary and I distributed it.

#### Control of the Newsletter

We weren't really prepared for the events that occurred after our first newsletter. Some Forest Supervisors wanted it officially sanctioned and distributed to all Forest Service employees in Region 6. This meant that the content of the newsletter would suffer due to stringent Forest Service editorial rules and regulations. Articles dealing with sensitive issues could be censored, and we would basically lose control. This possibility was just something we were not willing to consider. We decided to make it a private publication supported by yearly subscriptions. This would leave us in control of the content and design. We explained that in our second

newsletter (April 1980) and from there we became a quarterly publication with a \$10 subscription fee.

#### Newsletter Content

From the beginning we carried statistics of some kind to give information on the overall status of women in the Forest Service. For example, in the first issue we noted that there were 5,682 foresters, of whom 154 were women for 2.7 percent—only 11 of those were above GS-9. Women technicians figured at 6.5 percent. For comparison, currently there are 5,171 foresters, 597 are women at 12 percent, and 12 percent of technicians are women.

We always had a Myths and Facts Section. One of our most interesting and irritating issues had to do with a safety tip in the Forest Service Health and Safety Code Handbook: "Women should avoid traveling into grizzly country during their menstrual period." Needless to say this caused an uproar from women who worked in bear country all the time—they said it was ridiculous. Linda and I did a lot of investigating of sources to see where this came from, researched data and articles to check on the statement's validity. We concluded that it was based on inconclusive information—even though a number of people believed it to be true and still do. (I just checked and I am appalled....that sentence is still in there. It looks to me like this project needs to be resurrected.)

Affirmative action issues were always

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at the forefront. Another of the persistent myths we addressed was "women only get jobs because they are women, not because they are qualified." And, of course, these comments revealed only a tip of the iceberg regarding attitudes toward women moving into non-traditional fields. It is very frustrating, however, that after 10 years, we are still dealing with this myth.

In the Summer 1980 issue, we recognized Wendy Milner Herrett as the first woman District Ranger, who was in Region 2, and announced that Susan Odell was becoming the second one in Region 6. What a breakthrough—another women District Ranger! For many of us, this was really significant. The feeling grew that eventually, we might even have a woman Forest Supervisor! Now of course, we have many unit managers (58), as well as a few Deputy Forest Supervisors, and three Forest Supervisors. I realize I am not talking big numbers—I'm talking breakthroughs and permanent change.

Throughout the early days of the newsletter we also dealt with sexual harassment and maternity leave—they received the most focus, since they seemed more critical. The content of those discussions is still the same as today, but the biggest difference is that these are now issues on which the Forest Service is also vocal. The only issues we weren't dealing with then that we are dealing with now, it seems to me, are day care and dual career movement. At that time, the majority of women were single.

#### Transitions

Our first bootlegged meeting was the foundation for the big meeting that brought some 100 women professionals together from Region 6 and the Pacific Northwest Station in November 1980. Retention of women foresters was just beginning to concern some managers in R-6, so Timber Management staff sponsored the meeting. With key staff from Timber, Mary and I designed a three-day workshop to address the barriers. Four women attendees wrote a lengthy report on barriers, solutions, and actions, and of course, we used the newsletter as the vehicle to spread the results of this groundbreaking workshop.

All of us involved with the newsletter were enormously enthusiastic about what it was doing to enhance communication between women with similar concerns. It was so fulfilling to see *Women in Forestry*

grow and its membership expand. This expansion also caused difficulties. Even though we paid to have the copying and collating done, Linda handled everything else: subscriptions, mailing, retyping articles, arranging printing. She continued to do it until it became impossible for one person to handle. The last issue of *Women in Forestry Newsletter* was Summer 1982.

Fortunately, Dixie Ehrenreich and Molly Stock from the University of Idaho took the torch from Linda. With the support of the College of Forestry, Wildlife, and Range Sciences, and the Laboratory of Anthropology, they turned it into a quarterly journal that we are all now familiar with. In appearance and format, it doesn't look anything like the photocopied originals. The name has changed—but not too dramatically—and the journal has a professional look and format now.

The spirit that *Women in Forestry* was founded on is still evident in the content of *Women in Natural Resources*. The transition was a good one. I feel privileged to have worked with Linda and Mary and the many other outstanding women "in the beginning."

*Andrea Warner is Supervisory Classification and Staffing Specialist of the Alaska Region, Juneau. She is also the Regional Federal Women's Program Manager. Warner has been in the Forest Service for 20 years: eight in Alaska, at the Pacific Northwest Research Station, Portland (six years), the Region 6 Office for one year, and the Supervisor's Office on the Six Rivers National Forest in Eureka, California for six years where she began in 1969. During that time, she interested herself in the dynamics and conflicts created in the Forest Service due to the emergence of women into non-traditional positions. Her husband John is Regional Logging Specialist.*

#### Mary H. Albertson

The first issue of *Women in Forestry*—the original title of the periodical now entitled *Women in Natural Resources*—was published in December 1979 by my office. After the first couple of issues, Linda Donoghue, of the North Central Experiment Station, agreed to publish it—which she continued to do for two years.

*Women in Forestry* was an outgrowth of a workshop for Women Foresters held in Portland, Oregon, in conjunction with the Pacific Northwest Conference for Professional and Managerial Women, held in

October 1979. Since most, if not all, of the women at the workshop were Forest Service employees, the publication's objective was "to build a communication and support network among career oriented women in the Forest Service..." Articles included a wide variety of topics, however, on both human and natural resources. The publication of this magazine was an early attempt to build and strengthen networks among women in the Forest Service.

I am pleased with the publication's growth over the last decade, and its expansion to encompass topics in all fields of natural resources and related social sciences. I believe the goals have not significantly changed, because it continues to address the needs for communication and support among women, not only in the Forest Service, but for all women involved in natural and related resources. I applaud this broadening as a desired evolution of the early issues.



*Mary H. Albertson is Personnel Management Specialist (Regional Work Force Planning/Recruitment Manager), for the Pacific Northwest Region of the Forest Service. Her responsibilities include implementing and managing the Region's work force planning process. Albertson has been with the Forest Service since 1972, was the first full-time Forest Service Federal Women's Program Manager. She is a Civil Rights Specialist and has been assigned several times to the Washington Office. She graduated from San Jose State University with a BA in Social Sciences and Secondary Teaching Credentials.*



*The Forest Service, allied with citizen groups, is pouring effort and money into fisheries programs on the National Forests and Grasslands in an ambitious new program. One manager already sees improvements.*

## National Forest Fisheries Resource

Leslie A.C. Weldon

Sport fishing is the second most popular outdoor activity in America. In 1986, sport fishing was tied with walking in popularity and was exceeded only by swimming. Sixty million anglers take part in some type of sport fishing each year. In 1985, these folks spent nearly a billion visitor days and \$28 billion pursuing their sport. On National Forest lands, current fishing use has been estimated at 46.5 million angler days and valued at \$1.21 billion each year. In addition to recreational uses, the yearly harvest of salmon and steelhead spawned and reared on National Forests is over 118 million pounds, with a commercial value of \$123 million.

The National Forests and Grasslands, totalling 191 million acres, hold 128,000 miles of rivers and streams, 2.2 million acres of lakes, ponds and reservoirs, and 16,500 miles of coastal shoreline. Fifty percent of trout habitat in the United States lies on National Forest lands—plus 50 percent of the spawning and rearing habitat for salmon and steelhead—in the lower 48 States. These waters provide a tremendous yearly harvest for sport, commercial, and Native American subsistence fishing. Game fish, including salmon, trout, catfish, pike, bass, sunfish, as well as hundreds of non-game fish species, make their homes throughout the National Forests. Within both sport and commercial fisheries, however, the capability exists to increase productivity, fishing opportunities, and commercial harvest through aquatic habitat protection, restoration, access development and effective habitat improvements.

The impact of these statistics and information, combined with a forecast of fishing demand doubling over the next fifty years, prompted National Forest fisheries managers to take a close look at the National Forest fisheries program. Realizing the opportunity and potential available for meeting fisheries resource demands on the National Forests,

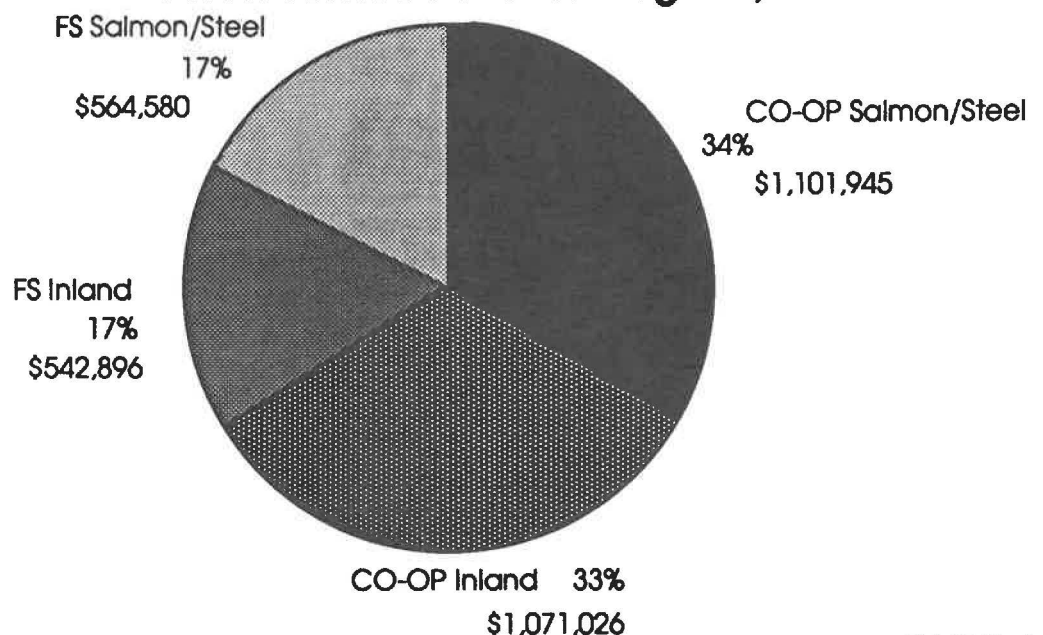
fisheries managers, with the input of interest groups and State fisheries representatives, developed what the Forest Service calls the Fisheries Program Action Plan entitled, "Rise To The Future" to fully integrate fish habitat management into the overall multiple-use goals at all organizational levels of the National Forest System. Its goal is simple at the same time—to protect and enhance fisheries resources and to heighten awareness of the importance of this resource within the Forest Service and to the American public.

On the National Forests and Grasslands, the fish habitat management goals are to:

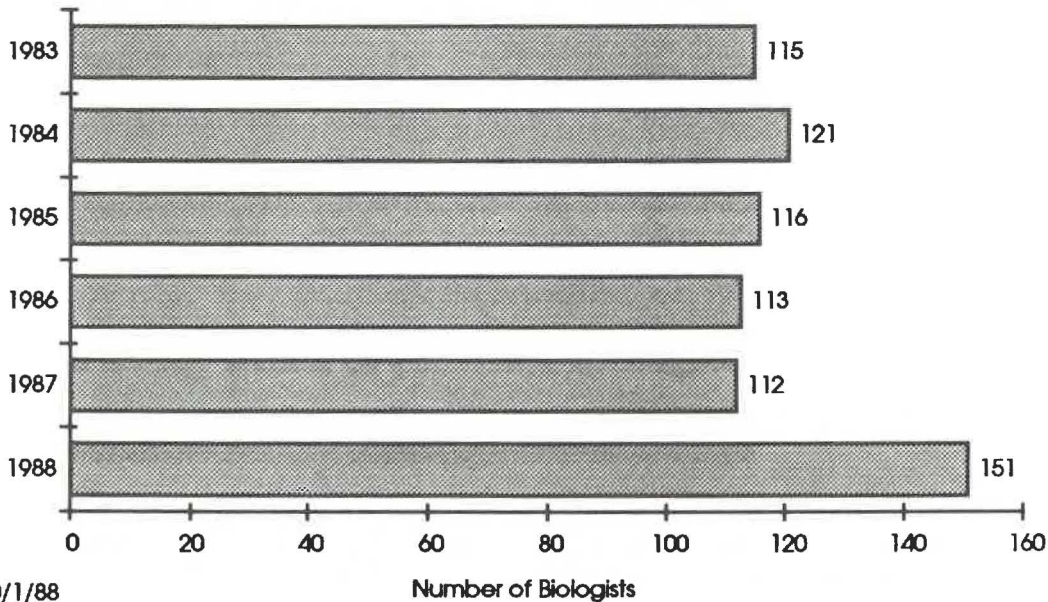
- ❖ Provide opportunities for the public to use and enjoy the fisheries.
- ❖ Maintain and enhance fish habitat capability.
- ❖ Improve communication, coordination, planning and involvement with all who have an interest in management of the fishery resources.
- ❖ Improve program effectiveness in meeting responsibilities for fish habitat management.

The objectives of the action plan are divided into five gen-

### Challenge Cost-Share Contributions to the Forest Service Fisheries Program, FY 1988



## Staffing Trend of Fisheries Biologists



10/1/88

eral categories: Program Identification, Technical Capabilities, Cooperation and Public Information, Economic Valuation, and Fishery Personnel Development.

### Program Identification

Recommended actions under Program Identification are what one would expect. The Forest Service commits to increasing the profile of and commitment to the fisheries program by increasing awareness of the national goals of protecting, restoring, and improving fish habitat and increasing fishing opportunities; ensuring that sport and commercial fishery objectives are well defined; using state-of-the-art procedures for habitat inventory, evaluation and monitoring; and strengthening integration of fisheries management with other land management activities. Fisheries managers also must translate their program needs into dollars from the annual budgets, while developing workload analysis procedures and identifying research needs. Each of the nine Forest Service Regions has developed regional fisheries action plans. Forest-level fisheries action plans are currently being completed.

### Technical Capabilities

Effective technologies are absolutely vital to assess and monitor the effects of various land use and habitat improvement activities on riparian and aquatic resources—and to further define fish habitat relationships.

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### Cooperation and Public Information

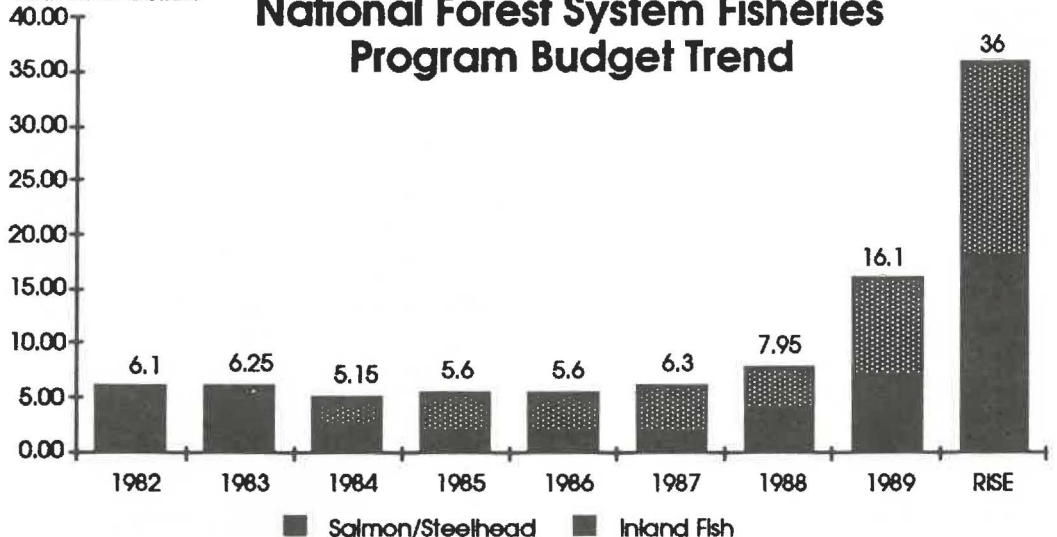
Other agencies, interest groups, and the general public fully understand our effort and are given the opportunity to involve themselves in program development and execution. This includes improving inter-agency coordination and providing a better understanding of the program by non-fisheries personnel through the various forms of media. Brochures, slide and video presentations, and traveling exhibits that describe the Forest Service Fisheries program have been developed as aids to public understanding. In

addition, formal partnerships are in place, with Trout Unlimited, The Federation of Fly Fishers, and the Sport Fishing Institute for maintaining and enhancing productivity of fish habitats on the National Forests. This cooperative management ranges from on-the-ground participation in habitat improvement projects by group volunteers, to donations of funds, to sponsorship of research projects—all of which provides direct benefits to the resource and to the public.

The Challenge-Cost Share program is another bright illustration of the success of Forest Service partnerships. In 1988, each dollar allocated by Congress for cooperative fish habitat improvement work, was matched by almost \$2.00 in resources by conservation groups, fishing clubs, state and federal agencies, private industry, and individuals. This combined campaign resulted in completion of close to 1900 acres and 3700 structures for fish habitat improvements, in addition to those

Millions of dollars

## National Forest System Fisheries Program Budget Trend



82-89 = Congressional Appropriation

RISE = Full Implementation of Rise to the Future



completed with regular program investment dollars. The 1989 Challenge Cost-Share program has already out-paced last year's program and the 1990 program will be even larger.

### Fisheries Economic Value

Economic Values are assigned by using the most modern fisheries use assessment procedures to estimate fisheries resource values. These values are used in decision making processes and determining future demand. This objective involves close coordination with state fisheries agencies, and with the Sport Fishing Institute, which represents the sport fishing industry and sport anglers.

### Fisheries Personnel Development

Fisheries programs need the most highly qualified staff available—and then the agency should commit to provide training throughout their careers. Training programs involve keeping researchers and managers knowledgeable in the most current concepts in fisheries management, strengthening leadership, communication and managerial skills, and increasing competitiveness for interdisciplinary positions. An important component of this action item is to increase fisheries biologist staffing to match program needs on Forests and Ranger Districts. The agency is beginning that effort: in October, 1988, some 151 biologists were on board while there are currently over 170. This number is expected to grow to over 200 by the end of 1989.

A continuing education program was implemented in 1987 in cooperation with several universities including the University of Idaho, Oregon State, Colorado State, VPI, and Yale, to provide further training for biologists in professional leadership, program management, and resource policy. These continuing education programs are available to all biologists within the Forest Service to improve their capabilities. Fisheries biologists, furthermore, are encouraged to pursue successful career paths in staff positions and also in line manager positions. As a result, in 1988, the number of Fisheries Biologists in District Ranger positions increased from one to four.

Accompanying our personnel development activities is the Forest Service's strong parallel commitment to workforce diversity and equal employment opportunities. The wildlife and fisheries biologist workforce is already among the most diverse in the agency.

### A Positive Future

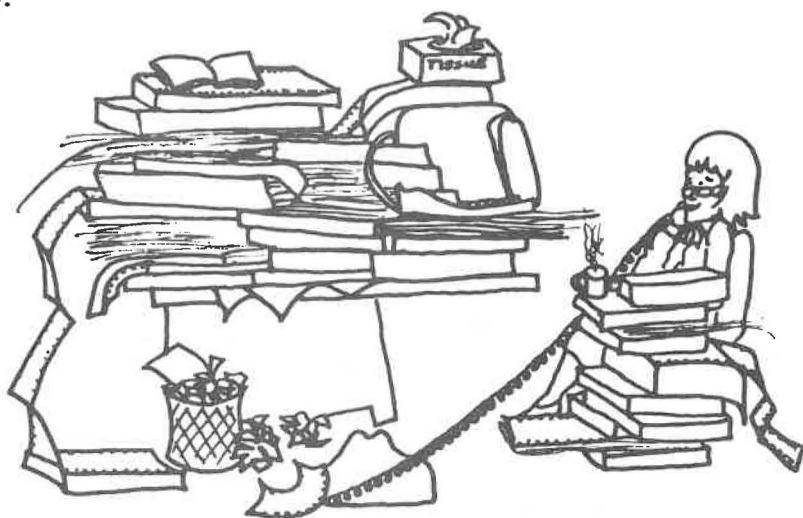
A program as ambitious as "Rise to the Future" can expect to be received with some initial skepticism within the organization and by interest groups. During its first year of implementation, response has been overwhelmingly positive, but concerns have arisen about the Forest Service's ability to back up its intentions with funds for staffing, program investments,—and getting the word out. Obtaining an increased base level of funding for the inland and anadromous fisheries programs has been the highest priority of national program managers.

In 1989, the Fisheries Program experienced a substantial increase in base level funding, the effects of which helped sustain progress in "Rise to the Future" at all levels—most importantly the District and Forest levels—thanks to viable interest group support and better program identification. Our partners, the Sport Fishing Institute, Trout Unlimited, Federation of Fly Fishers, and the American Fisheries Society, not only add depth to our accomplishments, they monitor and evaluate our progress with "Rise to the Future," and recommend needed program adjustments and improvements. Through the eyes of local communities, the quality of leadership and condition of the resource are most visible at these two levels. It is here that the Forest Service directly affects fisheries resources and it is here that we have the best opportunity to influence public response.

The success of "Rise to the Future" will only be as sweet as our success in caring for those thousands of river miles and millions of acres of lakes on the National Forests. Combined, of course, with our success in meeting the needs of fishing Americans.

*Leslie A.C. Weldon is an interdisciplinary fisheries biologist with the Wildlife and Fisheries Staff of the Forest Service in Washington D.C., providing guidance to the National Fisheries program management. She is currently acting as National Wildlife Program Manager. Her previous position was that of Fisheries and Wildlife Biologist on the North Bend and Skykomish Ranger Districts of the Mt. Baker-Snoqualmie National Forest. Her BS is in Biology (1983) from VPI.*

Copies of the National Fisheries Action Plan and Progress Report are available from: USDA Forest Service, Wildlife and Fisheries, P.O. Box 96090, Washington, D.C. 20090-6090



I'm NOT FEELING WELL TODAY. I THINK I CAUGHT A VIRUS FROM MY COMPUTER.

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*In expert system development, the final user of the program is generally not a computer specialist. Builders of these systems, in addition, must use interpersonal communication skills to extract knowledge from experts. A pioneer researcher helps planners think a project through.*

## Planning Expert System Projects

Molly Stock

**A**lthough there are numerous parallels between traditional computer programming and expert system development, there are also some important differences that alter how a project is designed. In resource management, lack of awareness of some of these critical differences, in part a result of the relative newness of the technology, has led to inconsistent application of criteria by which project plans are developed and judged. Without established criteria, efforts to systematically plan projects and to integrate them into a work unit description tend to be ad hoc. The projects themselves may be poorly designed or overly ambitious. Some signs of poorly designed and potentially unsuccessful project plans include over-emphasis on programming activities, poorly identified users, and insufficient development of knowledge acquisition strategies. A checklist for project planning is proposed based on some general attributes of successful projects. These include choice of a suitable subject area, clearly identified project goals, inclusion of system users in project design, appropriate knowledge acquisition strategies, and incremental project development (including a prototype). The checklist covers project justification, goal specification, development of a user profile, task analysis (with and without the expert system), development of system specifications (including the user interface), knowledge acquisition, prototype specifications, and delivery (including technology transfer). The checklist can serve as the basis for a set of guidelines that could be used by knowledge engineers, project managers, and agencies to improve the quality of expert system projects for natural resource management and agriculture.

Expert systems is one of the fastest growing computer technologies in the world today. Enormous amounts of money, time, and human resources are being invested in efforts to learn about expert systems and to apply this knowledge to specific problems in industry, government, and academia. Natural resource managers and agriculturists are increasingly involved in such efforts. Expert systems have been developed for pest management (Logan 1988, Saunders et al. 1987, Stone et al. 1986), fire control (Kourtz 1987), weather forecasting (Moninger and Dyer 1988), and silviculture (Rauscher and Cooney 1986, Schmoldt and Martin 1986), to name but a few.

Although there are numerous parallels between expert system development and more traditional computer programming, there are also some important differences. In traditional software engineering and computer modeling, programs are devel-

oped by computer experts, and the resulting programs are run by these same people or by people they spend considerable time training to run the systems. Even software developed for wide distribution, such as word-processing programs, requires of its users specialized training or existing familiarity with the computer. In expert system development, the final user of the program is generally not a computer specialist. These users often are not able to envision clearly the final product at the beginning of the project. System builders (called knowledge engineers when they build expert systems) commonly do not serve as the source of expert knowledge built into the program, and they must have or acquire specialized interpersonal communication skills to facilitate acquisition of knowledge from experts and to understand the unique needs of the system users. These differences alter how a project is designed.

In areas such as natural resource management and agriculture, lack of awareness of some of these critical differences, in part resulting from the fact that involvement in artificial intelligence (AI) and expert systems at most institutions is relatively new, has led to inconsistent application of criteria by which project plans are developed and judged. There seems to be little general agreement among researchers, administrators, and funding agencies as to how one measures the success of an expert system project and how this goal can be translated into a coherent project proposal. Without established criteria, the efforts of administrators to systematically plan expert system projects and to integrate them into the overall work unit description tend to be ad hoc. System developers may have similar difficulties, undertaking projects that are poorly designed or overly ambitious. As a result, the quality of projects and products varies greatly from person to person and place to place.

This paper presents some criteria for planning expert system projects. I hope that it will serve to stimulate discussion and that, from it, a set of guidelines can be developed that will be used by knowledge engineers, project managers, and agencies to improve the quality of expert system projects for natural resource management and agriculture.

### Goals of an Expert System Project

Expert systems are typically defined as computer programs that mimic the problem-solving behavior of human experts. Correspondingly, the goal of many expert system projects is an expert system that performs a problem-solving task as well as a

**Table 1. Checklist for planning expert system projects.**

**Justification for the project:**

- Need for the expertise
- Potential users
- Suitability for heuristic (AI) programming
- Economic or social return on investment
- Specific project goals

**User profile:**

- Description
- Number
- Information needs
- Common background/training/skills, if any
- Computer experience, if any
- Resources (hardware and software available or money to buy them, if necessary)

**Task profile:**

- Present task environment
  - Types and amount of information processed
  - Frequency, regularity, and location of task
  - Duration/intensity of task
- Task modified with expert system
  - Compatibility of expert system to users' work environment
  - Frequency, regularity, and location of system use
  - Projected alternations of workload, physical environment, etc.

**System specifications:**

- Development hardware/software
  - Special features that suit the subject area
  - Possible alternatives
- Delivery hardware/software--suitability to needs and resources of users
- User interface (based on user profile above)
  - Questioning strategies
  - Use of technical terms
  - Screen appearance
  - Explanation--rationale, level, frequency, format
  - Output
    - Form of decision presented to user
    - Format of printed document, if any
- System testing

**Knowledge acquisition:**

- Justification for choice of expert
- Specific characteristics of expert and subject domain
- Logistic arrangements--management cooperation, meeting place, frequency, etc.
- Procedures to be used to elicit knowledge
  - Initial interview procedures
  - Later

**Prototype specifications:**

- Scope and performance criteria
- Justification of prototype specification relative to user needs
- Demonstration and evaluation
- Timing
- People
- Locations
- Aspects to be re-evaluated at this stage

**Delivery specifications:**

- Number of systems to be delivered, location
- Technology transfer
  - Demonstrations and trials planned
  - Interpersonal and media communications
  - Training opportunities

human expert. Many system builders work almost entirely with the expert or experts, and consider their project a success if the recommendations made by the computer program match those that would be given by a human expert under the same circumstances. A large body of literature has accumulated to help researchers evaluate system performance according to this standard (e.g., Geissman and Schultz 1988, O'Keefe et al. 1987).

Problems may arise, however, because this goal does not include some elements critical to the success of most projects. An expert system is a user-machine system. Its success cannot be measured solely by the success of what one half of the system does. How well the system fulfills the users' needs and requirements is as important as how correct its recommendations

are. Thus, another measure of a project's success—one that may be considered very important by a funding agency or project management—is whether the system is actually used in the way that it was envisioned to be used by the project planners. Because expert systems are not typically built for use by the experts themselves, system development requires additional activities involving users to be built into the project plan at the outset. These additional activities cannot simply be tacked onto the end of the plan.

To gain support for a project, researchers who may be interested only in developing a program to the expert-performance stage may add a goal of user acceptance to their project plan. Such projects are likely to fail the second measure of success if potential users of the system remain ill-defined in the project description and during system development. In such cases, the program is turned over to its supporters and/or to potential users when system performance matches expert performance, but those users have not been involved in project design, and there is usually no systematic follow-up to determine if the system is being used by them. This approach produces an unfocused project design and, ultimately, disappointment among those supporting or managing the effort.

**Elements of the Project Plan**

Because the field of expert system applications in areas like natural resource management is new and exploratory, the elements of successful projects can vary as much as the ingenuity and creativity of their human builders. Nevertheless, if a project's goal is an application—that is, a program that will be

used in place of a human expert or experts under well-defined circumstances—and if the project is not a very small one, a number of items should be addressed in the project plan. Table 1 is proposed as a checklist for project planning. It is based on some general attributes of successful projects. The most important of these are: 1) choice of a suitable subject area, 2) clearly defined project goals, 3) identification and inclusion of system users in project design, 4) appropriate knowledge acquisition strategies, and 5) incremental project development (including a prototype). All of these attributes and all of the items listed in the checklist need not be included in every project plan. However, all should be carefully considered.

### **Project Justification**

As with more conventional programming activities, topics chosen by agencies as possibilities for development of an expert system usually arise out of some need of the agency for expertise in an area where expertise is scarce (or soon to be scarce), or the recognition by a person within the agency that a computerized compilation of knowledge about a particular area is logistically possible and potentially worthwhile. Beyond this, there must be substantial additional justification for undertaking the project if the goal is an application—a system that people will use. Many topics would make good expert systems, but the expense and effort of producing all of them may not be justified.

In examining the literature, two general types of expert systems seem to predominate. One includes systems, such as XCON, that can handle high-frequency, complicated, and routine tasks faster, better, or more consistently than their human counterparts. The other type includes systems used infrequently—or never—to avoid catastrophic events such as airplane crashes or nuclear power incidents. The investment in this second type of system is justified by the potentially very costly consequences of *not* having it. Expert systems of the first type are accumulating a substantial record of success and are a good choice for applications in natural resource management.

Typically, demand for a project is justified by analysis of the discounted cost of system development (including opportunity costs) vs. money saved over a certain period of time (or per performance of the task) once the system is implemented. Alternatively, or in addition, a project is justified in terms of its doing a task better (for example, integrating diverse types of information) and enhancing the quality of the human work environment (reducing job stress, for example, or improving human relations).

A justifiable project need not be large. There are many good small applications of expert systems that can enhance decision making, speed operations, save money, free workers from mundane, repetitive tasks, or improve the performance of humans in any number of other ways.

### **Project Goals**

Many expert system projects suffer from ill-defined goals. What *should* be done is confused with what realistically *can* be done with the resources available for the project. Clearly specified and realistic project goals—geared to the unique constraints of user needs, funding, and time—are essential for an

applications project. The overall goal of the project could be development to the prototype stage, or further—to controlled testing, field testing, or through final development, including technology transfer. The precise stopping point and the criteria for measuring performance of the system at that point should be identified as early and as clearly as possible. If this is done, managers will be satisfied, for example, with a well-performing but small-scale system and will not then ask why a full working system was not provided for distribution within the agency. Project supporters won't ask why more wasn't done when the project stimulates their interest for further work. Miscommunication and disappointment are avoided.

### **User Profile**

Users should help identify the scope and purposes of the project. Their specific needs must be assessed and incorporated into project design to help ensure that the finished system will be acceptable to them. In *any* project envisioned to involve human users, the user group should be identified very explicitly at the beginning of the project and appropriate representatives involved in project planning, system development, implementation, and evaluation (Gordon et al. 1987).

Serious consideration of users at all stages of project development is important even if the project is planned to stop short of full technology transfer and evaluation of user acceptance. In small projects, sufficient pertinent information about users might be gathered during discussions with the expert and with one or two potential users. In larger projects, a more formal evaluation of the characteristics and needs of the user group is appropriate (e.g., Gael 1983). In either case, vague references to ill-defined users are a clue that this aspect of project planning has been neglected.

Who are the potential users and how many of them are there. Are they specialists of some type? How narrowly can this group be defined? Are their skills, interests, and preferences relatively uniform or will they approach the finished system with a diversity of purposes or perspectives? What information do these people need or want? How much do they know about computers? How often will they use the system? How much training should the system require?

### **Task Profile**

Design of an expert system for a group of users should include analysis of the task as it is performed without a computer aid. What information or resources are needed to perform the task? How often and where is the task performed? How long does it take? How critical, difficult, or interesting is the task to the people who do it? Is there a difference between the way the task is typically performed and the way it would ideally be performed?

How will the task that will be done by the expert system complement the present work responsibilities of the users? How will the expert system alter the work environment of the users? How often and where will they use it?

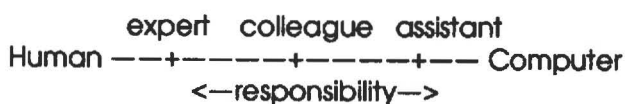
### **System Specifications**

Selection of hardware and software for system development should be tailored to the specific problem domain. Well-designed projects include relatively extensive analysis of the

problem-solving strategies used by human experts *before* the form of the knowledge representation and the choice of tools for the project are finalized. Although most system builders don't have access to, or familiarity with, unlimited different types of hardware and software, it should nevertheless be clear that the tools are appropriate. In early stages of the project, any choice of tools should be presented as tentative and readily modifiable. A list of tool features should be closely tied to both areas of expertise. For example, features such as ease of system access to databases or models, and use of different search strategies (e.g., backward or forward-chaining) and knowledge representation (e.g., frames, objects, or rules) that match the domain and the expert's problem-solving strategies are often very important.

Analysis of both the user and the task substantially influences choice of delivery software and hardware. The system must be delivered to its users on computers and software that are accessible to them. In an increasing number of cases, expert systems developed on relatively expensive, specialized AI workstations with correspondingly expensive development software can be translated into a system that can be delivered on microcomputers or mainframe computers available to the users without a great investment of funds. However, this aspect of technology transfer should be explicitly considered in initial project planning. The legalities as well as the costs of delivering a working system to users should also be considered when software is selected. How much does a finished system cost, and what are the special licensing restrictions that go with it? In other words, can the users afford the finished system?

User analysis is also important for design of the user interface—identifying input requirements, types of questions to be posed, explanatory features, screen appearance, and form of program output (e.g., Baecker and Buxton 1987). What type and level of questions should be asked? How much technical jargon is appropriate or should be avoided? How much explanation should be available to the user of the system? In this regard, I find it helpful to consider an expert system as functioning somewhere along a spectrum from assistant to expert (Davis 1985). When an expert system is designed to serve as an assistant, most of the responsibility for decision making lies with the human user of the program. When an expert system truly serves as an expert, the program takes most of the responsibility for decision making.



How much the human works in concert with the expert system and remains informed and involved in the task—and to what extent the computer takes over the task—depend a great deal on the nature of task as identified in the task analysis. In some situations, systems that will be used by many people only a few times or infrequently or for very routine tasks may be designed quite differently from those used regularly by the same people. In the former case, explanation may be less important; users may not want to be involved (i.e., fully informed

and/or participating) in the decision-making processes of the expert system. An “expert” expert system may be most appropriate. In contrast, people who use a system frequently for relatively important tasks or tasks that they enjoyed doing, at least in part, before the expert system was provided, will often want to know what it is doing. They may be less likely to accept or trust recommendations made by a black box, and might tend to prefer to work with a system designed as an assistant, or perhaps a colleague, not as an expert.

I have found that people who are using an expert system to enhance their work as specialists of some type, especially those with a vested interest in the recommendations made by the system, tend to be much happier with a program that allows them to exercise some of their own skills and judgment. Questioning strategies and explanation should be tailor-made for this type of user. We have had good results from systems that produce a series of alternative recommendations with some associated information from which the user can make the final judgment.

### Knowledge Acquisition

Despite hopes and claims for automated knowledge acquisition software (e.g., Parsaye 1988), knowledge acquisition currently remains almost entirely a painstaking “manual” effort. Many unsuccessful projects are almost entirely programming exercises; both the human expert and the system user(s) are virtually ignored. Thus, a serious deficiency of many project plans is inadequate consideration of how much time and effort will be involved in knowledge acquisition and an insufficient description of specific techniques that will be used during this stage of the project. Justification for choice of an expert or experts, an evaluation of the special characteristics of the expert and his/her subject domain, and explicit consideration of how, when, where, and with what frequency meetings will take place are necessary in the project plan.

System builders should demonstrate familiarity with a diversity of appropriate knowledge acquisition methodologies—such as structured and unstructured interviews (Hart 1987), protocol analysis (Ericsson and Simon 1984), and presentation of tasks of various types to the experts (Hoffman 1987)—and explain how these techniques will be employed with the particular expert and in the context of the particular subject area to analyze the expert's problem-solving strategies. For example, in working with an expert who has been doing a task for many years, and who has some trouble explaining exactly how he/she goes about solving problems, unstructured interviews and analysis of verbal protocols are particularly useful, especially in the initial stages of knowledge acquisition. With more articulate experts or in later stages of knowledge acquisition, different strategies—such as group discussion, presentation of test cases, or actual involvement of the expert in the framing of rules—may be fruitful.

With the improved, cheaper, and easier-to-use expert system shells that have appeared on the market recently, experts are increasingly able to build their own expert systems. When they do, there is perhaps an even greater need for the system builder to consider exactly how he or she is going to explore and formalize problem-solving strategies, and for bringing representative users into the early stages of project planning.

## Prototype Specifications

Most successful expert systems projects begin with development of a prototype, sometimes called the initial prototype (Geissman and Schultz 1988). A prototype is a small, non-trivial program developed very early in the project timetable, and covering a *realistic* and *useful* subset of the entire problem area. A prototype is necessary because administrators and/or potential system users often don't always know exactly what they want when development begins. The prototype stage of project development is based on the idea that the system builders, in conjunction with the expert, users, and project management, can evaluate a real system more easily than an imaginary one (Mathieson 1988). Although it is small, the prototype must be well designed and display many of the important functions and features of the finished system. A prototype may take approximately 3 to 6 person-months to complete and, in rule-based programs, include anywhere from about 50 to 200 rules.

Have users had a central role in identifying the scope of the prototype? Does performance of the prototype suit their needs in some important way? Does the prototype do something that is worthwhile by itself? Prototypes should not be sketchy or oversimplified versions of the finished system. (One exception to this occurs in situations where an expert system is needed to link several models or other programs. In this case, the prototype may use simplified "dummy" models to test and display the planned interactions among system components.) Some successful projects involve development of several coordinated prototypes that are later developed further and linked to form the finished system.

The prototype is refined iteratively by the system builders working with both the expert and users. When it functions well, the improved prototype is typically demonstrated to project managers, supporters, and others with an interest in the project. The prototype may be the end product of a small project. In bigger projects, it is the basis for evaluating and, if necessary, redefining ideas about problem definition, project scope, and knowledge representation *before* a great deal has been invested in the particular methods and approach and there is a reluctance to change directions. The prototype is used to determine if the tools used are appropriate for further development. From an administrative perspective, the prototype is particularly important; it serves to improve communication and understanding about the project between system builders and management, and it is something tangible to show senior staff in the funding agency.

## System Delivery

The adoption of an innovation, such as an expert system, by its potential users is not the *use* of the innovation, but the *decision* to use it (Burch and DeLuca 1984). The process of adoption is not necessarily related to how well the expert system works or even *if* it works. Whether or not it has advantage from an outsider's point of view may be irrelevant to the decision to adopt it. Some degree of attention to technology transfer should thus be an integral part of most project plans. System compatibility, observability, trialability, and communication channels are some important points that should be addressed (Rogers and Shoemaker 1971, Muth and Hendee 1980).

As mentioned above, thought should be given to the sorts of software and hardware that the user can best afford and most easily use, and how the system will be integrated into the users' work environment with minimum disruption. Even if these points have been considered, how will the possible advantages of the system be communicated to the users? For example, to what extent and at what points will communication with users be made directly by system developers, through management, or via written material (e.g., letters, fliers, or journal articles)? Will users have a chance to see the system in action and to use it on a trial basis before they must make any serious commitment to the technology? If so, how and when? If the system will require training, how will such training be made available?

## Summary

Successful expert system projects result from thoughtful and thorough project planning, using the same principles that apply to project design in other areas and an understanding of the unique and important features of expert systems themselves. Some signs of poorly designed and potentially unsuccessful project plans include:

- ✗ excessive emphasis on programming activities, hardware, and software
- ✗ poorly identified users
- ✗ insufficient detail about the knowledge acquisition process
- ✗ excessive commitment to one software package before knowledge acquisition begins
- ✗ trivial or oversimplified performance specifications for the prototype

In contrast, a well-designed project plan will have some or most of the following characteristics:

- ✓ application justifiable in economic and/or human terms
- ✓ clearly defined and realistic project completion goals
- ✓ clearly identified system users
- ✓ well-specified (time, place, people) interactions with expert(s), users, managers, and project supporters throughout the project timetable
  - ✓ representative users involved in project development at several stages
  - ✓ development software suited to the subject domain
  - ✓ user interface and system output specifications tailored to users' needs and preferences
  - ✓ delivery hardware and software tailored to users' environment and resources
  - ✓ well-thought-out and appropriate strategies for knowledge acquisition
  - ✓ planned production of a prototype early in system development
  - ✓ prototype performance keyed to user needs
  - ✓ well-thought-out strategies for technology transfer

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## Acknowledgments

I thank Sallie Gordon, Gregory Buhyoff, Richard Davis, W. L. Mills, Jim Saveland, Michael Rauscher, Rosemary Dyer, Peter Kourtz, and Richard Olson for their critical comments on this manuscript at various stages in its preparation.

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USDA Forest Service seeks a Ph.D. research scientist for a permanent position in plant diversity at the Intensive Management Practices Assessment Center (IMPAC), Gainesville. This person will be responsible for research on the effects of intensive forestry practices on the diversity of plants in forest ecosystems of the Southeast and will participate in an existing research program inquiring into the effect of forestry on water, wildlife, soil, and forest vegetation. Expertise in one or more of the following areas is required: plant taxonomy, quantitative ecology, forestry, soil science, weed science, modeling. The research will involve intensive, field-oriented studies and will require interaction with university, industrial forestry, and U.S. Forest Service personnel. The position provides for an appointment as an adjunct assistant/associate professor affiliated with the Forestry Department, University of Florida. Send a curriculum vitae to: Dr. Dan Neary, USDA Forest Service, c/o Newins-Ziegler Hall, University of Florida, Gainesville, Florida 32611-0301 (904-392-1951). *We are desirous of inquiries from a full spectrum of applicants. The position will be formally advertised at a later date—this is an early job alert.*

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**The Woman in the Mountain: Reconstructions of Self and Land by Adirondack Women Writers by Kate Winter (State University of New York Press 1989)**

**K**ate Winter has collected a wide range of fiction and autobiographical prose and poetry from seven American women authors writing in the early 1900s to the present. The central theme of this collection focuses on the intimate connection of the women—their sense of self and spiritualism—with mountain landscapes, most particularly the Adirondacks. Coming from a variety of backgrounds, several of the women moved to the Adirondacks initially as a treatment for their tuberculosis and there confronted the mountain environment and their own mortality and spirituality.

Each author is featured in a separate chapter, prefaced by photos and Winter's introduction. The personal histories give additional insight into the problems confronting the women in their efforts to integrate their family and personal responsibilities with their love for the Adirondack wilderness. Reading about their backgrounds made me appreciate the freedom we have now to define our own relationships with the natural world.

In the chapter on Jeanne Robert Foster (1879-1970), Winters produced samples of her poetry celebrating the mountain people and their efforts to establish a truce with the Adirondack wilderness:

*Here in the wilderness folks will tell you  
To be careful about the place you live,  
For there's something in the mountains  
And the hills that is stronger than people  
And you will grow like the place where you live  
The hands of the mountain reach out  
With bindings that hold the heart forever. (pp. 21-22)*

Another stanza includes sentiments with which all resource managers can identify:

*Nature don't listen to us very much.  
When we tell her what to do, she veers off  
On some road she had in her mind  
Before we were born. Smart men tell us now  
That they're digging down into her secrets,  
But when they've dug out just how she does things  
And set it all down, she'll pull out a trick  
That's brand new. (p. 20)*

Foster's mother, Lucia Newell Olive (186?-1927) taught school and worked



as a pioneer suffragist. In her section, her free verse captures the clipped vernacular of the regional speech, telling stories of mountain people involved in the mundane battles of wilderness life.

Adelaide Crapsey's (1878-1914) poetry focuses on her last months at a Saranac Lake tuberculosis sanatorium. The imagery burns brightly:

*With swift  
Great sweep of her  
Magnificent arm my pain  
Clanged back the doors that shut my soul  
From Life. (p. 68)*

The selections Winters included from Anne LaBastille's popular book *Woodswoman*, were "Among My Closest Friends," "A Copycat Walden," and "Sauntering Around Lilypad Lake." These introduce readers to LaBastille's life on Black Bear Lake and highlight everyday tasks and the mysticism which underlies her efforts to establish a communion with the New York wilderness.

Martha Reben moved to the Adirondacks in 1927 where she met a mountaineer who introduced her to backwoods life as a cure for her tuberculosis. A city-born woman, Reben embraced this new life. Her selections celebrate her intimacy with mountain landscapes and creatures with whom she shared the woods.

The section on Alice Wolf Gilborn focuses on "creating a life that is authentic, satisfying, and survivable in an environment that constantly forces one to confront her own vulnerable humanity." Jean Rikhoff tells the story of ten generations of the Buttes and Raymonds—beginning with Odden Buttes and Emily Guthrie—clearing for a homestead. Emily, a woman of mythic woods skills and physical strength dominates the tale. Her story made me want to read more.

Of the women authors excerpted in *The Woman in the Mountain*, I had read previously only the books of Anne LaBastille, so I was grateful to be introduced to the others. I look forward especially to discovering other work by Jean Rikhoff, Alice Wolf Gilborn, and Martha Reben.

The author, Kate H. Winter, is a New Yorker who received her Ph.D. in Literature from State University of New York at Albany. She currently is a Lecturer in the Department of English, specializing in Nineteenth Century Fiction and Writing. Her research interests lie in the relationship between gender and landscape—and how region influences this. Her current focus is on early Hawaiian missionaries.

Reviewer Pam Porter is also from New York, now working as a Research Fisheries Biologist for the Pacific Northwest Research Lab in Juneau, Alaska. She also is studying for her doctorate at the University of Idaho in Fisheries Resources.



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*As our population ages, managers of recreation opportunities, especially those in risk recreation, are going to be asked to provide more for elderly Americans. Who is doing that research now?*

# Adventure Programming and the Elderly: The Research Begins

Becky Hancock

**P**eople are not only living longer as America approaches the twenty-first century, they are also living healthier lives. Modern advances in health services have created the possibility to live into old age, but this may not always be a blessing. Many older persons lead lives of seclusion and deprivation, without effective means of providing leisure and other services for themselves. It appears, at the same time, that society will not be prepared to handle the increasing number of older people in recreation programs—in fact little is offered now.

The statistics show the growth: four percent of the total American population, only 3.1 million people, were age 65 or over in 1900. The 1980 census counted 25.5 million, (or over 11 percent), in the 65 and older age bracket. By 2030 this figure is projected to reach 64 million, an estimated 15 percent. It is obvious that this rapidly growing segment of the population will require more extensive services in a variety of areas.

Health care professionals and gerontologist are not the only ones who need to be concerned with this major block of older persons. Recreation professionals should be working harder now to provide more diverse leisure opportunities for individuals whose health status as a group has generally improved (compared to earlier times), who have increased financial security, earlier retirement, and more accessible recreational facilities (MacNeil, Teague, McQuire, & O'Leary, 1987).

The need for recreational diversity is evident in several studies which show that the majority of older persons participate only in activities which are close to their homes (Moss & Lawton, 1982). Peppers (1976) listed watching television and visiting friends as the most popular leisure activities. Obviously, the elderly require more purposeful leisure activities than those in order to challenge them to improve their physical and mental capabilities at higher and more consistent levels. Adventure programming would be an ideal way to provide such diversity!

Often called risk recreation or experiential education, adventure programs are typically group-oriented experiences conducted in outdoor settings. Activities such as rope courses, white-water rafting, mountain and rock climbing, scuba diving, and backpacking are among typical outdoor adventure programs. These programs are filled usually with teenagers and young adults even though outdoor adventure also interests the older adult (Ewert, 1983). Regardless of ages, the goals of

most adventure program participants appear to be similar: 1) encourage personal growth, 2) develop interpersonal relationships, 3) acquire abilities to deal with stress, 4) prevail over one's natural resources, and 5) develop a spiritual attitude (Teaff, 1985). For older adults the socialization aspect of the adventure may often be more enjoyable than actually mastering the skills. Ewert reported that older persons tended to be more process oriented: they weren't overly concerned about the final outcome even though older persons can and will push themselves in both physical and psychological terms at times.

## Benefits of Participation

The underlying principle in adventure programs is that by being outdoors one can gain knowledge about self, about others, and about the natural world. Participants are able to challenge themselves in a setting which is not laden with social pressures and routine distractions. Ideally, the environment will be conducive for one to boost self-confidence, focus on personal values and come face to face with important life issues.

Ewert believed that outdoor adventure programming for older persons is based on one single consideration—the individual. If older participants, however, are able to gain newfound awareness and examine personal goals while having an exciting and fun experience, it seems the benefits would reach beyond the individual to families and society at large, since older adults generally place a high value on friends, family, and health (Gould, 1975). Recreation programmers can use this knowledge to create ideal adventure opportunities for groups of elderly persons or families.

In addition to these health and social advantages, Teaff (1985) argued the adventure programming process should include problem-solving tasks which pose problems that must be overcome both individually and cooperatively. The teams courses—caving, climbing, and rappelling—are activities which provide the participant the opportunity to use problem solving skills allowing the participant to achieve success within the tasks.

Hendee and Brown (1988) discussed the many benefits of challenge-type adventure programs in their conceptual model which integrates previous research, personal experience, and direct contact with instructors and participants of wilderness programs. The Hendee-Brown model (1988) includes hypotheses which the authors use as a framework to guide the design

and instruction of adventure activities and to assist programmers in their attempt to effectively create new wilderness programs.

They assert that adventure experiences can lead to increased personal and social awareness, the possibility of growth motivation, and exposure to the direct influences of nature. By ridding oneself of worries and tensions, the participant can reveal a keen awareness of personal behavior and values. Hendee and Brown refer to this stage as the ability to find one's growing edge.

Unique social relationships develop during outdoor adventure programs. Strengthened by each participant's personal searching, the social interaction creates a trusting environment enhanced by group sharing and exploration exercises. With such a model, participants can be guided through a carefully structured experience which will be fulfilling.

### Barriers to Participation

While it is obvious that there are benefits for the elderly who do experience adventure programs, there are several barriers which must be overcome. Ewert (1983) established several internal and external factors which hinder participation. Included among the internal factors are expense, failure to see the activity as functional, lack of time, and feeling inadequate, which is the greatest hindrance. These become major stumbling blocks for individuals who want to partake in adventure activities but may not have the self confidence to do so. External pressure from peers denigrates the desire to experience risk recreation. To participate in adventure programs may mean traveling a great distance for the elderly, or more unfortunately, there simply may not be any offered for older persons in their community.

Other problems exist. Cowgill and Baulch (1962) identified physical disability, lack of time, companionship, and finances, as problems which hinder participation. Another study agreed and identified health as the factor which most often inhibited participation (Scott & Zoernick, 1977).

Myths about aging limit the range of activities. Strain and Chappell (1982) noted a common misconception is that older people should not and cannot exercise. Another common myth is that the elderly are too old to learn and therefore would not be able to participate in new or different activities.

Baltes and Schaie (1974) challenged the assumption about the learning capabilities of older persons with the suggestion that intelligence itself does not decline with age. What does happen, however is that the *information and skills* of older persons become obsolete. This explanation is supported by Strain and Chappell (1982) who reported that older persons can indeed learn new physical activities—the potential for acquiring benefits for participation is there. Ewert believed that a thorough explanation of the activities, plus providing desired goals and a preactivity training component, would allow programmers to structure the activity to maximize success.

In an attempt to address some of the external barriers, Sessoms (1981) thought that providing decentralized locations would assure participants of access to healthy and enjoyable experiences. This approach enables the programmer to reach more elderly through clubs, lodges, and other organizations. In doing so, the decentralized endeavor is in direct contrast to the

traditional approach which requires that individuals must travel to the park and/or recreation building.

Attracting older persons to an adventure program is another problem in itself. Meyer (1979) proposed an effective marketing scheme to promote excitement, physical, and mental strengthening. Refocused advertising could emphasize the lack of substantial injury rates between older and younger populations.

Ewert summarized the challenge of developing and providing realistic programs for the older population. The key seems to be coordination of socialization components, health enhancement opportunities, and process orientation.

### Conclusion

There is not extensive literature on the value of adventure programs for older persons (Teaff, 1985). However, as we have noted, what there is fully supports the thesis that diverse and enduring benefits are offered and experienced through adventure programs. These benefits include personal and social awareness, and feelings of oneness with the natural world. More specific research about how the elderly can benefit from adventure programs is greatly needed because the desires of the elderly often may be hidden among the many myths and misconceptions about their limitations.

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## Public Access to Private Kansas Lands for Recreational Purposes

Wendy D. Justice,  
Reinee Hildebrandt

Public access to private lands is a sensitive issue facing Kansas decision-makers, public agencies, and landowners. According to the 1985 Kansas State Comprehensive Outdoor Recreation Plan, "Kansas has and will most likely continue to experience demographic changes whereby the population in rural areas decline while cities and suburban areas grow." In addition, "demand for high quality recreation facilities and experiences is already outstripping existing supplies and revenue sources." With 97 percent of the state's land in private ownership and over 68 percent of its population living in urban areas, there is a need for an outdoor recreation land base.

The purpose of the public access study was to determine the feasibility of expanding the recreation resources base in Kansas by utilizing private forest lands. The objectives of this study were to 1) determine the importance of private lands in providing recreational opportunities in Kansas, 2) determine issues and concerns related to the public use of private lands 3) determine landowners' attitudes toward allowing people on their land to recreate, and 4) determine the feasibility of expanding the recreation base in Kansas by utilizing private lands. Eleven counties in eastern Kansas and eight counties in western Kansas were studied between August 1 and March 1, 1989. A total of 2721 surveys were sent to Kansas landowners. Of those, 146 responded.

Information gleaned from respondents included the following: Currently, nearly 40 percent of the landowners sampled have their lands open for recreation to people who are not relatives. Of those landowners, 3.3 percent currently charge fees; 92.5 percent do not charge fees; and 4.2 percent do some of both. Sixty percent post their lands.

Public access sometimes brought problems. Fifty-seven percent of the respondents reported damage, with average annual losses ranging from \$1.00 to \$10,000 with an average annual cost of \$217.48.

The median response, however, was \$0. The most commonly reported problems were: livestock/crop/property damage, litter/garbage, opened gates, cut or damaged fences, and trespass. Twenty-two percent reported excessive damages with \$80,000 being the highest amount recorded. Theft, property/livestock/crop damage, machinery damage, erosion, and fire were problems reported during excessive damage years.

When asked to report their interest in a state assisted public access system, 35 percent reported *yes* or *maybe*. Respondents were asked to rate their preference for four potential access programs. From 11 percent to 22 percent of the respondents indicated they *avored* to *strongly favored* the programs. For all programs, approximately 20 percent of the respondents were neutral.

Of those respondents who answered *yes* or *maybe* to a state assisted program, 78 percent owned or leased a farm; 16 percent owned or leased a ranch; and seven percent owned or leased a rural acreage. The total acres owned by the 146 respondents is 42,291. Respondents reported the price per acre which they would like to be paid for access according to activity: \$0 to \$10 per acre. Landowners were more willing to allow access for hunting and nature observation. The land use categories on which landowners were more willing to allow access were cropland, rangeland, streams, and woodlands.

Researcher Reinee Hildebrandt will distribute the research results to Kansas landowners, the Kansas State Board of Agriculture, Kansas Department of Wildlife and Parks, and other natural resource special interest groups. These research results will be used in the 1989 legislative discussions related to public access.

Wendy R. Justice, *Research Assistant*, and Reinee Hildebrandt, *Assistant Professor Forestry Department, Kansas State University, Manhattan*

## Quantity and Quality of Surface and Ground Water of a Native Tallgrass Prairie

Cathy M. Tate

Tallgrass prairie once covered about seven percent of the continental United States. Most prairie has been con-

verted to agricultural crop production or used for cattle grazing. The Konza Prairie Research Natural Area is 3,500 ha. of native tallgrass prairie owned by the Nature Conservancy and managed by Kansas State University for ecological research purposes. It is one of 17 Long-term Ecological Research sites funded by the National Science Foundation (NSF).

The objective of the Konza research is to evaluate the roles of fire and grazing by native grazers (bison) in maintaining tallgrass prairie. Aquatic research has focused on Kings Creek which drains a portion of Konza Prairie. Kings Creek is gaged as a part of the US Geological Survey's (USGS) Benchmark Network (streams draining undisturbed basins). As such, Kings Creek gives researchers a chance to study long-term natural variations in hydrology and water quality in native prairie which can be used as a reference for manipulated watersheds.

Flow regime plays an important role in understanding water quality and the types of organisms found in streams. Researcher Jim Koelliker has constructed hydrologic models predicting water yields from Kings Creek. Water quality research in Kings Creek has emphasized nitrogen. Nitrogen, particularly nitrate, is a major contaminant of surface and ground water in the midwest and plains region. In contrast, nitrate concentrations in Kings Creek are low (<0.1 part per million [ppm]) compared to streams draining agricultural systems (>1 ppm). Researcher Cathy Tate has examined the spatial and temporal variation of nitrogen concentrations and abiotic (baseflow, storm flow, temperature) and biotic (terrestrial grasses, algae) factors influencing nitrogen concentrations in Kings Creek.

One conclusion was that low nutrient concentrations can limit algal growth (an important food resource for invertebrates and fish) in prairie streams. This study led to an intersite comparison of nutrient limitation to algal growth in streams of five biomes (4 LTER sites) including sites in North Carolina, Wisconsin, Kansas (Konza), Colorado (Rocky Mountain National Park) and Oregon.

Currently, Konza research is being expanded to include studies on movement of inorganic nutrients and dissolved organic carbon (DOC) from soils, to ground-

water to streams as a part of a cooperative research project between researchers Tate of Kansas State University, and USGS' Mike Thurman and Mike Pomes. The goal is to understand the movement of water, nutrients and DOC in natural prairie systems which then can be compared to agricultural and contaminant studies being conducted by other researchers at Kansas State and the USGS.

*Cathy M. Tate, Division of Biology,  
Kansas State University, Manhattan*

## Habitat Evaluation for Rehabilitation Design

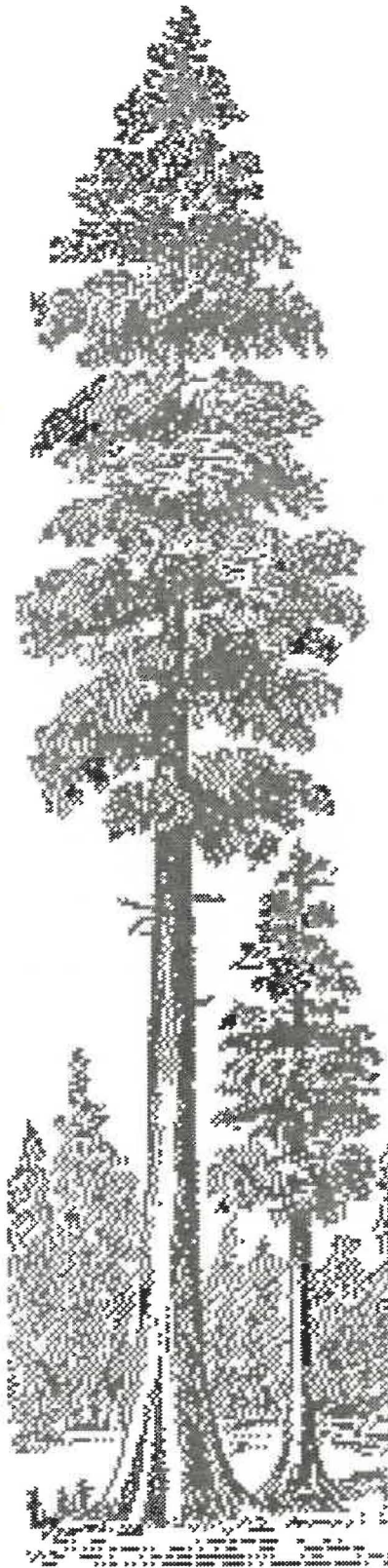
**Karen F. Northup**

**F**ew approaches to habitat design allow prediction of the quality of the final project. Most evaluation methods require field reconnaissance. The habitat on devastated land is a *proposed* feature, which makes field reconnaissance impossible. Therefore, the Department of Interior's U.S. Fish and Wildlife Service Habitat Evaluation Procedure ([HEP] Ecological Services Manual 102) will be used to generate habitat design criteria for sites where habitat is absent. A new application of HEP is also tested in this study. HEP thus may allow landscape architects to calculate the influence of design decisions on habitat quality.

HEP relates cover characteristics to habitat quality for a given species. HSI values are a relative measure of how well the study habitat matches the ideal habitat. Relative value indices (RVIs) allow comparison of different design scenarios on the basis of how well they address societal needs. Solving the equations for model measures gives the minimum design criteria for a socially valuable wildlife area.

In this study, a process will be developed to generate and evaluate habitat designs on devastated lands using the HEP. This process and its easily recorded results may help justify design decisions before public groups. The procedure will be formatted as a guide for applying HEP during design.

*Karen F. Northup, Master's Candidate,  
Landscape Architecture, Kansas State  
University, Manhattan*



## Assistant Professor Fishery Resources University of Idaho

Require Ph.D., expertise in fish ecology, communication skills, research and management ability with salmonid fishes. Salary commensurate with experience. Search is open until qualified applicants are identified. For details contact David Bennett or Michael Falter, Department of Fish and Wildlife Resources, University of Idaho, Moscow, Idaho 83843 (208-885-6337 or 885-7123).

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## Assistant or Associate Professor, Forest Economics/Management

A 9-month, tenure track faculty position in Forest Economics/Management is available. This position has teaching and research components. Responsibilities are (1) to teach undergraduate courses in forest economics and administration, and an introductory course in forestry; (2) to teach, depending on interest or need, in one of the following forest recreation, international forestry or urban forestry; (3) to conduct research, teach, and direct graduate students primarily in forestry economics, with an emphasis on development and marketing of forest-based goods and services.

Qualifications include a Ph.D. in forestry economics or in natural resources economics with at least one degree in forestry. Duties will require quantitative and computer capabilities. Teaching, research and/or forestry-related professional experience are desirable. Opportunities will exist for participation in on-going forestry research.

Applicants should send resume, transcripts and three letter of recommendation to: Dr. Steven E. Jungst, Chairman, Department of Forestry, Iowa State University, Ames, IA 50011-1021. Application deadline July 1, 1989 or until filled. Position available August 15, 1989.

*Iowa State University is an equal opportunity affirmative action employer. Iowa State University invites and encourages applications from minorities and women.*

*Two managers share a blueprint for moving forward. The successes they outline required ten years of meetings, discussions, and directives.*

# Forest Service Women in the Pacific Northwest—How Far Have We Come?

Susan N. Little and Abigail Kimbell

This year marks the 10th anniversary of *Women in Natural Resources*. The journal began as *Women in Forestry*, an informal newsletter, to strengthen a network of women foresters employed by the USDA Forest Service. Then, as now, the publication carried a mix of subjects: articles on technical matters, departments, career development, interviews, and feminist features.

In this paper, we will trace briefly the origin of the newsletter, but more importantly, the journey of northwestern Forest Service women through the intervening 10 years. Various meetings—designed to air women's issues and concerns—and actions taken by women and management to resolve those issues and concerns will be examined.

As we contemplated writing this paper, we asked ourselves: Have the hopes and aspirations of those women who gathered in 1979 been met? What worked for them and what did not? Has the agenda changed over the years? And finally, where are we headed from here?

## Where We Were

In the early 1970s, women started appearing on USDA Forest Service field crews throughout Oregon and Washington (Figures 1 and 2). These women were received variously by the men and the corporate Forest Service culture. Some were welcomed into their work groups—others were not. All faced tremendous challenges in the traditionally male organization (Figure 3). We remember the giggles, the harassment, the testing. We also remember innuendoes and the patronizing, solicitous behavior. We can remember being “protected” from dirty jobs and the triumphant and gallant waving of a dead rattlesnake. Ah, the old days. Fortunately for all of us, some folks were monitoring how things were going, and by the latter part of the decade, a general perception developed that all was not well.

## Identifying Needs and Barriers: Women on Their Own

Acting on this perception and her own experiences, Linda Donoghue, Scientist, North Central Research Station, contacted Andrea Warner, then Federal Women's Program Manager, Pacific Northwest Research Station. They discussed ways of sharing information and helpful hints with the few, dispersed women in nontraditional roles in the Forest Service. They, with the help of Mary Albertson, Federal Women's Program Manager, Pacific Northwest Region, hosted a one-day session in 1979 in conjunction with a Business and Professional Women's Conference sponsored by a private, non-profit group. Forest Service women applied to attend the conference as training, and thus were able to get the financial and time support from their supervisors which may not have been offered for the one-day session alone.

Thirty-five women attended that meeting, roughly half of the women in forester positions in the Region and Station at that time. They identified barriers to their careers and offered strategies they could implement to overcome some of these barriers (Table 1). The emphasis was on

**Table 1. Barriers identified at the 1979 workshop for women professionals.**

1. Lack of information about the informal workings of the organization. Women felt left out of social groups through which such information is obtained.
2. Lack of information about experience, training, and positions held necessary to progress into line positions.
3. Male employees assume that women foresters are hired only because they are women and assume they are not qualified.
4. Women are not taken seriously by their supervisors, who will take sides with male subordinates during disagreements.
5. Superstar syndrome means that all eyes are on the woman, who cannot make a mistake and must be twice as good as a man to be considered acceptable. If one woman fails, it is perceived we all fail.
6. Dual-career families.
7. Lack of mentors and no female role models.
8. Lack of training plans.
9. Subtle sexism: little innuendoes that continue over time to become harassment.
10. The need to toe the line emotionally between what is regarded as passive and aggressive behavior. Women felt that when they display the same amount of assertiveness as their male peers, they are often regarded as being pushy, but men in similar situations would be considered real go-getters.
11. Isolation. Often the woman is the only professional woman on a District, with no other woman to share problems with or obtain support.

what women could do—individually and collectively—to advance their careers.

One of the more visibly successful strategies was to form a network that would be facilitated initially by a quarterly newsletter, *Women in Forestry*. Linda Donoghue volunteered to organize and publish the newsletter, and did so until 1982 when Dixie Ehrenreich and Molly Stock at the University of Idaho became the co-Editors. From 1979 to 1982, the newsletter had served as the focus of the informal network, expanding nationwide to include other professionals, but remaining predominantly Forest Service women. Ehrenreich and Stock improved the format and expanded the content of *Women in Forestry*, making it an international journal with appeal to men and women interested in the natural resources. (A few years later, Stock left the journal and Ehrenreich carried on as Executive Editor, changing the name to *Women in Natural Resources* after Lei Bammel of West Virginia University became Editor. Today, there are 10 Editors from locations all over the country and the independent journal claims a readership of more than 12,000 from all facets of natural resources and the related social sciences.)

### Seeking the Support of Management

Warner and Albertson reported to their respective management teams on the results of the 1979 meeting. Their reports included recommendations to line managers for specific actions in support of the few, isolated women professionals. As a result, the Region and Station agreed to a joint workshop of all of their women in professional positions in the natural resources fields. Under the sponsorship of James Torrence, then Deputy Regional Forester for Natural Resources, Warner and Albertson organized the workshop around the need to resolve concerns of the 1979 discussion group.

In November of 1980, 125 women met, approximately half of the Forest Service women in professional positions in the northwest. Some had 15-20 years Forest Service experience, some had less than a year. Among them, many were angry and hurt, while others, at the same time, had been able to establish positions within the Forest Service culture and felt a part of the organization.

The women divided into small groups to identify issues and barriers to working as competent professionals (Table 2). These issues, as it turned out, were very similar to those listed in an unpublished report (1978) by the Taskforce on Barriers to Women in Management at the Pacific Northwest Research Station. The emphasis had changed, clearly, from women helping

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**Table 2. Barriers identified and solutions proposed by Forest Service women at the 1980 meeting.**

#### **Problem 1. Isolation from other women, continual visibility (spotlight).**

##### **SOLUTIONS:**

- a. Recognition of isolation as a problem by line management with the understanding that it will not be resolved until more women are in these positions.
- b. When assigning affirmative action targets, favor placing two or three women on one unit rather than spreading them thin. This would increase overall retention.
- c. First-line supervisors should allow and encourage women to attend technical meetings as full participants and to fully use their skills to give them professional visibility and credibility.
- d. Encourage mentorship and sponsorship of women by supervisors and managers.

#### **Problem 2: Lack of Awareness of Changing Roles**

##### **SOLUTIONS:**

- a. Unit managers have a responsibility for setting and maintaining a positive work environment. Supervisors need to inform employees of what affirmative action is and why it is needed.
- b. Management should review the inadequacies of traditional equipment and clothing.
- c. Eliminate inconsistencies in applying nepotism policies.
- d. Encourage workshops such as "Changing roles for men and women" as tools for increasing awareness.
- e. Ensure that professional women at all levels have training plans that provide for career development and cross-training for the positions where women are currently underrepresented.

#### **Problem 3: Sexual harassment**

##### **SOLUTIONS:**

- a. Implement effective programs to increase the awareness of employees of sexual harassment and how to deal with it.
- b. Managers are responsible for setting an atmosphere where harassment is not tolerated. Accountability of managers in this area is essential.

#### **Problem 4: Maternity Leave.**

##### **SOLUTIONS:**

- a. Establish Regional guidelines and outline available programs that enable employees to take extended leave for maternity. Make this information available to women employees and supervisors.
- b. Set up a taskforce of women concerned with the issue of maternity leave to explore alternatives and make explicit recommendations.

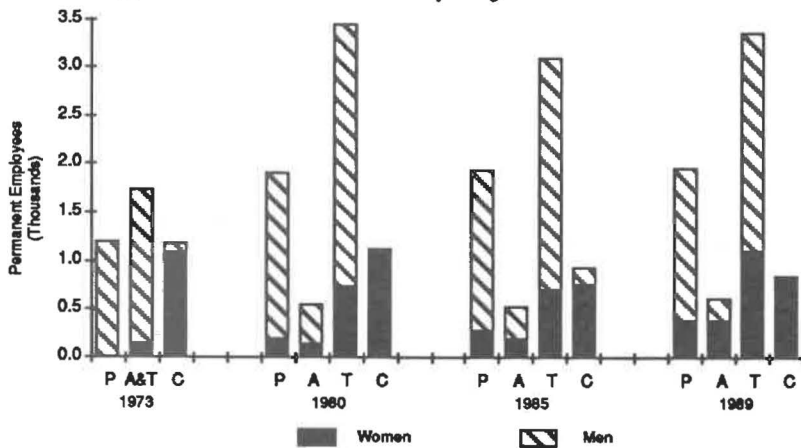
themselves and each other, to requesting organizational change and management support.

### Management Responds

The women at the meeting presented their findings to representatives of both management teams and then wrote a report suggesting paths for reducing or eliminating the barriers. Responses to the oral presentation were mostly indifferent or defensive. Although the list of actions (below) indicate the subsequent support from top administrators in both organizations, acceptance and allies to assist in implementing them were slow to develop down the line.

With today's perspective, we speculate that this lack of support (which was not by any means uniform across Forests or Labs) arose not only from traditional chauvinist beliefs and backlash, but also from a reluctance to accept policies and attitudes that individual managers did not have a role in developing. Without this direct ownership, individual line officers in

Figure 1. —R-6 Employment Statistics



Station. Barriers identified were lack of support from their supervisors for their research and professional development, and behavior and actions on the part of supervisors and peers that undermined the credibility of women. Most of the recommendations were similar to earlier ones (Table 2). In addition, the taskforce called for improving the competence of supervisors and opening communications within the Station regarding workforce issues. The Station Director agreed in principle with most of the recommendations and forwarded them to the Project Leaders to implement as they saw fit.

#### Change

By 1985, the workforce looked (and felt) much different (Figures 1 and 2). Many employees from all corners of the workforce had attended sessions on changing roles for men and women. Women had become less of a novelty and many had proved themselves to be valued workers. Men with wives, daughters, sisters, mothers, and girlfriends working outside the home gained increasing respect for that work. Men desiring to be a more equal partner in their families opted to spend time at home with children sharing the responsibilities of childcare. The issues previously identified as "women's" issues were becoming "workforce" issues.

Some of the old concerns persisted, however, perhaps because not everyone was caught up in the social change. Added to the original barriers, backlash had grown in the workforce, not only from men who felt they were denied opportunities because of affirmative action, but from women in nonprofessional jobs. These women felt that "professional" women were getting the attention and glory—while they were stuck in lower status (and thus lower paying) jobs. They had no future in the Forest Service. The 1980 workshop had helped to fuel this backlash by setting the professional women apart with a special agenda. The old us versus them attitudes were perpetuated: women versus management, professional versus technical, professional versus clerical, men versus women.

an organization with a strong and uniform status quo are reluctant to let go of tradition.

In direct response to the workshop report, directives from management translated the ideas into action within a year's time:

1. Memoranda from the Regional Forester Richard Worthington and Station Director Robert Ethington to line officers reiterated and strengthened policy on maternity leave, sexual harassment, and how to overcome the effects of isolation in the workforce. The Regional Forester accepted, in principle, most of the recommendations made by the women, and encouraged the Forest Supervisors and Directors to implement suggestions as they saw fit.
2. The Regional Forester requested that Forest Supervisors and Directors forward to personnel a list of women employees who had potential for upper staff and management positions. This list was to be used to target individuals for development and recruitment into mid-management positions.
3. Personnel and Civil Rights officers in the Region were asked to review current nepotism and maternity leave policies and make recommendations to the Regional Forester for improvements.
4. A separate taskforce chaired by Susan Little addressed the needs and concerns of women scientists at the Research

#### Working Together

The Society of American Forester's Symposium on Women in Natural Resources in Dallas in 1986 rekindled the waning enthusiasm (see *Women in Forestry*, Spring 1986, for delivered papers). When Katherine Jesch (one of five women from the Region who attended the meeting) approached John Butrielle, Deputy Regional Forester for Natural Resources, he supported the idea of another Region-Station meeting—patterned after the Dallas meeting—so that the experience could be shared with more of the workforce. This early sponsorship within management for such an effort was a new step.

Thirty of the women who had attended the 1980 or the Dallas meetings became the advisory board to a team of volunteers. These volunteers

Figure 2. —PNW Employment Statistics

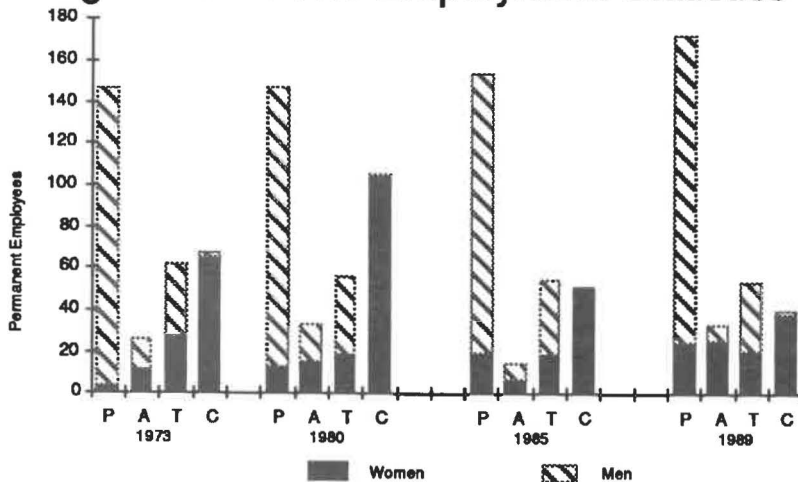
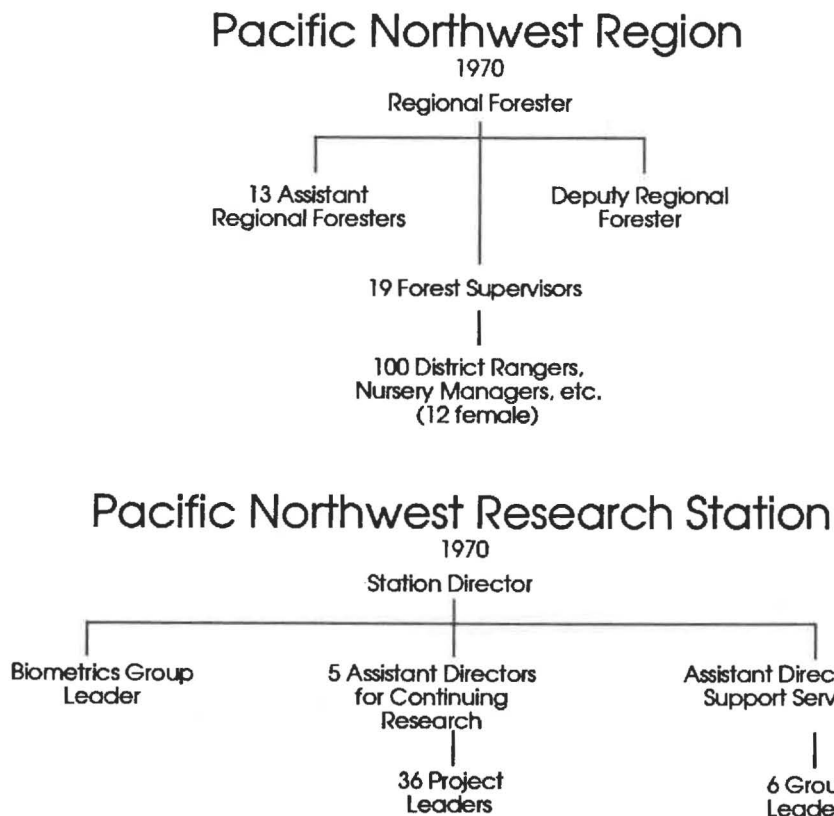


Figure 3. Organization structure of the Pacific Northwest Region and Pacific Northwest Station in 1970. All positions were held by non-minority males.



then organized another conference under the leadership of Sally Collins, then a planner on the Siuslaw National Forest. The board decided that the conference should assess how far Forest Service culture had evolved: Were women active and vital in national forest management and in forest and rangeland research? Were women achieving their personal goals? And finally, were women gaining positions of influence and power?

The volunteer team members brought very different perspectives to the planning effort. Besides differences in personal style, the members of the team came from a variety of cultural backgrounds, positions in the Forest Service, and working environments, from remote locations east of the Cascades to the Portland metropolitan area. They viewed this conference as key to reigniting grass roots interest in resolving workforce issues.

The team also knew that this conference must be designed to address concerns of all Forest Service women and not just those in natural resource professions. And, they knew that to accomplish anything worthwhile and long-lasting, management of both the Region and the Station had to be well represented: Regional Forester Torrance and the Station Director Ethington were involved from the beginning. To ensure that women attending

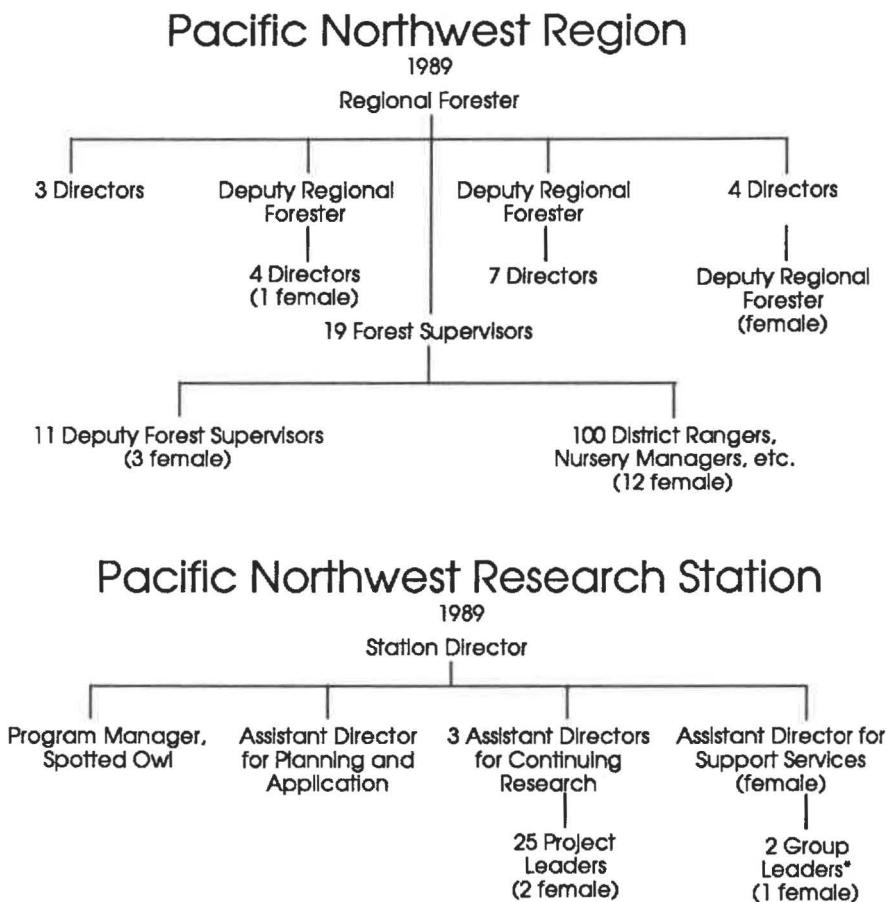
the conference were representative of their units and were committed to representing those units, all women employees had the opportunity to compete to attend.

#### Working Together

In January 1987, 300 people attended the conference, including women from all series and grades. Leadership, including Torrance and Ethington, was well represented and made up a full quarter of the attendance. Other Regions and Stations sent representatives as did the Chief of the Forest Service and the Bureau of Land Management.

The conference program focused on what women can do and what the agency can do towards the overall mission—the advancement and development of women in the workforce. Various formats were used to address such issues as tradition, culture, and change in the Forest Service; preparing for the future, retention and fulfillment of minority women; moving up in the organization, career options, personal effectiveness; and agency effectiveness. Many of these issues were recognized as concerns of the workforce as a whole.

Figure 4. Organization structure of the Pacific Northwest Station in 1989.



\*Personnel, fiscal, purchasing, civil rights, and computer services now provided by Pacific Northwest Region.



**Table 3. Issues identified by the workforce prior to the 1987 conference with a sample of roles and solutions proposed by the conference workgroups.**

**Issue 1: What creative solutions can be used to help dual career couples?**

- a. Individual roles:
  - 1) Be realistic about the sacrifices and compromises necessary to achieve career and family goals, especially with regard to mobility, turning down opportunities for the sake of one's partner, and the time needed to place dual career couples.
  - 2) Take the initiative in participating in dual career placement. Identify placement needs when first applying for a position.
- b. Agency roles:
  - 1) Enforce consistent application of dual career policy across locations and position in the agency.
  - 2) Provide more information to employees on dual career policy and helpful strategies for employees and supervisors.
  - 3) Increase interagency cooperation for dual placement. Provide employees with information and contacts for opportunities outside the agency.
  - 4) Handle backlash constructively.

**Issue 2: How do we improve communication and working relations among diverse people?**

- a. Individuals should identify perceptions, understand cultural values, develop trust, promote respect, increase comfort levels, fight apathy, develop active listening skills.
- b. Agency roles:
  - 1) Increase the availability and use of tools to increase understanding of cultures, values, and life experiences.
  - 2) Promote formal and informal small discussion groups representing a cross section of employees.
- c) Develop resource lists for special emphasis programs.

**Issue 3: Career ladders for support services personnel (Includes clerical, personnel, and administrative support positions).**

- a. Individual roles:
  - 1) Set career goals and actively pursue them
  - 2) Seek information on training and opportunities for development
  - 3) Use details, cross training, and other on-the-job opportunities to enhance skills and visibility.
- b. Agency roles:
  - 1) Provide quality, timely career counseling.
  - 2) Reclassify and/or restructure jobs and pay scales to reflect work being done and enhance career fulfillment.
  - 3) Incorporate support services personnel into unit activities. Encourage these employees to be part of the team, and encourage appreciation of their value to the team by other employees.

**Issue 4: How do we make networks work? How do we help and support each other?**

- a. Individual roles: Seek opportunities to develop contacts and share information (details, committee involvement, community service, one-on-one, professional/interest organizations).
- b. Agency roles:
  - 1) Strengthen Federal Women's Program as an information sharing network.
  - 2) Counsel employees on how to make use of opportunities listed above.
  - 3) Provide training in active listening and assertiveness.

**Issue 5: What are the "how to skills that get people ahead in their careers?"**

- a. Individual roles:
  - 1) Develop feedback skills: strengthen communication skills, use criticisms effectively, take responsibility for one's own mistakes.

**Followthrough**

Since the 1987 conference, actions have occurred on several fronts. Delegates have shared their experience with their constituents—men and women—through informal meetings, formal briefings, newsletters, and videotapes of conference sessions (still available through the Civil Rights Office in Portland). At least twelve units have had conferences built on the January 1987 experience and tailored to their local needs, often the joint effort of adjacent Forests and Research Labs. Some Forests and Labs have incorporated and built on the recommendations made by the conference work groups. Region and Station staff have worked with the work groups to meld the recommendations with activities already underway and to get them into action as quickly as possible. As a result of conference recommendations, a similar conference on workforce diversity was held November 1988 (see Elaine Zieroth's account in this issue of WiNR).

The Regional Forester and the Station Director have informed employees of program activities through articles in newsletters. The Federal Women's Program network also distributes a newsletter. Recommendations being pursued include: holding dual-career workshops; identifying dual-career needs on applications and lists of available employees; requiring for all a communications course tailored to the Forest Service as part of employee orientation and training; cross-training support personnel; developing an orientation package for support personnel; strengthening training for first-line supervisors; announcing detail opportunities Region- and Station-wide; developing a package of how to survive and thrive in the Forest Service; surveying child-care needs and availability at all locations; and developing a list of career counselors who can speak specifically about career paths.

**Progress**

Gains have been made on all fronts (in terms of numbers) for women employees, most notably in management positions (figure 4). Poor supervisors, both men and women, still abound, but resources and information are increasingly available to employees (such as the Federal Women's Program, professional

societies, mentors, and sponsors) to discuss workforce issues and career goals. Sexual harassment continues to be a problem, but is no longer condoned by lack of management awareness or responsiveness. Managers and employees are forming local and broad partnerships to help dual-career families.

It is unusual today to find a field crew or management team in the Pacific Northwest that is all male. Women and men fight fire, survey budworm damage, measure effects of slash burning, prepare timber sales, conduct meetings, enforce the law. Women do dirty jobs, getting critical experience to join the advancing women moving up in the Forest Service. Some may even wave dead rattlesnakes.

### The Future

Women in the 1990s—and the next century, of course—will continue to play a major role in the resolution of workforce issues. Communication channels and working relationships with agency policy makers will continue to grow. Some of the issues that we've struggled with will not disappear: Communication and supervisory skills will always need active monitoring and improvement. Family needs will have increasing emphases in personnel management.

The 1987 conference (Table 3) served as a model that is widely utilized throughout the organization to resolve workforce issues. That model provides a forum for coming to grips with the past, facing the present, and planning the future. The keys to resolving organization problems lie in a strong and visible commitment from management and the workforce. Open, honest communications are a must throughout the organization. This is what has and will continue to strengthen and facilitate effective change in the Forest Service in the Pacific Northwest.

*Susan N. Little is a Research Forester at the Pacific Northwest Research Station. Abigail Kimbell is a District Ranger at the La Grande Ranger Station on the Wallowa-Whitman National Forest.*

### Table 3. Continued

- 2) Actively pursue training and development: career goals, relevant training, opportunities for visibility, take tough assignments and leadership roles in the agency and community.
  - 3) Build self confidence and self esteem: set goals, develop support groups, network, healthy lifestyle.
  - 4) Learn the informal systems and politics of the agency.
  - 5) Have fun! Know how and when to create a more pleasant working environment.
- b. Agency roles:
- 1) Promote and provide effective and timely career counseling and training.
  - 2) Be creative in providing counseling and training for all employees.
  - 3) Positive position classifications: don't define jobs so narrowly that they squander employee talent and limit career satisfaction.

### Issue 6: Wellness and self-esteem.

- a. Individual roles:
- 1) Be as mentally and physically fit as you can be.
  - 2) Be open and supportive of wellness activities.
  - 3) Share the cost, both time and money, of wellness programs.
  - 4) Be assertive.
  - 5) Take risks: broaden interests and take on new challenges. Share risks by involving others, maintain a support network.
- b. Agency roles:
- 1) Promote wellness as a shared responsibility.
  - 2) Support and promote family involvement in wellness programs.
  - 3) Allow flexibility to respond to individual needs with creative programs.
  - 4) Emphasize traditional safety values.
  - 5) Provide assertiveness and communication training.
  - 6) Provide opportunities for employees to exercise assertiveness: delegate tasks, share responsibility, committee assignments, etc.
  - 7) Help all employees to be part of the team. Value all positions.

### Issue 7: How can we balance our work and home lives to the advantage of the agency and the individual?

- a. Individual roles:
- 1) Set goals and priorities.
  - 2) Separate personal and working lives
  - 3) Improve time management skills.
  - 4) Be involved in the community.
- b. Agency roles:
- 1) Provide assistance in career life planning.
  - 2) Reduce requirements to move in order to advance one's career.
  - 3) Provide leadership for childcare information. Provide support, including information on available care givers, space and facilities for childcare cooperatives.
  - 4) Allow maximum flexibility in scheduling individual worktime.

### Issue 8: What are the qualities and skills we want in management? How do we promote these skills?

- *Motivate, generate, initiate, support, respect, relate.*
- *Communicate and listen.*
- *Take risks and support subordinates who are innovative.*
- *Have an enthusiastic, can-do attitude.*
- *Delegate authority.*

- a. Individual role: Develop, hone, and use these skills.
- b. Agency roles:
- 1) Develop these skills in the workforce by effective training programs.
  - 2) Recognize and reward these qualities.
  - 3) Utilize employees' skills.
  - 4) Critique performance based on these skills.
  - 5) Provide training for managers who need to improve their skills.
  - 6) Develop a skills file as a resource for detail assignments to provide opportunities for individuals to stretch their abilities.

# Interview Linda Donoghue

## Fire Prevention Researcher

*The first editor of this journal talks about her work, her interest in seeing a diversified workforce, and her life.*

**Daina Dravnieks Apple**



*Linda Donoghue at Tiger Stadium presenting an award to the Detroit Tigers for their commitment to wildfire prevention.*

**WiNR:** *Your fire research unit has an intriguing name: Atmospheric and Socio-Economic Relationships with Wildland Fire. Since fire research is generally a less well understood area of Forest Service research, could you tell us what your research is about?*

**Donoghue:** Our unit does fire management research. In my own work, I focus on fire prevention problems in rural or wildland/urban interface areas in the eastern half of the United States. Fire prevention, by the way, can include anything from mass media campaigns to personal conversations with campers, from jailing people for arson fires, and verbal warnings. It involves other things, too: Mechanical devices from spark arrestors on chain saws to locomotive maintenance. In other words, fire prevention covers a broad range of activities—all designed to reduce the number of wildfires through education, enforcement, or engineering activities.

**WiNR:** *How do you go about doing that?*

**Donoghue:** Our computer programmer, Bill Main, and I are pursuing one avenue of research which involves developing methods to evaluate the effects of fire prevention programs that land management agencies are currently using. We want to determine, using statistical

analyses, if these programs have an impact on the number of wildfires these agencies have each year. Bill and I are taking a quantitative approach.

**WiNR:** *Is part of your work assisting fire managers nationwide to do a better job?*

**Donoghue:** We are trying to come up with a better way to evaluate fire prevention programs by looking at the methods fire managers currently use. Then, we want to determine the success of their programs and to compare those methods to the techniques developed and used by professionals in other fields, such as medicine or education. We may find that we can dramatically improve the way fire managers evaluate their prevention programs by borrowing those already-in-use successful evaluation techniques.

**WiNR:** *Could you give us an example of the kind of projects you direct?*

**Donoghue:** Right now, I'm in the process of conducting a national survey in conjunction with Larry Doolittle of Mississippi State University to determine what kinds of evaluation methods are currently used by Federal and State land managers to assess the impacts of their prevention activities. Do managers, for instance, simply count the number of fires they have each year?—and if the number of fires has gone up or down, assume that their prevention activities reduced the number of wildfires? Once Larry and I learn what types of evaluations these managers are using—and what is important to them—then we can, by borrowing techniques used in other fields, put together evaluation guidelines and procedures. Then managers can use those if they are looking for a better way of evaluating how well they did at reducing wildfire occurrence.

**WiNR:** *Some areas of this country have had historic fire problems and probably will continue to have them, so that must be a fertile field for research. Do you follow a particular methodology for particular problems or regions?*

**Donoghue:** In some places, we have assisted in fire management planning, particularly in the wildland/urban interface. Our unit is in the initial stages of examining the use of geographic information systems to assist the heavily populated northeast, and at least initially, the state of Michigan, to begin dealing with wildland fires which threaten homes and businesses.

But I have to say, that no matter what fire prevention problem I work on I follow pretty much the same procedure. Our job as researchers is fundamentally to "create" or generate new knowledge.

**WiNR:** *Let me ask the rhetorical question—and how do you do that?*

**Donoghue:** We identify the problem, first, of course. What is it that's causing fire managers trouble? What do they want to know—or want to solve? For example, fire managers do not have methods to accurately and reliably evaluate the success or failure of their prevention programs. So, once we select a problem like that (and assuming we know what the manager feels is important and we have the skills to handle it) then we proceed in the classic manner. We prepare a study plan—a statement of how we plan to do our research.

**WiNR:** *And then?*

**Donoghue:** In a nutshell, the plan contains a statement of the research problem, the objectives of the study, the hypotheses we plan to test, and how we will design the study, collect and analyze the data, and report the results. Beyond that, once the plan is approved, we then conduct the research—and that takes from months to years depending on the work. During and after the study, we publish our results and deliver papers at conferences just as other scientists the world over do. In addition to all that scholarly stuff, we produce videotapes and brochures and meet with fire managers so that the word gets out to everybody who needs it.

**WiNR:** *It sounds to me like you may function partially in a consulting role.*

**Donoghue:** Well, some people don't know how to evaluate fire programs, and our job is to help them get a handle on what is working and advise them on what they can do to improve the effectiveness of the programs they do have.

**WiNR:** *Apparently in some states, arson is the cause of many fires. Do you analyze the impact of human behavior?*

**Donoghue:** I do not get into behavioral research as such. I concentrate more on analyzing quantitative data like economic, demographic, weather, and forest fire report data. For example, I mentioned earlier the work that Bill Main and I are doing: Developing methods to evaluate the effects of fire prevention programs that land management agencies are currently using. In our study, we have learned that the number of wildfires varies from year to year for a number of reasons and we have to take them all into account. Fires could increase or decrease because of our prevention efforts, for instance, dry or wet weather, high or low forest use—and of course high or low forest use influences the number of ignitions caused by human activity.

In one study, Bill and I used regression analysis to determine the contributions that state law enforcement programs, length of fire season, weather, and population density had on the number of wildfires in the eastern U.S. Although the relationship was weak, we found that state law enforcement efforts did seem to have an impact on the number of arson wildfires. Our data indicated a minimum amount of law enforcement effort produced large reductions in the number of arson wildfire. But adding even more law enforcement effort produced smaller changes in the numbers of those fires.

We are working on a similar but far more complex study for the state of Pennsylvania. They brought us volumes of data related to their fire prevention programs and asked us to tell them what the data say. The question they wanted answered is: Are our fire prevention programs—they have over 70 of them—reducing the number of wildfires in the state? Are we accomplishing anything

with these yearly activities? While the question is simple, the answer is not. Using regression analysis once again, we are going to try to explain the variability in wildfire numbers caused by fire prevention activities, weather, and demographic factors. This takes a lot of creativity and hard work.

**WiNR:** *Tell us what made you decide to go into the field of natural resources?*

**Donoghue:** I actually started out to study veterinary medicine at Michigan State University. I had relatives in northern Michigan who owned farms, so early on I worked with them and became interested. I entered MSU in 1967 as an undergraduate in the pre-vet program.

**WiNR:** *How difficult was it for you as a female in a predominantly male academic field?*

**Donoghue:** I was told that women were unwelcome in veterinary medicine, so I went to various other departments to seek admission. Most of them did not encourage women. Finally, I went to the Department of Forestry and asked if they would have me, and they said yes, so I joined their program. Even though it wasn't my first choice, I had a lot of interest in it, so much so that I received my MS in 1974 and my Ph.D. in 1983, both in Forestry.

**WiNR:** *When did you start with the Forest Service, and where are you now in your career?*

**Donoghue:** I first started in a summer job. MSU had a strong tie with the national forest system and a strong summer hiring program. From 1970-71, I worked as a forestry aide in fire control and timber on the Winema, and from 1972-74, I was a forestry aide in the fire research work unit. I was hired full time in 1974 and am currently a GM-13 Research Forester at the North Central Station, headquartered in St. Paul, Minnesota. My unit is located in East Lansing, Michigan at MSU and I'm the Project Leader of the Fire Research Work Unit. I report to Dave Lothner who is the Assistant Director and to Ron Lindmark, the Director—both in St. Paul. I super-

wise nine people on the project. Of the \$475,000 our Station receives for Forest Fire and Atmospheric Science research, approximately \$81,000 of that is what our unit receives to do research and run the project.

**WiNR: Where do you expect to go from there?**

**Donoghue:** Everybody has to look ahead a bit, and I've given it some thought. Almost every route I would have to take involves some time in the Washington Office—maybe after I worked as a Planning and Applications Assistant Director for another Research Station. That position is responsible for research planning, program direction, Station budgeting, Research Work Unit Descriptions. After Washington, there would be several possibilities such as becoming a Program Assistant Director managing, in some cases, 12 or more projects.

**WiNR: Some of this theoretical moving will in actuality involve your husband. How will this affect him?**

**Donoghue:** My husband, Bill de Graaf, works full time for the MSU Language Laboratory, where he repairs electronic equipment and develops computer software and hardware. He is also a student in landscape architecture and hopes to someday work either with the Forest Service or a private firm. He has agreed to follow me for the next couple of moves. After that, we'll play it by ear as they say. He's ready for a change, and his skills are certainly marketable. I have definite career plans and he's willing to support them right now. I really appreciate his willingness and desire to do that.

**WiNR: Do you plan to have children?**

**Donoghue:** Because of my experience as a child in a single parent household, I decided that either I had to stay home with children or work. I could not

do both. For us, my staying home would not have worked out.

**WiNR: Can you elaborate on your experiences as a child?**

**Donoghue:** My father was killed in a construction accident in 1951, leaving my mother with three small children—the oldest was three years old. We did not fit into the traditional nuclear family mold and it made for tough times and stress. Children from single parent families were an anomaly in the 50s. Day care was unheard of back then. We were burdened, as well, with tremendous responsibilities at very early ages because



my Mom worked and she needed our help. We cooked for ourselves, took care of ourselves after school. Socially, people at church, in school, and in the neighborhood didn't know how to relate to us. So, I guess I made the decision that I would never put children through what I experienced. It was lonely and demoralizing.

**WiNR: And for your mother...?**

**Donoghue:** She didn't fit in as a single parent either. There was always pressure on her from friends and relatives to remarry. Since she worked away from home, which most women didn't

do back then, people pulled away from her. But an interesting thing happened to her, too. She became a strong advocate of single people. She has actively campaigned, especially in her church and workplace, for recognition of their status, needs, and value. It continues to amaze her how unwilling people are to accept singles. They are so frequently viewed as an aberration in our society and are either ignored or pitied. It frustrates her no end!

**WiNR: In your case, though, it was a career which influenced you not to have children?**

**Donoghue:** Yes, we've made a trade-off. But anyhow, in a marriage without children, pressures still exist, and considerable ones. Bill and I choose to work very hard on our relationship. We come home tired from full-time work, go for a walk or bike ride, get supper, catch up on the day's activities before bedtime. We try to spend as much time together as we can to keep our relationship growing. This may sound crazy, but we thoroughly enjoy working together—building furniture, landscaping, constructing decks and brick sidewalks, wallpapering, whatever needs to be done. But we also recognize the importance of having alone time where each of us can pursue

our own interests and pleasures. Bill loves astronomy. I love to ride horses (dressage and cross country) and to train dogs. I've been riding for 20 years and will never lose my enthusiasm for it. And training dogs is great fun. Especially if they are intelligent like my Australian Shepherd. They pick things up so fast, inventing new ways to train the trainer!

**WiNR: It sounds like your having had a lot of responsibility at a very young age may have contributed to your choosing a non-traditional profession.**

**Donoghue:** Well, being a latch-key kid, I learned I could do most anything like home repairs. I became independent quickly. And, of course, my mother did all kinds of work around the house, so I had a role model for that and really believed there were no male/female barriers. I was shocked when I learned there were.

**WINR:** *I understand you were one of the founders of this journal when it was called the Women in Forestry Newsletter.*

**Donoghue:** Back in 1979, I met Andrea Warner, who was at the Pacific Northwest Station at that time, and we got to talking about women's isolation and how damaging that was—both personally and professionally. We thought it would be a great idea to get together the professional women in Region 6 to talk about being so separated which contributed to low self-esteem. Andrea, Mary Albertson in the Regional Office, and I then sponsored a workshop which provided an opportunity for women to openly discuss this kind of thing in a setting sponsored by the agency. It was an important milestone that began what has now become a series of special workshops for women throughout the Forest Service. So the Journal began there, and women who attended the workshop pledged to submit articles. But as more and more women found out about it, it expanded quickly to a national newsletter.

I had burned out by 1981, and I put out pleas for someone to take it over. Dixie Ehrenreich called me from the University of Idaho and told me that if I didn't get any better offers, she and Molly Stock would take it rather than let it die. Dixie's husband John was Dean of the College of Forestry, Wildlife, and Range Sciences and was very committed to increasing the numbers of women in his college's faculty, in women student enrollments, and women professionals generally, so he offered production support. Dixie's Director, Rick Sprague, in the Laboratory of Anthropology, where they train forest archaeologists, also offered word processing and other support for the first years. It's amazing to think that it's been 10 years since we started all this.

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**WINR:** *In light of all the special programs, and a journal dedicated to women in natural resources, what is your perception of the actual progress the Forest Service is making in advancing women?*

**Donoghue:** Slow. One of the primary problems is retention of women and male and female minorities. I attribute the slowness to the Forest Service being unprepared for what's happening in the world around them. For example, there is sometimes a strong value conflict between the agency and what women themselves value. Women aren't motivated to feel the same loyalty to a system like employees from the Gifford Pinchot era whose credo was—the Forest is everything—just hang in there. I think for most women, loyalty doesn't come from longevity on the job, but from good working conditions, good human relationships, and the ability to contribute in a meaningful way like anyone else. They need to be valued as people, but I think it's an even stronger need right now for most women.

Line managers seem ill-equipped to deal with a changing workforce and changing values. Some are not good at asking what's important to our people or what keeps our people committed. They don't seem to care as much about what women value or how to help women to be productive. They forget that a lot of women don't easily fit into the Forest Service system, whether it's due to differences in family, religious values, or personal philosophy. Although we are bringing women in at a reasonably good rate at the lower rungs of the ladder, we're having a hard time keeping many of them.

**WINR:** *Coming from Region 5, I see some progress in attracting greater numbers of women in underrepresented series in the Service and in the Pacific Southwest.*

**Donoghue:** I see Region 6 as being successful and progressive as well. Especially in retention. PSW has also increased its numbers of females, because they have had to. I think the verdict is

still out on whether Region 5 will succeed in the long run. I hope they do.

**WINR:** *In the opinion of some, sexual harassment is pervasive enough in the Forest Service to encourage women to leave. What is your observation?*

**Donoghue:** Although I have not personally experienced it, I do know it happens. Word travels fast, women learn about the offenders from one another. They have clear, specific stories of exactly what happened. In many cases, management also knows about it, but has been slow to respond if they respond at all. The agency seems unwilling to deal with them when they're failing or messing up whether it's due to sexual harassment or some other problem. These managers are often allowed to continue in their jobs or are promoted.

**WINR:** *Have you experienced or observed women being discriminated against in other ways?*

**Donoghue:** Unequivocally, yes. I've seen it, for example, stopping promotions, reducing opportunities and choices about locations, denying career counseling. Another example is where one man got his school work paid for with time off, but a woman with the same credentials had to work full time and manage courses around working. On the other hand, in the last several years things have changed for the better.

**WINR:** *How do you account for your success in the Forest Service?*

**Donoghue:** In addition to basic professional competence, which is up to the individual to acquire, I've also had the good fortune to have had a number of helpful individuals, all in different areas, and each of whom played a different role in my career. There were two faculty at MSU, for example, who were particularly helpful: One valued me for who I was and supported me as a person—the other, my academic advisor, was a good counselor who helped me cut through red tape. And in the Forest Service, there was a Research Scientist who gave

me a "political" education and taught me how the organization really works—and how to get things done.

**WiNR: Have you had any women mentors?**

**Donoghue:** At that time, there were no women I knew in the field I'm in. My mentors were all men. I have women friends and I confide in them. But so far, I've had no women mentors in the official sense of the word.

**WiNR: As you advance professionally, are mentors less important?**

**Donoghue:** No, I'll probably always have a mentor, no matter where I go or how old I am—if my choice is to continue to learn and to improve my skills and management abilities. I look for someone who can help me cut through barriers and in whom I can confide. After all, a career is a form of development. I don't want to get stuck in one spot. There's always something you need help with no matter where you are in your work life.

**WiNR: Earlier we were talking about how hard it is for the Forest Service—and all other agencies and institutions, for that matter—to open up to professional/cultural/racial diversity. How do you see them responding to the new realities?**

**Donoghue:** The Forest Service—the only one I can speak about from my own knowledge—is making a concerted effort at this time to diversify the workforce: We have to become more people oriented. The public, in addition, is making different demands now, and we are forced to respond. Before—we called the shots. And this might be the place to say that I think the Consent Decree is positive, in that it forces necessary changes to take place. Perhaps the Consent Decree would not have become an issue had it been dealt with effectively in the first place.

**WiNR: Do you see court orders as significantly opening opportunities for women, or is it window**

**dressing?**

**Donoghue:** Though not the most desirable way to change, the law is forcing the agency to get its act together and face diversity issues. Although the Consent Decree is perceived as negative, I can see both sides of its impact. I hope the end result will be worth it. And, no, I don't see this as window dressing this time because the courts are behind us. There are things happening outside the agency forcing us to change. Recently I heard statistics which bodes for even greater change: In the next ten years, 50 percent of the Forest Service management will turn over. This will open up opportunities for women and minorities.

**WiNR: What advice would you give women at this time that would help them plan their careers?**

**Donoghue:** Women have to take the initiative. If they're not getting help from their bosses, go somewhere else. Get professional career counseling to learn about opportunities. Train in areas that may open up new horizons. Go on details, talk to others. Let people know where you want to go, and remain flexible. Even if you are not sure, focus on something that looks interesting. You can change your mind later, but if you don't take that lead, either nothing happens, or someone else will make the decision for you. I now let people know what I want and I try my best to learn about jobs I aspire to. Forest Service people are generally very helpful, and that's one thing I'm proud of about the agency.

Even though you didn't ask this question specifically, I'd like to say that when I think back over people I've known throughout my career, some of the finest people I've ever worked with have been women. Regardless of their age or what they do, they are incredible. They are often women with a purpose, who do an outstanding job while struggling with difficult issues, both personally and professionally. They retain their values and have the strength to handle resentments and obstacles—yet continue to help people with open arms. I'm very proud of them, and grateful for the support and encouragement that they have

given to me.

*Linda Donoghue was interviewed by Daina Dravnieks Apple of the U.S. Forest Service, Pacific Southwest Region (R-5). Apple is with the Regional Engineering Staff at Pleasant Hill, California where she does management and organization analysis, organization design, and workforce management planning. She earned her BS and MA (1977 and 1980) from the University of California, Berkeley, in Natural Resource Economics and Geography. Before taking her current position, she was Regional Administrative Appeals Coordinator in R-5 (1986-88), and an Economist with the USFS Management Sciences Staff, Berkeley. Her publications include studies on the management of policy and direction in the Forest Service (1984), an analysis of civil rights practices and trends in the Forest Service (1984). She has developed public involvement models and methodologies (1977 and 1981). Since 1981, Apple has been active in Phi Beta Kappa, served as President for Northern California (1982-84) and most recently, as National Association Secretary.*

**Assistant Professor  
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## **The message is worth repeating: Planning and study are necessary in order to manage our money well.**

**F**amily financial management seems so simple, any child should be able to do it. And in fact, in the process of giving children allowances, adults are teaching the financial principles they so often violate. We tell children: spend your money wisely; don't buy what you cannot afford; don't borrow unless you need to, and put some money away for a rainy day. If we added to that: invest some money for the remote future, it would be a complete package of good financial advice. If we all know how to give the advice, how come we have so much difficulty following it?

There are many different reasons why people have too much money left at the end of their paycheck. Basic financial planning begins with creating a budget, and accounting for where the money goes each month. Keeping a budget may seem tiresome, but it produces surprising insights into where the money really goes.

Suppose one finds that expenditures inevitably exceed income? The obvious basic remedy is to produce more income, and most professional people could produce more income if they were motivated to do so. It may require finding another job in a new location—a stress-producing task. Or it may mean simply becoming more productive at current employment. For many people, supplementing income by part-time employment, perhaps in your own business, may be the best solution. That route may require investment of your own money as well as time, and require financial backing from an appropriate supporter such as your friendly neighborhood banker.

For most middle-aged professionals, however, the biggest financial problem is what to do with the money that finally begins to accumulate. Longer term financial goals must be identified and met, and investing money for greatest safe return is a critical problem.

I still advise investing in two or three appropriate mutual funds as the safest and sanest approach to investing those sur-

pluses. A large number of funds have averaged almost 20 percent for more than a decade. While that level of performance may not be matched in the immediate future, returns of better than 10 percent per year seem likely for Vanguard Windsor, Fidelity Magellan, and Mutual Shares—all well managed funds. For investors for whom safety of principle is of utmost importance, Vanguard Wellington, Fidelity Balanced, and Lindner Dividend will perform almost as well. These will not suffer much should a bear market develop.

For those among us who have financial assets exceeding \$100,000, the pur-



chase of common stocks makes some sense, but only if three hours a week (minimum) is available for careful study of stocks and the market in general. For many people whose attention is fully occupied by a more than full-time job and the raising of a family, trying to keep up with the movements of the stock market is just not a feasible enterprise. Money management demands attention to the basics.

When we were children, financial goals were simple. The older you get, the more complicated the financial picture becomes because setting even short-range goals can be difficult: where to go and how much to spend on vacations; how much to spend on basic transportation; how much for education; how much for family projects. Long range goals include the purchase of homes and property, the amount of money you

must accumulate in order to retire (since relatively few people really plan to work until they drop), and what kind of estate you want to leave behind for your heirs and assigns.

Over the lifespan, the basics remain the same. Income must exceed outgo. We all need at one time or another to borrow money, so it is important to do it as economically as possible. It is imperative to get the most for our money whether grocery shopping, buying a car, home or graduate degree. What money we do have must be made to work for us: an earning rate of six percent in a savings account is actually losing purchasing power year by year as taxes and inflation erode its value. Over the long term, owning productive assets (like your own company or shares in some other company) beats the heartbreak of taxes and inflation by five to ten percent per year.

The most basic of the basic requirements for financial success is information. There are excellent periodicals, ranging from *Consumer Reports*, *Changing Times*, and *Money* magazine to fine new books such as *One Up On Wall Street* and Givens' *Wealth Without Risk*. These books and magazines can help provide the element that most people lack in pursuing these basic financial goals—motivation. Since the basic information seems so elementary, we all need to be preached to a little bit to get us to do the right thing. The literature on finance can help put us on the path to wealth, and provide some of the motivation to keep us pursuing those goals when we are tempted to stray.

Now picture this modern financial equivalent of original sin. In *this* scenario, we see Adam tempted by the forbidden fruit of some new consumer goodie. Meanwhile, however, Eve counsels thoughtful pursuit of basic long-range goals.

*Gene Bammel regularly presents personal finance workshops and is Columnist for Women in Natural Resources. He is Department Head, Professor, and Forest Scientist in the Recreation and Parks Management Program in the Division of Forestry, West Virginia University.*



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*Jo Brewer Winter's life reminds us that Renaissance Women have the ability to see, master, make coherence of, and transmit large bodies of disparate information the rest of us need help in organizing.*

## Butterfly Gardening and Much More

Diane M. Calabrese

If you want to know how to attract butterflies to your garden, ask an expert: Jo Brewer Winter. The Dedham, Massachusetts resident said she “nearly died for joy” when she first saw a monarch emerge from its chrysalis. She became so fascinated by the monarch and its long migrations that she wrote *Wings in the Meadow*. Butterfly “gardeners” know that was just the beginning of her writings: *Butterflies* followed, then other articles on butterfly gardening.

Jo Brewer’s first book however, was not about butterflies. It was a fantasy for children published in 1953 (E.P. Dutton & Co.) titled *Mysterious Treasure*. Even the fantasy, however, was filled with her gifted naturalist’s voice, commenting on the sand and the sea. Ask the 78 year-old when she found her voice for nature and you learn it was early, in primary school.

Later, when Jo Brewer graduated from high school, the May School (in 1929), she traveled to Europe with her aunt and wrote poetry. She sailed on the George Washington, wore her first evening gown, wrote many many poems, and now regrets only that she spent eight months writing long letters to her parents about her “protective” aunt. She learned much from her aunt, who was well-versed in European history and architecture.

She thought about art and culture, of course—and would return again and again to it in her writings—but as a young student at Driscoll School she had been much impressed by a teacher she labels a “nature freak”: Miss Robbins. Miss Robbins, aided by Audubon kits, encouraged students to know the natural world by experiencing it, and that’s exactly what Jo Brewer did. She persuaded her father to take her each Sunday to a new area beyond her Brookline, Massachusetts home so that she could add to her wildflower list. Not all she learned was uplifting: On their saddest outing, they encountered a mallard mother and her chicks who at first look, appeared to be wallowing in a puddle. The puddle proved to be quickly solidifying tar and not water. Despite her father’s valiant efforts to clean the ducks, they died, so young Jo learned early that there is a dark side to the beauty in the natural world, one that gives it texture, but one that is often made blackest by the encroachment of humans. As a grandmother much later, she would cope with the incredible pain of losing her beloved ten-year-old grand-daughter in a traffic accident.

Jo Brewer’s expertise as a butterfly gardener comes from more than three decades of doing the same. When monarch butterflies first attracted her attention, she thought about col-

lecting them and their relatives, but found that “collecting and mounting butterflies did not suit [her] at all” so she channeled her enthusiasm into photographing and writing. She was evangelistic about spreading her enthusiasms. If you had grown up in Newton, Massachusetts, you might have been one of the lucky children who participated in her Metamorphosis Club in the 1950s, a group that spent the summers rearing butterflies, thinking and writing about them, and even producing a play about the metamorphosis of the creatures. (No, it was not Kafkaesque.)

Jo’s observational and instinctive collection urges are keen and obvious in other ways: in her doll and puppet collections, in her knowledge of birds. She can recall now the day during World War 1 that her interest in butterflies began. She and her mother, who was knitting socks for soldiers, were in their backyard: a yellow swallowtail fluttered by and Jo, typically, decided to learn more about them. In addition, Josephine Edwards Tyler had the interests of any 1920s girl. She collected autographs of famous actors and musicians who visited Boston (a collection that includes the unique trailing signature of Rachmaninoff). In her poems, she pondered everything from animals living their lives in zoo confinement to the astrological stories written in the night sky. (Her father later bound the poems of her high school days in a large volume she titled *Morgue Revamped*.)

Jo claims that she did not know anything about butterflies before she began to do the research for *Wings in the Meadow*, but the large body of poetry she wrote while at the May School, indicates she always had been absorbing the intricacies of the natural world. She credits all of her teachers there with instilling in her an “attention to detail” in writing, in her studies of French and Italian, in all that she did.

The greatest good fortune of her life, she said, was meeting “two wonderful men who became [her] husbands.” Her first husband, George Brewer, died almost twenty years ago. Her second husband is a pediatrician who shares her interest in butterflies and is himself a collector. Their home is filled with his clever inventions such as the screened cases that hold six or eight spreading boards, hanging vertically on the walls (and conserving table space).

Jo Brewer served as a Founding Associate Director of XERCES and helped fledge the international organization for the study and preservation of invertebrates. Clearly, this is evidence of the respect members of the scientific community of



lepidopterists have for her work and knowledge.

In *Butterflies* (Harry N. Abrahms, Inc. 1976 [photographs by Kjell B. Sandred with many photographs by Jo herself]), she wove a fabric made up of the threads of her loves: poetry, art, culture, and butterflies. In the section *Butterflies in Art, Heraldry and Religion*, she wrote:

*In the decorative arts, butterflies abound. The eye of lepidopterist, attuned to their presence in the field, sees butterflies in embroidery, tapestries, cut glass, laces, dishes, in all the small niches where the unpracticed eye passes over them, seeing only that which is obvious... (p. 47).*

She went on to cite the caterpillars, butterflies, and chrysalids that comprise an inner-ring on a collection of plates by Philippe Mombaers (Musée Communal, Brussels), the "butterfly window" designed by John LaFarge (Museum of Fine Arts, Boston), and modern designs that incorporate butterflies like the Christmas card by Joe Brainard (for the museum of Modern Art, New York), as examples.

Not surprisingly, Brewer is a much sought-after and well-known lecturer. She has travelled the world. Her matter-of-fact style in speaking and writing enhances her acknowledged wisdom. In a recent essay titled *Gardening and Butterflies* (*Wings*, Summer 1988), she wrote:

*Having crowds of butterflies in your garden at once is really not the point. Rather, the point is that no matter how many there are, if you plant for them, watch them, and rear them, you will have added a sense of wonder to your life (p. 14).*

She went on to admonish those who would attempt butterfly gardening with the aim to "attract hordes":

*...Things really do not happen that way. The true pleasures are those that endure in one's memory long after the butterflies have been buried under a frigid blanket of snow. A thing witnessed only once in a life time can be relived year after year as long as flowers bloom and memories last, unexpected bits of behavior both unpredicted and puzzling: these are the great rewards of butterfly gardening (p.15).*

In the admonishment, the poet in her provided all of us with a metaphor for living life well. It surprises her that she has lived so long—both the number of years that she's seen—and how fast they have gone. She never expected such a varied life, but she has relished all of it, and will continue to do so.

*Diane M. Calabrese is an entomologist and writer, based in Dedham, Massachusetts. She works through her own consultancy: PAPILLONS. Calabrese is a Section Editor for Women in Natural Resources.*

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# WINR

**WOMEN IN NATURAL RESOURCES** is a quarterly journal for those who care about the world's environment and the new workforce working in it. We cover forestry, wildlife, fisheries, range, and environmental concerns. We address issues of administration and personnel, educational resources, and support mechanisms.

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*The North Dakota Centennial bird is a huge and majestic creature in flight, a widely foraging provider for offspring while on their island nurseries.*

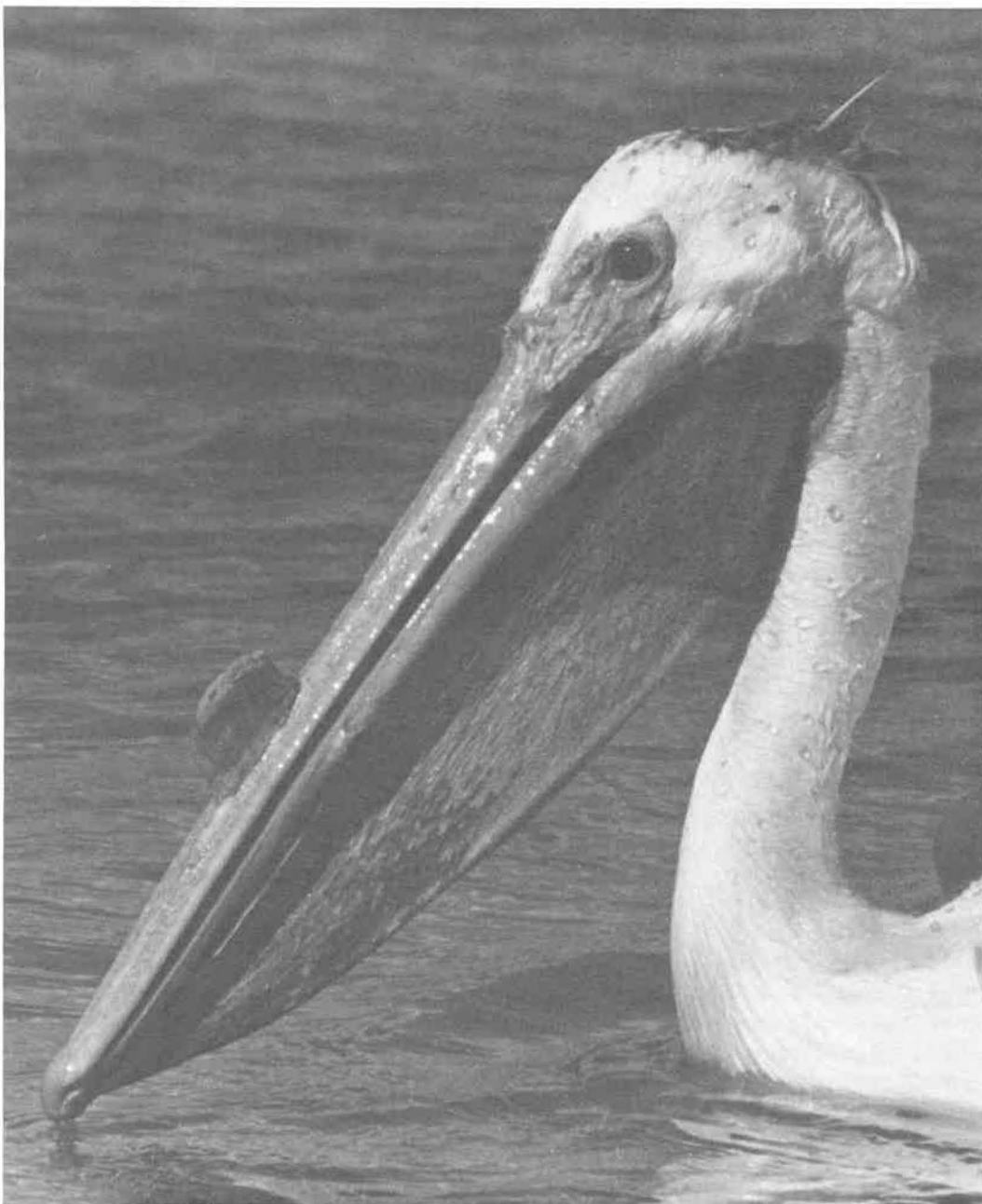
## American white pelicans

Bob Johnson and Donna Rieckmann

Photos by Ed Bry

**T**he black, honeycombed ice was melting quickly in the warm April sunshine. A pair of giant Canada geese were resting on the edge of the ice near the big

island in the middle of the lake. A few mallards and pintails were engaged in courtship activities in the scattered patches of open water along the lake shore.



Small specks appeared on the horizon and grew steadily larger as they approached. These were large, white birds with black wingtips flying in an undulating line, heads drawn back, bills resting on their breasts, each bird appearing to move in unison with the others. These were American white pelicans. They had returned to Chase Lake National Wildlife Refuge to lay their eggs and to rear their young as they had for uncounted years.

Chase Lake is a 4,385 acre refuge located in Stutsman County in east central North Dakota, about 35 miles west of Jamestown. The lake is slightly over 2,000 acres. It has no outlet, is highly alkaline, and *supports no fish or other pelican food items*. Two small islands, both fewer than 10 acres, are found in the lake—and these are occupied every year by thousands of nesting white pelicans.

White pelicans are large birds, weighing up to 16 pounds with a total length of 50 to 70 inches and a wingspan of eight to nine and half feet. The white pelican has an enormous orange-colored



bill with a blue-gray pouch suspended from the lower half, hooked at the tip. Its big, webbed, feet are orange-red. Sexes apparently are alike.

These highly social and gregarious birds nest in colonies on islands in isolated lakes that are free from human disturbance and predation. Pelicans don't breed until after their third year, and at that time, a horny plate adorns the top of bills of breeding birds from late winter until after the eggs are laid. Nests are scrapes rimmed with dirt and debris—rubbish, wood, plant stems, and other fine materials. Dull white eggs are laid from early April to early June in a normal clutch of two eggs although up to five eggs have been noted in individual nests at Chase Lake—probably the result of more than one female using the same nest bowl.

The nests are incubated for 30 days with both parents alternating at incubation duties. After the eggs hatch, one of the parents broods the young 15-18 days to protect them from the harsh sun during the day and to keep them warm at night. The young are fed what the parents eat: partially digested fish, salamanders, and crayfish.

At Chase Lake, two young rarely, if ever, survive in a single nest. The eggs hatch a day apart, and the young that hatches first prevents the later one from eating by repeatedly attacking it. Usually, the second hatched bird does not live for more than two weeks. The reason for this behavior is unknown although it may very well be related to food availability.

As the young pelicans mature they form groups called pods and spend their time moving about the islands waiting for their parents to return. Returning adults are greeted by mobs of young birds. It appears that adults recognize their own young, however, and will not feed any other. The young poke their heads down the gullet, grab the food right out of the parent-bird's throat and down the meal.

Adult pelicans that nest at Chase forage a radius of over 100 miles to find suitable food. Fish tags have been recovered on the Chase Lake islands that came from fish tagged at Lake Darling, Lake Ashtabula, Lake Oahe, and the Little Missouri River, indicating adults travel very long distances in their search.

Groups of pelicans practice cooperative fishing. A group swims abreast of one another, forming a semicircle facing the

shore. A commotion of wing flapping and splashing drives prey ahead into shallow water where they are easily caught. Pelicans eat substantial numbers of rough fish and may do some good eradicating carp in lakes because of their habit of feeding in shallow waters. With over 17,000 nesting birds at Chase Lake, the numbers of rough fish eaten must be enormous.

Young pelicans gain weight rapidly and by eight weeks of age generally weigh more than their parents. At approximately 10 weeks of age, the young learn to fly. Excess weight is lost rapidly as they attempt to learn how to forage. Many young never successfully learn to obtain their own food, they starve to death, and the islands and shoreline of Chase Lake become littered with bodies of pelicans. It is also a fairly common occurrence to find starving young pelicans on many wetlands throughout North Dakota in the fall. This happens every year.

In early September, the pelicans begin to leave Chase Lake and begin their migration south to wintering grounds. Their migration takes them through South Dakota, Nebraska, Kansas, Oklahoma, and Texas. The Texas coast and northern Mexico is the final destination. They spend the winter months before beginning their northward trek in the spring.

Chase Lake has long been considered the largest white pelican colony in North America. In at least one recent year, however, this was not true. Stillwater National Wildlife Refuge, Nevada, in 1986, had over 10,000 nests, while Chase Lake had 4,995. The number of nests at Chase Lake in 1988 was 8,640 counted from images on aerial photos taken in June.

How important are pelicans? They are an integral part of a complex ecosystem and are good indicators of environmental quality. They live long lives at the top on the aquatic food chain. If a buildup of toxic chemicals used in pest control, industry, and farming negatively affects their reproductive capability, behavior, or causes death, it becomes very important to assume human life is threatened. Finally, the pelican is an important part of the prairie—they have spent the breeding season on the northern plains since the last ice age, and without them, the prairie would be missing something noble and beautiful.

*Bob Johnson is wetlands manager at Arrowwood National Wildlife Refuge. Donna Rieckmann is a wildlife biologist.*

*This article was reprinted with permission from North Dakota Outdoors (March, 1989).*



# EVENTS

## June

**Variable Probability Sampling and Computer Applications in Forestry**, June 1989, Paul Smiths College, New York. These two programs will be offered separately, the Sampling June 5-9 and Computer Applications June 22-24. For information on equipment to bring, the schedule, and fees, contact Continuing Education, Paul Smith's College, Paul Smith's New York 12970 (518-327-6249).

**Water and the City**, 7-10 June 1989, Chicago. This is an international conference on the past, present, and future of urban water management. For information, contact Conference Manager, Public Works Historical Society, 1313 E. 60th St., Chicago, Illinois 60637 (312-667-2200).

**American Women in Science Executive Board Meeting**, 11-12 June 1989, Washington, D.C. All AWIS members are welcome to attend. The Board solicits concerns or policy views before they visit Congressional offices. To discuss your views contact AWIS, 2401 Virginia Avenue, NW, Suite 303, Washington DC, 20037.

**National Association of Environmental Professionals**, 19-21 June 1989, Reno, Nevada. This is a change of location for the national conference. For more information contact Joan A. Schroeder, Executive Secretary, P. O. Box 46171, Denver, Colorado (703-660-2364).

**The Nineties: A Decade for Change**, 24-29 June 1989, Seattle. For more information contact Mel Monkalis, Conference Manager, National Environmental Health Association, 720 S. Colorado Blvd., Room 970, South Tower, Denver, Colorado 80222 (303 756-9090).

**Southern Forest Tree Improvement Conference**, 27-29 June 1989, Charleston. For registration information contact David Canavera, Westvaco Corporation, Forest Research, P. O. Box 1950, Summerville, South Carolina 29484 (803-871-5000)

## July

**Western Division of American Fisheries Society**, 2-6 July 1989, Seattle. For information contact Tom Johnson, 8595 Highway 101, Port Townsend, Washington 98368.

**Summer Institute for Women in Higher Education Administration**, 2-27 July 1989, Bryn Mawr College. The curriculum prepares participants to work with issues in higher education with emphasis on the growing diversity of the student body and the work force. Contact HERS, Colorado Women's College, University of Denver, Denver, Colorado 80220

**Western Division of American Fisheries Society**, 2-6 July 1989, Seattle. For information contact Tom Johnson, 8595 Highway 101, Port Townsend, Washington 98368.

**Wildfire**, 23-26 July 1989, Boston. The theme is Meeting Global Wildland Fire Challenges, and international cooperation techniques will be discussed. Contact the National Fire Protection Association, Batterymarch Park, Quincy, Massachusetts 02269-9101, Telex 200250 (617-770-3000).

## August

**Woodsmen's Field Days**, August 1989, Boonville New York. For the first time, there will be an Open Women's Championship for log rolling, bow sawing, two-woman crosscut, horizontal log chop, axe throwing, fire building, pulp throwing, and splitting. For information about the precise date, the requirements, and fees, contact Ruth J. Thoden, Executive Vice President, NYS Woodsmen's Corporation, PO Box 123, Boonville, New York 13309.

**Reclamation: A Global Perspective**, 27-30 August 1989, Calgary, Alberta. For information contact the American Society for Surface Mining and Reclamation, 21 Grandview Drive, Princeton, West Virginia 24740 (304-425-8332).

## September

**Fishery Management Controversies: Biology, Economics, and Politics**, 4-8 September 1989, Anchorage. This annual meeting of the American Fisheries Society (AFA) will schedule a luncheon "Recruiting women and minorities to the fisheries profession" and feature a panel on the subject. There will be the usual convention mix of technical papers, panels, exhibits for the expected 900 members who attend. For information write the AFA at 5410 Grosvenor Lane, Suite 110, Bethesda, Maryland 20814-2199.

**Managing America's Enduring Wilderness Resource: A Conference**, 11-17 September 1989, Minneapolis, Minnesota. This focus is resource management of wilderness and adjacent lands outside wilderness. Commemoration of the 25th anniversary of the 1964 Wilderness Act and the establishment of the NWPS will be featured along with papers and a trip to the Superior National Forest. A proceedings will be published. Contact David Lime, University of Minnesota, Department of Forestry 110 Green Hall, St. Paul, Minnesota 55108 (612-624-2250).

**Forestry at the Frontier**, 24-27 September 1989, Spokane. The Society of American Foresters annual conference will feature, in addition to papers, panels, posters, and trips, a buffet for women in the profession to be held right after the icebreaker. For information contact Charles Harden, SAF, 5400 Grosvenor Lane, Bethesda, Maryland 20814-2198 (301-897-8720).

## October

**Fourth Urban Forestry Conference**, 15-18 October 1989, St. Louis, Missouri. Sponsored by the National Urban Forest Council, the Missouri Department of Conservation, the American Forestry Association (AFA), and the Forest Service. For registration, papers, exhibit information, contact AFA, PO Box 2000, Washington DC 200131

## November

**Homespun to High Tech: National Interpreter's Workshop**, 5-10 November 1989, St. Paul. This is the theme of the National Association of Interpreters (NAI) annual meeting. Session papers, field trips to a wide variety of sites, special events having to do with living history museums, exhibits, and workshops are featured for the expected 1,000 attendees. For information contact NAI at 6431 University Avenue, Fridley, Minnesota 55432.

**Society for Social Studies of Science**, 15-18 November 1989, Irvine, California. For information call Adele Clarke, Chair, 136 Whitney St. San Francisco, California 94131 (415-821-4162).

## The Forest Service Prepares for Cultural Diversity

Elaine Zieroth

During the first week of November, 1988, an exciting event took place in the quiet mountain town of Welches, Oregon: the Pacific Northwest Region's first conference devoted to ethnic minorities. It was moving to sit in a room of 350 mostly Forest Service employees and see the future. The conference, entitled Strength Through Cultural Diversity, featured every race, color, creed, gender, and origin—white males were a minority—and more than one language was heard at any given time.

To understand the magnitude of this change, you must remember that the Forest Service has had a long tradition of promoting an image of the macho firefighter-ranger out on his horse. Others have described the organization of the agency in military terms. I've seen old recruiting posters from the agency's early days that make Marine recruiting efforts look pale. These posters recruit for rangers who ride all day and shoot from the hip. The ranger must build a trail and a cabin, maybe in the same day. The agency for years was staffed mainly by men from rural backgrounds with farming or logging fathers. There were a few women clerks and very few minorities.

In the early 1970s, however, the agency began a revolution when it accepted women

into non-traditional roles. The first few minorities came in, but we tended to select many minorities "by name only." By 1976, minorities were up to eight percent, with women at 22 percent (including clerical and administrative positions) of the 29,000 permanent employees. The agency counted 12 percent minorities and 31 percent women among the 31,000 employed by 1987. In addition, more employees were coming from urban backgrounds.

In the agency pamphlet, Work Force 1995, Strength Through Diversity, Chief of the Forest Service Dale Robertson pledged his commitment to "have a work force that better reflects the nation's diversity." The 1995 goal, in a nutshell, is to reach parity with the civilian work force (based on the 1980 census) of 18 percent minorities, 42 percent women, and one percent disabled employees—at all grade levels. This is an ambitious mission, and to plan to actually accomplish that mission was the reason we were gathered together in Welches Oregon.

### Conference Highlights

Regional Forester James Torrence and Pacific Northwest Experiment Station Director Charles Philpot gave welcoming remarks followed by Dr. Edwin Nichols, a psychologist, who spoke on how people raised in different cultures acquire different values, concepts of time, and traditions based on the things they deem important.

For example, northern European cultures become very production-oriented because they have only three weather-friendly months each year to produce crops, meat, and other changes to their environment. People from tropical climates, on the other hand, have all year to do these things and they tend to lead a less harried existence. Explanations such as these tell us why certain ethnic groups have the flavor and inherited cultural patterns they do today.

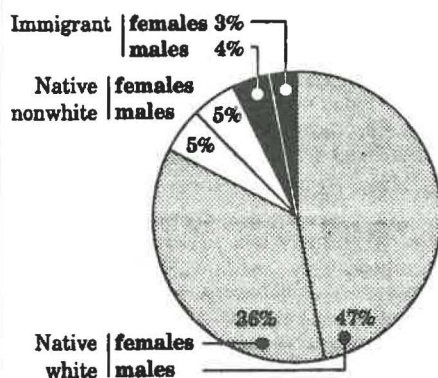
There were panel discussions and small group workshops: Ethnic Diversity, Cultural Awareness, Forest Service Commitment to Affirmative Action, Cross Cultural Relations, Minorities in Fire, Mentoring, Networking, Dealing with Racism, Parity, Backlash, Retention of Minorities. There was also an excellent session on minorities of the Pacific Northwest (our backyard) and a hard-hitting dose of realism by Byron Kunisawa on workforce data trends based on the forecasts by Johnston and Packer from the Hudson Institute. These forecasts say that more minority immigrants are entering this country, and more children are born to each minority family than to white families. By the year 2000 more women than men will be working, and minority working populations will dramatically increase. Thematically, these sessions warned: workforce cultural diversity *is already happening, will happen* with increasing frequency, and agencies should prepare for it to mitigate pain and fear.

The inclusion of cultural presentations throughout the conference (taped and now available from the Portland Regional Office) gave the Forest Service audience a creative look at what their new coworkers might enjoy in their leisure time: dramatic presentations, a female Hispanic comedian, Indian dancers, and storytellers.

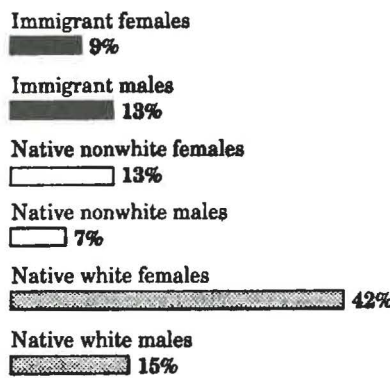
Unlike some of the 1970s Civil Rights Workshops, this conference had a very positive focus for the future. When I looked around the room, I saw diversity. I didn't see defeat or victims. I saw role models with confidence, talent, and with self esteem. I saw pride and tears and colorful dress. I overheard someone correct his friend that he was not Tom anymore: "Call me Tomas." I also saw a few uncomfortable people who are not ready to handle the rapid changes in the organ-

## The Workplace Diversifies

Who made up the U.S. labor force in 1985... (In percent)



... And who will account for its growth through the year 2000\* (In percent)



\*Net additions NOTE: Percentages have been rounded. Source: Hudson Institute

izational culture.

The increased emphasis on women and minorities in the workforce has the appearance of devaluing the importance of white males. Cultural diversity includes white males, people from urban and rural backgrounds, different schools, and varied political and social interests. These differences—all of them—strengthen and balance our mission. The fine traditions and values of the Forest Service were built, mainly, by white males and they will continue to be an integral part of the agency. To put it another way, a monoculture of pines is not as strong and resilient as a stand with various species, ages, and genetic backgrounds. This does not make the individual pine less valuable.

### What Will the Changes Mean?

When there are very few tokens of a group entering the workplace, they try hard to blend in and be one of the group. When I first started in 1972, it was important to me to be "one of the guys" and not stand out—principally because I got tired of the spotlight and scrutiny. But the adjustment to cultural diversity will be quite different, I think. Most women who joined early with me were ethnically pretty much the same—we shared with the men the same culture and language. The Forest Service believed it was diversifying, but in fact, it was making even the women conform in order to avoid feeling on stage all the time. But as more women joined the ranks, we started exerting an influence: we asked for dual career placement, child care, parental leave, flexible work schedules, other things. Now, however, this is another ballgame with new players, and if we really want strength through diversity we must be willing to accept what this means: differing holidays, different languages at times, and especially, resistance to moving away from employees' ethnic bases. We forget the sacrifices we are asking of such persons: being the only black family in Orofino Idaho, the first ethnic asians in Happy Camp, the first Apache in the Washington Office.

We need, as well, to accept the fact that we need actively to educate and recruit minorities to work in our professions. A white male in a forestry school may put a premium on joining the Forest Service, but it may not mean a thing to hispanic students in a New York City school or a native

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*Regional Forester James Torrence addresses the Strength through Cultural Diversity Conference with his words of strong support.*

American on a New Mexico reservation.

We have a big job to do in recruiting, and it is worthwhile because there are real benefits to diversity. Women and minorities are bringing new ideas and approaches to the agency. They are helping to humanize it with more emphasis on people skills, training, human rights, public involvement, and families. By themselves women brought more flexible schedules, emphasis on dual careers, and wellness programs. All of us together can better represent the true and growing diversity in the publics we serve, the citizen/owners of the National Forests.

### What Is Next?

Conference speakers pointed out another important role for the Forest Service. We must help prepare small communities—especially those whose economic viability depends on Forest Service families—for the diverse workforce we will be bringing. At the same time, we must actively prepare the minority workers for what they will find. Some of our earlier minority hiring programs resulted in bad experiences because the agency did not assist in the transition. This means, in part, reminding small town folks who rely on us to play a big part in their community that we are committed to strong cross-cultural relations. We will not tolerate discrimination and bigotry. With the disturbing acceptance of neo-nazi and skinhead racism in my neighborhood here in the northwest, this commitment is both timely and chal-

lenging for managers.

The Strength Through Cultural Diversity Conference was so exciting and inspiring that almost all the National Forests in the Pacific Northwest are planning their own local conferences this spring. These won't be sugar-coated versions of a "happily-ever-after" future, but an open, honest, and realistic discussion of our diversity goals and how we hope to achieve them.

*Elaine Zieroth is a wildlife biologist and District Ranger on the Tonasket District of the Okanogan National Forest. She is a Section Editor for Women in Natural Resources.*

## Women in Fire Management Conference

**Sue Vap**

On February 29, 1988, Region 6 of the Forest Service sponsored the first Women in Fire Management Conference. The Conference was designed for women who currently work in fire management, are on fire teams, or are thinking about a career in fire. Two hundred and fifty women came to Portland primarily from Region 6, but representatives from other Regions and the Washington Office attended as well as participants from the Bureau of Indian Affairs, Bureau of Land Management, Oregon State Department of Forestry, and the Washington Department of Natural Resources.

The conference committee, Karyn

*Turn to page 46*



# PEOPLE

**Kathryn Fuller** is the new President of the World Wildlife Fund and the Conservation Foundation, the first woman president of a major international environmental membership organization. She succeeds **William K. Reilly**, selected by **President Bush** to head the US Environmental Protection Agency. She has researched wildebeast behavior in Tanzania and rhinoceros census in Nepal, but has been a trial lawyer and later, chief of the Wildlife and Marine Resources Section of the US Justice Department. She directed the World Wildlife Fund's trade monitoring program, and their public policy program, then was Vice President and General Counsel for WWF and the Conservation Foundation, before assuming the Executive Vice President's position supervising conservation programs and budgets.

**Vera Norwood**, faculty member of American Studies at the University of New Mexico, received the invitation to give the Hilliard Scholar lectures at the University of Nevada in Reno. She described the work she did in preparation to write *The Desert is No Lady* (Yale University Press, 1987). Currently she is at work on the research for her new writings on American women naturalists.

**Christine Moffitt** was awarded a \$1.2 million grant from the Bonneville Power Administration to conduct studies for FDA approved registration of Erythromycin in treatment of Bacterial Kidney Disease in chinook salmon. This is the first major aquaculture project at the University of Idaho and will require the construction of a \$300,000 wet lab facility to accommodate the adult fish work proposed. The lab will provide the university program with an expanded research capability in aquaculture, and will function as the rearing and holding resource to undertake large projects in the future. Moffitt is a Section Editor and Book Review Editor for *Women in Natural Resources*.

District Ranger **Margaret Ewing's** first day on the job was more significant than most first days for most people—she was planning for the arrival next day of a new baby. **Kim**, a five-month-old Korean baby arrived, and **Margaret's** husband **David Ewing** was in Portland handling the labor on this one, their second child. Ewing manages the Powell Ranger District on the Clearwater National Forest, one of the rugged 1.8 million acre national Forest's most remote outposts.

The History of Science Society presented the Schuman Prize award to **Susan Lindee** for *Sexual Politics of a Textbook: The American Career of Jane Marcet's Conversations on Chemistry, 1806-1853*. At the same time, **Pnina G. Abir-Am** received the History of Women in Science Prize for her essay *Synergy or Clash: Disciplinary and Marital Strategies in the Career of Mathematical Biologist Dorothy Winch*, published in 1987.

**Judy Rose** accepted the position of the Forest Service's Region 5 historical preservation officer, replacing **Sonia Tamez**, who recently took the position of land management coordinator. Rose moved from Laramie, Wyoming where she was the Wyoming Zone archeologist. Prior to that she was the Utah Zone archeologist (five years) and earlier had worked for the National Park Service in Mesa Verde. Her Master's degree in Anthropology is from California State University at Sacramento.

Also in Region 5, **Linda Lux** became the new Regional historian. A 10-year veteran with the Forest Service, she had worked in the Regional office in cultural resources under a special agreement with the Pacific Southwest Research Station in Berkeley. Earlier, she worked at the Lowie Museum of Anthropology in Berkeley and the M.H. de Young Museum in San Francisco. She has been a

museum consultant for excavations in Greece and England. Her Master's is in art history from UC at Davis.

**Diane M. Calabrese** has become a Series Editor for Iowa State University Press. She will develop a monographic series *Women in Science and Technology: Studies and Reflections*. She is now looking for individuals who will serve on an advisory board for the series. Although the formal announcement of the series will be made after the advisory board has been established, it is not too early to share ideas for books that might fit. Contact her at PAPILLONS: diversified endeavors, 22 Sumner Street, Dedham, Massachusetts 02026-1921 (617-326-4750). Calabrese is a Section Editor for *Women in Natural Resources*.

**Bessie Woodward**, a research microbiologist at the Forest Service's Forest Products Laboratory, was recently named Soror of the Year by the Kappa Psi Omega Chapter of the Alpha Kappa Alpha Sorority, a national service sorority promoting higher education. Woodward was recognized for her successful implementation of long-term service programs and her leadership of a college scholarship program to assist needy high school seniors.

**Barbara Smuts** is one of a handful of researchers who first recognized the existence of friendships among nonhuman primates. In her observation of olive baboons, she developed objective criteria by which these could be documented and compared. Her next project in Western Australia is to study social relationships of dolphins. As a graduate student, she worked with **Jane Goodall** and **David Hamburg** at Stanford and began research for her doctoral dissertation on a troop of 150 olive baboons 160 km northwest of Nairobi. (That work is chronicled by managing editor **Sandra Ackerman** in an interview in *American Scientist* [Vol. 76] and in Smuts' own

book *Sex and Friendship in Baboons* [1985 Aldine]). Currently she is on joint appointment at the University of Michigan in both Anthropology and Psychology.



The Chevron Conservation Awards are the oldest, privately-sponsored awards to honor private citizens, or professional conservationists employed by non-profit organizations for outstanding contributions to the conservation of natural resources. **Julie Kierstead** (above), the Conservation Coordinator for the Berry Botanical Garden in Portland, Oregon won in 1988 for a number of reasons:

- She worked with the Army Corps of Engineers to save Barrett's penstemon, a plant unique to the Columbia River Gorge, taking cuttings in an area marked for a navigational lock, cultivating them in the Garden, then reintroducing them near their natural habitat after construction.

- She worked with the US Fish and Wildlife Service to re-establish the Malheur wire-lettuce in its only known habitat after it became extinct in the wild. Through seeds and plants maintained in cultivation since the 1970s, Kierstead grew several hundred transplantables of this annual species.

- She ensured passage of Oregon's first Endangered Species Act for rare plants and animals by organizing conservationists to draft bills, hold meetings, lobby, testify, and negotiate compromises which guaranteed passage.

**Emily Faulkner**, who owns a team of Percherons, has hired on—with them—to be Forest Service seasonals at Vol. 10, No. 4

the Moose Creek Airstrip, Moose Creek Ranger District (Idaho). Horse and mule power maintain two primitive airstrips, mowing and raking during the summer to control weeds, provide feed for stock animals, and to define the landing strips.

**Diane Griffin**, Executive Director of the Prince Edward Island Nature Trust, has been elected the Vice Chairman of the Board of Wildlife Habitat Canada, a national organization concerned with agricultural, forestry, fisheries, and wildlife issues across Canada. Griffin lives in Charlottetown, Prince Edward Island.

President **George Bush** appointed **Manuel Lujan, Jr.**, as the new Secretary of the Interior. He served 20 years in the U.S. House of Representatives, representing New Mexico. During that time, he was appointed to the House Interior Committee gaining experience for the post which oversees management of the Bureau of Land Management, the National Park Service, Minerals Management Service, Bureau of Reclamation, Bureau of Mines, Bureau of Indian Affairs, U.S. Geological Survey, and the U.S. Fish and Wildlife Service.

The New England Society of American Foresters presented **Lynn Levine** of Dummerston, Vermont with the first Austin Cary Practicing Professional Award. The award honors a member of the society who has shown outstanding achievement as a practicing forest manager. Levine owns Forest\*Care, a consulting forestry business she began in 1978, dedicated to practical services that protect the future resource values of the forest. She is a Project Learning Tree workshop leader, a Tree Farm inspector, Vice President of the Consulting Foresters Association of Vermont, and author of *Working With Your Woodland*.

**Bonnie Bunning**, a nine-year Department of Natural Resources employee (Washington) is the new Lands and Minerals Division Assistant Manager for minerals, the first woman to hold that position. She will direct the division's subsurface resources and energy leasing, hazardous waste management program, and land use coordination with local government for DNR holdings outside of

urban areas. Previously she was an exploration geologist, state map project coordinator, senior economic geologist, and department management analyst.

**Denise Meridith** is the new Associate State Director for the Bureau of Land Management for California. Meridith is a wildlife biologist who had served in BLM's Las Vegas office, and, in addition, served in the Washington DC Headquarters Office as Chief of the Recreation, Cultural and Wilderness Branch.

### Associate Professor Department of Forestry Clemson University

Clemson University seeks applicants for a tenure-track faculty position in forest resource management. This is a 12-month appointment, including teaching, research, and administration of the Clemson Experimental Forest.

Responsibilities include teaching undergraduate courses in forest resource management plans and forest regulation; developing one or more graduate courses in forest resource management; conduct research in forest resource management; and serve as an administrator of the 17,000-acre Clemson Experimental Forest.

The successful candidate will have a doctoral degree with at least one degree in forest resources. Individuals with significant nonacademic experience in forest resource management will be given preference. Teaching experience is desirable. Salary will be commensurate with qualifications and experience.

Submit a resume and academic transcripts along with a letter of application and names and addresses of three references. Closing date of application is July 1, 1989, or until a suitable candidate is found. August 15, 1989 is a desirable starting date. Applications should be mailed to:

**Dr. Frank H. Tainter**  
(803) 656-4856

**Search Committee Chairman**  
**Department of Forestry**  
**Clemson University**  
**Clemson, SC 29634-1003**

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*Sometimes it is enough in an international development project to say simply that your two years' legacy to the people you work with is that, at least, after you leave, they will think about trees.*

## Creating a Peace Corps Forestry Project in Ecuador

Tammara VanRyn-Lincoln

**P**ace Corps: The mind conjures panoramic scenes of Africa, erosion in Nepal, faces of the poor in Latin America, "the toughest job you'll ever love." It is also culture shock, physical illness, and the mental frustration associated with any type of development work. In June 1987, lured by advertisements—and our own sense of adventure—my husband Chris and I entered the Peace Corps Ecuador Forestry Program. We would now add to the above list the panoramic vistas of the Andes, the destruction of tropical forests, the faces of our neighbors, and the arduous task of defining our own two year project.

Ecuador contains 23 of the 26 Holdridge Life Zones ranging from snow capped peaks to tropical rainforest to the Galapagos Islands. Amidst this natural bounty are 25 to 30 forestry volunteers, one-third women, working in a wide range of activities, but most somehow connected to the Ecuadorian Ministry of Agriculture. A few others work with assorted Ecuadorian agencies and other international organizations. As a group, volunteers work in natural parks, in commercial nurseries, on community projects, in local high schools, on range management. Some have regular nine-to-five jobs, while others, like ourselves, have unstructured, rural extension positions.

We entered Ecuador as part of Omnibus 54—the fifty-fourth training group in Ecuador—which included seven forestry trainees (three of whom were women) and 31 others training for work in agriculture, cattle, fisheries, and rural development. Three months later, 35 of us graduated from the intense training program with the basic language, cross-cultural, and technical skills necessary to be effective in our sites.

To successfully complete training we needed to score two on a language skills exam that was scored on a 0-5 scale. We were prepared for the test by 20 hours of language training per week and by living with a family near the training center to develop, in addition, our crosscultural skills. It was there that we first learned to live with intermittent water, all of it cold, and sporadic electricity. We learned to wash clothes by hand and also taught our family that men can wash as well as women. We were treated to a family fiesta with pig skin soup and roasted guinea pig and, in return, we shared our pancakes with them on Sunday mornings. Unhappily, we also learned how to survive several bouts of intestinal ailments caused by unboiled water.

Another ten to fifteen hours per week were devoted to the technical component of the training which was quite thorough

and in-depth as it trained people from several different disciplines to be qualified to work in the forestry program. Even trainees with degrees in forestry, like my husband and myself, needed the extensive training to learn species and soils of Ecuador and the complex process of plant propagation, a subject which our university curriculum had not covered. No matter how complete though, training could not prepare us for the peculiarities endemic to each site.

After training, Chris and I were assigned to rural extension positions in the coastal zone. Despite being classified as rural, we live near a large town, Chone, which is in the province of Manabi, and thus, our lifestyle is not as primitive as many rural positions are. We have, usually, electricity and, sometimes, running water. We also have the luxuries of a Peace Corps motorcycle for transportation and a refrigerator for storing our seeds.

Our area, 14 meters above sea level, receives an annual rainfall of 1370 mm in the five-month wet season, and has an average daily high temperature of 80-90 degrees. It never falls below 68 degrees F so it is a paradise for tree propagation and growth. We are surrounded by orange, banana, papaya, and tropical timber species, such as teak, mahogany, and cordia.

Theoretically, volunteers are requested by specific communities, but upon arriving in Chone, we learned that is rarely true. Our site was chosen more to satisfy internal political pressures than because of community support for a forestry program. Our specific site assignment was to replace two forestry volunteers finishing their service. They had established a nursery project at a high school and had been compiling data for a book on common trees in the zone. When we arrived, the high school project was the responsibility principally of the volunteers as the students were generally disinterested. Since the school project was not working out and since we did not want to write a book while in-country, we had to start from the beginning. We were directed by Peace Corps to study the area and in two months' time to report to the Quito office with a detailed two-year project plan. We were assigned, at the same time, a formal Ecuadorian counterpart at a Ministry of Agriculture office two hours away, but he has been of little help.

The first phase of project creation was to identify the needs of our region. The Manabi Province has undergone tremendous deforestation in the last 50 years so reforestation seemed to be the most pressing need that we could address. The landuse pattern traditionally includes pasture with mar-

ginal lands in cocoa (cacao) or coffee production. While the Minister of Agriculture has advocated planting two trees for every one that is cut, little money and few resources are actually available to accomplish this. The ministry operates several tree nurseries in the country, but the nursery in the Manabi province is at the southern tip of the province and is not very accessible to the farmers in our zone.

The volunteers before us created a commercial nursery at the high school but only 1000 of the anticipated 20,000 trees were actually growing by the time we arrived. With these facts in mind we decided to change the focus of the high school project from a commercial nursery to a teaching tool and to begin a program to teach the local farmers the fundamentals of growing trees.

The second phase in project creation was to decide on a method for reaching our goals. Worldwide, the current popular development technique is community or social forestry. The land tenure system here, however, has resulted in large plots (100+ ha) and little community organization so we were led to believe that community forestry would not be effective for our program. Instead, we chose to teach individual farmers how to construct low technology nurseries on their own properties based on the principle of the home garden. It is very simple and only uses the tools available on site. Since many of the local residents grow their own coffee, cacao, and papaya plants already, we make the connection between growing these and growing timber species.

First, we had to find farmers willing to participate. Originally, we wanted to work with people who had coffee or cacao nurseries. We were given a list of such individuals by the Ministry of Agriculture, but, we received no help beyond that. Without knowledge of the region or its people, and without transportation (the Peace Corps motorcycle came later), the list was of no assistance. Instead, we relied on word of mouth through people we knew in Chone.

From these contacts, we chose five landowners each season to focus our program on. Some farmers live on their properties, others live in town, but all have workers who live on the property to do the manual labor. Most of the farms have some common characteristics: Cattle is their primary product, corn is planted during the rainy season as a cash crop, and coffee and cacao are grown as a filler crop with no management. Despite these similarities, each farmer has specific reforestation needs.

In our initial discussions with farmers we identify the proper species of trees. Because our site is on the border between dry and wet tropics, we use different species depending on the exact location of the farm. For the dry areas we recommend the genera of *Albezzia*, *Casuarina*, *Leucaena*, *Prosopis*, and *Tamarindus*. In the moister areas we choose *Albezzia*, *Cedrela*, *Centrolobium*, *Erythrina*, *Samanea*, and *Teca*. We spend a good portion of our time collecting our own seed from these species and we instruct the farmers where and how to collect also.

Once the seeds are collected, we establish a nursery at each farm, ideally one that is flat, near a water source, and away from chickens and pigs. The site is then fenced; with wire by farmers who have it, and with sticks of closely spaced bamboo by the others. With the help of the farmer and his

workers, we mark out seedbeds 1.2 meters wide by whatever length is available. As we make raised beds, the sloping sides actually reduce the top surface of the bed to about one meter. We like to put a 0.8 meter walkway between each bed. The soil is turned by hand with shovels and picks and then dry cow manure and humus from cacao plantations are added. The latter two procedures are necessary because the nutrients in the natural soils have been depleted by intense pasturing. If the manure is not well decomposed, an application of nitrogen is also necessary. When the soil is mixed, the raised beds are watered well, leveled off, then seeds are planted at a spacing of 20 cm x 20 cm. The number of seeds per each hole depends upon the viability of the seed. Using these procedures, we have not had a problem with damping off, even with the added organic matter.

After three to four months in the nursery the trees will have reached at least 40 cm (in some cases 150 cm) in height and are ready to be transplanted. Once the rainy season begins (January through May), the trees are planted as bareroot strip seedlings or pseudo estacas. Strip seedlings are prepared by removing all leaves except the terminal bud. A pseudo estaca is prepared by removing the growth below the first 20 cm of root stock and above the first 20 cm of stem. Both procedures facilitate the handling of the seedlings and guard against dehydration.

One goal of the program is to incorporate trees into the existing farm, that is, to create an agroforestry system. The farmers here are unwilling to try many of the classic agroforestry schemes, but they have been willing to make modifications to their own systems. We encouraged them to plant legume timber species as shade for their coffee in place of the *Inga* spp. that is currently used. The *Inga* is a legume also, of course, but has no commercial value. If they used other legumes, farmers could harvest trees for lumber when the coffee plantations are renovated every 25 to 30 years. While no farmers have been willing to plant the timber species over an entire plantation, many have planted a few. We have also discussed with them the classic 10 meter by 10 meter pasture plantings, but as this requires keeping cattle out of the pasture or fencing off each individual tree, the farmers have been unwilling to do it. In addition, we have suggested they make small plantations in the corners of the pastures and then fence those sections off. Most often though, the farmers will plant the trees only in their fence rows. While this isn't the ideal place for them, it will provide some timber in the future while also benefitting the soil during the tree's lifetime. The trees probably will not grow with good form, but that is not a priority here as they cut lumber and posts out of anything.

One example of our program is the nursery we built for Dr. Antonio Mier. Dr. Mier lives in Chone and commutes two hours every weekend to his farm in El Carmen, in the wetter zone north of Chone. We met him in Chone when we had the physical exam for our motorcycle licenses (one can meet potential farmers in many ways). He explained to us that he had planted timber trees the year before and would be grateful for any help we could give him. Since he had already shown initiative for reforestation, we considered him a likely candidate for success with our program. In October 1988, we held a *diade campo* (similar to an old fashioned barn raising) where the

neighbors came to help build his nursery and to learn the process to carry back to their own farms.

We planted 1000 seeds of *Centrolobium pareense*, locally called Amarillo, a beautiful and durable hardwood. Also planted were 500 seeds of an ornamental *Cassia* spp. valued for their showy flowers and nitrogen fixing capability. The *Cassia* seeds were pretreated, by us, with a hot water bath 48 hours before planting. Since *Centrolobium pareense* seeds are too large for pretreatment with hot water, we had the live-in worker soak the sacks of seeds in the river for three days before planting. The seeds were planted at a spacing of 20 cm x 20 cm with one *Centrolobium* seed per space and two *Cassia* seeds per space in their respective seed beds. After planting, the nursery was tended by the worker and his family. The *Centrolobium* had a 90 percent germination rate. The *Cassia* germinated well, but had less than five percent survival because leaf cutter ants devoured the seedlings.

Three and one half months after planting, the seedlings—those which were 1.5 meters tall—were prepared as strip seedlings. They were wrapped in wet grain sacks and transported by burro to the planting site. The majority were planted in a wooded zone not yet cut for pasture and some were planted on fence rows without protection. We are waiting to see how the seedlings fare.



Another example of our work is the nursery on the farm of Freddie Arteaga in the dryer zone south of Chone. He approached us for pasture-improvement ideas after learning of us through a Peace Corps cattle volunteer. Mr. Arteaga also had done some experimental planting the previous year. Because he was interested in timber as well as better pasture, we selected two legume species that provide construction quality timber, *Albezzia gauchepeli* and *Samanea saman*. In September 1988, we planted 750 *Albezzia*, 20 cm x 20 cm, three seeds per hole and 500 *Samanea*, 20 cm x 20 cm, two seeds per hole. In addition, as the farmer wanted to see the difference between bareroot and containerized seedlings, 50 plastic bags, 6" x 10" were filled with soil and planted with *Samanea*. The seeds were pretreated, again by us, with boiling water 48 hours before planting. (The pretreatment process is essential and is explained to the farmers. However, if left to them it may not get done and thus delays the planting process. Since we must work within time constraints, we do the pretreatment ourselves.)

The nursery was tended by Mr. Arteaga and his children. The *Albezzia* had a 40 percent germination rate and the *Samanea* 60 percent. In cases where two seeds germinated in the same hole, both plants were left and separated as transplants—the farmer could not bear the thought of thinning the trees and throwing some away. After four and one half months in the nursery, the plants were removed, rolled in wet grain sacks, the bags placed in cartons, and transported one half hour to the

farmer's other property, a cattle farm virtually devoid of trees. The farmer soon saw that while these bareroot seedlings were more sensitive to potential damage than the containerized seedlings, it was more practical to carry them long distances. Mr. Arteaga planted the majority of his seedlings on the fencerows. A few were planted on the hilltops and fenced with bamboo, and still others were planted in the corn field, protected from cattle until after the rainy season.

We find that the individual nursery on an individual's property has a number of positive factors which should ensure some success: The farmer is able to grow species specific to his needs, survival of the trees is increased because they do not need to be transported long distances, the nurseries cost very little, and the time the farmer invests can create a personal attachment to the trees which may result in better care in the future. Once the farmers have learned the process they are, theoretically, able to carry out a planting program every year.

There are also negative factors, some intrinsic to any type of development work. Currently the farmers rely on us for motivation, and thus, it is unclear whether projects will continue when we leave. Farmers are understandably preoccupied with their immediate cash crops and so the nurseries often suffer from lack of water and adequate care. When the plantations are left untended, they quickly become overgrown with weeds and are vulnerable to chickens and pigs, and wildlife, such as ants, armadillos, and iguanas. Any of these can destroy a nursery overnight. Once a few nurseries are well-established, on the other hand, and are being carefully maintained, it will be easier for other farmers to follow their examples with their own nurseries.

On a personal level we have had our share of frustrations with this project, but, starting from nothing, we have attempted to teach some people how to create lasting forestry projects, and, we console ourselves, if nothing else, they have thought about the importance of trees. They can make now the easy connection between locally produced seed and the needs for their farms.

In turn, we have learned as much as we have taught. Living in a cattle area has given us some insight into the social aspects and cultural reasons for deforestation in tropical zones. We have gained a better understanding of the term *developing nation* and have stored enough memories to last a lifetime.

Although our work usually keeps us busy, we have also had the opportunity to explore some of the physical bounty of Ecuador, enjoying the warm waters of the Pacific and wandering along many deserted beaches. We made use of our time in Quito, the capital (9600 feet above sea level), to study the colonial and pre-colonial history of the Andean region. The Andes have offered us beautiful background landscapes—and challenging climbs. We have even taken a canoe down the Napo river, a tributary of the Amazon. Back in Chone, we are often sung to sleep by the howler monkeys. The job hasn't always been tough—and we haven't always loved it—as the Peace Corps promises, but the experience truly has been, as they also say, once in a lifetime.

*Tammara VanRyn-Lincoln and her husband, Chris Lincoln, will be on their Peace Corps assignment in Ecuador until July 1989. They both obtained their B.S. degrees from New York State University's College of Environmental Science and Forestry in Syracuse. Upon returning to the United States, Ms. VanRyn-Lincoln plans to attend the Master's program in Environmental Law at Vermont Law School in South Royalton, Vermont. Photos courtesy of Chris Lincoln.*

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*Expert advice on designing departmental communications for non-designers, using the copier as a creative tool.*

# In-House Design for Newsletter Non-designers

Eve Faulkes

**C**opiers these days have many control choices including size, darkness, color and photo settings. Here are some suggestions for using these settings to your best advantage.

## Light/Dark Setting

Weak or lightly typed copy can be strengthened by using a darker setting. Find the point on your machine at which the white areas are still clear and make a good master copy.

Photographs often reproduce better on the lighter settings, particularly color photos. Should you need to deal with putting both light type and photos on the same page, first position the photo and type and record that by making a copy. Then take your good master of the type and tape the photos into position as they should appear on the new copy. Set your machine for a light reproduction. The type should now hold up for the new setting which best reproduces the photographs.

## Image Sources

Here is where creativity and fun comes in because anything that is nearly flat will xerox quite beautifully on today's machines. Again you must experiment with the light/dark setting for different objects. Since the copy process adds contrast to the image, beautiful textures such as woodgrain will show up on the copy that could hardly be seen on the original. For this reason also, some of those flat grey office photos look quite good as a first generation copy on your machine. You no longer have to draw to illustrate your text, just be a collector.

## Pasteup

Pasteup refers to placing various items together on a page in order to reproduce them. You first need to know what your machine "sees". Many copiers do not see scotch tape, particularly on a slightly lighter setting and may not see different layers of the same color and weight of paper. If lines do show up on your first copy from layers of paper, try first a lighter setting. If traces of lines still come through and to go farther would sacrifice the quality of your copy, use an eraser or a blade to scrape the lines from the master. Make all of these corrections only on the master copy so that subsequent copies will be clean.

## Experiment A Little

Try using the various settings on your copier for reduction

and enlargement. Typed copy looks better smaller and will reflect even color and enlarging can give you a variety of sizes when you need them.

Experiment with different generations (copies of copies). Because each generation will breakdown in quality, interesting textures can be achieved.

## Design and Layout

Once you have an idea about what the copier can do, you need to know what you can do in the way of design.

## Display Type From Sources to Arrangement

Whether you need large type for a title, or small letters for subheadings, a good source is the instant or rub-down lettering available through art stores. Since these come in thousands of typefaces, most of them bad, I will list four currently available that are good and offer the variations needed. These include: Helvetica, Times Roman, Optima and Caslon. Each come in regular and italic as well as weights from thin to bold.

Lowercase or small letters were made to go together and generally space themselves as you rub them down. Capitals, however, must be spaced visually to even out the average color of the words and allow the eye to follow smoothly. Always put more space between lines of type than between words. This helps your eye move horizontally across the page. And finally, use a wider margin than the space between lines. This keeps the reader's attention in the interior of the page.

The use of two clearly different typefaces is best, such as light and bold. If your type is closely matched in style or weight, it may appear as though an error has been made.

Type size is critical to the balance of your page. Try to use no more than three sizes of type on a page and keep it as simple as possible. Sizes and styles should change for a reason such as title, subtitle and secondary information but similar kinds of information should be similar size. Also don't forget your copier and its reduction and enlargement capabilities. It can make size changes economical since even large display type holds up for several generations of copies.

Keep the type arrangement simple. Use type in groupings rather than as single elements. There are three basic typographic arrangements but only one should be used at a time.

**1. Centered** Each line is centered on the page. This kind of arrangement needs a lot of margin space as it has a formal feel.

2. **Flush left or flush right** In this arrangement, the type lines up at the left or right, forming a perpendicular. This is a good arrangement for working with photographs that have right angles.

3. **Asymmetrical** This arrangement is like the first in one aspect, that the lines of type are balanced against the imaginary center of the page. It looks, however, like a rhythmical meandering down the page.

### Mixing Type and Image

Once you have decided on a type arrangement, go with the same idea in introducing the photo or image. Often a photograph will have strong directional lines which can be used to line up a title. If the photo is square or rectangular, a flush left or flush right arrangement will work well but if type is placed on an angle, the photo should be as well. Finally, an image may go off the page, but type should not.

### Newsletters

Decide on a two or three column page and stick with it. Don't change once you have decided. Let the placement of pictures be guided by your column size. The space between columns should be about three letters wide, certainly less than the outside margin width to keep the page balanced.

Lastly, don't get extravagant with the masthead. It is the first thing the reader sees and should not give the wrong impression. It is better to be conservative than to be too cute. If you don't draw, this is not the place to start.

Whatever ideas you have, remember to keep it as simple as possible and use the tools you already have available. Most importantly, have fun.

*Eve Faulkes is a professor in Graphic Design in the Department of Art at West Virginia University.*

Evolution  
of the  
Field-Working  
Woman



### Conferences from page 39

Wood, Becky May, Joe Cruz, Bonnie Wood, Kathleen Jordan, Mike da Luz, and Sue Vap, were encouraged and supported by Regional Forester Jim Torrence and Jim Bates, Director of Aviation and Fire Management who offered financial support.

The objectives of the conference were: to provide information concerning career development in the Fire Organization, to provide an arena in which women in fire and fire managers can interact and network in the future, and to provide for problem-solving of issues specific to women in fire. The speakers who welcomed the group referred to those objectives: Jim Torrance, Mary Jo Lavin, Deputy Regional Forester for State and Private Forestry, Jim Bates, and Lynn Roberts, Director of Civil Rights.

In the following days, keynote speakers, panel discussions, and workshops focussed on: Women, Fire and the Forest Service; Personal Strategies; Effective Communication; Competing in the Job Market; Women in Fire—Career Experiences and Future Challenges; Fire Career Challenges; Career/Life Planning. Workgroups addressed some of the same topics on careers plus ones on self esteem, training, backlash and the myths that promote it, sexual harassment, cooperation and alliance in the workplace, and blending choices—career and family goals. Each of the workgroups identified barriers and possible solutions. Recommendations from each group were forwarded to the Regional Forester for action by the Region.

Temple Tait-Ochs from Region 8 presented A Model for Workforce Diversity in Fire and Aviation Management developed by a task force chartered by the Washington Office Deputy Chief for State and Private Forestry and the Fire and Aviation Staff. The assumption was that

change was necessary and would be best accepted if it came from within the fire organization itself. The action plan addressed: Recruitment, Washington Funding, Hiring Goals, Development, Inappropriate Behavior. The plan has been approved by the Washington Office and has received strong support so far.

Among the Keynote Speakers, Terry Floren, a structural firefighter from Ohio announced that she and other structural firefighters have formed Women in Fire Service (WFS) to serve as a network and support system. They encouraged women engaged in the wildland firefighting field to join them because there are many common issues. The variety of women WFS represents brings strength through diversity to the organization.

Jim Torrance and Al West, Deputy Chief for State and Private Forestry from the Washington Office spoke directly to the issue of sexual harassment: Crews and key personnel will be dismissed for inappropriate behavior. Because sexual harassment came to the forefront during the last fire season, Torrance and West offered supervisors words of caution and responsibility for the future: "What you permit, you promote."

Mary Jo Lavin contributed a thoughtful perspective on her own professional career and talked about visits to the fire-line. As a woman, she noted she could not hide the fact that she was different, nor should women try. She encouraged participants not to blend in with men, but instead, appreciate that as women, we bring something unique to fire. As women professionals we need to support other women's effort in the fire management workplace.

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*If you've ever wondered why the dullest material given at a meeting gets the best response, consider the audience and the gender of the person communicating it.*

# Do Women Communicate Differently Than Men.....Really?

Carolyn Peluso Atkins

In 1978, researchers Eakins and Eakins wrote "In our society a person's gender matters very much, for to a great extent, it determines how others act and react." In 1981, Kramarae sharpened that perspective and gave, as we will see, an opinion shared by some (not all) researchers about which gender the "others" react to and how they react.

*Women's speech is devalued. Women's words are, in general, ignored by historians, linguists, anthropologists, compilers of important speeches, news reporters, and businessmen, among others. People who control public-speaking platforms and public airwaves have effectively restricted women's access to these resources. In more private settings also, women are more likely than men to be interrupted or ignored.*

The impact of a speaker's sex on communication has been a topic of increasing research (and some controversy) over the last two decades. Several investigators have established that communicative differences between men and women do indeed exist while others see few or no differences. Still others say the manner in which studies are designed makes a difference as to what results are found and how they are interpreted. While it is tempting to expound at length about the shortcomings or strengths of each piece of research—and to extrapolate about how the researcher has advanced or hurt the way society views women—the purpose of this paper is rather, to present some aspects of that controversy, and to present an overview of what significant researchers have said and how their key interpretations and developments fit.

## **Advocates for the position: Differences Do Exist in the way women and men communicate**

According to Maccoby and Jacklin (1974), one of the more solidly established generalizations in the area of sex differences has been female superiority on verbal tasks. Specifically, they noted that girls show more verbal maturity during the first few years of life. And, while few differences are seen in the preschool to early adolescent years, at approximately age eleven, females begin to outscore males on an extensive variety of verbal skills: spelling, punctuation, vocabulary, fluency, and comprehension of written tests.

Sause (1976) collected and analyzed the expressive language of 144 kindergarten children with results which indi-

cated that boys exhibit significantly more language that do girls. Furthermore, boys make significantly more references to "aggression," "self," "time," "space," "quantity," "fears," "good act of oral communication," "negation," and "affirmation." On the other hand, girls reportedly make more "female" references than boys, and appear to be shy in contrast to the boys' aggressive verbal behavior.

Boys asked the examiner more questions. Therefore, Sause concluded, the pattern of sex-related differences noted in the study conforms to conventional stereotypes in most respects, but, since the investigator who elicited the language from the children was male, the investigator also questioned if the results indicated people tended to communicate more freely with their own sex.

Other studies have investigated communicative differences of adults. Mulac et al. (1986), for example, studied various linguistic features between the sexes. Male speakers, they say, use the following types of linguistic features:

1. First person singular pronouns.
2. Present tense verbs and progressive verbs.
3. Active voice verbs.
4. Grammatical errors.
5. Vocalized pauses (e.g., "uh....").
6. Large numbers of syllables per word.

Therefore, the authors contended that male speakers are relatively egocentric and want to focus upon the present as opposed to the past or the future. In addition, they are not concerned with formal linguistic standards, but are concerned with holding the floor, and are generally controlling and intense.

Maltz and Borker (1982) found that while the feminine pattern of communication is one that tends to interpret accurately the speech of others, asks questions, facilitates, uses positive minimal responses, and uses silent protest after an interruption, the male pattern is very different. Males tend to assert a position of dominance, assert themselves when others are speaking, make declarations, control, ignore others, and interrupt more. Moreover, Maltz and Borker found that females tend to use *you* and *we* more, interpret minimal responses from others as signs that they are listening, view questions as part of conversational maintenance, and explicitly acknowledge comments. On the other hand, males tend to challenge and dispute, interpret minimal responses as agreement with what the speaker is saying, and view questions primarily as requests for information.



Furthermore, in this same study, Maltz and Borker found important differences: women tend to interpret verbal aggression as personally directed, negative, and disruptive. Men reportedly view it, however, as one more conventional organizing structure for conversational flow. Finally, these same researchers recorded that while females tend to develop topics progressively, shift topics gradually, share experiences, and offer reassurances, males tend to define and develop topics narrowly, shift topics abruptly, act as experts, and lecture their listeners. Furthermore, O'Barr (1982) reported that males tend to use heavily definite/demonstrative noun phrases, such as "That will usually..."

Mulac et al. (1985) doing work on parallel lines, noted that the use of present tense verbs, vocalized pauses, and grammatical errors is consistent with the stereotypical language of male characters which appear in children's television programs. Conversely, Mulac et al. (1986) found that female public speakers exhibit a style that is relatively complex because of its mean length of utterance and the use of prepositional phrases. They also found the female style to be both literate and formal as evidenced by the use of adverbials beginning sentences and the use of rhetorical questions. Their frequent use of fillers and of oppositions (e.g., "That's correct, but...") demonstrates a relatively high degree of tentativeness or uncertainty.

In an earlier study looking at women's language subtitled "Uncertainty or interpersonal sensitivity and emotionality?" McMillan et al. (1977) pointed out that female speakers may use oppositions out of politeness or interpersonal sensitivity. Moreover, these researchers stated that women's frequent use of negations indicates a less assertive stance while their large number of references to emotion suggests an affective orientation that is stereotypically female. Therefore, others also claim, female public speakers are reportedly comparatively complex and literate, but tentative, and attentive to emotions—suggesting a relatively powerless condition (Mulac et al., 1986).

Gleser et al. (1959) studied the relationship of sex and intelligence to choice of words. They concluded that females use a significantly higher percentage of words implying feeling, emotion or motivation, whether positive, negative, or neutral. In addition, they also make significantly more references to self and use more auxiliary words and negation. At the same time, their data revealed that female subjects use a relatively smaller percentage of words implying time, space and quantity, the difference being primarily due to their less frequent use of words referring to place or spatial relations. Moreover, they don't refer to destructive action very often.

The Gleser group's early work correlates with that of Gilley and Summers (1970) who asked male and female subjects to choose between a hostile verb (e.g., "stabbed") and a neutral verb e.g., "began") when composing each of a series of 100 sentences. In addition, respondents were given either a personal-reference pronoun (e.g., "I" or "we") or an other-reference pronoun (e.g., "he" or "they") with which to begin each sentence. Although pronoun type was not a significant variable, the investigators found that male respondents use significantly more hostile verbs than do females.

Thorne et al., (1983) noted two communicative areas where reoccurring sex differences have been found. One is that women are more likely to choose correct phonetic vari-

ations (e.g., saying "walking" instead of "walkin"). The second is that females are apt to utilize a wider pitch range and more variety in intonation than are males (McConnell-Ginet, 1985).

Mulac et al. (1986) concluded, however, that there were points at which males and females began to converge, that "more intelligent women resembled the men with regard to their less frequent use of self-references and negation but the more intelligent men were similar to the women in using fewer references to place or spatial relations and words implying destructive action."

### Perceptions and Expectations

McConnell-Ginet (1978) observed that perhaps hearing is sex-typed since the same intonation patterns may be perceived differently when used by a woman than when used by a man. Condry & Condry (1976) found that often similar speech by males and females is perceived differently. For example, if listeners were told that a crying infant was a boy, the cry was interpreted as anger; when they were told that the infant was a girl, it was interpreted as fear.

Montgomery & Norton (1981) investigated how men and women perceived themselves regarding their communicative styles and found that although males see themselves significantly more precise than females see themselves, females demonstrate higher levels of animated style than do males. Macke, Richardson & Cook (1980) reported that college students found women professors to be more likable than men but less competent than men the more that they generated student participation in the classroom.

According to Burgoon, Dillard & Doran (1983), there is an expectancy theory which purports to explain that people develop certain expectations about who should say what how, and further, it differs between the sexes. Earlier work on the same subject by Burgoon & Stewart (1975) and Burgoon (1975) reported that language choices which different speakers make are powerful predictors of how well they will persuade their listeners. Burgoon and Stewart (1975) found—simply stated—that males are most effective in the process of persuasion when they use the highly intense language which they are expected to use. And, as could be anticipated, Burgoon (1975) suggested that females are only effective when they use low intense language since it conforms to normative expectations. In addition, if males use low intense language, they are perceived to be weak. The investigator provided evidence that highly credible sources who use highly intense language are more effective, but they are less effective and less credible when they use low intense language. However, low credible sources are more effective when they use low intense language.

Similar results were evident when Burgoon et al. (1983) reported that since males are expected to use more verbally aggressive persuasive message strategies, they negatively violate such expectations and are less persuasive if they deviate from those strategies. Likewise, since females are expected to be less verbally aggressive and use more prosocial message strategies, they are penalized if they deviate from those strategies. Moreover, Burgoon et al. (1983) noted that respondents in their investigation have such clear differences in the expected strategy used by males and females that neither psychological sex

role nor biological sex changed their expectations.

Carrying this concept somewhat further, Farmer and Farmer (1989) pointed out recently that adults tend deliberately to adopt gender-associated speech styles. Knowledgeable speakers, however, may make a deliberate choice to adopt speech characteristics of the opposite gender. Often, they are expected to do so. For example, Kramer (1974) noted that professional women will typically lower their pitch somewhat and lessen their pitch variation since both of those characteristics are male traits.

Since such strong stereotypes exist regarding sex-role appropriateness, Kramer (1974) uses the word *genderlects* to refer to such sex-role related variables. Farmer and Farmer (1989) stated that "genderlects have been documented in the areas of vocabulary, conversational style, polite forms, and verbosity."

### Differences in Profanity

The topic of profanity and its use by male and female speakers seems to have been especially well studied: Cameron, 1969; Rothwell, 1971; Baudhuin, 1973; Bostrom, Basehart, & Rossiter, 1973; Bock et al., 1984.

Rothwell (1971) defined profanity simply: "a type of swearing that utilizes indecent words and phrases." Cameron's 1969 research suggested that the effects of profanity depend upon the types of profanity utilized. Baudhuin (1973) divided profanity into three types: words having religious connotations; words referring to excretory functions; and words related to sexual functions and organs. Bostrom et al. (1973) reported that the specific type of profanity which the source used determined the perceived credibility of that source. Specifically, their results demonstrated that excretory profanity has the most detrimental effect on female credibility while sexual profanity has the most detrimental effect on male credibility.

The investigation of Bock et al. (1984) supported this finding. In addition, they found that speeches using profanity are rated more negatively than speeches not using profanity. They also went a step further to give advice: although social mores are seemingly more lax for males utilizing profanity, males should be warned against its use.

Anshen (1974) found that the sex of the hearer is more important than sex of the speaker in determining choice of obscenity. Although both sexes (but especially men) are more likely to use obscenities in single-sex groups, in mixed company men are apt to switch to weaker obscenities while women chose stronger words. And there were differences in swear words according to age. Bailey and Timm (1976) found that female college students chose weaker obscenities than men when asked to indicate which they might use if faced with various situations, while women aged 31 to 34 chose stronger expletives that did women in their twenties.

### Differences in Writing Style

Hiatt (1978) examined 50 books written by males and 50 books written by females, then concluded that while contemporary male and female authors do exhibit different styles of writing, neither should be considered a "norm" from which the other style varies. There was no significant difference regarding the average sentence lengths of non-fiction male and fe-

male authors. When the sentences were divided into short (20 words or less) and long (more than 20 words) however, a significant statistical difference existed—women used more short sentences (58 percent) than did the men (48 percent). Upon examining average sentence length for fiction writers, Hiatt (1978) again found that while there was no significant difference, men tend to write longer sentences than women—and more longer sentences than women.

Hiatt (1978) also examined the use of adverbs of emotion (e.g., "amiably," "angrily,") to discover if women writers are, as frequently noted, "hyperemotional." At the same time, she studied the use of adverbs of pace (gradually," "hastily," "slowly,") Results indicated that in general, women fiction writers use the same number of adverbs of emotion and adverbs of pace as do the men, but men fiction writers use four times as many adverbs of pace as adverbs of emotion. Therefore, regarding fiction, the feminine style balances pace of action as well as expression of emotionality.

She looked also at the use of *ly* adverbs (e.g., "simply," "utterly," "awfully") since it has been reported that women's speech contains many more such adverbs than men's. Hiatt found, however, that there was no significant difference. She also devoted special attention to the adverb "really" since women writers use the word two and a half times more often than male writers in nonfiction, and one and a half times more in fiction. She concluded—somewhat tentatively it would appear—that its use reflects women's concern that they will *not* be believed; therefore, they tend to claim sincerity and validity more frequently than do men.

### **There is not enough clear evidence: It is still possible to say there are No Differences between women and men in the way they communicate**

There is a group of investigators who disagree with the interpretations of some of the above investigators. Many in this second group believe that cultural, historical, and social barriers are hard to ignore and that these other investigations have not proven that there are communicative differences between the sexes. There is also a note of scorn, communicating disbelief that so many researchers have proceeded from an assumption that male communicating is somehow superior. Kramer (1977), for example, noted that people tend to *believe* that a male's speech is forceful, efficient, blunt, authoritative, serious, effective, sparing, and masterful while viewing women's speech as weak, trivial, ineffectual, tentative, hesitant, hyperpolite, euphemistic, and often characterized by gossip and gibberish. She further pointed out that *beliefs* of people should not have been accepted as a measure of accuracy in research. Investigators have tended to focus on small segments of women's speech thus allowing them to find deficiencies if they look long and hard enough—and in the right places.

Thorne, Kramarae, and Henley (1983) agree that the results of gender-related communication investigations are often contradictory and very complex. For example, Lakoff (1975) stated that women use more tag questions ("It's nice today, *isn't it?*"). Two later investigations supported this (McMillan, Clifton et al., 1977; Fishman, 1980). On the other hand, Baumann (1976) reported that men and women used approximately the same number of tag questions in a classroom setting while

Lapadat and Seesahai (1977) found that men used twice as many as women in informal conversations. In addition, Dubois and Crouch (1977) observed men attending a professional conference and noted they used 33 tag questions while women used none. Thorne et al. (1983) point out that these contradictory data do not enable one to draw conclusions except that perhaps "the initial claim was phrased too simply."

In Spender's book *Man Made Language* (1985) it is emphasized that early research—aimed at proving women's "language inferiority"—focused on vocabulary. Prior to the 1960's, it was believed, for example, that slang was the exclusive property of men (Flexner, 1960). Spender has not found existing research to substantiate the communicative "deficiency of women—or the concomitant supremacy of males."

Finally, Hiatt (1978) concluded that the feminine writing style is rather different than common assumptions lead us to believe. She found it to be conservative, structurally sound, logical, and balanced in terms of emotion and pace. In addition, she did not find excesses of length, complexity, or emotion. The only excess found was in the use of the adverb "really."

### Summary

As Kramarae (1981) noted, the manner in which studies are designed makes a difference as to what results are found and how they are interpreted. Therefore, caution needs to be exercised when forming generalizations.

Whether communicative differences do or do not exist between the sexes is a topic that has been—and will continue to be—researched and debated for years to come. And, regardless of the reader's viewpoint, one fact remains: Public speaking (and writing)—whether it is informative, persuasive, or entertaining in nature—continues to be a vital component of the professional's work responsibility to his or her colleagues and to the various publics served through that work.

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# PUBLICATIONS

The Association of American Colleges' Project on the Status and Education of Women recently devoted an issue of their newsletter to **The Restoration of Title IX: Implications for Higher Education**. The publication, written by Bernice R. Sandler, the Executive Director, and Marcia Greenberger, Managing Attorney of the National Women's Law Center, the pamphlet covers applications of the recent reinstatement of the law in the Civil Rights Restoration Act. In 1984, in *Grove City College v. Bell*, Title IX was restricted to cover only those specific programs or activities funded with federal money. With the new restoration, however, the entire institution is covered regardless of where federal funds are utilized. For a copy of the newsletter giving specific restorations and what they mean, write PSEW/AAC, 1818 R St. NW, Washington DC 20009 and send \$5.

Calls to the 800-THE-SOIL number have increased dramatically since the Soil Conservation Service (SCS) began the **We Owe It To Our Children** National Public Service campaign focusing on strong conservation messages. The telephone line is answered automatically and callers are instructed to leave their name and address so that information can be mailed.

Janet Diehl and Thomas S. Barrett wrote the *Conservation Easement Handbook* (1988) to answer questions about how conservation easements affect private lands. The authors talk about taxes, enforcement, language of good plans, and the legal and conservation rationale behind the complex easement process. Send \$19.95 plus \$2.75 for postage to Land Trust Exchange, 1017 Duke Street, Alexandria, Virginia 22314 (703-683-7778).

*Gender and Education* is a new journal of feminist research in the area of international education. The journal is planning a special issue for 1989 on racism and gender, and in 1990, an issue will be devoted to equal opportunity. For infor-

mation or to submit an article, contact June Purvis, Editor, School of Education, Oxford Polytechnic, Wheatley, Oxford, OX9 1HX, ENGLAND.

*Women's Ways of Knowing: The Development of Self, Voice, and Mind* by M.F. Belenky, B.M. Clinchy, N.R. Goldberger, and J.M. Tarule (Basic Books, 1986) is a complicated book about the ways women learn and think. Women are forced to operate in a milieu that has failed them, that is foreign to them. This has destroyed self confidence and the ability to perform effectively in the public realm. What must happen to combat this, is to find other avenues for learning and other models to use for expression, and the book identifies some of those.

Washington State University publishes a newsletter for researchers interested in devastating diseases of cattle, especially those of developing countries. The newsletter is named appropriately, *Anaplasmosis/Babesiosis Newsletter* and is available from Evelyn Rodewald, International Project Support Office, WSU, Pullman, Washington 99164-6226 (509-355-2980).

*I'm Going to Change My Name and Move Away* is by Alyce Cornyn-Selby (Beynch Press Publishing Co.). As you would guess, the book is about how names affect behavior.

The *American Forest Adventures* catalog for 1989 features trips to the wilderness in places like Alaska, with companions like Llamas, and international tours and US safaris. Contact them at PO Box 2000, Washington DC 20013-2000 (800-323-1560) for their listings.

WorldWIDE News is an international newsletter published six times a year featuring information on events and projects that affect rural women. Their focus is on environmental and natural resources management (in economic development) and they publish a Directory to link women in

developing countries with an audience in the developed countries. For information write them at PO Box 40885, Washington DC 20016

The National Science Foundation Bulletin is available to those who ask to be included on the mailing list. For their program announcements and deadlines information write them at NSF Foundation, 1800 G Street NW, Washington DC 20550.

*Cultivating Agricultural Literacy: Challenge for the Liberal Arts* edited by Gordon K. Douglass (W.K. Kellogg Foundation 1985) is available free from the Foundation at 400 North Avenue, Battle Creek, Michigan 49017-3398. The book includes an analysis of 11 programs that were developed to increase awareness among liberal arts students and faculty about US agriculture.

*Future Risk: Research Strategies for the 1990s* and its appendices (A-E) (September 1988) is available on request from the Science Advisory Board, US Environmental Protection Agency, Washington DC 20460. The summary report, minus the appendices, includes 10 recommendations for EPA in the 1990s. Number four says "EPA must improve its capability to anticipate environmental problems."

Beacon Press has a new dictionary named *The Nonsexist Word Finder: A Dictionary of Gender-Free Usage* for those of us interested in alternatives, explanations, or definitions of sexist words and phrases.

A recently printed book about the Bureau of Land Management titled *Opportunity and Challenge, the Story of BLM* by James Muhn and Peter D. Doran is an historical recounting plus a collection of historic documents, retired BLM officials' accounts, and data about the agency which was established in 1812. Copies are available for \$12 from the Superintendent of Documents, USG Printing Office, Washington, DC 20402-9325.

# NEWS & NOTES

## Weeds on Montana Rangelands Zapped Using a Combination of Biological, Chemical, and Cultural Techniques

On rangeland, noxious weeds increase production costs, destroy wildlife habitat, and increase soil erosion. Today, 8.4 million acres of Montana's 65 million acres of public and private rangeland are infested. In 1985 the Montana Legislature enacted the Noxious Weed Trust Fund Act and began to promote cooperative integrated weed management programs by providing technical and financial assistance to interested groups and landowners. Before cost-share funds are made available, all private, State, and Federal land managers within the project area must cooperate in the program, and educational and training programs must be part of the total effort. Since 1985, the Southwest Coordinated Weed Management Area, assisted by the Headwaters RC&D Range/Weed Committee, has expanded to include 26 new weed management areas totalling approximately 1.5 million acres.

....Kim Berry, *Soil and Water Conservation*, October 1988

## Internalized Sexism: I'm An OK Kid, I Tell You

We feel that we are always having to prove ourselves and that we are always starting over. The energy required to prove ourselves over and over to counteract the internalized sexism that says "I don't belong here" is enormous. It is energy that could much better be spent doing relaxed, creative science, or enjoying our jobs and our colleagues, or building personal lives where we flourish. We function at our best when we feel good about ourselves and our intelligence, and so we need to combat the internalized sexism which keeps us from feeling completely proud of and delighted with ourselves. We can each include in our personal support system people we tell all

the brilliant things we've done that week. In this way, we can start noticing and remembering them ourselves.

....Sheela Mierson, *AWIS (American Women in Science) Newsletter*, May/June 1989

## Depression Year National Forest Net Receipts. How Much is That in 1989 Money?

Net receipts from the National Forests for the fiscal year ending June 30, 1938 totaled \$4,608,853; special-use permits totaled \$364,350. By Regions, the total net receipts were as follows:

Region 1	\$413,676
Region 2	805,020
Region 3	541,055
Region 4	574,314
Region 5	622,737
Region 6	896,103
Region 7	111,703
Region 8	461,307
Region 9	121,049
Region 10	61,888

....Service Bulletin, Vol XXII, No. 18 in *History Line*, Fall 1988

## Gender Composition Matters in Job Satisfaction—But Not the Way You Think

Amy S. Wharton of Washington State University—and a colleague at Stanford—have been evaluating the job satisfaction attitudes of more than 822 men and 438 women who work more than 20 hours per week. Gender composition is determined by examining job settings. The three working environments are: men working only with men, women working only with women, or men and women working together. In one of their first studies, the team found that men are happiest when working in predominantly male occupations, or when working predominantly with women. Men tend to be less satisfied with

their jobs when working in integrated settings—they feel threatened. The study on women is being revised, but Wharton's data found women were most satisfied in predominantly male jobs, and least satisfied when men were the minority, representing 16 to 29 percent of the workforce. Wharton said that "women are the most satisfied when they are in an all-male occupation." This is one of the first studies to use a large, nationally representative, varied sample of men and women in diverse work settings. They used a national survey conducted by the Institute of Social Research at the University of Michigan.

....Robin Thalheimer, *Evergreen*, January 24, 1989

## Tough Life for Urban Trees

Urban planting sites are usually small and unavoidably harsh. The smaller the site, the shorter will be the life of the plants therein and the more expensive will be the maintenance costs. Typical trees in open farm yards and sheltered corners of college campuses live 40-80 years. Typical trees in heavily used city parks live 25-30 years (Central Park, Grant Park, The Boston Common, and the Mall in Washington, DC). Typical trees along suburban street right-of-way live 12-18 years. Trees in the small planting holes of New York City, New Orleans, and elsewhere are replaced every three to four years.

....Thomas Perry, *Urban Forest Forum*, January/February 1989

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## Challenges from Smart Publics

For years regulatory decisionmakers have faced challenges from "smart" industries. Industry organizations such as the Chemical Industry Institute of Toxicology (CIIT) have hired scientists to corroborate that regulations proposed by agencies are unjustified. Industry has thus sought to contradict the scientific evidence provided by regulatory agencies regarding the carcinogenicity of substances such as urea-formaldehyde foam insulation or benzene. Hiring topnotch scientists has given industry an expertise equal to that of regulatory agencies. But the tendency has been for decisionmakers to assume that their various lay publics are ignorant when it comes to scientific knowledge....Given that these publics are supposedly driven by misinformation and misperception, decisionmakers often conclude that they should make decisions unilaterally and then educate and assure people that the decision is a good one.

Instead, decisionmakers are often dealing with smart publics. These publics are neither ignorant nor driven only by summary perceptions. Realizing that they lack knowledge and expertise, they hire or attract it.

....Merrie Klapp, *The Environmental Professional*, Vol. 10, No. 3

## The Counties in Idaho—and Other Places—Bear Huge Burdens Because Federal Lands Keep Tax Bases Down

One of the steeds that carried Ronald Reagan into the White House was dubbed the "new federalism," designed to shift \$47 billion in federal programs to state and local governments. But six years later, the counties still bear the burden. In the state of Idaho, Idaho County—the largest with 8,503 square miles, including parts of four wilderness areas and four national forests—covers more territory than Massachusetts. But only 14,000 people reside within its sprawling boundaries. Owyhee County's 7,666 square miles of desert rimrock and juniper is slightly smaller than New Jersey. Each county is mandated, just

as it is in Massachusetts and New Jersey, to provide court facilities, law enforcement, weed control, solid waste disposal, separate jails for adult and juvenile offenders, as well as alterations of buildings to accommodate the handicapped. Only a fraction of land in these huge counties may be privately owned with the rest held by the BLM or the Forest Service. Because they lose out on property taxes, the counties receive money back from the federal government in the form of forest and range funds, or payment in lieu of taxes, called PILT money.

Idaho County, which boasts 4.8 million acres of public land, (and 1,000 miles of road to repair) was the largest recipient of 1988 forest funds at about \$2 million—but the total budget is only \$5 million and includes \$440,000 coming from PILT funds. Some 85 percent of Owyhee County's land is public domain, mostly under BLM control. The county (with 8,000 people) received about \$342,000 in PILT payments last year. For both counties, more and more visitors are taking advantage of Idaho's wild lands while county officials must keep roads in repair, deal with garbage at campsites, and increase law enforcement—all on a tiny resident tax base.

....Dan Gallagher, *Lewiston Tribune*, February 26, 1989

## Playboy Official Says Censors Always Wrong

The underlying principal of censorship from biblical times to the present has been "the infallibility of the censor." Burton Joseph, Chairman of the Playboy Corporation said "Yet, history has proved the censor always, always wrong." The target of censorship has shifted over the years and in different cultures. First, it was religious beliefs that did not fit with the mainstream, then it was political material, then socio-economic information during the McCarthy Era and the Cold War, and finally, the lawyer said, the present day target for censors is sexual images. "It's as fashionable as ever to allow censorship of explicit sexual images," Joseph said. And, he added, he does not buy the argument that explicit sexual materials or pornography prompt violence against women and children. "There is some legitimate anxiety about the status of women and children being powerless," he said. "But look at countries

where there are no sexual images allowed. Look at Saudi Arabia. Look at Iran, at India, at Pakistan." In those countries, women are treated as less than second-class citizens, Joseph said. "Women aren't injured by sexual images." They are injured by men who watch how their fathers treated women or who are taught women are not equal. "It's recreational to be violent in our society."

....Kathy Barnard, *Idahonian*, March 9, 1989

## Fire (and Crime) Sleuthing

Forester Bob Bourhill, with the Oregon Department of Forestry, is known as the worldwide expert on cigarette butt identification. Phone calls come in from around the world for his services and for his 326-page reference book which keys and identifies some 300 cigarettes. An arsonist might use cigarettes with an incendiary device in the forest, or travelers might carelessly toss them from cars. The identification aid to track down those responsible for damage is used, however, most often by crime labs both in the US and overseas.

....*Forest Log*, December 1988/January 1989

## Don't Reach Out and Touch Someone While at Work

The ability to trap workers abusing the phone system is an attractive by-product for many employers. At some companies, phone monitoring systems automatically print out a record of every call. And then there are "exception reports." These are audit trails of an employee's telephone indiscretions that detail, for example, calls that exceed a specified duration or cost, or that are placed to locales clearly not job-related. This can identify big potential savings: one report found that about 33 percent of all calls handled by the federal government's telecommunications system are personal, costing the government more than \$100 million a year. Personal calls at private companies run at about the same rate. To discourage such calls, companies some times tack up bulletin-board lists of heavy hitters, the phone system's biggest users.

....Jeffrey Rothfeder, *Business Week*, January 25, 1988

## Are Modems Going the Way of the Buggywhip?

Out on the horizon is a large threat to current manufacturers of modems: the conversion of the telephone network over the next decade or so to digital format. Modem is shorthand for modulator-demodulator; the device converts or modulates a computer's digital pulses (1s and 0s) into sound waves that can be sent by phone, then demodulates them back to digits at the other end. In a digital network all this is unnecessary. One manufacturer (Dennis Hayes) is working on an ISDN circuit board that will plug into a PC, enabling it to support a phone call, data communications and video transmission all at the same time.

....David Churbuck, *Forbes*, February 6, 1989

## Raoul Felder, Mega Divorce Lawyer Gives Some Free Advice

Given today's divorce rate, anybody who goes into a marriage without a prenuptial agreement is doing something very foolhardy. Back before these modern laws of equitable distribution, it was very simple: Women got support until remarriage or death. Now, they get support or alimony for a stated number of years, and even then they may never collect it. The courts don't help them. They're also losing children. Suddenly, scores of men are seeking custody, sometimes just as a lever or ploy in the divorce litigation. Men are using this new standard, under which neither parent has prima facie right to custody, as a weapon and it's become the atom bomb of divorce proceedings.

....Stephanie Harrington, *Cosmopolitan*, January 1989

## You Must Remember This...

Hershey's Kisses got their name from the "puckering" motion made by the machine that drops the melted milk chocolate onto a continuously moving stainless steel conveyor belt. Since the Kiss's introduction in 1907, as time has gone by, its size has remained constant, at a little more than an eighth of an ounce. Originally, each

Hershey's Kiss was wrapped by hand. By the 1920s, automated machines were wrapping them. In 1921, the thin white strip of paper with Hershey's Kisses printed on it, called the identification streamer, was added to complete the standard Kiss "package." Today, the main manufacturing plant of Hershey, located in Hershey, Pennsylvania, can produce over 25 million Hershey's Kisses in one day.

....Barbara Albright, *Chocolatier*, March 1989

## An Explosion of Copreneurs

"Copreneurs" is the term applied to entrepreneurial couples. According to the Small Business Administration, the number of sole proprietorships, excluding farms, that were jointly owned by a husband and wife soared 82 percent between 1980 and 1985. In comparison, business owned by women increased 47 percent and those owned by men 31 percent. Experts, however, believe that the actual increase in companies owned by married couples is several times higher because the government data does not include partnerships or corporations. Eleven of the 50 fastest-growing new franchise chains (ranked by *Venture* magazine) were founded by couples. Some of the reasons for the increase in couple-owned businesses included: Women are starting businesses at twice the rate of men, and many are forming partnerships with their husbands, more couples are working out of their homes, franchising is making it possible for couples without much business experience to buy a business together, and successful couples are spurring others into business action.

....Buck Brown, *Wall Street Journal*, March 6, 1989

## Wage Gap Narrows

The wage gap between men and women is decreasing but an increasing percentage of the poor are women. A study conducted by the Rand Corporation found that between 1980 and 1986, wages for all working women increased from 60 percent to 65 percent of men's wages, and that women between the age of 20 and 24 earned from 78 percent to 86 percent of men's wages. A "very conservative estimate" for the future had women earning 74 percent of men's wages by the year 2000,

with 80 percent being more probable.

Poverty was gender neutral in 1940 when more than 90 percent of all families included both a husband and wife. By 1980 women headed almost one in seven families and 62 percent of poor adults were women. The statistics are worse among blacks where now more than four out of every 10 families are headed by women.

....*Investors Daily*, February 8, 1989

## Million-Dollar Day Care at SUNY

Officials at SUNY announced grants to improve and enlarge child-care operations at 28 community colleges. The grants are part of a total child-care commitment of \$2.3 million, which also includes grants of \$1.246 million to go to 20 centers of the state-operated campuses. State funding and funds from student fees are major revenue sources.

....*On Campus with Women*, Summer 1988

## The Best of Public Interest Groups

Other environmental groups condemn The Nature Conservancy for refusing to take on the corporate world or the government. But by forgoing these tactics, the low-profile Conservancy has preserved some 23.6 million acres of selected wetlands, deserts, forests, prairies, and islands. Their work helps establish an important public interest principle: You don't always have to work through the government to get things done. While other environmental groups are busy talking from their K Street offices, the Nature Conservancy is out with mud on their boots, snatching vital lands from the jaws of condominium developers. "They are all action and no talk," said Frank Dunkle, Director of the US Fish and Wildlife Service. When Conservancy operatives hear of a plan to build a ski resort on a mountain that provides the last good habitat for a certain warbler, they don't issue anti-development manifestos. Instead, Conservancy agents begin conventional commercial negotiations to buy the land outright before the developer. With donations of cash and land topping \$73 million last year, the group commands considerable financial clout. The Conservancy played a crucial role in the Prudential Insurance Company's re-



cent donation of 120,000 acres of North Carolina forest and wetlands to the Fish and Wildlife Service. Valued at \$50 million, it is among the largest gifts in the history of American conservation.

....Rita McWilliams, *The Washington Monthly*, March 1988

## In Holland, Social Safety for Women Receives Attention From Landscape Architects

If you design a park for women, is it different from a "normal park?" We talked with a number of women-users of the park, women who come there with their children, older women who sit all day in the park, talking and drinking coffee. The answer to our question was: Yes, a park for women is different. In most parks there is a lack of facilities for women, such as toilets, a bathroom to refresh babies and children. And an important aspect in the design of a park is social safety. You should design a clear build-up of the park, escapeways, and forms of social control such as a restaurant or cafe. In the last few years social safety has been taken more and more seriously by communities in Holland. We have done research and design work to improve the area of a hospital (in many places hospital areas are found to be very unsafe, especially by nurses), for living areas, and parks. And we have written a book on this theme: *Outdoor Safety*. At this moment we are working on the railway-station of Leiden, a very busy station. We were asked by the community of Leiden to do proposals to improve the unsafe walking and cycling routes to the station and to give an opinion on the plans which are being made for a new station and surroundings. It is very stimulating to see how in all different communities women can use this knowledge and support from women in other towns to start to do something against the lack of safety in the streets.

....Annemarie Lodder (Holland), *Women & Environments*, Summer 1988

## The Walls Came Tumbling Down

In 1948 when Israel became a state, Jews still had no access to the kotel (Wailing Wall); it belonged to Jordan which chose not to maintain it as a holy site—and

in fact, purposely kept it in a state of disrepair. In 1967, after the Arabs failed in their Six Day War against Israel, Israeli soldiers "took" Arab East Jerusalem. The cry went out: "We have the kotel." Everyone—from the fiercely secular to the fiercely religious—came to gaze in wonder or to pray. Almost overnight, ultra-Orthodox rabbis constructed a "mehitzah" (barrier) to separate the women from the men. For centuries before this, women and men had prayed here together. The kotel began to resemble an Orthodox synagogue—where the women are effectively in purdah, either at the rear behind heavy curtains, or in upper balconies behind latticed partitions. The women's section is traditionally much smaller, more crowded than the men's. Only (Orthodox) men can read from or sing and dance with the Torah; only men can pray in groups of 10 known as a "minyan". No (orthodox) woman may say Kaddish (the prayer for the dead); she must ask a man to do it for her. Orthodox women can and do pray—but not in minyanim, and never in positions of spiritual or ritual authority over men.

On December 1, 1988, for the first time in history, more than 70 Jewish women, representing Orthodox, Reconstructionist, Secular, Reform, and Conservative branches of Judaism, prayed together with a torah at the kotel. The men stopped their prayers; many climbed onto chairs to see over the mehitzah. Several men literally began howling like wild beasts once they saw we had a Torah and/or heard our sweet singing voices.

....Phyllis Chesler, *On the Issues*, Vol. XI 1989.

## Export Regulations Affect Log Prices

Changing log export regulations to expand or reduce the supply of exportable logs would have the greatest impact on the availability and price of high-grade logs. The effect on low-grade logs would be minimal in both domestic and export markets. Donald Flora and Wendy McGinnis (Forest Service) focussed on portions of Oregon and Washington west of the Cascade mountains, where most log exports originate. If the ban on federal timber is lifted, the researchers estimate that exports of high-grade logs would increase by 630 million board feet (Scribner scale) per year. The supply of high-grade logs available to

domestic processors would fall by 530 million feet. The price differential between exportable and non-exportable timber would disappear, resulting in a drop of about \$100 per thousand in high-grade export log prices and a similar increase in domestic prices. Some mills would close and others would curtail production. An additional 925 jobs would be created in exporting, while 1,300 would be lost in domestic processing, for a net decline of 375 jobs.

....*Random Lengths Export*, March 2, 1989

## Women Managers Cost More Than Men and They Are Worth It

Based upon recent research findings, Felice Schwartz, president of a nonprofit research group in New York that studies work-family issues, reported that "it costs companies more to employ women managers than men." Currently female managers cost more than male managers because women are more likely to interrupt their careers or leave their jobs altogether. One large industrial company found that the turnover for top managerial females was two and a half times greater than that for equivalent males.

Will these findings make it even more difficult for women to advance? On the contrary. Schwartz also pointed out that due to decreasing fertility rates, a tremendous shortage of desirable workers will occur thereby forcing management "to do everything they can to attract and develop women." These activities would include 1) identifying early those who have talent and ability, 2) provide them the same opportunities as men to grow and develop, 3) include them in informal meetings and special training, and 4) recognize that the business environment is more difficult and stressful for women—they are always a minority. Besides the four things, companies will also need to provide greater flexibility. Flexibility that ranges from the freedom to take time off to alternative work schedules. Flexibility is expensive, but not as costly as losing a high-performing woman.

....Beth Brophy, *U.S. News and World Report*, March 13, 1989.

# KIOSK\*

\*postings

Petra Schneider is looking for a graduate program in landscape planning that deals specifically with landscape planning for women. She is most interested in Canadian or U.S. programs. If you have a good program to recommend, contact her at Fossestr. 67, D-3000 Hannover 91, West Germany.

The Hagley Museum and Library announces research fellowships for 1989-90 for work at the Hagley's Center for the History of Business, Technology, and Society. There are various stipends for various periods and amounts of money. Short-term grants are also offered. For information on these and other assistance write them at P. O. Box 3630, Wilmington, Delaware 19807.

There is an association for the millions of Americans who work out of their homes—called the American Home Business Association. It offers information on reduced-cost health insurance, tax advantages, and other benefits. Write them at 397 Post Road, Darien, Connecticut 06820 (800-433-6361).

The conference on Managing America's Enduring Wilderness Resource is sponsoring a photo exhibit and competition for entries in several categories of photos taken within a designated wilderness area. For rules, regs, and prizes, contact Mike Link and Kate Crowley, Northwoods Audubon Center,

Route 1, Sandstone, Minnesota 55072 (612-245-2648).

*Women in Natural Resources* is interested in knowing the kinds of books and periodicals that various government agencies, universities, and private companies provide and circulate in their libraries devoted to cultural diversity and women's programs. (For example, the Federal Women's Program Library on the Nicolet National Forest now contains 64 books and tapes which are available to all Nicolet employees. The library is divided among the four Ranger Districts, Job Corps Centers, and the Supervisor's Office.) WiNR would also like to know if there is a line item budget for your collections, where they are housed (Women's Center on a campus, for example) and a feeling for how much they are used. Send your data to Editor, WiNR, P. O. Box 9003, Moscow, Idaho 83843.

The Forest History Society is encouraging readers and writers of articles which have been printed in newspapers and general circulation magazines to be sent to them to be considered for the John M. Collier Award for Forest History Journalism. Include full publication information and send to 701 Vickers Avenue, Durham, North Carolina 27701.

The BLMs California Desert District released a draft proposal for limited control of raven populations. The objective of the proposal and of the Desert Tortoise Preserve is to reduce excessive raven predation on juvenile tortoises in the Mojave Desert. The methods considered: selective shooting and poisoning. The Desert Tortoise Preserve Committee has spearheaded this effort. Copies of the pro-

posal are available from BLM, Desert District, 1695 Spruce St., Riverside, California 92507.

The push to diversify the workforce is reaching corporate headquarters. General Electric will spend \$15 million to get more women and minorities into college majoring in science, engineering, and business. For information about their program, contact GEs Foundation President Paul M. Ostergard, 3135 Easton Turnpike, Fairfield, Connecticut 06431 (203-373-2250).

There is a National Committee on Pay Equity which holds conferences and works to end discrimination in salaries and wages for women and minorities. They have been at this for 10 years and are interested in hearing from you about new directions for their activities. Write them at 1201 Sixteenth Street NW, Suite 420, Washington DC 20036 (202-822-7304).



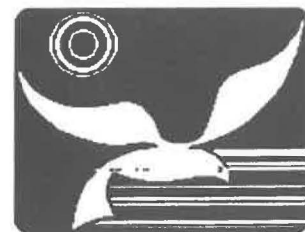
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tosh or IBM, but should include hard copies as well. Please check with the editorial office before sending disks. Average manuscript length is 10 to 20 pages (space and a half). Include non-returnable black and white photos (action shots, please), and a short biographical sketch similar to those included in this issue.

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