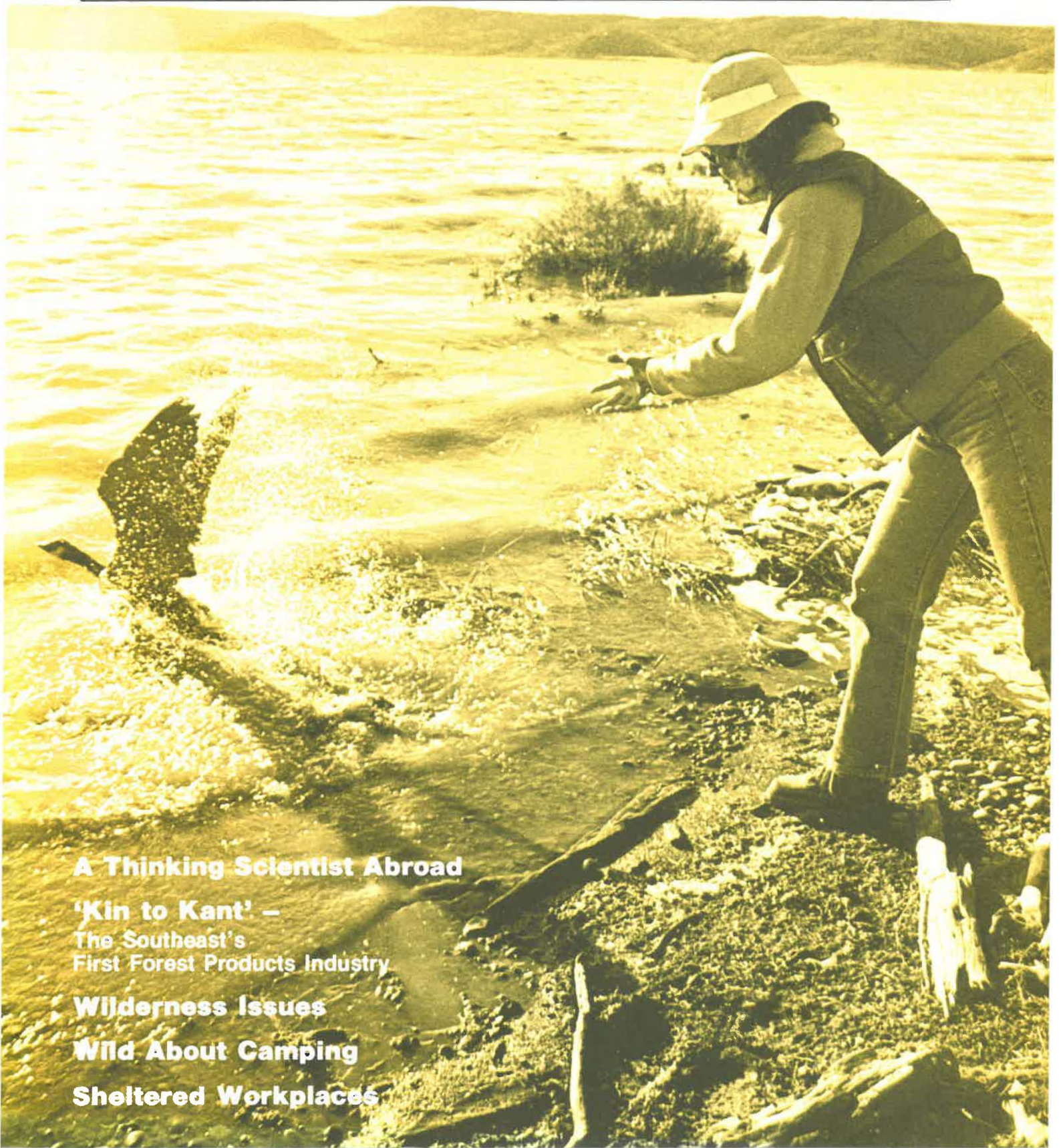


women in

formerly *women in*
FORESTRY

NATURAL RESOURCES

for professionals in forestry, wildlife, range, fisheries, recreation and related fields



A Thinking Scientist Abroad

'Kin to Kant' –
The Southeast's
First Forest Products Industry

Wilderness Issues

Wild About Camping

Sheltered Workplaces

YOU CAN MAKE A DIFFERENCE

Have you ever caught yourself thinking “the next time around I’m going to be a man,” or “this wouldn’t be happening to me if I were a man,” or “they shouldn’t be allowed to get away with this” or “why doesn’t somebody do something about this?” The point, however, is not to lament that it is still primarily a male-dominated society but to 1) recognize that there are injustices, 2) realize that actions can cause changes, 3) determine what recourses are available, and 4) do something. Remember the joke about being able to divide people into three groups? “There are those who make things happen, those who watch things happen, and those who wonder what happened.”

Many significant strides have been made due to the women’s liberation movement, but much remains to be done. Perhaps you have reflected on the nature of feminism but decided that you are not an active feminist. Feminists, however, are united by the simple belief that the inferior social status of women is unjust and needs to be changed. There have been very few Gloria Steinems or Betty Friedans, but every person can contribute towards improving conditions for women and/or making the case for individual rights.

What can you do? And would what you do make a difference? You might be surprised to find you have a great deal of impact. In some cases, writing one letter, making one phone call, or insisting on your rights in a given situation are all that are needed to make a difference. For example, I teach in a college that at an earlier time was comprised of an all-male faculty as well as an all-male student population. After years of being annoyed by the sexist language in the cover letter to a graduation check list, I wrote the associate dean responsible for the offending letter. I indicated that I objected to the following statements: “Has the student properly identified his major and degree? Will the student have completed all his required courses and the minimum number of hours required for his degree as of the end of the semester? If not, his name should be deleted and so noted.” In my letter I pointed out tactfully that using masculine pronouns was no longer appropriate given the current makeup of the student body, that pronouns were not even necessary, and that to many persons sexist language is offensive, even though not intended. I also indicated how the statements might be altered. Within two weeks, I received a letter in which the dean was “sorry for the language on the graduation check sheet” and that “it has been corrected.” For years the checklist language had bothered me when all the action required had been a half page letter to the right person.

Obviously, not all efforts are going to receive positive awards. You will feel better, even so, for making your opinion known. Furthermore, you never really know what action might result. I believe it is important, however, not to be emotional, accusatory, or demanding. It is helpful to be tactful and to present alternatives.

How many times do you receive personalized mass mailings the contents of which begin with “gentlemen” or some equivalent? To these, I usually respond by pointing out that what could be perceived as sexist language is not in their best interest, that X percent of the field is comprised of women, that some people will not do business with firms that appear to discriminate, that the public is actually over 50 percent female, that I will not follow through on whatever they have offered in the letter, and that I hope they can take these comments in the enlightened spirit in which they were made.

What can you point out to others who have a single perspective or who have been doing things as they have been done in the past? Are you, for example, bothered by sexist language used by local reporters? If so, tell them. Count the number of times men and women appear in pictures of various publications. If women are underrepresented, express your concerns to the editors of those publications. If you don’t agree with the roles that are assigned to men and women in various ads, remind the ad executives that women use computers, large equipment, and are in management positions. Likewise, if something is being done that you appreciate, give some positive reinforcement to those responsible so that it will continue to be done that way and, perhaps, even be done that way more often.

Let us know at WINR what action *you* have taken that has made a difference. Send us a copy of the letter or phone conversation and we will include it in a future issue.

—Lei Lane Burrus-Bammel

women in NATURAL RESOURCES

VOLUME 9, NUMBER 1



Thames Television, Ltd., U.K.

COVER Photograph by Meg Gallegher

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MANAGING EDITOR
Dixie Ehrenreich

EDITOR
Lei Bammel
CONTRIBUTING EDITOR
Karen Lyman

ASSISTANT EDITOR/DESIGN
Caroline Hagen
SECTION EDITORS
Christine Moffitt
Jonalea Tonn
Berta Youtie
Linda Hardesty

ADVERTISING/MARKETING
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ART DIRECTOR
Lorraine Ashland
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CARTOON
Deann Zwright
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LETTERS AND OPINIONS

√ I would like to subscribe to *women in NATURAL RESOURCES* (formerly *women in Forestry*). I am a graduate student in Environmental Studies at the University of Montana. Last winter while conducting research for a paper on "The Changing Role of Women in the Forest Service," your professional journal was recommended to me. I was disappointed that the University of Montana Library does not have a subscription. However, they DO have bound issues of *Good Housekeeping* and *Better Homes and Gardens* dating back to the 1950s—what a disappointment. I did register a complaint to the library and find it amazing that the School of Forestry also did not subscribe. Eventually I was able to obtain copies from an individual. I do appreciate the journal and have decided to subscribe. Thanks for the quality publication!

Kari Gunderson
Environmental Studies
University of Montana

Eds. note: We'll send your note and a complimentary copy to your library to see if it will do some good. Any library can request a sample copy from us free of charge.

√ Does *women in NATURAL RESOURCES* have any type of job service or résumé file? I've been working in the woods for 12 plus years as a contractor, am an honors graduate of the University of Idaho ('83) and am looking for permanent work.

Thank you for any help you might be able to give.

Kristi Olsen
Eugene, Oregon

Eds. note: The job information telephone number is on page 52.

√ Enclosed is my subscription renewal for \$15.00.

I support your decision to change the name to *women in NATURAL RESOURCES*. I often ask other women if they are familiar with *women in Forestry* and will now no longer have to explain that the journal is not just limited to forestry topics.

I am now the computer archaeologist for BLM's Anasazi Heritage Center near Dolores, Colorado. It is quite a switch from mostly male co-workers to a predominantly female staff and little field work, but I am very pleased. Your issue last fall on computers was quite timely. I

am still a beginner, but learning quickly. I am impressed with both the variety and the direct application of your articles to my career. Keep up the good work.

Victoria Atkins (formerly Sounart)
BLM Anasazi Heritage Center
Dolores, Colorado

√ I am writing in regards to the results of the work group that I was involved with at the Women in Natural Resources—Moving toward the 90s Conference, held April 21–23, 1987, St. Paul, Minnesota.

As a large group we identified issues of importance to us that we would like to take action on. After cutting the list down to the top ten issues, the group members attended an action meeting on the issue of their choice. This allowed members to put ideas together on future directions to take on that issue.

As a member of the action group on Local Networking and Support Groups, I would like to pass on information that we believe *women in NATURAL RESOURCES* would be interested in. It is a major concern that there be a national network for women in natural resources and that there be statewide chapters that allow local groups to take action on specialized topics. Statewide chapters are also more accessible to the people in the field.

Several of us in the work group are members of Women in Forestry and suggested that this might be the organization to join to accomplish this goal. One member of the group, Sue Morgensen of Scottsdale, Arizona, has started a statewide support group called the Women in Natural Resources Society (WINRS). Since its inception the group has grown tremendously and members are from all over the U.S. Statewide chapters (or regional chapters) could be started by interested persons.

All work group members were in agreement that if this fusion of groups were to happen, the title should be Women in Natural Resources to encompass *all* fields.

The members of this work group are curious to hear the opinions of you and your staff, and other members of WIF. Let's all work together for a common support group.

Patty Beyer
Michigan DNR
Newberry, Michigan

√ Recently I attended the "Women in Natural Resources—Moving toward the 90s" conference in St. Paul, Minnesota. This conference proved to be a consciousness-raising event

as well as informative. These midwestern women provided an action-packed session with ample opportunities to network. The presentations from women who have "made it" were excellent. The concurrent sessions and small working groups were applicable to women working in the field. Those involved in making this conference a success should be commended.

I would strongly recommend field-going women to attend a conference of this calibre the next time one is offered.

Judy Henry
Black Hills National Forest
Hill City, South Dakota

Postscript

Our Tenth Birthday Is Coming

As you can see, the change in the name of the journal is not the only thing that has been completed for this issue: design changes, accompanied by changes in personnel (or shifts in some cases) bring a new look as we anticipate the tenth anniversary of the publication.

- Our formatting and typesetting processes have been brought up-to-date, taking advantage of new personnel and new technology.

- Better quality papers and phototypesetting should improve readability.

- A shift in emphasis in the departments is underway.

- We have a continued commitment to quality manuscripts and editorial policies which include peer-reviewed sections for those of you who desire it.

- We are searching for advertisers with products designed to assist women professionals live better lives.

To help us make the journal more useful to you, we ask that all of you fill out the questionnaire in this issue and mail it back. Copy it for others who are interested. We need to have accurate information in order to implement our planning.

The personnel changes are equally dramatic. Molly Stock will leave the journal with this issue to pursue actively her other editor's post with the new journal *AI*. Molly is a full professor at the University of Idaho with a joint appointment in Forestry and Engineering. This lady has her plate full! She hopes to ladle out the occasional spoonful of help to us; she emphasizes that this in no way diminishes her concern for women who work in the natural resources fields—it is just time to open up a new niche for herself. Karen Lyman, a consulting forester, moves into the contributing editor's slot. She writes for a Washington newspaper and feels this would better enable her to contribute from afar. Her articles (especially the humorous ones) have been some of the most popular in the history of the journal. The new assistant editor Caroline Hagen has been an editor for scientific journals for a university press and for publications in the humanities, computing, and business. She brings her skills of desktop publishing, writing, design, and editing to the everyday running of the journal. John Pool, new to WINR's production leadership, will also create a viable advertising campaign. He brings a decade of experience in running newspapers and production staffs. Watching him at work will be a learning experience for us all.

LETTERS AND OPINIONS

CORRECTION

I am finding Marilyn Hoskins's Mali story being attributed to me due to a deleted footnote in my article "Women in Subsistence Forestry: Cultural Myths Form a Stumbling Block," reprinted from a SAF article in the last issue. I'd appreciate very much your publishing a note to the effect that the work to be consulted on Mali is: Marilyn Hoskins. 1980. "Community Forestry Depends on Women." *Unasylva* 32(130): 27-32.

Louise P. Fortmann, Ph.D.
Asst. Prof., Department of Forestry and
Resource Management
University of California, Berkeley

Penny Morgan, an assistant professor at the University of Idaho, is the new editor for Research in Progress. Her specialties are fire ecology, fire management, agroforestry, and shrub biology. She also manages the continuing education office for the College of Forestry, Wildlife, and Range Sciences. Research in Progress is not in this issue, but Morgan asks that readers send in one to three paragraphs about current research projects so that the section can continue to be a dynamic source of information and exposure for projects in their early stages. Christina Petersen, extension forester at the University of Massachusetts, has kept her eyes on the people and events of the northeast for us. She is going on leave for a time and we will miss her contributions. Look for her interview of Mollie Beattie, Commissioner of Forests, Parks and Recreation in Vermont in an upcoming issue. Linda Hardesty, assistant professor of range management at Washington State University, is still working hard on the Agroforestry issue, but has time to consider another manuscript or two before deadline. Bertie Youtie, photo editor (now with the Nature Conservancy in Portland), wanted to be sure you sent in photos for the contest. Check the rules and regulations printed on page 41.

We are looking forward to next year and are planning some dynamite issues for the tenth anniversary. Most of the pioneers who started the publication are now managers, researchers, and professors. We are going to try to get them to talk about what the last ten years have brought them. For us at the journal, the last five years have seen us grow from a newsletter into a full-fledged publication with subscribers around the world. We are proud of who we were, who we are, and where we are going.

Dixie Ehrenreich
Managing Editor

DIRECTOR OF THE KELLOGG BIOLOGICAL STATION

MICHIGAN STATE UNIVERSITY seeks a resident director of its Kellogg Biological Station. The responsibility of the director is to provide creative leadership and to guide future development of KBS programs in ecology, natural resources, and agriculture. The University is committed to build at the Station a program of excellence in research, education, and extension directed toward the comprehensive understanding of the interdependence of natural and managed terrestrial and aquatic systems and the conservation of natural resources.

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Candidates should have an established record of scholarly activity, which includes research experience, have demonstrated leadership ability, and possess a strong interest in interdisciplinary research and teaching.

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College of Natural Science
103 Natural Science Building
Michigan State University
East Lansing, Michigan 48824
(517) 355-4472

Closing date for applications is November 1, 1987, or until a suitable candidate is identified.



BOOK REVIEWS

Book Feature

Earth

Anne and Paul Ehrlich
Franklin Watts Inc. 1987

EARTH BY ANNE AND PAUL EHRLICH is a magnificent summary perspective of our planet. It follows the geological and biological origins of the earth, and documents the present and future options for our world. The book is very well organized into three parts. The first section, entitled "An Island of Life," sets the geological and biological stage for the present-day earth. The second section, "Earth's Predicament," details the costs of our overpopulation. In the chapter "Fouling the Nest" the authors relate the human population's impact on its life-support systems as roughly the product of three factors: the numbers of people, the per capita level of consumption, and some measure of the average amount of environmental damage done per unit of consumption (or the technology factor). In the final section, entitled "The Human Response," the Ehrlichs document the history of the environmental movement and look at the options for the future. The book is particularly enhanced by 151 illustrations (photos and drawings in both black and white) chosen carefully from myriad sources. Each of these illustrations with its caption tell a story.

The combination of text and illustrations and the very modest price make this book a must for everyone's home library or office, where it will command respect and discussion.

New in the Ehrlichs' message is that we can no longer separate our actions toward the earth into environmental and other interests. Nuclear proliferation threatens the future of our earth. This threat not only derives from the direct hazards of radiation from nuclear explosions and from nuclear winter, but perhaps more from the accelerated commitment of our global resources—human, natural, and monetary—to this arms race. This nuclear proliferation leaves us with relatively few resources left to spend on humanity and our earth's future. Once again the Ehrlichs' holistic approach is hardhitting and absolutely on target. Reading *Earth* is a must!

The Authors

ANNE AND PAUL EHRLICH have worked as a team in research and writing since 1959. Together they have written three textbooks on human population, environment, and resources, as well as numerous articles and several books on these issues for laypeople, including the book, *The End of Affluence and Extinction*.

Anne Ehrlich is a senior research associate in biological sciences at Stanford University. She has written or coauthored many articles on the issues of population, resources and environment, and the environmental consequences of nuclear war. She was a consultant for *The Global 2000 Report to the President* under the administration of President Carter. She has served tirelessly on the boards of directors of numerous organizations and conferences, such as: Friends of the Earth (1975–1985), Conferences on the Fate of the Earth (1980–1985), and the Board of the Center for Innovative Diplomacy since 1981. She was commissioner for the Greater London Area War Risk Study (GLAWARS, 1986). Currently she chairs the Sierra Club's Committee on the Environmental Impacts of Warfare.

Paul Ehrlich is professor of biological science and Bing Professor of Population Biology at Stanford University. As a biologist, he has written over 100 scientific papers and a series of textbooks in evolution, ecology, and animal behavior. In the field of human ecology, he has authored hundreds of articles and several books. His most popular books include *The Population Bomb* and *The Machinery of Nature*. He has been elected member of the National Academy of Sciences, and is a fellow of the American Academy of Arts and Sciences. He has received many honors and awards, including the John Muir Award, the highest honor given by the Sierra Club.

Reviewer Christine M. Moffitt is book review editor of *women in NATURAL RESOURCES* and adjunct professor in the Department of Fish and Wildlife Resources at the University of Idaho.

PUBLICATIONS

Success at reclaiming bentonite mine spoils in the Northern Plains does not come easy. One of the main obstacles involves the infiltration rate of water into plant growth media. Precipitation is sparse in this region, and when it does fall, little filters into the hard clay spoils.

Scientists at the Rocky Mountain Station have found that amendment of sawdust into the spoils can increase the infiltration rate up to 300 percent over non-amended spoils—a mean infiltration rate that is only slightly lower than the mean for all range-soil groups in the Northern Plains. Studies show that other amendments such as gypsum and inorganic fertilizers were not as effective as sawdust.

For more information, write the Rocky Mountain Station at 240 W. Prospect Street, Ft. Collins, Colorado 80526-2098. Request the imprint *Infiltration Rate of Bentonite Mine Spoil as Affected by Amendments of Gypsum, Sawdust and Inorganic Fertilizer*.

Readings on Ecofeminism comes from an annotated bibliography prepared by participants in a Faculty of Environmental Studies course on Ecofeminism offered in the summer of 1986 by Miriam Wyman. Contributors are Anne Champagne, Lisa Dunn, Allan Greenbaum, Jane Horsley, Tanya Lewis and Joyce Peterson. Photocopies of the complete (8pp) bibliography are available for \$1 from Women and Environments, c/o Centre for Urban & Community Studies, Room 426, 455 Spadina Avenue, Toronto, Ontario M5S 2G8 CANADA.

If you agree to be interviewed over the phone by a reporter, take the call in an empty office devoid of distracting desk memos, appointment calendars, and flashing "call-waiting" lights. You will be better able to concentrate on framing your answers precisely, says media consultant Jack Hilton in *How to Meet the Press, A Survival Guide* (Dodd, Mead, \$19.95).

In KC Publications' *National Park Service: The Story behind the Scenery*, three key men who have lived the NPS story—Horace Albright, Russell Dickenson, and William Penn Mott, Jr.—discuss the park system from its beginnings to the present day. To order, write KC Publications, Box 14883, Las Vegas, Nevada 89114 (or toll free number 1-800-626-9673). Hardcover \$17.50; soft \$9.75.

As we take the time this year to celebrate the bicentennial of the Constitution, many will have the opportunity to discuss and reflect with others on this great document. In order for us to provide an accurate and informative portrayal of the events leading up to the Constitution, we should take time not only to brush up on the Constitution itself, but, if at all possible, the following material should be considered for possible reading:

• *Framers of the Constitution*. This publication is available through the National Archives. Its order number is 200045. Additional information is available through National Archives Trust Fund, Dept. 425 (NEPS), Room G-1: Cashier's Office, Washington, D.C. 20408 (202-523-3181).

• *Signers of the Constitution and The Framing of the Constitution*. These publications are available through Eastern National Park & Monument Association, Independence Agency, 313 Walnut Street, Philadelphia, Pennsylvania 19106 (215-597-7129).

Since nearly every family has some stake in Social Security it behooves you to learn as much as possible about your rights, benefits and allowances. To help you, the Social Security Administration is offering a 35-page, easy-to-read, updated booklet, *Your Social Security*. For your free copy of the January, 1987, edition, write to: Consumer Information Center, Dept. 31, Pueblo, Colorado 81009.

Courier, the newsletter of the National Park Service, has devoted its entire April, 1987, issue to "National Park Women—Then and Now." Sweeping history into its pages, the issue provides a series of feature articles and photographs of women and women-inspired historic places maintained by the NPS. A vivid account of harsh lives, imagination, and determination is "The Women of Fort Union," which begins the issue. The special problems and intelligence of the modern NPS professional are equally treated. A "good read" with many good ideas and pleasant surprises.

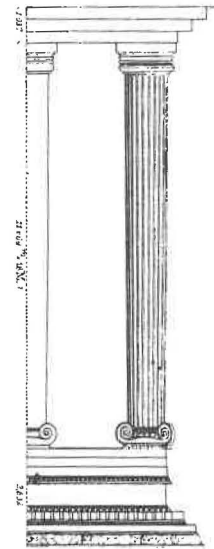
The *State-by-State Guide to Women's Legal Rights*, published by the N.O.W./Legal Defense and Education Fund and Dr. Renée Cherow-O'Leary, is now available.

The last decade has seen a quantum leap in Australia toward recognition of Aboriginal rights, in particular those regarding land resulting from the Land Rights Bill (Northern Territory) of 1976. Not unrelated to this is a parallel leap forward in Aboriginal anthropology by an increasing number of young "issue oriented" and "interpretive" ethnographers. *Daughters of the Dreaming* (Winchester, Massachusetts: McPhee Gribble/Allen and Unwin, 1984) is an outstanding example of this "new breed." Author Diane Bell clearly locates her interpretive ethnography of the women of Warrabri (a central desert Aboriginal community) within the feminist tradition of cross-cultural studies of gender, and within the fairly new Australian tradition of contemporary ethnography.

Particularly interesting is the discussion of negotiation between groups and between genders, relating to secret and sacred objects and ritual behavior. Through such negotiation the traditional Dreamtime Law adjusts to contemporary needs and problems faced by men and women. In her account of the shared responsibility of women and men concerning a young man's initiation Bell argues that while men are responsible for selecting their son's initiator/wife's-father, women are equally responsible for selecting their son's mother-in-law. Should these separately selected individuals not be a married pair, a "problem" requiring political/ritual negotiation and resolution results and involves both men and women equally. Indeed, as has been demonstrated many times before, often no distinction is made between Aboriginal secular politics and ritual activity. What Bell does here is

to demonstrate that in Warrabri life, women are as much a part of the political/ritual activity relating to land and law as are the men. But where the women are not an equal force and participant is shown to be in those roles and activities in the community that are imposed by, or borrowed from, the dominant white society. Here is where men have been accorded an unequal amount of new power and privilege reflecting the imbalance of power and roles accorded to males and females in White Australian society.

Students, scholars, the public, and politicians will surely find much of interest in this engaging and important contribution to our understanding of Aboriginal culture and society as it includes women.



From the Nature and Natural Sciences List

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John Baker

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PUBLICATIONS

The new *AFS Directory of North American Fisheries and Aquatic Scientists* (2nd edition) has been published. The Directory contains more than 9,000 names of aquatic scientists and includes job titles, phone numbers, addresses, and professional specialties and activities. In addition to the alphabetical listing, names are presented geographically by state and also by disciplinary specialty. It is an excellent reference document and nearly a third more comprehensive than the original Directory. Produced in the AFS Central Office, credit goes to Beth McAleer who had direct responsibility for the project and Susan Bowman who did the computer inputting. You will find it an almost indispensable reference document, with information available no other place. The price is \$25, and it is available from the central office. The *1986 AFS Membership Directory and Handbook* is also available from the central office. This year's edition contains over 100 pages and includes the newly-revised Constitution and By-Laws. Office staff member (and AFS member) Beth McAleer deserves principal credit.

A new *Fish Culturist Registry* has been produced and published by the AFS Fish Culture Section. The Registry provides background information and expertise for over 700 members involved in various areas of aquaculture, and is a fine publication, which should be very useful to any fish culturist. The background information includes title or position held, educational history and work experience. 1985-1986 Fish-Culture

Section members receive a free copy while nonmembers may order a copy for \$10 from Fish Culture Section, c/o Nick Parker, 503 Bibb St., Marion, Alabama 36756.

The Grand Canyon Natural History Association has combined full-color reproductions of the paintings of Cynthia Bennett (who chooses themes and views from various national parks) with an introduction by Ann Zwinger and historical essays by Susan Lamb. The book illustrates the magnificence of Park Service areas and features women who are actively interpreting them. *Lighfall and Time* is available through the Grand Canyon Natural History Association, P.O. Box 399, Grand Canyon, Arizona 86023 for \$14.95 soft, or \$24.95 hardbound.

The Brookings Institute has just published *Gender and the Workplace*, edited by Clair Brown and Joseph A. Pechman. Social scientists from a wide range of viewpoints consider the dramatic shift in women's participation in the workforce and consequent socio-cultural changes. Among the many noteworthy contributors are Heidi Hartmann, Myra Strober, and Lourdes Beneria. Beneria examines how subcontractors employ women. Contact the Brookings Institute, 1775 Massachusetts Avenue, N.W., Washington, D.C. 20036.

Vera Norwood (University of New Mexico) was awarded an American Council of Learned Societies Grant-in-Aid for the summer of 1987. She will work with the Rachel Carson papers at Yale University for research toward her book *The Ground We Walk On:*

Women's Traditions in American Natural History.

Developments in research, design, and establishment of windbreaks for conservation highlighted the first International Symposium on Windbreak Technology held in Lincoln, Nebraska, in 1986. Three symposium publications will soon be available: (1) abstracts of the papers, \$7; (2) a bibliography of publications dealing with windbreaks, \$15; and (3) a textbook to be developed from selected symposium presentations, \$45. Address all requests for these publications to: International Windbreak Symposium, 101 Plant Industry, University of Nebraska-Lincoln, Lincoln, Nebraska 68583-0814.

The Women's West, edited by Susan Armitage and Elizabeth Jameson was published this spring by the University of Oklahoma Press. This collection of twenty-one articles attempts to see the West anew, through the eyes of the women who were actors in their own lives and in the history of the West. From diaries, public records, interviews, art, literature, letters, and other sources, the contributors build a portrait of the West as it was experienced by men and women of all ages, classes, and ethnic groups.

The Constitutional Issues in Local Coastal Resource Protection (SGR-85) is intended to assist local government officials to examine constitutional issues for consideration in developing land use controls. For \$3.50 from the Sea Grant Extension Program, G022 McCarty Hall, University of Florida, Gainesville, Florida 32611.

A Thinking Scientist Abroad

A Life-long Fascination With *Gerridae* Leads the Author
to Study the Nature of Waterstriders In Indonesia
and the Nature of Humans In Kenya

DIANE M. CALABRESE

WATERSTRIDERS, MEMBERS OF the insect family Gerridae, fascinated me long before they became the focus of my basic research. By using their middle legs as oars, hind legs as rudders, and forelegs as raptorial tools for feeding on hapless invertebrates and relatives trapped in the surface film, waterstriders have successfully exploited the semiaquatic environment for at least 30 million years. The success of the group can be measured by its world-wide distribution; the 600-odd species inhabit every sort of water from the most pristine fast-flowing streams to areas of open ocean over 2000 miles from the nearest land.

Studying gerrids has provided me with two kinds of opportunities. In the most immediate sense my studies of gerrid ecology and evolution have provided me with the immense gratification that comes from being able to ask a question in science and seek an answer to it. At another level my work on waterstriders means that I have often had a legitimate reason for being in an area which otherwise would be designated a reserve, and therefore, restricted from public access.

Perhaps it is not surprising that as a scientist working on reserves, I began to ask questions about the nature of preservation of flora and fauna as it is practiced globally: Can there be a management plan which successfully balances minimum access to reserves and maximum preservation? Do managers of reserves entertain philosophies of land use which conflict with management plans they must implement?

The questions I asked became the basis of a

proposal to the W.K. Kellogg Foundation National Leadership Fellowship Program. And, in 1983 I was awarded a three-year grant by the Foundation to explore and to develop interdisciplinary skills by so doing.

The last two years have found me trying to maintain my basic research program, while devoting a large amount of time to my Kellogg-funded project, a project which in itself includes much travel as I make in-residence visits to reserves world-wide. The summer of 1985 took me first to Indonesia in pursuit of field data on waterstriders, and then, immediately to Kenya on my Kellogg work. In providing a short and roughly chronological account of the summer, I hope to convey some of the many joys which have come from combining two very different types of scholarship.

Funds from a grant from the National Geographic Committee for Research and Exploration and a grant from the Board of Advisors at Dickinson College made it possible for me to participate in the Project Wallace Commemorative Expedition to Northeast Sulawesi (Indonesia). (Funds from an Erna and Victor Hasselblad grant will support analysis of data in the laboratory at Dickinson.) The year-long 1985 expedition was mounted by the Royal Entomological Society of London in cooperation with the Indonesian Institute of Sciences. The Project Wallace Expedition derived its name from Alfred Russell Wallace, whose fieldwork in the Indo-Australian region in the 19th century contributed to his ideas about evolution as a process.

A base camp for the expedition was established at the southern border of the Dumoga-Bone Park/Reserve. It was for the Project Wallace base camp that my husband, Peter Tallerico, and I set out on May 15. (Peter

was able to spend three weeks in Indonesia with me as a field assistant before returning to his regular full-time position as a senior staff nurse at Harrisburg Hospital.) Travelling to Jakarta, even with a trunk full of field gear (or “kit” as the British Service people referred to it), we encountered no problems. Being processed in Jakarta by the police and by the Indonesian Institute of Sciences took time, but went smoothly.

Two days after arriving in Jakarta we returned to the airport for a 5:30 a.m. flight on Bouraq Airlines to Manado in northeast Sulawesi. After five hours of flying on a Vickers Viscount—a real simulation of what the 1950s must have been like (the stewardesses even passed around cigarettes on a tray)—and a very steamy hour on the ground at Balikpapan, Kalimantan, we arrived in Manado.

After half a day of police processing in Manado we set out by Landrover for the five and one-half hour drive to Toraut and Project Wallace base camp. All transport to and from base camp was by Landrover. The expedition brought three Landrovers into Indonesia. The Landrovers are maintained by British Service people and they will be given to the Government of Indonesia when the expedition concludes. Scientists could not drive the Landrovers, and the arrangement provided a subtle way for the British Service people to keep track of us.

The Service people had gone through a rigorous competition and had helped subsidize their own airfares in order to take part in what was labelled for them “Adventure Training.” Somehow it must have often seemed something quite different as they did their best to prevent scientists from losing direction on the way to Edward’s and 1440 subcamps.

We arrived at base camp in the dark, and we were pleasantly surprised that we would have a room in an old irrigation building—i.e., we would not be living in a tent, as were most of the Service people. The next morning we were processed by the police at Toraut, and then we were ready to begin our work.



Peter Calabrese

The author collects gerrids in a stream in northeast Sulawesi.

Specifically, I had set out to accomplish a systematic study of within-habitat diversity of the

waterstriders of northeast Sulawesi. For a given habitat I was interested in knowing how many species overlapped, the sizes of the individuals in each of the overlapping species, and how individuals in mixed groups of waterstriders spaced themselves with respect to one another. Some work involved collecting and preserving specimens for later analysis (e.g., measurement) back in the laboratory, and some work involved taking photographs and recording habitat conditions (e.g., temperature, rate of flow) in the field.

In the course of the six weeks I was in Sulawesi I spent every day in the field. My time was not only spent in the Dumoga-Bone Park/Reserve, but also visiting the north and south coasts and in most of the stream beds of northeast Sulawesi.

The support given to me by the British Service people made it possible to sample from a wide range of habitats in six weeks. The Service people not only drove Landrovers, but also helped carry gear into the forest and helped to collect. I encountered Phase II Service people in mid-May, or about three weeks after they had arrived at base camp, and several of the individuals had already developed into serious amateur lepidopterists. And, when they were not carrying on their primary duties of repairing Landrovers, surveying, or maintaining the base- and sub-camps, they could be seen wandering off with a butterfly net.

Peter and I soon adjusted to the conditions at base camp. We washed clothes without electricity in the evening. Water runs had to be made to the river twice daily. Mice and rats were simply accepted. Beer was always warm and “screech,” whether it was labeled whiskey or gin, was always undrinkable. The close living conditions threw everyone into everyone else’s life, and we knew it was going to be very difficult to say goodbye to people. Peter departed on 8 June and was sad to leave. I would stay until 2 July, and I was even sadder.

The interest of the British Service people in the projects of the scientists was keen and after dinner some scientists would give a presentation. After my presentation everyone began to offer gerrid observations to me.

When I think about the weeks spent with Project Wallace, a kaleidoscope of images appears in my mind: It was impossible to collect anywhere outside the park/reserve without attracting a crowd of adults and children, and my Bahasa Indonesian vocabulary grew as I tried to explain my activities. We were twice stuck in a Landrover in the Malibagu River and residents of the village of Malibagu helped to pull us out. The BBC film crew was a great diversion for the Service people, even more so for one of the scientists from the British Museum who could not seem to pull himself from them. There was a bat market in Kotamobagu where live bats were sold for food and where a visiting mammalogist had found his best “collecting” of bat specimens. All the markets I visited sold roasted rats. And, dogs were eaten like cows. (I never adjusted to the sight of dogs with bamboo spiked collars being driven to market.)

Other memories: Hornbills preening and nesting, a maleo bird hatching and emerging from the volcanic mud in which its mother had deposited an egg, macaques

throwing sticks and fruit at me as I tried to collect, the most diverse gerrid habitats in which I have ever collected. I shall look forward to returning to Indonesia.

After obtaining export permits at the National Museum in Bogor, I set out from Indonesia to Nairobi. A Lufthansa flight took me to Bombay, and with no clues I was somehow able to transit to Kenya Air for Nairobi. The shock of the cold air which greeted me when I stepped from the plane in Nairobi at 5:15 a.m., was just the first of several jolts Kenya would provide.

My primary reason for going to Kenya was to attend the Non-Government Organization (NGO) Forum and as many of the sessions in the *United Nations Decade on Women* Conference as possible. The Program Director of the Kellogg Foundation Program, Dr. Lorraine Matusak, had deemed the NGO Forum an important enough activity that she had supplied the nine Group IV Fellows who wanted to attend some travel funds supplemental to their project grants. In Kenya I would not only attend the NGO and UN sessions, but also travel to parks and reserves and conduct some interviews in connection with my Kellogg project.

When I reconsider my three and one-half weeks in Kenya, I think that my plans were a bit too ambitious. I did well, however, until one evening at Aberdare National Park five days before I was to leave. There I suffered the embarrassment of collapsing at the beginning of dinner and spending a night wrapped in five wool blankets padded with hot water bottles and in the company of a woman who seemed sure I had malaria.

It was very good, indeed, to overlap with eight Kellogg Fellows in Nairobi. Although each Fellow attended sessions in accord with her own interests, we were able to meet in the evenings and exchange information and frustrations. The group became particularly important when we, along with Canadian, British, and Australian NGO participants, were told by the Kenyan government to vacate our hotel rooms. Anti-Western sentiment was deep at the conference and the Government of Kenya was only one of many groups which gave expression to the sentiment. Of course, its expression had the most immediate consequences: I had nowhere to stay in Nairobi.

After much scrambling we all found rooms. I lived for a week in a room on the second floor of the Elite Camera House, a floor being converted to a Bed and Breakfast. Although renovation was going on all around us, the accommodations were made very pleasant by the thoughtfulness of the owner, a Sikh, who directed me to all the good vegetarian restaurants in Nairobi. The owner also graciously fielded all sorts of questions from the collection of inept photographers he had to take in as boarders.

It seems there were no apolitical sessions at the NGO Forum or UN Conference. I attended almost all the Environmental Liaison Committee (ELC) workshops on women in conservation, forestry, and agriculture and the Food and Agriculture Organization (FAO) sessions on women in agriculture. The almost complete absence of

female speakers in five days of ELC sessions meant that much of the discussion time was taken up by questions about their absence. Issues at the FAO sessions were clouded by the panelists who seemed out of touch with issues in their own countries: an articulate woman from Kuwait, for example, asserted there are no poor people in Kuwait.

At times the sentiments of those who could not separate me from the policies of my government drained my energy, but I was determined to attend sessions as I had planned. I also signed on to visit a Ford Foundation water project, a tea plantation in transition to a nationalized agricultural area, and a school. The school was overcrowded, with 37 teachers for over 1600 students. Half of the population of Kenya is under 16 years of age and each woman gives birth to over eight children on the average. Tribalism probably contributes to the high birthrate because the government apportions land according to the percentage of individuals in each tribal population.

Most of the women of Kenya could not have been more greatly separated from the Forum or the Conference. While UN conference delegates appeared for sessions clothed in expensive national costumes and wearing gold and diamonds, Kenyan women who had been hired to clean the beautifully designed and constructed Kenyatta Conference Center at the rate of 30 KES (less than \$2) for 13 hours of work per day had not been paid. When the women suggested the Conference could pay them perhaps 100 KES per 13 hours of work, they were rebuffed.

As I sped past women carrying loads of wood and water (no different than I had observed in Indonesia or Papua New Guinea or Argentina) in my rental car on my way to visit parks and reserves, I had a lot of time to think about my own place in the situation. I thought of the jet fuel consumed to get me to Kenya when firewood was a prized commodity there. I thought of the average of 100 KES I spent on dinner each night in Kenya when the average earner in that country earns about 300 KES a month.

As I drove along I wished in part that I could lose myself in my basic research and never think beyond interesting evolutionary and ecological problems in waterstriders. I know, however, that I could never eliminate the part of me who thinks globally, and, for not the first time, I was glad the Kellogg Foundation had given me the opportunity to develop my interdisciplinary skills.

At the time this was written Professor Calabrese was an assistant professor of biology at Dickinson. A graduate of Gannon College, she received her M.S. and Ph.D. degrees at the University of Connecticut and joined the Dickinson faculty in 1981. Beginning this fall, she will be at the Radcliffe Research and Study Center in Cambridge, Massachusetts.

PEOPLE

"The wedding ceremony took place on March 21, the first day of spring. It was on this day that we 'tied the knot' of matrimony in a pin oak tree which was located around the corner from the Ravenna, Ohio, city court house." With those words, J. LEN HALL, the bride in a highly unusual marriage ceremony, recently described her wedding to JOHN A LAUERSDORF. Since both are practicing arborists, they decided to get married in a tree.

Hall and Lauersdorf wore climbing clothes for the ceremony and used ropes to reach their wedding positions in the tree. White hard hats, climbing saddles and climbing boots were among their chosen attire. Ravenna Mayor DONALD KAINRAD officiated at the service but called out the traditional vows from the ground, where the attendants also chose to remain.

The two are partners in business as well as in marriage. Hall explains, "We are co-owners of Northwood



J. Len Hall and John A. Lauersdorf, arboriculturists, decided to get married in a pin oak tree.

Resource Systems, Inc., located in Kent, Ohio. Our company is licensed to provide training in all phases of tree care, landscaping and lawn care. We offer these services throughout the country."

AUDREY R. KOLTES, a senior majoring in Forest Resources in the College of Forestry, was one of 40 students from the University of Minnesota selected to receive a travel grant to attend the first annual National Conference on Undergraduate Research held April 23-25, 1987, in Asheville, North Carolina. She presented a paper entitled "Microcomputer Evaluation of Timber Yields" based on work she has done with THOMAS E. BURK, Department of Forest Resources, under the University of Minnesota Undergraduate Research Opportunities Program. Koltes was the 1986 recipient of the Minnesota Forestry Association Forestry Scholarship.

Through the anthropology department at Duke University, *Journal of Forest History* managing editor ALICE INGERSON (whose doctorate is in cultural anthropology) taught a seminar in the fall of 1986 called "Culture versus Nature: History and Ecology in Anthropology." In the course students read about attitudes toward the natural world, resource management, and culture change in: Central America, Southeast Asia, western Europe, southwestern North America, western Africa, and the Brazilian Amazon. Additional readings and class discussions dealt with the history of ecological science, the relations between ecological and other critical social theories (especially

feminism and Marxism), the evolution of social class systems in relation to systems of resource use, and the pros and cons of anthropological fieldwork as a research tool.

BARBARA T. RICHMAN has been appointed editor of the *Journal of Forestry*, the monthly publication of the Society of American Foresters. In announcing Richman's appointment, SAF executive vice-president RONALD R. CHRISTENSEN noted, "She brings a strong scientific background to the Society. We are looking forward to her direction and leadership of the *Journal*." Richman was managing editor of *Eos*, published by the American Geophysical Union, for the past three years. Prior to that, she worked as a news writer for the publication for four years. She holds a B.A. from the University of Rochester in general science, with concentrations in geology and psychology, and a M.S. from Boston University in science communications.

The Eminent Ecologist Award is given by the Ecological Society of America to an ecologist who has made important and significant contributions to the field. The first award was given to H. S. Conrad in 1954. Since then, it has been given to 30 ecologists.

This year the Eminent Ecologist Award goes to E. C. PIELOU. CHRIS PIELOU is not your typical ecologist. She started her career by earning a certificate in radio-physics from the University of London when she was 18 years old. She then completed three years of war service as a Navy technical assistant. During this time, she met, and subsequently married, a biologist, then went on to

earn a Bachelor's degree in Botany from the University of London.

Within two years of completing her bachelor's degree, she had her first publication, in the *Journal of Ecology*, on the vegetation of the Rukwa Rift Valley, Tanganyika. Twelve years would pass before she was awarded a Ph.D. (again from the University of London). Yet during that time, she continued to do independent research, publish on statistical ecology, raise three children, then became a research statistician with the Canadian Department of Forestry and later the Department of Agriculture. When she finally entered the world of academe, she did it as a Full Professor, first at the Queens University in Ontario, then at Dalhousie for ten years, and finally at the University of Lethbridge, from which she retired last year. During those years, she was also invited to be a visiting professor at North California State, Yale, and the University of Sydney in Australia. In the same period, she earned a D.Sc., the senior doctoral degree in the British system.

Her book, *Introduction to Mathematical Ecology*, first published in 1969, literally changed the direction of ecological research. Her approach spread rapidly, not only among theoretical ecologists, but among experimental and field biologists as well.

Her other books, on Population and Community Ecology, Ecological Diversity, and Biogeography, had an equal impact on an eager audience. Open any issue of *Ecology* today and you will probably find a reference to Pielou, and certainly will detect the influence of Pielou's quantitative approach to ecological research.

Pielou continues to be an active researcher, even in retirement in rural British Columbia. Her most recent works emphasize biogeography and the interface between biogeography and ecology.

LYNELL SCHALK has been appointed special agent-in-charge of law enforcement for BLM in Oregon and Washington. Schalk, who has served as the Oregon-Washington cannabis coordinator since 1983,

transferred to the state office in 1982 after filling a special agent position on BLM's Vale district for two years. The first day of her BLM career, 13 years ago, began with learning how to pack a mule for pack trips for patrolling an archaeological wilderness area, Grand Gulch Primitive Area, in southeast Utah. Following this assignment she patrolled the southern California desert along the Mexican border area as one of the first 13 delegated law enforcement rangers in BLM. Schalk attended Basic Police and Criminal Investigators Schools at the Federal Law Enforcement Training Center in Glynco, Georgia. Since 1981 she has instructed the Archaeological Resources Protection Training Program at the training center. A native of Washington state, Schalk is a graduate of the University of Washington.

Secretary of State BARBARA ROBERTS is one of Oregon's more eloquent speakers on the topic of the feminist revolution. So when it came time to review all that has been achieved in the past twenty years, Roberts reached deep into her lexicon of liberation. Lots of things made it possible, she said, "But mainly we did it on plain guts."

The occasion was the coming out party for *In Unison*, a new magazine dedicated to discussing "issues for contemporary Oregon women. Publisher ELLEN NICHOLS explains that the magazine has been more than a year in the planning, with its first advisory board drawn from the leadership of the Women's Rights Coalition. "They fanned the first flames of enthusiasm," she says, "and watched it grow."

In Unison is being launched as a quarterly publication, with plans for more frequent distribution to follow. And will it be a newsstand hit? Says Nichols, "We do have a centerfold. The first is VERA KATZ."

BARB LEUELLING, soil scientist on the Virginia and Aurora Districts of the Superior National Forest, initiated a professional association of women soil scientists in April 1982.

PEOPLE



Stacey Hazen

In her words, "I was isolated in a very remote Forest Service Ranger Station in Isabella, Minnesota, and the number of women working in the field of soil science was slowly increasing. I wanted to establish some networking opportunities for women in as remote and unique a situation as I was." Leuelling had some goals for the association; (1) identify women as soil scientists; (2) share technical and career information; (3) enhance communication between members; and (4) provide assistance and encouragement for women seeking employment in the field of soil science.

Leuelling published the first "Newsletter" for the association and mailed it to a list of 55 other women soil scientists that she, Forest Soil Scientist, DON PRETTYMAN, Forest Supervisor, CLAY BEAL, and Deputy Forest Supervisor, RICK ROSS had compiled.

Response to the first newsletter showed Barb that there were several women soil scientists who thought the newsletter was a great idea and they had many questions for and about others in their profession. These questions ranged from "where do others work" to "how to cope in a male-dominated profession," to "what career opportunities are available?" As a result, she became the editor and the founder of the Newsletter for the Association of Women Soil Scientists.

PEOPLE

A University of Chicago senior majoring in biology, NANCY SONNEFELD was a Student Conservation Association (SCA) volunteer working on a project for the Salem, Oregon BLM district. She was, in fact, one of the 21 SCA volunteers working on the district in 1986.

Sonnefeld was investigating micro-communities in the Valley of the Giants Outstanding Natural Area—one of the largest remaining stands of large Douglas-fir. The stand, believed to be between 600 and 1,000 years old, is a hodge podge of fallen moss and lichen-covered trees.

Sonnefeld, who said her special interest is the study of mosses and lichens that luxuriate in the damp shade of the rain forest, was developing a guidebook describing the micro-communities of the old-growth forest.

The feet of MARTHA TOROK were planted firmly on the ground when she decided her future might be in the trees. Armed with a degree in landscape horticulture from Ohio State University, Torok, of Reynoldsburg, wants a job with a tree nursery. She's taking a two-week tree-trimming course at OSU to add to her skills.

Torok and nine other women are learning the ropes of tree trimming from two other women, LEN HALL and TAMMI GRUMMICH. Hall and Grummich think of themselves as pioneers in a male-dominated profession, Hall said. Hall is president of her own tree-trimming training and consulting firm. "Both tree trimming and landscaping are dominated by men, but increasingly the opportunities are becoming more available for women," she said.

Four instructors in Hall's year-old

company, Northwood Resource Systems Inc., in Kent, Ohio, have trained about 70 tree trimmers. Until the OSU course, only two were women.

Training sessions usually run 12 weeks, but the OSU program, paid for through an \$18,3760 affirmative action grant, was condensed "to acquaint them with the basics," Hall said.

OSU horticulture professor DAVIS SYDNOR said women have been excluded from supervisory positions in landscaping because they lack experience. To overcome that problem, he and SHARON SMITHY-MAN have written a "tree worker's manual," which Hall describes as a "first" for a woman in her field.

The OSU course will improve the campus as well as train students. Hall works closely with the groundskeeping crew in determining which trees can be trimmed or removed.

Forest Resources Systems Institute (FORSI) president TIMOTHY M. COONEY announced his resignation at the annual meeting on May 14 and, as of June 1, has joined the Timber Department staff at the First National Bank of Atlanta. RUSSELL SWINNEY has been appointed by the Board to act as Interim Coordinator for the Institute and has assumed Tim's former duties. FORS' products and services will continue uninterrupted during this transition period.

Oregon's riparian systems are the beneficiaries of an agreement signed in mid-March by Federal and state agencies and various conservation and civic groups. The state-wide cooperative volunteer agreement links BLM, the Forest Service, and Oregon Department of Fish and Wildlife with the Public Lands Restoration Task Force (PLRTF) of the Izaak Walton League and several other major Oregon conservation groups.

Under the agreement, PLRTF will coordinate volunteers to work on agency projects designed to improve riparian systems in all areas of the

state. The concept is called "riparian enhancement teams."

PATRICIA HONEYCUTT, PLRTF executive director, said that "by establishing closer working relationships with federal and state agencies, the riparian enhancement team members can accomplish some of the critical riparian (water) habitat improvement necessary to increase and sustain wildlife and fish populations.

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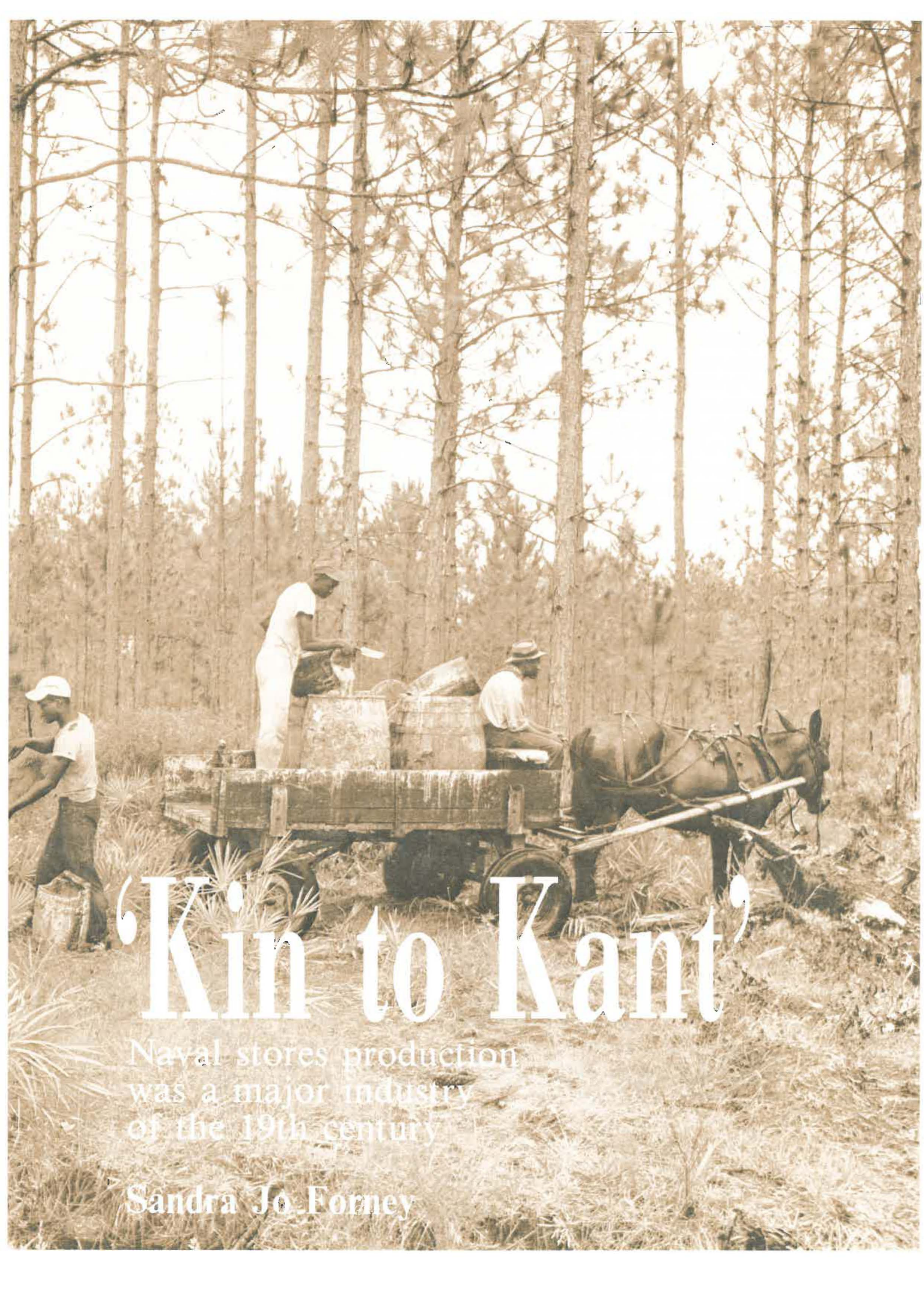
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‘Kin to Kant’

Naval stores production
was a major industry
of the 19th century

Sandra Jo Forney

THE PRODUCTION OF naval stores (resin, turpentine, pitch, tar and other products distilled from pine tree resin) was the first colonial major industry of the southern pine forests. Over the past three centuries, naval stores have been used in ship construction, paper sizing, perfumes, adhesives, pharmaceutical supplies, plastics and paints.

Like other forest products industries, the naval stores industry then later provided employment for freed blacks leaving the plantation system during the Reconstruction Era after the Civil War. Archaeological investigations in the Southeast have provided glimpses of the social and economic nature of the plantation system (Otto 1975, 1977, 1980; Singleton 1980).

These types of archaeological sites have become of interest during the past twenty years, and the findings are contributing to the body of knowledge about the plantation era. In fact, some of the previously accepted historical records have been proven inaccurate. These sites can contribute important information about forest industries' early treatment of their employees and the resource base that may soon be lost due to Florida development and/or timber management priorities. Archaeological sites, unlike trees, are a nonrenewable resource.

Since the lumber and turpentine industry labor system was an extension of the plantation system (Shofner 1974, 1981a, 1981b), working relationships were similar to those imposed by the plantation owner. The overseer and slave (or indentured servant and later sharecropper) may be expected among the workers of a naval stores operation. This article, adapted from historical research, discusses the basis for determining the potential significance of archaeological sites related to the naval stores industry in Florida.

As a result of their isolation, turpentiners evolved a distinct society over the years (Hickman 1962). During the latter 19th and early 20th centuries, naval stores was an industry with a distinct and perhaps picturesque routine of labor, language, and life.

A typical day's work for turpentiners was from "kin to kant" (dawn to dark). They would rise about 4:30 a.m., eat a quick meal prepared the night before, and head into the woods at first light. Between 8:00 and 9:00 a.m., the turpentiners ate a light meal, also prepared and packed the night before. They worked until nearly sundown, then walked back to their quarters for supper and home chores. This ritual was performed five or six days per week (Schultz 1981).

As in the plantation system, naval stores operations also had an overseer or foreman. This individual, who made his rounds on horseback, was called a "woods rider." Woodsriders were generally Caucasian and their duties were to inspect and supervise the work at a turpentine stand. The black workers were under complete control of the woods rider. In fact, a woods rider sporting a pistol and whip was the law in those isolated areas.

The workers usually received company scrip or metal tokens as wages. These were redeemable only at the operator's commissary which was usually located at the

turpentine distillery. Other forms of money could be acquired by trading scrip at a discount; however, for most workers, access to areas outside the turpentine camp or distillery was forbidden. Saturday was generally payday at the turpentine camp. Most workers were paid about \$10 per month, while female workers received \$2 less. The woods rider received around \$30 per month, which was usually paid in currency rather than scrip. Workers purchased goods on credit from the commissary, whose keeper affixed a high interest charge. Thus, the workers became indebted to the company store, making their ability to leave the turpentine camps for other employment unlikely. The commodities supplied by the commissary system suggest that the workers' meals probably consisted of cornbread, bacon, black coffee and an occasional treat of baking powder biscuits (Pridgen 1962). Berries, grapes, persimmons, nuts, and other edible wild plant foods probably were also gathered in season.

Housing and water were furnished as part of the workers' compensation. Because the trees began to lose their productivity after several years, turpentine camps were occupied temporarily, usually for a period of five years. Most of the early trees worked were near rivers for easy water shipment. Side camps and distilleries, where the resin was processed into turpentine, were moved to the interior portions of the forest when railroad lines were completed in the late 19th century.

Most turpentine workers lived in shacks or quarters grouped closely together or in rows to prevent social isolation and to provide a better means of overseeing and controlling workers' activities. These rough lumber shanties, occupied by both workers and the woods rider, were located at side camps and at the distillery.

Early shanties for the workers were often one-room pole structures with no floor or windows. If a worker's family was large, a lean-to was added along one wall for additional sleeping space. Each shanty occupant or family probably had a small garden of vegetables to supplement the diet.

Data compiled during a land acquisition appraisal of a Liberty County, Florida, turpentine camp in the 1930s indicates status differentiation in the camp (USDA 1934). In addition to 27 box and frame quarters to house 157 workers and their families, the 640 acre camp included a combination church and school, commissary and cemetery.

The workers' wood frame shanties, valued at \$10 each, were 22' x 24' with at least two rooms. Housing for the foreman, however, was a six-room dwelling measuring 22' x 40', valued at \$50. The appraised value of the stable, shed and garage was equal to that of the workers' shanties in the camp.

With few exceptions, archaeological remains from the side camp differ little from those of the distillery site, since most commodities at both types of sites were purchased at the company commissary. Glass and ceramic remains constitute the majority of the utilitarian material associated with these sites. Kerosene lantern gloves and bases, beverage and medicine bottles, and ornate cut glass dinnerware are the most common types of glass at the turpentine site. The largest percentage of

utilitarian ceramics collected from these sites are ironstone. The material remains associated with a turpentine stand include isolated objects such as beverage bottles, cups, tools, and other equipment used during gum collection, as well as an occasional domestic item.

The socio-economic conditions of turpentine workers themselves remained constant, at the same time that a number of technological advances improved harvesting and processing techniques. One of the major developments drastically changing the industry was the introduction of clay collecting cups.



Collecting resin.

Initially, the gum or resin was collected in “boxes” or collecting basins chopped into the bases of trees with a broadaxe. A “streak” or wedge-shaped groove was then cut into the face of the tree above the box to allow gum to flow. Each week a new streak was cut to increase the flow. The box cavity was found to weaken the tree at the base, leaving it vulnerable to disease, wind, fire, and reduced the lumber value of the tree.

Although the boxing method remained in common use until about 1915, Charles Herty’s 1904 invention of the clay cup initiated a new method for collecting pine resin. A streak was made in the tree and then an incision was cut into the face where a gutter was fastened to direct the flow of resin into the collecting cup hung by a single nail below. The use of clay increased the quality of resin by avoiding impurities which tended to collect in the open box cavity.

Stylistic changes in turpentine collecting cups are a major means of determining the chronology of a naval stores site in Florida. Distinctions in the physical characteristics of collecting cups may be due to functional, temporal, or spatial considerations. The relative dates and possible ranges for the manufacture and use of these cups were derived from a number of sources, particularly research conducted by Ralph Clements at the Olustee Forest Experiment Station (Clements 1979).

Turpentine cups now in the Museum of Florida History in Tallahassee beautifully illustrate variations in 20th century clay and metal cups. Because they were

much cheaper to purchase than metal, clay cups were almost exclusively used in Florida, except in the northern part of the state where clay cups could break during a freeze.



Sandra Jo Forney

Clockwise from upper left: Herty clay cup, clay cup with metal fastener, yellow clay cup, cement cup. In the foreground is a curved or Pringle cup.

The Herty cup was the most common style on the market. Established in 1904, the Herty Turpentine Cup Company of Daisy, Tennessee, produced at least 60,000 cups per day until about 1914, when the advent of galvanized iron cups reduced the demand for ceramic cups. The Herty cups were marketed exclusively in Alabama, Georgia and Florida (Smith and Rogers 1979).

Consolidated Naval Stores Company of Jacksonville owned most of the shares from 1910 until 1942 when the company was voluntarily dissolved. These dates correspond nicely with the major era of naval stores production in the state, particularly in the Jacksonville area.

Another variety of clay collecting cup was connected to the tree by a metal fastener at the rim instead of a nail. The exact purpose of this unique attachment is not known. These cups were probably used in Florida between 1910 and 1925. Reminiscent of the Herty cup due to its fluted exterior and similar red clay, this cup may also have been made at the Tennessee plant.

The clay Pringle cup, curved to fit the shape of the pine tree, was also on the market during the first quarter of the 20th century. Although the location of manufacture is presently unknown, a patent date of July 10, 1910 is shown on the base of these cups.

Several varieties of yellow clay cups were apparently being made and used almost exclusively in the Escambia County, Florida, area during the early 1930s. Although the color of the clay was consistent, shapes and sizes varied greatly, suggesting temporal distinctions in the styles or perhaps different manufacturers.

An unnamed Jacksonville company, possibly associated with Charles Herty’s business, manufactured a cement cup in the mid 1930s. Experimental glass cups were also made in Jacksonville during the late 1930s.

As early as 1914, galvanized iron cups were on the market. Styles included the flower pot-shaped Birdseye cup, the trapezoid shaped Buzzard wing cup, and a

variety of metal oblong boxes. During the 1920s and 1930s, an array of tin, galvanized iron, and aluminum cups were manufactured for collecting pine resin. In a final attempt to produce quality resin free of leaf litter and other debris, steel oblong boxes with a fired enamel finish were used during the waning years of the industry.

Another source of data for establishing a chronology of the naval stores industry in Florida is the



Sandra Jo Forney

Top, left to right: scraper, dip spoon. Bottom, left to right: detachable blade hack, hack, puller.

development of specialized tools used in chipping and dipping the pine gum. Five technological innovations involving collecting cups occurred in the industry's peak years between 1900 and 1935. During the last 50 years of the industry at least 38 new tools, types of equipment, and extraction methods were adopted and accepted, over half occurring between 1942 and 1958.

The common chipping tool known as a hack replaced axes and single bevel hatchets in the first half of the 19th century. Further design advances were made during the early 20th century with the introduction of the No. 2 hack in 1900, the No. 0 hack in 1910, and the detachable blade hack in 1915. These early hacks, which were attached to a handle and weight, were used throughout the remaining course of the industry.

To accompany the new extraction methods, a broadaxe for mauling the incision into the streak was introduced in 1908 to replace the boxing axe in use since 1700. A puller, invented in 1865 to chip high streaks, was still in use until the late 1930s.

In 1918, the hogal was invented to smooth the bark for gutter insertion and chip subsequent streaks. Chipping paddles to prevent chips from falling into the cup were introduced during the late 1920s. Two styles of specialized buckets and dip paddles were invented in the 1930s to replace the dip spoon previously in use since 1750.

It is apparent from this discussion that archaeological sites related to the naval stores industry provide an important source of data for the study of worker status differentiation, and the evolution and geographical distribution of harvesting technology.

Unfortunately, a review of the results of cultural resources inventory and assessment surveys conducted during the past several years indicates that sites associated with the naval stores industry, with few exceptions, have been "written off" as an insignificant cultural resource. Future investigations by the Forest Service and state agencies in Florida and other states should make every effort to more appropriately consider and evaluate this valuable historic resource during inventory compliance and preservation processes.

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Sandra Jo Forney, a forest archaeologist, has worked 11 years for the government, one year with the National Park Service and since 1978 with the Forest Service. Currently she is a Ph.D. candidate at Florida State University. This paper was presented at the Conference "Current Topics in Forest Research", Gainesville, Florida.



The Tropical Carbon Cycle

Clearing Tropical Forests Exacerbates the 'Greenhouse Effect'; Further Study Is Needed to Increase Our Knowledge of the Tropical Carbon Cycle

SANDRA BROWN

CLEARING OF TROPICAL forests for agriculture can release CO₂ to the atmosphere and thus exacerbate the "greenhouse effect." Release of CO₂ results from burning and decomposition of plant material and the increased oxidation of soil organic matter. Land use changes in tropical forests produce a source of atmospheric CO₂ that may be as much as 20-80 percent of the amount contributed by the burning of fossil fuel (Houghton et al. 1983, Detwiler 1986). These estimates of carbon flux (as CO₂) to the atmosphere are derived from models that consider rates of forest clearing, specific land uses for which an area is cleared (e.g., for permanent agriculture, shifting agriculture, pasture, or timber), and changes in biomass or carbon content of the vegetation and soil due to clearing.

There are several sources of error associated with estimates of carbon flux from tropical forests. These errors are based mainly on uncertainties in the value of parameters such as biomass or carbon content of tropical forests being cleared, rates of forest clearing by forest type (i.e., low or high biomass forest), changes in soil carbon pools upon clearing, and rates of decomposition of organic material left behind on the site after clearing. This paper discusses some of the sources of error associated with estimating the carbon content of tropical forests.

Because of the diversity of tropical forest types,

problems in estimating their carbon content with any degree of precision are enormous. According to the Holdridge Life Zone system (Holdridge 1967) for classifying plant formations of the world, a system based on mean annual biotemperature and precipitation, there are 30 unique forested life zones in the tropics ranging from lowland very dry forests to montane rain forests. Each of these forested life zones potentially has a different organic carbon content because of the influence of temperature and moisture on the structure and function of forests. Brown and Lugo (1982) synthesized existing data on the carbon content of tropical forests and found a highly significant relationship between carbon content of vegetation (expressed as biomass) and an index of life zone (ratio of temperature to precipitation; Fig. 1). The carbon content of tropical forests peaks in the moist forest life zone ($T/P = 0.7-1.4 \times 10^{-2}$) with lower values in wetter (T/P less than 0.6×10^{-2}) and drier (T/P greater than 2.0×10^{-2}) life zones. Thus, models of tropical forest clearing need information on the kinds of forests being cleared because their carbon content is related to the climate in which they grow. Unfortunately, this kind of information is generally lacking and represents a source of error in carbon flux estimates.

Another uncertainty in the data base for tropical forests is the magnitude of the carbon content of tropical forest vegetation. There have been several attempts during the last decade to both estimate the carbon pool in tropical forests and compute a weighted average carbon density (Table 1). The first four values in Table 1 are based on a summary of the published ecological

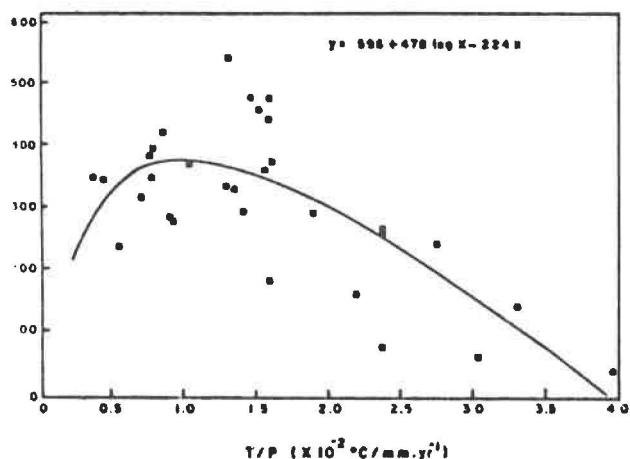


Figure 1.—Relationship between total biomass of tropical forest vegetation and the ratio of temperature to precipitation (T/P), a ratio used as an index of life zone (see text for further explanation). This relationship was determined by least squares regression analysis and is significant at $p=0.05$ with an $r^2=0.54$ (from Brown and Lugo 1982).

literature. Variation in the estimates of the size of the carbon pool is attributed to both differences in the area of tropical lands covered by forests and differences in the carbon content of tropical forest vegetation. The changes in the amount of tropical forests used in these studies reflect improved accuracy in the area estimates by international organizations charged with such assessments (e.g., Food and Agriculture Organization of the United Nations [FAO]) rather than a real decrease in forest area. Differences in the carbon content of forests used in the studies (Table 1) are due to (1) grouping of forests into fewer or more categories (e.g., two main types were used by Whittaker and Likens [1973] whereas six main types were used by Brown and Lugo [1982]) and (2) accessibility to a larger data base in the later studies

Area (10^6 ha)	Carbon content (t/ha)		Carbon pool (10^{15} g)
	Range	Weighted average	
2450	160-200	188	460 ^a
1480	115-190	165	244 ^b
1838	40-185	124	228 ^c
1510	70-200	125	189 ^d
1930	12- 90	53	102 ^e

Table 1 — Estimates of carbon content in tropical forest vegetation:

- a) Whittaker and Likens 1973
- b) Ajtay and other 1979
- c) Brown and Lugo 1982
- d) Olson and others 1983
- e) Brown and Lugo 1984

(e.g., many studies used by Brown and Lugo were published after 1975). It is generally agreed by those working with the global carbon cycle that the lower estimates are more representative of the carbon content of tropical forests.

Brown and Lugo (1984) made another estimate of the carbon content of tropical forests using commercial timber volumes. This study relied heavily on a 1981 FAO report in which average commercial volumes for eight forest types in 76 tropical countries were given. Commercial volumes were converted to total biomass of vegetation by multiplying volume by an average wood density to obtain commercial biomass and then by an expansion factor (ratio of total above and below ground biomass to commercial biomass); biomass was converted to units of carbon (assuming 1 gram of organic matter = 0.5 gram of carbon). This analysis resulted in a carbon pool and weighted carbon density of tropical forest vegetation of about one-half the values based on direct measurements given in the ecological literature (Table 1).

Forest type	Expansion Factor		Sample size
	Range	Mean	
Closed humid forests ^{a, b}	1.3-1.8	1.6	19
Open forest ^a :	2.7-3.1	2.9	2
Moist forest:	1.0-1.7	1.3	10
Wet and rain forests:	1.9-2.4	2.2	5
Dry forests:	3.6-3.7	3.7	2

Table 2.—Expansion factors for converting tropical forest volumes to total biomass:

- a) From Brown and Lugo 1984
- b) This category includes moist, wet, and rain forests.

One of the major causes of the discrepancy between ecological-based and volume-based biomass estimates is due to sampling error. Biomass estimates derived from the ecological literature are based on direct measurements (either by harvest methods or allometry) of small areas (a total of less than 30 hectares for all studies) of a few tropical forest types and extrapolated to all tropical forests. Volume-derived biomass estimates are based on large sample areas (hundreds to thousands of hectares) and tend to be a more representative sample. Selection of small sample plots for ecological studies of direct measurements may be biased towards large biomass plots because of a preconceived notion as to what a tropical forest should look like. For example, a frequency distribution of volume-derived biomasses for tropical moist forests of the Amazon basin demonstrate that more than 50 percent of the area covered in the survey had biomass values less than 200-220 metric tonne per hectare (t/ha) (Fig. 2). Biomasses of tropical American forests obtained from destructive sampling or allometric methods ranged from 210-480 t/ha (Brown and Lugo 1982), of which 50 percent had values between 210-330 t/ha and the other 50 percent were between 370-480 t/ha, with a greater frequency at the high end of the

range. These results suggest that biomasses obtained by direct measurement on a few hectares are not average for Amazonian tropical moist forests but are biased towards high biomass plots. Similar trends were obtained for forests in tropical Africa and Asia (Brown and Lugo 1984).

There are several potential sources of error in biomass estimates based on volume: wood densities, stand volumes, and expansion factors. Of these, the greater error is likely to exist in the expansion factors, and the determination of new factors is the emphasis of my current research with Ariel Lugo. New expansion factors are being determined from detailed forest plot data which include diameters, species, and commercial volumes of individual trees in the plots and specific gravities of the species. From this information commercial biomass was calculated (sum of the product of commercial volume and specific gravity of all trees). All available allometric data for tropical trees have been gathered and allometric regression equations developed. These allometric regression equations were then used to calculate aboveground biomass of the plots for which commercial biomass was calculated. Root biomass was determined from root/shoot ratios given in Brown and Lugo (1982). Expansion factors were calculated as total biomass/commercial biomass. Results of this analysis to date are shown in Table 2 and are compared to the expansion factors used by Brown and Lugo (1984).

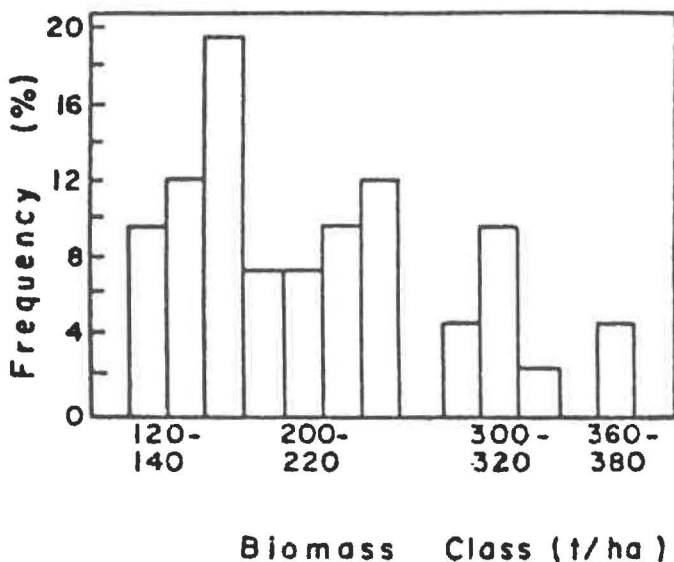


Figure 2.—Frequency distribution of volume-derived biomass based on volume data collected from 1230 x 1 hectare plots of forests in the Amazon Basin (from Brown and Lugo 1984).

In conclusion, use of forest volume data offers an advantage over ecological biomass data because larger areas of tropical forests are represented and a more realistic picture of the variability in forest biomass is provided. Revised expansion factors appear to be more variable than the previous analysis (Brown and Lugo 1984) suggested and demonstrate the need for regional biomass estimates rather than aggregated ones. A

comparison of the new expansion factors (Table 1, based on the analysis to date) with those obtained by Brown and Lugo (1984) suggest that volume-derived biomass estimates of tropical forests could change by as much as plus/minus 40 percent.

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Sandra Brown is an associate professor in the Department of Forestry at the University of Illinois, Champaign-Urbana, Illinois. This paper was presented at the Symposium on Current Topics in Forest Research, Emphasis on Contributions by Women Scientists, November 4-6, 1986 in Gainesville, Florida.

Tropical Conservation

By Saving The Tropical Forests And Their Myriad
Plant And Animal Species, We Will Be Investing Wisely
In The Future Survival Of Our Own Species

PETER H. RAVEN

SHARING THE PLANET Earth with us are at least four to five million species of animals, plants, and microorganisms, most of which are poorly known. About two-thirds of them have not even been given scientific names.

Of all the world's species, roughly ten percent occur in the United States and Canada together. We can state with confidence that most of these plants, vertebrates, and larger invertebrates and fungi have been studied and classified. Furthermore, we now know that some five to ten percent of North America's species are threatened or endangered, and we are making advances in protecting them.

But to think that by "taking care of our own" we are saving a large proportion of the world's organisms is to delude ourselves. It is to the tropics that we must turn. For instance, about a third of the total number of Earth's plants, animals, and microorganisms occur in Latin America. Of these, only about a sixth have been catalogued. Of the remainder, amounting to nearly 30 percent of all the planet's organisms, we know absolutely nothing. Some scientists, including Terry Erwin of the U.S. National Museum of Natural History, have estimated that the total number of species in Latin America might be much higher. His calculations indicate a regional total of perhaps 15 million species. But whatever the final figure, the number of unknown species is staggering.

For example, South America's fresh waters are

inhabited by an estimated 5,000 fish species, only about 3,000 of which have been named. (This amounts to about an eighth of all the world's fish species.) On the eastern slopes of the Andes, 80 or more species of frogs and toads often exist within a single square mile—almost as many as in all of temperate North America. Approximately the size of the state of Colorado, Ecuador harbors more than 1,300 species of birds—roughly twice as many as those inhabiting the United States and Canada.

Moreover, hundreds of *new* species of plants—including many dozen tree species—are being discovered in Latin America every year, as are dozens of new species of terrestrial vertebrates and fishes. Over a third of the nearly 800 species of reptiles and amphibians known to occur in Ecuador have been discovered since 1970, and many more are still being found there. In fact, the three northern Andean countries of Colombia, Ecuador, and Peru combined are home to about a sixth of all the Earth's biota—some 750,000 species that are also the most poorly known organisms on our planet.

Such richness, paired with a lack of knowledge, makes it imperative that biological surveys like The Nature Conservancy's conservation data centers be initiated in all the countries of the tropics. Only with continuously updated biological information can the people of any country take appropriate steps to preserve and wisely use their nation's species and natural ecosystems.

The actual and potential importance of species for human welfare cannot be overstated. About 85 percent of our food is derived directly or indirectly from 20 species

of plants, and some 60 percent comes from only three: corn, wheat, and rice. It stands to reason that among the world's remaining estimated 235,000 known flowering plant species, there must be many more that could provide important sources of food—not to mention medicines, oils, chemicals, and sources of renewable fuels. Our continued survival depends on our ability to use plants, animals, and microorganisms extensively and wisely. Yet we know absolutely nothing about most tropical organisms, and we certainly haven't examined them for their potential value to humans. By saving the tropical forests and their myriad plant and animal species, we also will be investing wisely in the future survival of our own species.

But despite its riches, tropical vegetation worldwide is being altered or eradicated at an alarming rate. In 1981, the Tropical Forest Resources Assessment Project of the United Nation's Food and Agriculture Organization (FAO) estimated that 44 percent of the tropical rain forests had already been degraded or destroyed by 1980. Currently—according to an international task force sponsored by the World Resources Institute, The World Bank, and the United Nations Development Programme—27 million acres (an area larger than Austria) of tropical forest are being cleared each year. This is some 50 acres per minute. (The task force has launched an \$8-billion campaign to reverse tropical deforestation by 1991.) If present trends continue, the rich tropical moist forests of many developing countries will disappear in the next two to three decades.

Whatever the estimates, the destruction is disastrous and is probably accelerating because the population in tropical countries is growing so rapidly. Since 1950, the number of people in tropical and subtropical countries has grown from 1.1 billion to approximately 2.5 billion. With 80 million people added each year, this population alone is projected to reach about five billion—equal to the entire globe's current population—within 35 more years.

With no other options for feeding their families, the estimated one billion people of the tropics living in what The World Bank defines as absolute poverty are consuming the forests. They clear it a couple of acres at a time, cultivating small patches for a few years and then moving on when the generally poor soils have been depleted. (Many tropical soils—and most of those in Latin America—are acidic and infertile; they cannot be cultivated on a sustainable basis.) Areas in which the tropical forests have been most heavily cleared or degraded include Mexico, the West Indies, Central America, the Andean countries of South America, the southern and eastern fringes of the Amazon, all of Africa and Madagascar (outside the Zaire Basin), and all of tropical and subtropical Asia.

The human consequences of this devastation are profound. Famine in the tropics stems directly from overpopulation and overuse of resources, with the effects of droughts simply being amplified by the existing conditions. Political instability is widespread in the tropical and subtropical countries. The nations of the developed world will be less and less able to interact with

these countries until they attain stable populations, provide reasonable expectations for their poor, and deploy sustainable agricultural and forestry practices throughout their lands.

The greatest consequence of all, however, is that of biological extinction—the extermination of a major fraction of Earth's plants, animals, and microorganisms during the lifetimes of most people living today. Many tropical organisms are very narrow in their geographical ranges and highly specific in their ecological requirements. At least 40 percent of the world's species occur in the very tropical forests that may not survive the next few decades. The loss of only half these organisms would amount to the permanent disappearance from our planet of at least 750,000 species—a far greater number than the *total* number of species found in the United States and Canada. If we wish to preserve the world's biota, can it be doubted that our major concern in the closing years of the 20th century and the early years of the 21st century must be with the tropics?

In areas such as Madagascar, coastal Ecuador, and the Atlantic forests of Brazil, all of which have lost more than 90 percent of their natural vegetation, extensive extinction has undoubtedly already occurred. The ecological theory of island biogeography predicts that a decrease of an area to a tenth of its original size should eventually result in the extirpation of half its species. Each of the three areas just mentioned is believed to harbor roughly 5,000 endemic plant species, as well as perhaps 100,000 endemic species of organisms of all kinds. Thus, we can estimate that in all three areas combined perhaps 150,000 species of plants, animals, and microorganisms have already been extirpated or are presently vanishing from their small remaining islands of vegetation. Projecting these figures throughout the world—and keeping in mind the totally inadequate state of our knowledge of tropical organisms—we can estimate that some 750,000 species will become extinct over the next few decades. This amounts to a loss of several species each hour.

To find an extinction event of this magnitude in the geological record, one needs to go back some 65 million years to the end of the Cretaceous Period when—possibly spurred by a cloud thrown up by the collision of a gigantic meteorite with the Earth—a large proportion of the Earth's organisms, including the dinosaurs, became extinct. The extinction that is taking place now will occur during our lives and those of our children. But we can ameliorate its effects by learning about tropical organisms and using our knowledge to save them. Our contribution to preserving natural diversity will be minute if we do not look beyond our own borders to the tropics. This task is one of extreme urgency. If we succeed, we shall play an important role in shaping the quality of life for all who come after us.

Peter Raven is director of the Missouri Botanical Gardens and Engelmann Professor of Botany at Washington University, St. Louis. He is also the author of *Biology of Plants*. This article is reprinted with permission from *The Nature Conservancy News* (January-March 1986).

Fireflies: The Evening Rites

Is It A Matter of Love or Lust
When the Night Is Set Aglow With
the Light of The Modest Firefly?

DONNA BURKS

IN SPRING AND summer, as darkness falls over the lawns, fields and meadows of West Virginia, hundreds of tiny yellow or greenish yellow lights begin to flicker all around. This show is simultaneously repeated over the entire eastern United States as fireflies perform their evening rites. In addition to this aerial display, firefly larvae or glowworms illuminate stream banks and roadside ditches, glowing intermittently in their search for

snails and earthworms. The function of the glowworm's luminescence is not known, but it may attract prey or advertise the unpalatability of the larvae.

In any case, the glowworm is no more a worm than its parent is a fly or a (lightening) bug. They are beetle larvae and beetles respectively. Using the name firebeetle would complicate matters since this term is generally reserved for light-producing click beetles. To avoid a lengthy lesson in Latin, the term firefly will suffice.

The firefly family is well represented numerically and geographically with more than 2000 recognized



species and a range that includes every continent except Antarctica. In the United States finding a firefly west of Kansas is an unlikely event.

The burst of light emitted by the firefly is the result of a chemical reaction (the oxidation of a substance known as luciferin) in which energy is released in the form of visible light. The light “generated” by the firefly is unique because it is cold light. Nearly all (92-100%) of the energy from the oxidation reaction is released in the form of light unlike an incandescent lamp (light bulb) where 90% of the energy is given off as heat and only 10% as light. The flash is triggered via a nerve impulse to the lantern. Although the different flash patterns are unique to that particular species of firefly all have a common message—sex!

In the most common species, males fly over lawns, pastures, etc. at sunset giving off a half second long flash every five to seven seconds. While flashing, the male follows a “j” shaped path first flying downward a few inches and then upward for a foot or so. This behavior alerts females to his presence and to the fact that he is searching for a mate. At dusk, females perch on grasses or other vegetation and wait for the males to display. When the female spots the flash of a male she waits two seconds and flashes once. If the male notices her reply he will redirect his flight to her and repeat his signal. As the female continues to respond, the male flies closer, homing in on her beacon. Eventually, the male lands near the female and makes his final approach on foot, trading flashes as he zeros in.

Fireflies are not infallible. Armed with a small penlight you can mimic the display of either gender and attract a member of the opposite sex. To find females just imitate the flash duration and interval of the male. Tracing the “j” flight path isn’t essential. To lure a

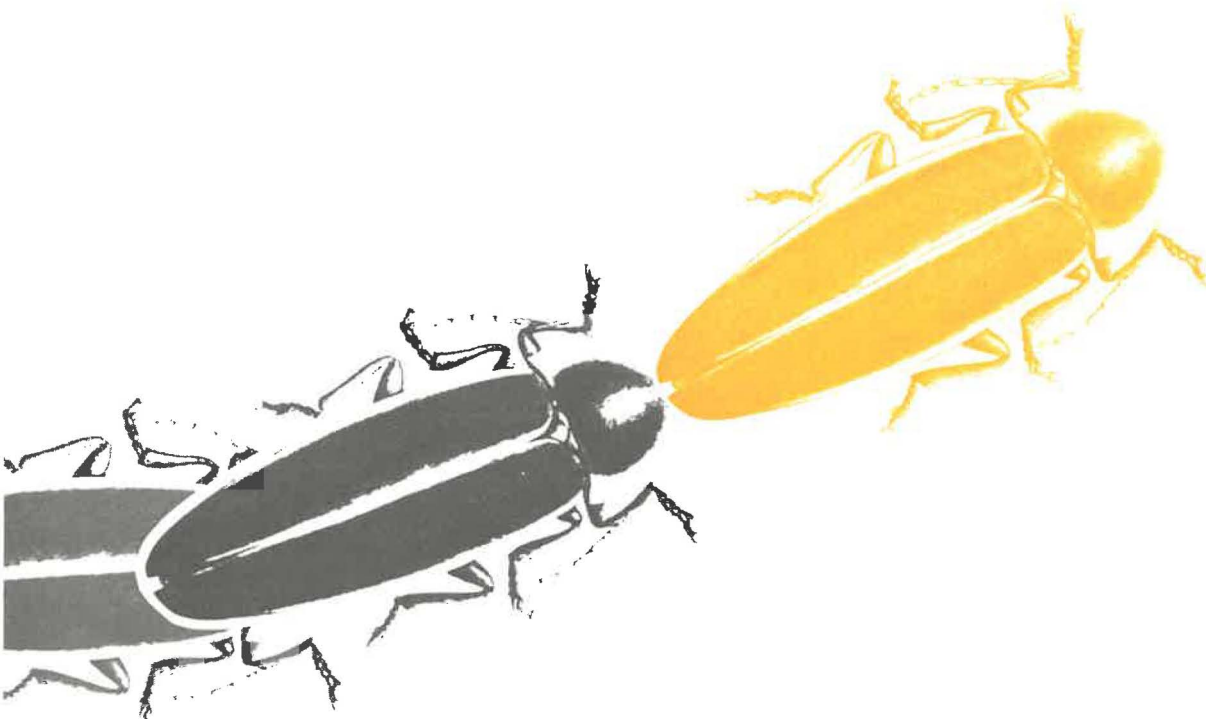
male, position yourself about 15 feet in front of him and touch the bulb end of your penlight to the ground. When the male flashes, wait two seconds and answer him with a single, one-second flash. As the male nears, reduce the intensity of your light by pushing the lens into the ground just a tad. Fireflies control their light intensity by regulating the amount of air supplied to the light-yielding organs—the more air the greater the reaction and thus brighter light is produced.

Although there are roughly 100 species of fireflies in North America, confusion of mating signals is rare. Not only do distinct species have unique flashing rhythms, but no two species which inhabit the same geographic region elicit the same signal. Further, not all species are active during the same time of night.

There is one interesting exception to the differentiation of species by their flash pattern. Females of one firefly species in the genus *Photuris* feed on certain species of males in the genera *Photinus* and *Pyraclomona*. Although her lantern is brighter and a bit greener than that of females of the prey species, the female *Photuris* mimics their rhythm. Instead of finding romance, males fooled by this imposter end up as an entree! More commonly though, the firefly’s diet consists of soft-bodied animal material and some plant matter.

Many people notice fireflies, but few take the time to truly observe them. Some summer evening while you are taking it easy on the porch, pick one firefly out of the crowd and follow him. It could add to your appreciation and understanding of these interesting insects.

Donna Burks is a Wildlife Biologist for the West Virginia Department of Natural Resources in Elkins, West Virginia.



Wilderness: Promises and Pragmatism

Wilderness Needs Should Prompt Changes in Research Priorities, Attitudes

JAY D. HAIR

ACROSS THE COUNTRY, the debate about what to designate as wilderness is one of the most dramatic arguments on the environmental front. The incalculable value of our natural legacy, the grandeur of wilderness, the economic impact of protection are all elements in that debate.

By the time this nation turned its ingenuity to the *protection* of wilderness, it had nearly completed its *conquest* of wilderness. American pioneers, like people since Biblical times, fought the “wilderness” in a relentless drive for civilization. Only in the last few decades—in the decades of Bob Marshall, Olaus Murie, Aldo Leopold and others—have we at last realized that wilderness *is* a vital part of civilization. We finally comprehended that as we had conquered the wilderness, we had really destroyed a unique component of our natural heritage. By the 1960s, we fully realized our loss and began to accept our responsibility to protect the few wild places still untouched across our nation. So began the long and successful drive for passage of The Wilderness Act. The Act was rewritten 66 times before it was finally passed by Congress and signed by President Lyndon Johnson on September 3, 1964. Idaho’s late Senator Frank Church, a distinguished statesman, was the Congressional floor manager for this landmark piece of legislation.

In passing the Wilderness Act, Congress sought to assure citizens that “an increasing population, accompanied by expanding settlement and growing

mechanization, does not occupy and modify all areas within the United States.” The legislation attempted to “secure for the American people of present and future generations the benefits of an enduring resource.” And it recognized the value of areas “where the Earth and community of life are untrammelled by man—where the imprint of man’s work is substantially unnoticeable.”

The goals were lofty. The promises were broad. But have they been kept?

Today, the National Wilderness Preservation System contains more than 88 million acres of world-class resources. It is the largest system of wild lands protection in the world, and the envy of other nations. Nonetheless, wilderness covers less than four percent of the United States total land mass. It is far less than we need. And it is far less than was promised to the American people when the Wilderness Act was signed.

We know that about 1.7 million species have been formally named since Linnaeus inaugurated the binomial system of scientific nomenclature in 1753. In the 1960s and ’70s, a few scientists estimated the world’s total number of species as high as 10 million. Then in 1982, after an intensive sampling of tropical rain forests, others raised the estimate by threefold. So how many species live on Earth? The answer is still a mystery, and it has a direct relationship to our need for protected wilderness ecosystems.

Of even greater concern is scientific evidence that we are witnessing the global destruction of world-class wilderness ecosystems—particularly tropical forests. If unchecked, that process will culminate in the summary

elimination of millions of species. Norman Myers, in a talk at Berkeley last year, noted, "Of all the environmental assaults we are mounting against the Earth, mass extinction will be the most profound." Isn't it ironic that just when we are learning so much about the origins of life, we are also allowing so much of life's biological diversity to disappear? Isn't it tragic that just when we are learning how to improve the quality of life through spectacular advances in bio-engineering and associated technologies, we are also allowing entire stocks of genetic materials to be eliminated?

OUR NEED FOR WILDERNESS IS SCIENTIFIC AND ECONOMIC

Let's first examine the scientific values. As the basic unit of evolutionary biology, the species is also the basic unit of ecology. An ecosystem, comprised of species in association with their environment, is best understood when we can divide it into its component parts. Then we can understand the relationships within and between species and their habitats. If we do not have intact natural ecosystems—such as those found in large, undisturbed wilderness areas—then we severely limit our global, and our local, opportunities for studying the determinants of species diversity, population regulation, energy cycles, nutrient flows, social systems and community structure. After all, most in society agree that scientific inquiry is essential if we are to understand the world around us. And most in society agree that such knowledge is highly valuable in formulating solutions to resource management problems. Therefore, why has so little long term research about appropriate wilderness-related topics been undertaken? Partially because many in our society can't see the importance of wilderness ecosystems until they are shown their economic values.

Worldwide, every time a prescription drug is bought, there is a 50 percent chance that the purchase owes its origin to materials from wild organisms. In the United States, the annual commercial value of these medicines is approximately 14 billion dollars. Around the world, the commercial value tops 40 billion dollars a year.

In other words, the pharmaceutical industry has an enormous stake in the health of worldwide wilderness ecosystems. If the current rate of global habitat destruction and species loss continues, the pharmaceutical industry—and humankind—will be denied opportunities to discover new drugs to end the suffering and death of millions.

A recent Congressional advisory group found that species are disappearing at a rate perhaps not seen since the loss of the dinosaurs 65 million years ago. At this rate, an average of 100 species may become extinct *each day* by the turn of the century. Most extinctions will take

place in tropical wilderness areas—like those in Madagascar where the rosy periwinkle grows. That species contains alkaloids that have yielded two potent medicines against a variety of blood-related cancers. To date, more than 93 percent of Madagascar's forests—including habitat for rosy periwinkles—have been destroyed. More than half the native plant and animal species are presumed lost.

The National Cancer Institute has reported that in the Amazonian basin alone, there are undoubtedly several other species of plants that could yield superstar drugs against cancer. But, we may never even know their names because, sadly, as the world loses wild things and wild places, we also lose the myriad benefits they have held secret from humankind.

Let us now turn to the economics of wilderness. The tourism business in a small state like Idaho, for example, has passed the traditional industries of agriculture and mining to become one of the state's most important sources of private sector jobs. During the 1984-85 outfitting season, nearly 70 thousand people hunted, fished, skied, mountaineered and otherwise took

advantage of Idaho's outdoor resources. They spent more than 19 million dollars in outfitting and guide activities. Of that amount, nearly 15.5 million dollars stayed in the state. Additionally, the outfitting and guide activities stimulated 24 million dollars in adjunct services for a grand total of more than 38 million dollars poured into the state's economy. The activities created more than 700 full-time jobs.

In the Pacific Northwest, it is estimated that even if all recommended wilderness areas were designated as such, demand for recreation by the year 2030 would still exceed the region's capacity by 50 percent. The economic potential in wilderness is enormous.

The pragmatic—or economic—value of wilderness has not settled the debate about wilderness. The search for

a balancing of priorities continues. It is little wonder, because the questions surrounding wilderness are thorny. In our multiple-options society, how do we provide enough timber to meet our nation's needs while increasing the size of our wilderness system? How do we decide between resources needed for "national security"—resources like minerals, oil and gas—and the resource of land, which warrants protection for its wilderness values? How do we meet the ever increasing demand for dispersed wilderness recreation—for hunting, fishing, backpacking, rafting—and still maintain the solitude that is central to the "wilderness experience"?

WELL-FUNDED, LONG-TERM RESEARCH A MUST

First, we need long-term and properly funded research to provide the kinds of information required to understand complex ecosystems and to resolve complicated public policy and resource management issues.

'Of all the environmental assaults we are mounting against the Earth, mass extinction will be the most profound.'

Let me give you a real life example of how the lack of such long-term research has produced a massive, national environmental conflict. In 1980, when the Alaska National Interest Lands Conservation Act became law, its Section 1002 set aside 1.5 million acres of the Coastal Plain of the Arctic National Wildlife Refuge for further study of its natural resources and potential for oil and gas development. Although the Coastal Plain—or the 1002 area, as it is commonly called—is a relatively small part of this 19 million acre wildlife refuge, it is considered the most biologically productive area. It includes the primary calving ground for the internationally invaluable Porcupine caribou herd. This area, as part of an undisturbed arctic ecosystem is of world-class stature. In fact, the land adjacent to it to the east and the south have already been designated as “wilderness.” Now, seven years later and with virtually no comprehensive research data in hand, the U.S. Department of the Interior is proposing that the entire area be made available for leasing and full oil field development.

Congress faces two diametrically opposed pieces of legislation: One for total wilderness designation and the other for total development. Once again, we are poised for a bitter battle where emotions are high, facts are few, and a number of important national issues are at stake.

Some people—including those in the Reagan Administration—have clad the need for oil and gas development in the patriotic cloak of “national security.” The administration would rush the nation into a decision about oil field development in spite of knowing very little about the probable impacts on one of the world’s most sensitive ecosystems. We have not answered questions that must be answered before a congressional decision can be made about opening the Coastal Plain of the Arctic National Wildlife Refuge to oil development or maintaining its current protected status. For example, do we really know enough about the potential oil reserves of the 1002 area? No. And I believe we must know what exists there even if we decide that the nation’s best strategic course requires deferral of extraction for another 50 years.

Other questions linger. For example, do we really understand the probable impacts of development on the internationally invaluable Porcupine caribou herd or on the area’s musk oxen population or other fish and wildlife resources? No. Do we know the environmental impacts of full oil field development on the area’s air and water quality or the effects of toxic substance bioaccumulation? No. Has anyone evaluated the cumulative impacts of circumpolar development on the arctic environment and its wild living resources? No.

The Arctic National Wildlife Refuge is not the only such instance. We continue to make the same kinds of mistakes on a wide range of important public policy issues. Our society must learn that in order to make

responsible decisions among competing and complex choices, all interests will be best served if better science and enhanced information transfer become more integral elements of the public decision-making process.

Surely, if we can commit billions of research dollars to the development of a dubious space-based defense

program, then we should commit millions of dollars to environmental research designed to understand the life-support systems of this planet of which we are but one part. In the very early 1960s, President John Kennedy pledged to put a man on the moon. In 1969, we accomplished that feat. Wouldn’t it be just as worthy of a President today to commit our nation to a comprehensive inventory of the world’s wild living resources by the year 2000? Aside from a world at peace with itself, I know of no better gift we could leave to the children of the 21st century.

One of the most important lessons I learned about scientific research came during my graduate school days at the University of Alberta in Canada. I had just presented to my major professor the data from my doctoral dissertation on

‘... we should commit millions of dollars to environmental research designed to understand the life-support systems of this planet of which we are but one part.’

the quantification of the structures and function of a complex biological community. Without a word, he looked carefully through my reams of computer printouts and graphs. After an hour or more, he looked up and said, “These are some of the most incredible answers I have ever seen ... Do you have any idea what the questions are?” The point he made so succinctly has remained with me: Scientific research is conducted within the framework of developing and testing hypotheses. That lesson must apply as we try to answer scientific questions relating to wilderness ecosystems.

WE NEED TO REALLOCATE OUR RESEARCH DOLLARS

We need to reallocate our research priorities and our research dollars. Haven’t we counted enough elk feces? Do we really need the 10-thousand and first research project on the white-tailed deer when the species is flourishing and at least 10 million dollars have been spent on research since 1950?

Wouldn’t it be more valuable to fund long-term research programs into such questions as: How do wilderness ecosystems function? What species are present? What is their relative stability over time? What variables are most critical? What happens when they are perturbed by natural causes? By human activities? What resource management knowledge can we apply to non-wilderness areas?

And wouldn’t it be more valuable to quantify that demand curve for wilderness recreation or its contribution to our Gross National Product? Wouldn’t it be more valuable to assess our land management policies regarding all public lands in order to determine how much acreage should be designated as “wilderness.”

Wouldn't it be more valuable to evaluate how many miles of roads we can build in our National Forests before we end up with a highway system separated by strings of trees and silted streams instead of an integrated forest ecosystem capable of sustaining a broad array of renewable natural resources?

And, finally, given the scale of the worldwide destruction of wilderness ecosystems and the limited financial resources at our disposal, wouldn't it be prudent to systematically identify those areas of greatest importance and aggressively proceed to protect them? This priority ranking approach, sometimes known in medical circles as a "triage strategy," would not be without controversy. Who decides, for example, what areas are most important?

However as Norman Myers recently noted (1986, "Tackling Mass Extinction of Species: A Great Creative Challenge." Albright Lectureship, Berkeley.), far from seeking to establish quantification of all critical parameters, a triage approach tries to identify all relevant sets of values in order to illuminate an unduly confused situation. Such an approach would bring a degree of order to the current haphazard process and allow us to make the best use of available financial and other resources. By emphasizing the protection of entire communities of species or entire ecosystems, we could avoid the moral dilemmas inherent in a triage approach as it relates to saving individual endangered species.

In short, we need more emphasis on the importance of natural resources-related scientific and socio-economic research to meet the needs of modern society. And we need to approach such research more creatively, even if it generates some controversy.

NEW ATTITUDE NEEDED IN ORDER TO MOVE FORWARD

In addition to a new research direction, we need a new attitude. First, it is important to remember that science is only orderly *after* the fact. During the research process—and particularly on the frontiers of research—science can be chaotic and fiercely controversial. Likewise, we need to be more cautious in characterizing research as either basic or applied. While there may be some truth in the definition that a specialist is someone who knows more and more about less and less, there is another side to that coin. A tremendous idea in science

often appears to have its birth as a particular answer to a narrow question. Many times, it is much later that the ramifications of that answer become apparent. What began as knowledge about very little often turns out to be wisdom about a great deal.

Second, we must bury the adversarial relationships that have existed too long between various sectors of our society. Isn't it time that the timber industry and conservation interests stop drawing battle lines and start charting an effective and positive strategy for both economic development and enhancement of the wilderness system? Can't we agree that if we bring better information and less rhetoric to the decision-making process, we will produce better public policies?

Third, we must do a far better job of moving new information into the public policy and resource management arenas. Relevant research must reach the table where decisions are made.

Fourth, we need leaders who are willing to take risks, but not with the health of our environment or the natural heritage we hold in trust for future generations. We need leaders to educate our society and provide the scientific knowledge for continued advancement. We need leaders from all walks of life who have an inspired vision of a better tomorrow and a sense of stewardship for those yet unborn. Theodore Roosevelt was one of those people. He said "Far better it is to dare mighty things, to win glorious triumphs, even though checkered by failure, than to take rank with those who neither enjoy much nor suffer much because they live in the gray twilight that knows not victory nor defeat." We must resolve not to live in that gray twilight but, rather, to search the vastness of wild places for that which we have lost—and for that which we have not yet found. Like Roosevelt, we must "hear the challenge, learn the lessons, pay the costs." For ours among all generations is, literally, being given the last chance to save the best of that which remains of our wilderness heritage.

The author is President of the National Wildlife Federation in Washington, D.C. This manuscript was delivered as a Wilderness Resource Distinguished Lecture at the University of Idaho on April 8, 1987.

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Wild about Camping:

A Study of Preferences and Attitudes of Short- and Long-Term Campers at a New York Campground*

LEI LANE BURRUS-BAMMEL
GENE BAMMEL
DAVID DYKEMAN

CAMPING CONTINUES TO be a popular recreational activity in the U.S. The Heritage Conservation and Recreation Service estimated that 30 percent of the population, or 52.3 million Americans camped at least once in a developed area in 1977 (Cordell and Hendee 1982). In 1979, camping was the third most popular form of outdoor recreation, following only bicycling and swimming (Cole and LaPage 1980); during this year campers spent an average of 16 days at campsites. Today, camping is the number one use of National Forests; and it is projected that camping activities will increase by 150 percent by the year 2030. Clearly, camping provides an important recreational alternative for many Americans. To respond effectively to the rising demand for camp accommodations, we need to investigate the average camping experience to discover the sources of camping satisfaction and frustration. Data from this and similar studies can be used to manage campgrounds for optimum use and enjoyment.

While total time spent in any given behavior can serve as an indirect measure of the preference for that activity (Atkinson and Birch 1970 in Buhyoff 1979), there has been little research on the relationship between length of stay and camper satisfaction.

Higher levels of satisfaction were more common among campers remaining several days than among those who had camped for less time (Foster and Jackson 1979).

Such previous research has assisted responsive management in satisfying the camping population, but the increasing demand for this type of recreation requires greater specificity of information, planning, and management.

This study was undertaken to explore the factors leading to camping satisfaction. The study attempted to determine and compare the characteristics, attitudes, and behaviors of short-term (three days or less) and long-term (one week or more) campers at a particular camping area.

METHODS

Length of stay has not been commonly used as a research variable, although Bultena and Klessig (1969) stated that satisfaction would vary depending on duration of stay in a campground. Atkinson and Birch (1970) hypothesized "that the total time spent in any given behavior can serve as an indirect measure of the preference for that activity" (Buhyoff 1979).

A three-section questionnaire was developed to discover the characteristics, attitudes, and behaviors of campers at a New York state park. The four-page questionnaire was accompanied by a cover letter on the official Taconic Region, New York State Parks and Recreation letterhead.

Section 1 of the questionnaire asked the campers for demographic and general information relating to the current camping trip: number in their camping party, party composition (relatives or nonrelatives), waking hours spent

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in camp, previous visit, age, gender, education, income, and place of residence.

Section 2 consisted of two 10-item semantic differentials (SDs). The first SD was used to determine a respondent's feelings about his or her stay, and the second was designed to elicit feelings associated with leaving the park area and going home. Semantic differentials have been useful in other recreation research (Bammel and Bammel 1980, Burrus-Bammel 1980) as a quick, efficient means of getting quantifiable responses from a large sample. It is a standardized technique: its data can be replicated and its format can facilitate the responses of reticent or inarticulate subjects (Mindak 1961).

Past research indicates that the three most dominant factors in SDs are evaluative, potency, and activity (Osgood, et al., 1957). Factor-loading information for 76 standardized polar pair adjectives can be found in Osgood's Factor Analyzed List (Osgood, et al., 1957). Word placement for the selected 10 adjective pairs used in this study (figure 1) varied so that one end of the scale would not contain all the favorable, or active, meanings, thus avoiding position habits. The seven

scale positions that separate the two adjectives were scored 1 to 7 from left to right. "Leaving Park" items (figure 2) 1, 2, and 3 factor load as evaluative; items 5 and 9 are high in activity; item 4 was selected for its potency loading; item 6 for understandability factoring; and 7, 8, and 10 are miscellaneous items selected on face validity. Similar loading patterns existed for "Park Stay."

The remainder of the questionnaire contained a type of Likert activity frequency checklist for 26 activities (table 2). The first, third, and fifth scale positions were labeled in the following order: "five times or more," "three times," and "no participation" during stay.

Subject Selection and Data Collection

Data were collected during four weekends of a three-week period from 23 July to 14 August 1982. Questionnaires were given to campers on their last day of camping. This date was available from reservation records. All long-term campers were included as subjects. Short-term campers were selected

Table 1. Between-Group Chi-Square Semantic Differential Polar Pair Analysis.

Word Pairs "Park Stay"	x ²	df	Long-term \bar{x}	Short-term \bar{x}
1	3.55	2	1.3	1.4
2	39.83*	4	3.7	4.8
3	16.27*	3	1.8	3.8
4	1.95	2	1.4	1.4
5	13.82*	2	6.6	5.1
6	7.46	3	6.0	6.2
7	7.88	4	4.9	4.6
8	20.53*	4	6.0	5.5
9	26.23*	6	4.2	2.7
10	27.97*	4	1.9	3.9
1-10	33.09*	6	3.8	3.9
"Leaving Park"				
1	50.03*	3	6.2	4.1
2	3.65	6	3.7	3.5
3	5.92	5	3.6	3.2
4	22.30*	5	4.1	4.6
5	24.50*	6	4.2	3.9
6	13.15*	4	2.3	2.5
7	48.56*	5	5.9	3.7
8	2.78	6	4.2	4.5
9	8.63	4	5.3	4.7
10	42.87*	6	5.1	2.7
1-10	64.78*	6	4.5	3.7

*Significant at p<0.05.

on the basis of random numbers assigned to camp sites. Twenty numbers were drawn for each weekend. The questionnaires were given to the first person over 16 in each party of campers contacted by the researcher. Eighty short-term and 65 long-term campers received identical questionnaires from the same person.

RESULTS AND DISCUSSION

The overall response rate was 66 percent; short-term campers had a 61 percent (N=49) response rate, while long-term campers had a 71 percent rate (N=46). Half of the long-term camper respondents and 45 percent of the short-term respondents were women. The average stay for short-term campers was 1.8 days, while for long-term campers the figure is 15.1 days. Slightly over half, or 51.5 percent, of the long-term campers remained 20 days or more; 76.1 percent camped for 14 days or more; and 24 percent stayed for 7 days. During the three weeks of on-site data gathering, the total population

ratio of short- to long-term campers was four to one, with a 77 percent campground occupancy rate. Seventy-five percent of the sites were occupied by short-term camping parties, 18 percent by long-term visitors, and 8 percent were in between.

Between-group significant (.05) differences included number of previous visits, age, income, relatives in camping party, nonrelatives in party, and number of waking hours spent at the campsite. No significant differences were found in education or total camping party size. The average long-term camper was 10.45 years older (\bar{x} =40.59), had a higher income, averaged 2.8 more previous visits (\bar{x} =4.28), had 1.44 more relatives in the party (\bar{x} =3.83), 1.56 fewer nonrelatives (\bar{x} =0.46), and averaged spending 1.7 hours more per day at campsites (\bar{x} =10.54). Both groups averaged a party size of about five people, 5.04 for short-term and 4.94 for long-term. Short-term campers tended to be friendship groups, whereas long-term campers tended to be family groups.

Significant between-group attitude differences on the SDs occurred for both "Park Stay" and "Leaving Park" (table 1; figures 1 and 2). Compared to short-term campers, long-

Table 2. Between-Group Chi-Square Analysis of Activity Patterns.

Activity	χ^2	df	Long-term \bar{x}	Short-term \bar{x}
Arts and crafts	18.56*	4	3.6	4.8
Bicycling	1.29	4	5.0	4.4
Playing cards	2.85	4	3.0	3.3
Attending concerts	2.09	4	4.3	4.4
Building a fire	6.59	4	1.8	2.0
Cooking for pleasure	6.08	4	2.7	2.4
Drinking alcohol	12.81*	4	3.3	2.4
Fishing	17.83*	4	4.2	3.9
Hiking (<1 mile)	22.05*	4	3.3	2.1
Jogging	7.91*	2	4.4	4.9
Learning about nature	3.39	4	2.9	3.1
Listening to radio	5.95	4	2.6	2.2
Maintaining camp	16.51*	4	1.6	2.3
Going to movies	28.02*	4	2.4	3.9
Painting/Drawing	1.18	4	4.8	4.9
Photography	19.17*	4	4.5	3.9
Picnicking	9.15	4	3.1	2.6
Playing frisbee	16.83*	4	4.1	4.1
Playing volleyball	11.30*	4	4.1	4.7
Playing softball	6.84	4	4.2	4.1
Reading	9.86*	4	2.3	2.6
Relaxing	12.99*	4	3.1	3.8
Socialization/family	10.87*	4	1.7	2.5
Socialization/friends	15.94*	4	2.7	2.0
Swimming	12.52*	4	1.9	2.2
Walking/pleasure	15.65*	4	2.7	2.8

*Significant at $p < 0.05$.

term campers perceived their stay to be more complete, free, predictable, simple, and less active. Short-term campers were more positive, happy, and excited about leaving the park. The greatest between-group difference on a single word pair was registered for item 10 on leaving the park (figure 2). Long-term campers found it significantly more difficult to leave. The second greatest mean difference was found for item 7 on the concept of leaving. Long-term campers were sadder about leaving.

Significant chi-square between-group differences were found on 16 of the 26 activities as well as for the overall pattern (all 26 combined) (table 2). Long-term campers had higher per-visit participation rates for 10 of the 16 significantly different activities, but short-term campers were more active on a day-to-day basis. This observation is supported by the fact that long-term campers reported spending more time per day at campsites but scored lower activity values on the SD. Eighty-five percent of short-term campers indicated that they had hiked one mile or more three times or more during their stay, compared to only 52 percent of long-term campers. Only 6.5 percent of long-term campers reported "never" relaxing, but 26.5 percent of short-term campers

checked that response.

The activity inventory was not originally designed as a sensitive index for determining the degree of participation, but rather as an indicator of selected activities. Therefore, statistical procedures were greatly limited. Some general findings, however, are noted and include:

- Short-term campers seldom jogged, but 1 in 4 long-term campers did;
- Seventy-five percent of the short-term campers consumed alcohol 3 times or more during their stay of 3 days or less, whereas only 50 percent of the long-term campers drank that often during their 7 days or longer at the campsite;
- Over 30 percent of long-term campers went to the movies at least 5 times; 36.7 percent of the short-term campers never attended, probably owing to the fact that the campground showed movies on the weekends;
- More reading and walking for pleasure was reported by long-term campers.

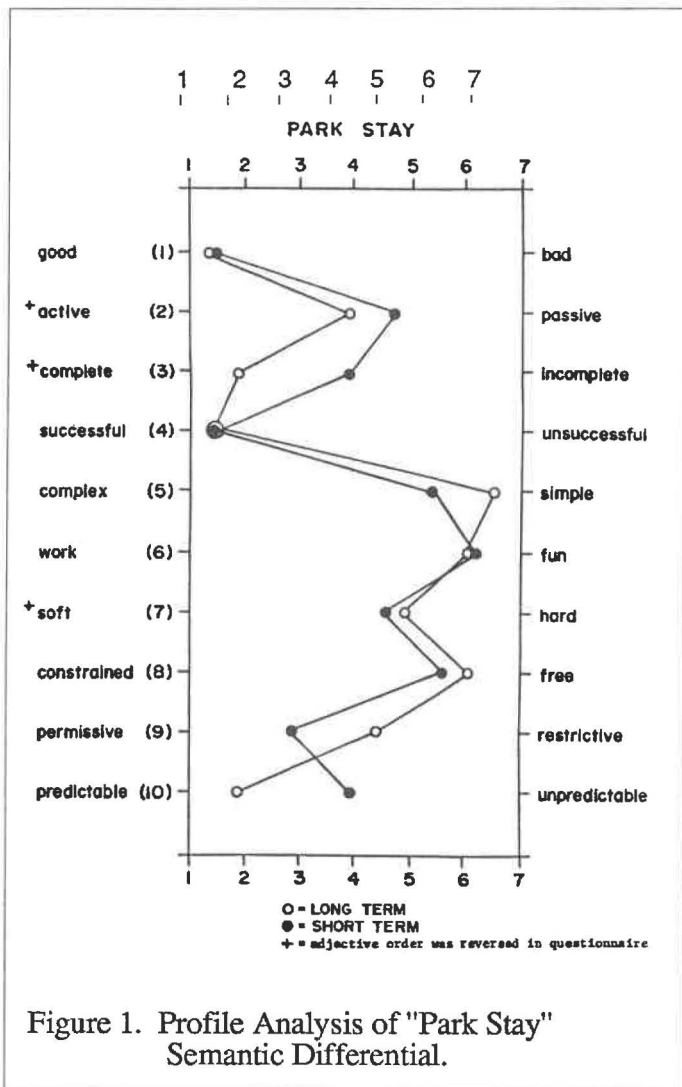


Figure 1. Profile Analysis of "Park Stay" Semantic Differential.

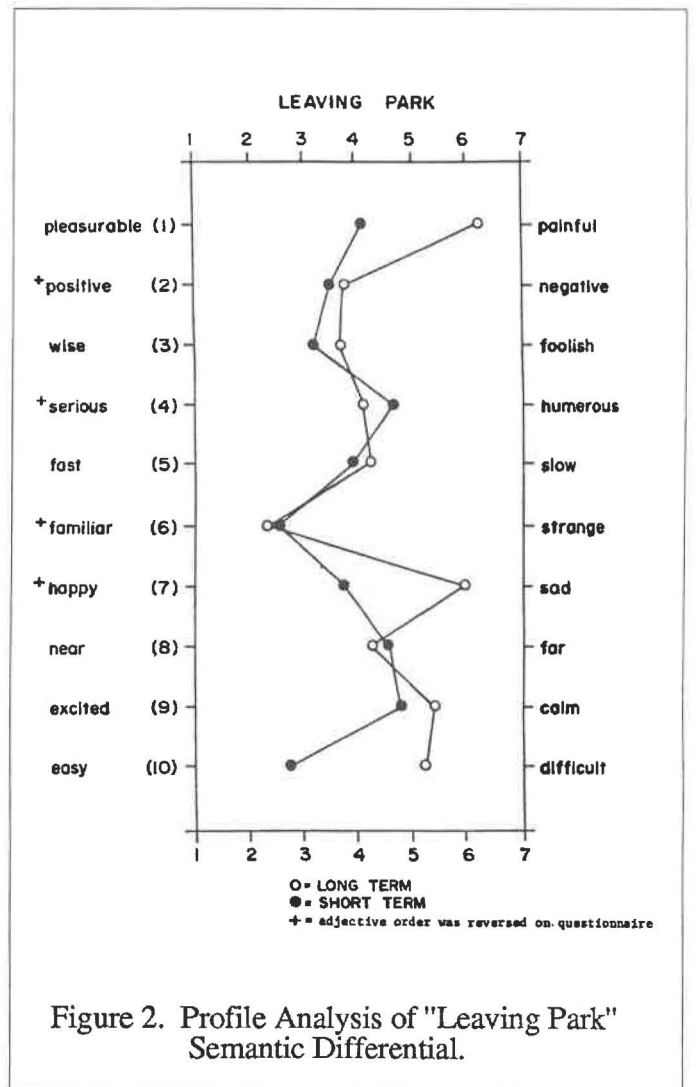


Figure 2. Profile Analysis of "Leaving Park" Semantic Differential.

Some of these differences could be due to age differences and/or the social composition of the camping group, that is, friends or family.

CONCLUSION

The data from this study appears to support the Chubb and Chubb (1981) premise that several days or more are needed before individuals can truly experience relaxation. Since long-term campers had a more positive attitude about their park stay, longer visits should perhaps be encouraged with marketing communications, such as various types of user-oriented brochures and camping literature. Future research could determine if different types of effects and benefits are associated with certain visit durations. If length-of-stay is shown to be a significant factor in other studies, different areas of campgrounds can be managed for different identified sets of camper expectations and motive-preferences.

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Lei Lane Burrus-Bammel, Gene Bammel, and David Dykeman are in the Division of Forestry, West Virginia University, Morgantown, West Virginia.



DZ 3/87

Overprotection of Working Women

Working Women No Longer Need Protection from the Rough Edges of the Workplace; Handicapping Attitudes Can Be Overcome

ELAINE ZIEROTH

NOT LONG AGO I had the privilege of monitoring a panel on civil rights. Four speakers represented the issues and concerns of Hispanics, Native Americans, women, and handicapped individuals. The rehabilitation specialist who discussed the last group, handicapped workers, told us how they had just closed the doors on their "Sheltered Workplace." This, he explained, was a place where workers with severe mental or physical handicaps worked on menial tasks, such as sorting fishhooks, in a safe and caring environment. The workers were not exposed to the hectic, callous pace of the outside world—and the outside world was saved the embarrassment of having to deal with handicapped workers.

The specialist went on to point out that handicapped people are becoming more educated, skilled, and able. It was once assumed that blind people could only make brooms, and retarded people should perform dull, repetitive tasks. As society became less protective and more accepting of handicaps, it was

perceived as amazing what handicapped people could do! A blind man earned a medical degree and became a psychiatrist; a paralyzed person could now operate a computer with a stylus held in the mouth or with simple eye movements. Even after this explanation, someone in

the audience commented that it was a shame that the sheltered workplace was closed down (presumably due to budget cuts). The rehabilitation specialist said, to the contrary, that he wanted the workplace closed down to force the workers to enter the mainstream. Some handicapped workers formed their own small businesses, such as delivering donuts to job sites and shoveling snow. Not only did the workers expand their abilities but the people in the community started accepting their handicaps and their place in the community.

Next, the speaker representing women in the workforce described her early experiences in the Forest Service where she was not allowed to fight fires, work on trails, or work in the field alone because she might get hurt. The thought struck me: just as with the handicapped worker, women were put in a "sheltered workplace" to protect them from dangers that were mainly



Meg Gallegher, Colo. Div. of Wildlife

The author works with a cooperative goose transplant.

in the imaginations of the men who managed the workplace. Elaine Enarson, in her book *Woods-Working Women* (1984, University of Alabama Press) described a similar phenomenon that she called the “protection racket.” It seems that many men have an overpowering need to protect women from the job, from other people, from themselves. It may not be any coincidence that this protection also keeps women from performing at full potential or from effectively competing for other jobs. As long as women themselves subscribe to the sheltered workplace, it will handicap them as surely as a ball and chain.

The discussion sent me back to my early experiences with the Forest Service and Bureau of Land Management. I remember people I worked with in those years telling me three things: women can’t, women won’t, or women don’t want to do such and such. Since most of the jobs I did in the early 70s had *never* been done by a woman before, I was *amazed* at how everyone knew about women’s abilities.

I remember going through fire training, passing the fitness tests, and then hearing my first fire call over my radio at a district meeting. As I ran to get into my new fire clothes, the Fire Control Officer took my arm and said that I really couldn’t go on a fire, it was no place for a girl—I should join the clerks in the radio dispatch room. I stood there looking defeated when one of the recreation technicians grabbed my other arm and said that if I dispatched, women would never fight fire. I decided to risk insubordination and possibly firing to do the job I was trained for. As it turned out, I did get a lecture but kept my job. And most importantly, my presence was not questioned at future fire emergencies.

I also remember working with a woman who finally earned a position on a Forest Service trail crew in California, only to be restricted to driving to the trailhead to post signs, clean toilets or pick up the men on crew who hiked and camped out overnight. I also remember a lady who was hired to inspect timber contracts, usually a solitary job. Since it wasn’t considered safe for her to work alone, the district hired someone to work with her. These women never fought for their right to do their own job. They further reinforced the myths and they allowed others to take away their right to show what they could do.

When I worked with the Bureau of Land Management, I camped out by myself in the backcountry, conducting wildlife inventories. One day my boss inspected several field locations with me. At lunch I parked near the creek and walked down to an inviting rock. My boss trailed along carrying the seat cushion from the truck. He told me that he had to let women work on his projects but he didn’t have to watch them sit on the ground and get dirty. I politely refused the offer, pointing out that it was his problem, not mine. You see, these myths of the gentle, weaker sex need not become our myths or our handicaps. It may be hard (or impossible) for some people to accept the fact that

you, as a woman, can, do, and want, to work equally—but that is also not your problem.

Here are some ways to help close the doors to your sheltered workplace:

- Project a confident and competent image. You can’t do this unless you are ready for the challenges of the job. This does not mean that you have to be experienced in all aspects of the job; just willing to take on the challenge.
 - Dress to fit the position. If you start a field job with painted fingernails, dangling earrings, and designer clothes then you may be giving the message that you are too dainty to do the job.
 - Sell yourself. Tell people what you can do and if they are still reluctant, suggest short-term experiments to prove your abilities.
 - Learn from others doing the job in order to increase your knowledge and show your determination.
 - Don’t lie or brag but remember that false modesty only helps put your abilities down. When entering into a new kind of work, men often bluff about abilities (“run a chainsaw all my life”) while women are often modest (“I could learn a lot more about doing this”).
 - Point out the loss of productivity and money that results from keeping you from doing your complete job. Also point out examples of other women doing similar jobs successfully.
 - Show how the protection you receive causes mistrust and resentment from fellow workers.
 - Protest your protection but remember that insubordination is very risky. If your boss insists on protecting you, despite your equal abilities, seek another source of help. Try talking to your Federal Women’s Program Manager, EEO counselor, next level supervisor, or other person with some power and influence. This may be a case of sex discrimination.
- Women have been burdened with artificial handicaps. Each time the protection is politely but firmly rejected, women will shed these perceived handicaps. One of the best experiences you can have (and then provide for others later) is to follow a woman in the job who was fully competent and exploded the myths for herself and for future women on the job.

Elaine Zieroth is the Zone Wildlife Biologist for the San Juan National Forest in southwestern Colorado. She also shares the duties of Federal Women’s Program Manager. She received a B.A. in Biology from the University of California at Davis and an M.A. in Biology from California State University Fresno. After working for the Forest Service and BLM in California for seven years, she transferred to the Gunnison National Forest for five years, working in wildlife, range and timber. Her husband is a Silviculturist, also working on the San Juan National Forest.

Investing In Natural Resources

Women Are a Potent Force in Stock Markets; 'Putting Your Money Where Your Degree Is' May Be a Smart Investment Strategy

GENE BAMMEL

WOMEN DO WELL in the stock market in this country. Women, who (research shows) tend to be patient investors, own more than half of all the stocks and bonds in the United States. Other recent research on women's investment practices show that (1) husbands who discuss investments with their wives make better decisions than those who don't; (2) some money managers claim that women are good investors, because they tend to ask more questions than their male clients; (3) women appear to have a greater interest in "ethical" investing—that is, investing in social causes, and conversely not investing in places like South Africa or in exploitative industries; and (4) investment clubs made up exclusively of women out-perform both exclusively male and mixed gender clubs.

Brokers advise beginners (whether men or women) to invest in something with which they are familiar. For women who work in natural resources, some form of natural resource investing makes a lot of sense. After all, the wealth of nations, as Adam Smith so aptly put it, is based on taking raw materials and turning them into something useful. Every viable economy depends on food, on energy sources, on building supplies, and on the minerals needed for manufacturing. Shouldn't one be able to add wealth by investing in such materials, particularly if one's employment provides a special perspective on unrealized values? The obvious answer is yes—but *what* to invest in is not so obvious.

ANSWER THESE QUESTIONS FIRST

Q. Gold is a permanent store of value. Why not just buy gold or gold stocks?

A. Gold, like other precious metals, is a commodity whose value fluctuates with industrial demands, currency changes, fears of inflation, even fears of war. Five years from now, gold might sell for \$200 an ounce, or \$2,000 an ounce: either prediction illustrates the futility of trying to lock your future security on any one investment. Part of one's investments might well be in gold, but gold is simply too volatile to represent more than 10% of your investment portfolio. A mutual fund investing in a *number* of mining companies, however, is probably the safest route if you must have gold.

Q. We are running out of oil. Should we buy oil stocks?

A. Oil is a commodity, a business, and a political weapon. It is the resource on which the world runs, and there may be serious scarcities within a decade. Within that time, however, alternative fuels may be discovered, reducing dependence on oil. There are too many variables to make oil the *sole* source of investing for your financial well-being. Owning shares in the oil company whose gas you buy may give you some pride of ownership, but like gold, oil's price is volatile, dependent on too many factors, difficult to forecast.

Q. I work for a small wood-products company that is introducing new high-tech machinery. I am sure this will be profitable for the company, but will it be for me if I become a shareholder?

A. The demand for wood products is generally cyclical. It's the old story: because of increased demands,

forest products companies become profitable; companies invest in new facilities to the point of market saturation; demand decreases; then profits tumble. Some forest product companies, like International Paper, Jefferson Smurfit, and Westvaco, seem well-positioned to overcome the long-standing cyclicality that has troubled the industry. Nonetheless, investing exclusively in forest products companies, or betting on a single new technology, is hazardous. (For federal or state employees, there may be conflict of interest problems in owning stock in a company that may do business on federal or state property. Seek appropriate advice.)

Q. Should I buy land? One real estate catalogue points out "they aren't making any more of it," and that most millionaires made their money in real estate.

A. Investing in raw, undeveloped land is indeed a path to riches, but it may take centuries. While the Dutch purchased Manhattan Island for \$24, and Disney bought the land around Buena Vista for just a few million, buying land is seldom a profitable venture. Land advertised as "recreation development" seldom returns anything to the investor except recreation. Farm land around the United States is selling for about half what it did five years ago. To make profits from land purchases requires good judgement, good fortune, and great patience.

Q. Skiing is important where I live. Should I invest?

A. Apart from the big private companies who own the major ski resorts, over three million Americans have invested indirectly in skiing, by buying condominiums in ski areas. If you are a skier, and intend to use the property for summer and winter vacations, it will likely return you more than monetary rewards. Currently, however, most ski areas are overbuilt to the extent that rentals cannot provide positive cash flows, and the tax advantages of ownership have been minimized by the new tax code. One publicly traded company whose stock you may want to investigate, however, is S-K-I Ltd., which owns and operates Killington and Mt. Snow. Read about this company in the June 1, 1987 issue of *Barrons*, a financial weekly newspaper available in many libraries.*

IMPORTANT PRINCIPLES OFTEN OVERLOOKED

No one company is guaranteed always to make money. If you had purchased \$100 worth of Xerox stock the day it became public, your investment would have been worth \$17,000 20 years later when Xerox was at its high. The same investment today, another 10 years later, would be worth only \$9,000. To make money in the stock market, you need to be attentive to what is going on, and you need to have some *variety* of investments. No one can pick only stocks that go up; in any five stocks experts pick, one will probably go up significantly, one will go down, and three will simply move with the market.

Mutual funds offer you professional managers who spend all their time monitoring the markets.

*Nothing written here is a recommendation to buy or sell any particular product or fund, but is intended simply as educational.

Paul Samuelson, a Nobel Economics Laureate, said many years ago that unless you had more than \$100,000 to invest, you should not buy individual stocks, but only mutual funds. They offer instant diversification, and if they are of the no-load variety, virtually all your money goes to work for you, with very little going for fees or commissions.

There is considerable learning experience, however, and some pleasure involved in buying the shares of a company with which you are familiar. As an "owner" of the company it may help you to keep track of what is really going on. Decide if pleasure and insider information are worth the offsetting price of the shares.

BEGIN SMALL IF YOU MUST

Many novices think they must buy 100 shares of a company, if they are to purchase at all. On the contrary, many discount brokerages are quite happy to sell one share or 25 shares of any stock. (The additional fee is usually quite small.) Most natural resource companies have "optional cash and dividend reinvestment plans," so that you may, if you wish, continue to buy additional shares directly from the company, without any brokerage commissions. (To receive information from Norstar Brokerage, who gladly accepts small orders, call 800-221-5088. There are many others. Local banks now have discount brokerages attached, and will be happy to open an account for you.) As another example, *Financial Programs-Gold* (800-525-8085) is a gold fund that is up 120% over the past year. Gold is volatile, and 120% up years may easily be followed by 50% down years. Gold funds are top performers some years, only to bring up the bottom in following years.

Even if you do not intend to invest, it is instructional to order the prospectuses of mutual funds, so that you have some idea of how mutual fund companies invest. The most enduring, and one of the most successful natural resource funds, *Price New Era* (800-638-5660) has a \$1000 minimum investment and has had an average annual return of 24% over the last five years. This fund invests in energy, minerals, forest products, and other related natural resources. The amount invested in any one company is so small, no conflict of interest problems should arise.

LOOKING AHEAD

Fundamentally, investing in a well-diversified natural resources fund makes good economic sense, for anyone whose investing horizon is five years or more. Invest a fixed amount regularly. Professionals call it "dollar cost averaging," and statistics indicate that investing a fixed amount monthly or quarterly is usually superior to investing large lump sums. Markets have always retreated from all-time highs, and the movement to new all-time highs may take only one month or a long ten years. Patience is the single most important virtue of the intelligent, successful investor.

Next issue, investment clubs will be discussed. To read ahead on them, write National Association of

Investors Corporation, (NAIC) 1515 E. Eleven Mile Road, Royal Oak, Michigan 48067. If you can get to a reference library, read *ValueLine*, which publishes one-page analyses of individual stocks, because in another issue, I will talk about how to use *ValueLine*, and the other investment advisories, to research stocks you might want to purchase. I will say a few words about bonds and their place in your investment strategy.

I have also been asked to write about the other side of the financial issue: borrowing, and how to deal with bankers and loan officers. Women have been the objects of financial discrimination at lending offices. While that situation is improving, there are still special strategies

women should employ when applying for a loan. More of that later.

Gene Bammel is a professor and forest scientist in the Recreation and Parks Management program in West Virginia University's Division of Forestry. He has Bachelor's and Master's degrees from the University of Toronto, and his doctorate from Syracuse University. He has been at West Virginia University for twelve years, and has offered a number of personal financial workshops.

Time to take some new shots or send us your old favorites!

LAST CALL FOR ENTRIES! *women in* NATURAL RESOURCES 1987 PHOTOGRAPHY CONTEST



CATEGORIES

1. WOMEN IN NATURAL RESOURCES—Women may be depicted working, recreating, or relaxing in the field, office, etc.
2. THE NATURAL WORLD—SCENERY—(landscape, waterscape) plant or animal photos may be submitted.
3. HUMOR IN NATURE—Be creative.
4. INTERNATIONAL—Photos taken outside the U.S. that communicate the exotic flavor of foreign places through the depiction of natural landscapes, people, flora, and fauna found there.
5. HISTORICAL—In this category you need not be the original photographer, but you or your organization must own the picture and it should be at least 35 years old.

PRIZES

Winning entries will be published in *women in* NATURAL RESOURCES. All entrants will receive a one-year subscription to the Journal. A grand prize of \$75 will be awarded. First prize winner in each category will receive \$35.

SUBMISSIONS

Black-and-white prints of a maximum size 5" x 7" are preferred. Color prints will be accepted, but entries will be published in B&W. Glossy prints preferred. No size limit on historical photos. Group or organization submissions are permitted. Negatives or slides will not be judged.

DEADLINE

All entries must be postmarked by October 15, 1987. Winners will be notified by December 1 and photographs will appear in the Winter '88 issue. Send entries to Berta Youtie, *women in* NATURAL RESOURCES, Bowers Laboratory, University of Idaho, Moscow, Idaho 83843 (208-885-6754).

JUDGING

Three professional photographers will judge entries. Judging will be based on image sharpness, composition, imagination, and artistic merit. Judges reserve the right not to select winners in a category if there are no entries that merit publication.

CONTEST RULES

Contestants may send as many as 10 entries. Please attach the category, photographer's name, address, and phone number with each entry. All entries must be available for publication. If contestants would like prints returned, please specify and send a stamped, self-addressed envelope. You must know the name/address of each recognizable person in your photo.

We need someone with the boldness of a pioneer, the resourcefulness of an inventor and the faith of a sword swallower.

We have a unique opportunity for someone very special.

A chance to spend two years in another country. To live and work in another culture. To learn a new language and acquire new skills.

The person we're looking for might be a farmer, a for-ester, or a retired nurse. Or

maybe a teacher, a mechanic, or a recent college graduate.

We need someone to join over 5,000 people already working in 60 developing countries around the world. To help people live better lives.

We need someone special. And we ask a lot. But only because so much is needed. If this

sounds interesting to you, maybe you're the person we're looking for. A Peace Corps volunteer. Find out. Call us at 1-800-424-8580, Ext. 93.

Peace Corps.

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NEWS AND NOTES

Diverse Groups Join to Protect West's Rivers and Make Money

THRILL-SEEKING RIVER rafters, staid government officials and environmentalists joined forces to protect and preserve western rivers without the financial support of the federal government.

The National Park Service held a week-long river conservation workshop in Lakewood, Colorado to develop innovative ways to maintain high-quality water activities. Richard Strait, park service assistant director for planning and resource preservation said, "The thing you like to see is smaller communities saying it's important enough to finance and do it themselves. When federal money falls through, we need local initiative." It will be needed, because most federal money for river preservation through the National Park Service went to eastern states with a more immediate need for planning and conservation efforts.

Interest in river preservation is twofold, Strait said. Not only are people working to protect the natural resource, but in tough economic times, they're starting to think of ways to make money from the resource. Enter the river rafting outfitters and other tourist-oriented activities. "For a long time, rafters were looked at as kind of scruffy, something not really welcome," Strait said. "Now people are realizing those outfits bring people with money into town."

U.S. Senator Sim Wirth, D-Colo., citing the economic values of the state's rivers, said more than \$5.5 billion goes into state coffers from activities related to rivers. "It's an enormous piece of our economy," he said, "We have to do a better job of managing our resources with a merger of interests from rafters, conservationists, sportsmen, and the tourism

industry."Janet Day, *Rocky Mountain News*, July 21, 1987, p. 27.

Navajos' Tribal Politics Terrible: National Policies also Seen to Interfere with Economic Progress

TO SYMBOLIZE HOW badly the Navajos need private industry to survive, tribal chairman Peter MacDonald chose Tohatchi, New Mexico, to gather about 500 people recently for the Navajo Economic Summit. The Navajo nation was rekindled here in 1868. After the Indian wars and four subsequent years of imprisonment, starvation and disease at Fort Sumner, New Mexico, 10,000 Navajos survived the "Long Walk" to Tohatchi, returned to their homelands, and started over.

Executives from General Dynamics, Occidental Petroleum, General Motors, First Chicago, the Marmon Group and Daiwa Securities of Japan, who filled the seats in the Tohatchi High School gym, echoed the cheer that the Navajo nation was overdue for free enterprise.

"I was profoundly shocked to learn that a land the size of West Virginia with a population nearing 200,000 in the middle of a Sun Belt market of about 20 million consumers had managed to elude the laws of supply and demand, risk and reward, assets and liabilities for so long," said Robert Pritzker, president of the Marmon Group, an international complex of 60 firms with annual revenues of \$3 billion.

The Navajo nation's relative isolation from free enterprise is a product of federal programs and tribal politics:

- The federal trust relationship prevents the tribe from using Navajo

land as equity for loans.

- Private companies only can lease reservation land, not buy it. Lease terms can change with tribal leaders, who run for office every four years. MacDonald's administration is reviewing a contract his predecessor signed for the Antelope Point marina on Lake Powell, although the contractor has started construction.

- The \$200 million annual allocation in federal funds for tribal roads, education, and other projects is administered by the Bureau of Indian Affairs, which also must approve any contract.

- The tribal process for private contracts sometimes takes years and up to 100 agreements.

The many bureaucratic obstacles, plus the tribe's 60% default rate on loans, said David Paulus of the First National Bank of Chicago, were discussed at length in public and closed sessions.

"You must send a message to the business community: 'Come on in, the water will be fine,'" said Sen. John McCain, R-Arizona, member of the Senate Committee on Indian Affairs. He warned MacDonald that tribal politics must not interfere with tax rates and contract terms in the future.

The impetus for tribal change is a 30% to 50% unemployment rate, an average per-capita income of \$2,414 a year, the exodus of four out of five college graduates from the reservation, a birth rate triple the national average and an energy crunch that has slowed or closed gas, coal, and uranium operations on the reservation.Deborah Frazier, *Rocky Mountain News*, July 27, 1987.

Board Adopts New Forest Practice for Riparian Management Move

IN APRIL, THE Oregon State Board of Forestry approved what may be the most significant administrative rule changes to the 16-year-old Forest Practices Act. The changes strengthen the requirements for protection of streams and streamside vegetation (riparian) vegetation on forested lands in Oregon.

In developing the new rules, the Board recognized that riparian areas contain a unique concentration of forest resources including timber, wildlife habitat and aquatic habitat, as well as soil and water quality values. The new rules are designed to acknowledge the public's interest in growing and harvesting timber in the riparian management area while protecting the other resources. Among the major changes are:

1. Expanded definitions of "Class I waters," "Class II waters," and "Significant Wetlands."
2. Creation of a new stream classification, "Class II Special Protection" to protect those Class II waters which have a significant summertime cooling effect on downstream Class I waters. The width of these riparian management areas will be an average of three times the stream width but not less than an average of 25 feet and up to a maximum average of 100 feet.
3. Added requirements for the retention of conifers and other vegetation and dead standing trees and downed timber within the riparian management areas. These are necessary for wildlife, and provide large wood debris for improved stream structure.
4. Added a requirement for prior approval from the State Forester before

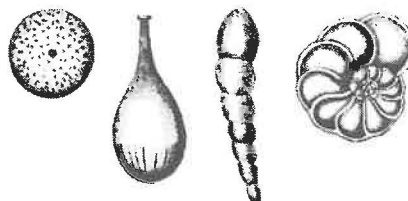
placement of woody debris or boulders in stream channels for the purpose of stream habitat enhancement. This should encourage stream rehabilitation projects on forest lands.

Those interested in receiving a copy of the rule changes should contact the Forest Practices staff at 2600 State Street, Salem, Oregon 97310 (503-378-2533).

Roger Troy Peterson Institute in New York

THE ROGER TROY PETERSON Institute for the Study of Natural History began full-scale operations this year with the hiring of its first president, Harold D. Mahan, former director of the Cleveland Museum of Natural History. The Institute, located in Jamestown, New York, near Lake Chautauqua, has been designated as the permanent repository for Peterson's artwork, correspondence, slides and movies.

A \$5 million headquarters facilities is currently being designed, with a mid-1988 opening projected. The Institute's staff will eventually include 45 scientists, program coordinators, writers, and editors, with a mission to develop a high quality, unique program of natural history experiences and publications on a world-wide scale. Ultimately, the Institute will have facilities and programs throughout the United States.*The Bridge*, a special joint newsletter of the Conservation Education Association and the North American Association for Environmental Education.



Four State Forest Alliance Forms in Northeast

THE STATE FORESTERS of Maine, New Hampshire, New York, and Vermont have signed a charter creating the Northeastern Forest Alliance. The alliance has four long-term goals: to support a regional approach to forest resources planning; to focus attention on natural resource issues and opportunities which transcend political boundaries, and enhance the ability of member states to affect positive change in these areas; to share technical expertise in the region to provide efficient problem-solving and delivery of services; and to promote the Northeast as a significant producer of forest amenities such as timber, water, wildlife, and recreation, and the jobs and other social benefits which result.

The four-state area has 44 million acres of commercial forest land, and is home to over 20 million people, 8 percent of the nation's population. Though the region is diverse in resource and economic terms, one area of similarity is clear: an abundant hardwood resource with a lack of markets leading to value-added processing.

Although the alliance expects to achieve several broad goals, state foresters have agreed to concentrate on improving hardwood markets as a first project. The alliance has received first-year funding from the U.S. Forest Service to solicit the advice of a professional marketing firm, preferably one not biased by long association with forestry, to show the region how best to tell its story. Money will be spent not on an advertising campaign alone, but to gain understanding about how to market the region.

A contract will be awarded by the end of the summer, based on detailed proposals to be submitted by several marketing agencies. It is hoped that the effort will yield not only an effective short-term campaign, but productive long-term changes in existing programs in the region.Gail Vaillancourt, New Hampshire Division of Forests and Lands, in *Forest Notes* (Summer 1987)

Introduction of Foreign Genes into Pine Cells

Ronald R. Sederoff, a plant research molecular geneticist and his coworker Anne-Marie Stomp, a visiting scientist from North Carolina State University in Raleigh demonstrated for the first time a practical means of introducing foreign genes into pines.

To get alien genes into pine cells, the researchers turned to a natural system that had been used to engineer tobacco and other angiosperms but never before pine.

They take advantage of the fact that *Agrobacterium tumefaciens*, the causative agent of crown gall, inserts a part of its DNA into the host cell's nucleus during the course of infection. This small DNA segment called a plasmid, carried genes that direct the plant cell to manufacture unusual products that may be used for the growth and reproduction of the bacterium.

It is theoretically possible to develop strains of *Agrobacterium tumefaciens* that could introduce into the cells of the crown gall host any one or a combination of desirable genes. That's because once they are isolated, other genes like that for blister rust resistance from the sugar pine, can be combined with the bacterial plasmid and transported into the pine cell by the natural infection process.

Until now, though, no one has been able to get crown gall to infect pine—the trees that will need to receive transplanted genes if a commercially successful gene splicing industry is ever to become a reality in forestry.

The researchers were able to find two strains of *A. tumefaciens* that were both able to induce gall formation eight weeks after inoculation. Gall appeared on 5 percent of germinants (infected cotyledons).Richard B. Pearce, *Forestry Research West* (November 1986)

Pat Schroeder for President: People Either Love Her or Hate Her

PAT SCHROEDER IS taking the talk of her potential candidacy at least semi-seriously. She's formed an exploratory committee, Schroeder 1988? Inc. She's raised over \$100,000 in cash and another \$400,000 in pledges. She's signed up direct-mail whiz Roger Craver to do a mass mailing in early August. She's even visited the Denver media, a sure sign someone has the campaign bug.

But the question remains. How can an unabashed liberal, who hails from a tiny state (Colorado), has no national political organization and is a lackluster fund-raiser, possibly have a chance to win the Democratic nomination? Oh, yes, I almost forgot; the congressperson is a she.

Well, just for argument's sake, let me suggest a scenario that might work. Let's begin by acknowledging that most of Schroeder's weaknesses are potential assets. Everyone knows a woman can't win, which makes her, at the very least, a curiosity item. Those of you who saw the seven Democratic dwarfs debate on the Bill Buckley show no doubt are aware that Schroeder, with her gift for the memorable phrase ("Teflon presidency"), could easily hold her own in that company. Moreover, because people have no expectations, all she has to do is not make a fool of herself. As far as the national media are concerned, she's almost in a no-lose situation.

What about the argument that she's too liberal, even by Democratic standards? First of all, in a wide-open primary, fringe candidates are often in a better position to win. Not only can Schroeder claim the feminist vote, but she has strong appeal to minorities, to people who favor cuts in military spending and to other constituencies.

So she starts with a bona fide base of support. That's more than Bruce Babbitt or Joe Biden can claim.

Then again, on certain issues, such as free trade and balancing the budget, she's much more in the mainstream than some of the other

candidates. But to a certain extent, it may not matter what she believes. Schroeder's advisers would argue that the real source of her political appeal is not that she's liberal, but that she's a populist. She probably won't be flattered by the comparison, but her political profile resembles Ronald Reagan. People may not agree with what he says or does, but they like his style. That's true with Schroeder as well. People either love her or hate her. If enough love her, the money will start rolling in, and she could go far.

What about the fact that she has no political organization in place? This column has consistently argued that the most important element in winning the nomination is developing a competent national organization. Schroeder has almost no chance to build a good organization at this stage of the game. However, she could "borrow" much of the staff of an existing organization such as NOW, which is reasonably well-organized in every state of the Union. That would be at least an interim solution.

Pat Schroeder, over the years, has proven to be the savviest and toughest campaigner of the Colorado congressional delegation. If she thinks she can win, she's either crazy or she knows something we don't. On the other hand, for the time being at least, what has she got to lose? As long as she's a class act, at the very worst, she'll end up being the de facto First Woman of American politics. That ain't half bad.David Ethan Greenberg, "Scenario for Pat Schroeder," *Denver Post*, July 25.

Leave the 'Fast Track' Behind to Get Control of Your Life

WHY INDEED DO some people leave the fast track when others do not? The need is not universal, but a significant number of women choose to make such lifestyle changes just when they are beginning to reap the rewards of career success. The tacit assumption of the business community is that only failures need ever change, but in fact it is often the most successful workers who pause midstream to reevaluate the quality of their lives. They may change jobs, move, leave the public sector, take up a whole new occupation. They may well work harder than they've ever worked before. But the one common denominator of people who choose to get off the fast track is a desire to regain control of their lives.Kim Wright Wiley, *Savvy* (November 1986)

Women and Depression

Women have been reported as being more prone to depression than men. Researchers at a Boston-based family counseling, education and resource center believe they know why. The cause may be the greater job and home responsibilities women face. Their study involved 651 men and women. The results indicated that women worked twice as many hours as men on home-making and child-care tasks. Even women who were the primary breadwinners in their households were the primary emotional and physical caretakers. Married women with children worked a total of 85 hours per week (combined family and job responsibilities) while married men with children worked only 65 hours per week.*Psychology Today*

Women in the Ranks of White-Collar Criminals

AT A TIME when American women are breaking age-old barriers in business, medicine and education, a growing number are also making big waves in a less illustrious field: white-collar crime. Arrests of women for such crimes as fraud and embezzlement have risen sharply in recent years, especially when compared with rates for men arrested for similar offenses. Federal Bureau of Investigation figures show that between 1976 and 1985 the number of women arrested for embezzlement increased 55%, compared with a 1% decrease for men. Fraud arrests among women shot up 84% in the same period, nearly twice the rise among men.

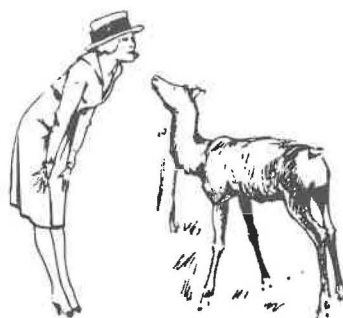
Much of the increase can be explained by the tremendous influx of women into the workplace, especially into positions of financial responsibility such as office supervision and investment management. In addition, male-dominated companies seem more willing to crack down on female offenders—who still fill many lower-level clerical assignments—than on upper-level male managers, whose exposure would cause the company considerably more embarrassment.

Those familiar with the problem, however, say there are other factors involved. "The new professional women are becoming greater risk

takers than they used to be," asserts Sani Gostin, a convicted embezzler who runs a San Francisco-based support group for women who can't control their spending.

As white-collar crime among women has increased, some telling contrasts between male and female offenders have become apparent. A recent Yale University study found that white-collar men who steal typically take far more money than women—an average of 10 times more. "The differences are amazing," says Kathleen Daly, an associate professor of sociology and the author of the study. The study also found that female white-collar criminals, who are largely clerical workers, tend to get involved in simpler frauds, and usually act alone and out of concern for their families. Many of their male counterparts, by contrast, tend to be conspiring managers. And while men tend to use stolen funds for luxury items such as sports cars, women embezzlers "may be motivated more than a need to make ends meet," Daly says.

Another thread running through the crimes of many female offenders is men. "Most women thieves in prison are there because of the man in their life," contends Gostin of the San Francisco help group. "These women will do anything for their men, including stealing." Consider Doris Giglio, a 57-year-old former insurance administrator for an Indiana manufacturing concern, who was recently released from a Texas federal prison after serving less than two years. Caught by the Internal Revenue Service, Giglio had pleaded guilty to embezzling nearly \$180,000—most of which, according to lawyers involved in the case, apparently went to her young boyfriend, a company clerical worker in his 30s who was never accused of the crime. ...Bryan Burrough, *Wall Street Journal*, May 28, 1987



Wheat on the River, Fish on the Roads

DURING THE PAST half century, the Columbia River has been transformed from a wild, free-flowing river into a chain of reservoirs. Idaho now has a seaport, but at the expense of fish. Wheat used to be transported on land, and the fish were in the river. Now wheat is moved on the river, and young fish are transported on roads. Increased reliance on transportation by the Corps of Engineers is becoming more controversial. The managers of the fishery resource, the tribes and fishery agencies, believe more water must be spilled over dams to help young fish reach the ocean, but the dam operators are opposed.

Some progress has been made in recent years to provide better passage and increase flows at critical times for fish, but the dams are still being operated primarily to maximize power generation. Federal and state fish agencies and the Columbia River Inter-Tribal Fish Commission (CRITFC) have asked that the minimum survival rates of smolts be increased by a few percentage points at each dam, but the Corps and utilities are claiming that the price tag of lost electrical generation will be too high to justify such an increase.CRITFC *News* (October 1985–November 1986)

Hunting "Igor"

AS OF MARCH 1987 only one California condor was known to exist in the wild. Nicknamed "Igor," this condor is the object of an intensive search by a team of scientists and wildlife experts who hope to capture this giant vulture in an attempt to help save this nearly extinct species. The plan is to protect the birds from the hazards of the wild (including indiscriminate shooting and lead poisoning brought on by eating shotgun pellets in animal remains) and to establish a captive breeding program that will someday allow the condors to return to the wild. Only 26 other California condors now exist, all in captivity.*Endangered Species Technical Bulletin* (vol. XI, Nos. 8, 9)

Field Brome Cover Best for Erosion

HARRY PARK IS a nursery operator in Multnomah County, Oregon, who sows field brome between his rows of ornamental plants to protect the soil from erosion.

The Park Nursery first started using field brome in 1975 when the local field office of the Soil Conservation Service obtained seed for a trial planting. Park tried the field brome, found it to be an excellent cover crop, and used it for several years until he could no longer find a commercial source for the seed.

Unable to get field brome, Park used other cover crops, such as cereal grains, but found they were harder to control and had to be mowed. Cost of the field brome is competitive with the more often used cereal grains.

The brome doesn't grow well between shade trees, but Park finds it

to be the best cover crop he has used in the narrow (5 foot) space between rows of ornamentals. He spreads about 10 to 12 pounds to the acre with a lawn spreader. After trial and error, he improvised a small spiked harrow to drag behind the 30-inch spreader. The harrow cuts little grooves that make the emerging grass look like it was drilled and, according to Park, the seed seems to germinate better.

Field brome was brought to the United States in the early 1940s from Sweden for testing as a forage grass. But it wasn't until it was tested as a cover crop in the 1950s that its value as a conservation plant was discovered. It is so similar to other, more weedy bromes, however, that it has never gained much popularity for erosion-control plantings.

"When you plant a cover crop, you have to think about whether it will do the job. Next—the hardiness

of it—will it take our winters? Then, of course, its availability," said Park.

Field brome can meet the test of Park's requirements. It produces a soil-holding root system three times greater than ryegrass. Since it doesn't form seedheads until about 5 weeks later than other brome varieties, it is much easier to control. Growers have until mid-June to work it under, yet the growth is low through the winter with no rank above-ground canopy until spring. Planting time is in September, which gives it time to produce a nice cover mat by the time the fall rains come. SCS estimates that more than 40,000 tons of soil is lost each year from the nurseries in the area.Soil Conservation Service *News*.

Self-Destructive Behavior Becoming Part of Success

World Bank Launches New Environment, Women, Population Policies

WORLD BANK PRESIDENT Barber Conable has announced that environmental matters have now been upgraded with the creation of an Environment Department overseen by the vice president of policy, planning and research. The staff will be expanded from 17 to about 60. The director is yet to be chosen. In addition, the bank plans to beef up the technical side by adding new scientific and technical personnel to the four regional offices in Asia, Africa, Latin America, and Europe. "We have an economic screen; what we're going to have now is an environmental screen," said W. David Hopper, the new senior vice president for policy, planning and research.

President Conable has named the environment as one of his top three concerns, the others being population growth and the status of women in developing countries. In a speech delivered at a World Resources Institute, Conable announced four new environmental initiatives: a 5-year assessment of the most severely threatened environments in 30 developing countries; a new effort to stem desertification and deforestation in sub-Saharan Africa; a hefty increase in annual funding for forestry projects from \$138 million to \$350 million in 1989; and a cooperative effort with Mediterranean countries to protect the Mediterranean Sea.Constance Holden, *News and Comment* (15 May 1987)

"WOMEN WHO HAVE a lot of social roles—workers, mothers, wives—show very little deviant drinking behavior," says David D. Celentani, an associate professor of behavioral sciences at the Johns Hopkins School of Public Health at Baltimore who has studied drinking among women in that city. But even without alcoholism, there is a growing list of stress-related behavior patterns being adopted by women.

For example, Judith Ellen Turian, a psychologist with the Vista Recovery Group, a Los Angeles chemical dependency treatment group, says there has been a tremendous rise in cocaine abuse among executive women. "They have the money to get it, they don't have to do it publicly. It gives them a feeling of power and it gives it to them fast." Executive women, many of whom have husbands or young children making demands on their time, rarely can go for an after-work drink or otherwise take part in the social networks of business. In contrast to these stress relievers are smoking and eating disorders. They do not interfere with other activities and can be kept hidden from children or bosses.

Women are more likely than men to mention stress as a reason they smoke. This infuriates some smoking experts who say news organizations are doing too little to discourage smoking among women.

"Women's magazines run millions of articles on breast cancer, contraception, osteoporosis, dieting, but how often do you see an article on lung cancer, the major killer of women?" asks Ellen R. Gritz, a cancer-control specialist with the Jonsson Comprehensive Cancer Center at the University of California at Los Angeles. The result is that women still see nicotine as a safe way to modulate mood.Claudia H. Deutsch, *New York Times* (August 1986)

Joggers Pound Trees to Death

DECLINE OF THE center row of trees in a street planting near the University of Washington is attributed to the effect of soil compaction from joggers and other intense recreation use of the median strip.Robin Morgan, Community and Urban Forestry on the West Coast, *Totem* (Spring 1987)

Give Buffalo a Home

SOMETHING NEEDS TO be done about Montana's controversial buffalo hunting season, but the State Fish and Game Commission continues to plod unyieldingly along the same course. National Forests and the park bison belong to the people of the United States, not just Montanans. If put to a national vote, Americans would likely want to see buffalo roaming their National Forests.Editor, *Bozeman Chronicle* (March 7, 1986)

Red Wolf to Be Introduced

THE RED WOLF, once found throughout the southeast, now exists only in captivity. The U.S. Fish and Wildlife Service has plans to reintroduce mated pairs of red wolves into the Alligator River National Wildlife Refuge in Dare and Tyrrell Counties of North Carolina. If approved, the plan calls for the acclimation of the wolves for six months in captive pens on the refuge, followed by a release of three pairs. The wolves will be checked periodically to make sure that they are still on the refuge. Any that should stray off will be recaptured. If this experiment is deemed a success, the USFWS hopes that other Federal land management agencies in the southeast will be interested in further reintroduction efforts.*West Virginia NonGame News* (Spring 1987)

E V E N T S

S E P T E M B E R

•PAST, PRESENT, FUTURE OF WORLD'S PARKWAYS, 9-10 September 1987, Roanoke, Virginia. The Appalachian Consortium, the River Foundation and the Blue Ridge Parkway will sponsor this conference examining parkways. For information contact Barry M. Buxton, Appalachian Consortium, ASU/ University Hall, Boone, North Carolina 28608.

•THE 117TH ANNUAL MEETING OF AMERICAN FISHERIES SOCIETY, 11-17 September 1987, Winston-Salem, North Carolina 1987. For information, contact: Carl Sullivan, Executive Director, American Fisheries Society, 5410 Grosvenor Lane, Bethesda, Maryland 20814 (301-897-8616).

•77TH ANNUAL MEETING OF THE INTERNATIONAL ASSOCIATION OF FISH AND WILDLIFE AGENCIES, 12-15 September 1987, Winston-Salem, North Carolina. Contact Jack H. Berryman, 1412 Sixteenth Street NW, Washington, D.C. 20036 (202-639-8200) for more information.

•CATCH AND RELEASE FISHING—A DECADE OF EXPERIENCE. 30 September—1 October, Humboldt State University. Speakers from the U.S. and Canada will present new techniques, results, and problems from a variety of fresh and saltwater experiences at this symposium. Contact Roger Barnhart, Humboldt State University, Arcata, California 95521 (707-826-3268) for information.

O C T O B E R

•ANNUAL MEETING FOREST HISTORY SOCIETY, 2-3 October 1987, Durham, North Carolina. The 1987 FHS annual meeting will include some joint activities with the fall meeting of the American Association for State and Local History at Raleigh. A joint hospitality suite at the AASLH headquarters hotel is planned. The Society's annual meeting is open to all. For more information, contact FHS, 7001 Vickers Avenue, Durham, North Carolina 27701.

•INTERNATIONAL SYMPOSIUM ON INCREASING WETLAND RESOURCES. 4-7 October, Washington, D.C. Sponsored by the National Wildlife Federation's Corporate Conservation Council. The symposium will examine the status and effectiveness of wetlands restoration and creation projects and ways to initiate and fund future projects. Scientists, engineers, elected officials, corporate leaders, agency officials, and conservationists will participate. For a conference brochure or more information, contact Barbara Haas, Administrator, Corporate Conservation Council, National Wildlife Federation, 1412 16th St., N.W., Washington, D.C. 20036-2266 (202-637-3746).

•COMMUNICATIONS SKILLS SEMINAR, 20-23 October, Paris Landing State Resort Park. Sponsored by the Land Between The Lakes, Tennessee Valley Authority. Designed for natural resource professionals, the seminar will focus on how to back up your oral presentation with lively audiovisual, graphic, and computer support; how to communicate effec-

tively through the media and by telephone; and how to deal with political and controversial issues. Jim Carpenter, Coordinator, Professional Development, LBL, TVA, Golden Pond, Kentucky 42231 (502-924-5602).

•SOCIETY OF AMERICAN FORESTERS, 18-21 October 1987, Minneapolis, Minnesota. For more information, contact Richard Zabel, Convention Manager, Society of American Foresters, 5400 Grosvenor Lane, Bethesda, Maryland 20814 (301-897-8720).



N O V E M B E R

•4TH ANNUAL INTERNATIONAL CONFERENCE ON ARTIFICIAL HABITATS FOR FISHERIES, 2-6 November, Miami, Florida. The purpose of this conference is to organize and evaluate rapidly developing research to enhance aquatic habitat and fishery populations in the world's freshwater and marine ecosystems. Professionals from many nations will present theoretical and practical state-of-the-art advances and science and technology. Technical sessions will focus on ecology, economics, engineering and design, fishery management, and mitigation fisheries. Subjects will include traditional benthic reefs and pelagic fish aggregating devices as well as newer innovative approaches developed in more general aquatic habitat manipulations. Quantitative and experimental approaches will be examined.

E V E N T S

Exhibits, poster sessions, and field trips to a variety of natural and human-made aquatic habitats will round out the program. Included in the 12 sponsors of the conference is the Southern Division of AFS, headquartered in the Hyatt Regency Hotel/Knight Center. Further conference information is available from the conference chair, William Seaman, Florida Sea Grant College Program, Building 803, Room 4, University of Florida, Gainesville, Florida 32611.

•ENTOMOLOGICAL SOCIETY OF AMERICA, 29 November–3 December 1987, Boston, Massachusetts. Program chair Kenneth V. Yeagan, Department of Entomology, University of Kentucky, Lexington, Kentucky 40546-0091.

•PRACTICING FORESTERS INSTITUTE COURSE I, 10–13 November, Durham, New Hampshire. A program of continuing education offered by the Practicing Foresters Institute, a Trust organization. The PFI Trust has assumed responsibility for continuing education courses formerly conducted by the Association of Consulting Foresters, Inc. Although ACF members are given priority for the limited course registration, others are invited to participate on a first-come, first-served basis. If you are interested and wish to receive further information, contact Fred A. Huntress, Jr., ACF/RF; ACF Continuing Education Committee, c/o New England Forestry Foundation, 85 Newbury Street, Boston, Massachusetts 02116.

•LAND CLASSIFICATIONS BASED ON VEGETATION, 17–19 November 1987, University of Idaho.

Moscow, Idaho. For more information contact: Donna Germer, Conferences and Enrichment, University of Idaho, Moscow, Idaho 83843 (208-885-6486).

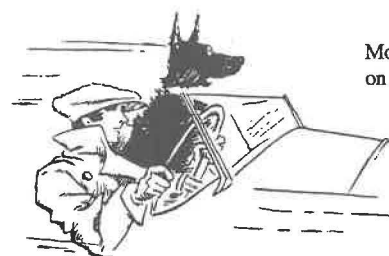
•WORKSHOP. INSECTS AND DISEASES OF SOUTHERN NEW ENGLAND FORESTS: DIAGNOSIS AND IMPLICATIONS FOR MANAGEMENT, 19 November 1987, Holyoke, Massachusetts. The program is sponsored by the University of Massachusetts Cooperative Extension, Department of Forestry and Wildlife Management, Connecticut Cooperative Extension, and the Yankee Division of the Society of American Foresters. The purpose of the session is to update practicing foresters on the status of forest pests and pathogens they are likely to encounter in southern New England. In addition, a comprehensive informational packet will be given to each registrant. For further information, contact Christina Petersen or Dave Kittredge, Department of Forestry and Wildlife Management, University of Massachusetts, Amherst, Massachusetts 01003 (413-545-2665), or Steve Broderick, Connecticut Cooperative Extension Windham County Extension Office, P.O. Box 327, Brooklyn, Connecticut 06234 (201-774-9600).

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•SOCIETY FOR RANGE MANAGEMENT CONVENTION, 14-19 February 1988, Corpus Christi, Texas. For Information contact: F. C. Bryant or R. E. Sosebee, Department of Range and Wildlife Management, Texas Tech University, Lubbock, Texas 79409.

•INTERNATIONAL SYMPOSIUM ON VANDALISM: RESEARCH, PREVENTION AND SOCIAL POLICY, 20–23 April 1988, Seattle, Washington. Organizers and sponsors: U.S. Forest Service, Pacific Northwest Research Station, Institute for Environmental Studies, University of Washington, Vandalism Alert, Inc. Address all inquiries to: Polly Dyer, Co-chair, International Symposium on Vandalism, USDA Forest Service, Pacific Northwest Research Station, 4043 Roosevelt Way NE, Seattle, Washington 98105 (206-442-7846).

SHORT COURSES IN REMOTE SENSING. The office of Remote Sensing at South Dakota State University announces its series of 15 short courses for 1987. The courses present basic to advanced techniques for remote sensing of natural resources, including such tools as data handling and processing, image interpretation, and field methods. Since 1978, the office has trained more than 500 scientists, and more than 200 participants from 30 countries have participated in its Visiting International Scientists Program. Contact: Engineering and Environmental Research Center, South Dakota State University, Box 507, Brookings, South Dakota 57007.



More Events
on page 52.

Women's Fisheries Network Described

A description of the Women's Fisheries Network has been provided by AFS member Karen Teig. She is a member of the Seattle Chapter of the Women's Fisheries Network. A brochure that she provided says: "The Woman's Fisheries Network is a national organization set up to educate its members and nonmembers alike about the fishing industry and the related industries that support it." Founded in Seattle in 1983, the Network has grown to include chapters in major fishing areas around the U.S. For more information and directions for joining, write: Women's Fisheries Network, 2442, N.W. Market Street, #2443, Seattle, Washington 98107.

Art for Beauty's Sake

The beauty of areas in our national park system may kindle emotions few of us are able to express. Artist Cynthia Bennett has captured some of the beauty in an exhibit of paintings depicting fifteen southwestern parks. The traveling exhibit is entering its second year touring under the auspices of Harpers Ferry Center. The paintings, copyrighted by Bennett (and owned by the National Park Service) will be placed on long-term display in appropriate parks or Washington offices. For more information about the collection's current travels, contact the Regional Traveling Exhibit Coordinator at Harpers Ferry Center in Virginia.

KIOSK* *postings

International Foresters Sought

The World Forestry Center, in an effort to expand its international program, is developing a roster of foresters with international experience or interest. If you have worked abroad or are interested in forestry in other countries we'd like to know who you are.

Please drop us a line with your name and address, the countries you've worked in or other internationally related work and your areas of interest. Let us know if you're familiar with the World Forestry Center and if you'd like more information about it. Please send responses to: World Forestry Center, 4033 SW Canyon Road, Portland, Oregon 97221, ATTN: International Coordinator.

Competition for Grants

The Center for American Women and Politics announces a competition for grants of \$5,000—\$10,000 for research on the impact of women in public office. *Grant applications are due October 31, 1987.* For further information, contact Debra Dodson, C.A.W.P., Eagleton Institute, Rutgers, New Jersey 08901 (201-828-2210).

Information on Teaching Forest Conservation or Environmental History Wanted

We are collecting course descriptions and reading lists at Durham Forest History Society (FHS) headquarters, along with suggestions about how best to circulate this information. Information on museum exhibits, educational tours, films, and other nontraditional teaching materials is especially welcome. Send to FHS, 701 Vickers Avenue, Durham, North Carolina 27701.

Peace Corps Legislation

Peace Corps training and educational benefits demonstration program (H.R. 2632), introduced by Rep. Connie Morella (R-Maryland) on June 9, would authorize \$5 million for training and educational benefits for selected students who have completed two years of higher education and agree to serve at least two years as a member of the Peace Corps. Students would be selected on the basis of special need in the Peace Corps, and from "traditionally underserved groups of students." The educational benefits will equal to tuition, room and board, books and fees, and other education costs involved.

Information Sought

The California Department of Forestry and Fire Protection (CDF) is seeking information worldwide about materials and programs in use to educate children and adults about forestry and trees. CDF is compiling the information in a compendium which CDF will use to further develop its education program.

The compendium will include resources such as books, films, pamphlets, posters, teacher workshops (such as Project Learning Tree), public service announcements computer software, etc. Because the compendium is focused on material suitable for the general public, the compendium will not include the many technical and professional resources that are available.

If you have material you would like listed in the compendium, or if you want to be notified when it becomes available Spring 1988, write by October 15, 1987, to: California Department of Forestry and Fire Protection, P.O. Box 944246, Sacramento, California 94224-2460, ATTN: Cherry DuLaney, Room 1516-29.

New Hampshire Event

The Society for the Protection of New Hampshire Forests meets on Sunday, October 4, 1987. After a day of field and business meetings, a moonlight dinner cruise on Lake Winnepesaukee is planned. Lake ecology and Lake Winnepesaukee's future talks by guest speakers are planned.

KIOSK*
*postings

Opportunity Forestry Apprentice— TVA's Land between The Lakes (LBL)

One-year position for recent graduate. Will assist with on-the-ground management of LBL's forest and openlands with emphasis on that part of the Resource Management Plan that affects aesthetics. Housing and stipend provided. Contact Jim Carpenter, TVA-LBL, Golden Pond, Kentucky 42231 (502-924-5601).

More Events: Upcoming Conferences

PONDEROSA PINE: THE SPECIES AND ITS MANAGEMENT, 29 September to 1 October, 1987, Spokane, Washington. Presented by the USFS, Washington State University, the University of Idaho, and the Society of American Foresters. For information and to register, contact Conferences & Institutes, Van Doren Hall, Room 208, Washington State University, Pullman, Washington 99164-5222 (509-335-2946).

Call for Papers

THE WESTERN SECTION OF THE WILDLIFE SOCIETY, 10-13 February 1988, Hilo, Hawaii. Conference theme is Conservation Biology's Role in Wildlife Manage-

ment, Issues, Concerns, and Opportunities. For information contact John G. Kie, Program Chair, Forestry Sciences Lab, 208 East Sierra Avenue, Hilo, Hawaii 93710 (209-487-5589).



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This newsletter is published six times a year and is available only by subscription. For more information, contact Nancy Michaelsen at 306 Walnut Drive, Fredericksburg, Virginia 22405 (703-371-7522), or send \$1 to receive a sample issue of the newsletter.

JOB INFORMATION EXCHANGE

IF YOU HAVE a job to offer in natural or cultural resources, list it with *women in NATURAL RESOURCES's* Job Exchange. If you are searching for one, send a brief résumé and describe the position you seek. Send them to: Nancy Michaelsen, 306 Walnut Drive, Fredericksburg, Virginia 22405 (703-371-7522). Nancy also has the names of several publications that list available jobs. Send a stamped, self-addressed envelope, and ask for the names of those publications.

INFORMATION FOR CONTRIBUTORS



The journal, *women in NATURAL RESOURCES*, aims to provide information and ideas for, from, and about women on topics related to the natural resource professions of forestry, wildlife, range, fisheries, recreation, aborigiculture, and the social sciences as they relate to natural resources. We address issues of administration and personnel, gender-related topics, educational resources, and support mechanisms. *women in NATURAL RESOURCES* seeks contributions that will effectively integrate the factual, the personal, and the philosophical aspects of the working professional. We also seek technical articles suitable for reading by professionals in many natural resource fields. Information from readers tailored for the departments is also solicited.

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