

*women in*  
**NATURAL  
RESOURCES**

Volume 14, Number 4

June 1993



**In This Issue**

Interview: Jane Ditley  
Agency vs. Contractor  
Protecting Rivers  
Viewing the Environment:  
Gender Differences

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

## Editorial

Elaine Zieroth

A now retired Regional Forester for the US Forest Service once said:

"If you want evolution to occur, sometimes you have to wait for a few dinosaurs to die."

I remember chuckling at that analogy to the old guard in the agency who resisted change and longed for the good old days. Somehow I assumed that when the current dinosaurs retired that the species would be extinct. I never envisioned myself aging and even entering the dinosaur danger zone myself.

The first rude shock came a few years ago when I was asked to speak to a workshop of new wildlife biologists. They introduced me and stressed that I had been in the agency almost 20 years. Suddenly I could read it in their faces: DINOSAUR. They didn't have to ask the questions that were written there:

You were *actually* trained before the Endangered Species Act was law?

You used to *intentionally* fragment wildlife habitat?

If only they knew. My first job was at a summer station with only three rooms and an outhouse in the back. It was part of my job to clean the outhouse. The only hi-tech equipment was a phone and the occasional sliderule. (My wordprocessor just told me that sliderule isn't even a word anymore!)

I remember getting the first computers in the office a mere 10 years ago and at least one dinosaur paid me a quarter to print the contents of his inbox once a week so he wouldn't have to go near the thing. Somewhere between now and then, technology zipped past me.

On the 100th Anniversary of the Forest Reserves, which eventually became the National Forests in about 1906, I purchased a special edition print of my ideal of a district ranger. There he is on his horse, leading the packhorse and looking out over a vast landscape of wilderness. The print was made from a photo of the first ranger, who, upon hearing about the creation of a forest service, rode his horse to Denver to sign up. I remember seeing his grave on the forest in

Colorado where I once worked. I stare at the print on days when I'm chained to my desk and as much as I stare, I can't see where Mr. Kreutzer kept his notebook computer or his Global Positioning System.

I cannot picture myself working on a district that doesn't have a large expanse of wilderness and back country where you can ride for a week and see no roads and few people. So, for the last few years, my priority has been on funding new pack horses and tack, not a FAX machine. I gained a reputation for being down on technology and my employees were chagrined to be pointed at as the "district without the FAX machine." I had a favorite phrase—*PC-free in 93*—and when asked to write my phone number AND my FAX number, I wrote Bub or Tucker, our new pack horses, instead. Why would anyone invent a machine that brings you tomorrow's work a day early?

Another shock hit last summer when we had a project fire on the district. I was helping the fire team from Portland get set up in our 1930s CCC work station and there it was again: evolution. Within 24 hours they had six private phone lines in the station where we had been trying to get one private line for years. Even I can agree that 8-party lines don't cut it anymore. Next they set up a FAX machine and two computers beneath the rattlesnake skin draped across the wall. Many of my employees huddled around to watch the FAX work and begged the team to leave it behind after the fire, just to annoy me. But I had the last laugh when the team called out a communication technician to find out why the cellular phones in their rigs all stopped working at once. They had indeed found the dinosaur burial ground because there are no microwave connections for cellular phones in our part of the world yet. I don't know how we ever fought fires before we could drop software on them.

Dinosaurs like to use phrases like "the good old days" or "back when." The good old days are described variously as: before the National Environmental Policy Act, before tight budget control, before "ologists,"

# Of Dinosaurs & FAX machines

before women walked out of the office, before environmentalism, and before the Endangered Species Act.

We were being pressured by the County Weed Board and our Congressperson last summer to control noxious weeds. We finally had to ask everyone on the Forest to come out and pull weeds all day by hand. I was sure that we were going to have lots of complaining and people with sore backs. Instead, I was amazed to see them laughing and making up contests like who had the biggest weed. I was dumbfounded and asked a few employees why this resembled a family picnic. One person summed it up this way: It was really refreshing just to DO something that didn't have to be planned for a year, appealed, taken to court, and then deemed out of date. Just like the good old days.

Someone once predicted that by the year 2000, the Forest Service would employ only

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EDITOR  
*Dixie Ehrenreich*  
CONTRIBUTING EDITORS  
*Lei Bammel*  
*Karen Lyman*  
SECTION EDITORS  
*Elaine Zieroth*  
*Diane Calabrese*  
*Daina Dravnieks Apple*  
*Jessie Micales*  
*Linda Hardesty*  
*Ruth Parnall*  
*Lori Payne*  
*Jonne Hower*  
*Ellen O'Donnell*  
ART/CARTOONS  
*Deann Zwright*  
GRAPHICS/DESIGN/PRODUCTION  
*Barbara Ham*  
*Marjory Knott*  
Business Manager  
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# WOMEN IN NATURAL RESOURCES

June 1993



Volume 14, Number 4

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*Elaine Zieroth*

The cover photo  
is of  
*Jane Difley*  
President, Society of  
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Vice President, American  
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*Photo by Joanna Matthews*

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Jane Difley is President of the Society of American Foresters. She is also a Vice President of the American Forest Foundation and runs the national Tree Farm program.

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### In Environmental Education, No Experience is Wasted *Nancy Pauline Arny*

In life, there are many alternate pathways to a particular goal. To paraphrase what Leopold said: Save all the parts.

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### Cynthia Moss *David Simpson*

Cynthia Moss has had a 25-year love affair with Africa and Africa's elephant families. Today she is feeling optimistic about the elephants' future at Amboseli National Park in Kenya.



What a great photo you had on the cover last issue. Regional Director Rust (of the Park Service, North Atlantic Region) made my day when I saw her in the mail box.

Mimi Johansen, Duluth Minnesota

I enjoy WiNR; it is very refreshing to see the accomplishments women are making in the resources field. I have been working for the Forest Service for the past 13 years. The past 11 years I worked in Engineering-Timber Sale Road construction, in inspection, contract preparation, preliminary road reconnaissance, planning and survey. I recently changed fields and am currently working in Engineering-Facilities, which includes campground construction, forest water and sewer systems, building maintenance and construction. I don't find Facilities work nearly as exciting or as varied as road construction, but in view of the impact of the spotted owl on the Forest Service, I feel I have made a wise decision in order to stay employed.

Jerry L. Carpenter, Greenville, California

I saw your announcement for articles for your 15th anniversary issue which is the next one. It doesn't seem possible that you've been around that long—or that I've been around that long. Every now and then, we have to lift our heads up from the heap of work we're buried in and agree together that it has been tough, it's still tough, but we're tough, too. Most of my female classmates in my graduating class are doing other things now, but I am still hanging in there expecting to advance and prosper with the new ecology, the new perspectives, the new reduction in force, the new whatever they throw at us. My career is a renewable resource of pleasure for me. I hope WiNR is around for the next 15 years to give me an assist when I need it.

Ruthann Knowlton, Buffalo, New York

Once again, another outstanding focus issue on the Park Service. You do all of us a great service in understanding our own agency when you print articles from authors who are not employed by NPS. I'm thinking for example of Polly Welts Kaufman's history of women superintendents (shamefully long in coming), Susan Bratton's article on discrimination against women in small science units. Good stuff. Managers take note.

Rod Nelson, Gainesville, Florida

I know it was too early for you to have an article in your NPS focus issue on the merger of the Department of Interior's research biologists in a new National Biological Survey (NBS). But do you have a preview of what it will be like?

Carol Longren, Honolulu

*Editor's note: Here at WiNR we have not seen a full blown proposal, but on April 1, Secretary Bruce Babbitt circulated a memo to Interior people about NBS. He wrote "To create the NBS, we would consolidate the biological research and inventory activities within our Department into a new, independent bureau. Not all biologists would join this new bureau—only research biologists. Of the 3,300 biologists in the Fish and Wildlife Service, for example, about 600 would transfer. We hope to finish this proposal in time to be implemented at the beginning of FY94....By separating the science from resource management, we can elevate the credibility of the science itself, forcing others to make decisions based not on ideology, but on science. This is one reason why both the Smithsonian Institution and the National Academy of Sciences have embraced this proposal.... By linking with universities across the country, we'll have greater flexibility in helping resource managers.... There is historical precedent for this, with many parallels to the creation of the U.S. Geological Survey a century ago...."*

UNIVERSITY OF MINNESOTA

Forest Pathology/Genetics

Research Associate/Research Fellow

Closes July 30, 1993

Two-year academic professional, 12 month, 100 percent research appointment available in the Department of Forest Resources, located on the St. Paul campus or at the North Central Experiment Station, Grand Rapids, Minnesota. Salary commensurate with experience and qualifications. Position available September 1, 1993.

Duties: Work with Aspen/Larch Genetics Cooperative to develop early screening techniques for hypoxylon canker resistance as part of a breeding program for fast-growing and disease resistant aspen; study genetic variation in hypoxylon canker resistance, resistance mechanisms, and host-pathogen relationships; and develop a reliable technique screening for hypoxylon resistant aspen genotypes.

Position requires expertise and technical skills for pathogen isolation, in vitro culture, and inoculation. Applicants must have 1) Ph.D. for the research associate title or Master's for the research fellow title in forest pathology or plant pathology by date of appointment; 2) graduate-level training or experience in forest genetics, 3) experience in pathogen isolation and culture, and 4) basic statistics and computer skills. Preferable qualifications include experience working with hypoxylon fungi or related diseases. Background in forest breeding and experience in tree propagation techniques are also desired.

An application letter, resume, transcripts, and the names and addresses of three references should be sent to Dr. Bailian Li, University of Minnesota, North Central Experiment Station, 1861 Hwy 169 East, Grand Rapids, MN 55744 (218-327-4522; Fax 218-327-4126).

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**The Bureau of Land Management, Lakeview District Office in Oregon, seeks a District Manager to administer a full multiple use resource management program in range, forestry, watershed, wildlife, lands, minerals management, and recreation. The position is open to current or former Federal employees with competitive civil service status or reinstatement eligibility; persons with disabilities who qualify under a special appointing authority; and former Peace Corps and VISTA volunteers. Salary and grade at GM-340-14 (\$56,627 - \$73,619 per annum). To be eligible for appointment, the applicant must have one year of specialized experience at least equivalent to the GS/GM-13 level in Federal service. For application materials, contact BLM Branch of Personnel Management, PO Box 2965, Portland, Oregon 97208 (503-280-7235). Closes July 16, 1993. BIM is an Equal Opportunity Employer.**

## Opinion: Many states manage trust fund lands well *plus* make money

Jan J. Hacker

I have been most impressed by the accuracy and quality of articles in the *Women in Natural Resources* magazine, but the article in Vol. 14 No. 2 (December 1992) "Redefining Trust Land Management Priorities" by Sally Fairfax and Jon Souder was filled with errors and misconceptions.

The second paragraph of the article, for example, states that among all public forests managed in the country, only Washington's timber management program did not collapse into a nest of lawsuits during the 1980's. This contention is absurd. I am most familiar with state and county land management in the Great Lakes region and can assure Brian Boyle [retiring Commissioner of Public Lands for the State of Washington] and the authors that not a single program in this region has collapsed into a nest of lawsuits. I'm sure this is also the case in many other states. In fact, I cannot think of a single lawsuit that was filed against the Michigan timber program in the 1980's, where I worked at the time.

The article goes on to suggest that Boyle is "breaking new ground" by managing trust fund lands with a specific mandate to make money, succeeding in both revenue generation and environmental protection and managing trust fund lands as a portfolio of assets. Again, these are ridiculous suggestions if the authors look beyond the Washington border. County land managers in Michigan, Wisconsin, and Minnesota have operated under these philosophies since the late 1960's and early 1970's.

Michigan and Minnesota state agencies with commercial

forest land bases of 3.6 million and 3.1 million acres, respectively, adopted as primary goals of state land management, promotion of economic development through increased supply of raw material to growing forest products industries. This goal is similar, but benefits society in a less direct way, than Washington's mandate of making money from trust fund land for the benefit of society. This emphasis has succeeded in accomplishing this goal without diminishing concern for and attention to environmental protection in these two states.

This is not to say the timber programs in Michigan and Minnesota do not make money, they do. Not as much as Washington's program, but revenues generated by the timber program are consistently above timber program costs.

I also found it humorous that the authors imply that it was a constant uphill struggle to accomplish the goals of making money and protecting the long-term productivity of the corpus. Nowhere else in the country are there more productive and valuable forests than the Pacific Northwest—how hard can it be with that kind of asset?

Research I have recently completed suggests that state agencies nationwide that do not make money from their timber programs are being forced to do so, because of declining general fund revenues. This is now true and it will be necessary in the future to maintain not only timber but also nontimber program budgets.

Of course, many states have been doing this for years, despite having far less valuable tim-

ber resources compared to the state of Washington.

As to management of natural resources from the perspective of portfolio or asset management, this idea was championed nationally in the 1970's and 1980's by William E. Nothdurft and resulted in a book entitled *Renewing America: Natural Resource Assets and State Economic Development* published in 1982 by the Council of State Planning Agencies. Michigan, in particular, operated under this philosophy throughout the 1980's.

All of the above discussion illustrates that Boyle's efforts were but one of many efforts going on along the same lines in many states in the 1980's. These other efforts may, in fact, be more significant since they occurred in states not fortunate enough to have highly productive and valuable timber resources on the scale of Washington's. Credit should be given where credit is due. Meaning no disrespect to Boyle's efforts, if you look at the facts, the title of *visionary* implied in the article as applicable to him alone is a pretty long stretch if it's applicable at all.

*Jan J. Hacker is a Research Assistant at the University of Minnesota and will soon complete her Ph.D. there in Natural Resource Policy and Economics. She has worked as a policy analyst in the Michigan Office of the Great Lakes and as a field forester in the Forest Management Division of the Michigan Department of Natural Resources. Her two Bachelor's degrees (forestry and wildlife) and her M.S. degree in forest management are from Michigan State University.*

PLAYING HARDBALL EVERYDAY WITH CONTRACTORS IS NOT THIS AUTHOR'S IDEA OF FUN. BUT PAINFUL EXPERIENCE TAUGHT HER LESSONS FOR PREPARING FOR THE WORST. WE ALL SHOULD FIND HER INSIGHTS USEFUL.

# HEADING INTO TERMINATION: *LAYING DOWN THE PAPER TRAIL*

DEBRA LAEFER

In the National Park Service park where I work as a civil engineer, by January 1993, we were 53 percent of the way through the contract time on a job, but had only 19 percent of the construction complete. Our contractor was (1) poised for a major investigation by the Department of Labor, (2) in the midst of being fined over \$50,000 by OSHA for safety infractions, and (3) on the verge of a law suit by the National Labor Relations Board. Things were not going well. At the rate we were progressing, the project would finish over a year and a half beyond the one year contract, if it finished at all.

Construction in a national park is never easy, particularly one being used by seven million people a year. But our system for choosing contractors has major problems, the worst being that unscrupulous bidders can slip undetected into the process. Government procurement is done through the low bidder system, ostensibly set up to minimize corruption. What lies behind the lowest sealed bid is often a mystery, but in hard economic times there can be more than simple inexperience. Fraud, corruption, and substandard



performance are not unusual companions in an industry where over 50 percent of the labor force is currently unemployed. Because these problems are widespread, government inspectors, managers and supervisors must take preemptive steps to minimize and monitor areas of potential conflict. This is most easily done through early intervention.

Although there may be ways to improve the bidding and background check procedures through such measures as pre-qualification, the reality of the situation is that low bidding is the current system and, therefore, the best we can do is try to protect ourselves and the tax payer from what may often seem to be the inevitable. Additionally, a bad government contractor is very difficult to terminate. To successfully obtain a termination for default, the government's case must be very strong. The records must prove that the contractor is unable to finish the project in a timely manner or that the contractor is unable to maintain a safe construction site. The first is easy to indicate but difficult to prove, and for the second, it is easy to demonstrate examples but much more difficult to show consistent negligence or indifference. The contract can experience other problems, but the government is unlikely to use them as grounds for termination, having not proved strong enough in court in previous cases.

Termination for default (inability to complete the contract) is rare because of the financial large risk for the government. If the contractor is able to prove in court that the termination was unfair, the case becomes "termination for convenience." In this case, the contractor may be entitled to any damages caused by the termination and the subsequent lawsuit as well as all potential profits, as if the contractor had successfully finished the job. Since termination occurs very infrequently, good record keeping is essential to any hopes for termination.

Each NPS construction project has a project supervisor and may have a number of inspectors. The number of inspectors is largely dependent upon the size of the contract and the complexity of the project. Although my current project was awarded for over \$3.5 million, the work is considered quite straight forward. At present, the site is not historically significant, environmentally sensitive, or structurally at risk. Consequently, I am the only NPS inspector on site.

NPS construction personnel are largely civil engineers, architects, and landscape architects and we strive to provide a variety of expertise to each project. As a civil engineer, my responsibilities have included evaluating soil boring logs, monitoring pile driving, and reviewing structural steel and concrete elements, and test data.

These activities are in addition to the regular day to day management of the construction.

Although my current project is considered to be proceeding especially poorly, and an extreme exception to most of the National Park Service's projects, I do not believe that it is as unusual as many would like to think. The reason my project is going so poorly is multifold. The major issues include

- poor construction practices
- an absence of a quality control program
- a lack of sufficient planning
- untimely submittals
- improper sequencing
- an undertrained work force
- an attempt to make substitutions for most specified materials
- the contractor's inexperience with federal government contracts
- a disregard for safety

Since the severity of the situation is caused by the accumulation of all these different problems, I am convinced that although few jobs will experience each of these separate obstacles to the degree found on this project, most jobs will encounter at least a few impediments. Broadly described, they are: quality, schedule, safety, administration, and general contract compliance.

**Quality** is a category that encompasses the selected materials, the installation process, and the level of final workmanship. These are items which must be checked every step: material delivery, phasing of installation (to ensure that perfectly good work does not have to be torn up), and placement of work.

**Schedule** includes not only keeping to a final completion date for the contract, but addresses whether or not the contractor is working within the hours and days permitted by the park. Consideration must also be given to weather and temperature restrictions on certain work, including the placement of concrete and asphalt.

**Safety** should concern the worker and the public. The difficulty in enforcing public safety is that it is not covered by OSHA. If a worker is not directly exposed to a danger, the problem is not within OSHA's jurisdiction.

Luckily many of the parks have safety officers who can work with the local park police to ensure enforcement. Items of concern may be the cleanliness of the job site (including the absence of all tripping and impalement hazards), the placement of sufficient refuse containers, the existence and upkeep of the portable toilet facilities, hazardous material plans, sufficient lighting, up to code temporary electrical, including the presence of Ground Fault Circuit Interrupts (GFCIs), compliance with backup alarms on all major equipment, fire prevention devices and plans, and regular use of proper protective gear (hard hats, safety goggles, ear plugs, and construction clothes).

**Administration** includes the timely submittal of items which need to be approved, the regular submission of payrolls, and revised schedules, the proper transmission of items including a sufficient number of copies, and the completeness of the information. This also encompasses the proper superintendence of the project with a competent self-inspection program, as well as the providing of sufficient notice for government inspection of new materials, new work and differing site conditions.

**General contract compliance** may be comprised of affirmative action goals, minority and women owned business participation, payment of proper wage rate and appropriate labor classification, prompt furnishing of those items specified in the general provisions (i.e. a trailer and trailer cleaning, office machines, supplies), and proper delivery and storage of materials.

#### A. Starting on the right foot: prevention

The largest problem is realizing a problem exists. Once it is evident that there is a problem, things are usually pretty far out of control. The key is prevention. Throughout the construction industry many different systems and approaches have been instituted to assist in these matters. I have tried to summarize many preventative suggestions and techniques below with an emphasis on how they are best employed.

1. *Take a strong, hard lined position from the beginning.* Most construction projects begin with a "pre-con," a preconstruction kick-off meeting where the contractor and the government meet. Often many of the subcontractors are included. If the sub-contractors are not invited, there should be a separate meeting to lay down the law with them. It is important to come across as serious and to involve as many of the players as possible. Since many government contractors get in over their heads, a lot of interaction with the subcontractors often occurs throughout the course of the project—more than is typical with private industry owners.

general steps towards correction. The first is to establish the scope and breadth of the problem. Once this has occurred, a remedial system can be devised to identify or track the problems. Discuss the policy with your own staff, making sure it is well understood. Seriously address concerns or anticipated problems your staff may have. After this is done, write a simple, yet strong letter to the contractor. The letter should state what the problem has been (i.e. untimely submittals, improper usage of the delivery routes, insufficient public safety protection). The letter should clearly say that current practices are unacceptable and will not continue to be



2. *If things have started off on the wrong foot, identify the worst problem and try to institute small, but immediate changes.* Once remedial action of the most glaring problems are underway, smaller concerns can be addressed. The problem with this entire approach, however, is that it is backwards. Trying to correct a situation once it has become an established procedure is very difficult.

If a bad situation or habit should take root there are several

tolerated. Finally, the letter should end by very clearly explaining what the new procedures will be, that they will be instituted as of a certain date and that full compliance is expected. It may also be necessary to include a sentence directing the contractor to distribute this information to all subcontractors on the site or affiliated with the project.

3. *Know the contract well before you try to enforce it.* It is impossible to expect the contractor to take the time to read and enact

the contract documents, if you are not willing to do so. The contract documents, made up of specifications and drawings, are usually developed over several years by a variety of experts. The site may be designed against future and as yet unapparent threats—hurricanes, earthquakes, or hundred-year floods. If you are unfamiliar with the specifications and the codes and standards which they reference, it will be impossible to fully inspect the work, and although it may cosmetically look right, or even be built to standards which are typical in the industry, the project may not last to its designed duration and may even unexpectedly collapse. A well devised schedule and good communication with the contractor should provide sufficient notice to stay abreast of requirements for upcoming construction.

There are many provisions in most government contracts which specify how long you may consider an item before it must be returned to the contractor. This may hold true for letters and requests for information, as well as submittals. There may be enforcement clauses with which you were not familiar. These may limit the amount of time the contractor has to file a complaint or place a claim. Requirements for superintendence may allow you to replace a contractor's supervisor who is not performing satisfactorily. Know how strong you really are by reading the actual contract.

**4. Meet with the designers.** To ensure that you, as the enforcer of the contract, fully understand the designers' intent, try to schedule a face to face meeting. Ask about the choice of unusual materials or why the designer has specified for work to be performed in a particular way. Ask whether the designers anticipate any construction difficulties, whether there are any specified materials which might be particularly difficult to obtain in a short period of time, and whether there is anything special they think that you ought to know about their design or special circumstances which influenced the design. These questions may bring to light crucial elements of the project which are not immediately

obvious from the contract documents.

**5. The referenced standards and codes are indispensable.** If possible, keep a copy of the necessary manuals and books, or at least the relevant sections, on site. As an employee of the federal government you have tremendous resources at your disposal. Many departments and agencies have libraries and some even have librarians to assist you in your search.

**6. Explore your local resources.** As a mobile work force, moving from site to site, we in the construction branch sometimes forget about all of the resources at the local park. These may range from botanical expertise to access to an external drive for your computer. If there are private design firms involved in the process, they too are an invaluable resource.

**7. A safety plan should be required of the contractor prior to the commencement of any work.** This should be a step by step analysis of how the job is going to be built, a list of anticipated dangers associated with each step and an explanation of how each danger will be mitigated. Additionally, all safety items listed in the specifications should be reiterated (i.e. hard hats, flag persons, temporary electrical, etc.). Once a safety plan is written each subcontractor working on the job site should be required to sign a form stating that they have read, understand and will comply with all provisions included in the safety plan. A subcontractor should not be allowed to proceed until this is done.

## **B. Keep good records**

Evaluate record keeping procedures with lawsuits in mind. This is a sad thing to say, but it does reflect the current state of affairs. Are the files in a state that any document can be rapidly found? Are the files in a state that all of the information on a particular subject can be obtained without reading every piece of correspondence for the project? Is your entire filing system comprised of loose papers filed generally in a chronological manner, *until* someone takes a document out?

**1. Organize paper documents sensibly.** I find it useful to separate kinds of documents into binders with Acco clips:

- a) correspondence
- b) daily reports
- c) monetary negotiations
- d) progress statements
- e) meeting minutes

A construction lawyer once told me that a letter should be filed in three places: incoming reverse chronological, reverse chronological by sender and by subject. One could add to this list the placement of each letter behind your response to it.

**2. Have the computer do some of the work.** For about \$1,000. in hardware and another \$500 in software all incoming correspondence can be scanned and kept in the computer. The letters' images are converted into text through Optical Character Recognition (OCR). The documents can then be searched for relevant information. This is of invaluable help when trying to document the history of a problem or conflict. There is an inexpensive product by the name of OnLine. It runs as a desk accessory and will search all documents for specified key words. If you need to quickly locate all correspondence—on galvanized pipe, for example—within seconds this software will not only find all documents in which this phrase is located, but will show where in the document the words appear.

If it is possible to have the project's specifications scanned into the computer, the system will be indispensable. Since the OCR alters the letter's formatting and potentially permits the text to be altered, it is still essential to keep one hard copy of the document. Reverse chronological order is the most useful method for most items.

**3. As a simple aid to letter writing, give each letter a subject line.** This allows for more rapid discovery, and if several letters are written on the same day it makes reference easier. Only include *one subject* per letter. No matter how tempting it might be to slay all of the soldiers in a single bound, treat them individually. This may take a little more time at the beginning, but it will ultimately keep things simpler and easier to follow. Use

the meeting minutes as a summary for multiple things. Insist that the contractor follow your example. Explain the importance of this single topic approach, and if you are unable to outright reject multiple subject letters, then answer each topic separately, referring back of course to the original letter. Always refer back to the original letter, at least by date. The date should be the one listed as sent.

When filing outgoing correspondence, include a copy of the referenced letter attached to the back. If using the scanning system specified above, the situation can be painless. Macintosh's system 7.0 now offers an option to create what the system calls aliases. These act as duplicates of the original letters, but take up almost no extra memory and allow the document to appear in several places at once. Consequently incoming correspondence can be filed in the computer with its outgoing correspondence as well as in an incoming file.

**4. Stamp all incoming correspondence.** Transmittals should be stamped when they come in, signed when they go out, and the procedure repeated if they come through again. If a problem begins to develop, such as a large discrepancy between a date on correspondence and when it was received, keep the post marked envelope. If the information is hand delivered, make the contractor correct the date and initial it. A running log can also be kept of all incoming correspondence and submittals. This should list the date received and a description of the item. This provides one more layer of proof as to the date of receipt.

**5. Keep a daily diary.** If you keep them on computer, always keep the file up and open. If you have to relaunch the program and refind the file each time you need access, you will be much less likely to use it. If you keep a hand written log, always keep it with you. A hand written daily diary or at least a note pad should be small enough to carry in a pocket and onto the site. Always keep it with you. If you write it as you see it, you will not forget. There is no such thing as writing too much.



Document as much as possible. This includes to whom you spoke, what they said, what was agreed upon, unsubstantiated rumors, and unusual circumstances. Make notes on things on which to follow up and situations which need to be monitored. Daily diaries should note who worked on the project, what was accomplished, and where it occurred. Note the temperature and weather conditions, if there were special visitors to the site and any special interruptions of the work. If there are workers who cannot proceed due to a site condition, lack of material, or conflict with another subcontractor, time the stoppage and specify how many people were affected. Try to quantify as much as possible. Note all machinery on the site and any materials delivered, including how much. In the current litigious climate there is no such thing as too much information, if one can find it. If the daily diary is hand written, try to use a form or format where items are clearly distinguished and easy to find. For those using computerized records, search systems are available for easy location and identification.

6. *Regularly take photographs with a databack.* The databack imprints the date the photograph was taken in the corner of the image. For those with access, a video camera is ideal. You never know what will show up. Try to get workers in the pictures. Photographs should be taken of general work progress, lack of progress, unusual installation techniques, differing site conditions and contractor or vandal induced damage. These will show the techniques selected by the contractor, whether an employee is exposed to a hazardous situation (crucial for OSHA investigations), and may provide the needed documentation to prove that an employee was on site on a particular day, or even that they existed at all. Label the pictures; two months down the line, the most important item or the reason the photograph was taken, may be completely lost. The labeling should include the name of the person taking the picture. Make sure that in the pictures one can determine the scale; use yardsticks, pens, or persons.

7. *Use 8.5" x 11" reductions of plans of the project.* These can be made up ahead of time and used to denote current areas of work and amounts accomplished. These are particularly useful as additions to daily logs.

8. *Keep a telephone log.* This is something very simple and yet so few people do it. No matter with whom the conversation is held—supervisor, supplier, consultant or contractor, it should be noted. The necessary information to include is the date, the times the conversation began and ended, with whom the conversation was held, and who initiated it. Finally a very brief synopsis of what was discussed and what was agreed upon. Just like in meeting minutes, if an action was agreed upon list whose responsibility it is and when the task is to be completed.

9. *A submittal is made for almost every product on a job.* A submittal may include material samples, product data from manufacturers' catalogs (called catalog cuts), and shop drawings which show the minutest level of detail for construction connections. Submittals are used to verify proper materials, select colors and preview installation techniques. For a metal roof, for example, typical submittals might include the catalog cut stating the gage of the material and its wind rating, a sample of the material in the specified color, and shop drawings displaying the points of connection, the type and length of welds, and the location, type, and number of bolts. The transmittal sheet should be structured with certain requirements and limitations. Just like with correspondence, insist that a particular transmittal only carries submissions for one specification section. The transmittal should include all relevant data: product name, manufacturer and make or model number, the specification section, and a sufficient number of copies for the agency, the Architectural & Engineering (A&E) firm and for any of the A&E's subcontractors. Seven or eight copies is a typical number. The transmittal sheet should have the submission date, it should be stamped "received" by the government inspector, and there should be a place for the date of transmission to the A&E. The

forms should clearly provide an area for comments and should have a section for status (i.e. pending, approved, approved as noted, approved as noted—resubmit, disapproved).

10. *Quality control means tracking submittals.* Many contractors, accustomed to working in the private sector, are not prepared for the rigorousness of the government approval process. A set of structural steel shop drawings may be submitted half a dozen times before all of the sheets are approved. The engineer may require resubmittal of a drawing prior to its approval or resubmittal may be required only for final record. If close records are not kept, the project may be built with unapproved materials



and in an inappropriate manner. The first step to prevent this is to make a list of all submittals that are due on the project. Share this with the contractor as soon as possible. The numbering system should indicate how many times the item is resubmitted by the contractor. Many project managers give the transmittal only a number during its first pass and then an ever increasing letter following the number with each resubmission. This numbering is especially important both in showing the contractor's competence and because many A&E contracts are based on a finite number of submittal reviews. In



some cases any number of submissions or resubmissions beyond a certain number are eligible for additional charges to the owner/government.

11. *Requests for information (RFI's) are common inquiries made for additional clarification of the designer's intent or to correct minor deviations in the sight conditions.* These can be some of the most important issues to carefully document, because by their nature they address issues which are not clear or which are different from anticipated. RFI's are best handled on a form similar to a transmittal. At each stage it should show the dates of transmission, receipt, and response. It should indicate the route the RFI took as well as all of the standard items such as: who made the request, which drawings or specification sections it affects, and a concise description of the problem. For differing site conditions, a sketch or a Polaroid photograph is often helpful.

### C. Evaluating progress

A schedule should be required of the contractor. Try to get it as detailed as possible.

1. *Ideally the schedule will be*

*a critical path method (cpm) schedule, showing the various phases for each item of work.* A cpm provides a logical network of construction activities needed for project completion. A cpm shows the shortest way to build the project, this is the critical path. For all items not on this path, a float time is provided. The float indicates how long an item can be delayed before it impacts the completion date of the project. In the cases of delay, a cpm will indicate which items need to be accelerated for timely completion of the project. As an example, if one were building a housing development, the cpm would show that the houses cannot be built beyond their basements until the main sewer and water lines are laid for each portion of the development. Conversely, it would show that the construction of each home was largely independent of construction on adjoining properties. Additionally, it would indicate that for each home, the roof could not be placed until the walls were erected.

2. *Include milestones in the schedule.* These could be the completion of a certain phase of work, getting the construction above the ground level, or sealing

a building with its roof and windows (essential for winter work in cold and wet climates). These items help keep everyone informed and on track.

3. *If, for whatever reason, a bar chart is the only schedule available, require the contractor to specify the crew size for each activity.* If possible, crew sizes should be specified even for the critical path method schedules. By having this information, verification of acceleration or deceleration is easily obtained. In cases of acts of god or change orders, there is a basis from which to negotiate time extensions. Trying to prove inability for timely completion is nearly impossible with a bar chart, especially without crew sizes. The contractor will simply shorten and slide items. Without crew sizes, the contractor may try to shorten the length of a construction activity to an impossibly compressed period for completion. The site might be too limited to bring in a sufficiently large crew or multiple machines required for accelerated performance, but without the crew sizes listed, this is difficult to prove. The contractor may also try to delay an activity's start date beyond what is constructable. As a simple example the roof cannot be put up before the walls. In a multi-million dollar project, these interactions are not always immediately evident. By creating logic networks at the beginning of a project, the impact of any change will be easily understood.

4. *If crew sizes are not provided they can be determined with the assistance of one of several cost estimating books.* The most popular one is Means. These handbooks have thousand of entries, each describing the installation of a particular item of work: planting trees, hanging doors, placing bathroom tile. With each activity, a crew size and production rate for that crew size are given. To determine the production rate for a concrete slab, the book indicates the first step is to select the appropriate category. There are entries for slabs of different thickness (i.e. 4", 6", 8"). For each of these there is the option of a slab with no steel reinforcement, light reinforce-

ment, or heavy reinforcement. Whether the slab is built directly on the earth, as the second floor, or as the top deck of the sky scraper will all affect these rates, but a cost estimating manual will provide a general guideline. If the contractor's actual crew size is different from the one in the book, adjustment is necessary. As an example, the crew size for a concrete floor with no steel reinforcement might be listed as 1 foreman, 4 cement masons and 2 general laborers. (The general complaint in private industry about cost estimating manuals is that they are too conservative—one would never win a competitive bidding job, if one submitted a bid using the numbers listed. If this is truly the case, then any production numbers derived as such will always be generous when estimating compensation during a change to the project.)

5. *Beware of front loading.*

This is when the contractor tries to obtain more money from the contract than there is work completed. The most common tactic is to assign a lot of money to items occurring early on in the contract, especially mobilization. Initial mobilization should not represent more than a percentage or two of the contract. If the amount seems too high, force the contractor to break it down among the major trades and only pay mobilization as the trades come on to site. Until material is ordered and the subcontractor's trailers are brought on site, it is hard for the contractor to justify any mobilization costs. Mobilization money should be for real expenditures and not just funny money.

6. *A schedule of values provides an associated cost for every major item on the project.* The amount may represent a general percentage of the project to account for labor (i.e. exterior masonry), or it may be the price of an item (i.e. hydraulic elevators). Whatever the case, the schedule of values should be largely broken down along the lines of the items in the schedule. In the case of a house, the list might include excavation, underground utilities, basement structure, house framing, doors and frames, interior plumbing, interior electrical, dry wall, painting, flooring, bathroom

fixtures, windows, roofing, and planting and landscaping. If there is a particularly large item, try to get the contractor to breakdown into phases (i.e. shop drawings, excavation, installation, finishes). The schedule of values should be used to determine progress payments, negotiate contract reductions, change orders for the extension or expansion of ongoing work, and a fair method to help evaluate progress. By critically analyzing a schedule of values when it is first submitted—and reviewing questions and potential overestimations with the contractor—the potential for front loading is greatly decreased.

7. *Alternatively, before a project is put out for competitive bidding, the government will usually do an estimate of the work.* The most accurate way to do the estimate is through quantity takeoff. In this process, each item is listed and quantified. For example, on my project it would be necessary to determine how many square feet of brick paving, how many linear feet of parking lot curb, how many cubic yards of concrete for the foundations, how many picnic tables, trash receptacles and light fixtures of each type. The level of detail needed for estimation is quite high. The process is time consuming and can be painstaking. The amount of brick, curbing or concrete would be scaled off the drawings. Other items would be counted, one for each time they appear on the drawings. Once the quantities are determined, costs will be established through personally accumulated knowledge, through a cost estimating manual or by calling up different suppliers and construction trades for estimates. There are also commercial computer programs available to assist with this task.

As a field supervisor it may not be necessary to do all of the work from scratch. If a government estimate was done, the breakdown sheets showing the quantity takeoffs may be available. If they are not, it is still advisable to do the quantity takeoff. The prices can be taken from the contractor's schedule of values. By dividing quantity takeoff into the appropriate schedule of values' line item the

cost per item, per square foot, or per cubic yard can be determined. This provides an excellent basis for negotiating additional work and preventing front loading. When the contractor wants payment for a certain type of work, the rate of the work has already been determined based on the amount of money listed in the contractor's schedule of values for the item and the quantity of the work complete to date as a percentage of the entire amount of this kind of work in the project. By using this approach, there is little room for fraud. Most cursory inspections will indicate such items as the linear footage of pipe installed or the number of drinking fountains placed.

8. *Weekly progress meetings are good for many reasons.* They provide a regular face-to-face interaction for airing problems, concerns, and miscellaneous grievances. These should include participation by major subcontractors as needed. If the prime contractor does not want the subcontractors privy to the general progress meeting, the subcontractor should be invited at the anticipated start or end of the progress meeting. These meetings are very important because they allow many concerns to be aired in an atmosphere less formal than in a letter, but one that is permanently part of the records of the job. These meetings should address new and anticipated construction concerns, the status of critical submissions, any important upcoming coordination and general contract procedures. This is also the appropriate forum for new and ongoing safety problems and contract compliance. The A&E and the owner should be copied on the meeting minutes. Whether or not they should be invited to attend these progress meetings on a regular basis will largely depend upon their desired involvement and the nature of the meetings themselves.

9. *Meeting minutes are essential.* A good rule to follow is that they should be kept whenever three or more people representing different interests are present. Conversations between two parties can usually be documented in a brief letter stating, "As a summary of our discussion on the above

date...." By documenting these interactions, any misunderstandings or confusions about what the results of the meeting actually were are then available for everyone's review and comment. As the owner's representative, it is appropriate that you write the minutes. If you do not, someone else may.

There are many different formats for taking minutes, and it is important to establish one that is suitable to the project at hand and to the tempo of the meeting. The degree of the meeting's formality and its minutes will largely depend on the number of the meetings' participants and the general level of antagonism between the individuals. Whatever the format, the meeting minutes should include several elements. They should state when and where the meeting was held, as well as a list of all participants—perhaps even a sign-in sheet including everyone's corporate or government affiliation. Most importantly, under each item of business, the date on which the topic was introduced, the date on which it was last acted upon, any dates which were



agreed upon for future action and the assignment of responsibility for the task should be clearly stated. Some minutes have a "responsibility/date" column next to each item. The company or individual is designated by initial and next to that the anticipated completion date is listed. Finally, each set of meeting minutes should close with the statement, "The above constitutes (this agency's) understanding of the aforementioned meeting. Any discrepancies should be addressed in writing to (this agency) prior to the commencement of the (date) meeting." At latest, the next week's minutes should note corrections or objections from the previous one. By including this final statement to the minutes, objections raised two months later due to changes in the project cannot be made successfully. If no additional meeting is scheduled, select a date about seven days from the issuance of the minutes by which time everyone must respond.

#### **D. Keeping on track, on top**

Once a contractor has proven to be competent and responsive, some of the paperwork formalities can be let up on. It is important to remember, though, that it is easy to relax strict regulations and very difficult to institute and enforce good standards and procedures once bad ones have taken hold. It is unfortunate to say that until proven otherwise, one must assume the worst about a government contractor.



1. *The government inspector should call the suppliers for all of the relevant items approximately once a month.* A procurement schedule is a list of large quantity items, critical path items, specialty items and items with large lead times. Each item should have the manufacturer's name, the name, address, phone, and contact person for the distributor, the anticipated production and/or lead time. This check is to verify general lead time, current availability, and that an order was actually made. The contractor should update this for you approximately once a month. The update should include all purchase order numbers. Since many contractors are unfamiliar with this procedure it should be spelled out very clearly at the beginning of the project. It is important to explain how this may be beneficial to the contractor, since the government may be able to encourage accelerated production times and how the contractor may possibly be exonerated if the supplier fails to deliver as scheduled and as verified by the government. If a contractor refuses to cooperate, it is usually a sign of large upcoming difficulties, including possible delays.

2. *On-site testing and the testing lab are important for a whole variety of work.* For many procedures such as pouring concrete and complete water supply systems, tests are required. The testing laboratory may be employed directly by the government or through the contractor. Items such as concrete should not be paid for until the tests are done, the test data received and reviewed by the government. Most contracts entitle the owner to the field notes of the testing laboratory technicians as well as the test results. These may be helpful when test results indicate borderline performance. As a precaution, insist that all correspondence from the testing laboratories be sent directly to you in sealed envelopes. To ensure that this occurs, reject anything which fails to meet these specifications. After repeated rejections, the contractor will come to understand that you are serious.

3. *Do not be afraid to ask an expert.* Many times the contractor will try to intimidate through their

supposed expertise. The contractor will claim that this is the way a procedure is done and even if the architect or engineer specifies one thing *everyone knows* that this is not the right way, and how in 20 years he/she has never seen it this way and is certain it will not work. You do not have to stand for this. Be firm. Delay any immediate response; do not be pushed into a corner. There is often an entire team of professionals behind you: other project managers and project inspectors who have positions equivalent to yours, full-time design professionals in your agency, the architectural/engineering firm hired for the project, and if all else fails call suppliers, manufacturers and installers. For a variety of reasons you may or may not want to directly contact the suppliers and subcontractors for your particular project, but that should not stop you from calling similar companies in the region to determine fair pricing, standard production rates, and acceptable installation practices. Most suppliers have a technical staff who are more than happy to explain test data parameters and methods, as well as recommended placement techniques. When dealing with professionals with whom you are unacquainted, note their full name and position with the company.

4. *Ensure that the contractor understands that no payment will be made if they proceed on differing site conditions without properly notifying you.* This will minimize unwanted work and unexpected claims.

5. *When on site, carry all the tools that you need.* Some common items are a level, a transit, a camera, a high/low air thermometer, an asphalt thermometer, work gloves, a tape measure and a flashlight. It is difficult to conduct adequate inspections or document problems, if measurements cannot be accurately taken.

#### **E. When all else fails**

1. *Involve your supervisor.* By bringing in an "impartial" party, someone who is not personally involved in day to day conflicts, a more accurate understanding of the severity of the problems may be obtained. This act may also get the

contractor's attention that you are serious and that your boss is aware of the situation and supports your decisions. Before meeting with the contractor, try to discuss all possible conflicts and establish an agreement between yourselves so as to present a united front against the contractor.

**2. Obtain legal assistance when necessary.** Most government agencies have lawyers on staff or on retainer. Once regular in-house channels of advice have been exhausted, this may be the next step. The decision to involve legal counsel is not usually made by field personnel. At NPS, this decision is made by a senior member of the Contracts Department. Initially, a lawyer may be asked to review certain correspondence. Often this includes requests by the contractor for large time extensions or significant monetary compensation. If the project is running significantly behind schedule, is failing to meet quality standards, or is in blatant disregard of public and worker safety, the agency's lawyer may be sent to the site for a firsthand determination as to the severity of the situation.

**3. Inform the bonding company of significant problems on the job.** All government contractors are required to carry a bond. This is a form of insurance which guarantees that the bonding company (otherwise known as the surety) will complete the project if the contractor is unable. The most common case of surety involvement is due to contractor bankruptcy. But if progress has fallen very far behind, if there are outstanding safety concerns, or if quality is consistently unacceptable leading to possible suspension, it might be prudent to copy the surety on letters to the contractor. There is a risk with this action. Bonding is not an easy thing to obtain. Increasingly larger bonds are available to a company slowly over a long period of time because they reflect a company's assets and their ability to successfully complete larger projects. If a contractor fails to complete a project and the surety must finish the job, it is unlikely that the contractor will ever be bonded by that company again—perhaps any bonding



company again. Consequently, any attempt to involve the contractor's surety may serve to heighten bad feelings or decrease cooperation on a job site. Therefore, this approach should be used sparingly.

#### **F. Heading into termination: our case**

A major meeting was held with the contractor, NPS field personnel, and supervisory personnel from NPS's home office. When this four hour meeting failed to produce significant improvement during the course of the following two weeks, the decision was made to involve the legal staff. The government's lawyer, the solicitor, viewed the construction site and met with NPS field personnel. The solicitor then met with the contractor to learn about any excusable delays or problems which might account for substandard performance. The contractor was also informed as to NPS's concerns and the severity in which they viewed the current project state.

In our case, the visit did not improve the situation. The solicitor was, however, able to tell the field personnel how to tighten up some record keeping practices in the event that the project would end up in court.

By mid-March 1993, eight months of construction time had passed, and we were still not out of the ground. The contractor was falling further and further behind. Despite two revised schedules and a meeting with the bonding company, the contractor and the contractor's lawyers, the schedule continued to slip. Quality and safety remained a constant battle, and calls from unpaid suppliers, subcontractors, and workers increased. Approximately five months after our initial request from the field, the contractor was terminated for default. It was the first default termination in recent memory. Currently, the surety is considering taking over the project.

As a final note, try not to become frustrated that your government contractor does not do what seems to be the correct, logical, straightforward or ethical thing to do. With an irresponsible contractor, you must throw away all preconceived notions of what you think ought to happen. If the contractor thought like you did, you would not be in this situation in the first place.

*Debra Laefer is a Project Supervisor/Civil Engineer for the National Park Service, the largest single employer of design professionals in historic restora-*

*tion, preservation, and rehabilitation. Her position requires administration of construction contracts, the daily inspection of new work, and the enforcement of safety regulations.*

*Prior to her NPS appointment in 1992, she worked as an engineer in private industry. Her degrees are a B.A. in Art History and a B.S. in Civil Engineering, both from Columbia University (New York). A Master's in Geotechnical Engineering from Polytechnic University (Brooklyn) is in progress.*

Photos these pages: Page 4, the author, Debra Laefer; page 5, example of cluttered, unsafe job site (note broken power pole); page 7, example of contractor's inability to lay out work properly; page 8, shoddy workmanship; page 9, gross safety infractions (lifting workers in a back hoe bucket to repair power line); page 10, worker unsafely uses electrical lines for balance near the pile driver; page 11, worker removes dirt by hand after backfilling too high, another example of not laying out the work properly.

THIS RESEARCHER FROM THE U.S. FISH AND WILDLIFE SERVICE IS PART OF A TEAM STUDYING CANADA GEESE POPULATIONS. THE TEAM WAS WORKING ON THE COPPER RIVER DELTA IN ALASKA.

# SEARCHING FOR *DUSKY* NESTS

MARGUERITE  
ROSS  
HILLS



"Bear! Bear!"  
"Where?"  
"There! There!"  
I pointed across the small slough. There, about 60 yards away, a brown bear was rooting in an open sedge meadow bordered by alder and willow thickets. My three coworkers and I relaxed a bit when we realized that the water separated us from the bear, but we still took the precaution of calling and waving to alert the bear to our presence.

The bear, who had been lumbering along the bank turned



toward us, then suddenly stood on his hind legs, made a loud grunt and hurried away. Dan pointed to two sets of bear tracks on the mudflat below, a larger one next to a smaller one. "Be careful, there may be a sow and a yearling still around," he warned. We returned to our job of searching for Canada goose nests, but with one eye peeled for brown fur in the underbrush.

Every summer for perhaps thousands of years, the subspecies of Canada geese called "dusky" have returned to the Copper River Delta near Cordova, Alaska, from their wintering grounds in Oregon and Washington. In this beautiful mountain-ringed expanse of sedge lowland on Alaska's southcentral coast, they have built their nests and raised their young. Named for the distinctive dark color of their breast, they may have always been a relatively small population of about 20,000.

In 1964, the forces that were unleashed by the Alaskan earthquake did more than destroy the city of Anchorage; the level of the ground all along the Alaskan coast was changed. To the west, some areas along Cook Inlet sank several feet, turning spruce forests into tidal marshes. The Copper River Delta, however, where the geese nested was raised about six

feet. The water level dropped and shrubs and trees began to invade what had been low marshlands. Predators such as brown bear and coyotes now had cover for travel lanes, and began to wander in.

By the 1980's, the wintering population of the dusky had declined by almost one-half; this triggered the concern of state and federal agencies who wanted to ensure that the dusky did not join their cousins, the Aleutian Canada geese on the endangered species list. Our nest searching team was made up of representatives of the agencies concerned for the dusky survival: the U.S. Fish and Wildlife Service, the Alaska Department of Fish and Game, the Washington Department of Wildlife, the Oregon Department of Fish and Wildlife, and the U.S. Forest Service. Representatives from these agencies meet twice a year to review the results from these nest searches and from aerial surveys in Alaska and the wintering grounds.

In my job as a U.S. Fish and Wildlife Service biologist for Ridgefield National Wildlife Refuge in southwestern Washington, I spend many hours observing dusky on their wintering grounds. Most of my year I am either studying the dusky and other geese that winter with dusky in

Oregon and Washington or tracking the habitat available to the birds.

Now, with the arctic sun high overhead, I felt lucky to help with studies on their breeding grounds. Since these efforts are expensive and require experienced waterfowl biologists and since I work with these geese in the winter, I had been selected to represent the Service on the team. Our task was to locate as many nests as possible in selected areas or "plots" and try to determine the fate of each nest: had the eggs hatched successfully, was the goose still incubating, or had the eggs been eaten by predators such as bears, coyotes or gulls? This information would give us an idea of the number of young hatched this season and indicate the status of the overall dusky population.

The duskys build their nests in small raised areas in sedge meadows or under open scattered willow and sweet gale along the borders of tide guts and sloughs. On this particular plot we found one nest with the usual complement of six large, white eggs still being incubated. Another nest showed signs of a successful hatch; the membrane that had surrounded the gosling was mature and rubbery. Unfortunately, four other nests had been destroyed, and we found the carcasses of three adult geese. I wondered if the bear we'd seen was responsible.

This plot also had an abundance of dry nesting sites, but elsewhere on the delta the duskys have had to cope with disturbance from an unlikely source—beavers. Earlier in the week we had seen nests that had been abandoned because of flooding; beavers had been very active there, with dams and lodges, some as high as six feet, visible everywhere. The beavers thrive on the small trees and shrubs that have begun to invade the delta since the earthquake. However, if a dusky nest fails, there is always a chance that the geese will re-nest. We had also seen examples of this: one goose was sitting on a nest built on top of another nest that had failed. A dead gosling floated nearby.

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Bruce Campbell, Alaska Department of Fish and Game biologist, had searched these plots for the past several years. He remarked that the delta was very quiet compared to several years ago; then the sound of geese made the delta a noisy place to work. Now, the most raucous birds we heard were the mew gulls. Once, when we came too close to a nest, the adult mew gulls repeatedly dive-bombed our heads. The birds got closer and closer with each attempt, though their feet never actually struck us. Before retreating, we got a glimpse of the cause of this aggression, a small black-spotted grey chick, hiding in the sedge next to a nest with a young bird just pipping out of its egg.

The delta is an important nesting area for other species too: red-necked loons, northern phalaropes, arctic terns, northern harriers, and short-billed dowitchers. The delta's water's are also home to many fish, one of which is the target of a real avian spectacle,

a "Hooligan Hoedown." The hooligan, a small smelt-like fish, swim up the little sloughs of the delta to spawn, and then die in massive numbers, while thousands of fish-eating birds gorge themselves on the small carcasses that lie piled in heaps along the shore and strewn on the bottom of the shallow slough. More than 30 bald eagles circled like vultures on the day I witnessed the hoedown. Their scraggly, beat-up appearance and missing feathers showed that life was not usually as easy as this hooligan feast.

Back on the nest plot, I watched a pair of duskys fly overhead. One wore a red plastic neck collar with large white numbers engraved in it. It reminded me that in another month, more

biologists would come to the delta on a different mission—to catch, collar, and leg-band the duskys for continued research and monitoring of their population.

Our week of nest searching, now nearly over, had yielded mixed results. Nest success was up and predation was down, yet the overall number of nests continued its gradual decline. As the pair of duskys slowly disappeared into the glare of sun on water, I couldn't help but think that they were flying into an uncertain future.

*Marguerite Ross Hills has worked for the U.S. Fish and Wildlife Service for the past 12 years at several different wildlife refuges including Sacramento, Stillwater, and Kenai. She graduated with a Bachelor's in wildlife biology from Humboldt State University in 1981. Her present position as goose coordinator keeps her involved in goose management issues for duskys as well as other Canada geese that winter in Oregon and Washington.*

Photos courtesy Steve Carlisle.



AT LAST, RIVERS ARE NOW THE PRIMARY EMPHASIS FOR PLANNERS. OUTSTANDINGLY REMARKABLE VALUES (ORV'S) ARE DIFFERENT FOR EACH RIVER. ALL OTHER MANAGEMENT ACTIVITIES CAN TAKE PLACE ONLY AS THE ORV'S ARE PROTECTED.

# WILD AND SCENIC

RON BONAR

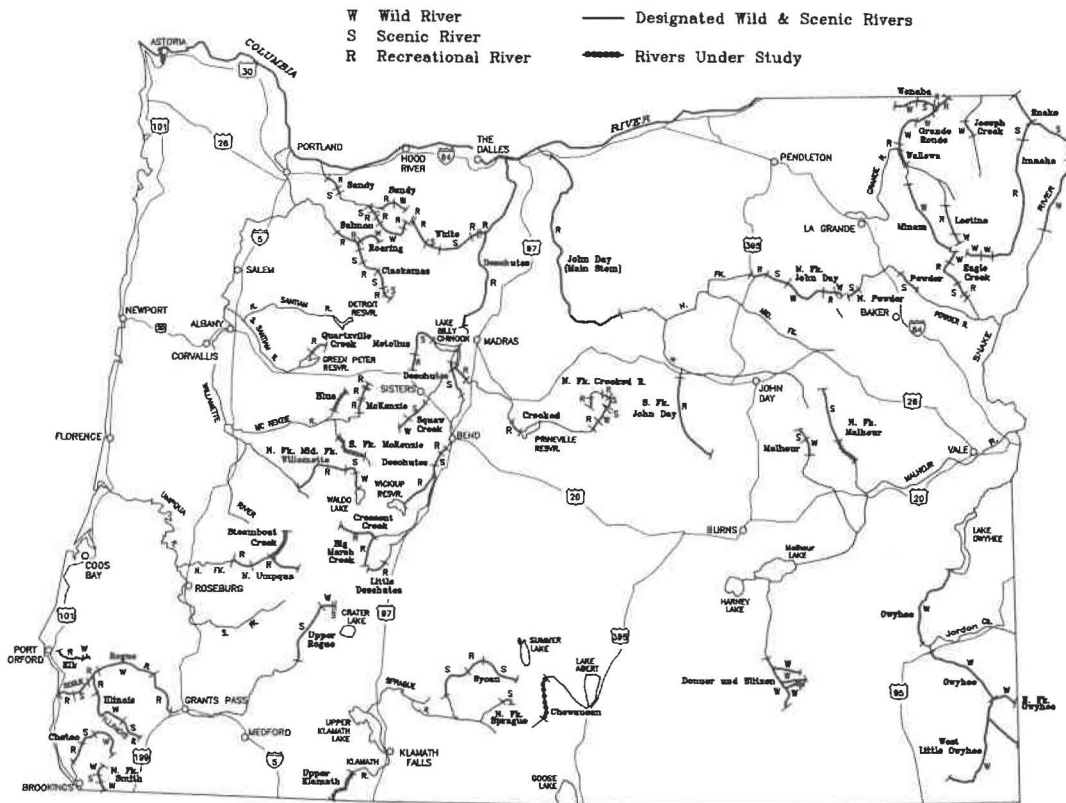


Figure 1.—Federally designated wild and scenic rivers in Oregon, with designated river segments and their classifications

A devastating fire in the Wallowa-Whitman National Forest's Hells Canyon National Recreation Area (Oregon, Idaho) in 1988 proved to be good for the career of Robin Rose. It created a need for specialists to work on the Tepee Butte Fire Recovery Project. And just as she finished her assignment there as the Recreation and Visual Resources Specialist, Congress passed the Oregon Omnibus Wild and Scenic Rivers Act of 1988, which created another opening. The Omnibus Act designated 40 wild and scenic rivers and seven study rivers in

Oregon. Rose became a Wild and Scenic River Planner (one of three) for the joint Umatilla/Wallowa-Whitman National Forests' Rivers Planning Team, working out of Baker City, Oregon.

This rivers' team must produce Wild and Scenic River Management Plans for eight rivers in northeast Oregon. Robin Rose is lead planner for three of them, and for the river study plan for the Wallowa River. "Our team has responsibility for planning on about 17 percent of the entire river mileage of that bill," Rose noted. "There are 190 miles to write

plans for on the Wallowa-Whitman, and 84 miles on the Umatilla National Forest." This team, which reports to Wild and Scenic Team Leader Steve Davis who works for the Forest's Land Management Planning, also cooperates with the Bureau of Land Management's rivers planning team. Even though a portion of the Grande Ronde River passes through the Wallowa-Whitman National Forest, the BLM is the lead planning agency for that management plan. The team has finished one river plan, other environmental assessments, plus the Wallowa River Study Environmental Impact Statement (EIS) which is to be completed by September 1993.

It is no coincidence that Rose is the lead planner for the (1) Eagle Creek and (2) Minam River projects. Both have their headwaters in the Eagle Cap Wilderness, a place she began her work for the Forest Service in the early 1980s. The North Powder River, which begins its journey to the sea in the Elkhorn Mountains just outside of Baker City, is the third river for which she is lead planner. "As rivers go, the North Powder is interesting because it is petite—only six miles long—and not very well known or visited by recreationists." It has significant wildlife habitat, beautifully clear and clean water, a remnant population of bull trout, and even an old road paralleling the river that is thought to be the first wagon road over the Elkhorn Mountains.



There is a new wrinkle to the project, and that is that a contractor has been hired to produce—for the Wallowa-Whitman National Forest—the Environmental Impact Statement for three of nine Forest Plan-identified study rivers. Rose is also the wild and scenic river consultant (liaison) for the contractor. She says that contracting river studies and NEPA (National Environmental Policy Act) analyses are relatively new endeavors, but adds, “I’m really impressed by the top-notch fisheries biologists, ecologists, geologists, and foresters that the contractor has hired.” Because the contractor has no stake in the outcome of the EIS, Rose finds it intriguing to guess how the public at large will view the final product. The Forest Service will base its recommendations for future river management, or possible designation as National Wild and Scenic Rivers, on these studies.

Since many diverse groups of people have a professional or personal stake in how river plans are developed, the rivers’ team formed several ad hoc work groups consisting of local government officials, private landowners, affected tribes, state agencies such as the Oregon Department of Fish and Wildlife, environmental organizations, local business people, ranchers, and representatives of the timber industry to assist in the planning process. This requires a lot of meetings so Rose often facilitates (chairs) meetings for the project leaders of the other rivers. This allows each lead project leader to participate as an equal member of the group and pay more attention to the attendees and their concerns. “Ad hoc groups require a lot of coordination and consensus reaching,” she says, “but we’ll get

a superior product in the end.” There have been no legal problems to date and none are expected. The Imnaha River Environmental Assessment and River Management Plan were well accepted by the public with no appeals due probably to the high level of public interaction and the Ad Hoc Work Group’s long involvement—they attended meetings as volunteers for over a year.

In explaining how river management plans differ from other resource management plans, Robin believes that no longer is it “business as usual. The RIVER is now the primary emphasis. Our multi-resource plans will provide more refined techniques to manage the resources in the river corridor.”

The Eagle Creek River Management Plan is an appropriate example. Prior to the 1988 Act, the Forest Service managed the timber in the Eagle Creek drainage and protected the streamside area. Congress now says that agencies must “protect and enhance the ORVs, i.e., the outstandingly remarkable values of the designated rivers.” The Forest may still manage the timber at historic levels, but it, like all other management activities, such as the recreational, grazing and all future resource activities, can take place only if “we [the Forest Service] protect the water quality, the free-flowing condition and enhance the ORVs.”

Each wild and scenic river may have different standards and guidelines because each river has different ORVs. “It’s really stimulating,” Rose says, “because we look at the visual resources, all kinds of recreational activities, available minerals and geological resources, timber, transportation routes, grazing practices, wildlife,

fish, hydrology, botanical and ecological resources, cultural resources, that is, historic and prehistoric habitation and use, and Native American treaty rights. With bark beetles and defoliators widespread in northeast Oregon, a prominent challenge now is how to balance the requirements of maintaining the health of these forests, while protecting and enhancing the ORVs. Optimistically, Rose says, “that is going to be tough, but I really believe that we can do it.” In addition,” she continued, “we work with private landowners in the corridor to gain cooperation, build partnerships, and assess that their activities will not adversely affect the ORVs. “Since the Wild and Scenic Rivers Act does not authorize the federal government to create regulations on included private land, the Forest Service has to encourage cooperation, and include these private landowners as co-managers of the riverine resources. Robin Rose believes that, “together, we need to fashion management partnerships by developing landowner incentives.” For Rose, dealing with the private landowners has an interesting family connection. “My great-grandparents on my father’s side homesteaded the Imnaha River Valley back in the 1880-1890s,” Rose explains. “I’ve attended some of the Imnaha River ad hoc work group meetings, and discovered that I am related to several families still living in the canyon.” She grew up in Portland, Oregon, though, and says that “the Willamette River [running through Portland] now ‘works’ for a living. The undeveloped landscape of my childhood has disappeared and has been developed into an industrial waterfront.”

The Willamette is not unusual, though. Some 17 percent of the circulatory system of the United States is already behind dams (about 600,000 miles of working rivers), the approximately 10,000 miles (less than one percent of total river miles in the wild and scenic river system) must remain in a free-flowing condition. “By protecting their special values,” she believes, “we may be preserving future values and benefits that we are not yet aware of. Wild and scenic rivers do fulfill a vital role. Future generations will someday be thankful that we [the Act of 1988] had the foresight to maintain some of them in a free-flowing condition, and to protect these superior examples of riverine ecosystems. Rivers are really the blood that circulates and cleanses the entire biological ecosystem. This country needs to keep some of them in a free-flowing condition, never to be threatened by dams.”

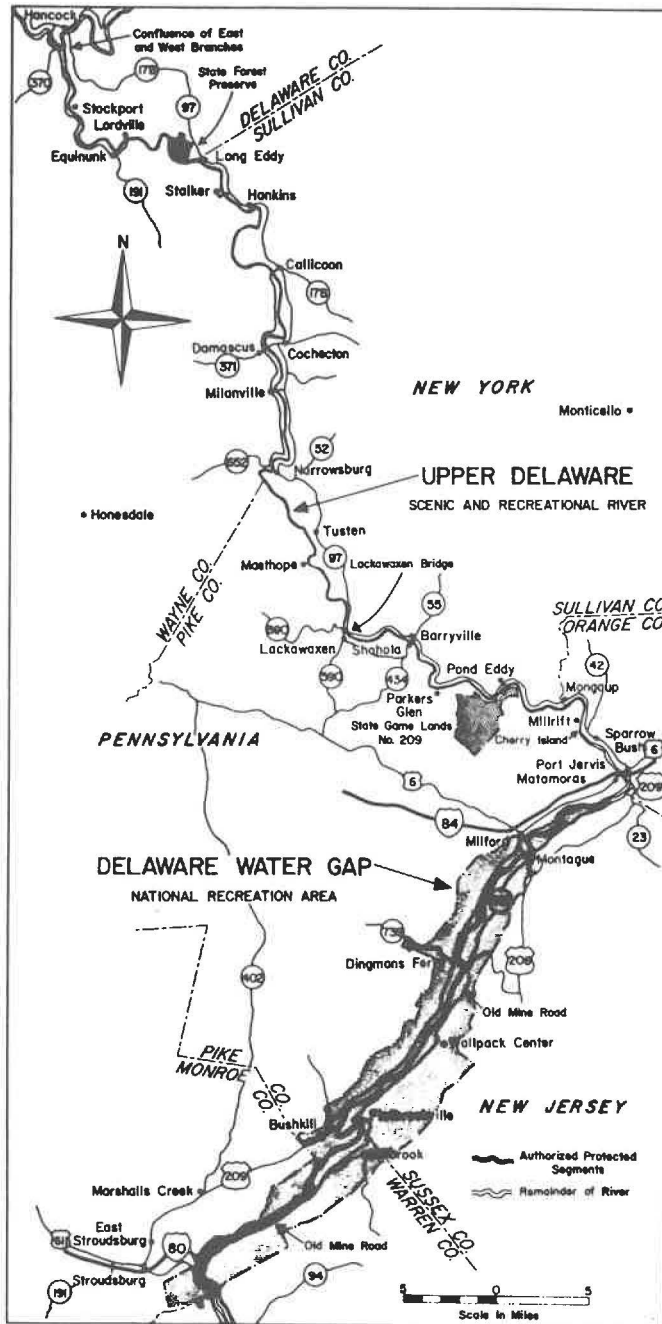
*Ronald E. Bonar is Reforestation and Animal Damage Control Forester on the Wallowa-Whitman National Forest. He is also a freelance writer, specializing in natural resource topics.*



TWENTY MILLION PEOPLE IN FOUR STATES DEPEND ON THE DELAWARE RIVER FOR WATER. ONE HUNDRED MILLION PEOPLE LIVE WITHIN A DAY'S DRIVE. YET IT IS ONE OF THE LARGEST UN DAMMED, FREE FLOWING RIVERS WE'VE GOT.

# PRESERVING OUTSTANDING WATERS

ELIZABETH A. JOHNSON  
RICHARD C. ALBERT



How do you protect existing high water quality in a National Recreation Area while rapid growth and development are occurring in the surrounding watershed? What if the surrounding area lies in three states, each interested in sustaining growth and development in a 4,000 square mile area? Where would municipalities fit in a protection plan? Can you ignore the water quality of a river and recreation area used each year by millions of outdoor enthusiasts, some of whom come from those municipalities? How do you circumvent the political, philosophical, and technical conflicts inherent in any major proposal that changes the status quo or adopts bold actions? These and similar issues are the subject of this paper that describes a process being used to preserve outstanding waters in the Delaware River.

## The region

The Delaware River is one of the largest undammed, free-flowing rivers in the United States. Almost 100 million people, or 40 percent of the nation's population, live within a day's drive of the Delaware River. Twenty million residents of four basin states depend on the river for water: New York (including New York City), New Jersey, Pennsylvania, and Delaware. Millions of people swim, hike, hunt, fish and boat in the Delaware River basin and thousands work in the recreation-related industries it supports. Economic benefits derived from river-based recreation—supported by the two National Park Service areas discussed in this paper—have been estimated to approach \$60 million annually. It is a heavily used region, yet, remarkably wild and well-preserved.

The 70,000 acre Delaware Water Gap National Recreation Area (DWGNRA) was established in 1965 to provide for public outdoor recreation use, enjoyment,

and for the preservation of scenic, scientific, and historic resources. The recreation area lies in the upper one third of the Delaware River Valley. Here, the river valley and adjacent ridges contain streams, waterfalls, hemlock ravines, geologic features, diverse flora and fauna, and traces of past occupants and cultures. The river is characterized by steep gradients, numerous rapids and rifts, and intervening, crystal clear, pools.

In 1978, the national significance of 110 miles of the Delaware River was underscored by declaring two segments to be included in the Wild and Scenic Rivers system. The Upper Delaware Scenic and Recreational River (UDSRR) begins at the confluence of the East and West Branches of the Delaware River in Hancock, New York, and runs for 73 miles down almost to Port Jervis, New York. Eight miles below, the Middle Delaware Scenic and Recreational River runs 37 miles down through the DWGNRA to Arrow Island, below the famous Delaware Water Gap. A distinctive geologic feature, the gap was formed as the river cut through a zone of weakness in the otherwise intact rock mass of Kittatinny Mountain, part of the Appalachians. About 4000 square miles of watershed drain to these two river segments.

#### Protecting the river's water quality

The provisions of the Wild and Scenic Rivers Act require that both the Middle and the Upper Delaware Scenic and Recreational River segments "be administered in such a manner as to *protect and enhance* (emphasis added) the values which caused them to be included in the system..." The legislation specifically mentions water quality as one of those values. The General Management Plan (1987) for the National Recreation Area states that "preventing water quality degradation and retaining existing high quality are of paramount importance..." to protecting river values. Objectives set out in the Upper Delaware Scenic and Recreational River Management Plan (1986) include the maintenance and improvement of water quality, and ensuring that proposed development in the corridor will not diminish water quality values. These goals commit the National Park Service to protecting the river resource in its present state.

Since 1983, the National Park Service and the Delaware River Basin Commission, an

interstate-federal water resource management agency, have been partners in a comprehensive water quality monitoring program covering both the Upper and Middle Delaware River and over 70 tributary streams. Program documents indicate that water quality is generally exceptionally-high in waters sampled annually—but water quality standards for this stretch of the Delaware were based only on the protection of so-called designated uses for primary contact recreation and aquatic life. These standards, however, if applied to the Upper and Middle Delaware would have permitted substantial degradation of the existing high water quality.

If development was not occurring in the DWGNRA and UDSRR drainage area, major water quality concerns, would not have arisen. However, from 1980 to 1990, population growth rates in Pennsylvania townships that border the National Recreation Area doubled. Adjacent New Jersey townships showed similar rates of growth as did some upstream New York State counties. Newly released census figures show that the Pennsylvania counties with the highest growth rates surround the DWGNRA.

By the mid-1980s, the DWGNRA began receiving requests from adjacent communities and developers for rights-of-way to cross park land in order to discharge treated wastewater to the Middle Delaware Scenic and Recreational River. These requests were denied because discharges would have degraded existing water quality. Outside of park boundaries, however, several major wastewater facilities were constructed in the latter half of the 1980s and others were expanded as a result of growth and development.

The potential for degradation in water quality in the face of population growth and development prompted the Delaware

River Basin Commission (DRBC) and the National Park Service to form a unique partnership and launch into a five-year effort to develop a water quality protection plan. After consultation with the DRBC's Water Quality Advisory Committee (composed of water pollution officials from the four basin states and the U.S. Environmental Protection Agency), such an effort was launched. In 1987, Delaware Water Gap National Recreation Area, the Delaware River Basin Commission, and the National Park Service's



Water Resources Division in Denver, initiated a water resources planning effort which culminated on December 9, 1992 with new regulations for certain qualifying waters. Included under the new regulations were the Middle Delaware Scenic and Recreational River and the portions of tributaries located within the Delaware Water Gap National Recreation Area and the Upper Delaware Scenic and Recreational River upstream.

## Special Protection Waters Regulations:

### Highlights of Provisions

- adopt water quality criteria that reflect existing water quality
- allow no measurable change to existing water quality
- discourage direct discharges of wastewater to designated waters
- evaluate all non-discharge/load reduction alternatives fully before rejecting as technically or financially infeasible
- encourage use of natural treatment systems like spray irrigation, filtering wetlands and floating aquatic plant systems
- declare no discharge zones where national interest is paramount to local or regional interest (as in park waters)
- require 'best demonstrable technology' (e.g., tertiary treatment including reduction in nutrients and high biochemical oxygen demand (BOD) removals) as minimum level of wastewater treatment for new and expanding plants
- require emergency management plans, require safeguards such as standby power facilities and remote alarms for continuous monitoring of plant operations
- utilize non-chlorination disinfection systems
- reduce visibility of effluent with filtering, treatment, or discharge technology
- provide some flexibility in treatment requirements (less stringent requirements) for areas outside, but draining to Special Protection Waters, depending on potential to cause measurable change

### New precedents for protection

The evolution of the new regulations is of interest because it sets national precedent for how outstanding waters in developing areas might be protected. The regulations represent a true anti-degradation policy that not only protects existing water quality from measurably changing, but also provides the flexibility to meet the goals and challenges of the surrounding region. The process used to ultimately obtain the adoption of the regulations by the four Delaware River basin states and the federal government provides insight to how similar programs might operate.

### A very public process overcomes resistance

The strategy of the planners was to document the need for increased water quality protection in order to overcome local and state resistance to higher water quality protection measures. Collaborators supported the effort with hard data by

- inventorying and mapping adjacent land uses, ownership patterns, and subdivided acreages
  - predicting future wastewater flows
  - developing a statistical definition of 'existing' water quality
  - developing various reports that presented various alternative strategies for maintaining the exceptional water quality
- A key, and very difficult aspect was to develop a strategy to protect existing water quality without negatively impacting the growth and development prerogatives of adjacent local communities.

Because of the controversial nature of the planning subject, the process was conducted through an open public process.

As the planning process entered its second year, an environmental group petitioned the DRBC to declare the Upper and Middle Delaware Scenic and Recreational Rivers an "Outstanding National Resource Waters" under EPA anti-degradation policies which would have required additional actions that would have profoundly impacted regional growth. The petition focused attention on the joint NPS/DRBC planning effort while polarizing opponents and proponents of increased protection. Within this environment, the two agencies released a draft plan presenting preliminary, alternative water quality protection strategies in March 1990.

In the document, DRBC staff presented the first set of potential water quality criteria that defined "existing water quality." Conceptually, if water quality standards equalled existing water quality, degradation of existing water quality would not be tolerated, assuming adequate pollution control measures backed up the standards. The planners also designed a numerical definition of existing water quality for adoption as water quality criteria—a unique feature. Various versions of this definition were to be developed until a statistical methodology and strategy was accepted by the DRBC Water Quality Advisory Committee. Comment on the document resulted in an expansion of the planning area to include the Upper Delaware Scenic and Recreational River—and suggestions for additional work.

The second major report in the process, the Staff Report on Scenic Rivers Water Quality Protection was prepared to address the initial comments. The report's findings, recommendations, and a regional land use map showing the extent of growth and development potentially jeopardizing water quality were released at a major regional conference (October 1990) with much fan-fare and discussion. In order to obtain consensus, the process of educating the scenic rivers region was escalated. DRBC with National Park Service support held a series of public briefings; newspaper articles were released. In addition, staff gave numerous presentations to local councils, advisory boards, elected officials, and environmental groups. Various local and state agencies provided thoughtful and constructive comments on the various 1990 Staff Report alternative approaches.



Following a public comment period, the DRBC released a Response Document which built on the comments and presented new alternatives and potential strategies.

At this point in the planning process, many people from state and local governments, business interests, environmental groups and the general public were more aware of the political, environmental and economic consequences of the proposed regulations. Applications for wastewater discharges in the scenic rivers region were still being approved, however, by the four states and by DRBC, with caveats regarding possible increased regulation in the region. Now closely aligned with the DRBC and the National Park Service was the formerly skeptical Water Quality Advisory Committee. The advisory committee's support of the planning process was essential because its members provided the link between the planning team and the various technical and policy levels in each state's environmental agency.

The interest in the 1990 Staff Report, coming as it did shortly after the furor over the environmental petition, and the urgent need for final regulations to provide guidance for review of water resources projects in the region resulted in a flurry of Water Quality Advisory Committee meetings; meetings of DRBC and NPS staff with various local agencies and as participants in a large regional conference. And finally, planners re-drafted the new proposed regulations which had evolved from the process.

Proposed regulations reflecting the general agreement of the various participants were finally released in March 1992. In April and May, DRBC held a public information workshop to allow for questions and then several public hearings to allow for comment on the proposed regulations. Reflecting the interest in the new regulations, 133 issues were raised from the public hearing process. These were addressed in a response document, and where applicable, the proposed regulations were modified accordingly. By fall 1992, staff polished language in the final draft.

#### **Special protection waters language**

The final set of water quality regulations were adopted on December 9, 1992 by a unanimous vote of the five-member Delaware River Basin Commission.



Action by the DRBC makes the regulations a de facto part of each state's water quality regulations and are largely an expansion to existing anti-degradation policies. Under the expanded policy, the DRBC may classify various river reaches as "Special Protection Waters." Qualifying reaches must have "exceptionally high scenic, recreational and ecological values" to be considered. Within Special Protection Waters "no measurable change in existing water quality except towards natural conditions" is allowed. "Existing water quality" is defined as a geometric mean of all the available water quality data and "measurable change" as the 95 percent confidence limits around the mean.

Water quality criteria defining existing water quality for these reaches were adopted for about two dozen parameters including biological indices. The resulting numeric criteria developed for each water classified as a Special Protection Water are some of the highest water quality standards in the U.S.

Although the adopted regulations provide overall policies, stringent stream standards, and rigorous point source requirements, still being addressed are potential regulations to control non-point sources (pollution from stormwater runoff and other diffuse sources). Based on the public hearing comment, it was apparent

that the proposed Special Protection Waters non-point source regulations required expansion. These are currently being developed. Public hearings on the proposed non-point source requirements will likely be held in May or June 1993.

#### **Impacts of the regulations for the future**

The DRBC actions of December 1992 classifies as Special Protection Waters

- the 120-mile stretch of the Delaware River from Hancock, New York downstream to the Delaware Water Gap
- the Upper and Middle Delaware Scenic and Recreational River segments
- the intervening eight-miles
- portions of tributaries located within the boundaries of the Delaware Water Gap National Recreation Area and the Upper Delaware Scenic River corridor

While protection of these areas will increase the cost of development and infrastructure improvement in the region, the increased cost should not impede proper local growth and development. Projects must now be evaluated for their impact on existing conditions, rather than on a degraded condition that may be reached in the future.

Meanwhile, the Delaware River Basin Commission and National Park Service team are working on various implementation activities. Underway is a full-scale

redesign of the their joint water quality monitoring program, the development of a Special Protection Waters project review manual, and the development of various post-adoption management tools including the integration of geographic information systems and water quality models. The models have been under development for several years with input data being derived from the water quality monitoring program and a special Time of Travel Study conducted in 1991. The latter study involved over 125 persons from various local, state, and federal organizations and was the largest single water resource study ever conducted on the Delaware River. The purpose of the study was to obtain hydraulic inputs for the development of toxic spill and water quality management models for the two scenic river segments.

Although the regulations approved on December 9, 1992 effected only the Middle and Upper Delaware, they, along with the pending non-point source regulations, could be applied to other basin waterways considered to have "exceptionally high scenic, recreational, ecological or water supply values ..." The DRBC will consider nomination petitions from local, state and federal agencies and the public calling for the designation of Special Protection Waters in other parts of the watershed. Any proposal would

involve further studies and public hearings on a case-by-case basis before DRBC action could be taken. This aspect of the Special Protection Waters program is significant because at least three river and tributary segments in the Delaware River Basin are under study for possible inclusion into the National Wild and Scenic Rivers System.

#### Available reports

1. Breidt, F. Jay and Duane C. Boes. Final Report: Statistical Analysis of Historic Water Quality Data for Middle Delaware Scenic and Recreational River, 1989.
2. Delaware River Basin Commission, Delaware Water Gap National Recreation Area, and the National Park Service Water Resources Division. Draft Water Resources Management Plan for the Delaware Water Gap National Recreation Area, 1990.
3. Delaware River Basin Commission. Staff Report on Scenic Rivers Water Quality Protection, 1990.
4. Delaware River Basin Commission. Response Document Regarding the Staff Report on Scenic Rivers Water Quality Protection, 1990.
5. Delaware River Basin Commission. Basis and Background Document with Proposed Revisions to Water Quality Standards and Regulations, 1992.
6. Delaware River Basin Commission. Recommended Biological Criteria, 1990.
7. National Park Service. Inventory and Analysis of Adjacent Land Uses, 1991.

8. National Park Service. General Management Plan: Delaware Water Gap National Recreation Area, 1987

9. National Park Service. River Management Plan: Upper Delaware Scenic and Recreational River, 1986.

10. Delaware River Basin Commission. Special Protection Waters Public Hearing Response Document, 1992.

11. Delaware River Basin Commission. Resolution No. 92-21, adopted December 9, 1992.

*Elizabeth Johnson is the Chief, Research and Resource Planning Division at Delaware Water Gap National Recreation Area. She began working for the National Park Service as a natural resource specialist in the Science Office in Washington, D.C. in 1980. In 1982, she moved to DWGNRA.*

*Richard Albert is the Supervising Engineer, Water Quality Planning and Analysis Section for Delaware River Basin Commission. He has focussed on water quality protection of the Delaware River for 17 years. Almost 10 years ago, they began working together to identify and evaluate water quality concerns in the Delaware Water Gap National Recreation Area.*

Photos these pages: page 17, sampling during the day and evening, DWGNRA; page 18, raft race at Smithfield Beach DWGNRA; page 19, Rock ledge near Narrowsburg NY in the Upper Delaware S & RR; page 20, Beth Johnson, one of the authors, taking sediment samples at Milford Beach DWGNRA.



THIS LABOR INTENSIVE METHOD OF COLLECTING ROE SAVES HERRING TO SWIM AWAY FOR AT LEAST ANOTHER DAY.

# KELP & ROE. AH.

## REGINA MCGRATH

In Japan, herring roe on kelp (*kazunoko kombu*) is a delicacy served as a side dish or appetizer during holidays, especially New Year's celebrations. California fishermen conventionally harvest roe for the Japanese market by catching female herring in purse seines or gill nets and excising the eggs.

Since the mid-1980s, however, a few fishermen on San Francisco Bay have been using an alternative method, which allows them to collect the eggs while sparing the fish. They attract the herring to spawn on giant blades of kelp, suspended from strategically placed aluminum rafts (pictured right).

In the 1992-93 season, December 1 to March 31, 10 fishermen harvested 47.4 tons of herring roe, worth at least \$806,000, through the open pound roe on kelp method, known in the trade as ROK. Roe sells for \$8.50 to \$9 per pound to Japanese wholesalers, said Jim Williams of San Francisco, who has been fishing the bay for 30 years, the last five for roe on kelp. ROK fishing is not easy, but Williams says he would never go back to purse seining because it kills the fish. "The fishery here is in very sad shape," he said. "I'd like to see it shut down until the fish recover."

ROK fishing is well established in Washington State, Alaska, and British Columbia. The prospects for its expansion in San Francisco Bay are slim according to Connie Ryan, associate marine biologist with the California Department of Fish and

Game, because sites for placing the rafts are scarce. Some 400 herring fishermen cast their nets in San Francisco Bay. The ROK fishermen have to maneuver around them and avoid navigation routes.

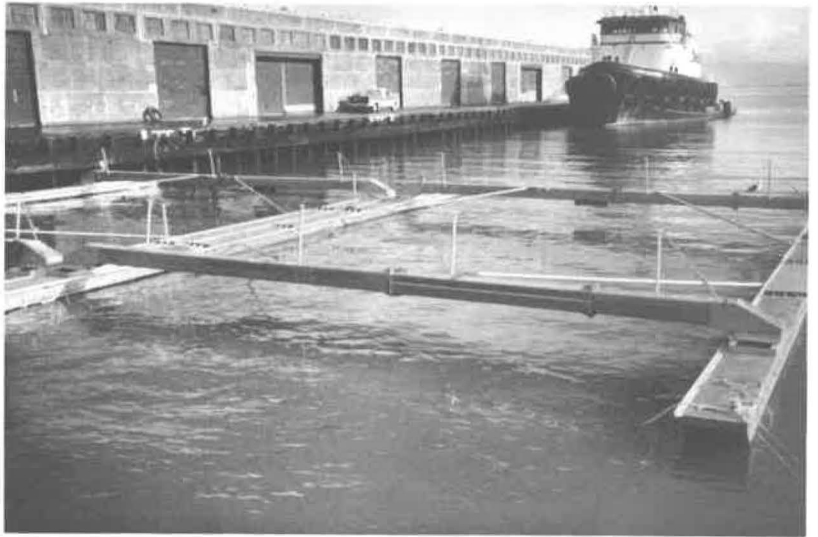
"It's a very labor-intensive way to fish, and about half the product price goes to cover costs," said Williams. At the start of the spawning season, 60 x 45-foot rafts (which can cost \$25,000 each) are placed offshore, ready to be towed to places where spawning is expected. These locations vary from spawn to spawn. Before the raft is moved into position, the kelp must be hung. The kelp is hand-harvested in the Channel Islands, off Santa Barbara, and trucked to San Francisco. Herring spawn on eel grass, rocks, piers, and marine algae, and on kelp if it is available.

Cut kelp only lasts eight to ten days, so the ROK fisherman must be alert to herring school movements into the bay, position the rafts, and have fresh kelp fronds at the right time. "Each time we bring up a load of hand-picked kelp, it costs us about \$3,000," said Williams. "Timing could make or break you for a season."

When spawning is over, workers pull up the lines on which the kelp blades are suspended and break the blades from the stipe (stem). Kelp is eaten with the roe and damaged blades mean lower prices, so great care is taken. The

roe on kelp is placed in plastic containers, in layers, and transported to a processing facility to be washed and trimmed. Silt and mud from dredging in the bay means that the roe harvested here needs more cleaning than that from Prince William Sound or British Columbia. For the last two seasons, Williams has washed his ROK in a machine he has invented.

Cleaned and trimmed, the ROK is placed in plastic trays, drained, weighed, and then put in containers, layered with rock salt.



The containers are filled with brine, covered, put in cold storage, and then usually shipped to Washington State, Japan, or Korea where the ROK industry is bigger and more processing facilities exist. In time, the ROK will be served on Japanese tables.

The Department of Fish and Game plans to hold public hearings later this spring on management of the 1993-94

fishery. "In the past two years, we haven't seen the two-year-old fish (first-time-spawners) come in to spawn," said Ryan. "The fact that there is a very low survival rate for young herring could be due to the drought, water diversions, El Nino, or other factors."

In light of the sorry state of this resource, ROK could help. Any kelp not kept for sale is returned to the water to allow attached eggs to hatch. The 47.4 tons of ROK harvested this year is equivalent to about 211 tons of whole fish, which instead, are free

to spawn again—if they can avoid other predators.

*Regina McGrath is Associate Editor for California Coast & Ocean, a magazine published by the California State Coastal Conservancy in association with the Romberg Tiburon Centers, San Francisco State University.*

*This article appeared in Winter/ Spring 1993.*

Photo courtesy California Department of Fish & Game.

# Research In Progress

## Modeling Forest Productivity During Global Climate Change

Linda Joyce, Range Scientist

National analyses of the supply and demand for renewable resources have traditionally assumed an unchanging climate. A growing consensus suggests that emissions of greenhouse gases and pollutants may change our future climate. While a number of ecological models have been proposed to project the biophysical effects of climate change, the robustness of these projections has not been compared across models.

Understanding the causes for differences and/or similarities in ecological projections is an important and necessary step towards improving our modeling capability and increasing our understanding of climate change effects. In order to fully examine these climate change effects, ecological analyses must be extended to social and economic systems.

Timber inventory research has traditionally had an economic basis, including harvest planning and calculating the return from investments in timber management. Links are needed between ecological models describing the biophysical processes in forested systems and timber models describing economic activity within the forest sector, particularly for questions involving both biological and economic issues. My colleagues (at the Rocky Mountain Forest and Range Experiment Station, the Ecosystem Center, Marine Biological Laboratory, Woods Hole, Massachusetts, and the Pacific Northwest Forest and Range Experiment Station, Portland, Oregon) and I initiated a study with two objectives:

- 1) to compare projected net primary productivity responses of two continental scale models, and

- 2) to link the process-based ecological model to the timber policy model of the U.S.

Forest Service in order to examine the sensitivity of the forest sector to changes in net productivity resulting from climate change.

Dr. Jerry Mellilo and Dr. Dave McGuire and others at the Ecosystem Center developed the Terrestrial Ecosystem Model, a biogeochemical model examining the relationships between abiotic factors, nutrient cycling, and net primary productivity. Dr. Richard Haynes, John Mills, and others at the Forest Service Experiment Station have used the TAMM-Atlas system to examine timber policy issues at regional and national scales.

Study findings related to the first objective indicate the importance of feedback between environmental factors, such as precipitation and temperature, and nutrient cycling. Feedback between the carbon and nitrogen cycles was also a major factor. Research on the second objective is still in progress. Results from this study will be presented in the U.S. Forest Service's 1993 Assessment Update, released later (Summer 1993).

*Linda Joyce (pictured left) is stationed at the Rocky Mountain Forest and Range Experiment Station's main laboratory in Fort Collins, Colorado. She has a B.S. in mathematics from Grand Valley State College in Allendale, Michigan, a M.S. in Environmental Science from Miami University of Ohio, and a Ph.D. in Range Ecology from Colorado State University.*





**William Butler Yeats—Entomologist?**  
Diane M. Calabrese, Entomologist

*Like a long-legged fly upon the stream  
His mind moves upon silence  
(Long-Legged Fly)*

Yeats writes to me. In part, I suspect, it's because insects infiltrate Yeats's poems. Mention insects and Yeats to anyone familiar with the Irish poet, and expect the question, "Aren't there a lot more birds?" Yes. Even so, insects made their way into 48 of the 510 published poems of Yeats.

Seeing entomologists in writers, particularly poets, is nothing new. Entomologists William Kirby and William Spence saw students of insects in Virgil, Shakespeare, and Spenser. In their 1812-1826 series, Introduction to Entomology (known to me in the 1878 edition), Kirby and Spence quoted poets who reminded them of "the connection between natural science and agriculture, and the arts."

When I read about the entomological stirrings in Yeats, I began to consider his poems differently and to tally insects — by hand. Ultimately, I cross-checked the concordance by Parrish (Stephen Maxfield) and Painter (James Allan), who remark about the abundance of "winged things" in Yeats; and comment that one would have "to look beyond the inventory" for images and associated words to figure out what Yeats was up to.

In the 510 published poems of Yeats, representatives of 8 orders of insects make unequivocal appearances, while insects in two other orders are probably there. Bees make the most frequent appearances: 39. There are 24 references to insect products: hives, honey, etc. Some of the references, such as "tortoiseshell butterflies" (Nymphalis), take us down to the contestable species level. At least one, the "peacock butterfly" (Inachis io), takes us to species. Other arthropods and their products, including spiders, webs and cobwebs, make 15 appearances.

There are also poems that create images reminiscent of insects. Consider this scene from a medieval fairy land, described in The Island of Statues:

*To prove his love a knight with lance in rest  
Will circle round the world upon a quest,  
Until afar appear the gleaming  
dragon-scales:  
From morn the twain until the evening pales...*

Of course, that's a knight on the first level, but how many entomologists see a dragonfly on the second?

Well-known insects illustrate simple allegories. In He Remembers Forgotten Beauty:

*... The love tales wrought with silken thread  
By dreaming ladies upon cloth  
That has made fat the murderous moth.*

There is:

*... the struggle of the fly in marmalade (Ego Dominus Tuus).*

and,

*... Or warned you how despairing?  
The moths are when they are burned. (Two Years Later).*

There is simile:

*... placid as a homeward bee (How Ferencz Renvi Kept Silent).*

and metaphor:

*... and wisdom is a butterfly (Tom O'Roughly).  
... moth-like stars (The Song of Wandering Hergus).*

Most of all, there is a sense that where there are insects, there is peace. "But every butterfly to a friend," wrote Yeats in Butterflies and Wheels (To Garrett or Cellar a Wheel I Send).

In Another Song of a Fall, Yeats wrote:

*... This great purple butterfly  
In the prison of my hands  
Has a learning in his eyes  
Not a poor fool understands.*



Many Yeats scholars consider the references to insects secondary. For example, they attribute "golden grasshoppers and bees" to Yeats's description of the work of Phidias. And, because Yeats appropriated Gaelic and Celtic tales that were spun of myths set in woodlands, some would see "flies below the leaves" (Anashuya and Vijaya) and "the murmurs of the bees" (The Priest and the Fairy) as inevitable. When I got started on this, one professor who teaches Yeats told me matter-of-factly, "There are no insects in Yeats, except the 'long-legged fly.'"

In The Lake Isle of Innisfree, Yeats returns to comfortable environs:

*And I shall have some peace there, for peace comes  
dropping slow  
Dropping from the veils of morning to where the cricket sings.*

The feeling for nature and her creatures—insects (and birds)—conveyed by Yeats is not second-hand. Among the insects that enrich the work of the poet lies a strong argument for the study of the six-legged creatures—or some large part of the natural world—for everyone. After all, Yeats tells us in his poems that he was an entomologist first!

*Diane M. Calabrese is an entomologist and a writer. She lives and works in Columbia, Missouri.*

THIS CORNELL STUDY SHOWS THAT THERE ARE FEW GENDER DIFFERENCES WHEN IT COMES TO THE WAY STUDENTS LOOK AT THE ENVIRONMENT AND THE PROFESSIONS WHICH HAVE TO DO WITH IT.

# UNDERGRADUATES AND THE ENVIRONMENT

LARRY M. GIGLIOTTI  
REBECCA J. STOUT

A question which has intrigued several researchers in the past few years has to do with whether or not men and women view the environment differently. Their studies about environmen-

provided a mixed picture, with some studies indicating men to be more concerned than women, others indicating women to be more concerned, and still others finding no significant differences."

Mohai's own study detected differences between men's and women's concern for the environment, though these differences were not large. In contrast, differences were greater when measuring environmental activism, with fewer women being environmentally active than men. On the other hand, Krause's study (1993) found no significant difference between women and men identifying themselves as environmentalists. Hines et al. (1987) conducted a meta-analysis of research on environmental behavior that indicated

ates in the environment and environmental-related careers (Gigliotti 1993, Gigliotti and Landers 1992, Gigliotti and Decker 1991). Although studying gender differences (see box for procedures) in this context is not new, the results led us to consider how using qualitative methodologies might improve studies assessing environmental concerns.

## Environmental Concern

We found that female students were more concerned about environmental problems caused by growth and development, and held a stronger belief that environmental problems could best be solved by human restraint than did male students (Table 1). A summation of the scores indicated females had a slightly higher mean score (about 7 percent) than males (31.2 vs. 29.9) ( $F=47.65$ ;  $df=1/961$ ;  $p<0.001$ ). Although significant, we believe the difference of 1.3 points between the mean female and male scores was not so great as to be of practical importance.

## Willingness-to-accept Environmental Conservation Actions

Another measure was the degree of students' willingness-to-accept actions to solve environmental problems (Table 2). Females were more willing to accept scenarios of required carpooling and rationing of electricity. Males were more willing to accept increased prices for consumer goods and increased

Table 1. Responses of Cornell University undergraduates to the New Environmental Paradigm--Growth and Technology scale (NEP).<sup>a</sup>

NEW ENVIRONMENTAL PARADIGM-- GROWTH AND TECHNOLOGY SCALE ITEMS	PERCENT AGREE OR STRONGLY AGREE	
	FEMALE	MALE
Humans are severely abusing the environment.	96.2	93.2
Humans must live in harmony with nature in order to survive.	95.8	90.4
U.S. citizens are going to have to reduce their consumption of material goods over the next few years.	88.2	76.3
When humans interfere with nature, it often produces disastrous consequences.	75.4	68.0
Rapid economic growth often produces more problems than benefits.	73.8	62.6
Science and technology often do as much harm as good.	65.6	53.2
We cannot keep counting on science and technology to solve our problems.	56.8	48.8
Most problems can be solved by applying more and better technology.	41.7	59.3
More emphasis should be placed on teaching children about nature than on teaching them about science and technology.	38.1	30.6
The positive benefits of economic growth far outweigh any consequences.	23.5	26.9
In general, U.S. citizens would be better off if the nation's economy stopped growing.	20.0	12.3

<sup>a</sup>Number of females = 451; number of males = 562.

tal attitudes, however, do not always present unified conclusions. The researchers report, for example, various outcomes in the ways men and women exhibit environmental concern, consciousness, behavior, and activism. Mohai (1992:1) acknowledged the lack of agreement when he noted that "What information is available [about gender differences] has so far

no relationship existed between gender and responsible environmental behavior. In another study, Fortmann and Kusel (1990) reported females were more supportive of ecological activities than males.

In an effort to add another dimension to the ongoing work, we investigated environmental concerns and the interests of Cornell University undergradu-

taxes to pay for mass transportation. No gender differences existed for acceptability of increased electric rates.

### Interest in an Environmental Profession

Similar percentages of females and males (9.4 percent and 9.9 percent, respectively) were interested in a multi-disciplinary degree in an environmentally-related profession. When presented with a broad array of environmental professions, females and males held similar interest in 9 of 15 possible fields in environmental management (Table 3). Female respondents were more interested in environmental education and communication, environmental ecology, environmental philosophy and ethics, and environmental sociology and psychology than males. Male undergraduates were more interested in environmental systems analysis and environmental engineering than females.

Students who were interested in an environmentally-related profession were asked where they would like to work. Females and males rated four outcomes similarly (environmental consulting firms; professional degree programs in law, medicine, or a Ph.D program; university research; and research in federal government). Females rated nonprofit environmental organizations, federal and state government regulating agencies, and teaching in primary or secondary schools higher than did males, while males rated industry and self-employment higher than did females.

### Discussion & Implications

We found that female undergraduate students at Cornell University were equally, if not slightly more, concerned about the environment than male undergraduates, and held a similar interest in pursuing an environmentally-related profession. More women were interested in socially-oriented environmental professions than men. While gender differences existed for many measures used, the differences were not large. For the most part, the overall ranking of

the different items was similar between females and males.

Thus, whereas differences between gender were small, they appeared to be more qualitative than quantitative in nature. For example, women were more willing to accept required car-pooling and rationing of electricity, while men were more willing to accept increased taxes and increased prices. Using a quantitative analysis, we can only speculate why these gender differences occurred. Measuring only one dimension in a quantitative manner did not allow respondents to explain the complex trade-offs involved with their decisions pertaining to environmental conservation.

Quantitatively, we measured only certain aspects of environmental concern. Depending on the component assessed, some measures of environmental concern might be inherently sex-biased. Perhaps the component we measured was gender neutral or slightly biased towards females. Statistical analysis using mean and percent responses may hide the qualitative differences in environmental concern. This may explain why results from studies appear contradictory.

Based on these findings, we believe using qualitative mea-

asures, or a mix of qualitative and quantitative measures, will foster better understanding of the ways women and men express their environmental concern. Qualitative measures reflect "the big picture"—i.e., the broader framework of concerns about the environment held by men and women. M. Q. Patton (1990) identified some qualitative methods: personal or group interviews, observation, and document analysis.

Rather than relying solely on quantitative data which will continue to give inconclusive results, we recommend that future research include qualitative measures that are able to differentiate *if* and *in what ways* women and men are concerned about the environment.

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Gigliotti, L. M. 1993. Environmental attitudes: 20 years of change? *Journal of Environmental Education* 24(1) (in press).

### Procedure

A 12-page, self-administered, mail questionnaire was sent to 1,500 undergraduates randomly-selected from the 1990 fall semester registration of approximately 12,000 students university-wide. These included students in the colleges of Agriculture and Life Sciences; Architecture, Art, and Planning; Arts and Sciences; Engineering; Hotel Administration; Human Ecology; and Industrial and Labor Relations. Nonrespondents received up to two reminder postcards and two additional questionnaires (Dillman 1978). The survey achieved a 70 percent response rate.

We measured environmental concern using a modification of Kuhn and Jackson's (1989) New Environmental Paradigm (NEP) scale (Table 1) that reflected attitudes towards growth and technology. We calculated a NEP score of respondents' attitudes towards growth and technology by summing responses to the 11 items. A low NEP score would reflect an attitude that growth is good, and that science and technology can solve environmental problems. A high NEP score would reflect concern about environmental problems caused by growth and development, and a belief that environmental problems can best be solved by human restraint. Items were developed to assess students' willingness-to-accept actions to solve environmental problems (Table 2) and interest in environmental careers (Table 3).

Table 2. Willingness of Cornell University undergraduates to accept actions to solve environmental problems.

ACTIONS TO SOLVE ENVIRONMENTAL PROBLEMS	MEAN WILLINGNESS-TO-ACCEPT <sup>a</sup>		ANOVA	
	FEMALE	MALE	F-VALUE	SIGN
Require car-pools to and from work	3.7	3.4	16.47	<0.001
Increase taxes to pay for mass transportation systems	3.1	3.2	5.46	0.020
Increase the cost of consumer goods to pay for pollution control	3.0	3.3	16.54	<0.001
Ration the use of electricity	3.1	2.5	54.09	<0.001
Increase electric rates so consumers will use less	2.8	2.8	0.38	0.538

<sup>a</sup>A five-point scale was used with 1=least willing to 5=most willing.

Gigliotti, L. M. and D. J. Decker. 1991. Interest of Cornell University undergraduate students in a fifth-year professional masters' degree in environmental management: Selected preliminary study results. HDRU Publ. 91-6. Dept. Nat. Resour., N.Y. State Coll. Agric. and Life Sci., Cornell Univ., Ithaca, New York. 34 pp.

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Larry M. Gigliotti is a Program Coordinator/Human Dimensions Specialist for the South Dakota Department of Game, Fish and Parks in Pierre, South Dakota. Previously he worked as a research associate in the Human Dimensions Research Unit at Cornell University. He received a B.S. in Biology from Pennsylvania State University and M.S. and Ph.D. degrees in Fisheries and Wildlife from Michigan State University. His research interests include human dimensions research in fisheries and wildlife management, environmental attitudes, and evaluation of environmental education programs.

Rebecca J. Stout is a Research Support Specialist for the Human Dimensions Research Unit at Cornell University in Ithaca, New York. Previously she worked for the Missouri Department of Conservation in the Education Division conducting program evaluation and research on the knowledge, attitudes, and values of elementary and secondary students about white-tailed deer and aquatic ecology. She earned a B.S. degree and 9-12th grade biology teacher certification from the University of Missouri-Columbia in Wildlife Management, and a M.S. degree evaluating a conservation education curricula at Michigan State University in Fisheries and Wildlife. Her research interests include citizen participation in wildlife management decision making, conflict resolution, public perceptions of wildlife damage, suburban deer management issues, program evaluation, and environmental education. Her most recent work has been evaluating Deer Management Unit Citizen Task Forces in New York.

Table 3. Interest of Cornell University undergraduates in 15 environmental management professions.

ENVIRONMENTAL MANAGEMENT PROFESSIONS	PERCENT INTERESTED OR VERY INTERESTED <sup>a</sup>	
	FEMALE	MALE
Environmental education and communication <sup>b</sup>	27.7	18.9
Environmental ecology	25.3	19.9
Environmental ecology <sup>b</sup>	23.9	15.3
Natural resource management	23.7	19.0
Environmental philosophy and ethics <sup>b</sup>	21.7	16.2
Environmental sociology and psychology <sup>b</sup>	21.7	14.6
Wildlife management	21.7	16.2
Forest management	20.0	15.8
Resource economics	12.9	14.4
Fisheries management	11.8	9.1
Environmental engineering <sup>b</sup>	11.1	14.6
Geology	10.4	6.9
Environmental chemistry and biochemistry	10.2	9.4
Environmental systems analysis <sup>b</sup>	8.9	14.1
Hydrology	8.6	8.7

<sup>a</sup>Number of females = 451; number of males = 562.

<sup>b</sup>Significant  $p \leq 0.05$ .

Hines, J. M., H. R. Hungerford, and A. N. Tomera. 1987. Analysis and synthesis of research on responsible environmental behavior: a meta-analysis. *Journal of Environmental Education* 18(2):1-8.

Krause, D. 1993. Environmental consciousness: an empirical study. *Environment and Behavior* 25(1):126-142.



There are two new women's humor magazines, *Hysteria* and the *Hilary Clinton Quarterly*. Critics who have reviewed both of the quarterlies believe that healthy fun-poking at themselves—by feminists—signal that feminism has come of age. For example in *Hysteria* there is a sarcastic rebuttal of Pat Robertson's assertion that feminism "encourages women to leave their husbands, kill their children, practice witchcraft, destroy capitalism, and become lesbians." There is also a Thelma & Louise's 10 Most Wanted list. In the *Hilary Clinton Quarterly*, there is a spoof on why Hilary should be grateful for the Gennifer Flowers story (because it helped create family values themes for the Republican convention).

*Renewable Energy: A Concise Guide to Green Alternatives* is by Jennifer Carless (Walker Publishing Company 1993). The book looks in an overview sort of way at various forms of energy: solar, water, wind, geothermal, biomass, renewable fuels. This book is a good addition to one's at-hand bookshelf of basic information. There is a bibliography, list of conservation and research groups who are interested in renewable energy, and an index. Carless is also the author of an earlier book, *Taking Out the Trash: A No-nonsense Guide to Recycling*.

The National Council for Research on Women will send you a publications list of their offerings. Available, for example, are several directories, Opportunities for Research and Study, Research Reports on Girls, Sexual Harassment, and others. Call 212-274-0821 or write them at 530 Broadway at Spring Street, 10th floor, New York NY 10012.

In an Austrian study of 104 ulcer patients, reported in the *New England Journal of Medicine*, only eight percent of peptic ulcer patients suffered a recurrence when treated with antibiotics. A placebo-treated group had an 86 percent recurrence rate. It appears that most peptic ulcers are caused by a bacterium called *Helicobacter pylori*, and not gastric acid.

*Kidthink* is a book by William Lee Carter (Word Inc.) who asks parents to remember that kids aren't as articulate as adults and to remember it's difficult for them to express in words what they're feeling. He describes common types of problems (e.g., the deceitful child, the sensitive child) and gives advice to families on how to handle them more effectively.

*Raising a Son: Parents and the Making of a Healthy Man* (Beyond Words Publishing, Inc.) was written by family counselors Don and Jeanne Elium. They say that boys need just as much cuddling as girls. Many parents unconsciously start to withhold hugs and other physical signs of affection from boys sooner than from girls. The result is conflict. We tend to give boys less affection than girls, but still expect them to show affection, share toys, and learn to cooperate. Makes a whole lot of sense.

If you are trying to make it by becoming a consultant, you might want to send for some free tips on how to avoid the 10 worst traps potential entrepreneurs fall into. Ask for Most Common Mistakes People Make Trying to Become Consultants and send along your own stamped and addressed envelope to Bottom Line/Personal, Box 735, Springfield, New Jersey 07081.

Psychologist Harriet Braiker wrote *Lethal Lovers and Poisonous People* (Pocket Books) for those who want some guidelines about open, friendly ways to discuss problems in a relationship. She believes that arguing is normal and can even be beneficial if it is done between two people who do not have doubts about the relationship and who avoid destructive behaviors.

To receive information about the programs, publications, or projects of California's State Coastal Conservancy, send a note with your name, organization, address, and affiliation (civic group, government agency, consultant, development/financial, maritime industry, or other) to: California Coast

& Ocean, State Coastal Conservancy, 1330 Broadway, Suite 1100, Oakland, California 94612.

In the April edition of *EarthWork*, published by the Student Conservation Association, Kevin Doyle of the Environmental Careers Organization (ECO) suggests some directories for people who are looking for a graduate school. He recommends Harold R. Doughty's *Guide to American Graduate School*, the College Board's *Index of Majors*, or any of the excellent *Peterson's Guides*. For people of color, he suggests ECO's book *Beyond the Green: Redefining and Diversifying the Environmental Movement* which has a bibliography of intern programs (send \$15 to ECO, 286 Congress St. Boston MA 02210). Good and inexpensive books are available from Garrett Park Press (PO Box F, Garret Park, MD 20896) for minority opportunities. Financial aid guides are in *Graduate Scholarship Book: The Complete Guide to Scholarships, Fellowships, Grants & Loans for Graduate and Professional Study* (Prentice Hall). Happy hunting.

In the April 1993 issue of *Forest & Conservation History*, Philip G. Terrie, a professor of English and American culture studies at Bowling Green State University reviewed a book by writer and environmentalist Barbara McMartin. It is titled *Hides, Hemlocks and Adirondack History: How the Tanning Industry Influenced the Growth of the Region* (North Country Books 1992). Most of us are familiar with the ways various early industrial enterprises (e.g., mining, railroads, shipbuilding) gobbled up whole regional forests with nary a house or building to show for it. Here is another one of those industrial uses of wood: leather tanning, which consumed Adirondack hemlock bark.

Reviewer Terrie notes that McMartin "tells us in introducing her subject, the need for tanned leather was so great in the United States that cows were slaughtered for their hides more often than for meat. Since Americans used European methods for tanning hides, depending on vast

quantities of bark from various species of trees to supply the tannin needed to render the hide resistant to rot, tanning centers concentrated around forests. In those days it was more economical to take the hides to the tannin than the tannin to the hides. In the Adirondacks, where nearly all the leather produced was used as soles for shoes and boots, the exclusive source of tannin was hemlock bark.

The industry began around 1850 in the southern and eastern foothills. It peaked between 1860 and 1880 and wound down finally in the 1890s.... Within roughly a 20-mile radius of the many regional tanneries, hemlock bark was stripped.... Only the bark was useful."

The book notes the environmental consequences of such operations, leaving the areas polluted with cow carcasses, acids, and rotting tree trunks. McMartin also details how such enterprises contributed to local and state economies, who the players were in the industry, and how it came to an end with the coming of improved railroads.

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# JANE DIFLEY

AN INTERVIEW BY DIXIE L. EHRENREICH

# W E V I E W I N T E R V I E W

WiNR: What is your position with the Society of American Foresters?

Difley: I'm the 1993 president of SAF. In 1992 I was elected the Vice President then automatically became President this year.

WiNR: Who does the day to day running of the Society?

Difley: There's a great staff of 20-25 in Bethesda that runs the day-to-day operations headed by Executive Vice President Bill Banzhaf. But as President of SAF, I chair the meetings of the Council which is the Board of Directors of SAF. We are responsible for policy making and for the fiscal soundness of the organization.

WiNR: How many members are on the Council?

Difley: There's one Council member from each of the 11 districts. There are also three officers: the vice president, the president and the immediate past president. We have 14 Council members altogether.

WiNR: Have you been in SAF a long time? During that time have you worked on a number of committees?

Difley: I've been a member off and on since 1973, and I've held a lot of positions in SAF. I served on the council for three years before I became an officer and before that I was the chair of the New England SAF. I served a year on the House of Society delegates. I also chaired the Communications and Education Working Group at one point. I was on the Land Ethic task force that led to our adopting a land ethic for our Code of Ethics.

WiNR: Does the President's job entail a lot of traveling?

Difley: Yes. I've been in the job for a few months now, and I have been getting around. The reason I am sitting here in your office is that the Inland Empire (eastern Washington and northern Idaho) SAF invited me to their annual meeting. So I spoke at that SAF meeting in Post Falls, Idaho last week and then last night I gave a public lecture that was sponsored by the Idaho Forest, Wildlife and Range Policy Analysis Group at The University of Idaho in Moscow. I

also met with the student chapter. In addition to that, I met with individual faculty members and administrators, (and I also managed to go to a 5th grade class in Moscow to talk about my work.) I want the membership to know who I am, I want to know who they are. The best way I can do my job in terms of SAF is to talk to people—particularly people out here in the Northwest where I don't know everybody and am less familiar with the issues than I am the issues of the Northeast—which is where I'm from.

WiNR: How many of these trips will you make a year, do you think?

Difley: It has to do with who invites me. I've been to the Montana Society meeting. I'm going to the Washington and Oregon meetings. I went to the Allegheny meeting. I'm hoping to get some invitations in the South and from other regions.

WiNR: Could you describe the roles of professional societies like SAF?

Difley: I can't speak for other societies, but SAF does a lot of things. We are the accrediting body for forestry schools in this country. We also produce five journals, four of which are refereed. One of them, the *Journal of Forestry* has some refereed articles and some that aren't and that journal also includes membership information. We sponsor educational programs and we have continuing education programs for foresters which are usually organized and run locally. There are the working groups, the science and technology board, workshops, and newsletters. With such a wide offering, members can participate in the subject matter and forum that best suits them.

WiNR: Most of the societies have conventions. How important are they?

Difley: Very important. It's the place for committee meetings, an educational program, delivered papers and panels, a lot of talking with members about forestry and about issues that concern all of us. Meeting with professional peers is a growth experience and I think that's how we all learn and change. Some people find jobs by networking at the convention. That network is really important to me and I think it is to a lot of people.

WiNR: Even the gripe sessions are important?

Difley: Since I've been one of the loudest grippers, I'd have to say yes. I've wanted SAF to be more vocal, more open to change and more encouraging of women for years.

WiNR: When SAF visits university sites for accreditation, the accrediting team looks at library holdings, they look at the building and facilities, and a lot of other esoteric stuff. Why don't they look at the makeup of the faculty for minorities or women?

Difley: Accreditation teams *do* look at the makeup of the student body. Looking at the faculty sure makes sense and the educational policies committee is looking into this issue as it reviews our accreditation standards.

WiNR: How old is the society? So much has changed in the last 10 years that it is difficult to think of the profession as focusing just on timber as it had in the old days.

Difley: SAF's been around since 1900 and, of course, in 1900 when Gifford Pinchot and some of his colleagues began this society, what they were really concerned about was establishing some sort of scientific basis for what we were doing in forests and for making sure that there were some forest reserves. They were concerned about forestry in a really elemental way.

I've watched a lot as SAF has tried to redefine forestry and what a forester is—by looking back—and we often look back at Gifford Pinchot. Pinchot was a wonderful man, our hero, and was radical for his time in terms of his ideas about forestry but, as somebody told me, Gifford Pinchot died. He is no longer with us to guide us into the next century and I'm not sure he should be. A lot of people have suggested that foresters need to be much more integrated with other natural resource professionals. The way we currently operate is to try to get wildlife biologists, for example, to join SAF. I'm not sure that over the long haul that is going to work. I know there are some state SAF societies that meet jointly with the Wildlife Society periodically, for example, and I think that's a great way to network with people who are wildlife biologists.

WiNR: SAF has a reputation for elitism which runs counter to integration, I think, because it does not allow wildlife biologists or range managers to hold full membership. In fact, that exclusionary practice drove out range professionals some 50 years ago who felt the need to create their own society because they were not welcomed. You do still have associate memberships, though, don't you?

Difley: Those are for people who have 4-year degrees and are in a field that's related to forestry somehow. If a person has a degree in something other than forestry, however, and spends a good deal of their time working in forestry, they can be full members.

WiNR: What keeps you in the membership?

Difley: Well, I think I stay a member because I'm so involved. I became active because I was so upset with SAF that I decided that I should stop being frustrated and start doing something about it—so I started running for office. I didn't like the number of women I saw at meetings, or on programs. In traditionally male fields we have concerns that our colleagues don't share and I wanted colleagues around who understood that. I wanted more women around as role models. I also think that forestry is in the process—as we approach the 21st century—of redefining what forestry is. And part of that is including professionals—men and women—of many ethnic backgrounds, different colors, and abilities who are going to lead us into the next century.

WiNR: How much time do you spend on SAF work? And how does it interfere with your career?

Difley: I'm spending about 20 percent of my time on SAF, which is quite a lot. I've tried very hard to integrate what I do for SAF with what I do for my employer, the American Forest Foundation. I have worked for them and their predecessors for 10 years. I am a Vice President, running the Tree Farm program.

WiNR: Does SAF and the Foundation work integrate?

Difley: I think so. While I've been traveling here in the Northwest, for example, I've also done some of the work I get paid to do. I met on Saturday afternoon right after the SAF meeting with the Tree Farm Committee in Post Falls, Idaho and I met with the extension forester about Tree Farms here at the University of Idaho. Many times, the same people that I work with on Tree Farm are the people that I work with in SAF so there's some overlap there—and that works for me. I'm the director of the Tree Farm program nationally, so every time I travel for Tree Farm, I try to do something for SAF, too. My employer recognizes that integration was possible and they care very much about the Society of American Foresters. What the SAF says about forestry is important to the industry, to the associations of various forest interests we represent, and to foresters who work for the industry. I think my boss, Larry Wiseman, also saw potential for me to grow and that's also good for my organization. I think I'm lucky to work with people who are pretty progressive. Industry's policies and those of SAF are not always the same, but both address productive, healthy forests.

WiNR: You bring up the subject of policy. The

*Jane Difley is President of the Society of American Foresters. She is also a Vice President of the American Forest Foundation and runs the national Tree Farm program—work that she has done for 10 years.*



whole advocacy issue is very tender, I think, because the poles are getting wider, not narrower. It's very difficult for an organization which considers itself an umbrella group like SAF to represent the poles. So what is your position about advocacy?

Difley: We've been looking at the policy process at SAF. As a matter of fact, in Montgomery, Alabama in April, we will be having a meeting on this subject with the Council, the policy committee, and representation from the House of Society delegates and the Science and Technology Board. We are still debating what role we ought to play in forest policy in the United States and in the world. Members tell us that they want us to be out front on the issues, in the press, advocating productive forestry. I understand that—but we're not a citizens advocacy organization. We're not a trade association. We're a professional society bringing the science and the techniques of forestry to issues that have to do with public policy. It's my personal feeling that SAF might have more influence and might be in a better position if we did more analysis and less "advocacy." In other words, I see us looking at issues and offering alternatives: e.g., if we do this, these are the likely consequences; if we do the second thing, these are the likely consequences. And after examining the range of alternatives, we might then as a profession say: having looked at these alternatives and the consequences, we as the Society of American Foresters feel that alternative #2 is the one that is the best for these reasons—then lay the reasons out.

WiNR: There are pitfalls in becoming strong advocates for a given policy, then?

Difley: Yes. Our membership is so broad. We have people who work for the Wilderness Society, members who work for industry, others who work for state and federal government, and private consultants. These people have different views. They live and work in different places, they have different concerns, so it's very difficult to advocate on behalf of that wide range of viewpoint. I often feel that when somebody asks us to advocate something, they want us to advocate their viewpoint, which is another problem. So that's one issue, the variety of our membership. But the other issue is perhaps more fundamental which has to do with the fact that as a professional organization, what we really can bring to the policy process that's different from what a trade association or an environmental organization or other groups can bring, is this scientific analysis of issues.

WiNR: For you personally, could you be an advocate for something that the society

decided, but was not your personal choice among the choices?

Difley: Yes. I would probably be less effective, however, as spokesperson if I didn't fully agree. I would never advocate something that I completely disagreed with. I'd get somebody else from the society who did agree. It's like being a citizen of the United States—there are lots of laws I don't like, but I would defend the way we arrive at laws. I get a little perturbed with a few of our members who want to drop out because they don't like a particular position statement that we've made. I don't always feel happy about the position statements we make, but they're arrived at by a group of our members who get together and hammer these things out. They're very honest efforts at doing the right thing and bringing forestry as a science to issues.

WiNR: How does SAF raise and spend its money?

Difley: The journals and personnel are big expenditure items in our budget. A lot of our income comes from dues. We pursue grants, particularly for science projects or policy projects. We also have some income that comes from the sales of SAF items and from the exhibits at the convention.

WiNR: How large is SAF's budget? As president for this year, do you have much personal say in how the money is spent and if not, who does?

Difley: The budget is about \$2.8 million. As president, I'm automatically on the finance committee. The person who really is chairing the finance committee is Brian Payne and he's very good at it. We do the budget a year ahead. It's based somewhat on recommendations from the staff—which is the way most organizations work. I don't know that we make huge shifts from year to year on how we spend money. We've been able to make some great savings in the publication of the journals and in staff costs. In the last three or four years while I've been on the Council, it's mostly been a matter of containing costs and trying to keep the income coming in. The staff keep a tight rein on their spending and look for every opportunity to get some income.

WiNR: Is the convention self-supporting?

Difley: Yes. People who attend pay convention fees. Exhibitors also support conventions through their exhibit and booth fees.

WiNR: How important are the local SAF chapters?

Difley: I think the local SAF chapters and the state societies are the life blood of the organization. I've come to realize as I've worked with Council that the work of Council is important—it has to do with policy setting and maintains the fiscal integrity of the organization. But new ideas and energy really comes to the society at the local level and is probably related to the fact that trees grow locally, not in Bethesda. For example, the proposal for a land ethic, a canon in our code of ethics, came from the state societies. But there's this kind of perception when members talk about SAF as if it is someplace else. As if SAF is at the building in Bethesda or SAF is somehow in my office or is the Council. And I don't think that could be further from the truth. SAF will become a much better and even more vibrant organization when each member takes the responsibility of *being* the SAF. That's where the creativity and the power lies.

WiNR: Is that the kind of thing you are trying to instill in the student chapters, too.?

Difley: Yes. I had a really good time meeting with the students at the University of Idaho yesterday and they raised some concerns with me about state SAF meetings: when they're held and how much they cost. I said, "You know, what you ought to do is put together a list of your concerns and make sure that the Inland Empire SAF knows what they are." I don't know that they quite know how to work the system yet. There is now a national student assembly, which meets at the convention, made up of the representatives from each of the SAF student chapters who attend. It's hosted by the student chapter in the local society; that idea came from the student chapters.

WiNR: When we ran the *Women in Natural Resources* survey last year, we asked our subscribers about whether or not they belonged to a professional society. And of those who said no, they listed as one of the reasons that it was too expensive.

Difley: Clark Seely, the chair of the Oregon State Society, is heading a task force that's looking at the dues structure. We hear a lot about dues—but we are not wildly out of line with other professional societies. Nonetheless, many of our members are concerned and dues may change.

WiNR: I think another concern is that the page charges are so high in the SAF journals to publish. Are you aiming for most activities to be self-funded? Do the journals have to charge high rates to be self-supporting like the convention?

Difley: Nobody's underwriting SAF, so



each activity has to contribute to its own support as much as possible. I know the communications department under Paula Tarnapol's leadership has gotten some funding from the Forest Service to produce videos about careers. We have to be very careful when we're seeking funding for policy activities; we've always made very sure there were no strings attached to any money, for example, that we were able to get for publishing a report.

**WiNR:** The headquarters for SAF are in Washington, in Bethesda really, but in Washington for all practical purposes. Why there?

**Difley:** Well, from a historical perspective we're in Washington because that's where Gifford Pinchot was. We have really incredible headquarters in the Grosvenor Estate in Bethesda with access not only to Congress, but also to folks in the Forest Service plus other groups like a National Council on Private Forests that Bill Banzhaf and I take part in. These are places where information about forestry is exchanged, so being in Washington seems appropriate.

**WiNR:** Does SAF do any active lobbying in Congress?

**Difley:** We don't do any lobbying, but we just created a briefings booklet that's about forestry issues and policies of the SAF that is being distributed to every member of Congress on Capitol Hill. And staff talk with key members of Congress and encourage other members of SAF to go and participate in those conversations.

**WiNR:** One of the criticisms over the years is that SAF—and probably all societies—tends to pay attention to researchers because they're published in the journals. Another criticism is that SAF caters to convention-goers who include a large percentage of retired foresters. (Women are neither, generally.) Are field foresters being neglected?

**Difley:** It's an interesting quandary that we're in, I think, with field foresters. I hope field foresters find something that they can use in the journals and that they attend useful SAF workshops at the local level. If you're managing trees in the Southeast, that's where you're going to learn about managing those trees. I understand that there's frustration from field foresters about SAF as there is frustration from university folks and people who work for industry and people who are publicly employed.

But I have the feeling that we talk about SAF as being based on the field forester and I think that's a fantasy. If you add up the membership's large categories, we're about a third university, a third Forest Service, and a third industry. About 20 percent are field foresters, spread across those categories and also in consulting. I think we still have this myth, though, that a forester is somebody who works out in the field managing trees. That's a wonderful part of our profession and many of us have lived and done that. I was a field forester for years. But I think this myth that we have—that the basis of our profession and that everything we do should be centered on the field forester—it's just that, it's a myth. Of course we need to make sure that field foresters get what they need. We need to make sure university researchers get what they need. People who are interested in policy should get what they need. All across the board we have a lot of different demands from a lot of different sectors of our membership. I think part of the reason that field foresters feel left out is that we talk about our organization as if it were really based on field foresters so they are disappointed when we don't continually focus on them.

**WiNR:** That's interesting. Could field foresters have left the organization—or never joined? If the percentages are not there, could it be that they found that what they needed wasn't being offered?

**Difley:** That's possible. But I work for industry and industry forces have felt that not

enough issues from the private sector have been in the Journal for them, either. And I've heard some complaints while I've been here in Idaho from university folks that SAF is run by industry, it's in the industry's back pocket. There is something about these diametrically opposed concerns from the different sectors of SAF that bothers me.

**WiNR:** What's the percentage of women? And how many women are graduating from forestry schools?

**Difley:** It's somewhere between 10 and 12 percent women in SAF out of 18,000 members. I think it's been fairly constant for years. Forestry schools are graduating 25 percent—on average—women.

**WiNR:** I thought many universities had as many as 35 percent graduating now.

**Difley:** Right. But I think the average is 25 percent. When I got my master's from forestry school in 1979 there weren't nearly that many.

**WiNR:** Have you seen substantial changes over the years which have been (a) made by women and (b) for women in SAF.

**Difley:** Since I've been there I've seen women move into leadership positions. They've chaired working groups, and state societies, there's now another women on Council. On the other hand, as soon as we leave the room, it's as if we have had no impact. So it's very important for us to stay involved and to make sure that women are present, that they're on programs. They've got to sit on the science board, they've got to be part of the working groups. We've made big changes for ourselves in terms of assuming leadership roles, but I'm not sure that the organization has changed. We need to keep pushing.

**WiNR:** I'd like to change directions now and turn to your personal life and start right at the beginning. Where and how did you grow up? Did science fascinate you as a child?

**Difley:** I grew up in central Massachusetts in the small town of Barre. I went to Girl Scout Camp every summer and loved it—swam, sailed, hiked. I also had a great teacher in 5th grade who was the person who ran the local Audubon Society reservation and he did environmental education in schools once a week. It was the only class I ever had in elementary school that challenged me and I loved it, just loved it. He was the only teacher who ever asked me questions that I couldn't answer. So I had to run home and figure it all out.



WiNR: Did you graduate from high school there?

Difley: No, I stayed through the 8th grade, and then I went to a private high school. I was a scholarship student at The Bancroft School which was a great opportunity for me. Then I went to Connecticut College—in those days for women—in New London, Connecticut, and I majored in English literature. It was a 4-year liberal arts school.

WiNR: What do you think of women's colleges? Many think it's a mistake not to send women to women's colleges.

Difley: I think they are great. Being in a women's high school and then a women's college was wonderful because women were in leadership positions. We developed an understanding of how to work with other women and things that I don't think you learn if you're in a coeducational institution, frankly. If I had it to do over again, I'd go to the same school. I went through sophomore slump, of course, and hated it, then stayed there for my junior and senior year and loved it. Connecticut College is now co-ed; I was very disheartened in reading my alumni news to see that the men immediately took over the student council for something like the next five years after their arrival. Eventually I think it sorted itself out so that it's more equal now.

WiNR: Did you have interesting summer jobs which pointed to where you are now?

Difley: In my junior year, I worked at the Harvard Forest which is in Petersham, Massachusetts—it's the next town from Barre. I worked in a lab there, surrounded by people from all over the world who were doing interesting forestry research. Then I finished my degree in English and I worked in a lab at the University of New Brunswick, in Fredericton, the following summer for Environment Canada. I worked in a biology lab the school year after that and then decided to go to graduate school.

WiNR: Which one? And how did you do?

Difley: I went to The University of Massachusetts. My first year was pretty miserable. I wasn't accustomed to being in a place where people were concerned more about getting a job than an education. I wasn't accustomed to the forestry school macho atmosphere. It was very stressful even though I'm a person who's pretty outgoing and I adapt pretty well, I think. I have a sense of humor. But I adjusted—learned how to handle it.



WiNR: What were some of your early jobs?

Difley: Right after graduate school I had three jobs at once. I was doing a project with the Forest Service, a project for the Institute for Man and Environment at the University of Massachusetts, and I was also working at the Society for the Protection of Natural Forests. I commuted to Concord, New Hampshire, once a week and I think I made \$60 a week. I had a great time. Then I spent about 10 months in Connecticut as the Resource Conservation and Development Extension forester. I did educational programs for foresters and loggers and land owners about forestry—based at the University of Connecticut. After that, I went to Dartmouth College where I worked for the Resources Policy Center and worked on an environmental impact assessment for a wood-fired power plant for 10 or 11 months.

Then I moved to Vermont and became a consultant forester and did that for about three years during which time I was doing all kinds of things to try to make a living: I taught a couple of courses, I did some editing. Following that, I got a job at the Society for the Protection of New Hampshire Forests promoting forestry and providing education and performing some membership duties. I did that for over a year.

The American Forest Institute was located in the same building in the conservation center in New Hampshire and I started working for them. The American Forest Institute then became the American Forest Council and I continued on. Now I work for the American Forestry Foundation, also the same group, so I've been working for the same outfit for 10 years now.

WiNR: You mentioned an environmental assessment for a wood-fired power plant. What happened there?

Difley: It was pretty interesting work.

The plant was never built, but I think those kinds of plants are viable. I learned the methodology—how to assess supply—not just supply in terms of biological growth, but actual availability in terms of topography, road structure, regulations, and private landowner preferences. How you work all those factors in and come out with reliable data was an important learning process for me.

WiNR: Over the years, what kind of work did you do for the American Forest Institute and the Council?

Difley: I went through various positions there, but basically I was located in a northeastern regional office working with Project Learning Tree, an environmental education program, and with the Tree Farm program. We promoted forestry to the public, worked with media, with Tree Farmers, and, finally towards the end of my tenure, I was doing some work with private land policy.

WiNR: And your job now?

Difley: I've relocated to Washington, D.C. and I'm the Vice President for forestry programs of the American Forest Foundation. The Foundation was formed in a reorganization of the industry's national associations. In January 1993, the American Paper Institute, the American Forest Council, and the National Forest Products Association merged to form the American Forest and Paper Association. The American Forest Foundation is a tax exempt 501 (C)3 organization where the educational programs are housed. We include Project Learning Tree, which Kathy McLaughlin directs, and Tree Farm, which I direct. I'm now in charge of the national program, but it's a program that I've been working with for 10 years—first in New England and then in the Northeast and North Central states. It's a good program for private landowners.

WiNR: What are the basic goals of the American Forest and Paper Association?

Difley: AFPA represents a single voice for the forest products industry. Most pulp and paper companies and many solid wood manufacturers belong. It is large—representing over seven percent of *all* manufacturing in this country.

WiNR: How is the Foundation funded?

Difley: By the forest products industry itself as it always has been. It's also supported by Tree Farmers, and some grants that support some specific projects. The foundation emphasizes that neither Tree Farm nor Project Learning Tree are exclusively industry programs and, in fact, they never have been. The programs belong to a lot of different people: volunteers who run them locally, county foresters, teachers, consultants, and many others.

WiNR: Where are the largest number of Tree Farmers located?

Difley: In the Northeast, Southeast, and in the North Central states, because that's where the bulk of private land is. There are now 70,000 Tree Farmers and they own 95,000 million acres of land across the country, so we're talking about quite a widely spread grass roots network. One of the things that I find interesting in the West is that people think of Tree Farms as being little rows of planted seedlings. While some Tree Farmers do have plantations, most are natural, private forests that they manage.

WiNR: Being a Tree Farmer can be a hobby or part time job, I gather. Are they a diverse group of people?

Difley: Very diverse. My mother's a Tree Farmer, for example. She inherited land when my father died, and he inherited the land from his father—an 80-acre woodlot in Paxton, Massachusetts, which is a bedroom town for Worcester. Most Tree Farmers really love their forests and they're attached to their land.

WiNR: In general, do you think there are major differences in the way public forests, private forests, and industrial forests are managed?

Difley: Yes. Private owners and public owners have different objectives, different opportunities, and different constraints. But foresters who work for any of them have to know how forest ecosystems work and how to participate in public policy.

WiNR: As you look at the situation from

your professional perspective, where do Tree Farmers fit in the national production scheme?

Difley: I think industry currently is doing about all it can to produce trees on its land and public sector production is coming down for the near future. That leaves non-industrial lands if we want increased production. Some Tree Farmers are very astute about economics and taxation and know that when they sell products—timber, for example—the other values that they manage for, like wildlife, can benefit.

WiNR: How does one become a Tree Farmer?

Difley: To become certified, Tree Farmers must own 10 or more acres of land, managed for continuous forest products, and adequately protected against fire, insects, disease, and over grazing. In doing so, they must also protect environmental benefits. Tree Farms are reinspected once every five years by volunteer foresters who work in each of the states. Every five years, in other words, they talk with someone to find out if they're still actively managing, if they're still keeping up with the standards of the Tree Farm program. If they're not, then they're decertified.

WiNR: As Vice President, what other things do you do?

Difley: I'm responsible for the Tree Farm program, our magazine, our volunteer efforts, and working with other organizations. No two days are ever alike. I spend time answering questions about Tree Farm from participants, the press, landowners, and others. As personnel of an association, I also work with the Operating Committee and Trustees. Strategic planning is near the top of the "to-do" list these days. I work with volunteer Tree Farm committees in their states to help them with difficulties. And I get to visit Tree Farms, usually as part of a Tree Farm meeting or the Outstanding Tree Farmer contest. Right now we're doing regional Tree Farm workshops—discussing program priorities for the coming year, funding items, coordinating programs like stewardship. We had one of the regional workshops in Charleston, South Carolina, and next week, Hartford, Connecticut. The week after that is St. Louis—the following week is Salt Lake City. So this is a busy month.

WiNR: To whom do you report?

Difley: I report to Larry Wiseman, the president of the American Forest Foundation. The board of directors are CEOs from forest products companies. I have an operating committee for Tree Farm that I'm just

putting together which will have five members from industries who contribute to the Tree Farm program, five Tree Farmers, and three association executives whose associations sponsor the program in their state. It will have two Tree Farm volunteers from the states and a representative of the National Association of State Foresters. This group will be setting policy for Tree Farm—putting together budgets, policy, and program.

WiNR: The foundation has a large constituency. How many employees?

Difley: There are eight of us in Washington DC. We also get some support services from the American Forest and Paper Association.

WiNR: Does the policy for Tree Farm change dramatically from year to year?

Difley: In the past it had not, but we've just gone through a major change. Tree Farm has always been, and still is, about excellent forestry being practiced on the ground by private landowners. We've always had standards for Tree Farmers, but now they need to be written down in the form of a brief management plan. The inspections and re-inspections are important because they're what gives the program credibility—the standards are being monitored. Those will continue to be part of the program, but we





out for forestry or that their policy desires are coming through clearly.

Difley: We won't be able to quantify it. But I think anecdotally at least, we'll be able to see if we're getting more newspaper clips from the tree farm folks about what they've been saying about forestry. Or if we're getting more tree farmers calling us and asking for us to get them appointments with their Congresspeople in Washington. I think the other indication is going to be whether the state committees—these grass roots committees—of foresters and tree farmers change their activities and their philosophies.

WiNR: And the end result of getting this heightened interest and heightened political activity is to do what?

Difley: This is an organization of 70,000 people but it's always been carried out as a program for tree farmers by foresters. Well, in some ways that doesn't make sense. Tree farmers are getting the benefits and they need to help shape the program. There are things happening to private forests in terms of regulation and taxation. We can help them speak out on those things if they choose to. But we can't always predict their interests. In 1986, capital gains was an issue that we'd identified as being important, but it turns out that it was not to them. When Tree Farmers do identify a concern, though, they act. In New York State, the legislature threatened to lay off all the state service foresters, and it was the tree farmers who said, "We don't want this to happen." So, the tree farm committees helped the tree farmers with names and addresses of their legislators. Not every tree farmer is going to be an activist, but if 10 percent of them are, if 7,000 are, that's not a bad network.

WiNR: Will the foundation's policies and direction continue to evolve or do you see it in a period of static strengthening?

Difley: Project Learning Tree is going through dramatic change right now. It is in the final stages of major revisions. In Tree Farm, the main project is to make the transi-

tion I just described, and I think it's going to take us a while to do that. But the foundation is structured in such a way that there might be other forestry programs that we do along with Tree Farm. One new idea that we've had—remember that we haven't tried these ideas out on tree farmers yet—would be to fund tree farmers to visit some of the former socialist republics, countries where private property is now evolving. They would share with landowners in those countries their experiences in forest management and how private property works.

WiNR: Do you see yourself staying with these programs? What might be next?

Difley: I don't know. I've always been interested when people have asked me for a 5-year plan or a 10-year plan because I've never had one. Yet I've always seemed to end up doing something that I like doing. I'm still so busy with SAF and the American Forest Foundation that I haven't had a whole lot of time to consider what I might do next. I own a home in Bennington, Vermont, and it's possible that I would return there some day. The next two years, I would say, are going to be crucial for Tree Farm and how that program evolves with these changes. I'm anxious to see that through. After that, I could stay with Tree Farm for a lot longer or who knows? I'm open to what the next couple of years bring.

*Interviewer Dixie L. Ehrenreich is the Editor of Women in Natural Resources. She and Jane Difley have known each other for 12 years.*

Photos of Jane Difley these pages: page 31, participating with Difley in a fun run in 1985 on Mother's Day are friends—from left—Randy, Maryev, Ann, Edie; page 32, receiving the 1989 SAF Young Forester of the Year award from then President Jay Craven (left) and Bill Banzhaf; page 33, in Concord, New Hampshire, 1982, at work for the Society for the Protection of New Hampshire Forests; this page, in 1988, receiving the PRSA Tree Farm Award (photo copyrighted by Carl Glassman, reprinted with permission).

want to make sure that Tree Farmers have opportunities to speak out on forestry issues. That's why we're trying to get Tree Farmers involved in the governing of the program at the national level as well as at the local level. So in a sense, we're trying to move the program away from just recognizing landowners for good management into assisting landowners to speak about good management to the press and to policy decision makers.

WiNR: How do you convey all of this activity to 70,000 members of Tree Farm?

Difley: Through the magazine *Tree Farmer* and local volunteers. The magazine is a networking medium and a how-to publication. One of the most important things for this year is going to be making clear this transition from an organization that has been based on expansion—getting more and more tree farms—to an organization that lets tree farmers speak out about forestry. My goal for the year is to get a strategy in place that's really working to make that transition.

WiNR: But you don't have any way to measure whether it's working, do you? You can measure the trees and you can count the number of tree farms, but you can't measure whether or not Tree Farmers are speaking

IN LIFE, THERE ARE MANY ALTERNATE PATHWAYS TO A PARTICULAR GOAL. TO PARAPHRASE WHAT LEOPOLD SAID: SAVE ALL THE PARTS.

# IN PREPARING TO BE AN ENVIRONMENTAL EDUCATOR, NO EXPERIENCE IS WASTED

NANCY PAULINE ARMY

The factors which lead to any career choice frequently seem to fit in with chaos theory. The patterns we believe are set at some early stage of our lives, diverge in ways we can never predict. How, for example, does an Art major, end up on the faculty of a Forestry Department at a major university?

While the major in Art lasted less than three semesters, it proved valuable in enhancing powers of observation. Light and pigments function in very different ways, and Art History taught me much of the physics of color and light, as we explored the impressionists, pointillists and the Hudson River schools of art. Monet's "Waterlilies" left a lasting impression of a misty pool of blossoms. Seurat's "Sunday Afternoon on the Island of la Grand Jatte" confirmed his theory that optical mixtures of colors are more intense than mixed pigments of the same hues. The paintings of Thomas Cole, such as "Crawford Notch," illustrate the power of light. As three dimensional work came on the scene sophomore year, I moved on, recognizing

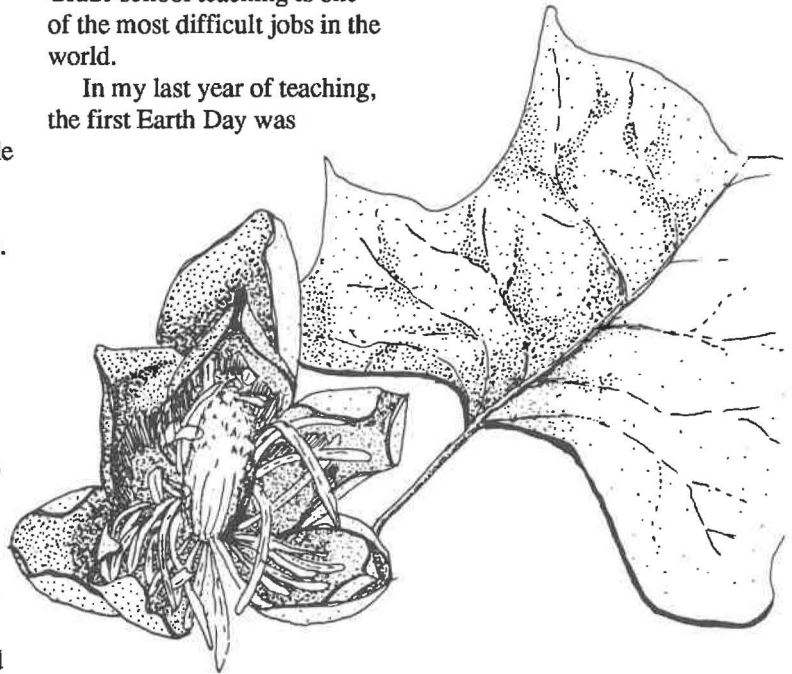
that not every artist can handle every medium, even if the courses are required. Perhaps it is my poor depth perception (which didn't help with photo interpretation either), but whatever the cause, my sculptures were unimpressive at best.

At the time Elementary Education seemed a reasonable curriculum choice. Required courses in Geology and Geography opened new vistas. Student teaching was fun and rewarding.

I landed a job teaching 6th grade in a small town in Wyoming. A far piece from Boston University—literally. How could I have done this to myself? Crossing the open prairies of Nebraska with hardly a tree in sight and no friends or family within 1,500 miles was sobering. What a lovely world Wyoming turned out to be however: moonlight on sage flats, golden cottonwoods glowing along the North Platte River in September, rime frosting the bare branches of the single tree on the school playground, the lone sugar maple in town blazing crimson on the very street where I lived. But could I

endure the trials of the 8:00 to 3:00 world? I lasted three years in the classroom and now have greater respect for teachers than do many parents. Grade school teaching is one of the most difficult jobs in the world.

In my last year of teaching, the first Earth Day was



celebrated. My third graders were informed of the occasion and I read them a poem about trees. Somehow trees kept creeping into my personal picture. So when I learned about a new graduate program in Natural Resource Planning in the Department of Forestry

and Wildlife at the University of Massachusetts, I returned to New England. Silvics, my first course, fascinated me. I learned why the maple turned crimson, why the cottonwood thrived beside the Platte River and what the hundreds of little feet were doing to the soil beneath the playground tree. I discovered that the openings I had sketched on the mountainsides in Jackson Hole were clearcuts, and that the redwoods I remembered from a childhood trip to California grew as they did because of fog and fire. The interdisciplinary nature of the program provided opportunities to study the ecology of fishes, regional planning, coastal ecology, and groundwater hydrology. The art work helped in Dendrology where I could recognize the species I drew in my notes.

In those days remote sensing was almost synonymous with photo-interpretation. Funding as a research assistant on a landuse mapping project supported me through my Master's program and provided the topic for my Ph.D. dissertation, "A Photogrammetric Study of Land Use Change on Cape Cod."

Three years as a PI was enough, though, so I went to work for the state 4-H folks. I designed and conducted a summer program for children to build awareness of the environment. The 4-H Center in Ashland, Massachusetts provided my first chance to share with students some of the fascinating facts and ideas I had acquired since last I was in the classroom. And now my classroom was outdoors.

But summer eventually ended, exams were to be held and the writing of a dissertation was at hand. With all but the dissertation complete, a series of events the chaos theory would cover neatly, sent me back and forth across the continent, into parenthood, and out into the working world with a small child, two gerbils, and a long-delayed but genuine Ph.D. in hand. And there I was, extremely glad to have been active in the Society of American Foresters, for that is the network which landed me at Penn State.

The network I had built in graduate school included faculty members from my own institution and others in the New England Region. Many of

them never taught a class I took, but I met them and talked with them and socialized with them at professional meetings. My name now had a recognition factor. The 4-H summer job had provided me with a nation-wide network of colleagues and that critically important "experience with Extension" to list on job applications. The SAF network included the same people who called me to fill in when another Extension forester resigned at my alma mater, giving me the chance to add additional experience to the resume.

At Penn State, Extension Forestry work with agents and landowners was a challenge, but supportive colleagues made it possible. And the art classes paid off because I could illustrate my own Extension publications, therefore getting them published without having to wait for artists to fit them into their schedules. But the funding was soft money and there was no career ladder to climb. When the announcement for "Natural Resources Education Extension Specialist—with emphasis on youth" landed on my desk, I applied. (This all sounds very easy, but during the chaos period I had 60 or 70 rejections to my job applications.)

In Florida, Natural Resources Education leans heavily toward Environmental Education. The 20th anniversary of Earth Day is now history, but some people are only now beginning to receive the messages. Through such programs as Project Learning Tree, 4-H Environmental Stewardship, the Forest Service's Natural Resource Conservation Education Program, and 4-H Forestry, I have the chance to reach teachers, leaders—and ultimately, children—with the messages my professors shared with me. Young minds are

eager for information and young hearts and hands are caring and eager to help the planet they call home. They just need a little guidance and some critical thinking skills to help them separate the facts from the hype.

Too often, in the past, we, the so-called experts, have developed grand programs and projects with no input or review by the educators and youth leaders we expect to use them. We wondered why they are not more widely used, without recognizing the realities of today's classrooms: overcrowded curriculum, limited or non-existent resources for field trips, lack of confidence in dealing with basic scientific concepts. So I've come almost full circle—program evaluation is coming into my picture again.

In the last 20 years, many aspects of environmental quality have diminished rather than improved even though our scientific knowledge has greatly increased. We've handed out and mailed out a lot of information, but most of it wasn't scientifically educational. Smokey Bear has taught the public that fire is bad. If you work in a region where prescribed fire is a major management tool you know this program wasn't thought out to its final end. Litter control programs haven't kept America beautiful, as a trip down any unadopted highway will attest. We have not broken down the barriers between the scientists and the people. These barriers are constructed of language and jargon, lack of sensitivity, and systems which reward technical articles above popular writing. Resource professionals need to examine educational systems and methodologies to discover how to infuse what we know as scientists into the materials teachers teach.



Outside the classroom, we have not taught the politicians about the environment and we have not impressed our fellow scientists with the importance of communicating effectively with policy makers. We have not provided adequate ecological education for the media specialists, and we have not been able to instill an environmental ethic in enough of our citizens and leaders. New academic programs I am familiar with like the proposed Environmental Policy, Environmental Education and Environmental Communication tracks at the University of Florida will help. Similar programs in Michigan and California are making some inroads. I am hopeful there are other promising starts.

There is a new generation which is listening, and to some degree, taking things into their own hands. Fourteen young people are planning a National Youth Environmental Summit in July, 1993. These 11- to 18-year-olds, who represent more than 100,000 youth in 50 states and 35 foreign countries, will be selecting 1,000 delegates to participate. As an environmental educator and a parent, I hope to be among those who are chosen. Environmental education is not only about teaching conservation, recycling, outdoor manners, and how ecosystems function, but it is about empowering people to make a difference. The expected outcome of the summit is that 1,000 young people will return to their communities to think globally, act locally, and network effectively to help monitor the environment and solve environmental problems.

Taking art classes is where my career began: Basic Drawing, Color and Design I and II, Art History, Composition, and Perspective. Along paths as divergent in perspec-

tive as the streets of Boston and elk trails in Wyoming, I have moved forward through the other basic life-lessons: observing the details, appreciating the beauty around me, accepting that change is constant, communicating with those who share the road. Picasso's "Guernica" meant nothing to me, until I learned of the painting's origin in violence, chaos, and war in the artist's own small town. "La Grande Jatte" was simply another painting, until I saw the original, and recognized the role of the human mind—making sense of billions of tiny bits of information and communicating it brilliantly.

From the paintbox, each of us has the opportunity to select the colors and tools we choose to create our personal masterpiece. My palette consists of a love of nature and respect for life, communication skills, educational foundations, imagination, and hope. I like the picture that is emerging and look forward to helping the next generation paint a beautiful planet with the colors of life.

*Nancy Arny is an Associate Professor at the University of Florida in Gainesville. Prior to that, she served on the faculties at the University of Massachusetts and Penn State. She earned her B.S. in Elementary Education at Boston University and taught school in Wyoming and New Jersey. She holds an M.S. and Ph.D. in Forestry and Natural Resource Planning from U. Mass.*

The photo is of Arny and her son Jon Pywell. Drawing by the author.

## SOIL PARFAIT

**Objective:** To have youth visualize that soil consists of different layers and textures.

**Materials:** Enough of the following for each youth to make a parfait:

Clear glass or plastic cup  
Large spoon  
Sand of various colors  
Dead leaves  
Gravel  
Clay  
Small pebbles or stones  
Different textures & types of soil  
Newspapers

**Procedure:** Spread newspapers on working surface. Give each child a container (cup or glass) and a spoon. Have each child spoon a one inch layer of gravel into the cup. Let children spoon in varying thicknesses of other materials until glass is filled, ending with dead leaves on top. Ask questions: How many DIFFERENT types of layers did you use? How does your parfait differ from others? Do all plants grow in the same type of soil?

After viewing and comparing various patterns of layers shown in the parfaits, take the children outdoors, dig a hole, and observe the layers in the soil. Discuss the layers that appeared in both parfaits and on the ground.

*From Earth Connections, 1992, Dept. of 4-H and Other Youth Programs, University of Florida Cooperative Extension.*

## AN EDIBLE EXTENSION

**Objective:** To discuss the role of soil organisms in soil formation.

Use above procedure, but substitute:  
Crushed vanilla wafers  
Gumdrop leaves or leaf cookies  
Walnut pieces  
Coffee ice cream  
Crushed unsalted peanuts  
Crushed chocolate sandwich cookies  
Crushed or crumbled chocolate chip or oatmeal cookies

Add Gummy worms and then discuss the role of soil organisms in soil.

This year, 1993, is the sesquicentennial (the 150th anniversary) of the Oregon Trail. Living and working in northeastern Oregon, I have been bombarded with Oregon Trail "stuff" and the bombardment doesn't even count my professional relationship with BLM's National Historic Oregon Trail Interpretive Center. I thought I would share with you a sampling of fairly recent books about the Oregon Trail.

But first, a few facts. Called the longest graveyard in history, it is estimated the Oregon Trail claimed the lives of seven to ten percent of the "overlanders." During the Oregon Trail era (1843-1860), between 250,000 and 300,000 emigrants left jumpoff points along the Missouri

ing the Elephant," begins: *The world looked a lot bigger in 1843, and appeared much more mysterious. It was a time before television, before movies, before even National Geographic.* This book of pictures captures images of the West which live forever in my heart. Even if you aren't an ardent Oregon Trail fan, these are great photographs. If you, like me, love the west, this is a book for your library.

**Oregon Trail, Voyage of Discovery, The Story Behind the Scenery**, has text by Dan Murphy, photography by Gary Ladd, (KC Publications, 1991, softcover, \$5.95, 64 pages). For the money, this is the best one-volume historical overview of the

During the Oregon Trail era (1843-1860), between 250,000 and 300,000 emigrants left jumpoff points along the Missouri River and trudged almost 2,000 miles to Oregon

**Western Women, Their Land, Their Lives**, was edited by Lillian Schlissel, Vicki L. Ruiz, and Janice Monk (University of New Mexico Press, paperback, 354 pages). Although not specifically focused on the Oregon Trail or that era, this book of essays is valuable in adding depth, texture, and dimension to our understanding of the culture of the frontier. Histories note the exploits of individuals (primarily male), but we often forget each of the heroes lived a daily life with family, close friends, and associates. This book sheds light on the part women played in the fabric of history as the west was settled.

In the introduction to the book, the editors write: *On an elementary level, it became apparent that the westward trek was less a movement of intrepid mountain men, explorers, and Indian fighters and more a migration of families ... In the Homestead Act of 1862, the Congress had acknowledged that the family was the only agency to be entrusted with the task of settling the land. Not the federal government, not the church, not the several states, but separate family units ...*

The subjects explored in the essays range from domestic ideology of Anglo women (staying home and producing offspring), religion and Indian-white marriages and the rise of a metis culture, to family life on the frontier. In addition to exploring the role of women in the settling of the frontier, the editors explore the cultural lines of both Native American and Mexican cultures. As they do that, the myth of a virgin land explored by mountain men and settled by Oregon Trail emigrants is exploded. This "virgin land" was settled not only by Natives but by emigrants from other countries. This book explores more of that reality.

**Women's Voices from the Oregon Trail, The Times that Tried Women's Souls, and A Guide to Women's History Along the Oregon Trail**, is by Susan G. Buttrille (Tamarack Books, Inc., 1993, paperback, \$14.95, 251 pages).

As its title indicates, this book has two parts: the first is an overview of women along the Oregon Trail and the second is a listing by state of interpretive sites, museums, parks, or events. Taken together, the two parts become a travel guide for the Oregon Trail during the height of the Sesquicentennial. The first part, in new journalism style, presents the Oregon Trail from the perspective of women of the time. Surrounding a photograph of suitcases in a car trunk, for example, there is the author's checklist followed by a list of questions an emigrant women might have had. However, the intrusion of Buttrille's present-day journey is a little unsettling as the last entry is in Wyoming. (The reader assumes she reached Oregon since the book has been printed.)

The second part of the book, the travel guide portion, is presented by state. Each section contains a map of the state with identified sites and accompanying text. If you use this as a guide book for summer travel, supplement it with information from individual states. I say this because the section of the trail I am most familiar with is in eastern Oregon and a number of interpretive sites are not mentioned.

*Reviewer Jonne Hower's Bachelor's is in Range Management from the University of Idaho, and her Master's is in Communications from the University of Portland (Oregon). She works for BLM and lives in Baker City, Oregon. Hower is a WiNR editor.*

Called the longest graveyard in history, it is estimated the Oregon Trail claimed the lives of seven to ten percent of the "overlanders."

### *Books Reviewed by Jonne Hower*

River and trudged almost 2,000 wearisome miles to Oregon.

**On The Oregon Trail**, was written by Jonathan Nicholas, (Graphic Arts Center Publishing Company, \$43.00 hard cover, 144 pages), who is a columnist for Oregon's largest newspaper *The Oregonian*. Nicholas and photographer Ron Cronin chronicle images of the trail or from the trail as an emigrant would have seen it. More than 100 full- or double-page photographs have caption information: where the photograph was taken and information about the site from the perspective of the emigrants. There is a journal, diary, or letter quote about each specific site. Each of the 12 chapters begins with a full page of text locating the reader in both time and space and provides basic factual information about Oregon Trail history. The chapter, "See-

Oregon Trail and the westward overland migration. It is one of "The Story Behind the Scenery" series written about westward exploration or one of America's natural scenic wonders.

Each set of facing pages offers a full-color photograph, emigrant quotes, and a small map of the western United States identifying the stretch of the trail being described. Accompanying this is an easily-readable and "stand-alone" section of text. You can literally open this book anywhere, identify where you are and learn some facet of Oregon Trail history. Murphy writes: *Modern readers puzzle at the exaggerated descriptions in Oregon Trail journals of the natural formations .... [s]peed ... was limited to the gait of a horse ...* So moving slowly from landmark to landmark, the reader can marvel—as did the travelers—at the strange and wondrous sights in this new land.



THIS RESEARCHER AND WRITER HAS HAD A 25-YEAR LOVE AFFAIR WITH AFRICA AND AFRICA'S ELEPHANT FAMILIES. TODAY SHE IS FEELING OPTIMISTIC ABOUT THE ELEPHANTS' FUTURE AT AMBOSELI NATIONAL PARK IN KENYA.

## CYNTHIA MOSS

DAVID SIMPSON

Something about Africa captures the soul. It draws you into its mysteries and never lets go. Some people can pinpoint what keeps them coming back: the exotic wildlife, the colorful markets, the vibrant people, the enormous African panoramas. But for most, the spell is indefinable. The lure is simply Africa, and for many it is love at first sight.

Cynthia Moss, now an international authority on elephants, experienced the phenomenal pull of Africa 25 years ago. A victim of itchy feet after nearly four years as a young *Newsweek* researcher in New York, she took a long leave of absence. After three months traveling Europe she arrived in Africa. "I fell in love, quite literally, fell in love with Africa," she says. "I was only there for about a week and I had this very overwhelming sensation that I had come home, that this was where I belonged."

Moss, today a senior associate of the African Wildlife Foundation (AWF), was back in the United States recently to promote *Echo of the Elephants*, her new book. A companion to a BBC/WNET (PBS) documentary broadcast nationwide in March, 1993, *Echo of the Elephants* recounts 18 months spent observing and filming a single

family of elephants in Amboseli National Park in southern Kenya. Moss knows Amboseli's 50 elephant families well after 20 years study, but her work has always involved observing the behavior of as many different groups as possible. The opportunity for this kind of intimate knowledge was new. "The thought of choosing one family and spending up to 12 hours a day with it over long periods of time was immensely

appealing to me," Moss wrote in BBC's *Wildlife* magazine. "It would definitely be a different way of being with elephants."

When she first arrived in Africa 25 years ago, she was offered a job as a research assistant by Iain Douglas-Hamilton who was doing his Ph.D. study in Lake Manyara National Park, Tanzania. Four years later, in 1972, with the support of AWF, Moss founded the Amboseli El-

ephant Research Project. Amboseli has been her home—and its elephants her family—ever since. The Amboseli Elephant Research Project continues to be funded by the African Wildlife Foundation.

Celebrating 30 years in conservation, the African Wildlife Foundation is the largest American conservation organization working solely in Africa. Based in Washington, D.C. with a field office in





Nairobi, Kenya, AWF assists African governments in their struggle to conserve natural resources by funding conservation projects, giving aid to parks and reserves, and aiding in conservation education. Funding for the organization comes from its members, foundations, corporations, and bilateral organizations.

Moss monitors Amboseli's elephants from the sanctuary of an AWF vehicle. In the early years she watched them from an impractical Renault and later from an old Land-Rover, which met its end under a windblown acacia tree. But Moss, an outgoing woman with a good sense of humor, is not inclined to talk about the tough aspects of living and working in the African bush, about the searing heat and dust—or the drenching rains that transform dirt paths into impassable rivers of mud.

In the first years, the Amboseli research project was run on a shoestring and initially part-time. In 1975, however, Moss set up a permanent camp within sight of snow-capped Mt. Kilimanjaro, but after 14 years, flooding rains forced her to relocate. The new camp, a compound of several thatched roofed tents and a kitchen hut, sits on higher ground in a stand of palm and acacia trees, a few hundred yards near her original camp.

During those first years, one of the Amboseli Research Project's triumphs was the discovery of the musth phenomenon in African male elephants. When a mature bull comes into musth his testosterone levels increase and he will compete aggressively for up to three months for the right to mate with as many receptive females as he can. Revealed in a 1980 joint paper by Moss and Joyce Poole in *Nature* and previously thought to occur only in Asian males, the discovery of musth in the African elephant was one of many valuable insights into elephant

behavior and social systems to come from Moss' Amboseli Project.

In 1982, however, faced with a decision by the Kenyan government to limit expatriate researchers to two to a project, Moss gave up her research permission to concentrate on her role as project director and coordinator. Maintaining the camp and vehicles, directing research at Amboseli with three to six researchers on staff at a time, and raising and administering the funds has kept Moss so busy she has not had time to gain a Ph.D. "Getting a Ph.D. would have been valuable, but I've published scientific papers in top journals. If you can do that—you are a scientist, that's the jury of your peers," she says.

Her numerous scientific papers include articles on elephant behaviour for publications like *Nature*, *The Smithsonian*, *ILCA Monographs*, *Behavioural Ecology and Sociobiology*, *Behaviour*, and *Journal of Wildlife Management*. She has also written her first-hand accounts of elephant family life in three books. Her first, the 1972 *Portraits in the Wild*, was a synthesis of approximately 1000 scientific papers that had been done on mammals in Africa. That was followed in 1988 by *Elephant Memories*. By taking her readers through 13 years—sometimes joyful, sometimes harrowing—in the lives of four related groups of elephants, Moss presents, in a form that is both readable and scientific, a definitive exposition of elephant society.

A talented writer as well as a scientist—"I was a journalist, I still am a journalist. It's another hat I wear"—Moss has teamed up for her third book with cinematographer Martyn Colbeck. His vivid photographs, combined with Moss' clear prose make *Echo of the Elephants* her most accessible book yet. (With a sequel and a children's book in the pipeline, it could also be the start of an elephant soap opera.)

The key event in *Echo of the Elephants*, the birth of the calf Ely, illustrates not only the appeal elephants have and why the world has rallied to their cause, but also the torture sometimes endured by the so-called objective observer. Not embarrassed to declare, "I love being with elephants....Those are the happiest moments of my life," Moss was forced to sit by and watch as she realized Ely had been born crippled. Nevertheless her scientific objectivity prevailed. She reported the birth of the crippled calf to

the warden of Amboseli who agreed they should let nature take its course.

"We're trying to preserve natural processes. We're not trying to preserve individuals," Moss explains. "Of course I love these individuals. It's hard." The alternative, Moss says, would have been to call in the vets. "But....the vets would have gone down, taken one look at Ely, almost certainly captured him and taken him back to Nairobi where he would have recovered, and that would have been it. We would have taken an animal out of the population who was a healthy big calf who probably will grow up to reproduce, and we've taken him out. Or they could have gone down maybe and said let's put him out of his misery. Shoot him."

Instead, what followed was a poignant story—captured on film—of Ely's struggle for life. His mother, Echo, stood over the calf for three days until he was walking normally, if a little unsteadily, and able to rejoin the family group.

During the 25 years she has observed, the elephant population has remained relatively undisturbed by poaching or human encroachment. Not that Amboseli National Park, a 150-square-mile area of grasslands and swamps in Kenya at the base of Mount Kilimanjaro, has been totally free of these twin threats to elephant society. But thanks largely to the influence and patience of the park's Masai neighbors, Amboseli's elephants have lived and died more according to nature's rules than human's. After years of government promises, the Masai now receive 25 percent of the gate revenue from Amboseli, the highest grossing park in Kenya, and are actively involved in protecting Amboseli's wildlife: elephants, lions, leopards, cheetahs, rhinos, giraffes, buffaloes, zebras, wildebeests, antelopes, and wild dogs.

Elsewhere in Kenya, and in Africa as a whole, elephants have been under severe pressure. From 1979 to 1989 African elephants were being killed at the rate of 100,000 a year, and until ivory trading was outlawed at the 1989 Convention on International Trade in Endangered Species (CITES) the future looked grim.

Now there is talk by some southern African countries of downgrading the elephant's Endangered Species listing, of resuming a limited ivory trade. Articles are appearing telling of elephant overpopulation and habitat destruction, voicing

the opinion that the ban on ivory trading is the result of an hysterical over-reaction by western conservation organizations and is not supported by Africans themselves. Moss disputes this: "My answer to some of this criticism is that people should have been at the second CITES meeting to really understand what's happened since the ban was put into place. The southern Africans proposed down-listing their elephants....so that they could trade in ivory. Now what was striking, really, really striking was that one African delegate after another stood up—from Ghana, from Cameroon, from Tanzania, from Kenya, from Zambia—and said, 'please do not let this happen. If you allow any ivory trade at all, we are going to start having poachers again in our countries. The ban has been a success....If there is any trade our elephants are going to be killed....We do not want the ban lifted.'"

The ban is important because it is a clear message, Moss says, but more important is the lack of demand for ivory, "and that's what has to stay down. If you release some ivory from certain countries, the message gets very confused; the demand goes back up again," she says. "This is what's so sad about negative articles. [The international ban on ivory trading] is one of the few conservation success stories."

"I feel very optimistic about Amboseli these days," Moss says. The threat of poaching has receded and relations with the park's Masai neighbors are good. With her elephants safe, Moss is able to look forward to continuing her research and her love affair with Africa. "The future for me? The cameraman I've been doing this film with, Martyn [Colbeck], he wants [to come back and film] when Ely first comes into musth. I said, but I won't be alive Martyn! He said, 'yes you will! You can just come along in one of those walkers.' And this is our vision of what we're going to be doing," she says, laughing. "Can you imagine? We'll have to wait until 2020, and I will be 80. I think I might still be able to do it.... We'll see, we'll see."

*Author David Simpson is a free lance writer based in Washington DC. He writes frequently about wildlife issues.*

*Photos by Martyn Colbeck, cinematographer-director for *Echo of the Elephants*; and Athi-Mara Magadi of the African Wildlife Foundation.*

VOL. 14, No. 4



# Q U E R Y

*Edited by*

*Ellen O'Donnell*

**What are some of the problems you've encountered as a graduate student in a natural resources field that has been traditionally dominated by men? How did you handle them?**

**Carolyn Mahan**  
**Ph.D. Candidate in**  
**Wildlife & Fisheries Science**  
**Pennsylvania State University**

I guess one of the most significant problems I've encountered as a woman in the wildlife field is establishing my credibility as a teacher. In my experience, women have had to work harder to prove themselves to receive the same level of respect from students that a male teacher often receives automatically.

In the mammalogy labs I teach, some of the male students seem skeptical that a woman would know as much as they do about some of the game animals, such as white-tailed deer. That may just be due to the fact that more men hunt than women, but it seems to take them awhile to trust that I know what I'm talking about. I see a big difference in the way these male students react to information when it's delivered by the other teaching assistant, who is male. He doesn't have to go through the same process of proving himself with each new class.

There are several ways I handle establishing my credibility with students. I try to show self-confidence and know my subject matter as thoroughly as I can; I take advantage of

opportunities to demonstrate my knowledge and I am not afraid to speak up; and I also try to enhance my own research experience by referring to current studies or journal articles during conversations with students. Usually a student who sees that you're on top of things will soon begin to take you more seriously.

Another factor in this field is the lack of women role models, and a number of my female students have expressed concern about this. When you look at this school (Penn State's School of Forest Resources) all you see are white males between the ages of 40 and 50. The lack of diversity overall, not just the lack of women in teaching roles in these fields, is a real drawback.

On the other hand, I feel I have been lucky so far because I have had only positive experiences with my advisors and teachers, and have always been treated with equal respect by my fellow grad students who are male. Other than with the undergraduate students, I have had no problems that I am aware of which relate to me being a woman in a male-dominated field. I've never really had a job outside of academia, so we'll see if that changes once I'm in the "real" job world.

I have attended conferences such as one with the American Society of Mammalogists, where they've devoted entire sessions to "sexism in scientific fields." Although I have never experienced sexism in the workplace to the degree that some women relayed during these sessions, I am aware it exists, and these meetings really opened my eyes as to the extent that it occurs.

I think holding educational sessions such as these serve to make men more aware of how their actions and comments affect their women colleagues, and that's taking a step in the right direction. We still have a long way to go, but I think we're at least on the right track.

*Carolyn Mahon earned a Masters degree in Wildlife and Fisheries Science from Penn State in 1992 and a Bachelors in Natural Resources from the University of Connecticut in 1989.*

**Callie Pickens**  
**Ph.D. Candidate in Forest**  
**Resources, Pennsylvania**  
**State University**

I am the only woman working in the unit on tree nutrition and soil acidification, and have been since the start of my graduate program. My work involves a lot of group interaction in the field. One of the more frustrating problems is dealing with a "joking attitude" toward women from my male colleagues and supervisors. They don't seem to grasp that gender-related joking is just not funny.

On a recent data collecting trip, one of the tasks involved lifting several very heavy sacks of lime. One of my male co-workers said, "Since Callie won't have to do that, she can cook for us." The ironic thing about this incident is that one of the other male co-workers on the trip was actually a chef, yet it was assumed that because I was a woman, I would do the cooking. I think toward the beginning of my graduate program I used to accept comments like this and not be annoyed by them. But after several years of it, I've become less and less tolerant.

I've also found that when I first work with a group of men in the field, I have to go through a "proving ground." For example, the first time I went electrofishing, I had to carry the pack, but once I showed that I could do it, one of the other guys in the team always carried it after that. Although male co-workers are not very up front about their intentions, they feel I have to pass a test to be part of their team.

Another case where I'm dealt with differently than men is when I present an idea of a technical nature. One time when I proposed a simple procedural deviation—using the same tool to do several operations—my male colleagues and supervisor looked astonished. They later agreed to implement the approach, but at first my suggestion seemed to take them by surprise. Sometimes in these situations it's difficult to tell whether the men are reacting to the innovative approach or the fact that the idea came from a woman. Perhaps as women, we do bring a certain insight to a task, or because of physical limitations, such as size, we have to demonstrate ingenuity to get the same job done. It would be nice, though, if that type of

innovativeness was met with support rather than disbelief.

I've also had very negative interactions with some of my fellow graduate students who are male. In my experience it seems that men who come from traditional backgrounds often don't know how to relate to women on a professional basis. In one particular incident, a male grad student accidentally knocked over a large plant while using my workspace when I was not there. Rather than apologizing or cleaning up the mess, he left a note "would've cleaned it up but didn't have a broom." When I came in to work, I had to spend an hour cleaning up the dirt and plant debris just to get to my papers and the computer which were covered with dirt. When I saw him the next day, I told him I didn't approve of the way he left my workspace, and that it was very unprofessional. He became irate, began insulting my character—in-sinuating that women are supposed to clean, so it was more appropriate for me to clean up the mess than he.

To deal with gender-related issues like these, I've learned to confront my colleagues and supervisors and insist that I be treated professionally. I do get tired of constantly being on the defensive, and standing up to male supervisors or committee members who can hurt me academically. They remember everything, and when it comes time to renew an assistantship or qualify for funding—people don't forget.

At first it was fun to challenge my advisors and co-workers, because I felt like I was accomplishing something. Gradually the men I work with are learning acceptable ways to relate to women in the workplace so I think that future female grad students will have it easier than I did. It's not all negative—there is a sense of pride being the only woman who has participated in a project or program, and sometimes that's what keeps me going.

No matter how tired you get you can't ignore gender-bias. You must take a stance and stick with it. When I'm feeling particularly frustrated with the status-quo, I tell myself, 'Someday I'm going to be Dean, and then I'll hire all women.'

*Callie Pickens holds a Bachelor's degree from Indiana University of Pennsylvania. She received her Master's in forest ecology from Penn State in 1992.*

**Lisa Chang**  
**Ph.D. Candidate in**  
**Environmental Sciences**  
**University of Virginia**

I have run into some odd situations as a young female contributor on certain projects. One time I was sent to Portland, Oregon to work on a hydrologic model to predict stream flow from a watershed. The other three team members were men of the World War II era who had worked either in the civil service or the Army Corps of Engineers. They were very kind and very gallant, but basically treated me as though I was a very young girl—perhaps like their granddaughters. I think it was a matter of style. They were from the 'old school' and insisted on holding doors for me and treating me to every meal. But when it came down to the actual project, we worked side by side, shirt sleeves rolled up, and actually accomplished a great deal. By the end of the project they had gained respect for me, and I had gained respect for them. I learned that gender differences don't necessarily have to lead to negative experiences.

With regard to relationships with co-workers and supervisors, I had one experience that I would definitely not repeat. When I was on a summer internship at a national laboratory, my project supervisor expressed an interest in me mid-way through the project. I wasn't prepared to handle the situation at the time; I was quite impressionable. As a young grad student I thought anything the lab did was prestigious and noteworthy, and my supervisor, who I had great respect for, became my sole contact with other professionals at the lab. I did become involved with him, but in retrospect, I think there is an identifiable wrongness about his conduct as a supervisor.

I think supervisors should be aware that young students, especially those with no prior experience in the field, often don't have the perspective necessary to make clear decisions about romantic involvement in the workplace. I'm not putting all the blame on him, but if a similar situation ever developed, I would do things differently.

I've been fortunate when it comes to my experience with male advisors, because in all cases, my academic advisors have been extremely professional. I sometimes think I would like to have an advisor who is a strong female mentor, but it hasn't turned out that way. I definitely value the courses I've taken from strong female professors. I see them as role models.

There are groups we should join just for professional women. I recommend them as sources for networking and mentoring with women in related fields. Some of the national organizations even have local chapters around the country.

*Lisa Chang holds a Bachelor's degree from Yale and a Master's in environmental management from Duke University.*

## Retirement

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At a recent retirement planning seminar for government employees, a double bell-shaped curve developed: it seemed that people were either very well or very poorly prepared for retirement. Being well prepared is not just a function of a high income, however, as some high income earners were ill-equipped for retirement, while some whose annual earnings never exceeded \$20,000 were very well prepared.

Fiscal preparedness is a serious matter. Some people have learned to live within their means, others never seem to learn this very basic lesson. Some people began saving 10 percent or more of their income when they were teenagers, and some people have overspent their annual income by at least 10 percent for all their working lives. Some people of retirement age have massive debts, while

**If someone needs to have \$25,000 of annual income, and expects to live 20 years in retirement, total accumulated capital of \$800,000 is needed to produce that amount of purchasing power.**

others have retirement plans that will produce larger annual incomes than they earned in any year of gainful employment.

Many natural resource managers have a very high level of dedication to their work, and to the career that has enabled them to do the kinds of things they most want to do. With the removal of mandatory retirement, most people will be free to work as long as they want to or need to, or as long as they are physically able. But work is not the whole of life, and cultivation of a wide range of interests broadens us as human beings, and gives us something to look forward to beyond the domain of work.

As we age, our bodies demand more attention, and time for exercise and relaxation become progressively more important. By age 50, some routines should be established that im-

Only 12 percent of women can be identified as investors. Women tend to treat their money very conservatively.

prove nutrition, muscle tone, flexibility, and endurance. We are all exposed to hundred of gurus eager to help us improve our physical well-being. Actually doing it, however, requires some personal motivation that only comes from awareness of the need for this kind of attentiveness to the needs of our own bodies, motivation that too often comes only when something goes wrong.

So how much money do we need before we notice something going financially wrong? An economist who delights in mathematical models assured me that if someone needs to have \$25,000 of annual income, and expects to live 20 years in retirement, total accumulated capital of \$800,000 is needed to produce that amount of purchasing power, given a projected annual inflation rate of four percent. If you are fortunate enough to have been in a retirement plan for 25 years or more (and including social security or other federal benefits), by the time you are 65, you will have most of that amount.

As for accumulating the rest of the funds you will need, don't wait (as most people do) until your 50s to begin thinking seriously about retirement only when many of life's major expenses have been met. And as you think, consider these variables:

- 1) future rate of inflation
- 2) costs of health care and health care insurance
- 3) future tax rates
- 4) future investment return

As one considers these points, some things seem certain:

1) it is unlikely that the annual increase in the cost of living will ever again be less than three percent

2) the costs of health care and insurance will become much clearer over the next few years, but whatever plan emerges from the White House and Congress, the costs of health care are unlikely to decrease

3) the total amount of income that taxes take is bound to increase—the only questions are

how much, when, and who will bear the brunt of the increases.

4) the only variable under your control is the return on your investments.

This brings up some perplexing problems, because there appears to be only one way to increase retirement income and that is investing—but only 12 percent of women can be identified as investors. Women tend to treat their money very conservatively, or they have their money managed by someone else. (A number of brokerage houses have initiated educational programs for women. The National Association of Investment Clubs has a large number of women's clubs and runs programs for novice investors.) While having some money in a three percent savings account is important, investing for growth is the only proven way of keeping up with inflation. And learning to use mutual funds, or learning how to commit long-term money to companies with good growth prospects, is essential to your long-term financial health.

Retirement is not something to be either forgotten about or dreaded. It is an opportunity to expand horizons and enrich your life, and the lives of others. You do not retire from life—only from work. The main reason for retirement is not just more time for relaxation or health care, but more time for the things that are really important: getting to know good people, getting to know and care more about the person you have become, getting to know and care more about the planet.

Spend some time now managing (and studying about) your financial resources, so that when you retire, you will be able to afford to do those things that you find intrinsically rewarding, and that contribute to the fulfillment of dreams, old and new.

*Gene Bammel is Program Coordinator (and Professor), Recreation and Parks Management, Division of Forestry, West Virginia University.*

**Women athletes have to put their game faces on**

Some runners pace themselves by an inner metronome, and pretend their opponents don't exist. Angie Mathison, who runs the 3,200 and 1,600 meter races, dwells on her opponents. She stares them down from behind. "I just fix myself on the back of their heads," she says, "and it's like I can't even feel myself running. You don't feel the pain." Her coach Tracy Behler noted that Mathison is kind of a passive person. "She's not going to let somebody beat her, however. Some kids, you see the competitiveness in their faces. Angie has always got her game face on. And she does it without being very aggressive about it."

In a small, early-season meet with rural high schools (Idaho), boys and girls were bunched together in one 3,200 race. Mathison beat them all, but not before getting an exasperating glimpse at the budding male ego. "Right when you pass them, they see you're a girl—and they have to sprint," she says. "I just hang back and bide my time. I come up on them again, then they have to sprint again. I know they're going to get tired. I just wait for that. Then I pass them."

...Dale Grummert, *Lewiston Morning Tribune*, April 19, 1993

**Working Woman poll lists biggest challenges facing career women**

An overwhelming 75 percent checked juggling work and family, while 71 percent cited both moving into top management and earning more money. Sixty-seven percent cited the lack of equal job opportunities, and 63 percent checked finding more affordable child and elder care. When asked which three issues should top an economic agenda for women, readers, not surprisingly, picked pay equity (56 percent), strong economic growth (40 percent) and breaking the glass ceiling (37 percent), putting more women in public office (34 percent). What would they be willing to pay higher taxes for?

A better public-school system (64 percent); healthcare benefits for all (56 percent) and affordable child and elder care (38 percent). On a more personal level, 71 percent said the biggest challenge is earning more money. The most important goals in lives are a good relationship or marriage (63 percent), good health and fitness (45 percent), career success (42 percent) and contributing to society (33 percent). When asked how satisfied, 93 percent said very or somewhat satisfied with personal life, and 88 percent said satisfied with careers.

...Lynn Povich, *Working Woman*, April 1993

**Here is a paragraph to make your day**

Household dust is not made up of tiny specks of dirt—contrary to common belief. Rather, it's primarily a mixture of dead skin cells, fibers from clothing and furniture and the bodies and feces of insects, especially the house dust mite. This microscopic bug, harmless except to those allergic to it or its feces, feeds on sloughed-off skin cells. It thrives in bedding and upholstery.

...Martha V. White, *Bottom Line/Personal*, April 15, 1993

**In North Carolina they are considering zoning the Atlantic ocean**

This is a battle which is a clash of cultures and a fight for the Outer Banks. The innovative zoning proposal is a last-ditch effort to end an escalating battle between recreational and commercial fishermen over certain practices that anglers say are

decimating fish populations. At stake are the rights of property owners who build 5,000-square-foot resort homes and take shark-sized bites out of the shoreline. Commercial fishing villages feel development pounding at them and their way of life threatened. Over the past three decades, the population of US counties within 50 miles of the Atlantic increased 34 percent, to 55.9 million, according to the 1990 census, increasing pressures from sportsmen on the fishery.

The tension runs especially high during the fall's "bluefish blitz," when the feisty fish rush the coast, attracting sports fishermen from all over. In one confrontation, anglers were fishing should to shoulder at Nag's Head when commercial fishermen allegedly scooped up the school they were following. To anglers, commercial fishermen are a greedy lot who would sooner push a fish to the brink of extinction that lose a day's wages by changing their practices. North Carolina's Marine Fisheries Commission will hold a series of hearings on the proposal to allocate areas and times for specific recreational and commercial fishing.

...Cox News Service, May 6, 1993

**The 75th Anniversary of the Migratory Bird Treaty Act**

The Convention for the Protection of Migratory Birds, signed August 16, 1916, is one of the most significant international treaties ever signed by the United States. It was the first treaty ever agreed to by any two countries for the protection of birds. By the

late 1880s, there was some form of protection for wildlife in all states and territories. But it was a reaction to a lack of uniformity in migratory game bird hunting regulations in the late 1890s that led to the need for an international treaty. State duck hunting regulations, where adjacent states set vastly different season dates, resulted in such an uproar from sportsmen and conservationists that the Migratory Bird Act (Weeks-McLean Act) was signed into law by President Taft in 1913, but ruled unconstitutional in 1914.

To counter the question of constitutionality, a treaty between the US and Canada was proposed. Dr. T.S. Palmer of the Bureau of Biological Survey, the predecessor agency of the Fish and Wildlife Service, wrote the draft that was ratified by the US and Great Britain for Canada in 1916. Ratification removed the constitutionality question, but one more step was necessary: passage of enabling legislation. This was accomplished on July 3, 1918, with passage of the Migratory Bird Treaty Act. Opposition still remained, however, until 1920 when the US Supreme Court Associate Justice Oliver Wendell Holmes read a landmark decision in the *Missouri v. Holland* case which cleared the way for Federal control of use and



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management of the continent's migratory bird resource.

A remaining challenge not addressed by the Act is that it does not address habitat protection, it protects only birds. Because of this, cooperative programs were necessary, such as the US-Mexico Joint Committee on the Conservation of Wild Fauna and Flora that involves a strong migratory bird component. The more recent North American Waterfowl Management Plan seeks to protect adequate water-fowl nesting, migration, and wintering habitat. The 1929 Migratory Bird Conservation Act and the 1934 Migratory Bird Hunting Stamp Act began the current process of funding the acquisition of national wildlife refuges and waterfowl production areas.

....Tom Dwyer, *Fish and Wildlife News*, Winter 1993

### **All outfitted? Take a look toward, lest you forget the agony of de-feet**

No matter how much sole your boot has, should your socks slip, sop up sweat, bunch, or press a thick seam into an uncomfortable spot, you'll need to use your blister kit. "The problem with finding good socks in America is—hikers [and field workers] have short-changed themselves by buying cheap, crummy socks for so long, that's what many

retailers give them," says Michael Hodgson, a technical editor for *Outdoor Retailer*, *Backpacker*, and *Adventure West* magazines. In general, look for a form-fitting weave, especially one that incorporates a distinct heel cup. All seams should be flat, non-bulky, and unobtrusive. Wool is durable and warm, but modern technology is adding olefin, silk, nylon, acrylic, spandex, and even kevlar fibers to yarns to enhance fit and durability.

The one thing you shouldn't worry about is price. Expect to pay between \$8 and \$18 for quality socks. They're worth it. They last longer, they will save a tender foot from corns, bunions and wear-and-tear problems that can begin by ruining your hikes or field schedule and end by propelling you to a podiatrist. Here are some industry leaders: Thor-Lo (began in 1953 in North Carolina to supply boot socks to the military), call 800-438-0209 for retail outlet information; Wigwam (began in 1905 to supply woolsocks to loggers), call 800-558-7760; Dahlgren (founded in 1979 to make socks for athletic competitors), call 800,635-8539 for dealer information.

....Paul McHugh, *San Francisco Chronicle*, May 6, 1993

### **West Virginia University: An emphasis on Appalachian Hardwoods, Fisheries and Wildlife, and Recreation**

The Division of Forestry at West Virginia University in Morgantown is comprised of four Programs: Forest Resources Management, Wood Science, Wildlife and Fisheries, and Recreation and Parks Management. Wildlife and Fisheries has almost half of the total Division enrollment of 400 undergraduates and 50 graduate students.

The Appalachian Hardwoods Center and the Appalachian Export Center for Hardwoods serve to focus research attention on hardwood silviculture, timber harvesting systems analysis, and international trade of hardwoods. The Fish and Wildlife Service Coop-

erative Research unit has targeted research in fish community dynamics, fisheries toxicology and ecology, and human dimension problems in fish and wildlife management. The recreation Working Group has studied aesthetic perception of natural landscapes, in the light of gypsy moth defoliation, and has initiated a number of studies relating to tourism and the management of natural resources in the Appalachian region.

Of 28 regular faculty and three temporary, four women are regular faculty and one is temporary. Lei Bammel teaches a graduate course in research methods, and serves as Coordinator of the University Office of Service Learning. Sue Perry specializes in aquatic ecology, Petra Wood is Assistant Leader of the Wildlife and Fisheries Unit, and Mary Ann Fajvan teaches and conducts silvicultural research. Nancy Ganz has been appointed to teach several undergraduate courses in recreation.

Jack Coster has completed 13 years as Director of the Division of Forestry, and says that he is pleased that the faculty is becoming more diverse. He believes that this is to the benefit of the Division, other faculty members, the student body, and the academic process generally.

....Gene Bammel, Division of Forestry, Morgantown, West Virginia

### **August 26th is Women's Equality Day. Yeah, right**

This day is celebrated because it commemorates the passage of the 19th amendment in 1920, granting women the right to vote. The passage of this Constitutional Amendment was the culmination of a massive civil rights movement by women that began in July 1848, before the Civil War. A resolution was passed by Congress in 1971 designating August 26th as the day to honor women's continuing efforts toward equality.

....National Women's History Project, Windsor, California

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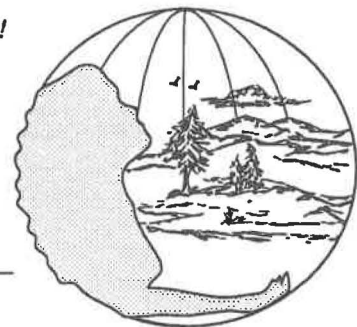
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## So who you gonna call?

Nearly 70 percent of husbands consider their wife their best friend, according to research by Drury Sherrod, a social psychologist in Los Angeles. Only about 40 percent of wives, however, consider their husbands their best friend. This is because men and women have different expectations for their friendships, Sherrod explains. How healthy your marriage is may depend on how much you get emotionally from your spouse. And while both sexes say they want a friend they can confide in and who accepts them as they are, women expect their closest confidante also to share the same attitudes and values.

This is not so important for men, who primarily want a companion, a helpmate. When women get together, they talk. When men get together, they rarely share their feelings, Sherrod reports, adding, "Because women want to talk intimately and most men don't do that, men are often not a great source of close friendship for women." Men, used to what psychologists call low-intimacy male relationships, may feel their wife more than fills the need for a confidante even though not much talking is going on. "Social support is often defined as the perceived availability of someone you can turn to for a variety of things—whether or not you actually do," Sherrod points out. For men, believing may be enough. Women need a regular demonstration of that commitment, an exchange of tears and hugs.

....Phoebe Cowles, *McCall's*, April 1993

## If you've got kids, boot the TV out the door

Seven US and Canadian studies establish correlations between prolonged childhood exposure to television and a proclivity for physical aggressiveness that extends from pre-adolescence into adulthood. All this is reported in *The Public Interest* quarterly by Brandon S. Centerwall, an epidemiologist at the University of Washington. He used an historical oddity—because of disagreement between Afrikaner- and English-speaking South Africans, that nation had no television prior to 1975—to study the effect of television on violence rates in the prosperous industrial society of white South Africans.

He studied homicide rates among white South Africans, white Americans, and all Canadians. From 1945 to 1974, the white homicide rate in the United States increased 93 percent; in Canada, 92 percent; in South Africa, the white homicide rate declined 7 percent. Neither economic growth, civil unrest, age distribution, urbanization, alcohol consumption, capital punishment, nor the availability of firearms explain the 10-to-15 year span between the introduction of television and the doubling of the homicide rate in

the United States and Canada—or the similar lag in South Africa after 1975. Furthermore, Centerwall believes that the introduction of television helps explain different rates of homicide growth for American whites and minorities.

White households began acquiring television sets in large numbers approximately five years before minority households. White homicide rates began increasing in 1958. A parallel increase in minority homicide rates began four years later.

A 14-month-old infant can adopt behavior it has seen on television. Because young children are unable to distinguish fact from fantasy, they regard television as information about how the world works. And, Centerwall says, in the world as television presents it, violence is ubiquitous, exciting, charismatic and effective: "In later life, serious violence is most likely to erupt at moments of severe stress—and it is precisely at such moments that adolescents and adults are most likely to revert to their earliest, most visceral sense of the role of violence in society and in personal behavior. Much of this sense will have come from television."

....George Will, *Washington Post*, April 28, 1993

## Religious men don't see harassment of women

With co-author David Terpstra of the University of Mississippi, Douglas Baker (of Washington State University) gleaned from court cases a broad range of sexually harassing situations and developed 18 vignettes, ranging from undirected sexual graffiti to rape. They then asked people how they perceived these situations. Using factors such as gender, religiosity, self-esteem, locus of control, and attitudes toward women, they compared perceptions of and reactions to those situations.

They found some curious interaction between their variables. For example, religious men see relatively few of the listed incidents as harassing. The more religious the males, the less they considered the incidents harassing. Religious women, however, are at the other end of the scale.

Perhaps, says Baker, religious men interpret their scriptures differently than do the women. Religious men may believe that women should be subservient, while women may interpret their religion much differently. This may, he speculates, help explain the difference between the perceptions of Clarence Thomas and Anita Hill. Baker also found a difference in how religious people and others react to sexually harassing situations. Those with high levels of religiosity attempted to rectify the situation by withdrawing or having someone else deal with the problem for them, while those with a low

## EDITORIAL

Continued from front inside cover

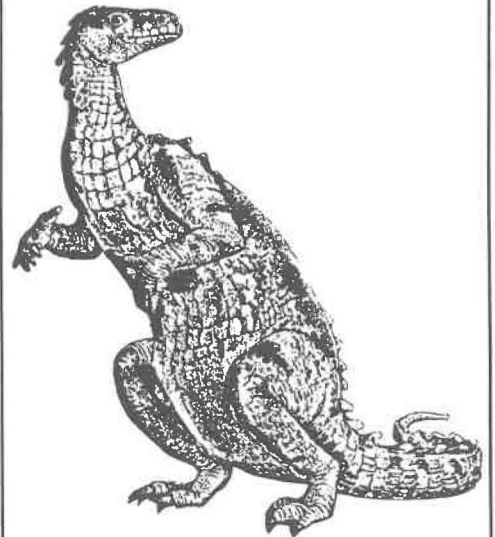
computer specialists and lawyers. I used to laugh at that, but I've been working with too many lawyers this year.

We already have a few folks who put more confidence in their database than they do in nature. Nature, after all, is so darned imprecise. But as much as I joke about technology, I know it is important. I am concerned however, that we are losing our common sense and field skills and are starting to get employees who hardly ever go out to the field. I guess I will be a dinosaur if the Forest Service of the future looks more like a Nintendo Game than Ranger Kreutzer's world.

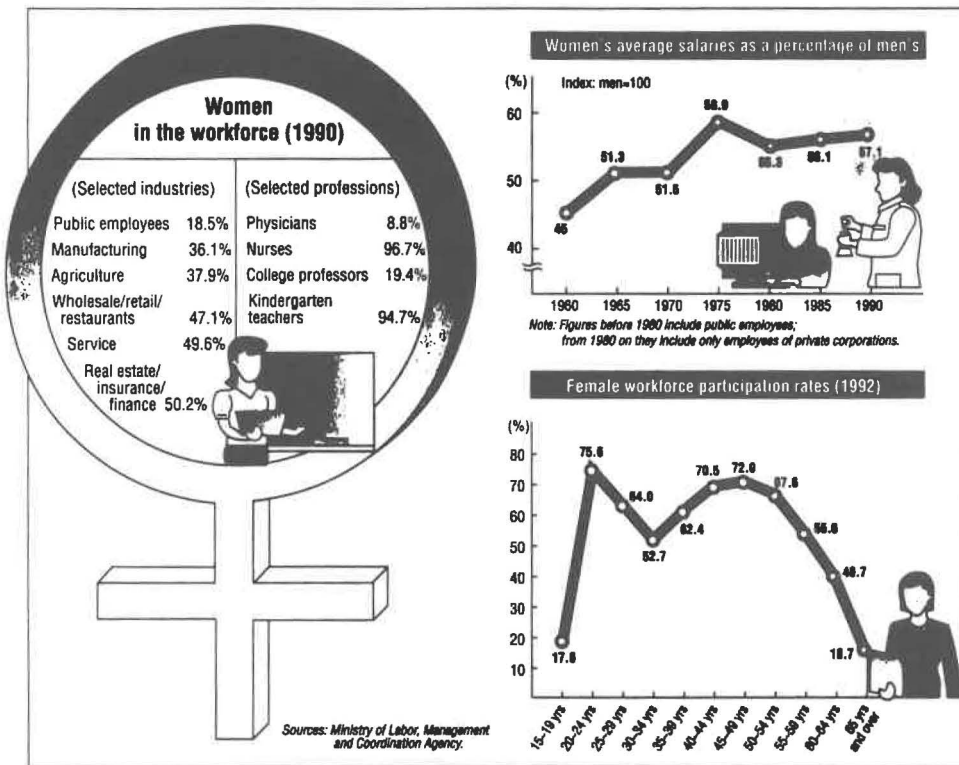
Another early warning sign for dinosaurs is when one of the songs you used to like is being re-recorded, badly, by a modern group. All those young employees look at you with disbelief when you tell them that the song was stolen from your youth. And they think Simon and Garfunkel is a law firm, and, oh my God, bellbottom pants are coming back in.

Last week they were installing a new phone system (which I still can't work) and for 24 hours the phone, FAX (yes, I finally buckled to pressure) and computers went down. What heaven.

*Elaine Zieroth is District Ranger on the Tonasket Ranger District, Okanogan National Forest in the State of Washington. Prior to that she worked in wildlife biology in California and Colorado. She is an editor for Women in Natural Resources.*



How are Japanese women doing in their workforce? (From *Look Japan* May 1993)



ber in that constituency and asks her to write a local op-ed piece. (The council helps with writing.) National figures are also scrutinized. The Women's Legal Defense Fund at 202-986-2600 invites your questions or comments. ....*Glamour*, January 1993

**Salvage Logging: Health or Hoax?**

Although salvage activities in our public forests were fostered by doctrines of prudent forest management, salvage forestry has been bastardized and subsidized to serve special interests. Since the 1960s, management agencies and the timber industry have focused salvage activities on logging to produce budget and profit windfalls. To facilitate continuing windfalls, salvage logging has been protected from normal public forestry reviews and controls. It has often become an excuse to "draw from the forest" without normal levels of social, economic, or biological protection.

The National Forest Management Act of 1976 (NFMA) paid homage to this sacred right to salvage. NFMA says, "Harvest size limits shall not apply to the size of acres harvested as a result of natural catastrophic conditions such as fire, insect and disease attack, or windstorm." NFMA also says, "Tree stands generally must reach their culmination of mean annual increment prior to harvest. This requirement shall not preclude salvage or sanitation harvesting of stands which are substantially damaged by fire, wind throw, or imminent danger from insect and disease attack." What do our forest managers interpret as "catastrophic conditions," "substantial damage," or "imminent danger?" They may consent to the science that fire, insects, disease, and wind are all vital components of a healthy forest ecosystem, but they still react as though natural disturbances are the enemy of healthy forests. The bureaucratic overreaction to natural disturbance is enforced by budgets, tree farm mentalities, and the politically influential timber industry.

....Roy Keene, *Inner Voice*, March/April 1993

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level of religiosity had a higher probability of physically or verbally reacting to the situation themselves.

....Dena Olsen, *Universe*, Spring 1993

**Holding politicians accountable**

Hungry politicians made women a lot of promises last fall. Will they be true to their word? Judith Lichtman, president of the Women's Legal Defense Fund, plans to find out. "We have to hold politicians accountable," she says, "and the place to do it is the home district." To that end, she's founded the Women, Work and Family Action Council, a network of local watchdog groups. When a politician reneges on a promise, the council contacts a mem-

The Together Foundation would like to announce TogetherNet a new communications network for those working to create a sustainable future for our planet. TogetherNet's users can receive information and send electronic mail to one another as well as to most other networks including EcoNet, PeaceNet, InterNet and MCIMail. The Foundation is currently installing a nationwide toll-free 800 line with the University of Vermont, listing information on about 60,000 environmental and social change organizations and projects. For more information contact Sharon Resnick, 130 S. Willard St., Burlington, Vermont 05401 (802-862-2030).

A symposium on Minority Participation in Forestry and Forestry-Related Sciences (MINFORS II) will be held October 24-26, 1993 in Corvallis, Oregon. Sponsored by major federal forestry agencies, forest industry, natural resource organizations, and universities with natural resource programs. For more information, contact Conference Assistant, College of Forestry, Oregon State University, Peavy Hall 202, Corvallis, OR 97331-5707 (503-737-2329).

If you would like to test your own soil, there is a compact system of color-coded tablets, charts and test-chambers produced by Kinsman Co., Inc. You can measure pH, potassium, nitrogen and phosphorous, and then consult included advice on improving soil conditions based on test results. Write them at River Rd., Point Pleasant, Pennsylvania 18950 (800-733-5613), ask for item RTKI at \$17.95.

If you are interested in volunteering for an archaeological dig, send for the Passport in Time newsletter, called The PIT Traveler, for the scheduled Forest Service projects and dates. Write PIT Clearinghouse, PO Box 18364, Washington DC 20036. The program dates from 1988 when the Forest Service's Superior National Forest started a program similar to one which was popular in Canada. To date 2,500 people have participated.

Health and the Environment: Meeting the Challenge for Human Development will be held June 20-23, 1993 in Arlington Virginia. Three

of the keynote speakers are women: Gita Sen, visiting professor at Harvard; Joan Martin-Brown, representative for the United Nations Environment Programme to the United States; Fatima Mello is with the Brazilian Institute for Social and Economic Analysis. For information FAX NCIH at 202-833-0075, or call 202-833-5903.

Ralph Nader's non-profit organization has a new book out to assist women in getting their money's worth in the marketplace. Nader asserts that women are overcharged for goods and services, in addition to making 74 cents for every dollar earned by a man. Send \$10 to: Why Pay More, PO Box 19367, Washington DC 20036.

The World Forest Institute will host a conference to Explore Stand Inventory Technologies for Forest System Management July 11-13, 1994, in Portland, Oregon. The conference is sponsored by the International Union of Forestry Research Organizations, USDA Forest Service and the Western Forestry and Conservation Association. Write them at 4033 SW Canyon Rd, Portland OR 97221 (503-228-1367).

Looking for interesting new work? How about a career in zoos? Send for a video called Zoo Careers (30 minutes) for \$65. Send it to Education Division, Metro Washington Park Zoo, 4001 SW Canyon Rd., Portland, OR 97221, (503-220-2781).

The Organization for Equal Education of the Sexes, Inc. has a brochure listing their posters of famous women. Among them are Barbara McClintock (geneticist), Rachel Carson (marine biologist and writer), Grace Hopper (computer programmer and developer of COBOL). Write OEES at PO Box 438, Dept. WA, Blue Hill, Maine 04614.

The Arbor Day Foundation's conference to promote peace between trees and utilities will be held December 5-7, 1993 in Nebraska City, Nebraska. For information, write them at PO Box 81415, Lincoln, Nebraska 68501-1415 (402-474-5655).

Clemson University has a brochure about their forestry education


extension courses which run through 1994. Ask for FORCE materials and contact Jacqueline Haymond, Associate Professor, Department of Forest Resources, Lehotsky Hall, Clemson, SC 29634-1003 (29634-0310).

The Olympic Natural Resources Center at the University of Washington is sponsoring a landmark forestry symposium August 24-26, 1993 in Portland, Oregon. The subject will be to re-examine the state of our knowledge with respect to forest systems and to explore those implications. For information, write UW College of Forest Resources, AR-10, Continuing Edu-

cation, Seattle WA 98195 (206-543-0867).

The Society of American Foresters convention will be held November 7-10, 1993 in Indianapolis. Write SAF at 5400 Grosvenor Lane, Bethesda, Maryland 20814-2198 (301-897-8720).

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Permit No. 120