

women in

WOMEN
WORKING

Volume 20, Number 3 Spring 1999

NATURAL RESOURCES



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

Editorial
Linda Hardesty

Sagebreath

A Sabbatical Moment

Take five minutes and try an experiment with me. It goes like this: sit down and write a brief description of the essence of what you do for a living. Not your job description, but the moments when you really feel "THIS is it—I can't believe they pay me for this!" If you never get that feeling...well, that's another essay.

A friend, Suzanne, suggested I do this one day and I was so surprised at what fell out of my head when I sat down to write. I realize now that I need to do more "aimless" writing—I thought I knew what was in my head—but like the kitchen junk drawer, my mind harbors more miscellaneous scraps than I knew.

As an academic on sabbatical for the first time, I have struggled futilely for months to free myself from the habits and obligations accumulated in 13 years of non-stop over-commitment. I had fantasized leisurely reading and contemplation, brilliant new insights, a resurgence of energy and inspiration to fuel my return to the routine.

Need I say reality is less dramatic? Life, professional and otherwise, remains an enigma. But I trust that the apparently random opportunity-, deadline-, and crisis-driven pattern of my days will continue revealing, if only in hindsight, a pleasing pattern. Piecing a quilt is a trite, but accurate analogy. No wonder I haven't quilted in years! But Suzanne's brief free writing exercise unexpectedly reassured me that I am at least making myself crazy for a life that I am as

passionate about as ever. And perhaps that discovery alone is sufficient reward for excavating my heart and mind these last months. If not, I still have a few months left to save the world.

So what was it that I wrote?

First, I thought of a mid-summer sage flat, shimmering in the heat, smoldering with sharp, aromatic sage breath and deep, musty soil-scent. Somehow the smell is easier to take in than the soft layers of landscape and sky, the complexity of scale, and the mid-day quiet. I like to sit on the ground, scraping a safe, little butt-cup free of sharp rock, cactus, and the prickly, dry phlox. Seated, I feel less intrusive.

I see wasp galls accenting a sage stem, the intricate pattern of dry moss, tiny pebbles, sturdy small plants that scatter over the soil, and a few parched bunny balls: all reminders of the sudden action that can explode in this place-out-of-time spot. Ants never take long to come into focus—the only purposeful energy that appears to exist in the whole world at the moment. Why do I always have to nudge them about with a twig? Because *their* focus highlights *my own* drift into aimless reverie? I sat down to do a data sheet, but it is these subtler sensory "data" I remember years after the real purpose of my trip that day is forgotten.

To me, this captures the essence of the "desert" people dread to drive through in their race to Houston or San Francisco. "But there is nothing there," I

have heard countless times. No more true than a deaf person denying there is music. But in the desert, it's so easy to turn off the main road, climb out of the car, and investigate this jigsaw puzzle that each day generates a life's-work worth of provocative questions.

How I love to see students drawn into it. The dung beetle rolls a vivid lesson: nutrient cycling is real, right here, right now. The tiny trails on the soil surface attest to violent rains scouring the currently parched soil, running off before it can even soak in, with the power to carry bits of stone and plant litter far across the site along a gradient too slight for us to even see.

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Spring 1999

Volume 20, Number 3

Our 20th Year!!

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Winifred Kessler

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Changing Roles of Women in Agriculture

*Barbara Wallace, Frank Clearfield,
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The NRCS' Social Sciences Institute takes a look at the growing numbers of women farmers. Their roles on the farm, their ownership patterns, and their demographic characteristics are also changing.



Forest Management Extension, University of Wisconsin, Madison

The Department of Forest Ecology and Management, College of Agricultural and Life Sciences, invite applications for a 12-month tenure-track extension position in forest resources management at the Assistant Professor level. The position split is 70% extension and 30% research and is located in Madison. The position is available August 2, 1999, and salary is commensurate with qualifications and experience.

Responsibilities: The incumbent will be responsible for developing and implementing a statewide forest resources management research and extension program, with the potential for collaborative programming in neighboring states. While the exact nature of the research program will depend upon the candidate's background and interests, we seek someone who can design and implement activities in the following areas:

- Develop and maintain strong working relationships with commodity-oriented publics and with non-traditional forest-related organizations, institutions and community groups.

- Develop educational programs to increase public understanding of the importance and benefits of forests and the role of forest management in providing such benefits.

- Develop and apply approaches and techniques that integrate information from basic and applied research programs to assist landowners in managing their forests in a sustainable manner for a range of products and values.

- Develop continuing education/technology transfer programs for resource professionals.

- Conduct scholarly research on the management of private forestlands for diverse commodity and environmental values, with an emphasis on non-industrial forestlands.

- Assess the contributions of education, incentive programs and personal motivation to participation in forest stewardship activities.

- Participate in instructional program as needed and advise/supervise graduate students.

- Participate in faculty governance/service.

Required Qualifications: At least one degree in forestry; Ph.D. degree in some area of forest resources assessment or management; strong oral and written communication skills and an ability to work effectively with a wide range of clientele and professionals.

Desired Qualifications: Prior experience in forestry or natural resources extension or in developing forest ecosystem management or restoration plans that incorporate diverse needs and values; prior work with or development of computer models or decision-support software for examining long-term management scenarios; knowledge of alternative economic valuation strategies for forest resources; ability to bridge biological, physical, social and policy dimensions of contemporary sustainable forest resources management; demonstrated scholarly achievement as evidenced by success in publishing and securing grants.

Application Deadline: July 31, 1999 or until a suitable candidate is found. Screening of applications will begin August 1, 1999.

Application Procedure: Send letter of application stating how you meet the required and desired qualifications; curriculum vitae; official copies of all your academic transcripts; and the names, telephone numbers and postal and email addresses of at least three references to:

Dr. Raymond P. Guries, Chair, Search Committee, Dept. Forest Ecology and Management, University of Wisconsin-Madison, 1630 Linden Drive, Madison, WI 53706-1598 (phone 608-262-0449; fax 608-262-9922; email rpjuries@facstaff.wisc.edu).

Unless confidentiality is requested in writing, information regarding applicants and nominees must be released upon request. Finalists cannot be guaranteed confidentiality. EO/AEE

Letters & Stuff

I note that it is WINR's 20th anniversary of publication. You deserve congratulations for maintaining the contract between your subscribers and yourselves to deliver information helpful to women in the sometimes tough natural resource professions. I hope you will have some stories, as you did for your 15th anniversary, from those who have been faithful to their training for a number of years. Some of us have been with you a long time, are even getting near, or at, retirement—a prospect that didn't seem possible in the battle-prone first years. The numbers of women are growing, but too often I am pulled up short by dismissive or flagrantly chauvinist behaviors in young men particularly. Perhaps my live-and-let-live fuse has grown short with age and higher rank, but the crude bullying and mouthy insolence seems to have gotten worse lately. So, while I won't be employed at the next five year anniversary, I want you to know your presence and the magazine's influence count. I lift my glass to your editors and wish you another successful 20 years.

Ann Jones-Powell, St. Louis, Missouri

I was very much pleased to acquaint myself with your magazine. I will be much grateful to you for publishing my letter in the Editor's Mail column. I am the President of the Association of Fire Heraldry, engaged in design of Russian fireman's badges and medals. I am 42, single, and I'd like to get to know a single, sensitive, and tender-hearted girl. I'll be much thankful for a letter with photo enclosed. The Association has an internet page <http://www.fire.da.ru> and three photos

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EDITORIAL *continued from inside front cover*

Like detectives, students begin to really look: why is this little grass growing like a halo—all dead in the middle? How come one bitterbrush has been munched to a bristly remnant while the one next to it grows freely, unmolested by hungry herbivores? Do they taste different?

I toy with suggesting they taste it and see. I did that once. Accustomed to using the Latin name *Purshia*, the ominous implications of the common name escaped me until too late. I never did taste the second shrub to find out if they tasted different. The astringency of that first bite stayed with me for two days. How is it that this is the ungulates' "ice cream," the most preferred food in the entire buffet? The reality that animals' perceptions do not match our own was never more clear.

And so it goes, each question opening the gates to others: the desert a bottomless treasure chest disguised as "nothing there." So put away your notes, take out a pencil and paper.... Real life is always a pop quiz.

Linda Hardesty is an Assoc. Professor in the Department of Natural Resource Sciences, Washington State University, Pullman. Her Ph.D. is from Utah State University. She is a WiNR Editor.

of mine are available under the Fire Museum heading. My email: fire@tetrus.dux.ru: mail address: Vladimir Nedelski, PO Box 257, Saint Petersburg 191025, Russia. I wish good luck and much love to all your readers.

*Vladimir Nedelski, St. Petersburg
Editor's note: We have finally arrived!*

I am the planner in the Air Resources Division of the National Park Service. I have just finished reading the Summer 1998 (19-4) edition of your fine publication, which has been circulating throughout our office. I was duly impressed. Of course, I know most of the women who were featured in the document (including my Division Chief), because I work for or with them in the air quality programs of the Federal Land Managing agencies. It has been a privilege to have worked with these fine people and others like them (and there are many more – this issue only highlighted a few) throughout my 30-year career in this field.

I hope because of my natural resources management career, I have also influenced my children and even nieces and nephews. One of my daughters is a marine biologist, who presently works in a laboratory researching potential cancer-causing agents in insulation material, but who continues to follow her discipline. My other daughter will graduate from college next spring with a dual major—sociology and education—and hopes to teach at one of the Outdoor Laboratories several school systems operate here in Colorado. My older sister's youngest daughter has just entered college, and has not yet declared her major, although she certainly enjoys biology as well as outdoor activities.

Erik R. Hauge

Early Alert—Silviculture and Forest Biology Research

The Pacific NW Research Station (USDA-FS) seeks a forest scientist to serve on the Silviculture Team at the Olympia Forestry Sciences Laboratory. The team's primary mission is to develop and evaluate silvicultural options for producing wood and other values in managed forests. Fundamental studies of plant biology and growing environments needed to accomplish the broad mission are also conducted. The scientist will design and conduct silvicultural field trials as well as related studies in the greenhouse or laboratory. It is a permanent full-time position that will be filled in fall or winter 1999.

Qualifications: PhD in forestry, preferably in silviculture, and some supporting biologically oriented science (such as tree physiology, forest soil science, or plant ecology). Experience with field studies is required. Proficiency in experimental design, statistical analysis, and technical writing as well as interest in applying these skills to a wide range of silviculture and forest biology studies are essential. Must be a US citizen. Salary: \$48,489 to \$63,489 per year (GS-12).

Interested persons may send a résumé to Dean DeBell, Forestry Sciences Laboratory, 3625 93rd Ave. SW, Olympia, WA 98512-9193; (360-753-7667; fax 360-956-2346; e-mail: ddbell/r6pnw_olympia@fs.fed.us). The position will be officially advertised in late summer both within the Forest Service and externally. **All those who respond to this early alert prior to July 31 will be notified when and how to apply for the position.** If possible, include an email address with your résumé. This position will be posted at www.usajobs.opm.gov. EOE

WiNRtime



University of Florida Population Ecology

The Department of Wildlife Ecology & Conservation seeks Assistant Professor, 12-month, tenure-accruing, teaching (70 percent) and research (30 percent) position. Assignment may change in accordance with needs of the unit. Develops a nationally recognized teaching and research program focusing on quantitative approaches in population ecology. Teaching responsibilities will include developing a course in Population Ecology for advanced undergraduates that integrates mathematical, statistical and ecological concepts, participation in other courses, and graduate course that emphasizes modeling and other quantitative approaches in population ecology. Individual will also supervise MS and Ph.D. students. Research includes developing competitive program in population ecology.

Require doctorate in wildlife ecology, biology, zoology, natural resource management, or related field, and strong background in math. Must demonstrate excellence in written and oral communication skills, strong commitment to teaching, and ability to procure extramural funding. Salary commensurate with qualifications and experience.

Send letter of application, curriculum vitae, statements of professional goals and teaching philosophy, and names, addresses, and phone numbers of three professional references. **Closes September 15, 1999.** Reference position #929710. Forward materials to: Dr. Michael P. Moulton, Chair Search & Screen Comm., Dept. Wildlife Ecology & Conservation, PO Box 110430, Institute of Food & Agricultural Sciences, University of Florida, Gainesville, FL 32611-0430 (phone 352-846-0643; fax 352-392-6984; email mpm@gnv.ifas.ufl.edu. *Women/minorities are encouraged to apply.* EO/EA/AA

The success or failure of the Forestry Program depended totally on our ability to become accredited.

The Story of North America's Newest Forestry Program

Winifred Kessler

It is hard to be the new kid on the block. So I learned shortly after arriving in northern British Columbia to help build, from scratch, a forward-looking forestry program as part of a brand new university. I had accepted the challenge because, after preaching for years about the need for change in university approaches to natural resources education, the opportunity to do so was in hand. To pass up this chance would have meant forever holding my peace. My purpose here is to relate the origins of the University of Northern British Columbia (UNBC) and its approach to natural resources education, the trials and tribulations of breaking new ground, and the effects our presence and persistence has had on forestry education in Canada.

A Regional University is Born in British Columbia

The story of UNBC begins in the late 1980s, at a time when the existing universities in British Columbia were nearly bursting at the seams. Increased capacity was clearly needed, and the provincial government aimed to accomplish this either by enlarging the three existing public universities (all located in the Vancouver or Victoria area), or by adding a new campus to the "lower mainland" where 90% of the population of British Columbia lives. The remaining 10% of British Columbians—those who live in the vast area of the province generally called the "north"—saw things differently. To begin, there was the abysmally low participation rate of northern young people in higher education. Only 8% of graduates participated in any form of post-secondary education, including technical training programs, the 2-year colleges, and university-level studies. Also, there was the fact that northern lifestyles, livelihoods, and perspectives are basically different from the southern mainland. Most southern urbanites do not under-

stand or relate to northern realities, and many northerners are not comfortable sending their children south to the big city.

Northern civic leaders got together and launched a campaign to create a university in the north. They went to the far-flung towns and villages, inviting people to sign a petition and contribute \$5 each toward the cost of a feasibility study. The study was commissioned, the results came back positive, and the leaders carried a petition containing 16,000 signatures to the capitol, in Victoria. The momentum was too great to be ignored. A University of Northern British Columbia Act was passed, and ground was broken on Cranbrook Hill, above the city of Prince George, in 1991. Early on, it was popular to describe this venture as "beyond Hope." To some, this simply reflected the fact that UNBC would be responsible for delivering higher education to that 68% of the province that was north of the town of Hope. Others construed it to mean the stark realities of the challenge: attracting qualified faculty to the "hinterland" of the province, and delivering education over a huge area with limited transportation infrastructure.

The main campus at Prince George was officially opened in August 1994. The concept of "a university in the north and for the north" became a reality. Within the first 3 years, the post-secondary participation rate in the region more than doubled. The naysayers were astonished to see the high quality of faculty that UNBC had attracted, and the tangible effects its educational and research programs were having on communities and industries of the north.

Crafting a New Approach

Early in the planning for UNBC, it became clear that natural resources would be a major emphasis. The communities of the north depend on forestry, mining, power generation, and tourism as the major economic activities. As well, there

thrives a secondary ("bush") economy based on outfitting and guiding, trapping, and fishing. Many First Nations depend on the land for medicinal plants, traditional game and fish foods, and cultural traditions.

One "given" in UNBC's development was the need for a program whose graduates would qualify for registration as professional foresters. However, the early discussions revealed that forestry and the other natural resources must not be developed as separate entities, as is typical in existing universities. Any one use of a natural resource has implications for all other resource uses, as well as for the spectacular environment that is northern British Columbia. The concept that emerged was a fully integrated Faculty of Natural Resources and Environmental Studies, including all the disciplines relevant to managing resources and protecting the environment: Biology, Geography (both physical and cultural), Natural Resources Management, Resource Recreation and Tourism, and Environmental Studies (both bio-physical and social). No departments would exist within the faculty to act as barriers to full integration. The faculty would teach across disciplines, and the students from different majors would engage in problem-based learning in shared interdisciplinary courses. Although forestry would attract the greatest interest and the largest enrollments, the concept of a forestry degree was rejected. Instead, there was created a BSc in Natural Resource Management, within which students could major in Forestry, Wildlife, Fisheries, Resource Recreation, or some combination of those disciplines to obtain a double major.

Numerous universities have embraced such concepts and methods of integration, but have had limited success in achieving substantial change. UNBC represented a unique opportunity to build an interdisciplinary program "from scratch." The kinds of people attracted as

faculty were significant factors for success. Two basic kinds of people joined UNBC in those early days, when it had no reputation whatsoever: 1) those who were fresh out of graduate school or post-doctoral positions, whose top priority was getting a job; and 2) established people who welcomed new ideas and wanted to participate in the change. This combination of young, energetic people and risk-takers was ideal for launching a new and different approach to natural resources education.

To say that building a new university was challenging would be a huge understatement. Literally everything had to be figured out, including basic policies and procedures, academic governance, curricula, design of laboratory and classroom facilities, and every detail imaginable. There were countless breakdowns, oversights, and crises of all sizes and descriptions. Nonetheless, the concept of an integrated approach to natural resources and the environment took hold and grew. Within the first 3 years, the BSc in Natural Resources had grown to be UNBC's most popular program, with enrollments in the hundreds.

Bucking Tradition

As a newcomer to Canada, I quickly learned that the success or failure of the Forestry Program depended totally on our ability to become accredited. By law in British Columbia (the Foresters Act), only individuals who have been registered by the Association of British Columbia Professional Foresters (ABCPF) have the right to title and practice as professional foresters. The implications for our forestry program were 2-fold. First, our graduates would have to meet all the educational standards and requirements of the ABCPF. The second requirement, closely tied to the first, was the need to become accredited by the Canadian Forestry Accreditation Board (CFAB). My initial inquiries into these processes revealed that it would not be easy, by any means.

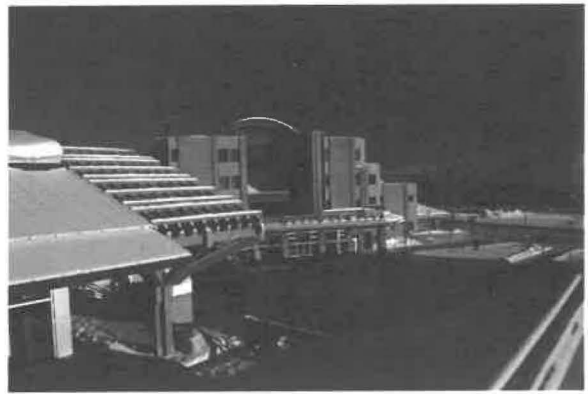
To begin, the CFAB was adamant that they would not evaluate us for accreditation until at least 5 years into the program, after significant numbers of students had



graduated. This created a serious problem for us and our students. Unless we were accredited, our students would not be able to register with the ABCPF. Quite simply, they would not be able to achieve their goal of becoming professional foresters, nor would the people of the north achieve their goal of producing "home grown" RPFs. We then turned to the ABCPF for help. Were they willing to do a detailed evaluation of our program early on, and accredit our program with respect to the standards and requirements established for British Columbia? They agreed—the evaluation was in the best interests of the students and the province. This was good news.

Next, I asked the ABCPF whether it would be possible to take a different approach in our evaluation than they had done in the past. Their standards were formulated according to core subject areas, topics within each area, and by hours of instruction required on the different topics. In essence, the accreditation standards mirrored the curriculum of the Forest Resources Program of the University of British Columbia. This made sense in that, throughout the ABCPF's history, UBC had the only professional forestry program in British Columbia; hence, the striking similarity between UBC's curriculum and the accreditation standards.

This template would not fit UNBC, however, for three significant reasons. First, unlike UBC, we did not have a Faculty of Forestry; consequently, our program was packaged quite differently. Most of our courses were not designed for forestry students alone; rather, they were designed to accommodate a mix of disciplines. Part of the reason was practical in nature: our "lean" structure and resources necessitated that we do more with fewer courses. Only specialized courses such as silviculture, forest harvesting, forest growth and yield, and the like were designed specifically for forestry majors. To the chagrin of the forestry community, for example, we did not have a course in dendrology. Rather, we had integrated the identification, taxonomy, ecology, and management of woody plants into several courses. Thus the accreditation standards, based on core subject areas and topics, did not provide a useful template for evaluating our program.



Second, our pedagogical approach was founded on instructional outcomes and competencies rather than subject areas and topics. What really mattered, in our view, was not the amount of exposure that students had to certain topics. The important thing is what the students come away with—the competencies developed—as a result of having completed certain courses or experiences.

Third, the accreditation standards based on traditional forestry subject areas ran counter to our basic philosophy about natural resources education. We believed that having a mix of majors and disciplines in our classes was an advantage, in that it allowed exposure to different knowledge, skills, perspectives, and ways of approaching problems. Our courses emphasize team-building skills and an integrated perspective, thus preparing students for the real world of natural resources management.

I suggested to the ABCPF that they prepare to evaluate us on the basis of our instructional outcomes and competencies, rather than by subject area and topic exposure. The response was not encouraging. The essential message was: "We have always done accreditation in this manner. You will meet our standards as presented or you will not be accredited. And besides, unless you shape up and get more conventional in your approach, you don't stand a snowball's chance of ever getting accredited!" Those were difficult days indeed for the new kids.

What is a Professional?

We decided to develop two, parallel structures for assessing our program. We would continue to develop, evaluate, and modify our instructional outcomes and competencies. Simultaneously, we would construct a huge matrix to demonstrate that all the subject areas and topics required for accreditation were indeed contained within our program. Along the



Members of the Forestry Program at UNBC. From left: Tom Steele, sabbatical professor from the University of Wisconsin; Katherine Parker, wildlife ecology; Han-Sup, forest operations; Staffan Lindgren, forest entomology; Kathy Lewis, forest pathology; Chris Hawkins, silviculture; Carolyn Russell, student advising; Steve Dewhurst, resource planning; Lito Arcocena, forest soils; Wini Kessler, author and program chair; Art Fredeen, silvics and plant physiology; Paula Poirier, program secretary; Hugues Massicotte, plant ecology; Chris Opio, forest management.

side of the matrix we listed all the ABCPF requirements. Across the top we listed all of the courses required by our forestry majors. For every course, we ticked off the subject areas and topics contained in the accreditation standards. We called this our "Prego" approach because it reminded us of the commercials for Prego spaghetti sauce (Basil? It's in there! Sun dried tomato? It's in there!)

Having resolved our practical problem with respect to accreditation, we settled into deep-thinking mode to formulate just what outcomes and competencies we hoped, overall, to accomplish with our professional forestry program. We needed to begin with the basics, such as a good definition of a professional. Dictionaries were of no help in this task (typical definition of a professional: "one who practices a profession"). Fortunately, right at that time (1994) the Association of University Forestry Schools of Canada held a Symposium on Educating the 21st Century Forester, in Quebec City. I obtained the perfect definition of a professional at that symposium, albeit from an unlikely source. Guest speaker Ursula Franklin, Professor Emeritus in Physical Engineering at the University of Toronto, defined a professional as "a citizen with a toolbox." Dr. Franklin expressed the belief that professionals, and the educators who help develop them, excessively emphasize the toolbox while giving insufficient attention to the development of citizens. Eureka! Here was a concept we could work with.

Through deep reflection on Dr. Franklin's words, we came to realize that the accreditation standards are concerned with the equipping of the toolbox, providing the knowledge, skills, and technology required for the practice of professional forestry. Those important needs were already identified for us; all we needed to do was ensure that all the accreditation requirements were met. But what about the development of citizens? We put our minds to the task of defining our aspirations for our graduates with respect to this element of professionalism.

The Qualities of Our "Target Graduate"

Ecological understanding. Understanding that natural resources are derived from complex ecological systems is an essential quality of all who aspire to a career in the natural resources. In our graduates, such understanding is based on a solid foundation of knowledge in the physical sciences and mathematics, biological sciences, and synthesis disciplines (e.g.,

applied ecology and conservation biology). Our graduates understand and appreciate ecosystem structure, dynamics, and function as a necessary context for addressing today's natural resource issues and needs such as sustaining ecosystem integrity and healthy human communities, conserving biological diversity, and maintaining resource productivity over the long term.

Integrated thinking and skills. Any single use of natural resources has implications for all other uses people may wish to make of the land. Our graduates understand the relationships among the natural resources and possess skills and knowledge to integrate a variety of uses and values in land and resource management plans.

Experience and work attitude. Our graduates are sought after by employers because they have achieved a healthy balance of academic learning with real-world perspectives and experience. Natural resources students at UNBC have been encouraged to learn about career options and potential employers and to gain experience and practical skills that complement their university studies. Having explored career options, our graduates are better able to identify jobs and employers that satisfy their personal and professional objectives and that they will be able to commit to over the long term.

Problem solving ability. Original thinking and problem-based learning are emphasized in our curriculum. As a result, our graduates are critical thinkers who tend to take a positive, creative approach to complex problem solving. As they begin their career paths, our graduates are able to demonstrate how to apply knowledge, experience, and technology in achieving solutions that are scientifically sound and socially responsible.

A big-picture perspective. The most challenging problems in natural resources today involve a magnitude of scale and complexity that extends beyond the traditional boundaries of the individual natural resource disciplines. Our graduates possess perspectives and technical skills to examine resource relationships across a variety of spatial scales, temporal scales, and patterns of resource ownership. Their global perspectives on natural resources provide a valuable context for thinking about local and regional issues, policies, and developments.

Ethics and professionalism. The values and actions of our graduates reflect a moral obligation to the land and to the people who depend on natural resources. Each graduate has adopted a personal ethic that includes stewardship principles and high

standards of professional conduct. In whatever jobs they find themselves, our graduates think about the implications of their decisions and actions, and reflect on the linkages of natural resources management to broader ecological and social concerns.

Communications. Not only do our graduates have well-developed skills in oral and written communications, they are eager to share their knowledge and experience. Their efforts help the public become more informed about ecosystems and natural resources management. Our graduates choose to be willing spokespersons for resource stewardship and sustainable ecosystem management.

Citizenship. A graduate of our program participates actively in the overall community of which he or she is a part. As natural resource professionals and good citizens, our graduates are helping to frame society's questions concerning natural resources, to work through the socio-political process, and to implement scientifically sound and socially responsible solutions.

Making Our Mark

Our target graduate concept has been a driver in the implementation, evaluation, and refinement of our BSc in Natural Resource Management, including the forestry major. Its objectives are embodied within a series of interdisciplinary courses required by all majors, which comprise the "backbone" of the BSc in Natural Resource Management. The objectives are also integrated into the specialty courses in which students develop the specific knowledge, skills, and technology to equip their professional "toolbox."

In 1995, we felt ready to seek accreditation, and asked the ABCPF to perform an official evaluation. To our surprise, the request was denied. The rationale went something like this: "Your initial request, to deviate from our normal standards when evaluating UNBC's program, triggered some heated debates within the ABCPF. The conclusion reached is that we can not reasonably evaluate a new program using old standards that we no longer have full confidence in. We have resolved to reconvene our standards committees for each core subject area, and to carry out any revisions that may be needed. This will take several months, but will be necessary to conduct a meaningful evaluation."

True to their word, the ABCPF completed an exhaustive review of their standards, and completed a detailed evaluation of our program in 1996. The refinements made to their standards were not trivial; in fact, they had rejected the topic area approach in favor of instructional outcomes and competencies! This change, in combination with our "Prego" approach, made for a thorough and insightful evaluation. In particular, the ABCPF sought to evaluate the degree to which we were achieving our target graduate concept. We were pleased with their finding that the objectives were being met. The evaluation identified some needed adjustments and deficiencies in the "toolbox" portion of the program, which we corrected in the following year.

Although the program was successful with respect to provincial accreditation, the students were still disadvantaged by our lack of national accreditation. The ABCPF took action on our behalf, and encouraged the CFAB to conduct our evaluation ahead of schedule, well before our first 5 years were up. The CFAB agreed to do so, and granted our accreditation effective with the 1997 graduating class. This process also went better than we had anticipated. Along with requesting our early evaluation, the ABCPF had urged the CFAB to consider a reformulation of its standards from topic-based criteria to instructional outcomes and competencies. The ABCPF offered its new standards for consideration by the CFAB. The CFAB reworked its standards into the new format, used the new approach in our evaluation, and is now

applying it in the periodic reviews of accredited programs in forestry.

Thus, the new kids on the block have not only persevered, they have made their mark in forestry education in Canada. Current enrolment in the BSc in Natural Resources exceeds 500. As well, we have programs at the masters and doctoral levels that feature a similar, interdisciplinary approach to natural resources and the environment. The climb has been steep and rocky, but we feel good about the path ahead.

Winifred Kessler is Professor and Chair of Forestry at the University of Northern British Columbia. Previous experience includes 10 years with the USDA Forest Service, beginning in the rainforests of Alaska and ending up in the Forest Service headquarters in Washington DC. Her experience also includes eight years on the faculty at the

University of Idaho, and four years at Utah State University. Her international work has included projects in Peru, India, Mongolia, Hungary, and the Altai Republic (Siberia). Her education includes BA and MS degrees from the University of California at Berkeley, and PhD from Texas A&M.



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Publications

The recently published book, *The Theory and Practice of Agroforestry Design*, by Paul Wojtowski, presents a detailed and in-depth look at concepts, principles, and practices that underlie agroforestry applications. The focus is on how the individual parts (theories and concepts) form the whole (the process of designing or understanding specific agroforestry systems), and how theory may lead to successful application. Based on agroecological theory, the book could serve as an advanced text for students of agroforestry or for practitioners interested in going beyond field basics. To order *Theory and Practice of Agroforestry Design*, send check for either \$29.50 (softcover) or \$45.00 (hardcover) to Science Publishers, PO Box 699, Enfield, NH 03748.

The 1998-99 edition of the *Herbal Green Pages*, which lists thousands of retail and wholesale herb and herbal product suppliers, is available in both printed and electronic formats. It is published by the Herb Growing & Marketing Network, the largest herb trade association in the U.S with approximately 2,000 members. To order the Herbal Green Pages (\$35 paperback or \$40 on CD or disk), contact the Herb Growing & Marketing Network, PO Box 245, Silver Spring, PA 17575, phone 717-393-3295, email herbworld@aol.com

A series of new fact sheets on riparian buffers, published by Maryland Cooperative Extension, include: (1) Introduction to the riparian forest buffer; (2) Riparian buffer design, establishment and maintenance; (3) Trees for riparian forest buffer; (4) Understory plants for riparian forest buffers; (5) Grasses for riparian forest buffers; and (6) Streambank restoration for riparian forest buffers. All are available

free (for single copies) from: Agricultural Duplicating, Maryland Cooperative Extension, 6200 Sheridan Street, Riverdale, MD 20737.

A new fatalities report (April 7, 1999) titled A new publication on Wildland Fire Fatalities in the United States: 1980-1998, is now available from the US Forest Service Technology & Development Center in Missoula, Montana. Written by Fire Program Leader Dick Mangan, the report uses the data from the NWCG *Safety-gram* that is issued annually, and analyzes the fatalities, looking at the causes, organizations, and geographic areas of the 133 fatalities. For copies of this report, contact MTDC by email pubs/wo_mtdc@fs.fed.us or fax, 406-329-3719.

Another Point of View: A Manual on Gender Analysis Training for Grassroots Workers is a practical training tool for development workers in the field. This guide presents a series of exercises for a four-day workshop at the village level as an aid in helping communities self identify gender roles and the different impact of development induced changes on each gender. It is project based in design, and intended to help communities understand the need for consideration of gender in making decisions about development. Published by UNIFEM, it is available from Women, Inc, 777 UN Plaza, 3rd Floor, New York, NY 10017 (phone 212-687-8633, fax 212-661-2704).

Included in the price of a subscription to the quarterly journal, *Women in Natural Resources*, are **free jobs flyers**. Subscribe now to start the journal and the flyers. For a student subscription, the cost is \$17; for a personal, \$23; for an agency, library, university, or business, \$39. Non-USA subscriptions need to add \$10 for postage. Send to WiNR, PO Box 3577, Moscow ID 83843 or visit www.ets.uidaho.edu/winr/

Women's Science: Learning and Succeeding from the Margins, by Margaret A. Eisenhart and Elizabeth Finkle (University of Chicago). For those seeking to gain a fuller and more expansive understanding of women's place in the fields of science and engineering, this is an important work. The authors discuss the definition of science itself and how science is presented in school as a male-driven construction.

For a Fall focus issue, *Women in Natural Resources* journal seeks articles about the U.S. Department of the Interior, Bureau of Reclamation. If you have a manuscript in progress, or ideas about doing one, contact the editor, Dr. Dixie L. Ehrenreich, email dixie@uidaho.edu or call 208-885-6754. The topics can include research, management, policies, or human interest. The deadlines are mid-summer.



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Global Frontiers

Sheila Helgath

The Internet & Useful Websites

The internet is an important tool for resource managers interested in international management issues. Use of the internet provides access to information, makes collaboration easier, and has opened up the professional resource manager to more global scrutiny. For example, I recently used the internet (email) to draft, coordinate, and supervise the writing, editing, and production of two international 1,500 page environmental impact statements. The draft document with photographs, charts and illustrations was sent back and forth between the U.S. and South America nine times for a cost of about \$3.50. It meant that field level people in South America, scientists in five different countries, and managers in North America, were able to make timely contributions to these environmental impact statements. Use of the internet provided better and less expensive communication, solved distance/time problems, and resulted in a much better document from a technical and cultural perspective. It also meant that non-governmental organizations (NGO's) who opposed the project had instant access and communication with those who agreed with their viewpoint.

The internet can also be used to solve work related problems by giving the resource manager access to specialists. For example, I was asked by my CEO, how much carbon is stored in a South American peat bog—and what is it worth? By using the internet I was able to communicate with specialists in Scandinavia, England, and Australia, and answer the question within a week.

One of the biggest problems with the internet is identifying websites that are credible and accurate. It is easy to be overwhelmed by the number of "hits," and/or by the irrelevance of the sites listed. Several strategies can be implemented to avoid these problems: (1) use more than one search engine (the Federal site mentioned below has a good list of search engines); (2) use very specific search keywords in combination with Boolean charac-

ters such as "and," "or," and "not," to limit the sites being identified; and (3), trying keywords indirectly associated with your subject may result in websites that are helpful. For example, to answer the peat bog question, the keyword "carbon sequestration" didn't help, but the keywords "peat," "sphagnum," and "global warming," resulted in numerous websites with useful information. To summarize: try more than one search engine with the same keywords, more than one variation of the keywords, other keywords associated with the topic, and use Boolean characters to limit the search responses.

Examples of websites with international resource management content are below. These websites are in no way the complete list and/or necessarily the best. They are presented as examples of the wide array of information available for your use on the internet, and are intended as an introduction to encourage you to use the internet. In the future, I would like to highlight more sites like these. If you have any favorite websites related to international resource management issues, and/or women working internationally, please email me at shelgath@nwlink.com.

Federal Web Locator

<http://www.law.vill.edu/fed-agency/fedwebloc.html>

This site has links to U.S. federal agencies and international commissions. It also has links to many of the website search engines.

Women in Natural Resources

<http://www.ets.uidaho.edu/winr/>

This is the site for this journal. It contains contact information, subscription information, job listings, and past articles about a number of natural resources disciplines.

World Resources Institute

<http://wri.org>

The WRI is a non profit research and policy think tank located in Washington D.C. This

website has incredible amounts of information on a wide range of issues, including the interaction of women and natural resources. The reports often cover global resource "hot topics" like global warming, carbon sequestration, the Kyoto Protocol, wetlands, biodiversity, forestry, some fisheries, and sustainable business development. It has a list of international meetings. The best way to access this site is to begin with the Index of Topics and the Geographical Index.

Global Association of Online Foresters

<http://www.foresters.org>

This is a relatively new organization. It has members from every continent. The objective of the GAOF is to provide a virtual contact point for foresters and the public about forestry issues. The GAOF has a webpage which lists forestry contacts (addresses, email, websites, and associations) in many countries including Canada, Japan, India, Greece, Chile, and others. It also maintains email lists for forest safety, inventory, jobs, and general forestry activities occurring around the world. Membership is free. Members often use the mailing list to ask others specific information about forestry related topics and to discuss issues of mutual interest. For example, the following request came via the GAOF membership mail:

Global Forestry Compendium - Request for authors CAB International has recently published Module 1 of the Forestry Compendium. Module 1 contains species reviews for more than 600 species important in the tropical areas of the Asia-Pacific region. CABI is now looking for authors to write data sheets for a further 650 species for the Global Forestry Compendium. The Global FC will cover Africa, Central and South America, and the temperate and boreal regions. CABI will pay a set fee on receipt of the data sheets. If you are interested in writing data sheets, providing illustrations for species, or would just like to find out more about the project, please contact us for further details.

Tim Green t.green@cabi.org, Forestry Compendium, CAB International, Wallingford, OX10

One of the biggest problems with the internet is identifying websites that are credible and accurate. It is easy to be overwhelmed by the number of "hits," and/or by the irrelevance of the sites listed. Several strategies can be implemented to avoid these problems.

8DE, UK". Further details and a self-running tour of the Forestry Compendium can be found at the CABI web site (<http://www.cabi.org/whatsnew/global.htm>).

CABI pays several hundred dollars per species. The GAOF website also provides an opportunity for people looking for jobs to post resumes, a job listing, and a Global Calendar of Forestry Events for 1999. Meetings like the International Training Workshop on Bamboo and Rattan Biodiversity Conservation, Utilization and Technology Exchange, or Rainforest Workshops are listed. Finally, there is a children's page.

World Wide Web Virtual Library

The WWW Virtual Library is a collection of websites: two sites are very useful for resource managers, Agriculture and Forestry.

World Wide Web Agriculture Library

<http://ipmwww.ncsu.edu/cernag/index.html>

The Agriculture site is maintained by the National Science Foundation for Integrated Pest Management at North Carolina State University in the U.S. This site connects to agricultural sites throughout the world and has received numerous honors. For example, the "Science Guide" has given it a Four Test Tube site rating. Meeting notices and newsletters are available through this site.

World Wide Web Forestry Library

<http://www.metla.fi/info/olib/forestry/>

The World Wide Web Virtual Forestry Library site is based in Europe (Finland) and contains global information on every aspect of natural resource management including tropical forestry, jobs, organizations, soils, genetics and forest policy. It has become one of my favorite sites.

Steve Shook's Directory of Forest Products, Wood Science and Marketing

<http://www.forestdirectory.com/>

This directory has gained recognition from NetDigest and Excite as being a good website. The site focuses primarily on U.S. and Canadian websites, but has global links and information as well. There are sections related to sustainable forestry, the forest industry, marketing information, academic information, and includes links with international organizations like the Forest Stewardship Council and other non governmental organizations.

European Forest Institute

<http://www.efifi/cis/>

The EFI is under contract with the European Community to monitor forest and forest product certification and disseminate information. The information is focused on Europe and key tropical wood producing coun-

tries in Africa, the Caribbean and Pacific including Guyana, Suriname, Belize, West Africa, Papua New Guinea and the Solomon Islands. The site includes news clippings, country reports, links to certifiers, certified forests, and products.

Forest Stewardship Council

<http://fscoax.org>

The FSC, located in Oaxaca, Mexico, is one of the leading NGO groups involved in certification of forests. The site describes the FSC, the worldwide membership, the latest news, and provides policy documents and links. It is possible to subscribe to an electronic mailing list.

Global Warming and the Third World

<http://www.cru.uea.ac.uk/tiempo>

This cyberpublication has an objective to promote the flow of information about global warming between Northern and Southern nations. Produced in the UK by academic research institutions, it receives support from the Swedish International Development Cooperation Agency. The site provides information on the latest global warming meetings, technical information, references, and editorials.

Sustainable Business Network

<http://sbn.envirolink.com/>

This site has a variety of information, feature articles such as "Turning down the heat" and "Northwest could play major role forming business solutions to global warming," green job listings, business opportunities, stock listings, and a daily digest by email of environmental headlines. The latter feature is an excellent summary of environmental reporting around the world with website access to the articles mentioned.

ASEAN Review of Biodiversity and Environmental Conservation

www.cyberct.com.my/arbec/

This site offers insights into environmental resource management issues in Asia. It is produced on a monthly basis. A recent issue had articles on logging, reserves, and parks in the Malaysian peninsula, bioprospecting potentials, and genetically engineered tulips.

Fisheries

I found many fisheries sites which were of interest, and will only briefly mention three of them now, because fisheries websites could justify another complete article:

Economically Viable Alternative (EVAG) Green Fisheries

<http://www.altgreen.com.au/fisheries/index.html>

This is an Australian website concerned with environmental issues related to the fishing

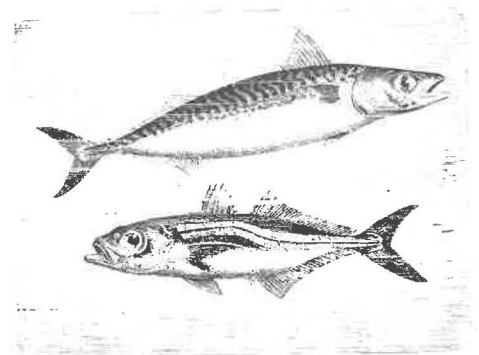
industry. The website U.S. Canada Salmon Conflict <http://www.kenyon.edu/project/ensv61/welcom.htm> gives a history of this conflict. A high school in Oregon State has a salmon website that includes links to international salmon websites at <http://www.riverdale.k12.or.us/salmoninternat.htm>.

Wildlife

In addition to fisheries, wildlife websites could justify another complete article. Search under "international wildlife organizations," endangered species, or CITES, to find information about international issues related to wildlife. One set of websites that is informative, is prepared by the World Wildlife Fund Organization. The best way to access these sites is to search under "World Wildlife Fund" and then go to the individual country sites. For example, the U.S. site has information about global campaigns, national issues, the Amazon Rainforest, a Mexican conservation organization's photography contest, and certified fish products. WWF Brazil at <http://www.wwf.org.br/>, has descriptions of projects, news and feature articles. Not all of the WWF sites listed are developed yet.

This is a good place to note again that searches with keywords that have double meanings may access sites that you have no interest in seeing. For example, I searched using the keyword "beaver." I accessed sites from typical wildlife websites created by state wildlife agencies, every town that had beaver in its name, Oregon State University (OSU's mascot is a beaver), a website of an OSU student sitting on a toilet, and pornographic websites. I solved this problem by searching under the Latin name for beaver, *Castor canadensis*. The more specific the keyword, the easier time you will have in finding appropriate sites.

Sheila Helgath recently accepted a "virtual" job (from her home in Seattle) with Banco Axial in Brazil as the Special Projects Advisor on Environment and Sustainable Development. Previously, she has worked in Chile and Argentina, for the Forest Service and the Park Service, the State of Alaska, and Peace Corps. Helgath invites comments and contributions for this column. She can be reached by email at shelgath@nwlink.com



Tribal Fishing Rights vs. State Government Agendas

In spite of considerable opposition from the states of Oregon, Washington, and Idaho, tribal fishers successfully conducted their fall commercial fishery for 1998. This year about 260,000 fall chinook returned to the Columbia River mouth with about 192,500 of those destined to cross Bonneville Dam. Nearly an equal number of steelhead that crossed also passed Bonneville dam. Tribal fishers were able to take about 48,500 fall chinook and 13,000 steelhead representing 47 percent of the harvestable surplus of steelhead. The tribal commercial harvest was down substantially from last year when tribal fishers took over 64,000 fall chinook and about 28,000 steelhead. The Snake River fall chinook returns for this year were encouraging, as were the jack counts.

As it has been for the last five years, the tribal commercial fishery was constrained by Endangered Species Act considerations. Naturally spawning fall chinook originating in the Snake River have been listed as threatened since 1992. In addition, last year, Columbia Basin steelhead were listed. Even though tribal fishers target fall chinook, especially those originating in the Hanford Reach, the last free-flowing stretch of the Columbia River in the United States above Bonneville Dam, some harvest of steelhead is inevitable.

Between 1988 and 1993, all in-river fisheries were conducted under provisions of the Columbia River Fish Management Plan (CRFMP), approved by the U.S. District Court of Oregon which retains jurisdiction over Columbia River fishing in the 1969 treaty fishing rights case, *U.S. v. Oregon*. The CRFMP expired at the end of 1998. Parties to the *U.S. v. Oregon* (Yakima, Umatilla, Warm Springs, and Nez Perce tribes, state and federal governments) are in the process of renegotiating. Since 1994, the Endangered Species Act listing of Snake River fall chinook has imposed additional constraints on Columbia River fall fishing.

Negotiations that began last February among the fish agencies and tribes resulted in a one-year agreement between the tribes and the Department of Justice that stipulated that the impacts of the tribal fishery on naturally spawning B-run steelhead be targeted at 15 percent with adjustments up to 20 percent. The state fishery agencies endorsed the harvest stipulations, but refused to sign the agreement unless there was a provision inserted stating that they retained the ability

to challenge the agreement later. The tribes and the Justice Department refused to accept the states' provision on the grounds of "what good is an agreement that some of the parties won't commit to or honor."

The states also voiced concerns that no biological opinion had been written and issued regarding the impact on the B-run steelhead. Ironically, the states had been conducting their own fisheries since February without benefit of a biological opinion, but were demanding that one be written before the tribal fisheries be allowed to proceed. On September 3 Judge Malcolm Marsh, of U.S. District Court of Oregon, ruled that the federal government must do a biological opinion before any more fishing, tribal and non-tribal, could proceed.

In the end, the tribes were able to catch nearly their full allocation of fall chinook by restricting mesh size of the nets. Though the U.S. Justice Department and the tribes avoided a showdown between treaty rights and the Endangered Species Act, the states suggested that they welcome the opportunity to force such a confrontation. Such an action, if the states were successful, could completely abrogate the promise the United States made to the tribes in 1855 to respect the fishing rights tribal leaders expressly reserved in the treaties. Such intent among state officials is particularly disturbing.

Wana Chinook Tymoo, Winter 1999

Wood Rat Jerky

Imagine starting your day hunting, catching, and preparing the white-throated wood rat for breakfast. Paul Campbell, a San Diego survivalist, accompanied two Kumiai Indians on a wood rat hunt, not just to document a fast-disappearing skill, but also to learn how the Kumiai derived maximum benefit (in this case protein), with little disruption to their environment.

Wood rats build twig nests under the nopal and yucca. Hunters burn these nests or probe them with sharp sticks. When a disturbed rat tries to escape, they shoot it with a bow and arrow from very close range. This hunt was successful, bagging two rats, and these were prepared the traditional way for consumption during our morning break. The Indians use a special mano and metate, which are kept hidden at least 100 yards away from their houses. The rat is placed in a fire of juniper bark and mesquite to singe the skin and remove it and the hair. Its tail and intestines are thrown a good distance away (to discourage coyotes) and the body re-

News & Notes

placed in the flames for another five minutes. The roasted animal is then pounded—flesh, bones, and teeth—into a flat, rather dry "tortilla." This is torn into pieces, and resembles nothing so much as jerky.

Allison Wren, *California Coast & Ocean*, Winter 1998-1999

Serious Fire Season in Southwestern US Projected

Weather patterns and current conditions in the Southwest indicate the possibility of an intense fire season. The region is under the influence of La Nina's drier than normal conditions. In New Mexico, the northern part of the state is in better condition than the southern part. The Rio Chama River Basin on February 19, 1999 showed snow water equivalent for the day at 69 percent of average. The Sangre De Cristo Range Basin was listed at 74 percent of average. The San Francisco River Basin and Gila River Basin have been showing about two percent of average. Arizona's Salt River Basin, in February, indicated snow water equivalent at 29 percent of average. Other areas of the state were considerably lower, including the Central Mogollon Rim Basin at 18 percent, Verde River Basin at 11 percent, and the Gila River basin at two percent.

International Association of Wildland Fire, *F-Mail*, April 1999

National Park Week 1999 Partnership Awards

The National Park Service (NPS) along with the National Park Foundation (NPF) announced the recipients of the 1999 National Park Partnership Awards. Through these awards, established in 1995, the NPS and the NPF jointly recognize the very best in public-private partnerships in support of the National Parks. The awards were presented April 21, 1999 in Washington, DC as part of National Park Week, 1999.

The awards recognize excellence in five categories where partners have demonstrated exemplary cooperation, vision, and dedication to preserving the integrity of the parks.

continued on page 44

JACQUELINE (JACKIE) LOWEY

AN INTERVIEW BY DAINA DRAVNIKS APPLE

INTERVIEW

WiNR: Can we start with some general personal background—where you're from, where did you grow up, what did you do in school?

Lowey: I grew up in New York City, in Queens, and lived there until I was 18. My brother and sister and the rest of my family still live in New York. I went off to Swarthmore College in Pennsylvania where my early plans were to be a teacher. While still in school, I started off working as a special education teacher, then decided it was not what I wanted to do at that point in my life. I had taken some time off from college and worked on Capitol Hill for the Congressional Caucus for Women's Issues, so I decided to go to Washington again. When I came back the second time, I worked on Senator Barbara Mikulski's campaign for the Senate. After that, I worked as a legislative assistant for a Congressman from New York who has since passed away, Congressman Ted Weiss. I handled a wide variety of issues, including natural resource issues, although I have to say that, in Manhattan, it's not the same as handling resource issues in other places!

WiNR: Did you like the political life?

Lowey: Yes. To my surprise, my mother did too, and decided that she was going to run for Congress; so I left my job with Congressman Ted Weiss and moved back home to New York to work on her first campaign. She is Congresswoman Nita Lowey, Congresswoman from New York. After she was elected, I left the New York delegation and went to work for Congressman David Skaggs of Colorado. I focused my attention again on natural resources and on transportation issues. Later I worked on Rep. Skaggs' Appropriations Committee Associate Staff.

I left the Hill in 1992 to work for the Department of Transportation, where I served in a number of different capacities. I started out running the Congressional Affairs Office, moved over to run the Deputy Secretary's Office, and finally served as Deputy Chief of Staff for the Department of Transportation, working both for Secretary Pena and Secretary Slater. Then I had the opportunity to come to the National Park Service which I jumped at. It was an opportunity to combine what I love with what I do full time. I've been here for a year and a half.

WiNR: What is your current title? Describe your position's responsibilities and relationship to the NPS hierarchy.

Lowey: Congress established a second Deputy Director position by law in 1996. The position was created to focus on "external" programs—or the NPS partnership programs, as we now call them. When I came on board, Director Robert Stanton, the other Deputy Director, Deny Galvin, and I agreed that it was in the best interest of the NPS not to divide the deputies' responsibilities between external/operations. We strive for one unified NPS, with partnership programs and park operations working together to advance our mission. My background is very different and complementary. Deny has a long and distinguished career in NPS operations and I come from both the legislative branch and another executive agency (Transportation). The different perspectives on operational issues works well. I have learned an enormous amount from Deny—which makes my job a lot more interesting.

WiNR: What are your special challenges?

Lowey: My job is to work under the Director, and with my colleague, Deputy Director Galvin, to forward the vision and the mission of the National Park Service. The Director has outlined several goals of particular importance to him: diversity, risk management, the natural resource initiative, education, and youth programs. Everything that I do relates to those goals and to forwarding the NPS' mission to preserve our resources unimpaired for future generations.

I have spent an enormous amount of my time, because of my background in transportation, on transportation-related issues, both on TEA-21, the Transportation Equity Act, which is the nation's major transportation law, and increasing funding for National Park Service transportation programs. We're working on new, alternative, transportation systems in Zion, Grand Canyon, Acadia, and Yosemite—to name a few. I have also focused attention on working with the FAA to regulate overflights over national parks to preserve the unique soundscapes of parks.

WiNR: What would you say the major emphasis areas are for the National Park Service at this time?

Lowey: Director Stanton has outlined a very clear vision for the National Park Service in a number of different areas. He wants it to really represent the full face of America, a diverse agency, not only in the make-up of employees, but also in our programs and our program delivery, ensuring that we're touching as

many people as we can throughout the country. We're the agency entrusted to preserve the whole country's natural and cultural heritage, so we launched a major emphasis on ensuring that our programs are relevant and are touching the broadest spectrum possible of the American people.

WiNR: Director Stanton is the first African American to be Director of the National Park Service. Does he bring a new consciousness of diversity to the mission of the Park Service?

Lowey: I think that he certainly has brought it to the forefront. I also think that it's an absolute natural for an agency whose mission it is to represent the cultural heritage of a nation. We have a responsibility to represent the entire culture. Frankly, it's not only the right thing to do, but it's in our best interest to do so. Because, as this country's demographics change, people need to feel that this is an agency that is important to them with a mission that's important to them.

WiNR: What other things are you working on?

Lowey: Another of our top priorities is a re-emphasis on natural resources management and using science in decision making. There are a number of different pieces to that. You've probably heard some talk about a large natural resource initiative (NRI) that we are advancing within the National Park Service. Essentially, the NRI is intended to serve as a catalyst to refocus the NPS on our core mission—resource preservation. Managers need to base decisions on the best possible scientific information available. There is funding in our FY2000 budget that puts us back on track to do that. Specifically, there is \$8 million for the inventory and monitoring program; \$4 million for native and exotic species management; \$3.5 million within the Natural Resource Preservation Program to boost the number of projects undertaken; \$2 million for scientific programs in the California Desert parks; and \$1.5 million to implement the Resource Protection Act. Now, the NRI is not just a budget initiative—it really is intended to be a service-wide comprehensive approach to redirecting our employees and partners to focus first and foremost on preservation and science-based decision making. It also needs to be an effort to look honestly at ourselves and ensure that we set an example in terms of

our own practices. Given our resource-preservation mission, the NPS should be in compliance with our nation's environmental laws, should lead the way in terms of energy conservation, and in sustainable practices.

I'd like to highlight two other areas for you. The first one is an emphasis on education and youth programs. By engaging youth we can help instill an environmental ethic that will help guide their actions for a lifetime. We have a lot of exciting partnerships with youth-serving organizations and schools to help us accomplish that. Another major emphasis is on risk management. We do a lot of things well in the NPS—safety isn't always one of them. So there is a major emphasis to reduce on-the-job injuries to our employees.

WiNR: Being from the Forest Service, I'm acutely aware of the hazards of working in a natural environment. How are you dealing with injuries?

Lowey: One of the things we have done, is to enter into a Memorandum of Understanding with the Occupational Health and Safety Administration, to use a number of different pilot parks to look for best practices in order to reduce work-place injuries. The primary causes are due to unsafe work practices connected with lifting, tripping, slipping, and falling. Specifically, these accidents occur during routine day-to-day work

involving groundskeeping, routine patrols, refuse collection, shop operations, and resource management. The injuries primarily involved the back, legs, and trunk of the body.

WiNR: I'd like to change the topic a bit to another of your responsibilities, diversity, and more specifically, women. How many top women managers are there in the National Park Service?

Lowey: The National Leadership Council of the National Park Service, which is made up of the director, deputy directors, associate directors, and regional directors, has 5 women out of 15. There are 26 SES employees throughout the NPS, 9 of whom are women. So about a third in each of these categories are women. There are a total of 273 superintendents (individual park managers), of those, 53 are women—so a much smaller percentage there. The breakdown for female superintendents is: 44 White, 6 Black, 2 Hispanic, and 1 Asian-American. Those are all within the permanent work force where we have approximately 34 percent women, agency-wide. There still is a relatively smaller percentage of those women who are in professional grades. As is the case with our minority recruitment, we are looking to broaden the number of women and minorities in senior management and professional positions; currently they are not



At Kenai Fjords National Park, Alaska. Center: Jackie Lowey, National Park Service Deputy Director; Brenda Mobley, left, Alaska Region NPS; and Glen Hunt, Park Ranger.

National Park Service Employment Numbers as of March 30, 1999

The top list are permanent employees, the bottom list are temporary.

	ALL		WHITE		BLACK		HISPANIC		ASIAN	AMERICAN	AMERICAN	INDIAN
	TOTAL	WOMEN	MEN	WOMEN	MEN	WOMEN	MEN	WOMEN	PACIFIC MEN	ISLANDER WOMEN	ALASKAN MEN	NATIVE WOMEN
A - ADMINISTRATIVE NUMBER PCT	5652 100.0	2221 39.3	3000 53.0	1777 31.4	184 3.2	239 4.2	120 2.1	98 1.7	53 0.9	58 1.0	74 1.3	49 0.8
B - BLUE COLLAR NUMBER PCT	4397 100.0	291 6.6	2874 65.3	195 4.4	693 15.7	58 1.3	261 5.9	17 0.3	92 2.0	4 0.0	186 4.2	17 0.3
C - CLERICAL NUMBER PCT	1136 100.0	940 82.7	164 14.4	691 60.8	15 1.3	130 11.4	6 0.5	58 5.1	5 0.4	32 2.8	6 0.5	29 2.5
D - OTHER WHITE COLLAR NUMBER PCT	832 100.0	132 15.8	534 64.1	84 10.1	120 14.4	27 3.2	24 2.8	11 1.3	19 2.2	4 0.4	3 0.3	6 0.7
P - PROFESSIONAL NUMBER PCT	2020 100.0	709 35.1	1196 59.2	630 31.1	30 1.4	35 1.7	41 2.0	19 0.9	23 1.1	19 0.9	21 1.0	6 0.3
T - TECHNICAL NUMBER PCT	2092 100.0	1311 62.6	634 30.3	983 46.9	81 3.8	187 8.9	39 1.8	74 3.5	12 0.5	33 1.5	15 0.7	34 1.6
GRAND TOTAL NUMBER PCT	16129 100.0	5604 34.7	8402 52.0	4360 27.0	1123 6.9	676 4.1	491 3.0	277 1.7	204 1.2	150 0.9	305 1.8	141 0.8
TOTAL BLUE COLLAR	4397	291	2874	195	693	58	261	17	92	4	186	17
TOTAL WHITE COLLAR	11732	5313	5528	4165	430	618	230	260	112	146	119	124

IN EEO REPORTS TYPE OF APPT CODE 10,15,30,32,34,36,38,50, OR 55 DEFINES PERMANENT
AND 20,40,42,44,46,48,60, OR 65 DEFINES TEMPORARY

	ALL		WHITE		BLACK		HISPANIC		ASIAN	AMERICAN	AMERICAN	INDIAN
	TOTAL	WOMEN	MEN	WOMEN	MEN	WOMEN	MEN	WOMEN	PACIFIC MEN	ISLANDER WOMEN	ALASKAN MEN	NATIVE WOMEN
A - ADMINISTRATIVE NUMBER PCT	794 100.0	295 37.1	471 59.3	272 34.2	10 1.2	9 1.1	6 0.7	7 0.8	5 0.6	1 0.1	7 0.8	6 0.7
B - BLUE COLLAR NUMBER PCT	1144 100.0	154 13.4	767 67.0	123 10.7	71 6.2	7 0.6	67 5.8	10 0.8	18 1.5	3 0.2	67 5.8	11 0.9
C - CLERICAL NUMBER PCT	673 100.0	468 69.5	164 24.3	351 52.1	15 2.2	46 6.8	13 1.9	31 4.6	6 0.8	15 2.2	7 1.0	25 3.7
D - OTHER WHITE COLLAR NUMBER PCT	27 100.0	7 25.9	10 37.0	4 14.8	6 22.2	1 3.7	2 7.4	1 3.7	2 7.4	0 0.0	0 0.0	1 3.7
P - PROFESSIONAL NUMBER PCT	241 100.0	105 43.5	131 54.3	102 42.3	2 0.8	0 0.0	1 0.4	1 0.4	1 0.4	1 0.4	1 0.4	1 0.4
T - TECHNICAL NUMBER PCT	1374 100.0	691 50.2	599 43.6	623 45.3	23 1.6	25 1.8	25 1.8	20 1.4	8 0.5	10 0.7	28 2.0	13 0.9
GRAND TOTAL NUMBER PCT	4253 100.0	1720 40.4	2142 50.3	1475 34.6	127 2.9	88 2.0	114 2.6	70 1.6	40 0.9	30 0.7	110 2.5	57 1.3
TOTAL BLUE COLLAR	1144	154	767	123	71	7	67	10	18	3	67	11
TOTAL WHITE COLLAR	3109	1566	1375	1352	56	81	47	60	22	27	43	46

IN EEO REPORTS TYPE OF APPT CODE 10,15,30,32,34,36,38,50, OR 55 DEFINES PERMANENT
AND 20,40,42,44,46,48,60, OR 65 DEFINES TEMPORARY

evenly distributed among grade and position titles.

WiNR: Do you bring a lot of women in from the outside, or do you primarily move them up through the ranks?

Lowey: There aren't many new jobs in the permanent ranks in any given year. One of the areas where we have the greatest opportunity to make improvements, and have done so, I might add, is within our seasonal ranks. Last year, our Director set a goal, and we increased by 25 percent our minority seasonal hires. That often becomes a feeder pool for permanent jobs as they open up. In addition to that, we have different intake programs which offer professional training opportunities. Those are 50 percent from outside NPS, 50 percent from the inside. We also are thinking strategically for the future. I was recently at a program in the Great Smoky Mountains, where we interacted with a school group taking part in our parks as classrooms program. There were many young women in it who had, for years, been coming to the park with their school group. These women developed a relationship and an appreciation for natural resource issues and scientific issues. Hopefully, their early exposure will lead them to pursue careers in the NPS or into another natural resource area.

WiNR: In the midlevel positions, what kinds of backgrounds would applicants need to have to qualify?

Lowey: We have a broad array of professional careers ranging from the cultural—with opportunities for historians or architects, for example—to natural resource backgrounds, such as biologists, geologists, foresters, and others. I think you can be a successful manager coming from any number of disciplines.

WiNR: The Forest Service has its own research division, a substantial one. Do you have anything that is comparable?

Lowey: The research function of the National Park Service is in partnership with the Biological Resources Division (BRD), which is in the U.S. Geological Survey (USGS). In order to better accommodate broad and coordinated research, Secretary Bruce Babbitt realigned the research programs at the Department of Interior several years ago. Part of our job now, is to ensure

that we have within the National Park Service, the core resource elements that connect us with the research being done with BRD and other external partners. We also rely on partnerships with a host of scientists from outside NPS; for example, we encourage Ph.D. students, university scientists, and others. Parks are wonderful places to conduct research.

WiNR: What has funding been like? Has it been adequate and steady?

Lowey: The National Park Service has done very well relative to a lot of other agencies in the last few years. Our increase in this year's budget is 16 percent over FY 1999. This year's increases are highlighted in a number of different areas. A major increase to forward the National Park Service's Natural Resource Initiative, which we think is one of the most important pieces that we have. We have an increase for the Lands Legacy Initiative—a \$1.0 billion program that is the largest one year investment in the protection of America's resources. It is funded through the Land and Water Conservation Fund receipts and will revitalize NPS' stateside grant assistance program as well as fund our federal acquisitions. We have a \$25 million increase for basic operations, the core resource preservation mission of NPS.

WiNR: Is much money spent on litigation? What is it usually for?

Lowey: Too much money is spent on litigation. I think we are typical of a lot of other federal agencies. Many of our rule makings are litigated. Current examples of litigation range from our Bison EIS and how we're handling bison in Yellowstone, to our regulations on Grand Canyon overflights, and to what we plan to do with respect to Yosemite Valley and the valley implementation plan. We face litigation on any number of significant management and policy decisions. There is usually someone who is not happy with what it is we're going to do in any one place.

WiNR: Where are some of the air quality hot spots? We often hear about them.

Lowey: We have visibility issues throughout the system: Shenandoah and Great Smoky are two of those. Ozone affects plant life at a number of different parks. Acid

In Zion National Park with Foundation members



rain in the Rocky Mountain parks is a major concern. In some instances, we know what the solution is, but sources are outside the park, so we must deal with air transport within a regional context. Big Bend National Park in Texas is a border park where we, in order to solve air quality problems with Big Bend, need to work in partnership with the EPA, and then work with Mexico, where some of the transborder pollution is coming from. Very rarely are we able to solve these issues on our own. But parks are wonderful places to monitor the impacts of air pollution and air quality on society at large. Because they are more pristine environments, we very quickly see some of the negative impacts.

WiNR: We hear that the parks are "loved to death." How are you dealing with that?

Lowey: National parks belong to all Americans. We want to ensure that all Americans have an opportunity to visit and interact with the national parks. We do not envision, at this juncture, major restrictions on visitation, but we are trying other means to reduce the impacts. In the case of Grand Canyon, we have proposed a plan to keep cars out and to get folks on transit systems. The same at Zion, where we're working in partnership with the city of Springdale, Utah, to set up a shuttle system. People will leave their cars in town. Right now the overwhelming problem is too many cars, not necessarily too many people, in many of the parks. We're going to have to be more and more creative to ensure that we're able to fulfill our primary mission. Some of those visits need not be in person. Some may be through our Internet programs or classrooms programs. There are other educational opportunities to interact with parks that we will be developing.

BUDGET AUTHORITY (EXCLUDING TRANSFERS) AND APPROPRIATIONS TO THE NATIONAL PARK SERVICE SINCE FY 1990 (\$000's)

	FY 1990	FY 1991	FY 1992	FY 1993	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000
CURRENT BUDGET AUTHORITY (Funded by an Appropriation Act for that FY):										<u>Enacted</u>	<u>Request</u>
Operation of the National Park System	767,765	876,688	976,498	983,995	1,061,823	1,076,900	1,081,481	1,154,611	1,246,004	1,287,924	1,389,627
National Recreation and Preservation	15,923	18,301	21,812	23,563	42,585	42,941	37,579	37,976	44,259	46,225	48,336
Construction and Major Maintenance	197,253	270,443	300,181	228,031	214,826	162,534	191,225	340,065	222,769	229,738	194,000
Land Acquisition and State Assistance	87,502	136,791	105,227	117,900	96,524	73,634	44,262	53,915	143,290	147,925	172,468
Land Acquisition for NPS and Administration	[67,740]	[103,566]	[82,023]	[89,686]	[68,471]	[45,687]	[42,762]	[52,415]	[142,290]	[147,425]	[171,468]
State Grants and Administration	[19,762]	[33,225]	[23,204]	[28,214]	[28,053]	[27,947]	[1,500]	[1,500]	[1,000]	[500]	[1,000]
Conservation Grants and Planning Assistance	-	-	-	-	-	-	-	-	-	-	200,000
Historic Preservation Fund	32,308	34,483	35,478	41,617	40,000	41,421	36,212	36,612	40,812	72,412	80,512
Urban Park and Recreation Fund	-	19,895	4,937	-	5,000	6	-	-	-	0	4,000
Illinois & Michigan Canal N.H.C. Commission	250	249	247	248	250	(In National Recreation & Preservation after FY 1994)					
John F. Kennedy Center for the Performing Arts	9,118	21,039	22,656	20,629	20,629	(Not to NPS after FY 1994)					
Land & Water C.F. Contract Authority Resciss'n	-30,000	-30,000	-30,000	-30,000	-30,000	-30,000	-30,000	-30,000	-30,000	-30,000	-30,000
TOTAL, CURRENT BUDGET AUTHORITY	1,080,119	1,347,889	1,437,036	1,385,983	1,451,637	1,367,436	1,360,759	1,593,179	1,667,134	1,754,224	2,058,943
APPROPRIATION TO LIQUIDATE CONTRACT AUTHORITY:											
Construction (Trust Fund)--Not Budget Authority	[12,000]	[22,143]	-	-	-	-	-	-	-	-	-
PERMANENT BUDGET AUTHORITY (Funded by permanent law or a law enacted before that FY):										<u>Estimate</u>	<u>Estimate</u>
Historic Preservation Fund (FY 1992 contingency funds made available FY 1993)	-	-	300	-	-	-	-	-	-	-	-
Operation of the National Park System (From forfeitures, by permanent law)	-	-	-	-	1	-	-	-	-	-	-
Construction (From forfeitures, by permanent law)	-	-	41	-	-	-	-	-	-	-	-
Land & Water Conserv. Fund Contract Authority	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000
Recreation Fee Permanent Appropriations											
Recreational Fee Demonstration Program	-	-	-	-	-	-	-	45,079	136,842	135,053	137,323
Deed-Restricted Parks Fee Program	-	-	-	-	-	-	-	-	-	1,440	1,565
Fee Collection Support, National Park System	-	-	-	-	11,353	11,895	11,354	17,735	1,100	1,152	1,152
National Park Passport Program	-	-	-	-	-	-	-	-	-	6,000	14,000
Transportation Systems Fund	-	-	-	-	-	-	-	-	-	-	1,000
Yellowstone/Grand Teton Payments by Law	535	665	1,036	765	739	765	670	100	817	873	872
Other Permanent Appropriations											
Park Concessions Franchise Fees	-	-	-	-	-	-	-	-	-	19,000	21,500
Operation and Maintenance of Quarters	9,538	11,778	9,858	10,406	10,736	12,196	12,535	15,491	14,791	14,984	15,283
Filming & Photo. Fees--Proposed Legislation	-	-	-	-	-	-	-	-	-	-	2,500
Other Permanent Accounts	282	239	258	276	3	16	766	69	526	1,511	1,531
Miscellaneous Trust Funds (includes Donations)	11,319	7,732	10,013	9,754	9,233	12,164	15,748	14,790	14,476	9,508	9,508
TOTAL, PERMANENT BUDGET AUTHORITY	51,674	50,414	51,206	51,501	62,065	67,036	71,073	123,264	198,552	219,521	236,234
TOTAL BUDGET AUTHORITY	1,131,793	1,398,303	1,488,242	1,437,484	1,513,702	1,434,472	1,431,832	1,716,443	1,865,686	1,973,745	2,295,177
Concessions Improvement Accounts (FY 1995 is incomplete)							13,561	24,549	21,898	26,288	24,500
Non-NPS Funds Allocated to or Used for NPS (FY's 1999/2000 are estimates based on enacted/request):											
Wildland Fire Management (Allocated to NPS)	34,464	21,483	22,129	30,068	32,016	37,932	32,758	32,687	40,666	42,359	48,929
Central Hazardous Materials Fund (Allocated to NPS) (In Operat'n of the N. Park System before FY 1995)	-	-	-	-	-	4,596	1,650	1,415	1,912	2,250	No est. yet
Priority Land Acquisitions, etc. (FY 1998 Title V funds approved in Congress for NPS, available in FY 1999 as reimbursable)	-	-	-	-	-	-	-	-	-	127,065	-
Federal Lands Highways Prgrm. (permanent law)	60,000	60,000	69,000	83,000	83,000	83,000	84,000	84,000	102,647	145,985	Approx. =

Amounts are Budget Authority adjusted for general reductions, rescissions and sequesters but not for transfers to or from other accounts, except as noted.

FY 1996 Land Acquisition and Administration amount reflects an inter-bureau redistribution by transfer (-\$4,768,000) approved by ranking appropriation subcommittee members.

WiNR: You mentioned earlier a program to control invasive species. How are you attacking these problems, some of which were exacerbated by past practices?

Lowey: Invasive species are one of our biggest problems. Part of the money in our Fiscal Year 2000 natural resource initiative would go into a strike team/task force to target invasives. We're building up a NPS database right now that has different management rules and regulations for dealing with specific invasive species. In terms of past practices, we have learned a lot. In the early days, in Yellowstone, there was an effort to eliminate wolves, to eliminate natural predators that are part of a healthy ecosystem. Throughout the Park System there are similar examples, where uninformed early management practices have altered systems in a manner that has created resource problems for us now.

WiNR: Are you doing public education programs, helping people become more aware of how they transport invasives?

Lowey: People usually don't realize they're transporting invasives on their vehicles, themselves, or in what they carry. We educate on our website as well as in brochures. We do a lot of specific outreach programs in the parks and work it into talks.

WiNR: In terms of the databases, including resource data, how are you sharing it with other agencies?

Lowey: There has been a sustained focus under Secretary Babbitt on ecosystem restoration, so we're joining with others to solve resource issues on a multiagency, regional basis. The Everglades and Greater Yellowstone are two examples of National Parks that are surrounded by other federal and state lands, and large, land-holding neighbors. In order to successfully rise to the challenges of resource preservation in the 21st century, reaching across physical boundaries is essential. Because I came from another agency, I brought with me an understanding of different agencies' cultures and how best to forward NPS' goals with them. We are much stronger sharing our resource data, but it's no secret that compatibility of the databases can be a roadblock.

WiNR: Are you acquiring new sites?

Lowey: Yes. Annually, we conduct suitability studies, and Congress considers various proposals for additions. It's been fairly steady since 1980 with a couple of new sites designated annually. Last year we had two new sites added. One is the Tuskegee Air Base, a training site for black airman during World War II, and the second one is the Central High School in Little Rock, Arkansas. It's still a functioning high school, so we don't own the property per se, but it is a wonderful site. Central High helps tell the story of the landmark desegregation case following *Brown v. Board of Education*.

WiNR: Do you do studies on vandalism over time? Do you see any new trends?

Lowey: Yes, vandalism is tracked within the National Park Service. Unfortunately, the figures are not good and there is an increase throughout the country. We need to continue both law enforcement efforts and educational efforts to slow it. These crimes are not against an inanimate object, but against a piece of this nation's heritage. Our latest figures show that the violations that were investigated include poaching, vandalism, and theft, primarily. We had 13,475 resource violations for 1997, which is the last year that I have statistics for. There are kids writing graffiti on memorials and monuments. We've had monuments defaced to make a political statement, and artifacts stolen. I have some specific examples: At Gettysburg NMP, the head of the sculpture on the 2nd Andrew Sharpshooters monument was taken off by someone swinging a tree limb; and a saber handle was broken off and stolen from the 4th New York Cavalry monument. On the Chesapeake and Ohio Canal in Maryland, people have spray painted historic homes along the canal. At Kings

New sites added to the National Park System since 1980, by year in descending dates. There are a total of 378 sites in the National Park System.

1998	2	1997	1
1996	5	1995	0
1994	3	1993	0
1992	9	1991	2
1990	4	1989	1
1988	11	1987	3
1986	3	1985	0
1984	0	1983	3
1982	0	1981	0
1980	13		

Lowey with Superintendent Anne Castellina of Kenai Fjords National Park



Canyon National Park in California, gangs have put their tags on some rock formations. On the Statue of Liberty, in New York, the Washington Monument in DC, and the Jefferson National Expansion Memorial (St. Louis Arch) in Missouri, people have written or etched their names/initials on the memorials. Most appear to be random and not organized.

WiNR: We were talking earlier about changing demographics. Are there unexpected changes in the types of visitors to national park sites?

Lowey: We have not done extensive studies on demographics, although we plan to. Visitation continues to increase—287 million visitors in 1997. We would like to ensure that visitation trends move toward diversity and have created partnerships which have diversified programs. For example, there has been a major trend in the last number of years towards heritage areas, which are not actually park system units. They are in partnership with communities and people who recognize certain landscapes and value them. No land acquisition is involved. While that's not NPS visitation per se, it certainly aligns with the National Park Service and its purpose. We are touching more people through heritage areas such as Essex, the National Heritage Area in Salem, Massachusetts, and the Hudson River Valley, which spans Troy to New York City. The Rivers, Trails and Conservation Programs are also working with communities to provide additional opportunities for trails, and for greenways like the Mountain-to-Sound Greenway in Washington State, or the Taconic Trail System Plan in Massachusetts and New York. Those are all opportunities to serve a broader spectrum of people and bring park programs and values to them.

WiNR: What would the National Park Service role be, where you don't really manage the lands?

In 1995, as a volunteer on the Granite Park Chalet project at Glacier National Park



Lowey: Technical assistance primarily, by helping communities preserve what's best. For example, when we help create green spaces in urban areas, we have an opportunity to highlight the same values that are the fundamental core of the National Park Service and System to areas where we don't have a System unit—an actual, congressionally-designated unit of the Park System. Preservation is not just about preservation and national parks. Preservation is about an ethic—preserving your heritage in your community. The strength of the National Park Service is really the strength of those two programs working in tandem.

WiNR: People think of the national parks as someplace you go 2,000 miles to visit. So when you're talking about visitor demographics, you are taking into account that most demographic visitor changes will take place in urban areas?

Lowey: Absolutely! And the 378 unit National Park System is enormously and wonderfully diverse with historic sites that are smack in the middle of urban areas. We have huge, wonderful natural areas. Each of them are of equal value to the system.

WiNR: It takes a lot of people to get work done on that many sites. How many of the NPS work force are volunteers?

Lowey: We have 85,000 volunteers, who donate more than 3 million hours of service—an amazing effort. We have senior citizens, the Friends groups—lots of others. Volunteerism is really important, not only because it helps us accomplish the mission and helps get things done that might not get done otherwise because of funding limitations, but also, it conveys a sense of responsibility and ownership. It's Americans say-

ing, "This is something that matters, and I'm going to take time to ensure that it's there for my children." It says, "I have a stake in the system, and care about its preservation." I was a volunteer in a park and that experience was pivotal to my desire to do more.

WiNR: As opposed to volunteers, what is the makeup of your paid work force?

Lowey: Sixteen thousand permanent employees, and then we expand it substantially with seasonals.

WiNR: How would you characterize your management style?

Lowey: I am a strong believer in empowering the people I work with. I'm not a micromanager. You surround yourself with good people, which we have in the National Park Service. It's really the finest public servant organization that I have ever worked with. I make clear at the outset what the goal is. And then free people to do their best doing it. We work in a collaborative fashion. Is that a management style?

WiNR: What do you like best about your job and what will come next?

Lowey: I have the best job in the world, working for the best organization in the world. Being outside and working in the natural environment is very important to me. I believe that you set goals and you take opportunities as they come. I have never been able to predict what kind of work I would be doing. If you had asked me five years ago if I would be the Deputy Director of the National Park Service, I would have laughed. I'm going to continue working at this job and see what comes down the pike after that.

WiNR: If you were asked to give advice to other women who are thinking of going into natural resource management jobs, what would you say?

Lowey: Careers in the National Park Service are rewarding. People should not feel confined by what they perceive to be a lack of experience in particular areas. There are an enormous number of skills required in management jobs. Skills from other fields are transferable and there are a lot of opportunities for training and learning on the job if a person will stay flexible. At the same time, I would say to women, there are more and more opportunities in resource management. Today, women who are entering the ranks see more senior women who are willing to put out helping hands, and mentor, to ensure that opportunities develop.

WiNR: In terms of women moving up in the ranks, what would be the most important trait that should be developed?

Lowey: Maintaining the flexibility I mentioned earlier. People need to keep their eyes on their current responsibilities, but when opportunities come up that may be a little different from what they always thought they were going to do, take risks. I don't think one moves up without taking risks.

Daina Dravnieks Apple is a natural resource economist on the U.S. Forest Service Policy Analysis Staff, Washington, D.C. She has served as a strategic planner for the National Forest System; as an Assistant Regulatory Officer in the Washington Office; as Regional Land Use Appeals Coordinator; and on the Engineering Staff in Region 5, San Francisco. She began her Forest Service career as an Economist at Pacific Southwest Research Station, Berkeley.

She is active in the Society of American Foresters and is Chair-elect of the National Capital Chapter. She is a member of Sigma Xi Scientific Research Society and was elected President of Phi Beta Kappa Northern California Association, and National Secretary. Her B.Sc. in the Political Economy of Natural Resources and an M.A. in Geography are from UC Berkeley. She is currently in the Environmental Science and Public Policy Ph.D. program at George Mason University.

PEOPLE

Jamie Rappaport Clark, the Director of the Fish and Wildlife Service since 1997, writing in the March/April 1999 *People Land and Water*, said that the sense of crisis about alarming declines of commercial fish, game, and waterfowl species is abating, population drops have been stemmed or reversed. The new crisis is the loss and fragmentation of natural habitat. She estimates fifty percent of wetlands have been drained, 85 percent of forests destroyed, and 95 percent of tall grass prairies are gone. And with another projected 125 million extra people living in the United States by 2050, human encroachment is further inevitable. On the plus side, was the passage of the National Wildlife Refuge System Improvement Act, which lists the singular mission of refuges to conserve fish, wildlife, and plants. Amendments to migratory bird treaties with Mexico and Canada will help improve that resource; and the USF&WS got a record \$1.4 billion for this fiscal year. Priorities for Clark revolve around renewed emphasis on saving landscapes and their species rather than addressing species-specific issues. After restructuring the organization, some 53 watershed systems teams, began work on the migratory bird issues, among others. Identifying and planning for management of invasive species will also be a top priority. A new thrust also, is improving the Service's ability to identify and acquire essential habitat for the National Wildlife Refuge System and to develop a clear and strong policy of compatible uses for the System..

The Kaibab National Forest, in northern Arizona, is the first Forest to have all women occupying the top line officer jobs. What they have in common is a great love for the outdoors, working with people and communities, and making a difference in managing forests and natural resources. These deep felt interests and pure coincidence have brought about what Forest Service officials think is a first for the USDA Forest Service.

Conny Frisch serves as Forest Supervisor. Under her, are **Jill Leonard**, the North Kaibab District Ranger, **Renee Thakali**, the Tusayan District Ranger, and **Susan Skalski**, the Williams District Ranger. Together, they are directly responsible for managing 1.6 million acres of forest and grasslands.

Frisch said, "I grew up hiking, fishing, and spending a lot of time outdoors on public lands. Science in the natural world has always fascinated me, which is why I'm here. Working with people who have an interest and passion for conserving public lands and natural resources and involving them in the decision making process gives me tremendous satisfaction." She was the first of the four line officers to arrive on the Kaibab National Forest and was the first woman Forest Supervisor. She was followed in July 1995, by Jill Leonard, who became the first woman district ranger for the North Kaibab Ranger District, and the first woman district ranger on the Kaibab National Forest. Renee Thakali followed a year later in July 1996, but has been promoted to the Midewin National Tall Grass Prairie in Illinois, and is leaving. Susan Skalski is the newest ranger having arrived in February 1999. **Teri Cleeland** will become even newer when she replaces Thakali as acting District Ranger in the spring of 1999.

Each brings a diverse background and work experience, with perhaps Thakali having the most out-of-the-ordinary background. Before coming to the Kaibab NF, she served a five-year term as the Associate Peace Corps Director in Nepal. The three current rangers have degrees in forestry or forest management and Frisch holds B.S. and M.S. degrees in geology.

"This is a unique situation and I'm not aware of another national forest where the forest supervisor and the district rangers are all women," said Region 3 Regional Forester, Eleanor Towns. Towns herself is one of two women serving as a Regional Forester within the Forest Service. She began her tour as Regional Forester in April 1998, and is headquartered in Albuquerque, New Mexico. She is the regional administrator for 11 national forests, including the Kaibab NF.

Source: *Cathie Schmidlin, Public Affairs Officer on the Kaibab National Forest.*

Abby Sue Foster was hired as a museum specialist for the Midwest Region of the National Park Service and promoted to Regional curator during her third year. Her first duty station was in a limestone cave associated with the Harry S. Truman National Historic Site in Missouri. Today, she administers a museum management program, provides budget oversight, and assists Midwest parks with every aspect of their museum collections.

Deborah Liggett was recently named the superintendent of four park units in southwest Alaska: Katmai National Park and Preserve, Lake Clark National Park and Preserve, Aniakchak National Monument and Preserve, and the Alagnak Wild River. As superintendent of these parks, she is responsible for managing about 8.6 million acres of land—an area nearly four times the size of Yellowstone. She will oversee construction of new visitors facilities, manage growing visitor use, and work with subsistence issues. Previously, Liggett was superintendent of Devils Tower National Monument, Wyoming, where she was key negotiator in mediating conflicts between climbers and Native Americans.

Karen P. Wade is the first female superintendent (13 male predecessors) of Great Smoky Mountains National Park, in North Carolina and Tennessee. This is her fourth position as a superintendent. Previously, she also earned the distinction of being the first female superintendent at the Guadalupe Mountains National Park (Texas) and Wrangell-St. Elias National Park (Arkansas). At the Great Smoky Mountains, the nation's most visited park, Wade is responsible for managing park operations to meet visitors' needs, while protecting park resources. The park is engaging in an intensive air quality monitoring program to protect the park's famous vistas. In addition to her responsibilities associated with the individual parks, she has contributed significantly throughout her career to NPS training programs primarily in the areas of supervision, communications, and leadership. She particularly enjoys mentoring new employees and encouraging women in nontraditional career fields.

Andrea E. Tuttle is the new director for the Department of Forestry and Fire Protection for the State of California. Tuttle, of Arcata, is the lead consultant for Andrea Tuttle & Associates, a natural resource policy and planning company she founded in 1992. Since 1997, she has been a member of the California Coastal Commission. Tuttle also served as a consultant for the State Senate

Select Committee on Forestry from 1987 to 1991 and was a member of the California Regional Water Quality Control Board, North Coast Region from 1976-1984. From 1978 to 1987, Tuttle served as an instructor and researcher on environmental planning at the Berkeley and Santa Cruz campuses of the University of California. Tuttle's bachelor's in biological science and doctorate in environmental planning are from the University of California at Berkeley. She also holds a master of science degree from the University of Washington at Seattle.

Diann Jordan, University of Missouri, Columbia, recently became an editorial board member for the American Society for Microbiology journal, Applied and Environmental Microbiology, for a three term beginning January 1, 1999. Members are selected on the basis of their demonstrated competence and achievement in their scientific discipline as evidenced by the quality of research accomplishments, publications in scientific journals, and national reputation. Membership on the editorial board of a scholarly journal represents a significant commitment of professional time and energy.

Ann Bartuska, USDA Forest Service, will be responsible for all forest management activities on the nation's 155 National Forests. Bartuska was most recently the director of forest health protection in the Forest Service's State and Private Forestry organization, and was responsible for the coordination of the program. Before this, Bartuska was a special assistant to former chief Jack Ward Thomas, serving as the Forest Service's liaison to the National Biological Survey. Her previous responsibilities include serving as the acting director of ecosystem management in the Washington DC office. She served as a wetland staff specialist for the Agency's forest environment research staff, and was responsible for developing the National Wetlands Research Program where she coordinated wetlands research within the Forest Service and with other agencies and institutions. Bartuska has also served as assistant director of the Forest Service's Southeastern Forest Experiment Station in Asheville, North Carolina, and program manager for the National Acid Precipitation Assessment Program at North Carolina State University. Her MS degree in botany is from Ohio University (Athens) and her Ph.D. in biology is from West Virginia University, (Morgantown).

Rick D. Cables has been selected as Regional Forester for the Alaska Region. Cables is responsible for overseeing 22 million acres of national forests in southeast and south central Alaska. Previously, he was a

Forest Supervisor in Colorado, overseeing the Pike National Forest, San Isabel National Forest, and Comanche National Grassland in southern Colorado, and the Cimarron National Grassland in southwestern Kansas. Prior to his current assignment, Cables served five years as Forest Supervisor of the White Mountain National Forest in New Hampshire and Maine. Cables has held various field positions in several regions across the country and has served in the Chief's Office in Washington, D.C. His BS in forestry is from Northern Arizona University and then he graduated from the U.S. Army War College in Carlisle, Pennsylvania.

Only two companies, Weyerhaeuser and Dupont, send more shiploads of merchandise overseas than **Yan Cheung** does. She tops even Ford and Philip Morris. Her wastepaper and wood-pulp company, America Chung Nam, had revenue of \$132 million last year. Most of her customers are in her native China. Immediately after graduating from college with an accounting degree, Cheung, went to work for a paper-processing company in southern China. In 1985, she obtained permission to emigrate to Hong Kong. She started in Hong Kong with little more than \$3,500, but contacts are as crucial as capital. Since officials who ran China's paper mills knew and trusted Cheung, she was able to get them to prepay for shipments of wastepaper, which the mills recycled. The big problem was Hong Kong itself, where the scanty supplies of wastepaper were controlled by local organized crime, known as the triads. Cheung let the triads know that she was well-connected with Chinese industry officials who could make or break their fortunes. After five years of such dealings, Cheung decided that the U.S. with its abundant forests and mountains of recyclable paper would be an easier place to do business. In 1990, she bought a recycling facility in California. She continues to ship most of the wastepaper and wood pulp to China, she explains, because other countries do not have as great a need. Today she is a Hong Kong citizen with a U.S. green card, living in California with her family.


Source: *Working Woman*, June 1999

After 33 years working for Potlatch Corporation, and now third in command of a \$1.6 billion company, **Sandra Powell** is chief financial officer. Her responsibilities range across the entire financial landscape of the company, including management of accounting, auditing, taxes, investor relations, and information systems. She began working for Potlatch in 1967 as a tax accountant and moved her way up the ranks taking positions in middle management and then corporate-level officer's positions. One especially valu-

able move was into the company's computer systems at a time when computers were just starting to be phased into the workplace.

Powell said she never gave much thought to the fact she was working in a male-dominated industry. She always felt there were opportunities for anyone if they had the qualifications and the knowledge necessary for the particular job or position. Her advice: people should enjoy what they are doing and be comfortable with it. They also should take advantage of the opportunities to continue their professional growth and education. Source: *Lewiston Morning Tribune*

Ghassan (Gus) Rassam has been appointed the fifth executive director of the American Fisheries Society (AFS). AFS is the world's largest and oldest, with 9,000 members in 73 countries. Rassam comes to the position via the Optical Society of America, a professional society devoted to the fields of fiber optics and laser technology, where he developed electronic journal publication, book publishing, and marketing. A geoscientist by training, his Ph.D. is from the University of Minnesota; he was a Fulbright scholar and did graduate study at the Sorbonne University in Paris. In addition, Rassam spent decades as a petroleum geologist, he worked as a database developer, was President of the Association of Earth Science Editors, and served on the governing board and executive committee of the American Institute of Physics.



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What's Your

R ESILIENCY Q UOTIENT?

A Management Column
by
Barb Springer Beck

How do you handle set backs? Does making a mistake devastate you? Are you frequently blind-sided? Does it take you a long time to get back on your feet? If so, maybe you need to work on increasing your "ResiliencyQuotient." Think of personal resiliency as having faith in yourself to continue under any and all circumstances—simply put, the ability to bounce back.

Let's talk about why improving your resiliency might be a good long term strategy. Consider the pace of change. It's something we're all subject to. You've probably noticed that in your own life (and in the world around you) you are constantly bombarded with changes. A new supervisor, new initiatives to implement, changed expectations for your performance, reorganization, and reduced job security are just a few of the day to day pressures you deal with at work, not to mention changes in your personal life.

We can exert a great deal of control over some of these changes—whether or not to apply for a vacancy, for example. Other changes we may only have control over how we respond, since the change has been initiated elsewhere. For example, you probably didn't predict the Asian monetary crisis, but you might be affected by the resulting decrease in demand for forest products. And, who could have predicted the popularity of echinacea? As a result, non-permitted harvest of the prairie coneflower on the national grasslands has skyrocketed. Although you may not have seen either of these situations coming, they could dramatically affect your work as a natural resource manager. The point is, whether we initiate change or not, it's unlikely the number of curve balls we have to deal with day to day is going to slow down any time soon.

OK, so knowing that changes are inevitable, what can you do to help yourself cope and even thrive in such an environment? Here's what I'd suggest.

1) Anticipate change if at all possible. Develop your change antennae by constantly

scanning current events, your own situation, and your surroundings. When you observe change, look for the underlying causes and relationships to other occurrences. Are there patterns which can help you predict how you or your work may be affected? From the Asian crisis, we can learn that even if we are employed in the timber industry in rural north Idaho, the demand for our products could very well be affected by changes in other areas of the world.

I remember learning a clever trick in defensive driver training. We were told to look ahead while driving and imagine the oncoming car veering into our lane. We were then asked to identify a course of action should this occur. I still practice this technique on the road, and also as I look ahead at the challenges of running a business. The idea, which applies to increasing your resiliency as well as driving safely, is that thinking ahead can help you be prepared for what might come along. Get in the practice of asking yourself "What if?" And then determine how you would respond.

If you feel that you are frequently blind-sided, you may not be sensing change as well as you might. When something happens to make you feel that you were blind-sided, ask yourself if there was a way to have anticipated that situation. If you've ever had a performance evaluation where you were surprised, even devastated, by a critical review, you know it doesn't feel very good. There may have been clues you should have picked up on. Were communications between you and your supervisor rare, or uncomfortable? Did you ignore, or have a tough time eliciting feedback from your supervisor over the course of the year? If your answer is yes, you may have missed indicators that could have prevented the unpleasant surprise, or at least, have been prepared for it. If you experience the feeling of being blind-sided, ask yourself how you might monitor future situations to prevent a reoccurrence.

If you work for the Forest Service and have a ski area as part of your responsibility, and that ski area is hosting a major race (Vail and the White River National Forest recently hosted the World Alpine Skiing Championships), you'd better expect and plan for the additional demands that will be placed on you. That may mean bringing detailers in to assist with coordination, public relations, or trouble shooting. Being prepared can make all the difference.

2) Don't look to place blame or make unproductive assumptions. We all have a tendency to place blame either on others or ourselves when we hit a roadblock. It can be productive to analyze how the situation came about—with the idea of learning from it and preventing a reoccurrence—then you need to move on. Accepting your share of responsibility for a problem is always appropriate. If you failed to prepare adequately for a presentation which was poorly received as a result, you need to own up to that. If, on the other hand, your ideas were not well received because they laid bare a difficult problem which will have to be dealt with, you may have been the victim of a "shoot the messenger" scenario. Although you may suffer some of the consequences in the second situation, the underlying problem is hardly your fault for simply pointing it out.

3) Change how you look at "failure." Ed Land, formerly of Polaroid, had this to say: "A mistake is an event, the full benefit of which has not yet been turned to your advantage." In the fast-paced environment within which we operate today, we need to increase the speeds at which we take risks. This may mean that we'll make more mistakes. Author Robert Kriegel, in *If It Ain't Broke, Break It* (1994), suggests that "mistakes are a good investment." Tom Watson of IBM takes that a step further with, "If you want to succeed, double your failure rate." How unfortunate that many within government have yet to recognize failure as a part of achieving success.

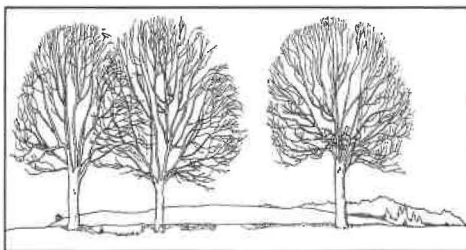
Of course, making a serious mistake isn't the end goal, but applying what can be learned from making mistakes contributes to success. Looking at success in the private sector we often see accomplished individuals with a string of bankruptcies and "failures" in their past. The point is to learn, then capitalize on your new knowledge.

4) Practice identifying options and alternatives. Look for opportunity in every situation. I'm constantly amazed at the number of people who don't believe that they have any options in their lives or careers. If you truly feel this way, small set-backs and changes can be very threatening. Hickman and Silva in *Creating Excellence* (1984), wrote that versatility means being able to convert threats into opportunities. Versatility, as they define it, is the capacity to embrace and participate in an ever-changing world. They explain that "in a world of accelerated change, survival may depend on learning to do something other than what you know best." Get in the habit of thinking beyond what you currently do, to imagine other situations in which you could thrive. It will give you a greater sense of control over your own destiny, even if you never find it necessary to act on these options.

While I was working for the Forest Service in Idaho in the late 1980's, we had a fairly clear set of priorities. Unrelated to our work, Bristol-Meyers Squibb initiated clinical trials using the bark of Pacific yew for treating the final stages of ovarian cancer. Since Bristol-Meyers was not yet able to synthesize the compounds in the yew bark, a significant demand developed overnight for a bark supply. We had Pacific yew on the Ranger District, and were asked to complete NEPA, develop sale procedures, and harvest yew bark in a short period of time. Other work was placed on hold, and priorities were rearranged in order to supply the bark. While this was a stressful time which no one could have predicted, it also offered us a great opportunity. That opportunity was to contribute to saving lives! Versatility allowed us to respond to this important societal need. The personal rewards for all involved were tremendous.

5) Take a little time to reflect on how you successfully handled difficult situations in the past. Too often, we've come through a tough situation remarkably well only to miss the learning experience or to miss giving ourselves the credit we deserve.

As a land manager, you may have had to address issues surrounding a fish species listed under the Endangered Species Act. That may have involved becoming familiar with new statutes, new review procedures, and revising priorities and projects. When a plant species found on your unit is subsequently proposed for listing, you can draw



upon the understanding of the Endangered Species Act you gained from dealing with a listed fish.

Do you remember how you felt when you first started the job you are in now? Facing unfamiliar situations probably caused your confidence to waver—even if only for a short time. It can help to think back on your previous experiences in other positions, and how you were able to deal with difficulty or uncertainty. One technique for giving yourself some credit, is to keep a "Success Log" in which you record how you effectively dealt with adverse situations. Then, in the future, when you find yourself facing a tough situation, you can read through your past experiences and triumphs. Boost yourself by celebrating those successes. You'll build your confidence to handle what may come.

6) Develop and use your support network. Support networks come in all varieties and may consist of a co-worker, spouse, family member, or a friend you trust. Sometimes just being able to talk about a situation to a good listener (your dog?) can help you see it from a new perspective. Other times, input from someone with your best interests at heart, can be just what you need. Your support network can help you retain your perspective about whether something that has happened is really all that significant.

Support networks are especially important in helping you to deal with situations where you've invested a great deal of yourself. Unfortunately, we as natural resource managers, find ourselves increasingly involved in litigation—which we don't always win. Maybe you've been working for the last nine months, full-time, with attorneys, on a land use planning case, and then lost the case. When something of this magnitude happens to you, it's only natural to feel let down and upset. Recognize that you'll need to go through some form of grieving, then allow yourself a reasonable time to do that—with support from others—then put the set-back behind you.

In other cases, you can use the support up front. I once had to facilitate a meeting with people I knew were apt to be hostile and confrontive. By rehearsing what might hap-

pen in the meeting with the client, who played devil's advocate for me, I felt better prepared and handled the meeting with confidence.

7) Manage your stress, take care of your health. This one should go without saying. When you're down physically, if you catch every cold that comes along, for example, it's hard to be "up" psychologically. Eat properly, get enough sleep, and exercise regularly. Keep your energy levels high. For me, maintaining my personal resiliency is directly related to my health and overall well being. When I'm healthy and energetic, confidence in my ability to handle life's challenges is high.

8) Know when to let go. Each of us has at one time or another continued to fight for a lost cause. Periodically reassess the things that have been weighing on you to see what the chances for success in the future are, and at what cost. You'll be better able to handle new challenges without burdensome baggage sapping your energy. It's healthy to decide, in some instances, to put an event behind you and not look back.

9) Develop a plan. Look at the facts of the situation, define the problem you're facing. Then come up with several approaches. By choosing a course of action, you'll regain your sense of control and lose the feelings of hopelessness that can paralyze you.

Think about the uncertainties an Incident Commander (IC) faces in an explosive wildfire situation. Using the best fuel and weather information available, a strategy for containing or fighting the fire is developed. But, all too often conditions change, and another response is called for. When you are facing a difficult situation, you can benefit from having a contingency plan just as the IC does.

Increasing your RQ should serve you well at work, but more importantly, it will contribute to the quality and maybe even the longevity of your life. Remember, "experience is not what happens to you, but what you make of what happens to you" (Aldous Huxley).

Barb Springer Beck is President of Beck Consulting, a firm that specializes in meeting facilitation and managing personal and organizational change. Prior to starting her own business in Red Lodge, Montana, she was a District Ranger for the Forest Service. She is a WINR Editor.

Exploring Campus Climate for Women

Dianne L. Phillips-Miller, Karen Guilfoyle,
Dixie Ehrenreich, Francesca Sammaruca,
Barbara Howard Meldrum

Introduction

The climate of a campus is influenced by factors (physical, psychological, social, and financial) that combine to create a working environment within colleges and universities that is either welcoming and conducive to the participation and success of faculty or that marginalizes some groups and creates barriers to their participation or success. Historically, women have been outsiders to the academic culture and have not had the same opportunities as men to work as regular, full-time, tenure-track faculty (Aisenberg & Harrington, 1988; Luke & Gore, 1982; Keller & Moglen, 1987; Kirsch, 1993). Since women began entering academe, studies have indicated that many experience a "chilly" campus climate (Ginorio, 1995; Sandler, 1986; Simeone, 1987; Schneider, 1998).

The intent of this paper is to describe how 12 women faculty at a small land-grant university in a rural setting have experienced campus climate in departments with very few women members. The qualitative study that provides the basis for the paper was designed to follow-up a survey of all faculty, on the same campus, that indicated that untenured female faculty were significantly less likely than their male counterparts to (a) be granted release time to conduct research, (b) have access to research assistants, and (c) serve as major professor for graduate students. These findings implied that there were gender discrepancies in access to resources that are important in obtaining tenure and in the retention of women (Capowich, Atwood-Hoover, & Handa, 1996).

Overview of Women in Nontraditional Professions

Women in nontraditional professions (those which include less than 30% women) do not experience the work place in the same ways as men. For example, they make less money with increased experience, are promoted less frequently, are given fewer supervisory responsibilities, experience more sexual harassment, and are more frequently isolated from their male counterparts at work (Brass, 1985; Burlew & Johnson, 1992; Fløge & Merrill, 1986; Gutek & Cohen, 1987; Jagacinski, LeBold & Linden, 1987; Lafontaine & Tredeau, 1986; Sherman & Rosenblatt, 1984; Simpson, 1996; Yoder & Adams, 1984). These kinds of experiences reported by women have been called micro-inequities.

Micro-inequities refer collectively to ways in which individuals are either singled out, overlooked, ignored, or otherwise discounted on the basis of unchangeable characteristics such as sex, race or age. Through these behaviors people are treated not as individuals, but rather according to preconceptions about the groups with which they are identified (Sandler & Hall, 1986).

Because women make up only 25 percent of tenure-track faculty in higher education, academe can be considered a nontraditional profession for them, particularly in those disciplines that include natural resources, engineering, medicine, law, agriculture, and others.

Design of the Study and Data Generation

This study was conducted to explore campus climate for faculty women in university departments (which will not be named) that had a significant gender imbalance. Data were generated over a four-month period (March - June, 1998) using a qualitative framework guided by participatory action methodology to foster a collaborative process of exploring, discovering, and understanding through problem solving, as well as problem posing. Interviews, structured according to participatory action methodology, were organized in a format based on Friere's (1970) concept of dialogue to encourage the women to reflect on parts of their lives that they might not ordinarily question and to look at the "whys" of their experiences at the institution—as well as to explore possible actions/solutions to address the issues/problems they identified (Maguire, 1987). Twelve interviews were conducted using this format.

All five researchers were involved in almost all of the 12 interviews/dialogues. Each interview ranged in length from one to two hours and included conversation, dialogue, and critique. A set of open-ended questions was used to guide each of the twelve sessions and to create a certain level of consistency; however, each interview was unique in terms of what participants chose to emphasize and in what direction their responses led the dialogue. All interviews were taped and transcribed by a professional transcriber. Data included more than 500 pages of transcription along with additional e-mail correspondence, researcher analytic memos, and field notes.

Interview questions covered broad categories, such as history/background, departmental support and resources, collegiality, mentoring, research and teaching climate, and tenure and promotion information. Other interview questions asked for suggested solutions and actions which the administration could use to improve the climate for women.

Participants

The 12 participants worked in 11 different departments/units and six colleges within the university. The total number of faculty within these units was 238, of which 64 were women. If off-campus extension faculty were not considered, these numbers fell to 161 total faculty, with 31 of them women; therefore, 19.25 percent of the on-campus faculty covered by this study were women. The twelve participants represented 38.7 percent of women faculty within these units. Their faculty ranks included assistant professor, associate professor, full professor, research faculty and tenured senior lecturer. Half of the twelve women were tenured at the time of the study. Participants had been employed at the institution from two to 26 years, with an average of 13.3 years of service. The age range of the women was 30-60 years, with a mean of 44.5 years. Participants reported working 45 to 80 hours per week with a mean of 62 hours. Some of the participants were known to one or two members of the research team; most were not. Participants were not selected because they held negative views regarding campus climate at the university although the research team had prior knowledge that one of the faculty members had previously filed a formal grievance. In most cases, participants were selected because they were the only women in their departments, or one of two women.

Since this study focused on generating a rich description of the experiences of these women in their current contexts, no attempt was made to introduce the perceptions of the participants' colleagues or administrators. Quotes from every participant have been included to illustrate the themes that emerged in the data and, in most instances, participants are quoted only once within each section or subsection of the report, as is evident in the coded numbering system used (P1-P12).

Analysis and the Sense of Community Model

Two forms of analysis were used in this study as is typical of qualitative and action research: ongoing and summative analysis. The purpose of the ongoing analysis was to construct meaning from the evolving data, further refine the questions, and guide the study. Ongoing analysis was facilitated by analytic memos focused on what was being learned, the insights being generated, and the kinds of further action needed, as well as by dialogues between the five researchers following each interview session and by e-mail communication. Through the ongoing analysis, initial categories were developed. "Creating categories triggers the construction of a conceptual scheme that suits the data . . . The process of establishing categories . . . has implications for ongoing method, descriptive reporting, and theory building" (Ely, 1991). Ongoing analysis began with the first interview and continued throughout the study.

As the study drew to a close, the process of summative analysis began, which was designed to "tease out what the researchers considered to be essential meaning in the raw data; to reduce and reorganize and combine data so that the readers share the researchers' findings . . . to carry the story of what we had presumably learned" (Ely, 1991). This process was initiated through a two-hour taped dialogue among all five researchers comparing and contrasting their insights and interpretations. Next, each transcribed interview was read at least four times to finalize relevant categories. Summative analysis began in June, 1998, and was completed in September, 1998.

Through analysis and interpretation of the data it was determined that various aspects of the academic system influenced campus climate for the participants and those factors they identified as significant appeared to fit a model developed by McMillan and Chavis (1986) to describe the dynamics of what they call a "sense-of-community force." This model is based on research findings from the fields of community psychology and group process and is applicable to relational communities as well as to geographical communities.

Relational communities, which include work environments, are concerned with the nature or quality of interpersonal relationships. A sense of community is developed by "a feeling that members have of belong-

ing, a feeling that members matter to one another and to the group, and a shared faith that members' needs will be met through their commitment to the group" (McMillan & Chavis, 1986). In the model, four elements have been identified as necessary for the creation of a healthy sense of community within the workplace: (a) membership, (b) influence, (c) reinforcement, and (d) shared emotional connection. The creation of a sense of community is a dynamic, interactive process that is largely interpersonal.

•**Membership.** Membership refers to the feeling of belonging that grows out of personal investment in a group such that one feels confident about one's right to belong. It has five characteristics: (a) boundaries which define who is "in" and who is "out," provide emotional safety and a sense of security, and define who can be trusted; (b) sense of belonging and identification that "involves the feeling, belief, and expectation that one fits in the group and has a place there, a feeling of acceptance by the group, and a willingness to sacrifice for the group" (McMillan and Chavis, 1986); (c) emotional safety or sense of security; (d) personal investment in the group; and (e) a common symbol system.

•**Influence.** The element of influence involves a reciprocal process in which the group allows the individual to influence the community and the individual allows the community to influence him/her. This results in a feeling that one matters to the group and vice versa. In the literature on group dynamics, this process is described as important to the success of relationships at any level of community systems (Yalom, 1995). In general, people are more attracted to communities in which they are allowed to be influential. They want to know that "the things they see, feel, and understand are experienced in the same way by others, and the studies have shown that people will perform a variety of psychological gymnastics to obtain feedback and reassurance" (McMillan & Chavis, 1986).

•**Reinforcement.** Strong communities find ways for people to meet the needs of others while meeting their own. Primary reinforcers (rewards that serve to fulfill individual needs) include the status of being a member, success of the community, and the competence or capabilities of other members in meeting group and individual needs and in contributing to community success.

•Shared Emotional Connection.

McMillan and Chavis (1986) call this the definitive element of true community, the final element of the model. It grows out of a shared history and numerous opportunities for group members to interact in positive ways. To support members in a community, these interactions need to lead to decreased ambiguity, constructive problem solving, and resolution of important tasks. In a community, members make significant investments of time, energy, and other resources that can strengthen their emotional bonds with others. The effects of honor or humiliation in the presence of community also have a significant impact on the attractiveness of the community to individuals. Shared emotional connection serves to establish a spiritual bond or community of spirit.

Findings: A Continuum of Community

The concerns of the women who participated in this study were found to be similar to those of women across disciplines at universities around the country (Ahrentzen & Groat, 1992; American Psychological Association, 1998; Arnold, 1995; Bateson, 1989; Ginorio, 1995; Leibenluft, Haviland, Dial, & Robinowitz, 1993; Sandler & Hall, 1986; Wicherski, Kohut, & Fritz, 1990; Zuckerman, Cole, & Bruer, 1991). In this paper, these concerns are described within a framework of community in the work place.

•**Membership.** While the achievement of tenure can be thought of as a ritual of membership in the community and determines an individual's continued membership in the academy, the data point more clearly to tenure as a matter of access to resources for success within the community than to tenure as a membership issue. As such, it will be addressed in a later section of the report. Spousal accommodation could also be viewed as a membership issue or at least a factor in retention but will be addressed as a significant need of female faculty in that section of the report dealing with reinforcement.

Welcome to the Academy: All of the women interviewed began their employment at the institution believing they had earned the right to join the faculty. Most described their experiences in graduate school very positively despite the fact that they occasionally felt lonely or isolated as the only women (or first women) in their departments.

I thought the climate in graduate school was very good . . . I felt very well treated by the professors and thought I had an equal chance to do everything, experience everything. I felt the same way in my post-doc experience. (P2)

Especially as a graduate student I never felt differently at all conducting research and doing things. I thought I was treated exceptionally well and never thought I would have a problem. (P4)

I was always interested in sciences and didn't feel any negative pressure, misconceptions, or stereotypes. I didn't have any discouraging messages as a student. (P9)

While some of the women felt welcomed into their departments and colleges as they entered the academic workforce, others felt immediately excluded from membership in the faculty community. The range of experiences is depicted in the excerpts below.

It's incredible. They listen to me and they give me a lot of freedom and support. The Dean is very supportive. (P5)

I recall situations in which people were hostile—openly and clearly hostile. On some occasions, I felt insulted and humiliated. I felt they were not ready to accept me as a peer. (P9)

Within a couple of months. . . a senior faculty member came to my office just to chat and what he talked about was how all the ills of society were due to women working. The reason kids were on drugs and on the streets was because women weren't home. I could count on one hand the contact I've had with other faculty, the number of times senior faculty have walked into my office, talked to me or come into my lab during this entire time. (P10)

Clearly, a sense of membership in the academic community involved positive relationships with administrators and faculty, which only five of the twelve women interviewed described. A sense of membership ranged from the necessity of hiring a lawyer just to ensure a fair hiring process to the strong belief that every member of the department was interested in the continuing membership of the new faculty person. Even

if very satisfied with individual departments, concerns were raised about the commitment of the university to diversify the faculty community by hiring women and minorities, comparatively low salaries, lack of resources to conduct research, heavy teaching loads that interfered with national and international research competitiveness, and lack of support for higher education at the state level. On the whole, these faculty members did not see the institution as welcoming and supportive of faculty.

Career Paths and Membership:

Men and women differ in their career development paths and this was evident among this group of women faculty (Arnold, 1995; Cohen & Gutek, 1991; Jagacinski, 1987; Shann, 1982; Tesch, Osborne, Simpson, Murray, & Spiro, 1992). Remarkably, in terms of career paths, seven of the twelve women interviewed described their entry into academe as "through the back door." Most had accompanied husbands/partners to the area, sometimes after unsuccessful attempts to find appropriate positions in the same location, and found themselves initially having to take jobs for which they were overqualified. Having served the university in these positions, they then had applied, and were hired for faculty appointments. Some of these positions were unusual in some way.

I would get an offer and he [her husband] wouldn't, or he'd get an offer and I wouldn't. He ended up taking a position at a university and I was hired as a two-thirds time temporary instructor. I would never do that now but we were desperate . . . The next year they made a tenure-track position for me. I think I got tenure in three years . . . Again I came [here] on a one-year temporary appointment and worked really hard, overachieved, published and everything and they actually made a tenure-track position for me contingent on someone retiring later. I don't want to do this again. I've done it twice and had to work harder than any man would ever have to work. (P1)

What does it mean for the university that the majority of the women interviewed were hired through the back door and were often the only women in their departments? What does this say about the success of affirmative action efforts and about the commitment of administration to diversify the campus?

continued on page 38

Women *f*olk *m*usicians

Marianne Harris

Helen Ruth Aspaas

The inclination to include environmental issues in folk songs is a natural development because, historically, manifestations of nature have been common themes in folk music (Bohlman 1988). Folk music ties listeners back to their real, or perceived, rural roots. It gives musical voice to feelings about particular qualities of land or the essence of rural peoples' lives (Cantwell 1996; Lomax 1960). Descriptions of the beauty of natural places, or the woeful neglect and abuse represented in environmental degradation, are found in folk songs.

A good folk song has been likened to a political cartoon. It quickly sums up a message, then makes a statement about it in a spicy or even irreverent style (Wenner & Freilicher 1987).

Folk music is a "contemporary expression of a nation or group of people," and though it is generally of a simple, unaffected character, composed in ballad form, it has historically had a substantial influence on people's attitudes toward different issues and events, often rallying people to a cause (Baker 1923; Lomax 1960). An example is "John Henry," considered to be one of the best known African-American folk songs. It is a work song depicting one of only a few occupations historically open to African-Americans, and is also one of the best representatives of protest against unemployment induced by technological advances (Greenway 1977). Most Americans of middle years, remember hearing Vietnam War protest songs, and more recently, folk songs of the civil rights movement. Nettl (1990), argues that "folk music, the music identified with the common person, and more specifically, with the poor, the minorities, or the marginalized, has provided the natural stylistic symbol, even in mainstream society, for social criticism and for protesting intolerable conditions."

One issue that has become a sounding chord for folk music is the current status of the world's natural environment. Folk music is proving to be an innovative and potentially effective means for summarizing and conveying environmental themes. Just as African-Americans turned to music for expressing their solidarity to achieve civil rights, economic security, and social status equal to that of the majority population, women may use this same form of artistic expression to define and present their views on disturbing social issues. These are issues that may affect the safety and health of themselves, their children, and generations to come. For example, Malvina Reynolds recognized an immediate kinship to folk songs. "They were very realistic," she stated, and "yet understated and deceptively simple." She felt at home using them as her medium for conveying her beliefs, especially those about the environment (Frym 1979).

Marianne Harris



Helen Ruth Aspaas



While environmental issues affect an entire group of people, the poor, minorities, or other marginalized groups may experience the negative aspects of environmental degradation to a greater extent. Several researchers believe that environmental racism occurs when people of color, or other marginalized groups, disproportionately bear the burden and risks of environmental policies (or the lack thereof) while the associated benefits are dispersed throughout society (Bullard & Wright 1990; Fairfax 1991; Goodell, Rand & Shields 1998). Because of their childbearing roles, women may suffer, or react to environmental hazards, to a greater extent than do men and express unique perspectives about the threat to life brought by environmental degradation. Lacking political or environmental-change muscle, music perhaps empowers women to deliver messages that they could not comfortably express through other means.

Because gender as a category of musical analysis is in its nascent stages, a careful examination of women—as women folk artists—and their contributions to the musical canon is still lacking (Drinker 1948; Ammer 1980; Herndon & Leigler 1990; Pendle 1991; Citron 1993; Cook & Tsou 1994). Similarly, the role of women folk artists as advocates for the natural environment, is also a theme for which little critical analyses exist.

To begin that focus, we looked at the environmental messages that women folk musicians send through their compositions, their performances, and their lives. We examined 20th Century American (USA) women folk musicians' life histories, analyzed interviews, and carefully read the texts of their compositions. The initial selection arose from our knowledge of 20th Century women folk artists. Using this list of artists, we investigated archival sources on folk artists and used the internet which connected us to websites on folk music with environmental themes. From the expanded list, we found recordings, searched for archival information, identified websites and homepages on the different composers/artists, and located texts of their compositions. Some recordings were available for audible examination via the Internet. From these sources, we derived four major themes that are representative expressions of women folk musicians' advocacy for the environment.

Musicians Bond with the Natural Environment

This loving attachment was expressed through descriptions of artists' experiences in beautiful natural settings, and through the use of two important analogies: (1) identifying the human body with the environment, and (2) identifying the home and attachment to a particular home-like place with environmental

themes. In "Make a Change," Alice Di Micele describes a beautiful scene in the Catskill Mountains complete with the smell of elder blossoms; their creamy color matching the beauty of a voice she heard singing. The voice in the song tells her to help heal the earth (Di Micele 1999). Also, in Cyndy and Don Strand's composition, "Watching the Future Burning," the opening verse describes peace-filled summer nights spent watching countless stars from a beloved hillside. The song goes on, however, to depict the loss of that childhood retreat to industrial sprawl (Strand 1997).

Women folk musicians made associations between the environment and the female body. Victoria Williams (1998), a musician who suffers from multiple sclerosis, told about a time when the doctors were drawing fluid from her spine.....

Out came this beautiful clear fluid.
I thought it was just like a river on earth,
and we're just like the Earth, all polluted.
It's nature's way of saying
look after me

In "Rape of the World," Tracy Chapman (1995) likens the earth to a universal mother, and then evokes a feeling of horror with these words:

Mother of us all
Place of our birth
We all are witness
To the rape of the world.

Research suggests that feelings, thoughts, interests, experiences, and associations common to women's lives, are the essence of women-identified music (Petersen 1989). Perhaps just as women have the power of procreation, they have the power to engender a sense of concern for the earth through the analogies of mothering and procreation. Women folk musicians are doing so through their compositions.

Attachment to a specific place, often associated with childhood or home, is another motif that represents the musicians' attachment to the natural environment. This association was frequently expressed in nostalgic and reminiscent longing for better days from the past. Nadene Steinhoff grew up in Utah and after returning from an extended absence, was alarmed at how Utah had changed through population growth and economic change. Her composition "By the Bear River Mountains" is a nostalgic song about her home environment in northern Utah, and her great-great grandfather, who was one of the first pioneers there.

In the song "Chinook Blues," Alice Di Micele (1998) sang about deforestation and the plight of the chinook salmon in hatcheries. She put a different twist on the concept of home when she sang as if she were a salmon who yearned for its clear home stream. Her words reflect resistance to human control of natural processes that deprive life forms of their natural homes. Two verses are reproduced below.

When you clearcut the forest
it's like pouring dirt into the middle of my home.
When you clearcut the forest it's like pouring dirt

into the middle of my home
and when you muddy up my bedroom
I ain't got nowhere to spawn.

It's the call of my clear home stream that I can't resist.
It's the call of the clear home stream I cannot,
I will not resist, cause I'm a wild chinook salmon.
I ain't no hatchery fish.

The implications of this first theme are that women may feel as if they are caretakers of the earth, just as they watch out for their own bodies, and perform vital care-taking roles for their homes and their families. Women reminisced about the beauty of their land. They saw changes in their local environments, as well as the global settings, and they worried about what they saw.

Musicians Recognize Environmental Degradation

The second theme which resounded again and again in women's compositions, as well as in discussions of their lives, was a recognition and description of environmental degradation, in general, and specific forms. Pollution as a generic form of degradation, was featured in almost all of the songs, but some individual songs also spoke about specific forms of environmental damage: global warming, nuclear fallout effects, deforestation, ozone depletion, erosion, strip mining, and acid rain. In her song, "Black Waters," Jean Ritchie pondered the former beauty of her home region in Kentucky, but described how. . .

There's only black waters run down through my land.
Sad scenes of destruction on every hand;
Black waters, black waters run down through our land.
(Wenner & Freilicher 1987)

In interviews and through their compositions, the women artists acknowledged that the world's current environmental situation is in grave danger. Much of their recognition came from their own life experiences, often associated with regions in the country where members of their family lived or where they were raised. Two artists, Jean Ritchie and Nadene Steinhoff, mourned the torture of rural landscape, while Di Micele recognized the loss of small but meaningful pieces of natural beauty within urban settings. Jean Ritchie sang of strip mining and personal irresponsibility in her home region in Kentucky (Wenner & Freilicher 1987). Nadene Steinhoff became interested in the proposed highway construction project through the scenic Logan Canyon in northern Utah and wrote her song "Highway 89 Blues." Alice Di Micele grew up in New Jersey, which she referred to as New York City's dumping ground. Her hometown housed factories for major chemical and manufacturing companies. She remembered that the river near her home was too polluted for swimming (Di Micele 1998). For these three women, association with home was very poignant—home should be free from threats of environmental damage and harm. "Home" represented not only a physical habitation but more importantly the realm associated with childhood, ancestors, and positive outdoor experiences. The environmental degradation is often specific and personalized. Marianne Harris' song is about the impact of Glen Canyon Dam on Native American reservations in the West. Here the musical script expresses concern for

Table 1

Artist	Talents	Songs	Internet Sources
Tracy Chapman	Performer Recording artist Composer	The Rape of the World New Beginning	http://www.escape.ca/~viking/dhFrames11.html http://hellco.pair.com/tchapman.htm
Alice Di Miccle	Performer Recording artist Composer	Chinook Blues Make a Change Defend the Earth In a World	http://www.amp.org/alice/
Gail L. Dreifus	Performer Composer	Legend of John Muir	http://www.sierraclub.org/John_Muir_exhibit/sound_and_music/Dreifus.html http://www.sierraclub.org/John_Muir_exhibit/sound_and_music/legend_lyrics.html
Earth Mama	Performer Recording artist Composer Lecturer	We are One Downstream	http://www.songnet.com/earthmama/index.html
Julia Fordan	Composer	Genius	
Karen Goldberg	Performer Recording artist Composer	Earth Day Everyday	http://songs.com/karengoldberg/index.html
Patty Hall	Composer	Organic	
Marianne Harris	Performer Recording artist Composer	What About the Water? Snow-Capped Mountains	
Beth McIntosh	Performer Composer	Hole in the Sky Spirit of Gaia Wilderness	
Malvina Reynolds	Performer Recording Artist Composer	Just a Little Rain	http://www.sisterschoice.com/mal-bio.html
Jean Ritchie	Performer Recording Artist Composer Author	Black Waters	http://www.bellenet.com/ritchie.html http://www.rounder.com/rounder/artists/ritchie_jean/
Nadene Steinhoff	Performer Recording Artist Composer	Escalante Lullaby The Hole Song Highway 89 Blues By the Bear River Mountains	
Cyndy Strand	Composer	Recycled Blues Get Up Watching the Future Burning	http://www.musiccanchangetheworld.com/homeplanet.html
Victoria Williams	Performer Recording Artist Composer		http://www.victoriawilliams.com/

Native Americans who are forced to adapt to widespread environmental changes induced by the construction of major dams on or near tribal lands

Musicians Help Listeners to Personally Connect With Environmental Issues

The third theme of the folk songs, and of the musicians' lives, is a recognition that the listener ought personally to relate to environmental problems. Through their particular performance styles, the women seek to engage their audiences through the lyrics' sense of urgency and seriousness. Live concerts, seminars, lectures, radio broadcasts, and recordings, were the channels for accomplishing these goals. In several contemporary settings, music was combined with instruction to make messages about the environment more clearly relevant to listeners' lives. One example is the radio broadcast, E-town, carried by National Public Radio, which combines live music with critical social and environmental issues. The broadcast strives to mobilize its audience by informing and encouraging listeners to become contributing, educated, pro-active citizens on behalf of the environment (E-Town 1998). Another example is the unique performance style of Earth Mama where a typical performance may include a lecture, an all day seminar, and of course her compositions.

These women know that generating awareness can be largely dependent on their own performance styles. In an interview given just a few months before her death, Malvina Reynolds proudly stated that she had become a master at involving her audiences. She admitted that even when people were uneasy about the issues that she raised in her songs, she was able to influence their attitudes because of her ingratiating manner. Malvina Reynolds was remarkable in her ability to eliminate the psychological distances that often exist between a performer and her audiences. This ability to individually relate was one of her unique performance qualities. During one particular concert, some children interrupted to ask her to sing one special song. She readily complied (Frym 1979). In the same context, Earth Mama, (Joyce Johnson Rouse), can relate well to her audiences. According to David Elliot, "Joyce is able through her spirit and music to motivate her listeners to action" (Rouse 1998).

Several have embraced electronic networks as a source for connecting with people who share concerns for the environment. As Table 1 indicates, many of the artists are represented on various websites. Earth Mama, Tracy Chapman, Karen Goldberg, Jean Ritchie and Victoria Williams, feature information about their music, their lyrics, and performance schedules on their websites, and they encourage readers to respond through email messages and various discussion groups.

Musicians Enact Change Through Music

The final theme which appears consistently in the music is the artists' desire to help their listeners take personal responsibility for the environment and for making a positive effort to halt the processes that lead to environmental degradation. Environmental advocates suggest that music may motivate people who feel overwhelmed and helpless regarding environmental problems, to get up and move again. According to the creators of the web site project "Music Can Change the World," the musical term *en-vi-ro-pop*, is described as "an engaging, challenging

music, created to inspire and motivate listeners of all ages to solve environmental problems" (Music Can Change the World 1998). For example, the Indigo Girls felt that their Honor the Earth Tour had serious impacts on their audiences, because excited people came backstage after their shows, acknowledging that they had learned from the music, and were using that knowledge to enact change (Perkinson 1996). Nadene Steinhoff suggested that one's own contribution should start in "our own backyards." She felt that people could better relate to issues that were close to home, or had the potential to affect them and their families at a very personal level (personal interview 1998). Di Micele, while recognizing the importance of personal responsibilities, expressed confidence in people's abilities to produce the necessary and larger changes (Di Micele 1998). This belief is expressed in the title of her first album, "Make a Change."

Many environmental folk songs carried a strong Socratic approach for encouraging listeners to respond to the environment's needs. To this end, the lyrics of women's songs were frequently posed in the form of questions. Such an approach encourages listeners to respond, either in their minds, or better yet, through actions. Reynolds' song "Just a Little Rain" asked questions about the rain.

Just a little rain. What have they done to the rain?
Just a little boy standing in the rain,
the gentle rain that falls for years.
And the grass is gone, the boy disappears
and the rain keeps falling like helpless tears...
(Wenner & Freilicher 1987)

In her song about the relationships between native peoples and their natural environment, Marianne Harris also closes with a question.

Sun sets across the water, reflections of what it was.
This is the place where they dwelled,
one with the earth, their mother.
So, what about the water...?

And finally, in the middle verse of "Rape of the World," Tracy Chapman asks "How can we stand aside and watch the rape of the world?" (Chapman 1995). Not only do these musicians seek to enable people to enact change, their lyrics reflect a desire to make people proud of serving as environmental advocates. Earth Mama's music honors the earth, and the heroes of her songs are those who work on behalf of the environment.

These women folk artists first recognized serious problems in the environment. They took that personal concern, and translated it into the lyrics of their music. Through lyrics and performance styles, they acknowledged personal responsibility to enact change. They encouraged action from their listeners. Finally, they asserted their faith that people would listen to their messages and enact change. These themes, then, lie along a continuum that begins with recognition—and ends with action.

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The Hornocker Wildlife Institute

International Research

in the Non-Profit Sector

Sandra K. Martin

History and Mission

The Hornocker Wildlife Institute is a private, non-profit research and educational organization affiliated with the University of Idaho. It was established in 1985 by Maurice Hornocker, a professor at UI with several decades of experience in the field of wildlife biology. Dr. Hornocker was the Leader of the Idaho Cooperative Wildlife Research Unit at UI from 1968-1985.

The Institute is designed to conduct intensive long-term research with special emphasis on large carnivores and their wild environments. Other goals of the Institute include the training and development of post-graduate and graduate scientists, and communication of information generated by Institute staff to the scientific community and the public.

Conducting research as a small, private organization allows the Institute to focus on problems that might be politically sensitive, and to work on long-term projects that are often difficult to justify again and again in annual budget processes within government agencies. One strength of the Hornocker Wildlife Institute is the use of new and innovative approaches and techniques in the study of wildlife, especially large carnivores. This is a tradition that flows from the early work of Institute founder, Maurice Hornocker.

Currently, the Hornocker Wildlife Institute has more than a dozen projects underway, including sites in Russia, Mexico, Guatemala, Idaho, New Mexico, Wyoming, Utah and California. Most projects focus on large carnivores, including cougars, black bears, and Siberian tigers, but Institute projects also involve migratory bird research, monitoring tropical biodiversity, and wilderness studies.

The Institute has 20 American employees, and several Russian technicians and other staff. The American employees include nine women; five are researchers and the other four work in staff jobs. Maurice Hornocker continues as the Institute's Director, while much of the day-to-day operations of the Institute are run by the President, Howard Quigley. Dr. Quigley has extensive

experience with large carnivore ecology, including his work with George Schaller on Giant Pandas in China; researching black bear ecology in California, Tennessee, and Maryland; and his doctoral work on jaguars in Brazil, which he completed with Hornocker as advisor. Quigley was an Assistant Professor in the Department of Biology at Frostburg State University in Maryland for four years before assuming the presidency of the Hornocker Wildlife Institute in 1993. The Institute is housed on campus at the University of Idaho, but is funded by grants, contracts, and donations generated by Institute staff. Among supporters are the Richard King Mellon Foundation, the Charles DeVlieg Foundation, the Charles Engelhard Foundation, the Murdock Charitable Trust, the National Fish and Wildlife Foundation, the National Geographic Society, Patagonia, Inc., and the Thaw Charitable Trust, to mention just a few. Private individuals often contribute, and two current membership programs provide support; the Adopt-a-Tiger program, and the new Hornocker Wildlife Institute Membership Program.

Cougars and Wolves

The cougar—and other species on which the Institute has focused—are solitary, secretive, and largely nocturnal, making conventional means of observation impossible. They are difficult to capture, and new restraint techniques, utilizing immobilization drugs, had to be developed to assure the safety of the animals and the researchers. Hornocker worked with John and Frank Craighead to develop and perfect radio telemetry systems for western big-game animals, and was awarded the American Motors Conservation Award in 1980 in part for this development work on bears and cougars. This modern technique, essential for indirect observation, had to be tailored for each species. Hornocker and his associates have been the first to utilize radio-telemetry in the study of many species, including cougars, wolverines, river otters, and Siberian tigers. Today, Institute staff utilize telemetry and other tools and techniques to conduct

research on large carnivores around the world. Cougar research is a core area of work for the Institute, and several projects are underway now.

Yellowstone National Park: During the late 1800's and early 1900's, cougars and wolves were hunted and trapped in Yellowstone National Park and surrounding areas. The rationale for this eradication program was the protection of the prey of these carnivores, such as deer, elk, and moose, within the National Park, and the protection of livestock in the surrounding areas. Cougars and wolves were eliminated from the park around 1930.

Some decades later, cougars found their way back into Yellowstone National Park. Since the late 1970's, increases in cougar populations across the West have been attributed to wolf extirpation, increased deer populations, and management of cougar populations through hunting seasons and quota systems. All of these factors were likely to have contributed to the re-establishment of cougars in Yellowstone National Park. An Institute survey in winter 1986, documented the fact that cougars were back in the Park, after an absence of decades. Institute staff conducted a seven-year research project on the cougars of Yellowstone, completed in 1994. This study was called the Yellowstone Cougar Phase I project.

In 1995, wolves were reintroduced into Yellowstone National Park and remote wilderness areas in Idaho. The federal government sponsored the program to re-establish the species as an important natural component of these ecosystems. Little is known about how the newly reintroduced wolves will interact with the other species in their new environment, including the cougars. The new wolf packs in Yellowstone National Park are being studied by the National Park Service, and the Institute is coordinating closely with these scientists to pursue an investigation of cougar ecology.

As carnivores, cougars and wolves play an important ecological role in the distribution and abundance of prey. The restoration of wolves to Yellowstone could affect cou-



In Siberia, from left, Howard Quigley, President; Linda Kerley, and John Goodrich, field biologists.

gars in several ways. First, wolves may change the population characteristics, behavior, and distribution of primary prey species for cougars, particularly elk. Second, wolves may compete with cougars for carcasses of ungulates killed by the cougars. If they are displaced from carrion by wolves, cougars may increase their predation on other prey species to compensate for this loss of food. Third, wolves may affect cougars directly by killing them, and indirectly by affecting cougar behavior and distribution.

The reintroduction of wolves in Yellowstone National Park provides a unique, natural experiment in which to assess the interactions between the two species and their competition for prey. This is the setting for our Yellowstone Cougar Phase II research. We will be comparing the new information we gather with our baseline findings from Phase I. Study objectives include researching population characteristics of cougars; assessing competition for resources between cougars and wolves; assessing the effects of cougars on elk and mule deer populations, as influenced by wolves; and documenting killing of one species of carnivore by the other.

Toni Ruth, the lead field scientist on the project, has several years experience working on cougar research projects in New Mexico and in Texas, where she earned a master's degree in wildlife management. She is currently working on her doctorate in wildlife sciences at the University of Idaho.

Field work on the Yellowstone Cougar Phase II project began in March 1998. Two female cougars, mother and daughter, were captured and radio-collared. The adult female cougar was followed throughout the summer, and used a range between Buffalo Plateau, Rose Creek, Elk Creek, and Pebble Creek within Yellowstone National Park. This range lies roughly between two known wolf



Linda Sweanor in New Mexico with cougar

pack territories. In late August, the female cougar localized movements within an area near Hornaday Creek. Subsequent monitoring indicated she had denned, and project staff saw her with three kittens in October.

During this past winter, field efforts resulted in the capture of 15 cougars, and collection of more than 200 radio-locations from these monitored cougars. We investigated 48 cougar and 12 wolf kills during the winter period, and found that scavengers were present at 60 percent of the cougar kills. We documented several carnivores visiting the cougar-killed carcasses. These included wolves, grizzly bears, coyotes, fox and marten. Data collection on this project will continue year-round for several more years.

Redwood National Park: A three-year project began in January, 1999, to examine cougar ecology and cougar-human interactions in Redwood National Park and vicinity in northern California. Using radio-telemetry tracking, the project is investigating cougar movements, behavior, activity patterns, and population characteristics in relation to human activity zones in the park. Understanding how and why cougars use developed areas will be particularly useful for assessing when a cougar poses a serious threat to human safety. A dramatic increase in the number of encounters between mountain lions and humans throughout the western United States, and four lion attacks on humans in national parks during the past three years, provide the impetus for this study. Current mountain lion management deals with human-lion conflict in two ways. One method is to kill the offending lion; the other is to close the trail or management area where a known mountain lion is frequenting. This project will refine our understanding of mountain lion ecology and behavior, especially in relation to human activity. Our ultimate goal is to assist with increasing the options available for managing mountain lions so that conflicts with humans are reduced.

Desert Cougars in New Mexico: A 10-year study of cougars in the San Andreas Mountains of New Mexico was completed in 1995 by staff scientists Ken Logan and Linda Sweanor. This landmark work resulted in collection of detailed, intricate data on the largest cougar population ever studied, and its relationship to the desert environment. The project has provided insights to both the conservation and management of cougars, and has guided Institute staff in drafting a cougar management plan for the state of New Mexico. The goal of the next phase of this project is to publish a book based on the

work. The book will not only present the scientific findings of this project, but will describe the experience the husband-and-wife research team gained from living with wild cougars for 10 years. Their perspective and experiences are unique, and will provide an intriguing and informative framework to the premier scientific information their research represents. The Smithsonian Institute Press has accepted the book for publication.

Central Idaho: The primary goals of a planned four-year study in Idaho are to assess the competition between cougars and recently introduced wolves in this region, and to assess the cumulative effects of wolves and cougars on winter prey populations. Cougars will be studied in a wilderness area, and in an area of south-central Idaho that incurs much more use for ranching, logging, and recreation. Hornocker Wildlife Institute scientists have conducted long-term research on cougars in the Big Creek drainage of central Idaho's wilderness for many years, beginning with Hornocker's landmark work on cougar ecology in the area. Our research record from this cougar population provides a unique opportunity to compare current and historical cougar population characteristics, home ranges, and predation with the effects of a known cougar population.

The Siberian Tiger Project™

The underlying premise of the work of the Hornocker Wildlife Institute in the Russian Far East, as with all of our programs, is that credible scientific information must be the basis for successful management of wildlife and habitat. Our Siberian Tiger Project™ includes research projects and scientific surveys, and these directly support our work in conservation within the range of the tiger. We currently have three programs of activities, and consider all of these of critical importance for the conservation of the Siberian tiger and its habitat: intensive field investigations to describe the ecology of this endangered cat, publication of environmental education materials, and conservation planning for range-wide application and impact.

Field investigation is the foundation of our work in the Russian Far East. For almost seven years, a team of U.S. and Russian researchers have been obtaining the best possible data set on the ecology and biology of the Siberian tiger. We monitor tigers in the Sikhote-Alin Reserve, on the Russian coast overlooking the Sea of Japan, to discover and describe their habits, behaviors, and ecological requirements.

The disintegration of the Soviet Union drew the attention of the world and raised many concerns about the political and economic impacts. What had been the hope of

perestroika for the Russian people was transformed into the unknowns of a more open society and a more uncertain future. One of the primary focuses of the speculation over the next few years, will be the future of the abundant natural resources which lie within this immense country. Under the Soviet system, world market access to their natural resources was rare. What will happen to natural resource utilization under new regimes? What of their impact on the economics of the rest of the world? Will the vast amounts of minerals, forest, wildlife, and fisheries products be managed for long-term sustainability, or for short-term gain? And what will the impact be on the overall biological diversity of Russia? The Russian Far East is of special importance, due to its high biological diversity, its accessibility to world markets, and its high-profile endangered species, including the Siberian tiger, *Panthera tigris altaica*. It was concern for this charismatic, endangered cat that first drove the Hornocker Wildlife Institute to begin work in Russia in 1989. At that time, the ecology and even the status of the Siberian tiger was little known outside of the Soviet Union, but it was clear that this species was in desperate decline. At the time of initial contact with our Russian counterparts, the number of Siberian tigers in the wild was estimated to be less than 500. Most of them lived inside the far eastern Russian provinces of Primorye and Khabarovsk. The number of remaining tigers was critically low, and conservation efforts were not underway. Although Russian ecologists had gathered unparalleled data on tiger ecology in the previous 20 years, it was limited by the fact that they relied on the traditional form of snow tracking (following tiger tracks during the snow-bound months of the year). This meant much of the annual life cycle of the Siberian tiger was unknown.

In the West, technological applications had led to many advances in wildlife science. We proposed to bring Western technology and techniques to Russia, meld them with



the ongoing Russian work, and help achieve our mutual goal of improving the outlook for tiger conservation. Our collaboration has vitalized Russian conservation efforts for the Siberian tiger, but ultimately the fate of this species will lie with the will of the people who share its range.

The original goal of field investigation activities was to fill in the missing pieces to the picture of tiger ecology which the Russians had developed through their previous work. In concert with Russian colleagues, we have generated the largest database on a tiger sub-population anywhere in the world: information on tiger movements and distribution, diet and predation rates, behavior, and habitat. Our research activities include the capture (or re-capture), immobilization, and release of study animals in the Sikhote-Alin Reserve, and radio-monitoring of the movements of these individuals. This work allows us to analyze territory sizes, examine movement corridors used by dispersing young, and document habitat use by adult and sub-adult tigers. Because of the longevity of our efforts, we will soon be able to analyze the territories of the tigers of the Sikhote-Alin region, juxtaposed against each other, to understand the landscape-level needs of tigers for survival. This kind of information is important in assisting with extrapolation of our entire data set to other areas with higher, or lower, quality tiger habitat. We plan to continue this work, gathering information on natural deaths, documenting predation dynamics, and recording tiger population characteristics (reproduction, survival of young, etc.). An important piece of information still lacking is documentation of human-caused deaths, including poaching.

Identifying key habitat is an important part of understanding tiger ecology; it is also a critical component of developing Habitat Protection Plans, a fundamental part of conservation of all wildlife. A network of protected reserves and ecological corridors has long been identified as important to sustaining remaining tiger populations and nurturing their increase. We will work in the next year to identify key components of Siberian tiger habitat in areas of Russia outside the region we have worked in for the past seven years. In March 1999, Institute staff completed a two-year project in cooperation with Chinese biologists and officials, surveying potential tiger habitat in two Chinese provinces that border Russia.

Another critical aspect in the development of conservation plans is the vehicle from which to take the

information to the application endpoint. The Hornocker Wildlife Institute is currently well positioned to propose and implement effective conservation plans for the Siberian tiger. It has been more than ten years since our first contacts with our Russian colleagues, and almost seven years since we established bi-national teams which have been working effectively through difficult times in Russia. Our American personnel are accepted as part of the society and culture; our Russian personnel are dedicated to working with us toward the common goal of improving resource management and the conservation prospects of the Siberian tiger.

Our conservation planning priorities for the present and near future include identifying a network of protected areas of habitat for the Siberian tiger, and crafting management regimes on unprotected lands that are compatible with tiger conservation. Even if the conservation work of the Hornocker Wildlife Institute and other organizations working in far eastern Russia is completely successful, the proposed network of protected areas is likely to leave a large majority of tiger habitat unprotected. Therefore, it is urgent that strategies be developed to provide for multiple use management of unprotected habitat that will be compatible with tiger conservation. We are working on projects that facilitate the private leasing of forest habitat within the range of the Siberian tiger by groups that will integrate sustainable management principles into their plans.

Ecology and Conservation of the Amur Leopard in Russia

The highly endangered Amur leopard is found today in a few forested regions of the Russian-Chinese border area where they have escaped poaching or debilitating impacts of habitat alteration. In conjunction with Russian biologists, Institute staff conducted a four-year study of Amur leopards using radio telemetry. We worked with others to hold an International Workshop late in 1996 to develop a recovery plan. Current work includes surveys for leopards in China, (in areas bordering our Russian study area), and the development of landscape-level information on leopard habitat, as well as the human uses and impacts on this habitat.



Ecology and Interactions of Two Species of Bears in Russia

In the southernmost Russian Far East Province of Primorye, several lifezones converge, resulting in a globally unique assem-

blage of large carnivores. Since 1992, the Institute, together with Russian colleagues, have been researching the ecology and interactions of Asian black bears and brown bears. Using radio telemetry, data have been collected on movements, diet, habitat, and interactions among both bear species, and with Siberian Tigers. Five students from Moscow State University, Russia, have participated in this work, and one of these students is working toward his Ph.D. on this project.

Yucatan Peninsula: Jaguar Basic Ecology

We are beginning work this year to investigate the basic ecology of the endangered jaguar in the central-American tropical forest habitat of the Yucatan peninsula, Mexico. This elusive large cat has slowly disappeared as the forests it depends on have been eradicated in the face of expanding agriculture and logging.

Migratory Bird Studies in Idaho, Utah, and Mexico

Research and conservation activities on migratory birds at the Hornocker Wildlife Institute are overseen and directed by Rod Drewien. These activities are principally funded through the U.S. Fish and Wildlife Service. Dr. Drewien has conducted long-term studies of sandhill cranes, including annual surveys of wintering cranes in the northern highlands of Mexico for more than 20 years, and surveys of cranes along migration routes in the Rocky Mountain west for over 10 years. Recent work by Drewien includes summarizing 50 years of surveys of migratory waterfowl in Mexico by the U. S. Fish and Wildlife Service.

Tropical Forest Wildlife Monitoring in the Maya Biosphere Preserve, Guatemala

Tropical forest environments contain an estimated 70 percent of the world's species. Significant losses are taking place daily, yet we have little documentation and even less understanding of the species and ecological processes of the tropics, and impacts on these by humans. The Peten region of northern Guatemala contains the largest block of tropical forest in Central America outside of Nicaragua. The Peten was set aside for long-term management as the Maya Biosphere Reserve in 1988. In 1991, Hornocker Wildlife Institute President Howard Quigley established a wildlife monitoring project that collected information for four years, in cooperation with local universities. We are in the final stages of the project, ready to summarize and analyze this information and make it available for use.

Linda Kerley and an Asian Black Bear



Existing Information Survey: Selway-Bitterroot Wilderness, Central Idaho

A lot of information has been generated over the years about many aspects of the central Idaho wilderness of the Selway and Bitterroot river ecosystems. Much of this information is in the form of reports, records, letters, and other unpublished materials stored in a variety of libraries, government offices, and private archives throughout Idaho and the Pacific Northwest. The Hornocker Wildlife Institute has been directly involved in wilderness studies for 10 years from our outpost at Running Creek Ranch, in the Selway River drainage, deep in the backcountry of central Idaho. We are locating, collecting, and documenting the many sources of information relevant to the natural history of the area, and making the information available to scientists, conservationists, and the interested public. Scientific research almost always builds on earlier work. The first step in any research project is usually to investigate what work has been conducted before, and what information resulted. The bibliographic search we are conducting will expedite all research yet to come in the Selway River drainage. This project is the logical first step in a comprehensive wilderness research program.

Environmental Education

One of the cornerstones to long-lasting conservation efforts is environmental education. It is a method for dispersing information from scientific efforts such as ours, but it is also an important method to instill understanding and support for the wise-use of natural resources. The Hornocker Wildlife Institute is involved in environmental education in Russia and on the Internet.

Russia: We focus on three areas of Russian society which will be important for the con-

servation of tigers and the conservation of natural resources as a whole: the general population (from secondary schools to the general public), hunting groups, and young people and potential young biologists. Also, addressing the economic needs of local people is important for alleviating pressures that ultimately lead to reduction of tiger populations through poaching. Sharing business acumen, entrepreneurial expertise, and ideas on innovative ways to utilize renewable, non-timber forest resources are ways to interject and facilitate human use of tiger range that will harmonize with the goals of tiger conservation. To facilitate this goal, the Hornocker Wildlife Institute has published a series of calendars in Russian, focused on conservation of the Siberian tiger. These are distributed throughout the range of the tiger in far eastern Russia. In addition, we assist local schools in the purchase of materials in environmental education activities. For the Russian hunting public, we are designing a brochure directed specifically at informing hunters about the importance of wildlife management and protection.

Internet: Institute staff are developing a website focusing on cougar ecology and our Yellowstone National Park research project. Regular updates from the field team in Yellowstone will be posted on the site, along with photos and maps to help visitors track the movements of real cougars as they are monitored during the research project. The website will include general information about cougar ecology, and specific findings of our project. This website should be available for viewing by Summer 1999, and will be linked from the Institute's main homepage.

The simple, straightforward framework of the Hornocker Wildlife Institute provides for direct coupling of the knowledge and experience of the Institute's senior staff, with the zeal and dedication of young colleagues. The resulting record, compiled over the past 14 years, is evidence of the Institute's success with this approach. The staff and scientists of the Institute will continue to explore the interwoven complexity of the natural world, and strive to find ways to use this knowledge to aid in the conservation of wildlife, and thus, ourselves.

Sandra Martin is the Development Coordinator for the Hornocker Wildlife Institute, a position she has held since early 1998. Her Ph.D. in Wildlife Ecology is from the University of California, Berkeley. She has worked as a research scientist for the U.S. Forest Service, and has worked in distance education at the University of Idaho.

Changing Roles of Women in Agriculture

Barbara Wallace
Frank Clearfield
Tonia Koppenaal

In 1997, the Social Sciences Institute of the USDA Natural Resources Conservation Service (NRCS) began researching the roles of women in agriculture in order to enhance outreach efforts to this audience. Through the Internet, university libraries, and the USDA National Agricultural Statistics Service, the Institute sought to identify publications that discussed the characteristics of women in agriculture. The primary purpose of the project was to provide current as well as historic information to the Natural Resources Conservation Service field staff about women who own, operate, or manage agricultural land. In addition, the authors intended to provide information to field staff about how to identify potential women customers, and to increase their reach-out initiatives to this important group.

Being aware of the changing role of women in agriculture in America is particularly important for service providers in the private and public sectors, because lives of farm women today reflect the diversity of agriculture itself (Tevis, 1995). Women have played an important role in agriculture in the United States since pioneer days. They cleared fields, worked ground, planted seed, harvested crops, and cared for livestock. Women have provided, and still provide, extra farm labor during busy seasons and times of labor shortage.

More recently, however, women's involvement on the family farm tended to be domestic in nature, contributing more to the subsistence of the family than direct farm production. As a result, women's involvement in agriculture has gone virtually unnoticed and unrecorded. Less than full ownership of their land also explains low numbers of women documented as operators and owners of farmland. According to the 1978 U. S. agricultural census data, only five

percent of farmers were women. Unfortunately, the data failed to accurately document women's contributions to agriculture. A national survey done in 1980 revealed that 54 percent of farm women described themselves as major operators of their farms. (Sachs, 1983).

During the farm crisis of the 1980's, some farm women headed off the farm to work. In a significant shift from their mothers before them, farm women's salaries today account for more than 40 percent of all farm family living expenses. These additional dollars allow further investment in the farm, and also grant women more authority on how household budgets are spent (Taylor, 1997).

More women farmers than ever before—and they vary demographically

While farms and the number of farmers are declining, women farmers and operators are growing in numbers. This growth indicates a need for program information and services from the private and public sectors. Census data show that in a 14-year span, the proportion of women farmers rose from 5.2 percent to 7.5 percent of the total farm population. The recently released 1997 Census of Agriculture, reported the number of female farm operators increased from 145,156 in 1992, to 165,102 in 1997. During the same period, the number of male operators dropped from 1,780,144 in 1992, to 1,746,757. In 1997, women were more likely to operate a farm from 10-49 acres in size, while males were more likely to have 50-139 acres.

Other 1997 characteristics of women farm operators include:

- They lived on the farm they operated.
- Their principal occupation was not farming.

While farms and the number of farmers are declining, women farmers and operators are growing in numbers.

- They have spent 18.8 years as an operator on their present farm.

- More women operators were 70 years of age or over than in any other age category. The second largest age group of women farm operators was 45-54.

- Twice as many women were engaged in the industry classified as beef cattle ranching and farming, than were in oilseed and grain farming, or animal aquaculture and other animal production.

- Of the 165,102 female farm operators, 2,533 were of Spanish or Hispanic origin.

Farms operated by blacks and/or women are generally smaller than the national average. Their sales of farm products are less than the national average. Black, Asian, and women farmers also tend to be older than the average U.S. farm operator. American Indian operators, on average, are slightly younger. The number of black operated farms is declining at a faster rate than U.S. farms in general (Effland, 1998).

Women's farm organizations vital to marketing success

Women have been, and will continue to be, vital in the development and maintenance of communities. Through their in-



involvement in various community-based groups, women have developed information sources and communication networks. Market research on farm women entrepreneurs, shows that people wanting to reach women in agriculture should target women's agricultural organizations. Some of these organizations include Agricultural Women's Leadership Network, American Agri-Women, American National Cattle Women, Inc., or Women Involved in Farm Economics (WIFE), to name a few. In addition, some national groups have women's committees or auxiliaries. American Farm Bureau and the National Association of Conservation Districts Auxiliary, are examples of national organizations with sections for women. Cooperative Extension offices also provide education, technical assistance, and networking opportunities for women in agriculture.

Women involved in agricultural organizations often have the background and education necessary to become successful entrepreneurs, to increase family income, and to expand and contribute to the local economy (Tanner, 1995). Because of their history of participation in community organizations, conservation partners should actively recruit women into all types of locally led conservation initiatives. Women ought to be considered for the boards of local conservation districts or Resource Conservation and Development (RC&D) Areas, for example. Women's farm organizations and local women's groups, like the General Federation of Women's Clubs, who have a strong interest in conservation and natural resource issues, should also be encouraged to participate in watershed project planning and other conservation efforts at the local level.

Women have a need for information about government programs—and should be targeted

At a conference for Women In Agriculture, women were asked what workshops would be most beneficial to farm/ranch women; stress management was listed first, next was understanding government farm programs. Women in large numbers attend workshops on computers, management, and record keeping (Pflueger and Lafferty, 1990).

According to a *Farm Journal* and *Top Producer* study, "13 percent of all farm

households report using the Internet in 1997, (but) women are significantly more likely to use information technology than their mates." And, women who have an interest in management and government programs are more likely to attend seminars on these topics if given an opportunity (Taylor, 1997).

The next power group in the future's market could be farm wives, according to an article in *The Wall Street Journal*. Women, who have traditionally handled bookkeeping and similar tasks on the farm, are taking over responsibility for selling family crops, utilizing their computer skills to access market information. Women are also organizing commodity clubs to develop their strategies on future exchanges. As a result, many grain handlers and insurance companies are targeting the farm wife to pitch their management and marketing services. This trend reflects changes in the 1996 Farm Bill which phases out crop subsidies and encourages growers to increase their income from their harvests. One avenue to increase profits is by using the futures market rather than selling crops at harvest prices—which are usually the lowest (Kilman, 1998).

An interest in conservation of property is an indicator of dependence on rents as income

As a percentage of the total population, older farm women heavily depend on rent from farmland, since their other sources of income, such as retirement benefits, are generally less than those of men. This may explain why there seems to be a correlation between gender and attitudes toward government regulation of the environment. Recent studies, including a 1996 Roper Starch poll, commissioned by the National Environmental Education and Training Foundation, show women have a heightened interest in conservation of the environment. Twenty-three percent of the men surveyed in the Roper Starch poll believe government regulations of the environment have gone too far, while only 14 percent of women felt that way. Conversely,

The Social Sciences Institute

The Social Sciences Institute (SSI) is a division of the USDA Natural Resources Conservation Service (NRCS). The SSI integrates customer opinion and fieldwork with science-based analysis to determine how social and economic aspects of human behavior can be applied to natural resource conservation programs, policies, and activities.

In conducting their research, the SSI sought to explore how the roles of women in agriculture were changing, then devise a way to transfer that information to the agency's service providers. In 1998, the Institute published a technical report titled, *Women in Agriculture: Changing Roles and Current Outreach Techniques*. Included was specific contact information so national women's organizations could be called if local NRCS staff needed to obtain the names of local leaders.

Functions of the Social Sciences Institute include:

- Assisting in implementing locally-led conservation training at the community level.
- Assisting in carrying out the executive order on Environmental Justice.
- Developing products, services, and training in sociology, economics, community planning, and cultural anthropology.

SSI may be reached at <http://people.nrcs.wisc.edu/socsciinstitute/>

51 percent of women, and 38 percent of men, said government regulation of the environment has not gone far enough (Sonner, 1996).

Farm wives frequently outlive their husbands, just as other women do in the general population. According to the USDA Economic Research Service, 46 percent of farmland acquired by women is inherited, versus only 19 percent for men (Rogers and Wunderlich, 1993). This fact translates in surprising statistics: women control over 40



percent of all leased farmland in this country; men control 31 percent; and joint ownership accounts for 29 percent (USDA Economic Research Service; Rogers and Vandeman, 1993). The percentage of women farmland owners varies by region. The areas with the highest percentage of land owned by women are in the Midwest and Plains States, while the lowest percentage is in New England. In the Southwest Central region of the United States, women lease out almost twice as many acres as compared to men (Rogers and Vandeman, 1993). This probably explains why a higher percentage of women than men landowners reside in off-farm urban areas.

Women's roles are changing

The number of women in agricultural schools and agribusiness is expanding as new generations of farm daughters seek off-farm agricultural jobs. In 1995, a study (Tevis) showed that the percentage of women agricultural majors at land grant universities ranged from 30-35 percent. In addition, a recent poll (Taylor, 1997) shows that 15 percent of farm women earned undergraduate degrees, versus 13 percent of the farm men surveyed. Further, eight percent of farm women completed graduate degrees, while seven percent of men did. "Women on-farm work is becoming less clerical and more managerial," says Rockwood Research President, Robert Hill. Rockwood surveyed approximately 1,000 women from a random sample of the *Farm Journal* publishing database in February 1997. About one out of every four of these women viewed themselves as managers in the family business, actively, on their own, or partnering with their husbands in the farm operation (Taylor, 1997). *Top Producers* magazine's April/May 1997 issue noted, "The New Face of America's Farm Wife: She Pays the Mortgage, Commands Computers and Sways \$10,000+ Deals." The conclusion to be drawn is inescapable—representatives from the public and private sectors should actively seek out farm women to make farm management decisions.

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Frank Clearfield has been the Director of the Social Sciences Institute for the USDA Natural Resources Conservation Service since 1995. He earned his Ph.D. in sociology from the University of Kentucky. He has spent the last 15 years providing assistance on socioeconomic issues to diverse agricultural and industrial groups, conducting research, developing and delivering training materials, and formulating and implementing federal policy.

Tonia Koppelaar is a senior account executive in the Agribusiness Division of Fliesman-Hillard, Inc. Koppelaar received her BA from Michigan State University in agriculture and natural resource communications. Previously, she was an editorial assistant with the Social Sciences Institute.

Exploring Campus Climate for Women

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One possible explanation is that academic selection committees who adhere to a traditional career development paradigm may inadvertently discriminate against female job candidates. For example, search committee members may question breaks in employment because they tend to believe that continuous employment is essential to career success. They may assume that an applicant is not serious about her career if she has not been continuously employed, yet it has been well documented that women are far more likely than men to leave the work force temporarily in order to accommodate the birth of a child or to move with a husband/partner to a new job location (Arnold, 1995; Jones, 1985; Tesch, Osborne, Simpson, Murray, & Spiro, 1992). For women, this does not imply a lack of seriousness about career but rather an attempt to balance two important parts of life—work and family care—even when they are engaged in high status professions that pay well (Apostal & Helland, 1993; Demo & Acock, 1993; Duxbury & Higgins, 1991; Leslie & Anderson, 1988). This reality may negatively affect their marketability in academe, as indicated by one participant:

It's a buyer's market, this time. The people applying for this last position were at the star level and when you have a chance to hire somebody who is doing an awfully lot, a woman who may be a little bit lower [in number of research publications] will probably lose out. (P12)

Fewer publications do not mean that one is less competent as a researcher. The study participants consistently stressed the importance of excellence in all of their faculty endeavors and criticized the academy for being so focused on numbers that it loses sight of quality.

The Price of Membership in Academe: Professional women are far more likely than their male counterparts to be involved in dual-career relationships (93 percent versus 44 percent according to one study) (Wimberley, 1991). Women are also

more likely than their male colleagues to have partners that work full-time. Concerning whether they had been able to create balance in their personal/family lives while working in academe, some participants responded as follows:

Oh, absolutely not. I don't think you can do that. I had to make a choice between having children and a career. I didn't feel I could do both. . . . I think it's true even now. I think my career takes up most of my energy. It's very hard to succeed in academia and have a balance. (P1)

Ifelt I would not be able to start a family until after tenure although my husband and I do feel ready and are counting the days until we can get a family started. That's another problem I saw—if I leave and go to another university and I have to start the tenure clock over again, when am I ever going to start a family? I can't start a new job and a family at the same time, so I feel torn at times about what to do. (P4)

Everything was out of sync. I would say that to accomplish all of those things [research, teaching and service] was impossible in the time frame that was allotted with a family. I think that it is assumed that as an assistant professor, in my department, you will work 80 hours a week. The Chair, when he hired me, said at the end of the interview, "Don't plan on seeing your kid much when you are here as a busy Assistant Professor." I think that it is the underlying drive in the department. I saw it at other universities, but the other universities had a very different set of [support] resources available. (P10)

It is clear in the research literature that men do not pay as high a price for membership in the professions as do women (Ahrentzen & Groat, 1992; Jagacinski, 1987; Simpson, 1996; U.S. Department of Labor Women's Bureau, 1997). They are more likely to marry, stay married, and have children than their female counterparts. They are less likely to experience career disruption when a spouse changes jobs to a new geographic location. Since these are problems in the larger culture, they are often used as justification for inaction when women in academe ask for changes in the work environment. One participant had this to say about the demands of the academic work place:

I think one of the big problems that [has] to be addressed is the question of what it takes to be a "successful" academic. Why do we have to be workaholics and sacrifice everything to our jobs? Why can't we have a life, too? Men are starting to question this ridiculous work ethic, too—this male-driven, research-oriented, dollar, number, spend-all-of-your-time-working model for academics is just unhealthy. I think if women are ever going to truly fit in at the university, then that work ethic needs to change. (P8)

Three of the faculty women indicated that the only way they were able to participate at the levels they did in the academic workplace was to have husbands who were at home with children—or who took primary responsibility for home and family. This required considerable financial sacrifice and was a role reversal for their supportive husbands. Lack of family-friendly policies such as convenient and affordable childcare, an extended tenure clock, adequate maternity leave, and adequate family leave contributed to the conflicts these women faced. One tenured faculty member summed up the difficulty in balancing work and family this way:

I was going to have the Nobel Prize but then I got married. (P2)

•Influence. Influence, the second element that contributes to a sense of community, conveys to an individual that s/he matters to the group. It is critical in building a sufficient foundation of trust so that cohesiveness develops among group members. Influence in healthy communities is bi-directional; it flourishes in an atmosphere of shared governance and democratic processes. When mutual respectful influence is absent in the work place, individuals are not able to find validation for the ways they think and feel. "The consensual validation construct assumes that people possess an inherent need to know that the things they see, feel and understand are experienced in the same way by others" (McMillan & Chavis, 1986).

While virtually every woman interviewed in this study addressed the importance of mutual respectful influence in creating positive work environments, five of the participants believed that the influence processes in their units were positive and seven did not.

[At one time] *there were no factions in our department. We had a Quaker meeting way of doing things. We had faculty meetings almost every week and everybody had their say.* (P1)

I have always been given a lot of respect. Right from the beginning I was included in department meetings, I was asked to participate, my views were seriously considered, so in that sense I haven't felt like a second-class citizen in my own department. (P12)

The first semester I taught this course, I was openly challenged by male students several times, and I received low teaching evaluations, which devastated me, because I expect much more of myself than that. That semester was a complicated one because I had a new infant, but part of it was not knowing how to handle these students. I approached the Chair about this when I got my poor teaching evaluations, but he simply does not believe that women are treated any differently by [the almost all male] students. (P10)

I often felt isolated and ostracized. I think some of my colleagues are not able to deal with me in a natural, normal, and professional way. They are socially underdeveloped when it comes to working with women. (P9)

This concludes part 1 of the study, Exploring Campus Climate for Women. Part 2 resumes in the next issue of WiNR with discussions from the 12 women faculty and the researchers about the behavior of colleagues and administrators toward women faculty; access and availability of resources necessary to succeed in academe; teaching, advising, and service loads; spousal accommodation; the spirit of the work environment; quality of interaction; climate for retention of female students; and mentoring women faculty for tenure and success. Also included are sections on recommendations arising from the study: for central administration; about affirmative action and advocacy; about equity of resources; about tenure and promotions; and for women faculty themselves.

The University of Minnesota is hosting **Women's Lives, Women's Voices, Women's Solutions: Shaping a National Agenda for Women in Higher Education**, a national teleconference, on March 27-29, 2000. To coordinate a satellite site at your institution, discuss fees, and find out about funding, get information from www.umn.edu/women/wihe/site_org/main.html or email wihe@tc.umn.edu.

Walk on the Wild Side. The Soil and Water Conservation Society Annual Conference and Expo is August 8-11, 1999 in Biloxi, Mississippi. Contact them at 7515 NE Ankeny Road, Iowa 50021-9764, telephone 515-289-2331, ext. 17, fax 515-289-1227, email patm@swcs.org, or visit <http://www.swcs.org>.

What Have We Learned From Major Wildfire Disasters? is the theme of the International Association of Wildland Fire Wildland Fire Safety Summit November 2-5, 1999, in Sydney, Australia. The conference will review four case studies of large event fires. Presentations will also be made on other wildland fire safety issues with the foci of presentation, operations, and human factors. For details regarding abstract submission and registration please visit <http://www.wildfiremagazine/safetysummit.shtml>.

The University of Oklahoma Press is offering a library discount on selected publications, audiocassettes, and compact discs of **Native American music**. For more information or a complete list of titles visit <http://www.ou.edu/oupres>.

Women scholars with research interests in the higher education experience of women are invited to apply for a Washington-based American Association of University Women (AAUW) Educational Foundation **Research Scholar-in-Residence Award**. The research project must focus on the impact and consequences for women on either technology, in particular distance learning, in higher education or economic barriers limiting to higher education. To obtain guidelines, first visit <http://www.aauw.org> then contact AAUW Educational Foundation, Research Scholar-in-Residence Award, 1111 Sixteenth Street, NW, Washington, DC 20036, phone 202-728-7602, or email the foundation @aauw.org.

The U.S. Army Corps of Engineers is the steward of almost 12 million acres and they are looking for **volunteers to work at lakes and other recreation sites**. See www.orn.usace.army.mil/volunteer for more information.

Kiosk

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Research in Progress

Edited by Jessie A. Micales

Focus on Archaeology

What Are Archaeological Collections?

Leah K. Evans-Janke,
Collections Manager, Alfred W. Bowers
Laboratory of Anthropology,
University of Idaho

As a Collections Manager of archaeological resources, my job combines curation, academic research, and cultural resource management. Our laboratory is an admixture of a research facility and repository for archaeological collections. While we do not have a particular specialty, our lab is equipped to handle the many research needs of our students, faculty, and professional researchers. We offer a GIS/Spatial Analysis Lab, lithics lab, the Don E. Crabtree lithic collection, the Pacific Northwest Anthropological Archive, and Metals Conservation service. These facilities help the research side of our lab function, and also teach students the skills required to become competent archaeologists. These same attributes separate us from repositories that function solely as curatorial centers or museums. Their focus is on the care and management of archaeological collections and their subsequent display to the public.

In simple terms, an archaeological collection is a group of artifacts that has been collected from a particular locale and needs to be stored together. At our facility, we house collections from the 10 northern counties of Idaho and serve as a repository for the Archaeological Survey of Idaho. I serve as the collections manager or curator. The technical aspects of being a curator or collections manager vary from institution to institution. At the University of Idaho, it entails supervising and participating in the acquisition, security, preservation, and maintenance of archaeological collections. I also serve as the principal contact for donors, potential donors, community service organizations,

businesses, and individuals. We encourage support of our facility. Other duties include planning for, and directing exhibit preparation; developing a classification system for each collection; directing the artifact loan and transfer process; and directing the security arrangements for the collections' storage. I also supply information to researchers and the public on conservation and preservation of archaeological resources, and on Idaho archaeological history. The most important data that we share with fellow researchers are site locations information. This data is in a GIS database and is freely given to any qualified archaeologist. At the present time, we share this information with many of the federal agencies.

Stored in our geographically referenced database, our collections vary in size and time depth; many have both prehistoric and historic components. Prehistoric collections contain materials associated with native groups of the Americas prior to European contact. This designation "prehistoric" is something of a misnomer since the cultures in question do have oral histories, but lack a formalized system of writing. While the system does seem to place a stereotype on a culture, it is not intended to. It is simply a method of controlling the whereabouts of thousands of artifacts. Our historic collections are most often associated with the settlement of the western United States and, in our case, date to 1800 or later.

At present, I spend most of my time rehabilitating our collections. In the last few years it has become apparent that the "old" methods of curating archaeological collections are not always adequate. To bring our collections up to current curatorial standards, all 50,000 artifacts in our care must be entirely reprocessed: re-catalogued, re-bagged, and in many cases, relabeled. In order to do this, it is more efficient to start from scratch and treat the collection as if it had never been

curated at all. This, in part, is due to numerous methods of curation used in the past. In addition, modern computer programs make the creation of a new database relatively easy, prevent duplication of data, and make updating easier.

Once a collection has been rehabilitated, it is accessible for use. People who use the collections include students from around the country, professional and federal archaeologists, and academic researchers. Many of the collections that we house actually belong to federal agencies and are curated at this facility according to state and federal guidelines. An annual activity report lets the agency know who used them, and how they were used. I work closely with federal archaeologists regarding issues concerning a collection.

Each archaeologist fills a different niche in our professional community. The field requires a lot of expertise in a variety of areas to insure that the federal laws which have been enacted can be upheld. These laws are in place to guarantee that archaeological resources are preserved for the future. They apply to all archaeological resources on public lands, from those yet undiscovered, to a collection maintained in a repository. While we each have different specialties within the field of archaeology, we all work together to promote public awareness of a dwindling resource, to preserve what has been recovered, and to find and preserve new sites for future generations.

Evans-Janke has a B.S. in history from Weber State University, Utah, and a M.A. in anthropology with an emphasis in archaeology from the University of Idaho. She coordinated the many contributions to this Research in Progress column. Contact: leahe@novell.uidaho.edu

Passport in Time

Jan L. Hollenbeck

Forest Archaeologist and Heritage
Program Leader, Mt. Baker-Snoqualmie
National Forest,
Mountlake Terrace, Washington

I began working for the USDA Forest Service about 20 years ago, first intermittently as a temporary seasonal archaeologist assigned special projects and field work. One of my projects was to complete a Cultural Resources Overview for the Mt. Baker-Snoqualmie National Forest. The Overview provides the context for the prehistoric, ethnographic and historic resources on the Forest and was a required component of the Forest's Land Management Plan. The prehistory section describes sites within the broader patterns of prehistory known from geographic areas adjacent to the Forest. The ethnographic section provides a model of past land and resource use. It also gives background on the history of the local Indian groups, many of whom still use the Forest for religious and traditional cultural purposes today. The historic themes developed in the Overview are used to guide the inventory and evaluation of historic sites. The major historic themes include transportation development, mining, logging, Forest Service administration, recreation, and water development.

As a result of this effort, the Forest Overview Site List was developed and serves as the master list of all known and suspected heritage resources on the Forest. It's a dynamic list; as new sites are discovered they are added to the list, and as inventory, evaluation and research are conducted, their status changes.

Since 1991, I have been the Forest Heritage Program Leader and have had an opportunity to focus research through the Forest Service's Passport In Time (PIT) program. PIT is a volunteer program that provides opportunities for the public to work with archaeologists and historians on national forests across the country. The Mt. Baker-Snoqualmie National Forest has been lucky to have Pacific Lutheran University (PLU) Anthropology Department as a partner in its PIT program.

We've spent three summers with our PLU/PIT student and volunteer partners doing an archaeological survey of the wilderness areas of the Forest. Wilderness, under its implementing legislation, is managed by the Forest Service as the most pristine and unaltered areas of the Forest. Consequently, we have little cause to conduct surveys look-

ing for sites that might be impacted by management activities. Our PIT projects have been able to fill in some of the gaps with regard to site distribution and site types in these high elevation montane environments. As recently as 20 years ago, archaeologists in this region thought that Native Americans had not spent much time using or managing resources of the rugged north Cascade Mountains. That opinion has changed; archaeologists have begun looking in earnest in these areas and, nearly everywhere they turn, there is abundant evidence of prehistoric activities. These efforts have tripled the number of prehistoric sites on the Forest Overview Site List, and we are beginning to speculate about the relationship between the use of alpine environments and the lower-elevation riverine adaptations of Pacific Northwest hunter-gatherers of the late prehistoric period.

As prehistoric settlement and subsistence systems changed from a foraging strategy to a more sedentary, lowland-oriented strategy in which resources (primarily salmon) were collected in large quantities and stored for winter use, how did the use of the alpine environments change? The research is by no means complete, but with a growing number of documented sites, the Mt. Baker-Snoqualmie National Forest offers the opportunity to investigate and test hypotheses. Archaeological excavations at some of these newly documented sites may be the focus of a future PIT project.

Other PIT projects looked at two additional historic themes developed in the Cultural Resources Overview: mining and logging. The Forest was put in the unique position to learn about mining history after 460 acres within an historic mining town were purchased from private landowners. Monte Cristo, the name chosen by the town's founders to draw the interests and ultimately the finances of wealthy speculators, was the center of silver, gold and copper mining activities on the Sauk River in the 1890's. The town swelled to a population of 1,000 by 1893 and was platted with lots for sale.

Several shops and service enterprises sprang up; it was not just a town of miners but of several merchants and professionals and their families. In addition, a large labor force of Japanese day-laborers worked to maintain the railroad that linked the town to the market on Puget Sound. The significant extant historic features include not only the remains of several historic buildings, but the trestles and a turntable associated with the railroad, the remains of an extensive tram system that transported the ore from the mines to town and the concentrator, and the artifacts scattered throughout the area that

are related to the mining operation. Test excavations identified areas where subsurface artifact deposits can provide primary data on immigration, ethnic and gender demographics, and labor management relations and distinctions. Through archaeology, the daily lives of the people associated with the mining boom-and-bust phenomenon can be brought to the foreground. The information has helped in planning the recreation activities and opportunities associated with this popular destination.

Our most recent PIT project, and one that we will return to this summer, focuses on investigating and inventorying features of the Sauk River Lumber Company. We are looking at the cultural deposits at five logging camps that operated successively as logging progressed and the company moved its operations up-river between 1922 and 1957. What we are attempting to do is look at the Sauk River Lumber Company as a system consisting of several property types or features including camps, railroad sidings and grades, trestles and bridges, reload areas, and locomotive maintenance areas, rather than isolated "sites." The primary goals of the research are to evaluate the integrity of the various features, to determine how the sites and features can contribute to our understanding of the historic theme of the Pacific Northwest timber industry, and to address management options for the sites and features. Field methods included survey, surface collection, and test excavations. The 1998 survey and testing efforts established that at least two of the camps retain sufficient integrity to represent the theme, and that the ubiquitous and information-redundant railroad grades do not contribute to our overall understanding of the theme. Field work beginning in July, 1999 will continue this effort and look at the remaining camps and additional features.

**Are you doing, or overseeing,
an interesting piece of research?
Women in Natural Resources
welcomes research contributions.
Describe the research or process,
what is being done currently,
the expected outcomes, and your
(or the researcher's) part in it.
For more information, contact:
Dr. Jessie Micales, at
jmicales@facstaff.wisc.edu**

The opportunities for research of important prehistoric settlement and subsistence systems and significant historic themes seem endless on the Forest; the limiting factors are time and resources. With the help of PLU students and PIT volunteers, I hope that the Forest Service can not only contribute to important research questions in the region, but can increase public awareness and involvement to provide the greatest degree of protection for these valuable nonrenewable resources. Student papers, professional papers, interpretive exhibits, lectures, slide shows and news media are vehicles used to share this research with the public and professional audiences.

Hollenbeck has a B.A. in anthropology from the University of Washington and a MPA from Seattle University. Contact: jan.hollenbeck/r6pnw_mbs@fs.fed.us. To learn more about PIT, contact the Passport in Time Clearinghouse at (800) 281-9176 or e-mail: pit@sicrm.com.

Protecting Southwestern Archaeological Sites from Visitor Impacts

Leigh Ann Hunt, Moab/Monticello Districts Heritage Manager, Manti-LaSal National Forest, Monticello, Utah

As a cultural resource/heritage specialist with the USDA-Forest Service for 20 years, I have looked at the effects of many different activities on archaeological and historical sites - wild fires, prescribed fires, cattle grazing, Scout camps, ORVs, logging, and many others. Our objective is to find actions that the Forest Service can take to eliminate or limit damage or impacts to these nonrenewable resources. On my districts in the Four Corners part of Utah, one of the most evident impacts to our sites is the presence of large numbers of visitors - hikers, backpackers, and scenic-drivers, who are drawn to our back country areas in ever increasing numbers. The sites here include cliff structures, rock images, rubble villages, and lots of "garbage," such as pottery and stone tool chips, in 700 to 1200-year old "dumps" we call "middens". As a result of these growing numbers of visitors, damage to sites is becoming more and more noticeable, but with hundreds or thousands of such sites in the area, we can't individually watch and stabilize each one.

In the last five years, we have begun to systematically study the condition of archaeological and historical sites in order to develop management actions that could protect sites in the face of constant use with the goal of

correlating levels of visitor use with impacts from vandalism and "wear and tear" damage. The study looks at physical materials like stones and adobe; hydrology and soils properties involved in erosion and trampling; as well as visitor psychology, recreation patterns, and even economics and marketing as factors that influence visitor behavior. For instance, researchers have found that graffiti vandalism on rock art panels can be prevented by providing a visitor register with a "comments" space and a pencil at frequently visited sites. Back country hikers are sometimes more respectful of ancient sites than roadside visitors, but not always.

Visitors at pristine back country sites are often fascinated with the pottery sherds and stone artifact fragments found in the middens. They may know that taking these away are illegal, but they pile their discoveries on rocks and ledges within the site, a practice sometimes called making "museum rocks." This destroys the locational information archaeologists need to understand the dates of occupation within a site. It also distracts the next visitor from feeling the thrill of discovery for themselves. Meanwhile, just the movement of large bodies through the rubble of unexcavated and unstabilized 800-year-old structures weakens their walls, cracks foundations, and causes wear on doorways, steps, and paths.

The difficult thing to determine is how many visitors per month or year may cause irreparable damage, and what can be done to prevent this without ruining the fascinating qualities of these sites for the public. Our study involves revisiting a variety of sites, cliff structures, buried pueblos with rubble and midden, scatters and camp sites, both in frequently visited and untouched settings. My crews and members of the public in our "adopt a site" steward program record and photograph the condition of the sites so that they can be compared on subsequent visits. They also record information on visitor use and other impacting agents like erosion, cattle and elk, ORVs, and so on. The best sources of information on visitor use are mechanical trail counters, peak weekend visits, and visitor registers within the sites. Measuring impacts is trickier. Photograph points are established, and all components of a site are photographed each year. Locations of pot-hunting holes, ORV trails, and other vandalism, as well as footpaths and deer trails, are carefully plotted on maps. Litter and campfire rings are removed and museum rock items are hidden away so that future occurrences can easily be observed. At really frequently used sites, a register and an educational brochure are left in a small container for visitors to use and read.

One of the harder things to track is the theft of artifacts that go home with the visitors. Experience shows that the larger and highly decorated fragments of pottery disappear first, and that more items will disappear every year until all artifacts are eventually gone. We set up a sample plot within each site and count and note the items on the ground surface for comparison on each monitoring visit. It is my hope that we can develop protocols or management procedures from these data that will allow us to identify sites where levels of use are going to begin to cause problems, so that we can put mitigation actions in place before damage gets too great. Educational signs, patrolling, hardened paths, precollecting the pottery for museum storage before it is all stolen, and stabilization of structures are all things that can be done to prevent irretrievable loss.

One thing that we have learned in South-eastern Utah in the last 10 years is that publication of locations of sites in guidebooks, calendars, and hiking/visitor/photography and other publications, can lead to rapid increases in visitor use and impacts. With the data that we are gathering, I hope to show that promotion and publication of our heritage sites is an impacting action that must be accompanied by well thought-out protective measures. If not, in some cases our last resort to protect what is left is to close the sites to all public use, or to limit use through permits, guided tours, fees or other management practices that are less user-friendly.

Hunt has a B.A. in anthropology with archeology emphasis from Northern Arizona University and a M.S. from California State University at Sacramento in anthropology. Contact: lhunt_r4, m-1@fs.fed.us.

Pioneer Farmers in the Pacific Northwest

Lee Bennett, Bennett Management Services, Monticello, Utah

I earned my Masters degree in anthropology from Washington State University in 1972 and was working as a part-time instructor at a community college in Seattle when a colleague telephoned. "I've got a box of rusty artifacts and I need an analysis of them for the site report. There's \$80 left in the budget, and the job is yours," she offered. That was my first contract as a professional archaeologist, and the beginning of my career in archaeology and heritage management.

In the intervening 27 years, I've done archaeology projects in Washington, Idaho, Utah, and Montana. A 14-year stint with the

U.S. Forest Service, first as an archaeologist and then as a district ranger, was sandwiched between running my own company in Seattle and my present operation in Utah. I specialize in historic archaeology, which surely resulted from fascination with stories revealed by that first box of rusty artifacts.

My current project is a 19,000-acre parcel of land in eastern Washington on which we identified 32 historic sites spanning more than a century of agricultural settlement. At least one of the properties had remained in one family for 102 years. Through library research, checking county records, visiting local museums, and interviewing a number of people who had worked on or lived at the farms, a tale of pioneer tenacity began to unfold. First attracted to the area by advertisements for land offered by the Northern Pacific Railroad, the earliest farmers arrived from Canada, Germany, Sweden, and the midsection of the U.S. They dug into the sides of low hills to make rock-lined cellars with dirt roofs, put in gardens, grazed cattle, planted wheat, harvested the tall native grass, and built small houses. To keep their hay dry and provide a protected place to feed and harness their draft horses, they also constructed barns, several of which still stand.

The similarities in the barns suggest that they were constructed according to a commonly understood plan. One of the standing barns was built in 1890 using timbers sawn at a neighbor's mill about 20 miles away. Posts and beams are held together by mortise and tenon joints secured with wooden pegs. Shingles cover the roof, and local stone supports the sill timbers. The 3-alley floor plan was well suited to storing loose hay and feeding draft animals.

The farms tried to be as self-sufficient as possible, and often struggled for economic success. "We canned vegetables from our garden, fruit from the orchard, meat from the chickens, pigs, and cows, and filled the cellar each year. We didn't get electricity until after World War II, so there was no refrigeration. If we didn't eat it right away or can it, the food couldn't be stored for long," explained one woman in describing her life on a farm.

At harvest time farmers helped one another. "We'd take what equipment we had to a farm and work that place 'til we were done, then move to the next. The wheat harvester took 24 horses to pull it," recalled one man. With the men and older boys operating the harvesters and wagons, younger children drove the water wagon, while the women and older girls provided meals from a chuck wagon parked alongside the field. "Everybody did their part, we all helped each other," ex-

plained another. The switch to tractors didn't occur until after World War II in this remote farm country.

Among the archaeological evidence for self-sufficiency are recycled buildings. Granaries from a town 25 miles to the east were hauled to a farm and used as shops and garages. An abandoned house was moved to another farm and reoccupied, while another abandoned house was moved and used for chemical storage. A horse barn from an old country school became a garage at its new location. A large dairy barn was put on skids and hauled by horse teams across the wheat fields to a neighboring farm where it was used to house prized Percheron horses.

Social concerns that we hear today were also on the minds of people in the 1920s. Of a neighboring farm, a man explained: "He lived in town and didn't think it was a good place to raise kids, so he bought some land out here and built a house. His kids moved in and worked the place for a few years, but they liked the city life better and gave up. But one of the children [in his 90s] visits each year and likes to remember life on the farm."

Piecing together these stories is my greatest enjoyment as an archaeologist. The opportunity to link the dry words of a history book to labels on museum displays to the memories of our older citizens adds life to the artifacts and puts pizzazz back in the past.

Bennett has an AA from Seattle Community College, and a B.A. and M.A. in anthropology from Washington State University. Her major research topic was Ethnohistory of the Lower Skagit Indians. Contact: lbennett@sanjuan.net.

Asian Americans in the Pacific Northwest

Priscilla Wegars
Volunteer Curator, Asian American Comparative Collection (AACC)
Laboratory of Anthropology,
University of Idaho, Moscow

My current research projects include a study of Polly Bemis, Idaho's most famous Chinese woman pioneer, who was the subject of a book and a movie, both entitled *Thousand Pieces of Gold*. Polly lived on the main Salmon River from 1894 until 1933. Since her death, her life has been highly romanticized, to the point where it is difficult to separate myth from reality. In late June I will lead a University of Idaho enrichment and summer school class on a jet boat excursion to visit her former home, now restored,

and her grave. Once there, we can explore the differences between the book and the movie and compare them with what is known about Polly's real life.

Another project is a study of northern Idaho's Kooskia Internment Camp, a World War II work camp for Japanese aliens. The site is located on the Clearwater National Forest, adjacent to Highway 12 and the Lochsa River. Although little remains there now, research in Forest Service archives and the National Archives, and interviews with former internees and employees, have enabled me to assemble an extremely detailed account of camp inhabitants and activities between 1943 and 1945. This research is shared, via slide lectures, with school groups and the general public.

In Idaho, Chinese miners first arrived in the 1860s to work in the newly-discovered gold fields, some of which were on the remote, roadless, lower Salmon River. Today, many signs of their presence can still be seen, including some striking remains of rock dwellings. In July, I will lead a University of Idaho summer school and enrichment class on a three-day, two-night float trip and rafting adventure, to examine Chinese miners' rock dwellings, hydraulic workings, man-made reservoirs, and Chinese artifacts. We will also visit other Chinese sites along this 55-mile stretch of the Salmon and Snake rivers as we explore the fascinating history of Chinese people in Idaho.

Additional research has focused on Chinese and Japanese artifacts: the Chinese and the Chinese temple in Lewiston; Chinese women in the West; Asian American history in Baker City, Oregon; stereotypes and sensitivity issues (i.e., "joss houses," "Orientals," and so-called "Chinese tunnels"); archaeological excavations of Chinese mining sites in Idaho's Boise Basin and in northeastern Oregon; Chinese graves in the interior Northwest; an investigation of rock ovens (erroneously called "Chinese ovens") on railroad-related sites; and prostitution in early Moscow and the old West. This research has been shared through publications and in slide lectures.

Wegars has a B.A. in German from the University of California, Berkeley; a M.L.S. in librarianship from UC, Berkeley; a M.A. in scientific methods in archaeology from the University of Bradford in West Yorkshire, U.K.; and a Ph.D. in history/historical archaeology from the University of Idaho, Moscow. Contact: pwegars@uidaho.edu or AACC's website at <http://www.uidaho.edu/LS/AACC/>.

News & Notes

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Cuyahoga Valley National Recreation Area and Cuyahoga Valley Association won in the category of education. Whiskeytown National Recreation Area and Shasta Tehama Trinity Joint Community College District (Shasta College) took the environmental conservation category. Glen Canyon National Recreation Area, Rainbow Bridge National Monument, and the Rainbow Bridge Consultation Committee are the winners for historic preservation. Badlands National Park and the Telephone Pioneers of America won the recreation category. This year's Director's Award went to National Capital Parks – Central; Target Stores and Vendor Partners; Discovery Communications; General Electric Company; and the National Park Foundation.

The two honorable mentions awarded in the category of education were Gates of the Arctic National Park and Preserve, Yukon-Charlie Rivers National Preserve and Doyon Foundation; and Chaco Culture National Historic Park and the Albuquerque Astronomical Society.

National Park Service *News*, April 20, 1999

Invasive Species

On February 3, President Bill Clinton signed an executive order to coordinate federal efforts to address the environmental and economic threat that non-native animal and plant species may pose to ecosystems of the US. While aimed at curbing the spread of destructive species, such as the Asian long-horn beetle and the zebra mussel, the new policy may have potential ramifications for agroforestry activities by governmental agencies and their private-sector partners.

The new policy calls upon all federal agencies to prevent the introduction or spread of invasive species through monitoring, research, restoration, and public education. Agencies are prohibited from funding or undertaking any actions that could cause the spread of invasive species anywhere in the U.S.

The impact of this policy will depend on how the definitions of "alien" and "invasive" are interpreted and applied. An "alien" species is one that is not native to a particular ecosystem. An "invasive" species is defined as an alien species whose intentional or unintentional introduction therein "does or is likely to cause economic or environmental harm or harm to human health." While modern agriculture is based largely on cultivation of "alien" species, most crops are not clearly not considered "invasive."

According to Bruce Wight of the National Agroforestry Center (NAC), some within USDA interpret the new policy to mean that non-native species should be treated as "guilty until proven innocent" rather than "innocent until proven guilty." Under such a scenario, he said, NAC could not recommend or support forest farming cultivation of ginseng, for example, anywhere outside its native range until it was determined that it will not become invasive there. He cautioned, however, that it is too early to say how the new policy will be applied to agroforestry and how it may affect NAC and other USDA agencies.

The President's executive order also creates the Invasive Species Council, an Executive Branch body to be co-chaired by the Agriculture, Interior, and Commerce departments. Within 18 months (August 2000), the Council will issue a National Invasive Species Management Plan. This plan is supposed to include recommended measures for a science-based process to evaluate the risks associated with introduction and spread of invasive species.

Miles Merwin, *The Temperate Agroforester*, April 1999

Tree Extinction

Ten percent of the world's tree species are threatened with extinction, according to a report by the World Conservation Monitoring Centre and World Wildlife Fund of Washington, DC. According to the report, 259 of the species are in the United States, including two species of Texas oaks, the Florida yew, Georgia's stinking cedar, and 27 Hawaiian species. The US ranked 12th in all nations with threatened trees. Malaysia, Indonesia, and Brazil topped the list. Scientists estimate there are 80,000 to 100,000 tree species in the world with 8,750 needing "significant steps" to avoid extinction.

Arbor Day, May/June 1999

The Antics of Ants

The homes of harvester ants are easily recognizable as distinctive gravel mounds kept meticulously free of vegetation. These ants are of special interest to researchers because of their subterranean chambers. Harvester ant chambers increase the rate of water infiltration and involve continual evacuation of large amounts of soil from the soil column.

Engineers designing protective waste caps for nuclear materials need to consider infiltration rates in their designs because keeping water from the interred waste is their primary concern. When harvester ants take up residence on a cap, they may increase the depth to which water penetrates, even to the point of potentially leaching contaminants to ground water.

Newsletter of the Environmental Science & Research Foundation, Inc, March 1999

Sleeping Fish

Tobe Toshio, in Oita-ken, Japan, has developed a technique to put fish to sleep using acupuncture. Then, while the fish are out cold, they are shipped to market. He says the needles can induce a 10-hour sleep in a 400-gram fish, and claims success with snapper and saury. Tobe is now experimenting on other fish species.

Charles Whipple, *Look Japan*, May 1999



The American Fisheries Society annual conference will be held August 29-September 2, 1999 in Charlotte, North Carolina. The theme is Integrating Fisheries Principles from Mountain to Marine Habitats. For information contact Andy Doloff at 540-231-4864 or email afs99@vt.edu.

If you need information about Asia, you can search the database of resources in print, on video, or on the web through the new outreach service of the Center for East Asian and Pacific Studies at the University of Illinois at <http://www.aems.uiuc.edu>.

A listing of institutional agroforestry activities nationwide is available on the web at <http://www.unl.edu/nac/>. These feature teaching, research, extension, and international activities at over 60 institutions in the U.S.

The Wildlife Society meets September 7-11, 1999 in Austin, Texas. The theme is Conservation Challenges for the 21st Century: Are Wildlife Biologists Ready? For more information, contact Lorraine LeSchack at 301-897-9770 or email tws@wildlife.org.

The International Conference of the Society for Ecological Restoration will be held September 23-25, 1999 in San Francisco, California. The theme is Reweaving the World: Restoration, Community, Culture. For registration materials, call 608-262-9547, fax 608-265-8557, or email ser@vms2.macc.wisc.edu. For submission guidance for papers and posters, see <http://www.sercal.org/ser99.htm>.

Exploring Our Global Community: People, Food and Agriculture, July 6-11, 1999, St. Paul, Minnesota will focus on the issues and opportunities confronting agriculture and related sciences of soils, animals, food, and the environment. Registration materials: University of Minnesota Global Food and Agricultural Summit, College of Agricultural, Food, and Environmental Sciences, 277 Coffey Hall, 1420 Eckles Avenue, St. Paul, MN 55108-1030, email, globag99@coal.agoff.umn.edu, or visit <http://globalag.coafes.umn.edu>, or phone 612-625-7061, or fax 612-624-4974.

Experience International, located in Everson, Washington has offered specialized trainee programs in natural resources, forestry, fisheries, and agriculture for international visitors for 10 years. They have recently expanded their program to include similar short-term programs overseas for U.S.

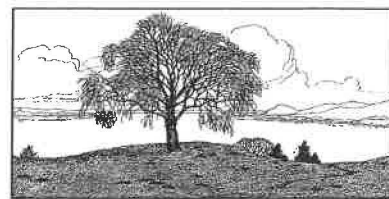
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students. They seek two unpaid interns for 6-12 month positions, as well as a full time office manager. Job descriptions available from Charlie Walkenshaw, PO BOX 680, Everson, WA 98247, email, si@expint.org, phone 360-966-3876, or fax 360-966-4131.

Travel Grants to Russia for U.S. Women Scientists. The American Association for the Advancement of Science's (AAAS) Program on Europe and Central Asia and the Association for Support of Women in Sciences and Humanities (ASWISH) in Russia, with support from US National Science Foundation announce two, one-time travel grants to promote the participation of US women scientists in scientific meetings. For eligibility requirements, application procedure, and award information contact the coordinator at email kgrill@aaas.org, or fax 202-289-4958.

University of Arizona's Women and Scientific Literacy is working to bring science to women's studies and feminist critiques to the sciences. An ongoing colloquium series provides a forum to work through the past lack of common ground and even hostilities across these fields. Developed by the American Association of Colleges and Universities, and funded by the National Science Foundation. For more information visit <http://w3.arizona.edu/~ws/newweb/wsl/coverpage.html>.

Women of the West. In November 1998, the Women of the West Museum opened, launching new public programs for people of all ages. The programs for 1999 include a national initiative for women's history trails, a short student video about women of the West, lectures by scholars on the



subject of western women, and continuing book discussion groups. The WOW website is at www.wowmuseum.org, a virtual museum with online exhibitions, book reviews, resources for educators, and a featured Woman of the Week. Contact them at 4001 Discovery Drive, Boulder, CO 80303, phone 303-541-1000, or fax 303-541-1042.

Congress designated August 26 as **Women's Equality Day** in 1971 to focus attention on women's continuing efforts toward equality. On August 26, 1920, the 19th Amendment to the U.S. Constitution was ratified, affirming women's right to vote. The ready-made Women's Equality Day Program Kit includes a speech, 50 placemats, 50 inspiring bookmarks, 24 imprinted balloons, and a 17 minute history video, "The Equal Rights Amendment: Unfinished Business for the Constitution." The cost is \$45, plus \$7.50 s/h from the National Women's History Project, 7738 Bell Road, Dept P, Windsor, CA 95492-8508 (707-838-6000). Email nwhp@aol.com for a free flyer.

Do you have a job, conference, journal, or book to advertise? Call 208-885-6754 for flyer mailing dates.

TO SUBMIT A MANUSCRIPT to Women in Natural Resources journal, send to the editorial office a single spaced preliminary draft by FAX (208-885-5878) for consideration to Dr. Dixie L. Ehrenreich, Editor. To discuss a topic, please call 208-885-6754 or email dixie@uidaho.edu.

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