A black and white portrait of Hilda Diaz-Soltero, a woman with short dark hair, wearing a dark top and a white collar with a large circular brooch. She is looking slightly upwards and to the right.

women in  
**N A T U R A L  
R E S O U R C E S**

Volume 21, Number 3

2000

**INTERVIEW:** Hilda Diaz-Soltero,  
Associate Chief for Natural Resources,  
U. S. Forest Service

**Diversity in Natural Resource Management**

**Effects of Insecticide on Embryonic Development of Fish**

**In Seattle: From Women's Rights to Global Warming  
and**

**Where Do We Find Environmental Heroes?**

## Editorial

**Sandra Martin**

# An Introduction

I have known and admired Dixie Ehrenreich for years, and in 1999 I learned that she planned to retire from her position as Editor of *Women in Natural Resources*. Having always followed my intuition when "planning" my career, I listened as it hailed me when I learned of the Editorship opening up. I asked Dixie to consider me as her replacement, and was thrilled when she decided in my favor.

*Women in Natural Resources* fills a unique publishing niche. It provides a one-of-a-kind publication for those of us who work in academia, the professions, and elsewhere, all with the common bond of nature, the environment, and/or natural resources; and for women, and men, too, who value a publication that focuses on equality and diversity, often in the most matter-of-fact way. The journal offers a voice for us, a place where we can be both the professional and the private people that we truly are.

If I visualize my career as a path I have been following for some decades now, I see it as a sinuous, organic thing, with obstacles encountered, and dead ends avoided (but not without some back-tracking!). I have academic training in natural resources, including a Bachelor's degree in Forestry and a Ph.D. in Wildlife Ecology; I have experience with research and other field work; I was employed by the U.S. Forest Service for six years; and I have worked as faculty and as staff for universities.

I am a walking advertisement for "life-long learning." After completing my undergraduate degree at the University of California, Berkeley, I took to the

life of a graduate student like a duck to water (or, in my case, like a polar bear to ice) and so, spent 10 years in that category working on a Master's and then a Ph.D., in western Montana, the Canadian Arctic, and California's Sierra Nevada. After completing my Ph.D., I joined the Forest Service in California, and then moved within the agency to Washington state. In 1995 I left federal service, and jumped off the deep end. For the past five years I have been "learning while doing" as I worked in distance education and then for a nonprofit wildlife research group.

With this eclectic background behind me, I found myself late last year turning another corner on my career path, and came to *Women in Natural Resources*. Dixie and I worked together through the late Fall and Winter. She taught me the nuts and bolts of putting together the issues of the journal, and how to integrate the business of the journal into the university's administrative infrastructure.

Although the Editor is the keystone, this journal is a product of many people. Multiple authors, of course, contribute the bulk of each issue. The Section Editors and Copy Editor help me fill the pages of the journal with coherent and interesting prose and information, and I have leaned on these women heavily as I segued into my new position. I am deeply grateful for their cheerful, kind assistance. I especially want to thank Jenny Ralston for training me on the fine points of Access databases, among other things; Jonne Hower, Sheila Helgath, Daina Dravnieks Apple, and

Barb Springer Beck for agreeing to continue their valuable contributions to each issue; to Tamara Blett for her critical eye; and to Linda Hardesty for substantial support (both material and spiritual) when the days seemed darkest. And finally, thanks Dixie, for keeping the flame alive through the years of your Editorship, and thank you for passing it on to me.

### Editor

*Sandra Martin*

### Associate Editor

*Karen Lyman*

### Section Editors

*Daina Dravnieks Apple*

*Zasha Bassett*

*Barb Springer Beck*

*Dixie Ehrenreich*

*Linda Hardesty*

*Sheila Helgath*

*Jonne Hower*

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*Deann Zwright*

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*Tamara Blett*

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Associate Chief for  
Natural Resources,  
U.S. Forest Service

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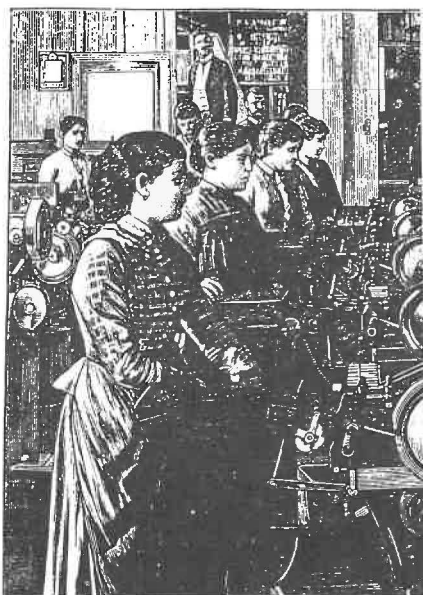
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**Women in Natural Resources invites contributions  
from subscribers for two departments:  
Research in Progress and Global Frontiers.**



**For Research in Progress,** describe the research and expected outcomes, plus the role of the author or originator of the research in the work. Contact **Dr. Sandra Martin** at [winr@uidaho.edu](mailto:winr@uidaho.edu).

**Global Frontiers** is the department for international aspects of natural resources. For the wide variety of topics which can be addressed, contact Dr. Sheila Helgath at [shelgath@nwlinc.com](mailto:shelgath@nwlinc.com)



## Letters

•••••

Dear Editor,

Congratulations on having such a lovely website. It is user-friendly and informative as well as visually appealing. Your site is one that I would put in my own category of Best on the Web. Since I spend so much time on-line, it is always a pleasure when I run across a site like yours.

I'm in the process of updating the information in the 1997 "Directory of Selected Tropical Forestry Journals and Newsletters, 2nd Edition" for the web version that will be hosted on Forestworld's website. A web version is the only way I can possibly keep up with all the changes in all the entries; the print versions start going out of date the day after the directory is printed.

When it's on-line, I'll let you know. I hope it will be a useful resource for you, your colleagues, and your readers.

Kind regards,  
Christine Haugen, Director  
Tropical Forest Network  
<http://www.forestworld.com>

### CORRECTION

The cover photo of Susan Jewell used in Vol. 21, Issue 2 was not properly credited to the photographer in the last issue. The photo was taken by William Campbell.

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**The Sacred Depths of Nature**, Ursula A. Goodenough, Oxford: Oxford University Press, 1998; pbk ed. 2000. This book focuses on reconciliation of the modern scientific understanding of reality with human spirituality. Goodenough covers topics such as evolution, emotions, sexuality, and death, writing about these with uncluttered detail about the workings of nature in general and of living creatures in particular. Her underlying thesis is that the origins of life and the universe are no less meaningful because of our increasingly scientific understanding of them. Goodenough ends each chapter with spiritual reflections.

**Vital Signs: The Environmental Trends That Are Shaping Our Future**, Lester R. Brown, Michael Renner, and Brian Halwell, New York: Norton, 2000. This annual report by the Worldwatch Institute tracks economic trends affecting overall environmental health. The book presents data on trends in clear graphs and charts organized by subject matter. This year's edition notes a jump in the sales of energy-efficient compact fluorescent lamps, but conversely, reports a global resurgence of tuberculosis.

## Publications

**Requiem for Nature**, John Terborgh, Washington, D.C.: Island Press, 1999. John Terborgh's new book provides an assessment of the current conditions and future prospects for environmental survival on planet Earth. Terborgh, an experienced ecologist, believes that there is little hope for preservation of what remains of biodiversity in the tropics, where the majority of this important part of the world's environment is housed. Although the book does not cover social and economic realms, it remains an eloquent and passionate wake up call to us all.

**Journeys of Women in Science and Engineering**, Susan A. Ambrose, Kristin L. Dunkle, Barbara B. Lazarus, Indira Nair, and Deborah Harkus, Philadelphia: Temple University Press, 2000; 1-800-4447-1656, <http://www.temple.edu/tempress>. The core of this book is 88 profiles of women scientists and engineers, in areas from biochemistry to mathematics, from neuroscience to computer science, and from animal science to civil engineering. It includes those who have already had

distinguished careers, and those beginning their careers.

**Orion Afield**, named "One of the Ten Best Magazines of 1998" by Library Journal, explores good work on behalf of nature, place, and community. This publication contains stories and profiles of communities, organizations, and individuals whose efforts represent a local attempt at remaking communities from the ground up. Visit The Orion Society's web site at <http://www.orionsociety.org/afield.html>.

**The Overseas Development Institute's Forest Policy and Environment Group's new website** was launched earlier this summer at [www.odifpeg.org.uk](http://www.odifpeg.org.uk). The site contains information on forestry-related issues, as well as a searchable database of the group's Rural Development Forestry Network papers, published in English, French, and Spanish. The site will allow access to the Institute's expansive literature collection on the social and economic aspects of forestry. The website also has an extensive links section to other Forestry websites.

### Energy and Environment Faculty Position

The School of Forestry and Environmental Studies, Yale University, seeks to fill a faculty position with an outstanding scholar and leader in the field of energy, particularly as regards the relationship of energy and the environment. The individual should have a distinguished record of research and be recognized internationally both for leadership and scholarship within the energy-environment community. The specific discipline is less important than is the cutting-edge engagement of the individual with science and policy issues affecting the future of energy supply, provisioning, and consumption; the interplay between science and society in energy policy and management; and/or the search for approaches in the United States and abroad for energy alternatives that meet economic needs while also meeting environmental objectives, including work related to local and regional air pollution and to climate change. The individual will be expected to pursue original scholarship relating to his/her area of expertise. Involvement with inter-disciplinary research teams, both within and outside the School, to examine important energy-related issues is also anticipated. Teaching is expected to include graduate level courses covering energy and the environment, and more advanced topics relevant to the individual's background. An interest in undergraduate instruction at Yale College would be welcomed. By August 15, 2000, applicants should send their curriculum vitae, a statement of their scholarly research and teaching interests, a list of three references, and representative examples of their publications to Energy and Environment Position, Dr. Thomas E. Graedel, Search Committee Chair, Yale University, School of Forestry and Environmental Studies, 205 Prospect Street, New Haven, CT 06511, USA. Additional information on this position may be obtained by contacting Dr. Thomas E. Graedel, phone: (203) 432-9733, fax: (203) 432-5556, email: [thomas.graedel@yale.edu](mailto:thomas.graedel@yale.edu).

*Yale University is an equal opportunity/affirmative action employer. Minorities and women are especially encouraged to apply.*

## Global Frontiers

Sheila Helgath

## From Women's Rights to Global Warming

### One Woman's Professional Journey

Global Frontiers interviews Marya Castellano, Director of the City of Seattle's Energy Management Service Division at Seattle City Light. Ms. Castellano formerly worked in the City's Office of Women's Rights as Assistant Director and Acting Director. She was a featured speaker at an international energy technologies forum in Seattle in February 2000, sponsored by the U.S. Department of Energy. This interview will focus on understanding Ms. Castellano's career path and choices, her insights into the current state of affirmative action, job opportunities in the energy conservation field, and Seattle City Light's commitment to global energy and environmental issues. Anyone wanting more information on Seattle City Light can find it on their website <http://www.ci.seattle.wa.us/light>.

**Q: Ms. Castellano, can you describe Seattle City Light; what it is, how big is it, and who does it serve?**

Seattle City Light is one of the ten largest public electric utilities in the United States. It is municipally owned and serves the City of Seattle and a few adjacent suburbs. The utility employs about 1,700 people, which is down from about 2000 employees in the 1970s.

**Q: What are your responsibilities as Director of Energy Management Services Division and how many staff do you supervise?**

My division focuses on energy efficiency and energy conservation. It was created in 1977 as the Office of Conservation, with a handful of borrowed utility staff. It grew rapidly to a peak of almost 120 staff in 1983. We currently have fewer employees than that; around 70. This Division has energy savings goals as its mission. The City considers conservation as a power resource to be acquired. Conservation defers the need to build additional power plants, which are costly and environmentally challenging.

**Q: Recently you spoke at the international conference "Lessons Without Borders", on low technology energy conservation solutions. The conference had federal government support but Seattle City Light was also one of the sponsors. Why is a local publicly-owned city utility interested in international resource issues?**

Global warming and the awareness of global economies have made us aware that it is necessary to look beyond our region. It is important to acknowledge that we are a small part of a greater whole. Global warming is not about one city or region, but the entire world. The City of Seattle was highlighted at that conference as a success story. In fact, the Department of Energy has given Seattle an award as having one of the five most successful energy conservation programs in the country, as well as the longest operating effort in that regard. Recently, I received an email from one of the delegates from the Philippines who attended the Lessons Without Borders conference. He was inquiring about the possibility of Seattle becoming a mentor city to his city in the area of energy efficiency. It is an intriguing idea that I will be pursuing.

**Q: What are some of the environmental and natural resource issues Seattle City Light is addressing?**

Global warming is the premier issue and the City is investing money to develop a global warming strategy. Another way to think about it is strategies to reduce carbon emissions. The question is—How can our city, or any city, thrive and still insure that we have left something for succeeding generations? Recently, I attended a meeting to address the City of Seattle's Comprehensive Growth Management Plan. The City has many policies that support environmental stewardship but no specific overall environmental strategy. Other important issues include restoration of salmon runs where the utility has hydro-facilities, and the restoration or maintenance of natural habitats.

***Q: Global warming is usually considered a global issue, yet your website presents an editorial stressing that global warming is a local issue. What is Seattle City Light doing to reduce global warming?***

Global warming is a worldwide issue, but it will only be solved if everyone takes responsibility at a local level. The City is highlighting the issue and investing in staff to plan and coordinate its efforts. The Energy Management Services Division should also be given credit for what we have done in this arena. As a result of our efforts there has been a pollution reduction equivalent of removing 20,000 cars from our roads in each year since the Kyoto Protocol baseline year of 1991. That is a savings of 1.8 billion kilowatt hours, which is enough electricity to power the entire City of Seattle for two years (with a population of one-half million). That amounts to 220,000 tons of carbon dioxide emission reductions in 1998 alone.

***Q: Seattle City Light has published an Environmental Policy. How and why did this occur?***

Anyone who would like to view Seattle City Light's environmental activities should go to our website. City Light's Environmental Policy dictates how the Utility operates in an environmentally sound manner. The policy addresses global warming, our pesticide policies, and efforts to save salmon. Last year the national Web Marketing Association awarded us the "best government agency web site" plaque for our conservation web site.

***Q: You are also working with a variety of other organizations. Can you explain the purposes and goals of some of these organizations, such as the Northwest Energy Efficiency Alliance, and your conservation and sustainability partners.***

When I first came from the Office of Women's Rights it seemed like City Light was so rich. It was clear that city government was comprised of "the haves" and the "have-nots." But over the last 25 years, resources for everyone have become tighter. Over the last decade, budgets have been cut by 1/3 or more. With resources shrinking, it is important to build partnerships. Partnering allows you to leverage your resources with others who have common goals and to increase the impact of the individual efforts.

The mission of the Northwest Energy Efficiency Alliance is to affect market transformation in the area of energy efficiency for the Pacific Northwest. Seattle City Light participates in some of their initiatives and the Alliance is a primary funder of the Lighting Design Lab, which our Utility operates. Partnering with other entities has now become a norm for this Division. Our partners are generally

involved with resource utilization efficiency. Our sustainability partners in the public, private, and environmental sectors are collaborating with us to mainstream sustainable building. Within this area, we focus on utilities.

Other cooperative efforts include the Neighborhood Power program (to provide an array of resource conservation-related city programs to individual communities), tailored agreements with large utility users such as Boeing Aerospace, and working with the International Council for Local Environmental Initiatives to help local industrial firms reduce their greenhouse gas emissions and increase energy savings.

***Q: You have had an interesting career path. Can you describe it? Specifically what did you expect to do when you came out of school, and how has your concept of your career changed over time? What motivated you to change jobs?***

Being a single parent with children has driven my career. I had four small boys and ended up supporting them on my own. I was a stay-at-home mom who had been doing volunteer work in Seattle's central area. When I realized that I needed to go back to work, I looked into the areas where I had been volunteering. I worked at a Catholic middle school developing diversity curriculum but ended up doing other things as well, such as teaching physical education classes.

Then I developed diversity curriculum for the Seattle Public Schools. That job was only for six hours a day and I needed more work, so I started working for a social services agency. A woman I knew recommended I apply for a staff support position at the Seattle Office for Women's Rights. I was hired and the Director and I shared an office. She utilized me in an Assistant Director capacity. When she left for a White House fellowship, I became the Acting Director. It was in the 1970s and we were taking on major city departments such as the police, fire, and Seattle City Light about their female recruitment, hiring, and training practices. It was heady stuff to be involved in women's issues in the middle of the national feminist movement during those years. We also developed a unique outreach program to women of color and the gay community.

When I was passed over for promotion to Director after working in the position for a year, I decided to look for another job. The Deputy Mayor thought I should broaden my search, and suggested that I apply to the new Office of Conservation being started at Seattle City Light. Pursuing this job was not an easy choice for me, as I had just been involved in discrimination litigation with the utility through my Women's Rights Office position. The supervisor at Seattle City Light said I had a lot of nerve and gumption to apply—but he hired me precisely because of those traits,

he later said. I became the program manager. In 1977 there were no experts in energy conservation, and so we helped define the field.

Working in social service, community service, and energy conservation have a common theme; improving the condition of people and the community. This is something I am extremely proud of, and love doing!

**Q: Having worked in affirmative action over twenty years ago, what are your thoughts on the current movements to eliminate affirmative action? What can women do to ensure equal employment opportunities?**

Applying the philosophy of affirmative action is more difficult now in Washington State, since the passage of Initiative 200 [an anti-affirmative action initiative] in 1999. Women are going to have to develop plans and be more creative about affirmative action. Affirmative action was, and is, important for the development of women and their careers. I think all women should be role models and help other females by partnering with them professionally. Women should try to level the playing field by creating opportunities for other women, such as providing special assignments or training in specialty areas. Affirmative action was about giving qualified women a chance. It was never supposed to be about doling out favors. Unfortunately, though, in practice it wasn't always applied properly.

Because energy conservation came along after the 1960s, there are relatively more women in this field than in other areas of public utility work. Energy conservation is an idealistic pursuit and it has a nurturing side to it, which is complementary to most women's nature. Women as nurturers can support other women by how we act, treating them with respect, and giving other women opportunities, even if they can't out and out hire a woman as an affirmative action.

**Q: What advice would you give women natural resource professionals seeking more managerial responsibilities?**

I believe there are a lot of opportunities in the energy field for women. For example, women head the Department of Energy's regional office here in Seattle and the Northwest Energy Efficiency Alliance. For both organizations, as with our Energy Management Services Division, there are many female staff.

Align yourself with a manager you admire and become an apprentice. Educate yourself—take classes to develop skills and knowledge. Understand that being a good manager is not only about being able to manage people, but about managing activities and issues as well.

**Q: What advice would you give female natural resource professionals looking for employment and/or just entering the workforce?**

Look for jobs and opportunities that incorporate or relate to your interests, if at all possible. That way, you will be happier and like what you are doing. The energy efficiency field is ripe. There are so many opportunities! Move around and talk to people. Be willing to look at all the different facets of the environmental area, including the applied, "industrial" facets.

**Q: I have been fascinated that the lists of important figures of the last century are lacking in women. Who would you place on a list of significant female leaders both professionally and individually?**

Rather than name specific people, I would prefer to recognize groups of women. I believe the women who worked early on to gain rights for women are important to honor. Women who achieved in areas previously dominated by men - aerospace, sports, science, and politics, are also worthy of recognition.

I also think we should honor women who touched so many with very limited resources such as Mother Theresa. But personally, I think the women who have kept on persevering in spite of all of life's obstacles, with a lack of resources, and working in basic obscurity—these women deserve recognition, too!



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**The Credo Series,  
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Another birthday, another book review. I don't plan my reading around my birthday, and it is mere coincidence that, as I began this review, I turned to the one I completed just a year ago. At that time, I noted my need for inspiration, citing my impending 49<sup>th</sup> birthday. Well, here I am again, and the birthday number coming up is 50! I don't find myself in need of inspiration this year, but I do find my mood introspective. Perhaps it has something to do with being on the planet for half a century; or, it might have something to do with supervising an intern and thinking about why I do the work I do. In the current confrontational and polarized climate of natural resource management in the West, I wonder what keeps all of us 50-somethings dedicated to our jobs. Surely, there are other ways to earn our living? How about all those dot-com companies and the big bucks? But, here we remain. We persevere in our dedication to the resources and the land we manage.

So, in that mood, I happened on *Taking Care, Thoughts on Storytelling and Belief* by William Kittredge as I was searching for ways to provide interpretation about water use. I was so taken with the book that I consulted the publisher's website (Milkweed Editions: [www.milkweed.org](http://www.milkweed.org)) and discovered the entire "Credo" series. The book jackets read: "Books in the Credo series explore the essential goals, concerns, and practices of contemporary American writers whose work emphasizes the natural world and human community." Just what I needed!

There are five books in print, with one more to be released soon. Each is organized in the same fashion. There is the work by the author, a portrait in words by series editor Scott Slovic, and a bibliography of each author's work. After reading these books, I feel as though I have had great conversations with these new-found friends. Books in the "Credo" series are (all from Minneapolis, MN: Milkweed Editions):

**BOOKS REVIEWED  
by  
Jonne Hower**



*Brown Dog of the Yaak: Essays on Art and Activism*, Rick Bass, 1999, 170 p.

*The Country of Language*, Scott Russell Sanders, 1999, 131 p.

*The Dream of the Marsh Wren: Writing as Reciprocal Creation*, Pattiann Rogers, 1999, 141 p.

*Shaped By Wind and Water: Reflections of a Naturalist*, Ann Haymond Zwinger, 2000, 200 p.

*Taking Care: Thoughts on Storytelling and Belief*, William Kittredge, 1999, 130 p.

*Walking the High Ridge*, Robert Michael Pyle, 2000, 172 p.

In *Shaped by Wind and Water*, Zwinger writes about her week-long stay at a writer's retreat on Whidbey Island, Washington, and her discomfort with introspection:

*My discomfort with introspection may be why I prefer natural history writing, which dictates an outward focus, not an inward one.*

*I prefer recording in field notes what watching and waiting bring to pass, what fly swerves with verve, what kingfisher yatters about the summer, what gypsy rose flings away its petals, which cactus flower gathers in its tiny nectar-besotted bees and closes over them like a comforter for the night ...but [introspection]...*

*embarks on new paths through old forests, and often finds trees caparisoned with new species of lichen and moss, punctuated with unfamiliar mushrooms as well as familiar confirmations and realizations, plus the comfortable appreciation of beliefs that have held up over time like good hiking boots.*

*Taking Care* by William Kittredge paints vivid pictures of southeastern Oregon's high Warner Valley, and of a time which I can only imagine and yearn for:

*We were some thirty-six gravel-road miles over the Warner Mountains from the little lumbering and rancher town of Lakeview...Warner Valley was not on the route to anywhere. The way in was the way out. Sagebrush flats on the high and mostly waterless plateaus out east were traced with wagon track roads over rimrocks and saltgrass playas, waterhole to waterhole....*

I have been in that country, and, yes, it is like that; high and lonesome and still empty of people.

Kittredge also writes of his emotional torment wakening to ecological crisis following his discovery of Rachel Carson's *Silent Spring*. He writes:

*We were wrecking what we did not leave untouched. I felt enormously betrayed. I loved my work [of irrigating and ranching the valley] but learned to hate its consequences...the beloved waterbirds no longer came to Warner in great migratory flights. We had drained and plowed their marshy habitat. Our fields were increasingly lifeless. Bacterial life in the soils was poisoned by our chemicals and dying. We thought we were living the right lives....*

In *The Dream of the Marsh Wren* by poet Patiann Rogers, I eagerly sought substance that would shed light on why we do the work we do in natural resources. She writes that her experiences with her children often led to the writing of a poem. For instance, her seven-year old son rescued a baby bird, which she agreed to keep overnight and release the next morning. However, in the chaos of getting off to school, there was no time. During the morning, she put the cage in the yard and the father (a redbird) found the fledgling just before the cat did. Putting the cat in the car (the only safe place she could think of), she collected her son from school and together they released the baby bird. From that experience came the poem "Suppose Your Father Was a Redbird." The last lines are:

*If your father was a redbird,  
Then you would be obligated  
to try to understand  
What it is you recognize in the  
sun  
As you study it again this  
evening  
Pulling itself and the sky in dark  
red  
Over the edge of the earth.*

In *The Country of Language* by Scott Russell Sanders, the author writes about growing up poor in the rural south, winning a scholarship to an Ivy League college, and eventually becoming a writer. In the process he discovers his commitment to peace and opposition to war. Noting that he can't explain why he writes any more than he can explain why he collected words or why he begged his sister to "give [him] the secret of reading so soon after [he] learned to talk," Sanders does say that writing is his way of "asking questions, tracing the contours of feelings, thinking about what moves and troubles [him]." He concludes: "My reports of insight and memory and affection, the most frail and fleeting of things, had become durable through being shared."

Rick Bass's *Brown Dog of the Yaak, Essays on Art and Activism* was the least satisfying of this series. It may

just be my age, but strident activism of the type Bass espouses makes me really tired.

Bass's first essay centers on his dog, Colter, a German shorthaired pointer. In writing about Colter, Bass displays his view of the world:

*The best hunting was during  
the good years of the grouse...and  
like an assassin, your burning dog  
will creep forward, skittering and  
scooching, nose snorkelling the  
ground and the air in the blind-  
crazed scent-puffs, moaning with  
joy, knowing the birds are right  
there, and...he'll freeze midstep  
as solid as if cast suddenly in  
bronze, or in some substance  
more taut and dense than bronze.*

Bass also writes about his loss of Colter, following an out-of-the-ordinary car unloading at the front door, rather than the back, "...where he's [Colter] not allowed to come in." Hours after unloading the car, Bass heard "...one tremendous deep bay from Colter." After looking out the window and seeing nothing out of place, Bass assumed Colter would be back in the morning. The dog never returned. It seems much of this book was written to assuage Bass's grief over the loss of his good friend, Colter.

Some of the remainder of the book (remember the subtitle) reads like a constant harangue to save the Yaak Valley in northeastern Montana. While I believe deeply in conserving and protecting our wild spaces, I'm just tired of reading lists of reasons why this is important, especially when the only remedy proposed is to "write our Congressional representatives." I always get a little bothered, too, by writers who implicitly assume that he/she and his/her group are "us" while all civil servants are "them." I always hope that people will look beyond labels, and as a civil servant, I certainly don't feel like "them." I feel like one of the good guys.

These are all relatively short books, and lend themselves as "quick reads." If you can't tell yet, I liked most of them very much. I think they are all worth anyone's time, especially those of us who work in the natural resources professions.

## NEWS & NOTES

**Readers will notice the lack of any date but the year identifying this and future issues of Women in Natural Resources.** Over time, the publication dates of the quarterly issues of WiNR have slipped to a point that created confusion regarding the labeled date of the issue (ie. "Winter 2000") and the calendar date of publication (May 2000). However, this gradual change has *not* resulted in loss of any consecutive issues, and it leaves us with a satisfying situation; all four quarterly issues of the current Volume (21) will be published in the calendar year 2000. Volume 22 will be published in 2001, and so on. Publication dates are: Issue 1, February; Issue 2, May; Issue 3, August; and Issue 4, November. Subscriptions have always been based on Volume and Issue number, and so all subscriptions remain unchanged.

**The 19<sup>th</sup> Amendment, which gave women the vote, turns 80 in August 2000.** The amendment, held in the National Archives in Washington D.C., can be viewed on the web at <http://www.nara.gov/exhall/charters/constitution/19th/19amend.jpg>.

**Stand By Your (Wo)Man.** A married couple. Successful. The wife excels, gets promoted. Maybe a lot. The husband gets off the fast track. What's a 21<sup>st</sup>-century guy to do? Bond with others in a similar situation, for one. Bill Higgins, married to New York real estate impresario Barbara Corcoran, founded Spouseclub, an informal network of men with powerful, career-oriented wives. "What was lacking was the camaraderie that had existed in our working lives," says Higgins, a father of five, U.S. Naval Academy graduate, and veteran of Desert Storm. "There's an opportunity for men who are comfortable with themselves to make other men comfortable. They're not out to prove anything."  
-Jonathan Pont, *Working Woman*  
July/August 2000.

*Cont. on page 30*

Hilda Diaz-Soltero, photo dated 1981.



## Hilda Diaz-Soltero

Associate Chief for Natural Resources  
U.S. Forest Service

By Daina Dravnieks Apple

**WiNR:** Hilda, I'd like to begin with the background of your experiences as a person. You were born in Puerto Rico. You are the highest-ranking woman ever employed in the Forest Service. Before we get into the substance of your career, I'd like to talk a little bit about your personal life, your history, and your experiences growing up in Puerto Rico.

**Diaz-Soltero:** I am blessed with having been born into a wonderful family. My mother was a scientist. She had a Master's degree in biochemistry. My father is a lawyer, trained at Harvard. I was very blessed because my upbringing was outside some parts of our traditional cultural paradigm. When I was born in Puerto Rico in 1949, usually boys were educated and trained, and girls were raised to be homemakers and excellent wives. This distinction did not exist in my parents' minds. My parents valued education, public service and achievement. That is the environment in which I was raised.

I am a third generation of professionals dedicated to public service. Even the family members who worked in the private sector interrupted their careers for public service. My father did so three times in his life, first to be a judge, then Chancellor of the University of Puerto Rico at Rio Piedras, and for the third time,

INTERVIEW

**When you're blessed with opportunity,  
there is a responsibility  
to give back to the community.**

to be the president of the Puerto Rico Bar Association. My mother was Chancellor of the University of Puerto Rico at Humacao, and was also involved in many community activities. So, public service is a family tradition. When you're blessed with having the opportunity to be educated and to have many other fabulous opportunities in life, I believe that there is a responsibility and a commitment to give back to your community and to give back to others. Very early on, I learned important lessons from my father: that I must respect and protect nature, and that wild places and creatures ought to stay wild.

I'm trained as a scientist and as a manager. I earned degrees in geology and astronomy at Vassar College. In the honors program, you are required to do a thesis before you graduate. My thesis was on the San Lorenzo batholith, a geologic formation located in the southeast corner of Puerto Rico. I studied how lava had cooled off, its minerals, and the history of that batholith. I completed graduate studies on tropical ecology at the University of Puerto Rico. Later, I earned a Masters degree in wildlife, also from the University of Puerto Rico.

In between those degrees, in the early 1980s, I decided to change from a scientist to become a natural resources manager. I realized that I needed to better understand organizational management and how to effectively motivate and manage people for high performance. I had opportunities to study these topics at the Harvard Program for Senior Managers in Government, and the Penn State Program for Natural Resource Managers. Later, while at the Department of the Interior, I attended the U.S. Fish and Wildlife Service's Upper Level Management Training Program and the Department of the Interior's Advanced Manager Program. The latter is like the Senior Executive Service Candidate Program, but just for Interior.

**WiNR:** I'd also like to interject here that among the honors Hilda earned while she was at Vassar was Phi Beta Kappa and Valedictory of her Masters degree at the University of Puerto Rico. In addition to all your other accolades, you also won the highest academic recognition as well.

**Diaz-Soltero:** I see myself as a change agent. I have always been curious and have enjoyed taking on challenging situations. Also, I've always had jobs that I've

loved. I discovered very early in life that you should discover yourself, discover your passion, and follow it. When you do that and you can have jobs that you really love, then everything comes together - your knowledge, your interests, your commitment - and wonderful things follow. Magic happens. If I had one thing to tell other people, it is that they need to take the time to look within themselves and discover and nurture their passion. Life is too short to spend working on things that you do not care deeply about.

**WiNR:** You have tremendous focus. You avoid things that are distracting. Your heart leads you to focus, and then you bring your skills to focus.

**Diaz-Soltero:** And, if your heart is in what you're doing as a job, it's amazing! It's pure magic!

**WiNR:** Let's give people a picture of Puerto Rico. It's about 100 miles by 35 miles. It's an island of about 3.8 million inhabitants, most of who live around the perimeter of the island, because the interior is mountainous and very beautiful, but not very accessible. Please, I'd rather you spoke about Puerto Rico, since you know it better. Could you give us an overview of what the island looks like?

**Diaz-Soltero:** Taino Indians originally inhabited the Island. Christopher Columbus discovered it on his second trip in 1492. The island is volcanic, is on the border of the Caribbean plate, and is close to the second deepest point in the ocean. This area has the second highest earthquake activity in the United States.

Puerto Rico only has a thin band of flat land, not more than 10 or 15 miles wide, created by coral reefs. The island has gone back and forth under the ocean at various times in its geologic history. It has mountains up to 4,000 feet. There is heavy influence of the trade winds that blow over the Atlantic, and bring high humidity. There is a shadow effect from the mountains. Rainfall varies from 200 inches in the Caribbean National Forest to less than 15 inches in the southwest corner of the island. Twenty-three of the 27 vegetation formations that you find in Latin America are found in Puerto Rico. So, from a natural resources point of view, Puerto Rico is among the most geologically unique and biologically diverse places in Latin America.

**WiNR:** Will you explain the structure of government in Puerto Rico, and its relationship to the United States?

**Diaz-Soltero:** Puerto Rico is a Commonwealth. Federal legislation was enacted in 1952 that allows the country to

elect its own governor. It has a bicameral legislature, with a Senate and a House of Representatives. It also has a judicial branch and an executive branch of government. The process is similar to the way the system operates in a state of the U.S.

Puerto Rico is subject to final decisions of the U.S. Congress, which has ultimate power over Puerto Rico. The island has operated in a very, very democratic manner since 1952. There is a profound public interest in politics and government, and 96 to 97% of Puerto Ricans vote in an election.

**WiNR:** That's a voting rate that is twice as much as the continental United States.

**Diaz-Soltero:** It's a peaceful society. It's very democratic. Its roots are Hispanic, African, and Taino Indian. Spanish is the main language. English is taught as a second language to children starting in the first grade.

**WiNR:** How many children do you have?

**Diaz-Soltero:** Three: a girl and two boys. I started my career in my late twenties, after having been with my children at home for seven years. I was very, very fortunate to be able to spend their early years with them. Then, my career started as my youngest one went to school. We had parallel paths, between his education and my career. I started working at the University of Puerto Rico Botanical Garden in landscaping, as the Superintendent of the garden.

**WiNR:** That's the location of the U.S. Forest Service International Institute of Tropical Forestry, in Puerto Rico.

**Diaz-Soltero:** Right! What a coincidence! While I was Superintendent, I wanted to create a garden of the native plants of Puerto Rico. A colleague said, "You should really do that only after you've studied the tropical ecology of this island." And that was the beginning of my graduate education in tropical ecology. I eventually earned thirty credits in that field.

After a couple of years, I began work with a relatively new agency, the Recreation Development Company. I was hired as a special assistant to the director. I had three tasks there; the first was to create a landscaping division. We were getting ready for the Pan American Games, so I developed a nursery that could produce 860,000 plants a month. I also organized 400 staff - all men. I was the only woman. We had 16 brigades that planted the existing 3,200 parks and the new facilities that were being built for the games.

## **My first mentor saw in me a lot more than I had realized about myself.**

The second part of that job involved close work with my first mentor, Dr. Joe Barbosa, a philosopher and the Director of the Recreational Development Company, as well as the Administrator for the Parks and Recreation Administration. This man saw in me a lot more than what I had realized about myself at such a young age. We had zero-based budgeting, so Dr. Barbosa and I would sit down and we would dream about what we wanted that agency to be. He taught me about strategic thinking and linking what you want to accomplish in an agency with how you put your budget together. Then, the budget director and I would work through all the details. The third part of the job was my writing the first draft of Dr. Barbosa's testimony as agency Director to the Puerto Rico legislature. This helped me understand the linkages between the executive and the legislative branches of government, and how and why those two branches need to look for ways to work together.

**WiNR:** What did you do after working for the Recreation Development Company?

**Diaz-Soltero:** After the Pan American games, we worked on legislation, and the Legislature established the Puerto Rico Sports and Recreation Department as a Cabinet-level agency. Dr. Joe Barbosa was selected as the Department Secretary and he appointed me as his Deputy Secretary. That was the watershed moment at which I made the decision to go into management, and not focus my career solely as a scientist.

I was Deputy Secretary for just nine months. Then the Governor asked me to become the Secretary of Natural Resources for Puerto Rico. The DNR is an extraordinary agency. The legislative framework in Puerto Rico is very comprehensive, and the DNR is responsible for all natural resources. It is as if you took from our federal government the entire Department of the Interior, the Forest Service and the Natural Resources Conservation Service from Agriculture, the Corps of Engineers in the Department of the Army, and the National Marine Fisheries and the National Ocean Service from the Department of Commerce, and you put them under one umbrella. So, the DNR in Puerto Rico has responsibility for all the natural resources of the island: endangered species, coastal resources, mineral resources, water resources, plants, wildlife, fisheries, the whole gamut.

**The Governor had three female Cabinet members... quite extraordinary.**

I was 31 years old when I was selected to be a Cabinet member. I think I was the youngest Cabinet member in the history of the island. I was one of the women pioneers. There was just the Secretary of Treasury, the Secretary of Education, and myself. That was the first governor who had three females as Cabinet members - quite extraordinary. It was a tremendous opportunity. It was the first time that a natural resources professional had had the opportunity to serve as Secretary of the DNR. It was a fabulous, fabulous thing. That was in 1981.

**WiNR:** You were probably quite a bit ahead of the United States in terms of appreciation of competent

women's abilities. We are moving toward it, but from what I know of Puerto Rico, women are amazingly powerful and very much included, and have been for a long time. In a small society, you have to use more of the people, more of the resources. So, if you shine, they want you.

**Diaz-Soltero:** Some of my top priorities during those four years at the DNR included endangered species conservation, environmental education, and forestry. We had almost no forestry program when I began. With the help of the U.S. Forest Service (Max Peterson, who was then the Chief of the Forest Service; and Jack Alcock, who was Regional Forester in Atlanta - Region 8) we made enormous strides in forestry.

We were able to accomplish many things. For example, we expanded the system of Commonwealth forests. We established a program for reforestation and provided technical assistance to private landowners so

Hilda Diaz-Soltero (right), Secretary of Puerto Rico's Department of Natural Resources, at the signing of a bill to purchase land and expand Puerto Rico's system of protected areas, in 1982. Carlos Romero-Barcelo, Governor of Puerto Rico, is signing the bill. At left is Carman Ana Culpepper, Secretary of the Treasury, Puerto Rico.



they would plant trees and start using timber. We focused our efforts on the watersheds that needed the most restoration so that we would avoid excess sedimentation to our rivers. We were able to expand the network of recreational facilities so that people would get to know their forests and enjoy them. We established a forest supervisor position with a technical staff and field workers in each one of the forests of the system. We also expanded law enforcement.

**WiNR:** How many Commonwealth forests are there in Puerto Rico?

**Diaz-Soltero:** At that point there were 13.

**WiNR:** Did you protect more natural areas?

**Diaz-Soltero:** Yes. Additional lands were added to the network of protected areas. At the end of my tenure with the DNR, we had 4% of the land in Puerto Rico protected. On a tiny island that's 100 miles by 35 miles, that's quite a lot.

During my tenure at the DNR, endangered species conservation was also a very high priority. We wrote legislation and regulations to protect endangered species in Puerto Rico and, as a result, the U.S. Fish and Wildlife Service delegated authority to the DNR for an endangered species conservation program. We established pro-active conservation policies for forests, fish, wildlife, water, soils and minerals. We established the first environmental education program. We created a Natural Heritage Program to identify biodiversity and protect lands of extraordinary ecological value. In only three years, we were able to increase the agency's budget from \$9 million to \$39 million. We worked intensely on the Puerto Rican Parrot, the Puerto Rican Plain Pigeon, the West Indian Manatee, endangered sea turtles, the Brown Pelican, and other species. Dr. Jose Vivaldi was the Endangered Species Coordinator for the DNR.

### **I changed my focus to the international arena.**

With the change in administration, I then changed my focus to the international arena. In 1986, I started working for The Nature Conservancy as Director of their conservation programs in Ecuador, Paraguay, and the Caribbean.

About a year after that, the whole international group of The Nature Conservancy became a different entity called Conservation International Foundation. When that occurred, I was tapped to be their Director of Conservation. I was overseeing all the Latin American

programs within Conservation International. We were working in 11 countries from Mexico and the Caribbean to Paraguay, and established a scientific basis for conservation and strengthening institutional capacity for sustainable development, natural resource management, and protection. We had program directors for and from each specific country.

We had a three-pronged approach. We first pulled together the scientific knowledge and the people who had this knowledge, so that each country could identify the biodiversity that they had within their borders. That was quite a challenge at that time because some of the Latin American countries had very few technical people trained in botany, wildlife biology, or forestry. Also, this scientific information was often in botanical gardens or academic institutions in Europe or the U.S., but not necessarily in the Latin American country. We created what we called "conservation data centers" to collect this information.

Once we had identified the hot spots of biodiversity, the second part of the approach was to help the government design, what they call in Latin America, "national parks." They would be the equivalent of a national wildlife refuge, a national forest, or a national park in this country. We helped identify the boundaries of those land areas and then helped the government designate them as parks and protected them. We also helped governments establish the organizational structure and the technical expertise they needed to start managing those parks.

The third part of our effort was to identify an existing organization in the non-governmental sector, or help create one, with the purpose of sharing the fundraising skills that we had. These organizations would learn how to raise funds for their organization within the U.S. or internationally to help sustain the protected areas designated by their country government.

**WiNR:** Did you encounter any resistance to the fact that you were female in what used to be a traditional male field?

**Diaz-Soltero:** I would call it more surprise than resistance. Puerto Rico was farther ahead in having women in very senior positions. When I started doing my work in Latin America, there were very, very few women working in senior positions in the private or in the public sector. Yes, there were some eyebrows raised when I walked in and people saw that I began to deal with the ministers, the presidents, and the conservation leaders in those countries. But it's amazing how quickly any gender issue seemed to disappear and I was quickly accepted. They saw that I was there with a positive attitude to try to share

the knowledge we had in The Nature Conservancy or in Conservation International, and that I was there to try to help. That was very exciting work on the international level. Being a Latin woman helped me connect very quickly and establish relationships.

So the initial surprise vanished very quickly. I never saw that as a problem. Obviously, you have certain ways of behaving as a woman in Latin countries, and I observed those customs as well. But there was no resistance.

**In 1987,  
I began federal service  
directing the Caribbean Field Office.**

After four years in the DNR, that agency had been strengthened by my presence. The Puerto Rico Conservation Foundation had been created as a result of my work in Conservation International. In Puerto Rico, there was a strong state presence in natural resources, and a strong non-governmental presence.

So, it was time for a new challenge. The U.S. Fish and Wildlife Service recruited me, and I began federal service in 1987 as Field Supervisor of their Caribbean Field Office. It was a small office, just five of us and an annual budget of about \$350,000. By the time I left three years later, we had programs in endangered species, Puerto Rican Parrot recovery, wetlands conservation and regulation, conservation education, contaminants, research, and Federal Aid grants to Puerto Rico and the Virgin Islands. The office had 24 professionals and a budget of several million dollars.

I was the Puerto Rican Parrot Coordinator. The Puerto Rican Parrot Project is part of the U.S. Fish and Wildlife Service because the parrot is an endangered species. The Service has a coordinator for each one of the flagship species. The effort for the Puerto Rican Parrot included the resource management side of the U.S. Fish and Wildlife Service and the Patuxent Research Center in Maryland, which was doing research for the recovery of the species.

**WiNR:** Is that parrot species located on the Caribbean National Forest?

**Diaz-Soltero:** Yes, in the Luquillo Mountains. Species recovery was a collaborative effort with the U.S. Forest Service, because the Caribbean National Forest is the only habitat that the wild flock of parrots uses now. The parrots used to be a lowland species, but as the island became more developed with agriculture, and human encroachment expanded, the birds flew up to the moun-

tains. And now, we have them only in the Caribbean National Forest. Employees of the National Forest would observe the wild birds using blinds. Their efforts helped avoid parasitization of wild parrot nests by other birds. They managed the habitat. Scientists from the Institute of Tropical Forestry, which is part of the research side of the Forest Service, were looking at research questions particularly related to habitat for the species.

Three major contributions to the Puerto Rican Parrot program by the Puerto Rican DNR were: first, the DNR established an interagency cooperative agreement where for the first time, the Commonwealth participated in the recovery of the species in cooperation with the U.S. Forest Service and the U.S. Fish and Wildlife Service; second, Dr. Jose Vivaldi learned about the use of special Nogel bird cages (larger cages where birds could perch higher and feel more secure) that were extremely important for successful breeding of captive parrots; and, third, the DNR funded the design, construction, and operation of a second aviary for the captive propagation of the Puerto Rican Parrots at the Rio Abajo Commonwealth Forest.

One of my most memorable experiences was working through Hurricane Hugo in 1989. It was a devastating hurricane for wildlife throughout the region. In Puerto Rico, we lost half of the wild flock of 47 parrots. We had censused these birds, and we knew them. Each one has a distinctive red mark over its beak. Some even had names.

**WiNR:** That's a very small total population from a viewpoint of genetic diversity.

**Diaz-Soltero:** Very small. We also had some captive birds in an aviary, where we were working on propagation. That was quite a challenge.

After the hurricane passed, we immediately started doing population surveys of the wild flock of parrots. We lost two of the wild breeding pairs and another bird from a third pair. But, within a year, there were six breeding pairs newly established; the one who lost its mate had re-mated. The wild population took off again. It was a major effort with very strong collaboration among all the Federal and Commonwealth agencies.

We were blessed by the fact that the Secretary of the Interior was in Puerto Rico right after the hurricane. When there is a disaster, the President designates one Cabinet member to head the initial team that goes with the Federal Emergency Management Agency (FEMA). Interior Secretary Manuel Lujan was designated for Hurricane Hugo. I had been doing parrot surveys that morning, and I was covered with mud from head to toe.





Hilda's first day as Secretary of Puerto Rico's Department of Natural Resources, April 15, 1981. From right to left: Bob Pace, Endangered Species Biologist with the U.S. Fish and Wildlife Service Caribbean Field Office; Tito Chabert, wildlife expert, Department of Natural Resources; Dr. Jose Vivaldi, Director of Terrestrial Ecology Research, Department of Natural Resources; and Hilda Diaz-Soltero surveying Luganas de Humacao, site of high value for fish, wildlife, and wetlands, and the subject of a lawsuit against the DNR.

My only uniform was my U.S. Fish and Wildlife Service cap. I had taken the time to sit down, though, and estimate what it would really take to put the parrot program back in shape. When the Secretary came through, he asked all the Department of Interior agency personnel what kind of damages they had.

**I got the memo to Secretary Lujan...  
and it resulted in the first use  
of FEMA emergency funds  
for the recovery of an endangered species.**

When he came to me, I said, "I have a species that is on the brink of extinction. We have counted them, and we have lost half of the wild Puerto Rican Parrots."

He said, "Do you know what you need?"

I replied, "Yes, sir. I need \$2.3 million." He was surprised. It had been less than 48 hours since the hurricane. He was surprised I had a number.

He asked me, "Is there a possibility that you could have the details of that in my office?"

I said, "Sure. By tomorrow morning, you'll have it." I called Atlanta and the U.S. Fish and Wildlife Service Assistant Regional Director sent a memo signed on my behalf. My efforts resulted in the first time FEMA emergency funds were used for the recovery of an endangered species. We got \$2.3 million. Those funds were shared among the Forest Service, the U.S. Fish and Wildlife Service, and the DNR. It gave a huge infusion of resources, both human and economic, to the parrot recovery effort.

The parrots are doing a lot better now. It's amazing! They certainly have adapted to those incredible cyclical events of hurricanes in the tropics.

**WiNR:** I recall discussion when I was in Puerto Rico, about the viability of such constantly declining species; especially the effects of cyclical catastrophic events, and how viable these species are, and how long will they survive. These questions are not easy to answer. It's almost like we've tried to sustain these declining species just above extinction and manage each catastrophic event. With each hurricane, we get decimation. Yet so far, they

are hanging on. In your professional opinion, what is the future viability of the parrot?

**Diaz-Soltero:** I have much hope that the parrot will be viable. When I was at the DNR with Dr. Jose Vivaldi, we were able to establish a second aviary in the Rio Abajo Forest at a much lower elevation in Puerto Rico. The parrots just love that kind of environment. That aviary has been very successful, even more successful in the reproduction of the parrots than the first aviary at the Caribbean National Forest.

**WiNR:** Was that their original, preferred habitat before encroachment?

**Diaz-Soltero:** That's right. The Caribbean National Forest, at a higher elevation, is a sub-optimal habitat with a cooler, wetter climate, whereas in the Rio Abajo Forest, it's warmer, and drier; and the parrots prefer those conditions. That has been very positive for the recovery of the species.

In the last three years, they have been doing some experiments with parrots in Santo Domingo, learning how to release Hispaniolan parrots into the wild. A release of 10 Puerto Rican Parrots occurred June 2000 in the Caribbean National Forest using the same techniques researched by Dr. Jamie Collazo in Santo Domingo. In the future, there is the opportunity to start a second population of Puerto Rican parrots in the Rio Abajo Forest, and with that we can increase the population of the wild birds.

**WiNR:** Are the parrots less prone to parasitism and other diseases in a drier environment?

**Diaz-Soltero:** It still occurs.

**WiNR:** Is there sufficient habitat, once the increase in individual numbers, considering the island is now extremely densely populated with humans?

**Diaz-Soltero:** No, I don't think that right now there's enough protected habitat for the parrot, even when you take together the Commonwealth forests, the national wildlife refuges, and the federal forest in Puerto Rico. So, more habitat protection is for the future. We need to protect habitats that can sustain the parrots. There are lands that were originally used for agriculture, were abandoned, and secondary forests are coming up. I see a big opportunity to protect these areas for the parrot and other wildlife species, and also for water protection. The Puerto Rican Parrot is the symbol of Puerto Rico, so you

have a huge commitment by the people of Puerto Rico to save the birds.

After three years in the Caribbean Field Office of the U.S. Fish and Wildlife Service, I moved to the Great Lakes Region, to the regional office of the Service in Minneapolis, Minnesota. The region covers eight Midwest states. I was Deputy Assistant Regional Director for Ecological Services. I oversaw the regional staff that took care of endangered species, contaminants, wetlands protection and mapping, and wetland regulations.

After three years in that job, I moved laterally within the agency to be the Deputy Assistant Regional Director for Fisheries and Federal Aid. I was responsible for working on restoration of lake trout in the Great Lakes, the largest native fish restoration program in the nation. Our efforts resulted in fish with better survival opportunity after stocking. I was also responsible for collaborating with states and Native American tribes in fish restoration, and working on fish and stream restoration of three great rivers: the Ohio, Mississippi, and Missouri Rivers.

### **It was the National Marine Fisheries Service that gave me the opportunity to join the Senior Executive Service.**

It was the National Marine Fisheries Service that gave me the opportunity to come into the Senior Executive Service. I joined that agency in 1994 as the Director for the Southwest Region, which covers California, the Pacific islands, and all the international programs along the Pacific Rim.

The NMFS deals with marine habitat issues, fisheries management, as well as endangered species issues in the part of the ocean under Federal jurisdiction, which is the 3- to 200-mile band of waters off our coasts. That job also included international work with Latin American countries. We share the tuna fishery in the Eastern Tropical Pacific, where the issue had been the demise of many dolphins. We were trying to lower the number of dolphins killed as the fishermen catch the large tuna. I also worked with other large fishing countries concerned with the distant deep-water fisheries in the Pacific.

After two and a half years there, I came back to Washington, D.C. in 1997 as Director of Protected Resources for NFMS with responsibility for supervising the national program for endangered species and marine mammals. We dealt with listing marine and anadromous fish species under the Endangered Species Act and their recovery programs. For example, we worked with all

turtles, salmon, the right whale (of which there are fewer than 300), and the monk seal in the Hawaiian Islands. We were also responsible for protecting all marine mammals, such as dolphins and seals.

The first year on that job I focused on the reauthorization of the Endangered Species Act. I was the senior person in the agency working on this issue. In collaboration with the U.S. Fish and Wildlife Service and members of Congress, we worked on the Kempthorne-Chafee Bill. Although that bill never got enacted, it was an opportunity to try to find a way to reauthorize the Endangered Species Act, looking to keep the strength of the Act and at the same time, modify some of its aspects.

**I'm honored to be the first woman...  
the first Hispanic...  
the first one from outside the  
agency to be Associate Chief for  
Natural Resources.**

I joined the Forest Service in July 1999. I am the Associate Chief for Natural Resources. I am honored that Chief Mike Dombeck has given me the opportunity to serve in this position. I feel a huge sense of responsibility. It's a fabulous opportunity to join the largest, and one of the finest, conservation organizations not just in the federal government, but in the world. This is an organization with proud traditions. It has incredibly valuable employees who have great and diverse knowledge. The agency has been able to face changing and challenging times and incorporate new information based on science. The Forest Service is in the process of modifying how it manages the landscape. We are looking at it holistically; not just from a biological point of view. We are examining our relationships with communities and with private landowners and creating opportunities for new, strong partnerships so that we can take an ecosystem approach to our conservation efforts.

My portfolio is the natural resources programs. Right now I'm focused on the National Forest System and the research programs. I work with the Deputy Chief for the National Forest System, Jim Furnish, on many issues. My portfolio also includes research, so I work with Dr. Robert Lewis and the research station directors as well.

I'm excited about the job. I'm honored to be the first woman, the first Hispanic and the first person to have been brought from outside the agency to occupy this position.

**WiNR:** You are the highest-ranking woman ever in the Forest Service. We are lucky to have you.

**Diaz-Soltero:** I'm honored to have the trust of the Chief and of the Forest Service. In terms of how I look at my job, this first year I'm committed to visiting all the regions and research stations. I want to see what's happening in the field and to fully understand the regions and the stations, programs, priorities, successes and challenges. I am conducting joint trips: a week for each region and research station, including visits with each regional forester and science director.

We tour the region, learning about the programs, and identifying the difficult issues that they're working on. We try to visit the field and see some of the projects on the ground. I have to tell you that I'm totally impressed by the enormity of the work that is being done, as well as the quality of the people and the challenges that they are facing. Forest Service employees have a great organization to be proud of, and we have a lot of work to do.

My typical day involves budget work, either the current budget or looking for additional resources in future budgets, to get the job done in the field. I'm involved in developing the Forest Service Recreation Strategy, which we're putting together with stakeholders so we can give a boost to that program. I also focus on the national leadership team of the agency and on our priority issues.

**WiNR:** Regional Foresters and Station Directors convene periodically with the Washington Office staff directors and upper level management.

**Diaz-Soltero:** That's right. We have teams responsible for tracking each issue. I get involved in research issues, and in National Forest System issues. I provide a link to the issues for the business side of the house. My colleague, Chief Operating Officer Phil Janik, works from a business point of view, and deals with budgets, human resources, strategic planning, and financial accountability. Phil and I work very closely together on policy analysis and legislative affairs. Whenever things happen on the natural resources side of the agency, they need to be linked to the business side.

I work with forest inventories, like the Forest Inventory and Assessment, or the Natural Resources Inventory System. I am very much involved in trying to integrate the science and the management sides of the Forest Service. It's very, very important that we conduct that integration, because our management decisions are scientifically based, and there is an ever-increasing need for more scientific information. Additionally, I get involved in selecting, mentoring, and training the next generation of leaders. It's succession planning.

Another important issue I work on is the proposed Roadless Area Conservation Rule. I'm the senior person overseeing the interagency aspect of this issue. This involves an extensive process in which we have established communication with the American public, to hear their desires as to how they want us to manage the inventoried areas of the National Forest System that do not have any roads in them. What management options are there? Should we allow more roads in them or not? What kinds of management activities should we allow in those roadless areas? We've started the process that will result in a Final Environmental Impact Statement and a regulation. The public is providing comments at more than 400 public meetings across the country, over e-mail, and through regular mail and we are listening to their input. We will analyze all the public comments, and then write a final Environmental Impact Statement on how we're going to manage those areas for posterity. The release of the final EIS is planned for December 2000.

**WiNR:** This is an extremely sensitive and controversial undertaking, but not the only controversial one that you

may have. The Forest Service is no stranger to competing values and competing wishes, when you manage the richest natural resources on the earth, with such great diversity. Everyone wants a piece of it, and as a democracy, we have to give everyone a chance to express that. How do you envision coming to terms with the turmoil that has resulted from changing public needs?

**Diaz-Soltero:** There has been a change in society's values. At the beginning of the century, more people would have thought of using the forest for either protecting important watersheds, or for timber. That's why the Forest Service is in the Department of Agriculture. Timber was seen as a commodity and as a crop. We are seeing a change in society's values in which people recognize other uses and values for their national forests. They want the forests for solitude, personal renewal and recreation; for supporting abundant fish and wildlife; to see naturalness in the landscape; and to provide choices for future generations. And yes, the forest is still for producing timber and clean water. These new, human-dimensions-related values are competing with traditional

Hilda Diza-Soltero working at Conservation International overseeing land and biodiversity conservation programs in 11 Latin American countries. Photo dated 1987.



uses, like timber harvest. The agency is right in the middle of that discussion, and is looking for ways to balance the different uses and values while incorporating sound scientific management practices.

**WiNR:** When you have an entity and everyone wants a piece, how do you conduct ecosystem management, which concerns the whole entity, and make wise decisions?

**Diaz-Soltero:** That's the challenge. We have to try and define the ecological boundaries. What can the earth take, from an ecological point of view? Then, within those parameters or boundaries, how do we allow for the maximum social and economic use in a sustainable way so that future generations will have choices as to how to use those resources? This rather complex and difficult discussion is being held right now in the public arena.

### **I think we need to focus more on conservation education.**

There are some programs that I think should be emphasized because of this change in social values. We need to be more into environmental and conservation education. We need to better understand the full gamut of human dimension issues and values on our national forests and grasslands. I think that our research groups have to do more social and economic research, so that we understand the people who are using the national forests, what they expect from the national forests, and then we need to decide how that can be provided for in a sustainable way within the ecological boundaries of the ecosystems. We need to do extensive and creative work on partnerships with other federal, state, and local community agencies; non-governmental organizations; Native American tribes; educational institutions; corporations; and other entities. We need to find better and more effective ways to communicate with the public, facilitating effective two-way, meaningful communication.

We are going to continue to do more work on ecosystem management and sustainability of all forest resources, including fish, wildlife, water quality, and so on. I think we're going to start seeing some of our federal lands become refugia. As some of the private lands are exploited intensively, there may be no other place for fish, wildlife, and other species to be maintained but on federal lands.

**WiNR:** Some people believe we already have such refugia. Then, the question becomes, how much can the federal agency responsible for management of the refugia really sustain the habitat needs of a species, when the

habitat extends beyond the borders of the federal lands. It becomes a question of biology as well as politics.

**Diaz-Soltero:** Federal agencies have a higher burden of responsibility for these species within our lands. This is clear policy. But for these species to survive, we need to engage more often in collaboration with private landowners and state agencies. That's a huge experiment we're seeing in parts of the United States, like in the Northwest, the Midwest, and in the South.

I also think we will see additional program growth in recreation. More and more people are discovering the natural areas, and they are going to demand more types of recreation and more visitor days from our facilities.

I think we're going to see a big increase in focus on water conservation. Water will be the limiting factor for this society. That's very well known in the western region of the United States, but it's becoming more and more evident in the East as well. We need to manage our forests for increased water quality and quantity, and we need to increase our conservation education and outreach efforts to the public regarding water conservation.

### **I learned about environmental activism from Frank Wadsworth, and it was Frank who first challenged me to take on the task of being Secretary of Puerto Rico's Department of Natural Resources.**

Mentors have been very, very important in my career. As I previously stated, my first mentor was Dr. Joe Barbosa, the Secretary of Sports and Recreation in Puerto Rico. My second mentor was Dr. Frank Wadsworth. Frank was the Director of the Institute of Tropical Forestry. He is a scientist, forester by training, and he directed the ITF for more than 50 years.

**WiNR:** He's an institution.

**Diaz-Soltero:** He certainly is! He's been in federal service for 63 years. Frank is the authority on tropical forestry.

**WiNR:** He wrote the book, literally.

**Diaz-Soltero:** I met Frank through the Puerto Rico Natural History Society. Frank was always an inspiration on how to work with citizen organizations, which would, in turn, get involved and challenge the different parts of government, so that we continuously evolve and improve.

I learned that part of environmental activism with Frank in the Natural History Society. Frank was the first one who really helped make me aware of my strengths and abilities that contributed to my success as the Secretary of Natural Resources. I still remember the day.

Dr. Jose Vivaldi, Dr. Frank Wadsworth, Roy Woodbury, and I were out in the field, looking for the endangered violet tree. There was going to be a change in the Secretary of the DNR, and I remember Frank just stopping in his tracks, turning around, and saying, "Hilda, you should be the next Secretary of the DNR. Would you do it?"

I was honored, but more than anything, surprised! I remember asking him, "Do you think I can do it?"

And Roy Woodbury, who had been my professor in most of my ecology courses at the University of Puerto Rico, then said, "Sure, you can! You would be a great Secretary of DNR."

"Well, if I'm given the opportunity, I'll do it!" I answered. And that was the first time anybody ever said anything like that to me. Sure enough, it happened about a year later.

Another important mentor was Roy Woodbury. Roy has an encyclopedic knowledge of ecology, botany, and taxonomy of plants in Puerto Rico. Roy and Dr. Jose Vivaldi both taught me a lot about the ecology of the island. I discovered all these wonderful things that were happening right in my backyard, in my little island.

Lastly, John Christian has also been a mentor. He is a colleague in the federal government. He has helped me understand what the federal system was about, how it worked, and how different it was from the way that I had operated in the DNR or in the international arena.

I've been blessed with people who have taken the time to share their knowledge with me. These people discussed with me who I was. They helped me hone my strengths, and helped me identify what things I still needed to learn to do a better job and to grow professionally. That has proven invaluable. I'm very committed to trying to do the same thing with others for the next generation of conservation leaders.

### **Yes, I see myself as a role model... and it's a huge responsibility.**

**WiNR:** Do you see yourself as a role model? It sounds like you do, and that you have functioned as one.

**Diaz-Soltero:** Yes. I see myself as a role model for natural resource managers. I see myself as a role model for women. And I see myself as a role model for

Hispanics. If I fail, it's not just Hilda that fails. It's symbolic. That's a huge responsibility, but at the same time, I feel so fortunate to help others in this profession.

**WiNR:** I think you have incredible energy and passion, which I recognized the first day I met you. I knew you would make a very inspiring and capable leader, coming with a lot of substantive background. In this busy, frenetic town, and with your high-level, responsible position, do you find time for a personal life, personal reflection? What are some of your hobbies? What do you do for fun? I know you enjoy your job. What else?

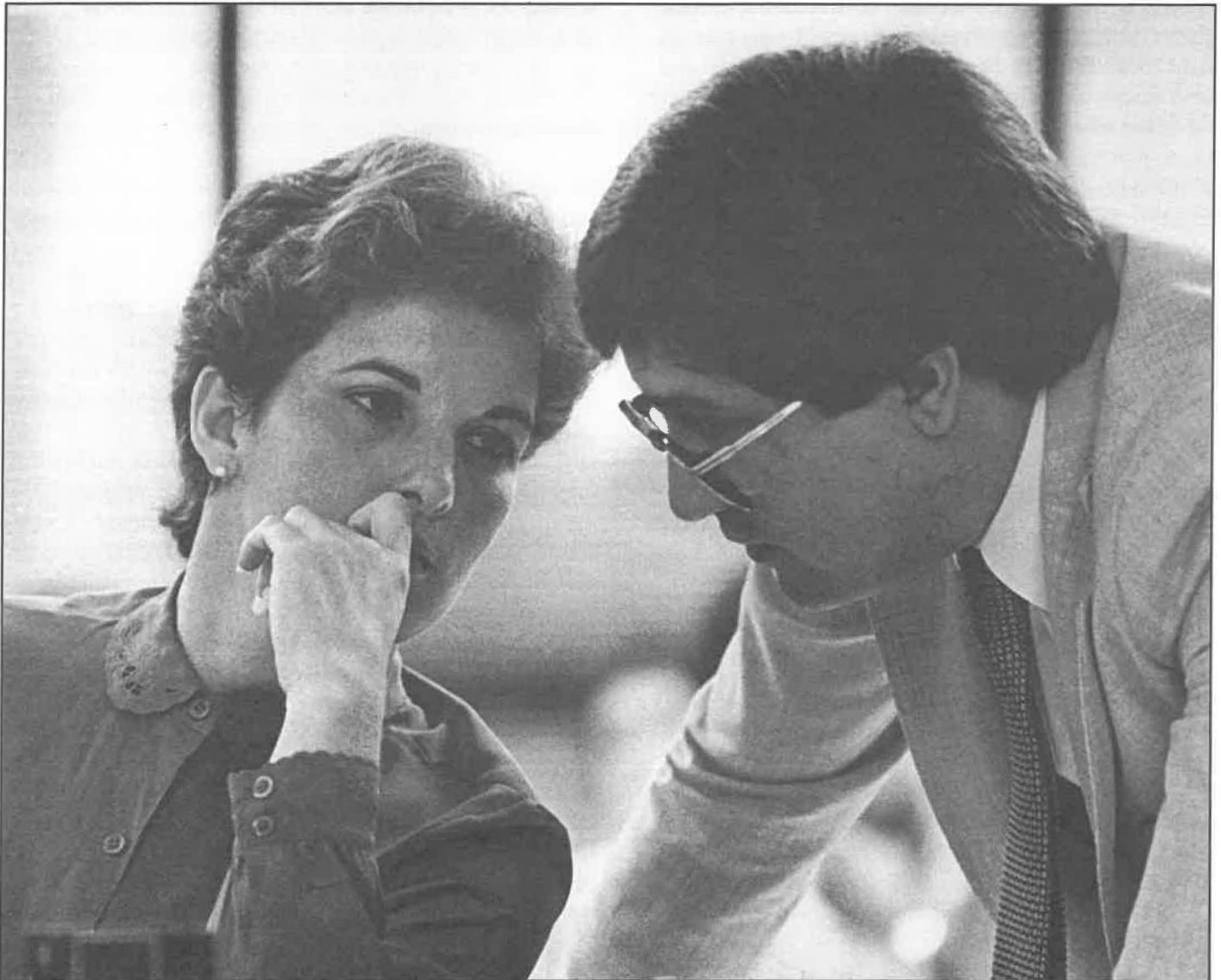
**Diaz-Soltero:** I love classical music. I love walks in nature. I love spending private time with family and close friends. Part of my problem is that I love too many things! I love to read. I read a lot about my profession because it's fun for me. I don't find it a chore to pick up a natural resources book and read it. It's fun and it's joyful and I am curious about what is being written on this topic. I feel very, very fortunate to have the opportunity to serve in a position to which I am deeply committed on a very personal level; where I feel that I can be making a difference; and be so much alive with what I'm about. It's a wonderful thing.

### **Management of natural resources evolves as our scientific knowledge base changes.**

**WiNR:** What future do you see, based on your insight and experience?

**Diaz-Soltero:** We have a continual learning experience in natural resources. The scientific knowledge we had to manage natural resources in the 1920s was not the scientific knowledge we had in the 1950s or in the 1980s, and it's not the knowledge we have in 2000. Part of the change and the evolution in the management of natural resources comes because of the change in the knowledge base that we are using to make decisions.

We took a species approach for many years. Only in the last decade has there been a recognition that you have to take a systems approach, and start looking at the whole ecosystem. We have to face the reality that we cannot just manage the pieces of land that are under the management responsibility of one particular agency. If you're a state DNR, it takes more than managing your state forests; you have to manage the whole ecosystem. Or, if you're a federal Forest Service, it takes more than managing your National Forest System. You have to manage the whole ecosystem.



Hilda Diaz-Soltero, Secretary of the Department of Natural Resources, Puerto Rico, with attorney Luis Davila-Colon discussing the violations of environmental laws in Vieques, Puerto Rico. Photo dated 1983.

We have started to recognize how much more complex the issues are. Before we could focus on just forestry. Now it's forestry, wildlife biology, hydrology, soils, global change, demographics, social value changes, and major economic transformations in the United States, among others. All of those things are affecting us. You have to have interdisciplinary teams that include more than just the physical sciences or the natural sciences; it takes the social sciences as well. We need to manage human dimensions in concert with the natural ecosystems. Ecosystem management must include the people and their values.

Another challenge is that we are now in a global society. So, what happens with one particular resource is more than what happens in just one region or in one country. You have international implications and this must be taken into account.

All of those factors place all of the natural resource agencies into a continuum of evolution. It would be naive to think that we can go back. We cannot go back to managing the way we did at any time in the past.

**I have observed a convergence among the approaches different federal agencies apply to their work; they are all focussing on an ecosystem approach.**

You were curious as to whether I found a difference in working for the Forest Service and some of the other agencies in my professional past. This dovetails with some of what I just said earlier. Initially, the U.S. Fish and Wildlife Service was created to deal with

hunters and recreational anglers. The National Marine Fisheries Service was created to deal with commercial fishermen. And, the Forest Service was created to deal with timber production and protection of the watersheds for water production. So initially, these agencies may have started at quite different points. However, because of the evolution of scientific knowledge, and the recognition that we have to manage whole ecosystems, and the genuine understanding that everything is interrelated, they are converging. I find that the kind of intellectual knowledge and the kind of approach to work that I used as a U. S. Fish and Wildlife Service employee seven to twelve years ago, as a National Marine Fisheries Service employee one to five years ago, and now as a Forest Service employee, are incredibly similar. Each agency still has their own mandate, but each one is trying to take a greater ecosystems and partnerships approach to what they do.

**WiNR:** Will you speculate, then, about the logic and feasibility of unifying natural resource agencies into a Federal Department of Natural Resources?

**Diaz-Soltero:** One can see that there would naturally be a lively discussion about putting diverse agencies under one umbrella agency.

**WiNR:** How much progress do you think has been made in terms of increasing diversity (gender, racial, other kinds) in natural resource management? What will be the impact of an increase in the number of women working in these fields?

**Diaz-Soltero:** There has been a significant increase of women in natural resource management. Today, usually half of the universities classes are women, so this is a good sign for the future. We have not been as successful in increasing the number of people from different racial groups: Hispanics, African Americans, Asian-Pacific Islanders and others. All agencies and organizations should continue to increase their efforts in attracting diversity of all kinds to their workforce. This will give the organizations strength because they will get a diversity of ideas and approaches on how to address natural resource issues. These new, diverse people will be able to communicate natural resource programs to an ever wider group of communities of place or communities of interests. America is changing, and by increasing diversity in the workforce, organizations will be able to communicate and recruit new citizens that care about natural resources conservation.

**WiNR:** I think you are quite an asset to the Forest Service, providing high-level leadership diversity. We have been struggling to become more diverse throughout the agency, and you are bringing that perspective very powerfully to bear.

**Diaz-Soltero:** I think that agencies will benefit from being open and hiring people from other places, because each one of us has a unique set of tools and experiences. When I am faced with a problem here in the Forest Service, I can think back and say, "Is there something I did in the DNR that can help me here? Is there something I learned in the non-governmental sector? Is there something I learned in the U.S. Fish and Wildlife Service or NMFS?"

I also think that all agencies would be enriched if they were more open to hiring people from different walks of life than just the natural resources arena. There are many, many different career paths that could apply to the successful management of natural resources. This enriches the discussion around the table. Hopefully, when you bring other perspectives to bear, you can arrive at 'best' decisions and best approaches to problem solving. It's worked for me.

My greatest hope is that I can contribute my expertise to the Forest Service and help leverage the agency so it will be a world-class agency for the conservation of natural resources and for the American people well into the future. It's wonderful to work with the people of the Forest Service. I'm really honored to have the opportunity to join the Forest Service.

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*She is active in the Society of American Foresters and is Chair 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. She is a graduate of the University of California at Berkeley, where she earned a B.Sc. in the Political Economy of Natural Resources and an M.A. in Geography, and is currently in the Environmental Science and Public Policy Ph.D. program at George Mason University.*



# PEOPLE

## **Bertha Gillam New Associate Regional Forester**

Bertha Gillam was named Associate Regional Forester of the Pacific Southwest Region, U.S. Forest Service in March 2000. At the time, Gillam was Director of Range Management in the agency's national headquarters in Washington D.C.

Gillam joined Regional Forester Brad Powell in having overall responsibility for fish and wildlife, recreation, timber, lands, minerals, geology, engineering, grazing, soils, planning, internal administration and firefighting for the region's 18 national forests, which cover one-fifth of California. The region also has authority over an extensive state and private forestry assistance program in California, Hawaii and several Pacific Islands. Reflecting the scope and complexity of these responsibilities, the new associate position was created to provide an "alter ego" to the Regional Forester, Powell said.

Gillam's Forest Service career began in 1977 on the Bighorn National Forest (NF) in Wyoming, where she was the forest botanist and worked on the land management planning staff. Later assignments with increasing responsibilities included Custer District Ranger on the Black Hills NF in South Dakota, Deputy Forest Supervisor on the Wasatch-Cache NF in Utah and Forest Supervisor of the Bitterroot NF in Montana. At that point in her career, Gillam moved to the agency's Washington D.C. office, where she was Assistant Director of Land Management Planning and Acting Director of Ecosystem Management between 1991 and 1994. She then went on to the position with Range Management.

"I am honored that Chief Mike Dombeck has asked me to serve as Associate Regional Forester for this important part of the country, and I am

excited about getting to know the people who live and work in California and the Pacific Islands," Gillam said. "I'm thrilled about getting back out West and working more closely with Forest Service employees, organizations and cooperating agencies that are striving for sustainable forests and rangelands."

## **Elaine Zielinski Receives Presidential Rank Award**

Elaine Y. Zielinski, State Director for Oregon/Washington, Bureau of Land Management (BLM) was presented with the Presidential Rank Award of Meritorious Executive Service at a Secretary of the Interior's Award Ceremony in January 2000, in Washington D.C. Zielinski was one of two top executives in the Department of the Interior to receive the prestigious award. She was recognized for her contributions in leading vital federal programs in the Pacific Northwest, such as the Northwest Forest Plan and Interior Columbia Basin Ecosystem Management Project.

"I'm very honored to receive this award. It is truly an indication of the tough issues we face in the region; and reflects on the hard work and dedication of many BLM employees and the organization as a whole," said Zielinski. As State Director, Zielinski oversees an organization that manages 15.7 million acres of public land in Oregon and 375,000 acres in Washington. Through her leadership as State Director, the BLM has focused on emphasizing interagency coordination to address and resolve natural resource issues facing the Pacific Northwest region. The BLM continues to play a major role in implementing the Northwest Forest Plan. The BLM, in conjunction with other federal agencies, has developed a common management approach for an entire ecological region. With Zielinski's guidance, Oregon/Washington BLM is applying a similar approach to the long-term management of federal lands in the interior Columbia River basin.

The Presidential Rank Award is given to members of the Senior Executive Series (SES) who work with some of the nation's most important medi-

cal, social, environmental, human resource, and defense programs.

## **Marcia Patton-Mallory Named Alumna of the Year by Colorado State University**

Dr. Marcia Patton-Mallory was recently honored as Alumna of the Year by her alma mater, Colorado State University. A Colorado native, Dr. Patton-Mallory has long been involved in the field of natural resources. While attending Colorado State University, she was very active in Xi Sigma Pi, the national Natural Resources Honor Society, and was the recipient of the President's Scholarship. Patton-Mallory developed the first three-dimensional computer model of a bolted wood connection as part of her dissertation research. The model is currently used by other researchers to design wood connections in engineered wood composites.

Dr. Patton-Mallory's distinguished career includes scientific accomplishments at the Weyerhaeuser Company in Tacoma, WA; USDA Forest Service, Forest Products Laboratory in Madison, WI; and Forest Service headquarters in Washington, D.C. She holds a B.S. in Wood Science and Technology (1979); an M.S. in Structural Engineering (1983); and a Ph.D. in Structural Engineering and Solid Mechanics (1996).

After years in Washington, Marcia joined the Rocky Mountain Research Station, US Forest Service, as Assistant Station Director for Planning and Applications, and in 1998, was promoted to Deputy Station Director. The \$30 million research program she helps oversee is dedicated to improving management of natural resources on federal, state, and private lands throughout the Interior West. She continues to work with CSU faculty and students on several research projects, and has been the recipient of 12 Certificates of Merit for Leadership and Performance within her profession.

Marcia enjoys playing soccer with the Fort Collins Women's Soccer Club, and playing the flute. She and her family make their home in Fort Collins.

# Building a Foundation of Diversity in Natural Resource Management in the U.S.

**Julia Dawn Parker**

Diversity—ethnic, gender, or idealistic—and natural resource management are generally not synonymous. But, as natural resource management and policy grow and change over time, we need to incorporate the idea of human diversity in order to survive and thrive.

## **AMERICA IS CHANGING**

Demographers predict that people of color (Hispanics, Native Americans, Asians, and African Americans) will constitute half of the United States population by the year 2025. If natural resource professionals never address the needs of these populations, or incorporate them into our professions to a greater extent, support for natural resource management may erode. Since the 1960s, political power of ethnic minorities has increased through voting, lobbying, and election to public office. Attention to diversity, Civil Rights, and equity is increasing in the United States.

Another area of growth in U.S. policy is the attention paid to environmental justice issues. Environmental justice incorporates the issues of environmental degradation and environmental hazards with issues of Civil Rights, equality, and social justice. For example, an environmental justice issue would include the inequitable distribution of heavily polluting industries in poor minority communities. Virtually unheard of 15 years ago, environmental equity and environmental justice concerns have grown to the point that President

Clinton issued an Executive Order on Environmental Justice in 1994 mandating federal agencies to treat predominantly minority communities equitably in the distribution of environmental hazards and impacts (U.S. Environmental Protection Agency 2000).

More and more attention is being paid to the public participation process in natural resource management. Some segments of the public have become increasingly active in making their voices heard in the public input process. This segmentation, however, leads to an inequity in who's voice is being heard. Interest groups, both on the environmental and the industry sides, participate intensively in public hearings and public comment periods. This high volume of input by interest groups may mask the views and desires of non-affiliated segments of the population. Certainly, traditional environmental groups and industry interest groups are not representing ethnic minorities well. We need all segments of society participating in natural resource management at all levels.

## **GROUNDWORK**

### **Recreation Research**

Within natural resources, probably the largest amount of research regarding people of color and women has been conducted within the field of recreation. Studies of Hispanic recreationists in Southern California show a need for different types of facilities than currently are available. The small white nuclear family picnic

area, for example, does not fit the need of a larger, intergenerational gathering of a Hispanic family (Chavez, Larson and Winter, 1995). Why is that important? If facilities do not meet the needs of users, they often get vandalized or damaged. Additionally, the agency loses support among its client groups.

Studies of African American youth and adults show a difference in recreation behavior in comparison to whites (Dwyer and Hutchison 1990, Floyd and Gramann 1995). African Americans tend to desire more developed park-like settings for recreation (Kaplan and Talbot 1988). Why is this? No one has pinned that down for sure, but an emerging explanation is that, for African Americans, wild areas are still something to be feared. From a historical context, the woods were not someplace African Americans wanted to be. Lynchings and other racially-based violence occurred frequently in remote areas, especially in the post-Civil War era. In a study conducted in the a three-state region in the Southern United States, research I participated in found that African Americans' environmental views were somewhat split between support for deep ecology and religious stewardship, and fear of nature—two philosophically opposing ends of the spectrum of environmental ethics, according to mostly white authors (Parker, Zuefle, and McDonough 1999). This dichotomy existed at the individual level. Thus, someone could support preserving the environment, considering all

creatures, and believing in the rights of all things to exist while at the same time feeling that nature is something to be feared. For the traditionally white natural resource profession, this dichotomy may cause confusion. The lack of participation in outdoor recreation may indicate to some professionals that Blacks do not care. In truth, they care about what is happening to the environment, but their history and traditions tell them that backcountry recreation is not desirable.

**Environmental Values Research**

At the same time that behavioral differences are being found for people of color in resource-based recreation, similarities in environmental ethics and environmental attitudes are being illuminated. In a study of Detroit area residents, we found very similar environmental attitudes among African Americans and whites (Parker and McDonough 1999). Based on a general environmental attitude scale, African Americans and whites shared pro-environmental attitudes in the areas of limits to growth, value of nature, and human dominion over nature. Interestingly, African Americans were generally more concerned about specific environmental issues. Some writings have suggested that African Americans would be more concerned than whites about inner-city issues, such as air pollution, waste management, etc. However, we found that African Americans and whites both showed concern for urban environmental issues (Table 1, right).

As stated earlier, African Americans in the Southern United States displayed similar environmental ethics to Southern whites, with the exception of a fear of the environment. Philosophically, both Southern Whites and Southern Blacks aligned with the concepts of conservation and stewardship. Although not traditionally considered ethnic minorities, Southerners face some of the same stereotypes as ethnic minorities. This is especially true within natural resources, as Southerners are seen as traditionally

utilitarian or extraction oriented. This leads to similar stereotyping as with African Americans or Hispanics in America in general. The idea of Southern concern for the environment is largely assumed not to exist. The South is often highlighted by extractive industries, especially timber, as a solution to the reduction in harvesting due to environmental concerns in areas like the Pacific Northwest. The South, it is declared, will be the "wood basket" of the United States. However, I doubt that any advocates of this "natural resource colonization" of the South have bothered to ask Southerners how they feel about providing that service to the rest of the United States at the expense of their native forests. (For an interesting overview of the effects of chip mill industry on Southern communities see *South-bound* by Bullfrog Films. This film focuses on the impact of the burgeoning chip mill industry in the

South on residents, communities and the forest resource.)

**AREAS IN NEED OF FURTHER WORK**

Existing research on the role of ethnic minorities and disenfranchised groups is beginning to lay the foundation of understanding. More work needs to be done at the research, education and management levels. We are beginning to document similarities in values across ethnic and regional groups within the United States. Breaking the stereotype of the white, young, educated, wealthy environmentalist will help us keep natural resource management in perspective. Also, understanding that all types of people have concerns about the environment will be a large step forward for people working in natural resources.

Topics to consider for examination may include; the role of Black-owned and -run logging operations in

Table 1. Level of perceived urgency of environmental issues for African Americans and Whites.

Item	Mean for African Americans	Mean for Whites
Toxic Waste	2.81	2.78
Air Pollution	2.75	2.64
Nuclear Waste	2.73	2.72
Garbage dumps	2.66	2.60
Supply of water	2.64	2.41
Litter	2.62	2.40
Noise pollution	2.43	2.07
Endangered wildlife	2.42	2.25
Overuse of natural resources	2.35	2.36
Over population	1.95	2.13

Likert scale of perceived urgency of environmental issues:  
 1 = not at all urgent  
 2 = somewhat urgent  
 3 = very urgent

*Data collected in the Detroit metropolitan area (Parker 1996).*

the South, the work of migrant laborers in forestry, the expectations of Native Americans in managing tribal forests or adjacent land, participation of ethnic minorities from urban areas in developing recreation plans for National Forests, and the consumer needs and desires of ethnic minorities.

In addition to acceptance and understanding of the values of people of color and other disenfranchised groups, natural resource professionals need to begin to work on breaking down the barriers between themselves and their diverse constituents. This will not be a fast transition. Women in natural resources understand the pace at which barriers come down in a traditionally white male field: *slowly*. The few people of color in the natural resources professions understand the slow pace of change as well. Perhaps these two contingents within the professions can help take the first steps toward change.

Some of the most important work, but most time consuming, is the effort that needs to be expended to diversify our profession. Because of federal mandates, public opinion, and ethics of some natural resource organizations, a large push has been made to hire ethnic minorities in natural resources. However, these efforts are hampered by the extremely low numbers of trained professionals within our traditional academic disciplines—wildlife, range, forestry, mining and resource-based recreation—who are also members of ethnic minorities. Therefore, the process must begin with outreach to children of color, children within large cities, and children from traditionally disenfranchised groups. Such programs are already emerging. The Bureau of Land Management's "Wonderful Outdoor World" works with inner-city youth. University Extension programs exist in some urban minority areas. These programs may eventually improve the dynamics of the relationship between the natural resource profession and people of color, and may eventually change the constitution of the natural

resource professions to better reflect society.

In the meantime, it is up to current natural resource professionals, most of whom are white, to reach out to non-traditional groups. It can be scary and frustrating to work with people from a different culture. It takes us outside our own comfort zone. And this is rarely included in job descriptions in natural resources. But, if the natural resource professions are going to survive and thrive, we must understand the diversity surrounding us, and we must incorporate that diversity. Only then will we achieve a more representative management of our natural resources.

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*This is the third and final installment of the series about the author's experiences with the federal Senior Executive Service Candidate Development Program.*

## **Chronicles of an Executive-in-Training Part III: Obtaining the Goal**

**K. D. Leperi**



The end was now in sight. After the submission of my Senior Executive Service (SES) package to the Office of Personnel Management, it came back with the coveted reward; SES Certification (see box, pg 28, for completion requirements of the program). Once a candidate is certified, it is a lifetime certification and is valid indefinitely. SES certification permits a candidate to be chosen for an SES opening without competition. For advertised SES positions, a certified candidate need only respond to the technical Executive Core Qualifications (ECQs) of the position, since the core executive qualifications have already been certified. These core qualifications are: Leading Change, Leading People, Results Driven, Business Acumen, and Building Coalitions/Communication. It's important to note, however, that SES certification does not guarantee a promotion to SES ranks.

### **Goals of the USDA SES Candidate Development Program**

As I looked back on the 18 months of my SES program journey, I realized that the USDA Graduate School and Growth Dynamics, Inc. had exceeded their goals. The SES Certification program seeks to provide training for leadership by focusing on requirements of high-level positions while also taking a closer look at self. Insights should help candidates engage in activities that

will expand their effectiveness as a leader. The program goals were:

1. clarify your leadership aspirations and target areas for development,
2. increase awareness of your strengths, limitation and blind spots, such that you can consciously exercise your strengths and, at the same time, manage your limitations,
3. reinforce your leadership with regular and informed personal and organizational practices,
4. become more masterful in leading and empowering individuals, teams, and organizations,
5. demonstrate leadership by targeting results that matter and demonstrate progress in achieving those results, and
6. develop a network of support for inspired public service leadership.

While most candidates view certification and promotion to the SES ranks as desired outcomes of the program, there were also intangible and intrinsic benefits for many that were perhaps even more valuable; the gifts of individual growth, self-awareness,

and perspective were the true hidden treasures of the program (see box, pg 29, for comments from other SES graduates).

Along the way, some individuals embraced their passions while others came to decision-points regarding the balance between their professional careers and personal lives. For some, the program led to a decision to leave federal service to pursue other opportunities and goals. For Ruth Williams of the Forest Service, program completion culminated in doing what she loves. "[For me,] this has been a story about a personal journey of introspection that has led to a connection with my professional passion – sustainable agriculture," said Ms. Williams, who is now National Sustainable Development Coordinator for the Forest Service. Steven Miteff of the Farm Service Agency explained, "Mine was a journey of reviewing myself, my blind spots and my strengths. It permitted me to go to the balcony and view my leadership from a new perspective." And for me, I have been able to reflect and grow in an academically enriched SES program, and realize my commitment to human dignity and respect for

all employees is a central tenant of how I want to lead (see box, pg 30, for Leperi's final essay written as part of her SES program).

### Forest Service Insights

Over the years I have accumulated an assortment of broad-based experiences with various federal departments, including the Department of Defense, Department of Navy, Department of Transportation, Department of Energy, as well as the Department of Agriculture. My job details with the Forest Service were by far the most rewarding for me, encompassing and reflecting complex current societal issues, values, and challenges to contemporary leadership.

My first two-month assignment was on the Deschutes National Forest in central Oregon. During my assignment to the Supervisor's Office, I was immersed in Forest Service programs and culture including community collaboration (Lava Lands Discovery Center, Inmate Program, and Native American issues), fire crisis response, and Recreation Fee Demonstration Program. In return, I provided leadership counseling and coaching to the entire Deschutes Forest Leadership Team. With my certification as an Enneagram teacher, along and my training in Neuro-Linguistic Programming, I provided a day of communications awareness training while using Native American culture, i.e., the "Talking Stick," as my contribution. Finally, I have been a catalyst for communicating success stories about the Deschutes with the publication of various articles, including those that have appeared in this journal.

My second job detail tapped into my terrorism expertise. During this six-month detail, I provided the agency with an investigative analysis of the impact of ecoterrorism on Forest Service policy (an article about this work will appear in a future issue of *Women in Natural Resources*).

The Forest Service deals with cut-

### USDA SESCDP

#### Completion Requirements

1. One-week core orientation program
2. Leadership Development Program (identification of training opportunities)
3. Leadership Laboratory sessions
4. 80-hour interagency executive development course
5. Designation of a mentor
6. Executive developmental assignment of one four month or two 2 months assignments outside normal setting
7. Final essay
8. OPM Application package to consist of a 1-page resume and summary of how and when different requirements were met.

ting-edge societal issues every day, involving the environment, resources, community, and sustainability. The success or failure of their mission will directly impact what the future world inherits. Based on these executive assignments, I offer my impressions and insights of the Forest Service.

### What's Working Well In the U. S. Forest Service

No matter where I go in the Forest Service, I am consistently impressed with the caliber and professionalism of employees, their competency, and their commitment to the land. From summer hires to leaders with 30 years in service, they all exhibit a loyalty to mission and possess personal value systems that are inextricably linked with public land stewardship and management. The result is a dedicated work force in which there is a harmonious alignment of personal and professional values. It has been an honor for me to work with such loyal public servants.

I am favorably impressed that the Forest Service values continuous quality training for its entire work force, exhibiting an appreciation for the fact that members of an organization must

continually broaden and refresh skills. This focus on the training environment is a precursor to innovative solutions and responsible actions. This is a direction that the Forest Service continues to pioneer.

Strategic planning for whole ecosystems (forest landscapes), rather than single, smaller projects, reflects a corporate culture that utilizes and rewards systemic thinking, and promotes holistic solutions. This stands in opposition to a reductionist approach that views issues in isolation from their environment. The Forest Service approach recognizes that forest management issues are complex and interdependent, and require integrated solutions. In particular, the Forest Service is pursuing innovative approaches to community collaboration, sustainable agriculture, and land ownership that speak well of an agency willing to forge new territory in arenas where answers are uncertain or unknown. Forest Service leadership exhibits decisive courage even as traditional government organizations are rewarded for inertia.

Evaluative processes promote the sharing of "Lessons Learned" while attempting to incorporate these into future actions. Hence, the Forest Service tries to learn from its mistakes rather than be doomed to repeat the same story line.

Finally, I am in awe of the numerous success stories and good works of the Forest Service; unfortunately many still remain untold. As an outsider looking in, I sometimes wonder where the champions of the Forest Service are to herald these voiceless victories.

### What Could Work Better

The Forest Service cares for the people and the land. And as part of their outreach effort, they are "Connecting People to Resources, Ideas and One Another So They Can Better Care for Forests and Sustain Their Communities." To do this effectively requires mainstream information technology that maximizes ease in communica-

## **What Graduates Had to Say**

### **Sally Collins, Forest Service**

Old Job: Forest Supervisor, Deschutes National Forest (GM-15)

New Job: Associate Deputy Chief for National Forest Systems (SES)

"SESCDP gave me time out through additional training and introspective focus to gain a broader perspective that was bigger than self. It helped me sort out the next step in the context of what was really important, both professionally and personally."

### **Joel Holtrop, Forest Service**

Old Job: Deputy Director for Range Management (GM-15)

New Job: Director for Wildlife, Fish & Rare Plants and Watershed & Air Management Staff (SES)

"My participation in the SESCO was a wonderfully positive experience that permitted me to know myself better, to know how to get the best of myself, to be introspective, and to be aware of my strengths and weaknesses. Most of all, I learned how to balance my personal life with my professional life and recognize the vital importance in being able to do so."

### **Jan Polling, Office of General Counsel**

Old Job: Deputy Assistant General Counsel (GM-15)

New Job: Assistant General Counsel for Natural Resources (SES)

"SESCDP gave me an opportunity to reflect and focus on leadership qualities and my career and life goals. My developmental assignment was an invaluable growth experience, providing me with additional competencies in federal budgeting and new perspectives as well."

### **Peggy Irving, Internal Revenue Service**

Old Job: Deputy Director, Office of Information & Privacy, Department of Justice (GM-15)

New Job: Privacy Advocate, IRS (SES)

"The Executive Development Program was a life-changing event for me. It demonstrated how much change can come from opening up our true self to others. The inspiration was in meeting people and meeting leaders who wanted to be a part of the solution."

tion, compatibility, and portability of platform. This makes sense if open channels are to exist between the Forest Service and communities, nonprofit organizations and the private sector. While most of the federal government has accepted Microsoft as a standard platform, the US Department of Agriculture, and the Forest Service in particular, have made choices, past and present, that challenge even the most computer literate in maintaining compatibility and connectivity.

For example, I maintain a hotmail account because I travel extensively for both my civilian and military jobs. No matter where I am in the world, I can retrieve my email and send documents with minimum effort. However, while transmitting a draft article to the editors of this journal last year, I ran into numerous technical problems. The

cause, I later found out, was that the local Forest Service information technology specialists had added a filter to the system that prevented individuals from accessing hotmail. When I asked about this, I was asked if I was using government computers for personal business. I protested that I was not, and received reluctant support in sending the article. The point is that this type of regulatory restriction is the very thing that interferes with open communications and connectivity, including with the public. It breeds distrust.

Another thorny issue for the Forest Service is forest health. This is a tough sell, since in general the public views forest health as a prerequisite, rather than an end goal. The public focuses more on recreation issues, wilderness areas, and multiple-use: issues that directly impact their livelihood and

leisure time. Therefore, I believe forest health should be directly linked to these issues, and the cause and effect relationship highlighted. This could facilitate proper funding for this important program.

Stewardship leadership values all voices, focusing on inclusiveness while emphasizing human dignity in dealing with employees and the public. People are neither marginalized nor disenfranchised for offering contrary views.

During my time with the Forest Service, I heard many employees express a sense of being unappreciated, or more literally, being told "to take a hike." Mixed messages leave employees and the public feeling vulnerable and unappreciated. The impact is that all contributors become risk-averse, preferring to keep a status-quo rather than reach for long-term solutions. I

highly recommend that Forest Service leadership consider sponsoring Forest Service Forums; open employee meetings with the national leadership team held in each Region to deal with the pulse of that region, its issues, its challenges, and its successes. Connecting top leadership of the agency to all employees, even those with minority viewpoints, will undoubtedly uncover unique insights and experience. These are truly vital ingredients for future success of the agency.

### Final Thoughts

My SES leadership goal is to become a vital contributing member of the Forest Service Leadership team, and assist the agency to forge new paths for land management in the 21<sup>st</sup> century. Specifically, my desire is to offer my leadership and expertise in ter-

rorism, particularly ecoterrorism, to efforts to promote safety and security for our public servants, while stewarding the land and serving the people. My dream is to be an instrumental part of a vision that insures the Seventh Generation will inherit and appreciate the wealth of the land, from its resources and recreation, to its spiritual wellspring.

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### Reflections on Leadership Training: SESCDP

K.D. Leperi

*This essay was written by Leperi to meet her SESCDP requirements.*

As I reflect on my last year in the USDA's SESCDP, I look back with a sense of fulfillment as to where I started and where I am at the present. In particular, my formalized leadership training has permitted me to update my insights on leadership based on peer discussions, current literature and contemporary prevailing models. Even though I am an avid if not somewhat prolific reader, it is difficult to stay current on issues without periodic interaction with the academic community. This program also afforded me the opportunity to seize moments for the necessary reflection and introspection that is part of the leadership territory. I am indeed thankful beyond words for this dedicated time.

Another gift this program has given me is the gift of leadership community. The opportunity to network, converse and rely upon a community of dedicated leaders who are traveling the same road is a priceless gift for the present and the future. It is a resource of both the intellect and heart that will be a constant reminder that I need not travel the road alone. Additionally, I appreciate the direction and encouragement that Growth Dynamics and USDA gave to this emerging class of leaders by imparting a sense of community and place to leadership candidates. It is extremely important to me that leaders of today and tomorrow recognize and value these larger communities while focusing on commonalities – the glue that binds.

Finally, this program has helped me solidify my "stand and deliver" statement – that I will be a leader that values human dignity in the workplace by seeking the good and the gifts in all people. And that I will be a leader that will say "No" when the respect and dignity of employees are demeaned and dishonored by the organization or its people. My leadership style will be based on values, integrity, and inclusiveness.



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## NEWS & NOTES

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**Make a Difference; Be a Volunteer.** The U.S. Army Corps of Engineers is looking for America's finest to volunteer their time and effort at lakes all around the nation. From a Cub Scout's first experience with a blue bird box, to a retired electrician solving electrical problems in the campground on the weekends, all volunteers play an important part in helping the lakes, natural resources, and recreation areas managed by the U.S. Army Corps of Engineers. The Volunteer Clearinghouse program began in 1994, and links interested individuals to Corps projects where volunteers are needed. A phone call to The Volunteer Hotline (see ad above) can start you on the road to volunteering at a Corps lake. Internet access is available at [www.orn.usace.army.mil/volunteer](http://www.orn.usace.army.mil/volunteer), where current listings are given. Positions include campground hosts, carpenters and electricians, and wildlife aids.

Cont. on page 34



# Effect of the Insecticide Endosulfan on the Embryonic Developmental Stages of Zebrafish, *Brachydanio (Danio) rerio*

Papiya Sinha and  
R. D. Kanamadi

## Introduction

The developing fish embryo or larva is the most sensitive stage in the life cycle of the teleost (bony fishes), and is sensitive to all kinds of low-level environmental changes (Rosenthal and Alderdice 1976). Endosulfan (EC) is used as a broad spectrum insecticide to control aphids, beetles, foliar feeding larvae, mites, cutworms, white flies, termites and slugs on deciduous citrus, other small fruits, vegetables, tobacco, tea, forests and ornamental plants. The chemical is sprayed on the plants, and when these farmlands are washed off, especially during the rainy season, the insecticide mixes into bodies of water and affects the aquatic life. The present work was undertaken at Karnatak University, Dharwad, India to study the effects of Endosulfan(35EC) [6, 7, 8, 9, 10, 10 Hexachloro-1, 5, 5a, 6, 9, 9a-hexahydro-6,9-methano-2,4,3-benzodioxathepin-3-oxide] on the developmental stages of zebrafish, *Brachydanio (Danio) rerio*, taken as a model fish of the aquatic ecosystem.

## Materials and Methods

*Brachydanio rerio* was obtained from a local commercial supplier and kept in a glass aquarium of 20 x 12 x 12 inches. Twenty fishes were kept in the aquarium, and a ratio of 1 male:1 female was maintained. The fish were allowed to acclimatize for 2-3 weeks. Tap

water was used in the tank, aged for several days to remove chlorine (stored for about 15 days in large tank outdoors). Fish 2.6 – 3 cm in length were taken for the experiment, and were fed with commercial fish flakes, freeze-dried tubifex worms, and hard boiled egg yolk three times a day. A perpetual "Spring" light cycle regime with a daily cycle of 14 hr Light: 10 hr Dark was maintained. Eggs were collected 1 ~ hr after the start of light cycle. This schedule allowed enough time for fertilization to occur.

The tap water was filtered and aerated before use, and was analyzed for physio-chemical parameters using standard methods (APHA 1985). The physio-chemical parameters of the tap water were:  $p^H = 7.4$ ; total hardness (as  $CaCO_3$ ) = 110mg/l; dissolved oxygen of normal water = 6.8mg/l and after 1.5 hr of aeration = 7.5mg/l; temperature = 26-27°C.

The freshwater zebrafish (*B. rerio*) were used in this study because they are relatively easy to maintain in large numbers, and readily reproduce under laboratory conditions. The embryos of zebrafish develop externally, which allows for direct examination of the cellular aspects of development at a level of detail that is not possible with many other species. Despite the evolutionary radiation of the different classes of fishes, the basic embryological characteristics unit

the classes as a group. Thus, zebrafish were selected as a model fish to study the toxic effects of Endosulfan on the aquatic ecosystem.

Embryos just after fertilization were used in the experiment. Different concentrations of Endosulfan (35EC) were prepared by dilution of 100 mg/l stock solution with aged tap water. Aged tap water without Endosulfan (35EC) served as control medium. Treatment of the embryos was carried out for 96 hrs, beginning just after fertilization, with concentrations ranging from 0.78  $\mu$ g/l – 1 mg/l. The treatment of the embryos was carried out in glass petri dishes, each containing 80 ml of the medium and 10 embryos. In all, 50 embryos were exposed to each concentration of the chemical. After the 96 hours of treatment, they were observed for mortality and other deformities under a compound microscope. Photographs of control and treated embryos were taken. The effect of various concentrations of Endosulfan (35EC) on the rate of heart beat was also investigated.

## Results

Toxic and teratogenic effects of Endosulfan (35EC) were found to be dose dependent (Table 1, pg 32). Fertilized *B. rerio* eggs of the control group completed the cleavage stages of embryonic development with a gap of 15 minutes. Epiboly began during the blastula

Table 1. Teratogenic effects of different concentrations of Endosulfan (35EC) on *B. rerio* embryos.

Conc	No of embryos exposed	% of mortality at 96 hr	% of abnormality at 96 hr	Abnormalities
0.0 µg/l (Control)	50	2	Nil	Nil
0.78 µg/l*	50	46	66	Initial irregular cleavage patterns were seen in many embryos. Melanophores were better developed and there was an increase in the percentage of hatch than at higher concentrations.
1.56 µg/l*	50	52	68	
3.125 µg/l	50	56	78	
6.25 µg/l	50	58	100	Initial irregular cleavage patterns in all. Newly hatched larva showed a reduction in size compared to the control (P<0.01)
12.5 µg/l	50	66	100	large yolk, blisters on the body (especially in the yolk region; Fig. 4), irregular and incomplete pigmentation and curved notochord. Those that survived showed late hatch (hatching between 80 – 87 hrs) and tail hatched larvae (Fig 6). The newly hatched larvae were lethargic and showed reduced heartbeat (Fig. 7).
0.025 mg/l	50	74	100	
0.05 mg/l	50	80	100	
0.1 mg/l	50	92	100	
0.2 mg/l	50	100	—	Initial irregular cleavage patterns were found. Blisters appeared on the body and pigmentation was incomplete. Many embryos showed abnormal body structures (Fig. 5), did not show proper development and died within 45 - 52 hrs. The few surviving embryos died within 68 – 73 hrs.
0.4 mg/l	50	100	—	
0.8 mg/l	50	100	—	All died within 8 – 10hrs.
1.0 mg/l	50	100	—	

\*Data corrected to the second decimal for convenience of calculation.

showed a yellow cast. The transparent body made it possible to see a straight notochord, gut, heart and other organs in the newly hatched early larva. After 72 hrs, the larvae showed active swimming and had a heart beat of 180±0.10/min. Mortality and abnormalities were not shown by control embryos.

### Discussion

Numerous studies have documented the toxic effects of Endosulfan on adult fishes, including adult catfish (*Clarias batrachus*; Gopal 1981), adult zebrafish (Toledo and Jonsson 1992), and other species (Devi 1981, Rao 1981). Adult zebrafish were found to have lipid accumulation of Endosulfan in the liver and necrotic focus in the gills of fish exposed to a mean concentration of the pesticide in water of 0.3 g/l.

In this study, irregular cleavages were observed in the treated embryos and could be due to cytogenic (genetic or

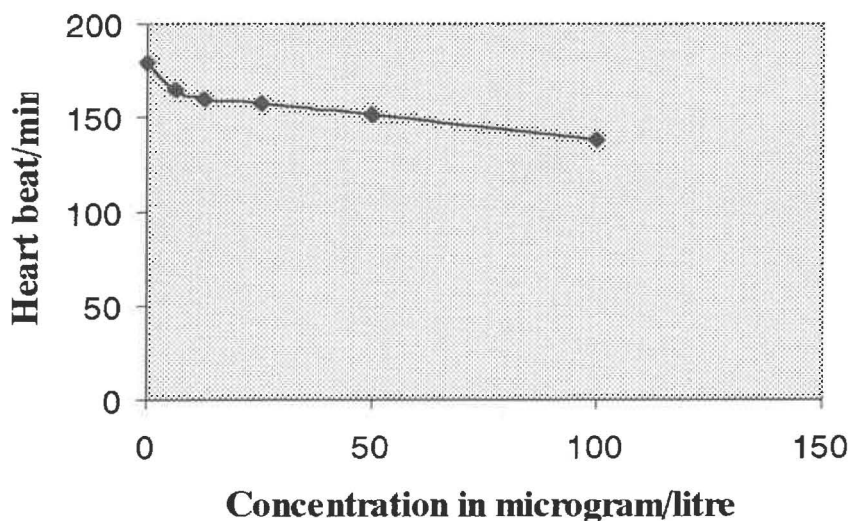
period and involution began during the gastrula period at 5 1/3 hr. Involution marked the closure of the blastopore. The segmentation period lasted from 10 – 24 hrs, with the formation of the 1<sup>st</sup> somite (a segment of the mesodermal tissue of the vertebrate embryo which gives rise to muscle, bone, etc.) in 10 1/3 hrs, the 5<sup>th</sup> somite in 11 2/3 hrs, the 14<sup>th</sup> somite in 16 hrs, the 20<sup>th</sup> somite in 19 hrs, and the 26<sup>th</sup> somite in 22 hrs. The pharyngula

period extended from 24 – 48 hrs. Hatching took place between 62 – 70 hrs.

For normal embryos, the early larva showed a well-developed head, eyes, tail, pectoral fin and was nearly 3 mm in length. The dorsal stripe of melanophores was well defined and densely populated. It was present along the midline of the anterior trunk and tail and as bilateral rows of cells in the posterior trunk. The entire body

chromosomal) damage. The repetitive wriggling movements of the healthy embryo is presumed to circulate oxygen. These normal wriggling movements were replaced by trembling in the embryos treated with Endosulfan, and these embryos became totally inactive later. The hatching process was severely impaired by this lowered activity of the embryo. As noted by Hagenmaier (1974), the hatching enzyme secreted from the head

**Fig.7 Effect of various concentrations of Endosulfan (35 EC) on the average rate of heart beat of the newly hatched larva of *B. rerio***



region of the treated embryo was not distributed throughout the perivitelline fluid, as would be expected in normal development. Without proper digestion of the inner layer of zona radiata by this hatching enzyme, the emerging larva could not break the non-digested outer part of the egg shell. Thus, they remained in the egg casing longer.

Reports of variations of time to hatch in the literature refer to abnormally-shaped embryos that hatched late due to physical failure to break the egg shell (Dethlefsen 1977, *G. morhua*, DDT). In this study, some embryos were found to be totally abnormal (conc. range of 0.2-0.4 mg/l) without proper development of head and body structures. Other researchers have found that the yolk is the main storage site of the pesticides, and when the larva consumes yolk, it takes up more and more of the pesticides, producing damaging effects (Atchison 1976 and Guiney *et al.* 1980).

### Conclusion

The results clearly show the teratogenic effects of Endosulfan on *B. rerio* embryos, even at very low concentrations. This insecticide not only affects the adult fishes present in bodies of water adjacent to fields where Endosulfan is used, but also the future individuals of the populations, by producing teratogenic effects on the embryos. The usage instructions for Endosulfan dictate that 1000 ml of EC 35 containing 35% active ingredient of Endosulfan is sprayed. The resulting pesticide is enough to bring the Endosulfan level in 1280 kiloliters of water to a concentration where the teratogenic effect will be obvious in the zebrafish embryos.

### Acknowledgement

The work was supported by University Grants Commission, Special Assistance Programme-II (Department of Research Scheme), Department of Zoology, Karnatak University, Dharwad, India.

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## NEWS & NOTES

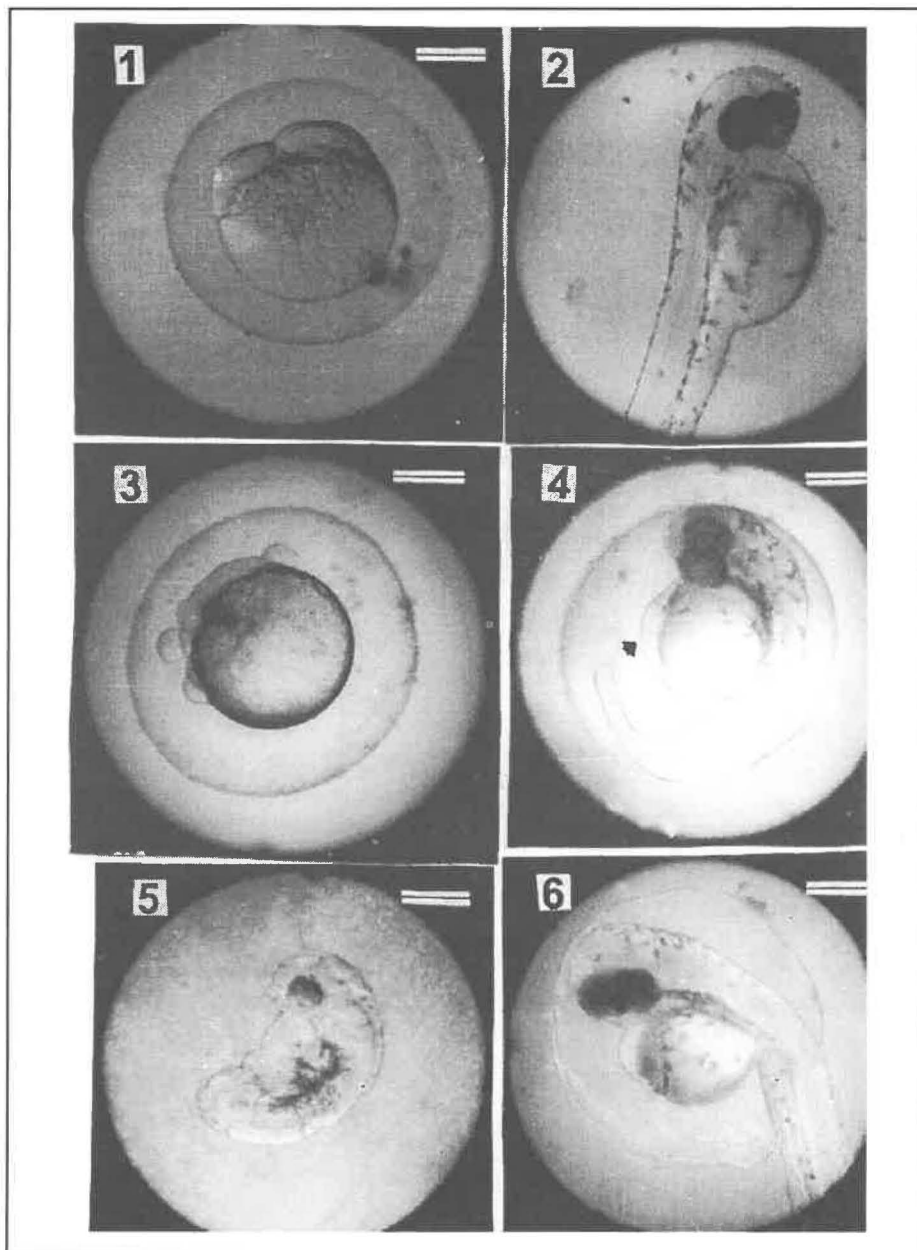
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**At One with Nature in the Cosmic Forest.** In the forest that surrounds Oike (big lake) in Tokamachi-shi, Niigata-ken, Japan, stands an abandoned elementary school that is now home to the world's largest collection of Indian and Nepalese Mithila art. Mithila Museum director Hasegawa Tokio has created a cosmic space where art and nature coexist in harmony. "These days it's harder and harder to get a feeling of reality, of ourselves living in the universe," begins Hasegawa Tokio, when asked how he came to open the remote Mithila Museum. "After a long journey looking for places where the cosmic essence is dense and the moon is beautiful, finally I was led to here. I call this place the Cosmic Forest. I opened this museum in May 1982. I would like to introduce people to art and culture that communicates deeply with nature: we will need this in the twenty-first century."

The heart of the little museum in the Cosmic Forest is its collection of Mithila paintings. More often called Madhubani paintings in India, the style has been painted for 3,000 years by the women of Mithila, an area that extends from Bihar State in India to the Nepalese plains. Museum curator Hasegawa Tokio first saw Mithila paintings as a young man touring Europe in 1971 with a rock band. "I was struck by the overflowing cosmic senses that filled these hard-to-describe primitive works," he said. Wanting to share these wonderful paintings with local people, Hasegawa planned a full-scale exhibition of Mithila paintings to celebrate the opening of his museum. Since that time, Hasegawa has made more than 10 trips to the Madhubani region to collect Mithila paintings. "Nature never ages," says Hasegawa. "That's why effort to become one with nature always has the same kind of freshness as avant-garde art. I've been working on my museum for nearly 30 years. At last I'm seeing a strong chance that my effort is being accepted by society. I'll continue offering suggestions from nature's viewpoint rather than from humanity's," says Hasegawa.

Note: For more on the Mithila Museum, visit the website at <http://www.bekkoame.or.jp/~mithila>.

-Nishimura Kunio, *Look Japan*, March 2000



Photographs of control and Endosulfan (35EC) treated *B. rerio* embryos and early larvae. **Fig. 1.** 4-cell stage of control embryo showing regular cleavage pattern. **Fig. 2.** Hatched larva of control. **Fig. 3.** Initial irregular cleavage pattern of treated embryo (12.5 µg/l). **Fig. 4.** Treated (0.25 mg/l) embryo at 48 hrs, showing blisters in the yolk region. **Fig. 5.** Treated (0.2 mg/l) embryo at 40 hrs showing abnormal body. **Fig. 6.** Tail hatched larva of treated (0.025 mg/l) embryo. Scale bars - 250 µm.

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*Papiya Sinha completed a B.S. degree in Zoology at Calcutta University in 1992. In 1994, she completed her M.S. in Zoology at Calcutta University, with*

*a special paper in Environmental Biology, and she completed a Bachelor of Education degree at the same university in 1997. She is currently working as a researcher in the Department of Zoology, Karnatak University, Dharwad, India, where she is also working on her doctoral degree. The research presented here was completed as part of her project work for that degree program.*

In June 1991, I spoke at a meeting focused on strategic planning about recycling issues hosted by the University of New Orleans. Before my talk, I gazed across the 100 or so participants as I stood in the back of the room listening to other speakers. I noticed a young woman in the audience who I did not know. I knew that she was excited about the topic, because she was sitting on the front row. I subconsciously committed the sin of type-casting by wondering who this young environmentalist was and with which organization she was affiliated. I did so because she had braided hair, wire-rimmed glasses, faded jeans, a green tee-shirt, and Birkenstocks. I guessed that she was about 25 years old.

During my talk, I was discussing the issue of making environmental choices based on the best information available. I used the example of a then recent studies comparing cradle-to-grave environmental costs (energy and other resource consumption, pollution, etc.) of polyfoam vs. paper products. I described the nature of the studies and explained why science suggests (see box, pg 36) that polyfoam appears to be the better environmental choice. I then asked why the audience might think that McDonalds had recently changed to paper products. The answer was that McDonalds yielded to pressure from their ill-informed customers who still believed that paper was superior to polyfoam.

Almost instantly, the young woman on the front row raised her hand. I thought that she was going to take issue with my facts about which product

# Where Do We Find Environmental Heroes?

**Robert A. Thomas**

was the most environmentally friendly. Instead, she said, "I think it's horrible that McDonalds did not seize the opportunity to educate their customers about the correct environmental choice instead of giving in to their misconceptions." I was pleasantly surprised to hear her embrace such an open and progressive attitude. We lamented the way that we, as a society, often mishandle entrenched information, then I went on with my talk.

During the coffee break, I introduced myself. The young woman was Christine Lepisto, a chemical engineer with American Cyanamide, now Cytec, a company that produces many chemical products. The story could end here, but I was intrigued at meeting such a youthful chemical engineer, as opposed to the stereotypical middle-aged males that I normally expect. I have since found that there are, and have long been, many women in leadership positions in this field.

Lepisto talked of the many challenges and opportunities encountered working in industry by someone wanting to design a better environment for the world. It is important to understand that according to the Superfund Amendments and Reauthorization Act of 1986 (SARA; this act regulates the way we handle and dispose of toxic wastes) Toxic Release Inventory (TRI) report, American Cyanamide was, at that time, one of the most polluting chemical plants in the United States. So much so that its presence in Jefferson Parish (e.g. County), Louisiana, made that parish among the most polluting counties in the U.S, even though it had very few chemical plants. I knew that American Cyanamide was in

the process of developing a massive pollution reduction program. In fact, between 1987 and 1997, American Cyanamide invested over \$50 million and reduced their release of TRI pollutants almost 90%. This feat took them off of the list the top 10 polluting companies in the U.S.

A few years later, Jim Dutcher, Cytec's manager of public relations, affirmed that Christine Lepisto had been a integral member of the team that designed and implemented the company's pollution reduction program. Lepisto, as with all their chemical engineers, worked on the permitting required for the company's \$250 million expansion of their plant that produces melamine. She also worked on environmental audits, operation of the Environmental Awareness Committee, and the sulfuric acid regeneration program (in which they removed sulfuric acid previously injected into the earth, removed contaminants, and used it again to produce methyl methacrylate - clear plastic sheeting).

Since my encounter with Christine Lepisto, I have used her as an example of an environmentally-committed person who chose industry as her avenue for improving the environment. When talking about environmental career options, I always discuss environmental groups and organizations, nature centers, government, and the like. Then I describe Lepisto's approach and suggest that one of the best ways to protect the environment is to work inside industry and use their resources to solve environmental challenges.

I began to wonder if I was exaggerating this story after telling it so many times. I called Jim Dutcher and asked how to contact Lepisto. He said that she had left Cytec to work for a chemical company in Oklahoma. I called and got her on the phone. Imag-



ine the conversation. "Hello, this is Bob Thomas in New Orleans. Some years ago I was speaking at a meeting and I believe you were there dressed in blue jeans, a faded green shirt, Birkenstocks, you had braided hair, and were wearing wire-rimmed glasses." So far, there was total silence at the other end of the phone. I suddenly realized how I would feel if I were a young woman, my phone rang, and an unknown male voice began to describe, in detail, how I was dressed some years ago. I laughed and told her this must be a weird encounter for her, and she readily agreed.

But then she recalled the recycling meeting and said that she was wearing the same green tee shirt at that moment. We talked about my observations and I told her how I had used this situation as an example of 1) how one should not type-cast, and 2) how a person armed with the right education and capability, and the will to clean the environment, can have an incredibly positive impact working within industry. What better compliment can an environmentally concerned person receive than that he/she is recognized as an important part of one of the country's largest pollution abatement project?

Lepisto told me that she had left Cytec to gain experience working on more environmental challenges. She accepted a job with a company that was seeking to build an environmental staff that would aggressively work to improve the company's past record of poor environmental performance.

We discussed the thin line that a person in her shoes must walk. Lepisto is an avid member of several mainline environmental organizations, and she admitted that if she ever works for a company that uses lies and deception in their environmental campaign, she may well end up outside the gate carrying a protest sign in the demonstration line. Meanwhile, she is quite content to be helping to improve Mother Earth from within the heart and soul of America's industrial establishment.

## POLYSTYRENE VS. PAPER

In the mid-1980s, I considered products made from foam polystyrene ("styrofoam" being the most familiar trademarked name) to be something an environmentalist should never use. Everyone knew that polyfoam products produced awful litter and they virtually never biodegraded-the process would take 500 years! Polystyrene was the environmental devil. Companies were outlawing it and ceramic coffee mugs were springing up everywhere with logos professing a clean environment. Every good environmentalist knew that when given a choice, the responsible action was to choose paper food containers!

In 1990, the Council for Solid Waste Solutions commissioned a study by Franklin Associates LTD to compare paper food packaging with polystyrene packaging in a "cradle to grave" study; i.e., they were to compare the environmental impact of producing, using, and disposing of, say, a paper cup as compared to doing the same for one made of polystyrene. When looking at paper, they had to consider land use, impact on watershed, impact of planting and nurturing the trees, harvest, transporting, milling, processing into paper, turning the paper into a cup, and final destination (landfilling or recycling). Then they did the same for polystyrene, starting with extraction of hydrocarbons. The finding of this study was that polystyrene is the superior environmental choice! A sudden clamor arose, with many voices saying, "Well, of course your study said that! You are funded by the packaging industry and it is in your self interest to make these findings!"

A year later, Canadian scientist Martin B. Hocking replicated the study, corroborated its results, and published his findings in a highly respected refereed journal.<sup>1</sup> This was followed by a deafening silence. Basically, critics of the first study said, "Okay, let's focus on another issue." The analyses were astounding. They found that it takes about 33g of wood, 4g of fuel (oil or natural gas), and 1.8g of nonrecycled chemicals to produce a 10.1g paper cup (with no plastic or wax coating). To produce a polystyrene cup, only 1/6 the materials are required and the chemical requirement is only 3% that of a paper cup. One could go on and on (as does the Hocking article), but it is sufficient to say that in every way possible, polystyrene seems to be a superior product to paper for use in disposable products. Paper products costed out at about 2.5 times that of polystyrene.

We used to praise paper because it biodegrades and polystyrene does not. Since we have found that paper does not always biodegrade in landfills, and, when it does, produces methane, carbon dioxide, and many water soluble products (such as cellulose) that create oxygen demand when decomposing, paper products are not as environmentally friendly as we once thought. Indeed, polystyrene is inert and does not degrade into harmful components. What was once a negative is now a positive when compared to the down side of paper decomposition.

After this information became public, some fast food businesses shifted to paper products - even though the evidence suggested that they should stay with polyfoam. Why did they do it? Because the uninformed customers demanded it. What a tragedy. And to add to the environmental mistake, their paper products cannot be recycled anyway, because health regulations demand that the paper be plastic coated!

Does all of this mean that the proper environmental decision is to simply use polystyrene? Absolutely not. The proper environmental solution is to 1) reduce your use of any of these products, 2) use washables when possible, and 3) use polystyrene when forced to make a choice.

<sup>1</sup>Hocking, M.B. 1991. Paper vs. polystyrene: a complex choice. *Science* 251:504-505. Also, see also challenging letters to the editor that followed in the June 7, 1991 issue.

*Dr. Robert A. Thomas is Director of Loyola University New Orleans's Center for Environmental Communications and holds the Loyola Chair in Environmental Communications. He was founding Director of the Louisiana Nature Center, and focuses his work in environmental interventions, policy, and media analysis.*

## Research in Progress

# HABITAT ECOLOGY OF THE AMERICAN DIPPER

## Katherine Strickler

The American dipper (*Cinclus mexicanus*) is a unique and characteristic bird of swift mountain streams in the northern Rocky Mountains. It inhabits clear, fast-flowing waters, feeding on aquatic insects and nesting in and along streams on rocks, cliffs, and bridges. Although the bird is common, relatively little is known about the habitat requirements of dippers, or of the factors that regulate their populations. Dippers are not neotropical migrants, but do migrate altitudinally, often seeking larger rivers at lower elevations at which to spend the winter, before returning to the small, swift streams at higher elevations for the breeding season.

Katherine Strickler and Dr. Kirk Lohman, Department of Fish and Wildlife Resources, University of Idaho, designed a study to investigate the distribution of dippers in wilderness areas in the northern Rockies. Objectives of the work included estimation of abundance of American dippers, determining their habitat requirements, and identifying some of the factors that influence the density of dippers. Specifically, Strickler and Lohman sought to identify the range of habitat conditions that dippers occur within. For example, are dippers limited to, or more abundant in, streams of a certain size, or that have a certain substrate type? They also investigated whether the abundance of dippers is limited by the number of aquatic insects that are present in a stream, or if streams with a greater number of insects are likely to have a greater number of dippers.

Although bird abundance can be difficult to estimate, there are indirect ways of estimating bird densities. Dippers are territorial, and the size of their territories can accurately be measured. Strickler and Lohman hypothesized that territory size would be much smaller in streams where insects were

abundant, and much larger in streams where insects were scarce.

Strickler conducted field work over the past three years in several wilderness areas, including the Wenaha-Tucannon drainage, Washington; Eagle Cap wilderness area, Oregon; and the Hells Canyon, Selway-Bitterroot, and Frank Church wilderness areas in Idaho. She collected information on dippers, their territories, and characteristics of streams, including physical, biotic, and chemical factors. Strickler banded dippers, located their nests, and investigated productivity of the streams.

Preliminary conclusions of the study are that American dippers use deeper, wider streams with larger substrates, and lower nutrient concentrations than unused streams. Dippers are associated with streams that have greater insect abundance, richness, and proportions of intolerant taxa. Aquatic insect abundance and richness

are related to similar stream features as dipper occurrence. Nest site availability may limit dipper use of lower elevation, productive streams.

Strickler is currently working in the field, and plans to complete her work in Fall 2000. This summer, she is collecting blood samples from dippers for genetic analyses that will help her to investigate whether the same individuals, or related individuals, are using the same streams year after year.

Katherine Strickler is currently working towards completion of her doctoral degree program at the University of Idaho. She holds a B.A. in Human Biology (Conservation Biology Concentration) and an M.S. in Biological Sciences, both from Stanford University. Strickler has over a decade of professional experience in biological research. Her expertise is in avian ecology, and a primary focus of her work has been analyzing the impacts of human activities to threatened, endangered, and sensitive species.

Strickler and Lohman's research was supported by the Idaho Department of Fish and Game, the Mazama Foundation, and Potlatch Corporation. Most recently, the DeVlieg Foundation provided support by selecting Strickler as the first Charles DeVlieg Wilderness Research Fellow (see box).

### Charles DeVlieg Wilderness Research Fellowship

The University of Idaho announces the availability of the Charles DeVlieg Wilderness Research Fellowship, to begin in January 2001. This fellowship offers three years of support for a Ph.D. student to carry out research focused on fish or wildlife questions in wilderness areas.

Idaho is the home of the largest area of defined wilderness in the U.S. outside of Alaska. The College of Natural Resources has a unique research center in the heart of the Frank Church River of No Return Wilderness. Taylor Ranch is a 65-acre site accessible by trail or airplane, and offers access to more remote sites.

The DeVlieg Fellowship will support research in any wilderness area in North America. Interested applicants should first contact a faculty member from the department regarding serving as a major professor; visit the web site at <http://www.uidaho.edu/cnr> to learn more about the faculty. Graduate School information and application for admission can be obtained at <http://www.uidaho.edu/admissions/application/grad-app>. One copy of the application should be sent directly to the Department of Fish and Wildlife Resources (attn: Karla Makus), marked "DeVlieg Fellowship." Applicants should relate their research interests to wilderness research in particular. Applications should be submitted no later than September 1, 2000. For further information, contact the Department at 208-885-4006, or visit the College of Natural Resources on the web.

# UNWRAP YOUR PRESENCE

Have you ever seen someone who just seemed to have it all together? I know I have, and because I've always aspired to be one of those people, I admit that it's caused me to feel slightly envious. For me, someone who looks as if they have it all together conveys a sense of inner confidence in themselves, and in turn, competence. The benefits of being a person who is viewed in this way are many, but the bottom line is that it contributes to your personal success.

Let's look at what things about a person might convey a positive presence. The elements appear to be a combination of the physical and mental—your physical image and an inner essence or confidence that just shines through. Much has been written about how to dress for success, and of course dress and personal hygiene are important parts of professional presence. But, it isn't a problem to find information that can help you with your clothing. What I recommend you focus on is the fact that your physical presence conveys a great deal more than simply the clothes and accessories you choose. For example, your posture, how you hold your head, your handshake, and the tone and clarity of your voice; all are vitally important to how you, and your abilities, are perceived by others.

All of the unconscious messages that your presence gives off can be improved by working on just one thing, your self confidence! This is a huge subject, but so very important. I'll touch on a few things I think can be of real help. I believe that if someone has confidence in herself, it shows on the outside. Unfortunately, very few of us are born with an excess of self confidence. The good news is that there are things we

can do to boost our confidence in ourselves. Let me share some things that work for me or I've seen work for others.

Trying new things, gaining hands-on experience, having successes, and giving yourself credit for those successes (whether they be large or small), are important ways to build your skills and your confidence. After starting my business years ago, I had lapses in confidence when dealing with new clients. Although I felt I could deliver on what I was promising, I wanted to truly believe in my abilities. So, I started keeping a "success log." I used the log to briefly record challenges that I had dealt with successfully in the past. When my confidence flagged, I simply pulled out the log and read through it, thereby giving myself the opportunity to remember accomplishments which demonstrated my capabilities. It seems that too often, we just don't take the time to stop and give ourselves credit for what we do. As a first step in boosting your confidence, try to reflect once a week on something you did well. Turn that into a habit, and I think you'll be surprised about what kind of long-term positive effects it can have on your self esteem.

Another way to increase your confidence is to set realistic goals for yourself and achieve them. For example, if you've been inactive and would like to become more fit, try setting a goal to walk for a half an hour two-three times next week and see how you do. However small it may seem, if you do walk as a result of setting that goal, you've achieved a success, and can go on to set incrementally more ambitious goals. I believe that the process one follows, and the learning that comes from setting and reaching goals in one area of

your life can translate to other areas of your life, too.

We can all probably think of someone who slumps and speaks so timidly that we have to struggle to hear them. Fair or not, this behavior doesn't exactly inspire confidence in us about that person's abilities. We need to convey to others that we are comfortable with ourselves. One thing that has helped me, is to make a conscious effort to stand up straight and tall. It's easy enough to try, might help, and has no known side effects!

Getting organized and being prepared can also contribute to successes. I recently had the opportunity to give a speech in front of several hundred people. After I got over my initial excitement, I started to become anxious. Being anxious turned into a motivating force for me and I worked hard at preparing and practicing my speech. So, given all of the practice and preparation, was I calm when I took the stage and did I deliver my speech flawlessly? Of course not - I'm only human! But, I gave the speech, and while I did feel anxious, I wasn't terrified. And, I did learn a few things from the experience, so that I'll be able to do even better next time. The preparation allowed me deliver a speech that was considerably more professional than I would have done without the extensive preparation.

Another tip for success is to envision the outcome you want ahead of time. This technique could be useful if you are an Olympic diver or more likely, interviewing for a job. In the case of the interview, you can envision yourself as you enter the room, meet the selection panel, and answer the questions articulately. Hopefully



you've also prepared by anticipating at least some of the questions you will be asked and can see yourself answering them in a calm, direct way. My experience has been that once the interview starts and it's going the way I had envisioned it, I can relax and do an even better job. After the interview is over, whether you got the offer or not, you should do two things. First, give yourself credit for what you did well, and second, evaluate your performance constructively and learn from it. If you do this, you'll have that much more confidence the next time you are faced with the same or a similar situation.

On the subject of self confidence, I would be remiss not to mention the slogan "Fake

it till you make it." First of all, one caveat: it's never appropriate in my book to misrepresent yourself or your experience. That said, if this idea encourages you to stand tall and take a risk or try something new, then why not? We've all seen people, usually the kind without ovaries, that this has worked like a charm for, and others who've only come across as blowing smoke. Because each of us is different, you may have your own techniques for boosting your confidence in a tough situation. Use whatever works for you while being true to yourself!

To sum up, while confidence can be gained from actual experiences, we'll never reach a point where we have previous experi-

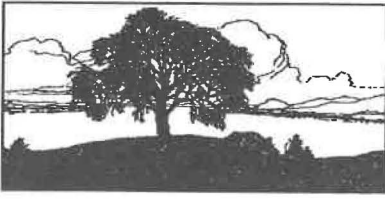
ence dealing with every possible situation. So, ultimately, self confidence is based upon a belief in yourself, built up from a variety of successes, and the feeling that you can handle whatever comes your way. In other words, it's OK not to know something when you trust your ability to figure it out and aren't afraid to try. Sometimes you just have to fly by the seat of your skirt! So, in addition to working on our outer selves, we need to work on our inner selves too. By doing so in a conscious way, you'll boost your self-confidence and as a result find that you can more comfortably take risks, learn from experiences, develop new skills and abilities, land opportunities, and create success for yourself.

### **KIOSK, cont. from pg 41.**

**International Perspectives: The Political, Social, and Economic Impact of Education for Women and Girls - A Forum to Explore How Women Create Change in Their Communities and in the World, November 17-18, 2000, Wyndham Hotel, Washington, D.C.** The American Association of University Women (AAUW) Educational Foundation is holding its first international biennial symposium to explore how women have used their education to become catalysts for change in social, political, and economic arenas in their countries. While global in scope, the symposium will focus on Africa, Latin America, the Pacific Rim, and the countries of the former Soviet Union. The symposium seeks to convene policy-makers, practitioners, and scholars to exchange information and ideas, and identify new research, policy and program strategies to advance education for women and girls; to establish a forum for reporting on programs and projects currently under way that advance the political, social, and economic status of women; and to strengthen the network of people to further these objectives. Register by Oct. 15, 2000 online at <http://www.aauw.org/7000/ef/symposium.html> or contact the International Symposium Coordinator, AAUW Educational Foundation, 1111 Sixteenth St. N.W., Washington D.C., 20036, FAX 202-463-7169, email: [intsymp@aauw.org](mailto:intsymp@aauw.org).

**Fire Conference 2000: The First National Congress on Fire Ecology, Prevention and Management, November 27-December 1, 2000, Town and Country Resort and Convention Center, San Diego, California.** Fire management is now in the forefront of natural resource management and land management planning nationwide, with fire-related issues becoming more complex each year. This first-time national conference will bring together fire researchers, managers, and other professionals in a common forum for both big-picture overviews and specialized workshops to address the needs of various fire management specialties. Register by calling (800) 752-0881 or (530) 757-8777, or online at <http://www.universityextension.ucdavis.edu/fire/>. For more information, contact Sandra Cooper, University Extension, UC Davis, 1333 Research Park Drive, Davis, CA 95616-4852, phone (530) 757-8948 or email [scooper@unexmail.ucdavis.edu](mailto:scooper@unexmail.ucdavis.edu).

**Call for Papers: International Education Conference, The Globalization of Education, March 4-6, 2001, San Jose, Costa Rica.** The Hispanic Association of Colleges and Universities (HACU) invites your submission of professional papers on economic development, higher education technologies, or the environment. All conference tracks will focus on models for cross-border partnerships and initiatives. Oral presentations will be in English and Spanish, with simultaneous translation provided. An international roster of speakers and participants will include the President of the Republic of Costa Rica, Dr. Miguel Angel Rodriguez Echeverria, who will open the conference. For more information, visit <http://www.hacu.net> and click on "Call for Papers" on the HACU 4<sup>th</sup> International Conference page. Also, information can be obtained from HACU, 8415 Datapoint Dr. Ste. 400, San Antonio, TX 78229, phone 210-692-3805 ext. 3229.



### **Institute for Tropical Marine Ecology, Dominica, Lesser Antilles.**

The Institute (ITME) is now operating on a year-round basis, and offers 3-month semester programs, 6-week summer courses, and serves as base for visiting researchers and student groups. There has been little exploration of Dominica's marine environment, and opportunities for marine biologists to be among the first to study these waters abound. ITME operates out of and manages the Archbold Tropical Research and Education Center. The facilities are located in a narrow valley of tropical rainforest, and overlook the Caribbean Sea. The complex includes laboratory, classroom, and living space, and can accommodate 30 visitors. Marine operations are being carried out with the support of a small dive center nearby. For more information on academic programs, research opportunities, or bringing student groups, contact ITME, PO Box 944, Roseau, Commonwealth of Dominica, West Indies, phone 767-449-3725, email: [admin@itme.org](mailto:admin@itme.org), or visit <http://www.itme.org>.

**International Conference on Riparian Ecology and Management in Multi-Land Use Watershed, August 28-31, Double Tree Portland/Lloyd Center Hotel, Portland, Oregon.** The American Water Resources Association will convene its Summer Specialty Conference as a forum for the discussion of multi-disciplinary as-

pects of riparian areas and stream corridors in multi-land use watersheds. Natural resource issues ranging from salmon recovery in the Pacific Northwest of the U.S. to ecological effects of the massive earthquake in Taiwan highlight the importance of riparian area ecological functions. Progress has been made in understanding the functions of riparian areas within individual land uses, but knowledge about the integrated function of these areas in multi-land use watersheds is still quite limited. To register or receive more information, contact AWRA, 4 West Federal St., PO Box 1626, Middleburg, VA 20118-1626, 540-687-8390, FAX 540-687-8395, or email: [info@awra.org](mailto:info@awra.org), or visit <http://www.awra.org>.

**4<sup>th</sup> International Conference on Integrating Geographic Information Systems (GIS) and Environmental Modeling, September 2-8, 2000, Banff Centre for Conferences, Banff, Alberta.** The conference is sponsored by the National Science Foundation, NASA, the U.S. Forest Service, the Environmental Protection Agency, and other federal agencies. The emphasis of the conference is on predictive, numerical modeling approaches to environmental problem solving. A special conference theme will be human-environment interactions, and the role that GIS and modeling have in their improved understanding and prediction. For further information, consult the conference web page <http://www.colorado.edu/research/cires/banff/>, or write Conference Secretariat, GIS/EM4, Cooperative Institute for Research in Environmental Sciences, CIRES Bldg. 216, University of Colorado, Boulder, CO 80309-0216, email: [GISEM4@colorado.edu](mailto:GISEM4@colorado.edu).

### **Introduction to Permaculture: A Design Workshop for Women, September 8-10, 2000, Pragtri Farm, Arlington, Washington.**

The purpose of this workshop is to create a comfortable, supportive environment to learn philosophy, principles, and strategies of permaculture, a holistic design system. The Workshop will include practical examples and hands-on experience. For more information, contact Workshop Instructor Jude Hobbs, 1161 Lincoln Street, Eugene, OR 97401, 541-342-1160, email: [hobbsj@efn.org](mailto:hobbsj@efn.org).

### **Endangered Species: Water Resources Issues and Coordinated Compliance, September 11-12, 2000, Sacramento Hilton Inn, Sacramento, California.**

This conference annually examines issues related to the federal Endangered Species Act and the California Endangered Species Act. This year the conference will address approaches to coordinated compliance with multiple regulations. Conference topics will include fisheries ecology and the ESA, water supply and ESA, Section 7 analyses of indirect effects, dam decommissioning, and local land use planning and ESA compliance. For more information or to register, call University of California Davis Extension, 800-752-0881.

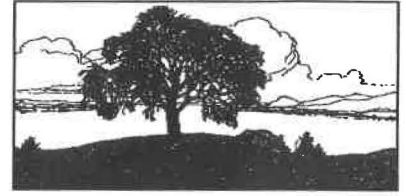
**Trees, People, and the Law National Conference, September 26-27, 2000 and Community Forestry at Its Best National Conference, September 28-30, 2000, Nebraska City, Nebraska.** The National Arbor Day Foundation will convene these conferences. Trees, People, and the Law will focus on providing a background for understanding the issues surrounding the rights, duties, and liabilities associated with incidents related to trees that municipalities and other

government agencies, utilities, private contractors, and landowners might have. In cooperation with the National Association of Towns and Townships, the Foundation presents the Community Forestry At Its Best Conference to address new techniques, ideas, and trends in planning and gaining support for urban forestry, and in working effectively with partners and volunteers. To register or receive more information about both conferences, contact Conference Services at 402-474-5655, email: [conferences@arborday.org](mailto:conferences@arborday.org), or visit <http://www.arborday.org/programs/conferences.html>.

**Mentoring to Change the Face of Science, National Conference of the Society for Advancement of Chicanos and Native Americans in Science, October 12-15, 2000, Hyatt Regency, Atlanta, Georgia.** Mentoring was chosen as the theme of the 2000 SACNAS National Conference to commemorate the Society's 27-year history of bringing mentors and students together. Also, the Society seeks to honor the Native American concept of elders and their role in transferring values and skills to younger generations. This national conference will provide a forum for students, faculty, and professionals in science and education to address the unique accomplishments and issues of minorities in science. Register by September 15, 2000 with SACNAS, PO Box 8526, Santa Cruz, CA 95061-8526, phone 831-459-0170, fax 831-459-0194, email: [info@sacnas.org](mailto:info@sacnas.org), or register online at <http://www.sacnas.org>.

*MOVING? Don't forget to send WiNR your mailing label along with your new address!*

**Annual Water Resources Conference, November 6-9, 2000, Miami, Florida.** The American Water Resources Association will convene its annual conference to present a wide variety of topics from many different areas of water resources, with focus this year on coastal areas. Coastal areas experience great challenges with their close association with water resources. These areas are often threatened by tropical storms and hurricanes on the Atlantic and Gulf coasts, resulting in millions of dollars in damage from flooding and the alteration of natural and artificial waterways. The Miami area provides the locale for a focus on coastal and estuarine issues, and also increasingly important international issues. For further information, contact AWRA, 4 West Federal St., PO Box 1626, Middleburg, VA 20118-1626, 540-687-8390, FAX 540-687-8395, or email: [info@awra.org](mailto:info@awra.org), or visit [www.awra.org](http://www.awra.org).



**First International Conference on Distance Sampling: Estimating Wildlife Abundance for Ecology Management and Conservation, July 30-August 3, 2001, St. Andrews, Scotland.**

This conference will bring together all those interested in estimating wildlife abundance using distance sampling methods. See the conference website <http://www.ruwpa.st-and.ac.uk/icods/> for information and to register potential interest, or contact the conference organizer, Rhona Rodger email: [rhona@dcs.st-and.ac.uk](mailto:rhona@dcs.st-and.ac.uk).

*(Kiosk continues on pg 39)*

**TO SUBMIT A MANUSCRIPT** to Women in Natural Resources journal, send to the editorial office a single spaced preliminary draft, preferably by email ([winnr@uidaho.edu](mailto:winnr@uidaho.edu)), or by FAX (208-885-5878), to Dr. Sandra Martin, Editor, for consideration. To discuss a topic, please call 208-885-6754 or email.

**TO ADVERTISE A POSITION OR PRODUCT** in a flyer or journal, send text by FAX or email for an estimate of cost. WiNR sends out job announcement flyers about every three weeks. The journal is quarterly. Price for a full page (8 1/2 x 11 inches) in the journal or the flyer is \$1100; half-page is \$550; one-third page is \$366; quarter-page is \$275; one-sixth page is \$183; the smallest is one-eighth at \$140. We format at no extra charge, or accept camera-ready copy sent to our address (see below).

**TO SUBSCRIBE**, send (to address below) \$39 for a library, government agency, business, or university; \$23 for a personal subscription; \$17 for a student. Non-USA add \$10 postage. We accept credit card payments - please include credit card number, expiration date, amount, and name on card.

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