

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

Volume 15, Number 2, December 1994

**Focus on Natural Resources
Conservation Service
formerly Soil Conservation Service**

**Interview: Joan Perry
COLORADO District Conservationists
Buzzard's Bay Massachusetts
Family Connections
Agroforestry
Creating Dunes
Crisis Management During Floods**

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

Guest Editorial

Judy Johnson

Leader, Strategic Planning Team
Natural Resources Conservation Service



SCS fades away as the NRCS blossoms into life

Fitting. That's how I would describe the October 20, 1994 celebration ceremony in Washington DC at which the reorganization of the U.S. Department of Agriculture was signed into being. And when the Secretary of Agriculture called forward the newly designated Under and Assistant Secretaries to share a ceremonial glass of champagne, cheers went up from the assembled crowd in the patio of the Administration Building. Indeed there's much to cheer—for this "people's department," recently maligned by press and public alike for being archaic and out of touch with its customers, needed this reorganization.

"Team USDA" now has an opportunity to recreate itself. It will be an enormous task. It will not happen overnight. And there are certainly still many trouble spots to deal with along the way. But the basic legislation has been put into place to create a streamlined USDA with six mission areas. The 41 agencies are being collapsed to 29. Agencies with proud histories will fade out of existence as newly created organizations step up to meet the challenge of creating a "government that works better and costs less."

The Natural Resources and Environment mission area will be headed by Undersecretary Jim Lyons. Lyons, who has been with the Department since May 1993, will continue to provide leadership to the Forest Service and the newly created Natural Resources Conservation Service (formerly Soil Conservation Service). It's been fascinating to have a front-row seat here in Washington as the reorganization took shape. The entire process has been filled with endless data gathering and documentation by the agencies, while the administration and congressional leaders waltzed to a mesmerizing dance of legislative policy development—which at times seemed to have no end. But the bargaining and trade-offs did come to an end and the legislation finally passed both Houses of Congress at the eleventh hour—and now the real work of implementing the grand plan begins.

Right now the most often asked question by those holding USDA positions across the

country has been, "how will this reorganization affect my job?" I certainly don't have the answer to that question, but I think we all have heard leadership say repeatedly that they are working hard to implement reorganization with people as their number one concern. I'd like to set aside that primary question and focus on the opportunities which certainly lie ahead in the coming months.

Just six months shy of its 60th anniversary, the Soil Conservation Service (SCS) becomes the Natural Resource Conservation Service. SCS arrived on the national scene to battle the enormous soil erosion problems caused by the great drought of the 1930's. It passes into the archives of history as the accomplishments of the largest erosion protection program ever undertaken in the history of the world are being written and evaluated. The Food Security Act of 1985 and the Food, Agricultural and Trade Act of 1990 staked out the nation's highly erodible land for protection and told farmers to get erosion under control or risk losing eligibility for a wide range of government support programs.

The record is impressive: more than 1.7 million plans on highly erodible land were written. Today, 92 percent of these plans are on schedule and are expected to be completed on time, showing the commitment of America's farmers and ranchers to controlling soil erosion. They deserve the nation's gratitude. It has been estimated that over \$400,000,000/year will be saved because topsoil is being held in place instead of filling in reservoirs, polluting water systems, lakes, and streams. The price, some will say, has been too great—both in cost to taxpayers and in cost to the "farmer friendly" image of SCS.

Up until 10 years ago, the agency had spent 50 years working with farmers and ranchers to develop conservation plans on a strictly voluntary basis. The FSA/FACTA legislation, however, has sometimes put SCSers in a position of both technical advisor and erosion cop. The negative label feels uncomfortable and has forever changed the chemistry between farmers and federal bureaucrats, especially in some parts of the country. I would suggest that many lessons have been learned in these last 10 years

which will help create a broader, customer-connected Natural Resources Conservation Service. I, for one, think this change for our organization comes precisely at the time in our history that we can make a transition to a "new way of doing business" which will be a win-win for the agency and its customers.

I see the new Natural Resources Conservation Service (NRCS) evolving from the nearly single-focus, Washington driven, erosion control force to an organization skilled in community-based natural resource problem solving. NRCS can look for models to the successful and well-received Resource Conservation and Development (RC&D) and PL566 Watershed Planning programs and apply them to ecosystems of varying scales—from river basins to large and small watersheds, depending on the interest of the communities involved and the critical nature of the problems.

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WOMEN IN NATURAL RESOURCES

December 1994

Volume 16, Number 2

For a soil scientist, every day is "earth day."



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Anonymous

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Judy Johnson
Leader
Strategic Planning Team
Natural Resources
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The cover photo
is of

Joan Perry
Director
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SCS Reacts Quickly to Texas Floods
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A crisis management plan is not created overnight while the crisis is developing. Informing the public, activating emergency plans, organizing funding and staff to work swiftly in concert requires advance planning.

Vienna would not be the same without news from home. Women in Natural Resources provides very special news from home. Thanks. Keep it coming.

Brian Payne, American Embassy, Vienna, Austria

As a close working colleague and friend of Wenonah "Noni" Sharpe, I thank you very much for the recognition (September 1994) of this outstanding woman in natural resources.

John Hendee, Moscow, Idaho

Thanks for the Wenonah Sharpe interview. I used Sharpe texts in a couple of my courses and wondered about the collaboration. Could you provide some more information about her very attractive cover photo on that issue? What is the design behind her?

Kathleen Khan, Venice, California

Editor's note: We asked for some information from the Sharpes:

The background of the cover photo is a ceramic mosaic executed by our daughter, Loretta Sharpe (pictured here with the piece). She finished it in 1976, while working toward her Bachelor's at The Evergreen State College, Olympia, Washington. The subtly-colored design is Kwakwiltl, representing thunderbird with whale in his claws, and is mounted on an outside wall.

Loretta earns her living as an artist and a firefighter. She helped put herself through college by fire line duty based out of the Gifford Pinchot National Forest, where she has worked both seasonally and full time for 18 years. During the summer of 1994, she served on a Forest Service Overhead Team on wildland fires, in the capacity of Strike Team Leader.

Grant and Wenonah Sharpe, Port Ludlow, Washington



Sex discrimination may haunt natural resource agencies, however, Dr. Joy Belsky's expose published in your June 1994 issue presented an unidimensional view of a complex selection process. We were disturbed to see Dr. Michael Collopy's character maligned in this article. An active proponent of equal opportunity and affirmative action, Dr. Collopy was responsible for hiring the only two female faculty members in the Department of Wildlife and Range Sciences

at the University of Florida during his tenure as Chair... He was a valued colleague and mentor. Half of all the graduate students that Dr. Collopy recruited and advised were female. They now are working professionals in the field, indicative of the sound supervision... While we applaud all attempts to expose and eradicate sex discrimination, unfair or erroneous character defamation must be guarded against in the effort to name names and take no prisoners.

Susan K. Jacobson and Lyn C. Branch, Gainesville, Florida

Having been a faculty member at two institutions, I have been the victim of serious sexual harassment and have helped students deal with being sexually-harassed/discriminated against by faculty members. I consider it to be a deadly serious issue. However, we have to be careful not to throw the baby out with the bathwater in our attempts to change attitudes and behaviors. The first step would be to make sure that we are not committing the same crimes that we accuse others of committing. In the case of this article, it appears that no attempt was made to present both sides of this issue. I do not believe that Mike Collopy is the biased person described... I am an example of a professional woman that he hired and I have found him to be honest, fair, and hard-working. This is a guy who helps coach his daughter's baseball team and has offered to babysit when one of his female students needed to be in the field. Second, characteristics of the "selectee" were grossly misrepresented. Not the least of which was the fact that, at the time of application, he had six years of continuous funding from the NSF (and now has more)... I am shocked that a professional journal would publish an article that included the names of people involved in a specific hiring situation without first checking the facts with both parties involved. The accused party should have had a chance to show their side of the issue. I hope readers recall that this case has already been tried in several courts and Mike Collopy was shown to be innocent....

Susan M. Haig, Corvallis, Oregon

Environmental Horticulturist Extension

Assistant Professor, Extension Floriculture Specialist

The University of Florida Gulf Coast Research and Education Center-Bradenton has open a tenure-track, 12-month position (70/30 percent extension/research in floriculture production. Ph.D. in Horticulture, Floriculture or closely related field, plus knowledge of floricultural crops. **Applications accepted until March 15, 1995;** approximate starting date is May 15, 1995. Forward letter of application, vitae, official transcripts, three letters of recommendation to Dr. G. J. Wilfret, GCREC, 5007 60th St. E., Bradenton, Florida 34203 (Phone 813-751-7636). Salary is commensurate with experience. Applicants should request a complete position announcement before applying.

The University is EEO/AAE.

The article by Joy Belsky brought tears to my eyes. The courage it took to write what she did amazes me. Her pivotal point is that some federal agencies and universities talk the diversity talk but don't walk the walk. All the high ranking official babbling about qualifications, advertising for the best managers and scientists regardless of gender, following the rules and regs—is often just blather. These committee guys—especially in certain disciplines she takes aim at—get together and hire whom they please. So then you can add blather about fairness to obfuscate the facts that women are being blocked

from getting jobs in some disciplines (in this case range) because the males in them pay no attention to their own agency or university rules. They know that the so-called diversity watchdogs in some offices are really pet dogs... No doubt most of the people Belsky named are nice people and good scientists, but we all know the situation she described rings as true as a bell. Her premise for naming names was that anonymous whining about unfair practices gets eminently qualified women candidates nowhere in certain disciplines... We need to follow through with investigations wherever there is a paper trail and a long history of blatant screening-out of women. This time there was a paper trail and Belsky caught them paying no attention to their own blather.

Marian Dolen, Houston, Texas

In your March 1994 issue I read a great article by Christine Thomas and Tammy Peterson about the "Becoming an Outdoors Woman" program that was started in Wisconsin. I kept my eye peeled for any information and fortunately saw a small promo in *Outside* magazine for the one held in Oklahoma October 14-16, 1994. I drove 14 hours to reach Kingston Oklahoma and spent a wonderful weekend learning about flyfishing, canoeing, and archery/bowhunting (three of the 14 courses offered). Being able to learn these outdoor skills in the company of other women (over 90 attended the three day event) is a very empowering experience. I am planning to purchase archery equipment, and may try my hand at bowhunting. There are 26 states planning to have these workshops in 1995. I would like to see WiNR publish the 1995 schedule.

Norma Van Nostrand, Monte Vista, Colorado

The September issue of WiNR had a very offensive and demoralizing advertisement for a WiNR logo T-shirt and patch. The ad depicts a 1940s housewife, headscarf and all, flexing her muscle while wearing the WiNR T-shirt and patch. Worse yet, the ad reads, "It's war out there, friend." What on earth are you trying to promote? The same kind of offensive, macho posturing and gesturing that we've been trying to discard for decades? Please get rid of that ad...

Bonnie Brooks Erpelding, Rochester, Minnesota

Editor's note: The woman you find offensive in the ad is "Rosie the Riveter" of World War II fame who has provided an icon of grit, muscle, and determination for women for 50 years. She has been used countless times as a symbol of women who rise up, become qualified, and go out to do a job. Read on for a letter from someone who is disappointed that only the WiNR arm patch logo and not Rosie herself is on the shirt.

I would like the T-shirt with Rosie on it since I've always wanted something with her picture. I thought that this would be the perfect expression ofchutzpah. Please let me know how I may exchange the shirt you sent (with the WiNR logo) for a Rosie the Riveter logo.

Nancy Thomas, Las Vegas, Nevada

A note to our readers about this issue

In this issue, we focus on USDA's Soil Conservation Service which is in transition to a new name and a new organization, with an updated structure. As we began receiving manuscripts in the summer of 1994, we heard rumors about the timetable for the name change. About the time we finished preparing it to go to the printer, SCS had become NRCS, the new Natural Resources Conservation Service—but not quite officially. There seemed to be no agreement among our contributing authors about when this change became official. Some wrote to say we could not use the new name until after what would be our publication date, others faxed us to tell us to change everything over to NRCS immediately, while still others told us to use both names, e.g. NRCS, formerly SCS. We have opted to announce the change (be sure to read the editorial about this), use the names in the original manuscript as sent to us—and let the reader mentally bid adieu to the SCS and welcome the NRCS. In preparing this issue, we are indebted to Sharon Norris, Idaho State Office NRCS, and thank her for her assistance.

QUALITY ASSURANCE SPECIALIST

USDA FOREST SERVICE, Radnor, Pennsylvania

Want to work in a multicultural and diverse organization whose employees work in a caring and nurturing environment? Then look at this job with the Northeastern Forest Experiment Station, where the Station Research Quality Management Program has available a PERMANENT position.

The Program mission is to integrate modern QA/QC methods into station research.

Incumbent will work with the Station research staff to develop, implement, monitor, revise and document Quality Assurance/Quality Control protocols and standards for all NE Station research activities.

The salary range is from \$35,291 to \$65,383 per year. The position does afford life and health insurance benefits, retirement, and annual and sick leave privileges.

All applicants for this position will receive consideration without regard for any non-merit reason such as race, color, religion, sex, national origin, political affiliation, marital status, physical handicap, age, or membership or non-membership in an employee organization.

For information regarding qualifications required and application procedures, contact Ivalee Horton at 610-975-4245 for Vacancy Announcement Number NE-DEMO-95-02.

Four Colorado District Conservationists individually describe the varied SCS work they do and the interesting places in which they do it. They give new meaning to the mottos which applaud those dedicated to "deliver services to the ground."

COLORADO

Colorado is a state of distinct landscapes and diverse people. In the west and southwest is mesa country; in the central part of the state are the Rocky Mountains with peaks reaching over 14,000 feet in elevation; and to the east are the high plains, characterized by gently rolling grasslands.

The organizational structure of the SCS in Colorado includes at the top, the state office in Lakewood headed by the State Conservationist. At the next level are four area offices headed by Area Conservationists who are located in Grand Junction (Area 1), Greeley (Area 2), La Junta (Area 3), and Alamosa (Area 4), and six Resource and Conservation Development (RC&D) areas. Under the jurisdiction of each Area are 12-15 field offices, each headed by District Conservationists.

AREA 4
 Southcentral and
 Southwestern Colorado
Norma Van Nostrand
 District Conservationist
 Alamosa Field Office

The San Luis Valley, in south central Colorado, boasts 360 plus days of sunshine a year and mild summer temperatures ranging in the mid-80s. The "Land of Cool Sunshine"—our valley's slogan—is rimmed by towering mountain peaks with the San Juan Mountains on the west and the Sangre de Cristos on the east. At 7600 feet in elevation, the town of Alamosa, in Alamosa County, lies in the heart of this "high desert" valley. The county encompasses 462,000 acres, two-thirds privately owned, of which 260,000 acres are rangeland and 150,000 acres are irrigated cropland, pastureland, and hayland.

The San Luis Valley was settled over time by various groups historians like to single out: the Ute Indians, the Spanish, the Mormons, plus white immigrants. The Spanish were the first to introduce horses, cattle, and sheep and early settlers considered the valley primarily for grazing.

In the mid-1850s, however, settlers from northern New Mexico came into the southern San Luis Valley and began diverting water from

the Conejos River for irrigating small grains, peas, and pasture. A few years later, irrigation water from the Rio Grande made the northern part of the valley bloom.

Although we receive a scant seven inches of precipitation a year (hence the name "high desert"), snowmelt from the mountains helps supply water for irrigation and the necessary recharge to the shallow unconfined aquifer that flows 100 feet beneath the valley floor. The aquifer is a dynamic resource that fluctuates with the season and pumping demands. During drought years demands for irrigation water can seriously deplete the aquifer storage. Therefore ground water recharge systems—pits, ponds, basins, and ditches—which utilize surface water are necessary to replenish and maintain the aquifer.

In 1883, T.C. Henry of Denver realized large quantities of water were available from the many mountain streams in the valley and started building three large canals to transport the water to farmers. This system of canals marked the real beginning of agricultural prosperity in the San Luis Valley. Today, over a half million acres are irrigated from a combination of surface and ground water sources. The introduction of center pivot sprinkler irrigation systems to 200,000 acres of farmland during the 1960s and 1970s provided another technological boost to the better use of irrigation water. In

Alamosa County over 66,000 acres are irrigated with them. Flood irrigation is used also to irrigate crops like grass hay and alfalfa.

By the late 1800s, the Valley became recognized for its ability to produce vegetables. Colorado ranks fifth in the nation for potato production and the San Luis Valley raises 90 percent of the state's crop, bringing in about \$150 million annually. Other high producing crops grown during our short growing season of 90-100 days include malting barley (for the Adolph Coor's Brewery), grass hay, alfalfa, oats, spring wheat, lettuce, spinach, and carrots. Organic vegetables, quinoa, and the oil seed crop called canola are now establishing themselves as marketable products.

Our open climate and Colorado's centralized location make it ideal for transporting crops and livestock. Vegetables, such as lettuce, go especially to the northeast, while spinach is shipped all over the U.S. and Canada. Alfalfa hay is shipped to ranchers in Texas and dairy farmers in New Mexico. Denver, Los Angeles, and Phoenix are wheat markets. Potatoes are trucked to the south and east.

In addition to agriculture, tourism is important. One unique feature is the Great Sand Dunes National Monument located in the northeast part of Alamosa County. The dunes are a geologic wonder, (North America's tallest, and Colorado's largest.)

They were created by winds blowing toward the northeast across the San Luis Valley. Sands carried by the winds were deposited at the foot of the Sangre de Cristo Mountains. The dunes can be seen from 50 miles away across the valley, towering up to 700 feet above the valley floor. Although the main dune field is stable, the dune surfaces change with each passing wind.

While winds brought and maintain the magnificent dunes, wind erosion is one of our main resource concerns in Alamosa County, especially in the north half where the soils are sandy loams and loamy sands. Winds can start blowing in February and not subside until June. Land especially susceptible to erosion are vegetable fields which have no remaining crop residue November through May. We are working with farmers to use surface roughening, to plant annual wind strip barriers of corn, or to plant winter rye cover crops. For farmers growing barley, wheat, or canola we promote conservation tillage after harvest. One thousand pounds of small grain residue per acre can reduce wind erosion by an amazing 75 percent. This is one practice widely used throughout our county and the valley.

Colorado has long been known for its beef and the San Luis Valley has proved ideal for cattle, sheep, hogs, horses—even bison. Our field office is currently working with an 80,000 acre bison ranch located near the Great Sand Dunes. Using Holistic Resource Management (HRM) principles, the landowner and ranch managers use the bison herd as a tool to manage the rangeland. They are installing cross-fencing and stock water tanks to more effectively graze the Salt Flats and Deep Sand range sites with the bison. We are in the process of setting up monitoring sites so that they can have visual and written records to help them determine the health of their rangeland—and document it. As the ranchers become more aware of the changes occurring, they can direct these changes towards the landscape goals they want to achieve.

For those not familiar with

HRM, it is a decision-making process conceived by Allan Savory and now taught by registered educators world-wide. Those practicing HRM must first define what is to be managed—the people, the land area, and the wealth that can be generated from it. The next step is to set one three-part goal that encompasses quality of life (an expression of the values of the people involved), forms of production (what you need to produce for profit while maintaining your aesthetic and cultural values), and future landscape description (what you want your land to look like in the future in order to sustain the forms of production). The third step is to look at what resources and tools you have available to achieve your goal. And the fourth step involves making decisions to use a resource or tool based on seven questions to ensure decisions are ecologically, economically, and socially sound—and relative to your three-part goal. Once a decision is made it is then monitored to produce results. HRM can be used by ranchers, farmers, or any land manager with equal success if they are committed to focusing on the “whole pie” and not just a single slice. This is also becoming the focus of the SCS as we move away from just saving soil and towards ecosystem-based assistance which encompasses all resources: soil, water, air, plants, animals, and people.

Although my staff is small—a Range Conservationist and a stay-in-school position, plus engineering assistance from the La Jara Field Office and the SCS Area Office here in Alamosa—we also concentrate on water quality through the San Luis Valley Water Quality Demonstration Project. Concern about drinking water quality and the environment has put the use of agricultural chemicals in the national spotlight. The threat of pesticide and nitrate contamination of ground and surface water in the San Luis Valley increased the need for farmers, ranchers, and other chemical applicators to modify some common production practices. Preventing groundwater contamination is important because, once con-

taminated, it is very difficult and expensive to clean up. Rather than legislate overly restrictive measures on farmers, the Colorado Legislature passed Senate Bill 90-126, which encourages the voluntary adoption of Best Management Practices (BMP's). BMP's are recommended methods, structures, and/or activities designed to prevent or reduce water pollution while maintaining producer profits. The BMP concept deals specifically with nonpoint source pollution.

The five-year water quality demonstration project was started in 1992 with funding by the U.S. Department of Agriculture in cooperation with the Soil Conservation Service, Colorado State University Cooperative Extension Service, and Agricultural Stabilization and Conservation Service. In Alamosa County, we are working with five farmers on nine center pivot sprinklers covering 1125 acres of irrigated cropland. These particular farmers grow potatoes, barley, and alfalfa and have a three year management plan with BMP's chosen for their specific site. They receive incentive payments to offset the cost of initiating irrigation water management,

nutrient (fertilizer) and pest management on their contracted acreage. Soil and water testing for nitrate content is mandatory, as is irrigation scheduling, pest scouting, and recordkeeping. Success with this project and the voluntary BMP's will depend on how many farmers actually use and promote them.

Norma Van Nostrand is District Conservationist (since 1992) for the Alamosa Field Office. Her career with the SCS began in 1985 while attending Colorado State University in Fort Collins working on a bachelor of science degree in range ecology and working for the SCS with the cooperative education program. She began work in southeastern Colorado in the small town of Las Animas, then worked in northeastern Colorado at the Greeley Field Office. After graduation in 1987 she was assigned to the Rocky Ford Field Office as a Range Conservationist, going from a GS-5 to GS-9. Prior to her work with SCS she worked for BLM as a surveying technician.

Photo: Van Nostrand and a local farmer examine water holding depressions in a barley field.



AREA 1
Northwestern Colorado
Patti Halbert
District Conservationist
Craig Field Office

COLORADO

I was born and raised in Massachusetts but every summer included visits to the family ranch in Throckmorton, Texas. The heritage and appeal of the ranch led me to Texas A&M University and a Bachelor's in Range and ranch management.

While in college I was employed at the Throckmorton Experimental Ranch—the first woman to work there. The summer of 1979, I worked for renowned scientist in agriculture research, Dr. Rodney Bovey, collecting data for herbicide studies. I also worked part-time for Dr. Bovey through my senior year and then full-time following my graduation until December 1980, when I started my SCS career in Abilene, Texas as a range conservationist. Four years later I transferred to Albany, Texas then I took the GS-11 District Conservationist position in Craig, Colorado in the spring of 1991.

Craig is a town of about 7500 people in Moffat County. Moffat County has three million acres of land, mostly rangeland, and two-thirds of it is publicly owned. My private land work for SCS is on 75,000 acres of highly erodible cropland. We implement the 1985/1990 Farm Bills, plan pasture and hayland plantings, and maintenance. We work on rangeland improvements and the installation of engineering practices for land resource improvements on private ranches and farms. Two skilled full-time employees work with me: a soil conservation technician and a range conservationist.

I was born with only two fingers on my left hand and no foot on my left leg. My left cowboy boot has a zipper on the inside for ease of putting it on and taking it off; the four-wheel all-terrain vehicle I use at work has a modified handle to pull up the gear shift; and I usually wear mittens rather than gloves. On top of the physical differences, I am also a severe asthmatic. My asthmatic condition is prevalent mainly during times of overexer-

tion or extreme cold and has been easily dealt with through medication.

Being "handicapped" and a qualified female probably helped me to be hired by the Soil Conservation Service. In the early years there were quite a few obstacles I had to overcome. One of them was "larnin'" how to talk "raaght" in a slow southern drawl. Danny Havins, the former soil conservationist in Abilene, use to sit down with me about twice a month to help with my drawl. I would say "hi" and he would say "haa"; I would say "dog" and he would say "dawg"; I would say "I'm planning to go hunting" and he would say "I'm fixin' to go huntin'" and so on. This really was not meant to be funny; it was a sincere effort on our parts to help me be more effective with the local landowners—and it worked!

Another obstacle was my age. I was 22 years old and fresh out of college. Landowners had a natural tendency to look for the experienced person in the office. They would almost always check out my advice with someone else in the office and find out that it matched for the most part. Nature has a way of taking care of some things, especially youthfulness—now I am the senior person in the office.

My physical challenges, however, cannot hold a candle to the administrative challenges I have with my position as District Conservationist. The Food Security Act (FSA) of 1985 and 1990 created a tremendous workload for those of us who work mostly with highly erodible soils. FSA posits that those who are farming fragile soils and receiving government financial assistance should be held accountable for their farming practices. Sounds sensible. The application of this, however, takes an enormous effort for both landowners,

landusers, and the SCS staff who are responsible for implementation. The program is called "voluntary" but the requirements for the farmer to be "actively applying" their FSA conservation compliance plans are difficult for them to achieve. But they must, or risk losing USDA benefits. No one, including Moffat County farmers, likes to be told that they have the possibility of losing their livelihood due to government regulations.

The Threatened and Endangered Species Act has affected us here, too. We have an endangered species of fish and a threatened species of plant in and along the 100 year flood plains of the Yampa River and its tributaries. These species must be considered when planning. To top this off we have the second largest elk herd in the nation along with huge populations of antelope and deer. This can make for heavy competition with the local livestock on the native rangeland and heavy use on wheat fields and the wheat stubble left over after harvest.

We contend with desert-like conditions: high daytime temperatures, low nighttime temperatures, and low precipitation—less than 14 inches a year. Our seasons also seem perverse: long and cold winters, a short growing season, and strong winds during critical times of the year sometimes reaching 45 miles per hour. We have steep slopes, 20 percent and higher in many areas, with a high erosion potential. Very few cropland fields are square so planning and designing field strips is quite interesting.

"Rangeland Reform" caused quite a stir within Moffat County. Most ranchers we work with have both private and public ground and some have had Bureau of Land Management lease permits for generations. SCS' local in-

volvement with Coordinated Resource Management (CRM) gives us an up-front picture of the rancher's problems and concerns. CRM is a process by which representatives from all vested groups gather together to solve local conflicts by consensus. The process often turns people's perceptions into new realities. This year one of our local CRM members became Commissioner of Agriculture for Colorado so we now feel privileged to have West Slope (of the Rocky Mountains) representation.

Despite my recitation of the hardships of climate and regulation, for me this is a good career because of the diversity of things I deal with. The people who are making a living off this land are among the most conscientious and conservation-minded people with whom I have ever had the pleasure of working.

Halbert received the "Thousand Points of Light" initiative, a certificate of recognition for USDA employees who give of themselves voluntarily after work hours for the good of their community. She received one of the first certificates to be handed out for volunteer efforts in 1991.

Photo: Halbert in revegetated cropland field to wheatgrass.



AREA 3
Southeastern Colorado
Karen Conrad
District Conservationist
Lamar Field Office

The Arkansas River Watershed Area in southeast Colorado provides a varied work environment for our SCS staff in Lamar, Colorado. All, or parts of eight counties—and nearly seven million acres—comprise the lower Arkansas River watershed. Ancestors of many residents moved here from Kansas and places east and the area is one of the earliest in Colorado to be settled. The Santa Fe Trail began bringing significant numbers of settlers to southeast Colorado in 1821. Bent's Old Fort, constructed in 1834 by Charles and William Bent, provided protection and trade between Americans, Mexicans, and Indians, and is located now near Las Animas.

Agricultural products dominate the economic base and reflect the variety of existing resource conditions; they include common crops such as corn, winter wheat, milo, millet, and alfalfa in addition to cantaloupe, watermelon, onions, tomatoes, potatoes, and chili peppers. Soil surface textures range from loamy sand to clay loam. Altitude varies from 3300 to 5500 feet above sea level in the watershed. The diversity in soils and landscape supports irrigated and non-irrigated farms and livestock grazing enterprises: beef cattle, swine, sheep, and horses are the main livestock operations.

Much of what is produced in our area is marketed nationally. Grain products are loaded onto rail cars and transported to main terminals such as Kansas City. Alfalfa is trucked to dairy farms in Texas and Oklahoma. Livestock sales companies in La Junta and Fowler buy locally produced animals for slaughter plants in Kansas, Oklahoma, and Texas, while vegetable crops find their way to various retail outlets, some more than a thousand miles away. Many cantaloupe connoisseurs in Ohio, Pennsylvania, and New York eagerly await the arrival of delicious Rocky Ford cantaloupe in their grocery stores. Colorado feedlots in Lamar, McClave, and

Rocky Ford, however, provide a good local market for alfalfa, corn silage, and grain.

My field office provides assistance to the Prowers Soil Conservation District located roughly in the west half of Prowers County. Prowers County itself is located in the lower end of Colorado's Arkansas River Valley and is bordered by Kansas to the east. Non-irrigated cropland, native rangeland, and cropland irrigated by Arkansas River water are the three main agricultural land uses.

Prowers County is one of Colorado's temperate regions with average summer temperatures at 71 degrees and average winter temperatures of only 38 degrees. Our yearly precipitation is usually 14.5 inches. Low precipitation and high evapotranspiration rates make non-irrigated crop production challenging and risky. Grazing management of rangeland becomes tricky when summer rains are delayed and poorly timed. The long growing season, however, enables heat loving crops like corn and grain sorghum to approach maximum yield potential and irrigators often harvest four cuttings of alfalfa. Many farmers graze the fifth cutting with cattle during the winter months.

Great Plains Conservation Program (GPCP) contracts, Conservation Reserve Program (CRP) contracts, and Agricultural Conservation Program (ACP) referrals are a large share of our workload. The GPCP provides technical and cost share assistance for many structural and management conservation practices. For example, to solve conservation problems on irrigated cropland, a plan may include installation of pipelines, structures, and land leveling to achieve irrigation water management in addition to an integrated crop management system. Grass seedings, cross-fencing, and livestock water development may be needed on rangeland to implement a planned grazing system and effectively manage the resource. This program stresses an approach that considers a producer's total natural resource system—soil, water, air, plants and animals.

The ACP program is designed to solve specific conservation problems on a producer's unit such as (a) planting a farmstead or feedlot windbreak to control blowing and drifting snow, (b) implementing a crop resi-

due system on highly erodible cropland to reduce erosion, (c) installing an underground pipeline or above-ground structure to control and conserve irrigation water, or (d) establishing permanent wildlife habitat for aesthetic value. The CRP program was designed to take highly erodible land out of crop production for a minimum of 10 years and establish a permanent cover on the fields to control erosion.

Additionally, my office has several hundred Food Security Act conservation compliance plans. These are very basic plans designed to ensure that farmers meet the minimum requirements for erosion control; they also establish eligibility for USDA farm programs.

Wetland determinations will also be a large workload in the future. My field office is involved in one active PL-566 watershed project and another may receive a planning start this fall. The new watershed project will address water quality concerns on irrigated cropland. All of these programs are labor intensive and it



will be a challenge for us to provide service if USDA reorganization brings budget and staff reductions to the field office level.

Karen Conrad is District Conservationist for SCS in Lamar, Colorado. She began working for the Soil Conservation Service in 1976 in a part-time position known as WAE (when actually employed) in eastern Colorado, then became a soil conservation technician. After seven years as a technician, she was accepted into the SCS Upward Mobility Program, graduating from Colorado State University in Fort Collins with a Bachelor of Science degree in agronomy. Conrad then became a GS-7/9 Soil Conservationist at the Rocky Ford Field Office in southeastern Colorado then transferred to the Lamar Field Office. She raises registered quarter horses and operates, with her husband, an irrigated farm.

Photo: Conrad, right, with Lorenz Sutherland, Area Conservationist, check salinity level in Amity Canal.

AREA 2
North Central and Northeastern Colorado
Sylvia Gillen
District Conservationist
Brighton Field Office



I began my career with the SCS in June 1976 as a cooperative education student, GS-3 Conservation Trainee. My college roommate was going on co-op and I went with her to the office to sign some papers but the secretary in the office would not let me leave until I enrolled for interviews. She taught me a tremendous lesson that day—it was a lesson in persistence and taking advantage of an opportunity at hand. Wherever she is today I wish I could say thank you! She started me learning about resource management and the responsibility I had to develop and to improve myself so that I was responsible to the people I supervise and the agency I work for. It all started with someone who saw something in me that I did not recognize in myself.

I was first assigned to the Monte Vista Field Office in southcentral Colorado. My primary duties were to assist the conservation technicians with engineering surveys. We installed pipelines, worked on bank stabilization on the Rio Grande River, and did snow surveys to determine snowpack and project water availability for the coming irrigation season. I assisted in writing conservation plans by gathering resource data. I did range surveys, irrigation efficiency studies, and worked with the local soil conservation district on educational projects.

While at school I also worked a part-time position with the Bureau of Land Management (BLM) compiling range data for an environmental impact statement that was being done in Dona Ana County in New Mexico. Observing another agency and seeing the way they did business was very good for me. It helped me verify where I wanted to work (public vs private management) and gave me a new perspective on how progressive SCS was.

In 1978, I was assigned as a GS-5 Soil Conservationist to work in the Montrose Field Office in western Colorado. Most of our workload was irrigated cropland, hayland, and rangeland. Cattle operations utilized

both private, state, and federal lands so we often did interagency coordinated planning with the Forest Service and BLM. We had the interagency snow survey responsibility, for example, and we taught school children the importance of conservation. In this office I found some very special mentors who taught me how important it is that people enjoy their work. So often we lose our perspective by taking things too seriously. Creativity is served very well by laughter. Fun is what energizes people and helps them weather rough times.

After I completed my degree in May 1980, I reported for my first full-time job as a GS-7 Soil Conservationist in the Colorado Springs Field Office, about 60 miles south of Denver. The office workload consisted of non-irrigated cropland, rangeland, grazeable woodland, and a lot of urban and suburban work. There were many large, private ranches in the southern end of the county, while most of the eastern half was non-irrigated cropland. At that time, I also assisted with data collection for the National Resource Inventory. An interesting part of the workload consisted of evaluating soils and topography for proposed development areas to determine suitability for housing or industrial uses. We also provided reclamation plans for gravel mining operations. We administered Great Plains Conservation Program (GPCP) contracts where we cost-shared reseeding of pastures, building cross-fences, and water development on rangeland, as well as other conservation practices. In this office it became clear that attention to detail and accuracy in our resource assessment was critical

because our work had the potential to impact the choice of ground where people built their homes—in addition to their livelihoods.

In 1981, I moved to Kiowa, northeast of Colorado Springs, as a GS-9 Soil Conservationist. Here I worked with an individual who always encouraged me to stretch, to try when I was sure I could not do the job. He was one of the most focused people I have ever known. He knew what he wanted, but at this point I was a little uncertain about where I wanted to be and what my purpose was. It became apparent to me that I needed to tie up some loose ends.

In 1982 I left the SCS to work at various jobs in the private sector including a motivation company from the East Coast. I lived in New Mexico and taught around the country with my husband who was one of their instructors. I also worked in a veterinary hospital and for a university in the science department. These were very important things for me to do because I found out who I really was and what parts of my life were negotiable and which parts were not.

I returned to SCS in 1988 as a GS-9 Soil Conservationist in the Wray Field Office in northeastern Colorado. My duties there were to develop Food Security Act compliance plans and to write and administer GPCP contracts. As part of my duties I worked with private landowners to address production and environmental concerns on irrigated and non-irrigated cropland and rangeland. I completed resource assessments evaluating erosion caused by wind and water. I also defined and recommended potential management improvements to reduce negative impacts to water quality usually by reducing sediment loads and minimizing fertilizer and pesticide leaching through improved water management.

I was promoted to a GS-11/12 Resource Conservation and Development Coordinator for the East Central Colorado RC&D Council in Limon, Colorado in 1989. RC & D programs in Colorado are dedicated to the development of local leadership in the solution of our state's natural and human resource problems. Local sponsors, including county commissioners, towns, cities, and soil conservation districts, apply to the Secretary of Agriculture to create an RC & D area. Once authorized, the same sponsors then form the local leadership for the RC & D Council. At

COLORADO

first I coordinated technical and financial resources to develop natural resources in four and a half counties. I trained local people to identify issues and solve some problems impacting small rural communities. In addition, drawing on my motivation training, I coached 80 community leaders in grantsmanship, fundraising, and networking to make the dreams for their communities come true. It was very exciting to watch empowered local people take charge.

A dramatic event changed the focus of my work to disaster relief when the town of Limon was devastated by a tornado on June 6, 1990. The community was bombarded with assistance from everywhere. I coordinated resources and assisted local people in the rebuilding. Aided by a half dozen people who sincerely wanted to make their town work, we planned (a) a medical center, (b) a fire station, (c) a library, (d) a senior center, (e) an educational center, (f) town hall, (g) streets and parks. We then set about raising \$850,000 to build it. The work was completed by the same date two years later. As a result of the track record, the RC&D council received funding for a three year leadership development project that covered seven other communities.

About three years ago I made a lateral move to Brighton as a GS-12 District Conservationist to get back into more mainstream conservation work. Being in this office has brought to my attention that there are no simple problems anymore in respect to natural resource management. Today's problems are very complex and *all of us* contribute to their creation. Therefore the only solutions that will work are those that involve *all of us* in fixing them. The time has passed for site specific fixes. The population of this country is placing such a large toll on our resources that everyone needs to participate to minimize the long term effects.

Developing people continues to be one of the highlights of my job. It gives me many occasions to expand my thinking and test my ability. My staff of three Conservation Technicians, one Range Conservationist, a Wildlife Biologist, and several trainees work with three soil conservation district boards and service over 793,500 acres, of which 260,000 acres are highly erodible cropland and subject to the requirements of the 1985 Food Security Act. This act requires farmers receiving government support payments to apply conservation practices meeting SCS technical guide standards. Our practice standards are based on research, conservation field trials, and accumulated knowledge and expertise. They establish the acceptable level of quality for planning, design, construction, operation and maintenance in order to achieve the practice's intended purpose.

We work with both irrigated and non-irrigated cropland and rangeland. Irrigated crops include intense vegetable production, corn, sugarbeets, and hay. Non-irrigated crops are wheat, corn, millet, and sunflowers. Rangeland is primarily privately owned and technical assistance is given in a voluntary manner using education as our primary tool.

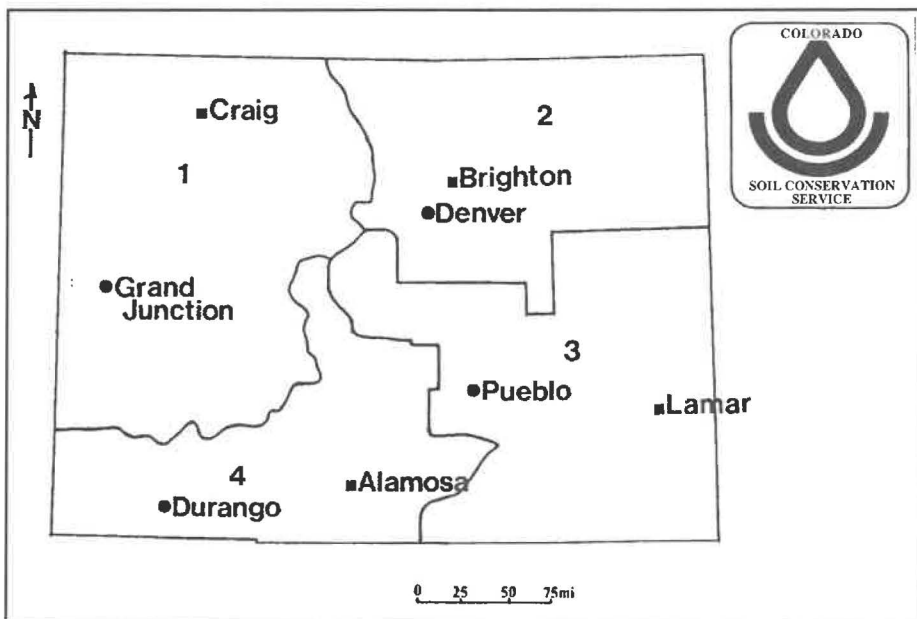
Our work area services the interface zone between expanding metro Denver (now at 1.6 million) and rural agriculture. We work with: (a) local governments on zoning issues, (b) suburban and urban landowners on water quantity and quality, (c) reclamation of areas impacted both by mining of sand and gravel, and (d) oil and gas drilling. We administer a Water Quality Incentive Program to encourage landowners to implement water, pesticide, and fertilizer management. Our office has several GPCP contracts with cost-share for conservation tillage, low energy precision application sprinkler conversion, livestock water development, and range and pasture improvement through reseeding and planned grazing management.

The Soil Conservation Service offers many national opportunities for its employees. Currently I serve on the Ecosystem-Based Assistance Course Design Team. We are developing an interagency training course

to clarify how ecosystem planning and implementation will be carried out. Ecosystem management gets us looking at the whole ecological picture—not just soils or people or wildlife, but how they interrelate and can be managed to sustain us while conserving them. Another national team I am on looks at how we can administer conservation compliance responsibilities after 1995. As a result of the 1985 Food Security Act congressional mandates, SCS found itself with a huge clientele that we now have to maintain records for. Huge program shifts, especially when they go from voluntary to regulatory, generate a tremendous workload. We are just now finding ways to streamline this process in order to protect our core emphasis.

The Soil Conservation Service has high expectations of its employees and supports their growth through challenge and flexibility. It is a great place to work and holds a wonderful opportunity to help others and make a difference in something of national importance.

Sylvia Gillen is a GS-12 District Conservationist for the SCS in Brighton, Colorado. Her Bachelor's is from New Mexico State University in 1980 with a major in Animal Science and additional emphases in Range and Agriculture Economics.



Research

In Progress

The National Science Foundation for Undergraduates (REU) program is designed to expose students to an aspect of science that may not be part of the average undergraduate program and is funded through supplemental awards to already existing National Science Foundation (NSF) grants. The program is designed to be a good trial run for students interested in graduate study.

Focus on:

National Science Foundation Undergraduate Research Program

During the summer of 1994, Dr. Indy Burke, an associate professor in the Department of Forest Sciences at Colorado State University, had two REU's working with her as a supplement to her NSF Presidential Faculty Fellows' Award. The focus of the grant is to assess the effects of land use management on grassland ecosystems.

Kari Bisbee, a biology student from Gustavus Adolphus College, arrived in early June with some experience in forest research, a lot of enthusiasm, and a little trepidation about working in the shortgrass steppe—a system far from the Minnesota forest where she studies deer browsing with her adviser Timothy Sipe.

Tricia Ortiz, on the other hand, was accustomed to the research site. She is a wildlife biology major at Colorado State University, and worked with the shortgrass steppe Long Term Ecological Research (LTER) group the previous school year.

Robin Kelly and Marcos Robles, students of Dr. Burke, mentored and oversaw the schedule of the undergradu-

ates. For the first month of the program, they did everything with Marcos and Robin from planning the research to sampling and laboratory analyses. Later in the summer, Kari even made a trip to the national meeting of the Ecological Society of America (ESA).

In addition to helping with research, each REU planned and carried out projects of their own. These projects are similar to "pilot projects" which are sometimes included as part of a graduate study. In addition, Dr. Burke scheduled bi-weekly meetings to discuss papers pertaining to a specific scientific question, issues of science as a lifestyle, or concerns of women and minorities in science. These discussions were particularly appropriate given that the group was made up of four women (one of whom is Chicana), and Marcos, a Chicano male.

ROBIN KELLY'S PERSPECTIVE

This summer, I welcomed the opportunity to work with Kari Bisbee, an REU student interested in a future in ecological research. Kari and I worked with Indy Burke to develop an interesting research project to isolate different components of soil organic matter loss due to cultivation—one of the themes addressed by our research group. I had the opportunity to share my enthusiasm for ecology in general, and soil organic matter research especially.

Kari helped me develop an important skill for a future in

science—the ability to communicate what I do and why I love to do it. Kari assisted me in the laboratory as well as in the field, and challenged my ability to explain ecosystem processes often taken for granted by people in biogeochemistry.

In addition to stimulating discussions about the science itself, we were able to share some our feelings about how to be successful as a woman in science. Happily, not all of our discoveries about the "feminine face of science" led to greater self-doubt. We realized that, although the scientific community does not have the strong representation of women present in our small group, there are some great advantages to being female. We have a strong ability to communicate and collaborate that leads to good science and strong interpersonal connections. This "connectedness" can partly compensate for the lack of women in ecosystem ecology.

In Kari's assessment of her REU, she said that the experience gave her a window into the academic world and showed her what the hardest and most rewarding parts of science are. She said "This summer was an experience of a lifetime for me. I got to see first-hand what graduate school was like. I got to design, work on, and hopefully publish my own project. It was both rewarding and challenging. The ESA meetings in Tennessee were an incredible opportunity to meet scientists and hear presentations from all areas of ecology. Spending the

summer surrounded by ecologists really gave me an idea about going into the field."

In the end, Kari, Indy and I worked together to complete an interesting project that contributes to our interest in land use and soil organic matter. In November, Kari will return to Colorado State University where she will present the results of her research in a department seminar, and we will work on a journal article. This was an overwhelmingly positive experience.

Robin Kelly is a Master's candidate at Colorado State University in the newly-formed Graduate Degree Program in Ecology (GDPE). Her thesis research includes a study of plant removal and the dynamics of soil organic matter loss.

MARCOS ROBLES' PERSPECTIVE

I am a second year Master's student in the Department of Forest Sciences studying ecology. I am also a Chicano scholar, one who has struggled with my place in academia. This summer I helped mentor a Chicana REU student, Tricia Ortiz, who assisted me with some of my work in return. Tricia and I developed a good working relationship and she developed a strong research project that she completed by the end of the summer.

During her REU, Tricia worked with our group and the nematode ecology laboratory of Diana Freckman, Dean of Research for the College.

Through nematode counts, she made inferences about bacteria and fungi present in native and recovering grasslands and cultivated fields. Tricia made some interesting connections between the two disciplines that may lead to future collaboration between our groups. Tricia will present her research to the department in November and is in the process of working on a publication.

We both discovered, however, that underneath the surface of things there are some core differences between us and the "academic world" in general that impede our acceptance and our will to join this world. One of these differences is the importance of family in the Chicano culture relative to other cultures, including the culture of academia. The pressure and competition inherent in academia require more time to be spent at work and less with family. In a letter to Indy following her REU, Tricia said "As you probably know, I never felt I had a good academic background considering the high school I went to. I always felt I had to play catch up and I always felt I didn't truly belong in the natural resource field. Confidence is the word. I could never say 'I'm doing just as well as everyone else—other people also struggle through.' I just need to tell you I appreciate your belief in me."

Before she began her REU last spring, Tricia chose to leave the University beginning this fall (1994). She explained that the university environment had become too hostile,

especially financially. She plans to recover her sense of self and her finances before she returns.

It is obvious that Chicanos can be successful in scientific disciplines, but to truly facilitate this, two things need to happen. Mentoring programs that are specifically aimed at matching minority mentors with minority undergraduates, such as the REU program, need to be much more widespread. We need to develop a "critical mass" of minorities in academia that work together on a day-to-day basis. Then, we too can feel at home.

Marcos Robles' thesis research focuses on soil organic matter recovery dynamics under the Conservation Reserve Program.

Photo: The four students at work.



MASSACHUSETTS SCS (NOW NRCS) IS COLLABORATING WITH OTHER AGENCIES AND MUNICIPALITIES ON WATER QUALITY PROJECTS WITH FAR REACHING IMPACTS ON INFRASTRUCTURE, MARINE LIFE, AND LIVELIHOODS.

MANAGING STORMWATER RUNOFF IN BUZZARDS BAY MASSACHUSETTS

BERNADETTE TABER



The setting

Buzzards Bay is located in southeastern Massachusetts between Cape Cod, Massachusetts on the east, and Narragansett Bay, Rhode Island on the west. The 280 miles of coastline are very rugged and irregular, and include more than 30 shallow embayments. The 200 square mile Buzzard Bay has 11 miles of public beaches which attract a large number of tourists each year. The bay also supports both a commercial and recreational fishing industry; species found there include herring, bluefish, winter flounder, scup, tautog, striped

bass, lobster, quahoags and soft-shell clams.

The Buzzards Bay drainage basin covers 432 square miles and encompasses all or parts of 17 municipalities. Some 250,000 people live within the drainage basin, but the population soars during the summer with the influx of seasonal visitors. Land use within the basin is diverse—urban and dense residential along the coast changing to rural areas which are typical in the upper reaches of the watershed. The urban areas include residential, commercial, light industry, and tourist

enterprises while the rural areas have forests, agriculture, and wetlands.

Land use and water quality

Over the course of the last 35 years, land use within the Buzzards Bay drainage basins have changed. Land that was once in forest, cropland or pasture has been converted to urban uses—especially residential acres. With the increase in new homes plus the conversion of summer cottages to year-round residences, the demand for other amenities (e.g., new and better roads, more commercial services, stores, restaurants) has also increased. This increase in urbanization has had a negative effect on the water quality of the bay.

Harbors and coves that are used for swimming and the harvesting of shellfish are often the discharge points for industrial wastewater, sewage treatment plants, and stormwater runoff. As a result, pollutants from these discharges affect, and in some cases, prohibit swimming and/or fishing in an area. Throughout the years, the number of shellfish closures have steadily increased from 4300 acres in 1971 to a huge 13,000 acres in 1991. The need to resolve these conflicts while protecting and improving the water quality of the bay resulted in the initiation of the Buzzards Bay Project (BBP).

Since 1985, the BBP has funded a number of studies to assess the existing condition of

the bay and determine its problems. These findings were incorporated into the Buzzards Bay Comprehensive Conservation Plan (CCMP), which was adopted in 1991. The CCMP identified three priority problems in Buzzards Bay, one of which is the closure of shellfish beds due to pathogen contamination. The amount of contamination is determined through the use of an indicator organism, fecal coliform bacteria. Once fecal coliform levels are exceeded, certain uses are considered unsafe.

Generally, sources of fecal coliform in a residential environment include both human and animal waste—domestic animals and wildlife. Human waste can be the result of failed septic systems or illegal tie-ins from the septic system to the storm drain system. Failing and overflowing systems can be locally significant.

The Buttermilk Bay example

In 1985, EPA awarded a grant to the Buzzards Bay Project to study potential sources of fecal coliform flowing into Buttermilk Bay, a small embayment located at the northern section of Buzzards Bay. Land uses within the drainage basin are primarily agriculture (cranberries), forestry, and residential.

Investigators found that Buttermilk Bay had periodic shellfish closures plus some closure of swimming beaches due to fecal coliform contamination. The Barnstable County Health and Environmental Department found six potential sources of fecal coliform contamination: (1) septic systems, (2) wildlife (including waterfowl), (3) freshwater inputs, (4) boats and marinas, (5) point sources, and (6) stormwater—which was found to be the most important factor affecting shellfish closures.

As stormwater flows over land surfaces, it picks up pollutants and discharges them into surface waters. These pollutants include not only fecal coliform, but also

sediments, organic material, hydrocarbons, and metals. Generally, the more impervious a drainage basin becomes (as in a paved-over urban area), the more runoff it produces and the more polluted it becomes because of less infiltration into the soil and thus less filtering of pollutants.

In the Buttermilk Bay study, however, investigations of several septic systems under normal operation, indicated that they are not a significant source of fecal coliform. Several of the stormdrain discharges were monitored to determine what impact land use has on fecal coliform levels. The study concluded, in general, stormdrains that service commercial areas have lower fecal coliform levels than residential areas with their domestic and wild animal pollutants—and the higher the

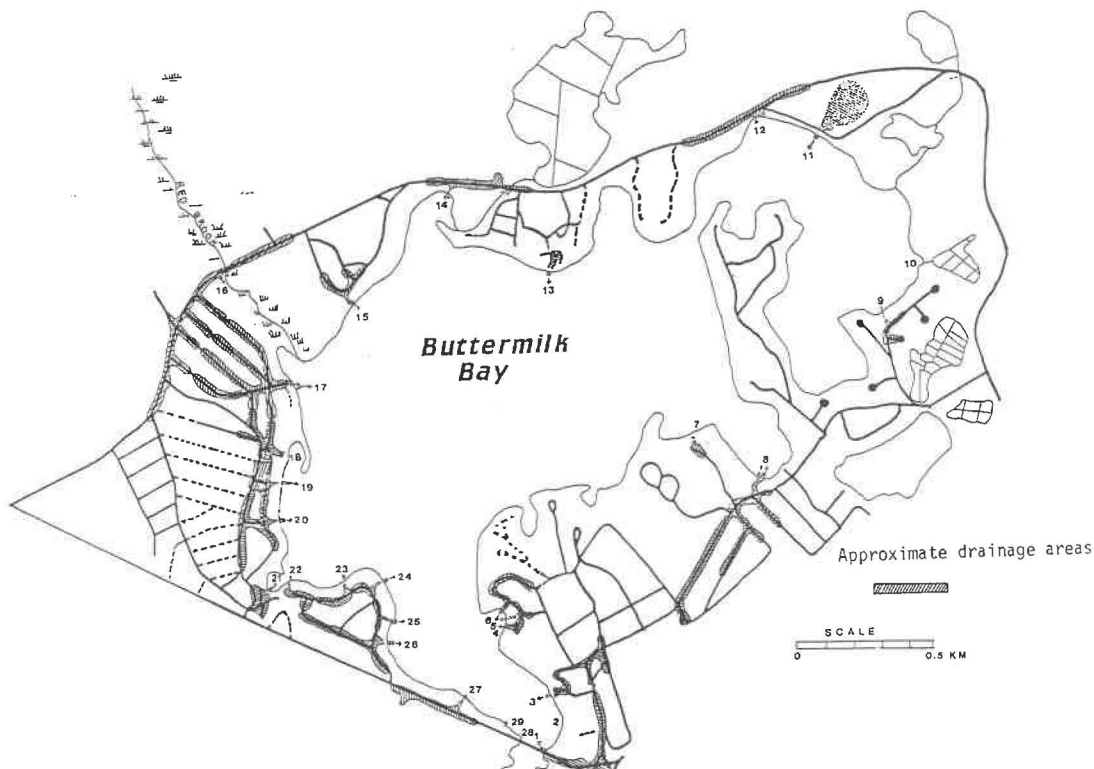
housing density is in a residential area, the higher the fecal coliform levels will be.

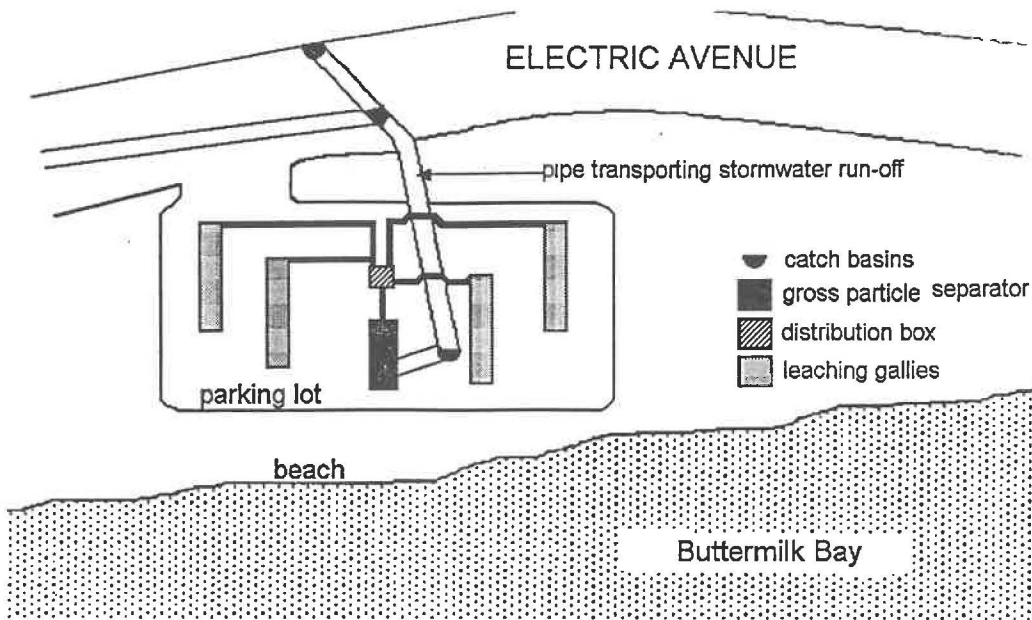
Utilizing the Buttermilk Bay report, all 29 stormdrain discharges were located and the contributing road surface to each discharge delineated. Each discharge was then prioritized based on expected contributions of fecal coliform to Buttermilk Bay. In 1988, three years after the investigations began, the BBP, through a grant from EPA, selected two high priority sites in Buttermilk Bay for stormwater remediation. Both of these projects, (1) Electric Avenue and (2) Red Brook, were selected to demonstrate cost-effective ways of removing stormwater pollutants—primarily fecal coliform bacteria. Based upon information obtained from the National Urban Runoff Program and from site specific investi-

gations, both sites expected to use infiltration as the treatment methodology.

The two priority sites and remediation

The Electric Avenue site is located in the town of Bourne. The stormwater pipe under investigation discharges directly into the bay waters at the town beach. Both local officials and area residents looked favorably on the project not only for the water quality benefits to the shellfish beds, but also for the swimming beach. Prior to any construction, however, permits from local boards and state agencies took many months to obtain and required interaction with several departments. Floodplain and wetland permits were required locally, while an underground discharge permit was required from the State.





Stormwater collects in catch basins, then is diverted into a gross particle separator where large particles are settled out and the remaining liquid is discharged through leaching galleys.

The National Estuary Program

The Buzzards Bay Project (BBP) was among the first estuary protection programs established in the United States. It is jointly managed by the Environmental Protection Agency (EPA) and the Massachusetts Executive Office of Environmental Affairs, Coastal Zone Management Program. The BBP was initiated in 1985 when Congress appropriated funds to EPA to study and assess the overall "health" of four major estuaries: Buzzards Bay in Massachusetts, Narragansett Bay in Rhode Island, Puget Sound in Washington, and Long Island Sound in New York.

Under the Water Quality Act of 1987, the National Estuary Program was established to maintain the ecological integrity of the nation's estuaries through long-term planning and management. Buzzards Bay was designated an "estuary of national significance" within the Program in 1988.

Also, the project needed approval at the Bourne town meeting because it required the use of publicly owned land.

Construction began on the Electric Avenue site in 1990. The largest part of the project involved an infiltration system placed under the town beach parking lot. This system included a gross particle separator, distribution box and several leaching galleys surrounded by crushed stone. As stormwater runs off the streets and the parking lot, it flows into the gross particle separator. This separator then removes oil and sediment from the stormwater. From there, the stormwater is piped to a distribution box which allows for an even distribution of stormwater into the leaching galleys. The galleys are designed to store and then gradually release the stormwater into the stone and surrounding soil. Monitoring wells have been installed to measure the effectiveness of this infiltration system in removing fecal coliform. Results from the monitoring have indicated a removal rate of over 98 percent.

Unlike the Electric Avenue project, the Red Brook

stormwater project has yet to be implemented. Originally, the stormwater discharge into Red Brook was to be diverted into a large infiltration pond. This pond was to be located on private property and the landowner was agreeable to its construction. During subsequent archaeological investigation, however, evidence of some Native American artifacts turned up, and the original design was abandoned.

Currently, the Soil Conservation Service is providing planning and technical assistance for an alternative design. The revised plan now calls for placing several infiltration structures either next to or under the road plus some roadbank stabilization. The Massachusetts Historical Commission has been providing archaeological advice on the revised plan. This project is scheduled to begin in 1995.

Other sites and methodologies

The Buzzards Bay Project and the Soil Conservation Service have worked together on several other stormwater projects. The Hen Cove project, for example, was installed in September 1992. This project utilized the existing catch basins as individual sediment basins. From the catch basins the first inch of stormwater runoff is diverted into leaching chambers. Each chamber is surrounded by stone (similar to Electric Avenue) where the stormwater is temporarily stored and then filtered out through the soil.

The Broad Marsh River project is similar to Hen Cove's under road structures. One of the problems with this project is the amount of impervious surface contributing stormwater to the stormdrain system. The project is located in an area of town that has 1/10th acre house lots and where most of each house lot is impervious. The streets are narrow and have three underground utilities. Due to the lack of space and the

problem with the utilities in the drainage basin, the existing catch basins will be retrofitted. The town has been a willing supporter of the project and it had agreed to be very diligent in removing any accumulated sediment in the catch basins. The BBP also plans to work with the residents in the Broad Marsh area to try and reduce the amount of stormwater coming off individual houseslots. This will probably entail installing mini-infiltration structures (dry wells) to reduce roof runoff currently being discharged to the road surface. The Division of Marine Fisheries believes that the reduction of stormwater discharges to Broad Marsh River will help to open closed shellfish beds. This project is being funded through DEP's 319 program.

The Buzzards Bay Project and the Soil Conservation Service are also cooperating to construct a wetland in the town of Marion to treat a major stormwater discharge. (This project is being funded through the Department of Environmental Protection's 319 program and through the U.S. Fish and Wildlife Service under their Wetland Restoration program.) The fecal coliform levels associated with the stormdrain have closed parts of the cove for shellfishing and have potential for affecting the town beach. Infiltration will not work on the site due to the poorly drained soils and a seasonal high water table, so the plan is to treat stormwater from a 64 acre drainage basin which historically discharged into Spragues Cove. The proposed wetland is an area that was once a salt marsh earlier filled in during the 1950's with dredge spoil from the Sippican Harbor. This fill will be removed and a 2.5 acre wetland will take its place.

Base flow from the stormdrain pipe plus runoff from the pipe and the road will be diverted into the wetland. The wetland has three components, the first being a sediment settling basin which the town will have to clean every

five years. The next component will be a shallow marsh where the stormwater pollutants will be filtered out. After the shallow marsh, the stormwater will flow into a deep pool. This pool will provide additional pollutant removal and a habitat for mosquito-eating fish (mummichugs). The stormwater will leave the wetland through a stone-lined channel and discharge back into Spragues Cove.

Due to the location of the proposed site, the Spragues Cove Project required several permits from the local boards: Board of Health (variance) and Conservation Commission (wetlands); from the state—Massachusetts Department of Environmental Protection (wetlands, waterways, and water quality certification); and from the federal government—Army Corps of Engineers and Coastal Zone Management. Because the project will be located next to the town beach parking lot and will border several private residences, it generated some local citizen concern; several public informational meetings were held to discuss the project. As a result the BBP, SCS, and the town will be working with the residents on landscaping issues. As of October 25, 1994, the town voted to allocate the funds necessary to proceed with the Spragues Cove Project.

Remediation limitations

Each of the above projects focus on the remediation of an existing stormwater problem. In every case, the remediation site had pre-existing conditions, such as elevations of stormdrain systems, the presence of underground utilities, and limited space for remediation which needed to be addressed. These conditions can limit the number of potential solutions and add substantially to the cost of installation and may also reduce the effectiveness of the solution. And although remediation is considered important to improving the

health of the Bay, the efforts may be negated if new stormwater discharges are allowed to flow into the Bay unchecked. As the Buzzards Bay Project moves into the future, both issues—existing and potential stormwater discharges—need to be addressed.

The Buzzards Bay Project and the Soil Conservation Service are currently working with several local boards (planning boards, boards of health, and conservation commissions) prioritizing existing water quality problems, identifying areas that need protection and addressing these issues through appropriate legislation. Coordinated efforts to fix existing problems while preventing future ones, can only enhance the quality of the Bay and protect it for generations to come.

Bernadette Taber has worked for the SCS for 15 years. Since 1990, she has been a liaison with the Buzzards Bay Project, focusing on nonpoint source pollution issues, primarily stormwater runoff. Prior to this assignment with BBP, she worked in SCS field offices in Vermont, Rhode Island, and Massachusetts. Her Bachelor's degree is in Environmental Science.

My story. . .

Attacking the Soil Conservation Service is a little like picking a fight with a bully who has 10 older brothers. You're just asking for a lot more trouble than you can handle.

I agreed to write about my experience dealing with the Soil Conservation Service under the condition of anonymity. Some will call this cowardly. Others, more likely those who walk in my boots, will understand why a land owner/manager such as myself cannot risk openly offending this powerful government agency. Most ag-producers in my region will say that their local SCS office has the power to force them out of business.

I believe that personnel in my local SCS office would huffily defend themselves from this accusation. I also know, however, of several SCS employees who would agree. They do, furthermore, readily acknowledge that the SCS is out of touch with agribusiness in the 90s.

But that's only part of the problem. It's the increasingly adversarial relationship between land managers/owners and SCS staffers/scientists that is at the root of our mistrust. The two groups perceive the role of the SCS in agriculture in far different ways. Farmers and ranchers wish they could rely on their local SCS office for help, support, and advice. But what happens instead is that SCS has become an enforcement agency, obligated to enforce an ever-changing set of—not laws, mind you, but—regulations that come from Washington DC., or Denver, or Olympia, or some other state office. Each new year brings a new batch of rules that have to be interpreted, spelled out in dum-dum terms and disseminated among the potential violators. The SCS and

its constituency are not allies any longer. And we land managers find ourselves running for cover from their "help."

But we are obliged to pay attention to the SCS. From an agri-business point of view, the agency wields a very important stick: The ability to withhold deficiency payments and the power to oust producers from farm programs. Deficiency payments are the difference between an average real wheat price (how the average is figured can vary from year to year) subtracted from a target wheat price (another arbitrary figure) multiplied by an average crop yield for your farm/ranch (calculated from arbitrary years in the 1980s and throwing out the high and the low). Deficiency payments commonly comprise about one-third of most farm incomes. Not exactly an insignificant percentage. On the other hand, the hoops that producers must jump through in order to earn the right to these payments are often so costly that you're lucky to have a break-even proposition. By that, I mean that it costs as much or more to farm the SCS-required way than what they hand out in deficiency payments. The SCS way may be more conservation-oriented but is over-designed and calculated to withstand the 100 year flood and is a bit like building a suspension span bridge over an annual intermittent stream. And what is galling to us is the growing citizens' anti-farming sentiment because of chemical applications—but the SCS way *requires* a great deal more of the expensive chemical applications to kill weeds since conventional tillage methods are severely limited. Is that good for the land?

So why stay with the program some may ask. I know I've wondered why I do. But the answer lies in the way the agricultural markets are set up and that without any governmental assistance it's practically impossible to

store, transport, or sell your goods anywhere to anyone on any kind of meaningful scale. The market is controlled start to finish by your ever-present, friendly government agents.

The current fear among my fellow farm producers is that deficiency payments will be eliminated but the hoops we have to jump through will remain with the primary weapon to keep us in line becoming (scary music, please) The Fine. Already we see evidence of hefty fines being levied in addition to threats against the deficiency checks.

At our house, we jokingly refer to the deficiency checks that arrive randomly (when the SCS is good and ready) as our welfare benefits because that's exactly how most of the nation views this support. Even in our little local economy, which is fueled primarily by agriculture, you can hear folks on Main Street "wishing they could get some of that government money." If they only knew. This widely held sentiment doesn't inspire a lot of faith in the value of government farm programs—especially from the beneficiaries. We land managers begin to believe the notion that we are being artificially propped up by the government and couldn't survive without them. And not just monetarily, but technically, too. Far too many Americans believe the Farm Program is nothing more than a fancy welfare scam for farmers.

The truth is that most land managers I know would cheerfully give up any subsidies or deficiency payments to be free of government control. It would be great to be an independent producer rather than the drone who must check with his local SCS office to see how much and what he will be allowed to plant. Or whether or not it's okay to hitch up a plow. Or burn. You name it, they'll tell you how and when to do it. Never mind that they've never actually done

My story. . .

anything like it themselves. The only thing they won't tell you what to do is *when* to plant, but then again, they do have STRONG recommendations such as this one I found recently in a relatively mildly worded **Question and Answer** sheet:

Q: Due to lack of rainfall, I will be seeding later than normal. How will this affect compliance?

A: *SCS is aware of climatic conditions that may alter normal farming operations and will account for those factors during status reviews.* [Status reviews are conducted randomly, supposedly by computer selection, but certain activities or requests send up red flags.] *Specific seeding dates are not part of your ACS requirements. However, seeding dates can affect the amount of plant growth normally expected to be present during the critical erosion period, as established in the ACS. Actual plant growth which exceeds these expected amounts will be accounted for and credited when the SCS conducts a status review.*

Got that?

The unofficial SCS attitude is that we farm producers are cheaters and resource rapists who cannot be trusted and that somehow, with their superior knowledge, the brains trust at SCS can better control the weather, growing conditions, soil history, (and maybe even God) to save us from ourselves. The SCS and the ASCS seem to forget that WE are the ones who must make our living off this land. It's not disposable and believe me, we know it. If we fail to protect our land, we pay directly. Their arrogance benefits no one.

Let me give another example: On my property I decided to improve a drainage problem created primarily by a fiber optics cable trench that had been allowed and approved by the previous owner. There are matching government funds available for such

improvements to fix major drainage problems, particularly in that this one involved a small wetlands site. The hitch is, of course, that you have to do it their way with them involved every step of the way.

All proceeded well until the actual execution of the plan. You can imagine the nightmarish collision between private enterprise and bureaucracy. We had the government guy wondering why, now that he's finally over that nasty cold and the relatives are gone, that the dozer operator can't get right to work. We had the owner of the dozer company wondering why the government folks don't show up when they say they will and why can't they be there during real working hours and what's the deal about changing the specs every five minutes. Everyone blaming everyone else. Between the bunch of us, we took a four hour job and handily turned it into a four-day frenzy (spread out over two weeks) where not much got accomplished. So it's no surprise that the weather turned foul and now the project cannot be completed this year. All I wanted was an improved grass waterway. But what I got was a major headache and a bill four times bigger than what I should have had.

And who's actually paying for all this? Me, of course, and you, naturally, the taxpayer. And what are we all paying for? I sure wish I could spend my whole day standing around watching a man operate a grader but that's not the way farming or any other business works.

Sadly, it gets even more depressing than this. One of the latest furors in our state is over how to count residue. This is important, see, because if you don't have enough residue, you can be fined or lose your deficiency payments or both. You might even say you'll be betting the ranch on residue.

But no one can agree on the definition of residue, much less how to count it. Even though the SCS has a standard measuring method, each person who tries it gets a different count. One guy doesn't count fractured hunks of straw less than two inches long. Another individual will not count those pieces of plant matter that are half-buried. Another person won't count stuff that is longer than 12 inches. Yet another will only count wheat chaff and not other plant material. And so on and so on. (You can see why a producer like me wouldn't want to tick off the old SCS Bubba by mouthing off about SCS policies in *Women in Natural Resources* when old Bubba is due to come out and count residue on the ranch next week.)

What really hurts though is that none of this has anything to do with stopping soil erosion—the original mission of the SCS. This standardized test, in particular, says nothing much about whether or not a land manager has enough residue to actually help stop erosion. And that's because the residue that really causes the soil to stay put during erosional events is the residue that's mixed with the surface soil. But no one is counting that stuff because, as the SCS puts it, How can we, it's buried?

If I sound bitter to you, you aren't mistaken. Bitter is how many of the farm operators I know feel after years of dealing with people who have no real idea what farming is all about. Perhaps SCS personnel should be required to undergo five years of scratching the dirt before they get to tell me how to run my business. It would make me feel a lot better about swallowing some of the loads they dish out.

Leadership and the New Science. Learning About Organization from an Orderly Universe.

Margaret J. Wheatley.
Berrett-Koehler Publishers, Inc.
San Francisco 1994.

Book Review

by Jonne Hower

Reading this book brought the same excitement I felt as a college freshman in chemistry class when we went beyond studying cations and anions and covalences to sub-atomic particles. Now, don't ask me to explain *why* quantum mechanics made sense to me when none of that other stuff did. But, I remember thinking, "Wow! This stuff is great." The same thing happened when I took physics the following year. I got completely lost in momentum and speed and trajectory and cars going over cliffs—but there was that great quantum mechanics stuff again. And, here it is back again in the form of organizational development, re-invention, and the 21st century.

Management consultant Margaret Wheatley became intrigued with some of the plethora of "new science" books written for the layperson: quantum mechanics, self-organizing systems, and chaos theory. While reading them, she became convinced that there were management lessons to be learned from science. In separate chapters, Wheatley explores the new ideas and concepts presented in those fields and their relationship to organizations, management, and leadership.

Discoveries and theories ... called me away from the details of my own field of management inquiry and up to a vision of the

inherent orderliness of the universe, of creative processes and dynamic, continuous change that still maintained order. This was a world where order and change, autonomy and control were not the great opposites that we had thought them to be. It was a world where change and constant creation signalled new ways of maintaining order and structure.

Wheatley explores the concept of field theory, using the differing views of Newton and Einstein about gravitational theory. She goes on to describe gravitational fields, electromagnetic fields, and quantum fields, indicating that in each theory, fields are unseen structures, occupying space and becoming known to us through their effects. In one of her giant leaps, she asks: what are the fields in organizations?

Outlining a recent project on customer service for a retail chain, she describes the mystery of being able to walk into a store and "feel" good customer service. Neither she nor the employees she was working with were able specifically to pin down visual cues to explain the sure sense they had when they walked into a store and knew that they would be treated well.

Of course, the field didn't just drift into the store; the cosmos didn't create a customer service field. In each of those stores there was a manager who, together with employees, took time to fill the store space with clear messages about how he or she wanted the customers to be served. Clarity about service filled every nook and cranny...

Wheatley suggests that the organizations of the future will reflect many of the elements currently being discussed in today's research laboratories. One of them is the concept of "strange attractors." She asks: "Is there a mag-

netic force, a basin for activity, so attractive that it pulls all behavior toward it and creates coherence?" She suggests that it is *meaning*. For example, Wheatley describes a company recently thrown into confusion by a leveraged buy-out. She saw employees who had predictably "checked-out" psychologically, the meaningfulness of their work apparently evaporating with the coming flux. But, at the same time, some employees stayed creative and focused on creating new services, even with great future uncertainty. Why? Because "they had taken the time to create a meaning for their work, one that transcended present organizational circumstances."

Even though the book is not long (166 pages), it is not a quick read. Although laid out on pages that are essentially double-spaced, Wheatley makes giant leaps to connect sub-atomic behavior with day-to-day office experiences.

This book, like quantum mechanics, isn't for everybody. But, there is much to ponder on. For example, she lays some of the responsibility on employers and employees alike for understanding their workplace dynamic when she says:

There is a simpler way to lead organizations, one that requires less effort and produces less stress than the current practices... This new knowledge is only beginning to crystallize into applications, but I no longer believe that organizations are inherently unmanageable in our world of constant flux and unpredictability....

The layers of complexity, the sense of things being beyond our control and out of control, are but signals of our failure to understand a deeper reality of organizational life.

Jonne Hower works for the Bureau of Land Management in Baker City, Oregon. She is a WINR editor.

AS THE TRANSITION OF THE AGENCY BEGINS AGAIN, IT PAYS TO KEEP THE CURRENT CHANGES IN PERSPECTIVE.

LOOKING BACKWARD TOWARD THE FUTURE: REINVENTING THE SCS

J. DOUGLAS HELMS

The Soil Conservation Service has been reviewing its operations and organization as part of the general reassessment or "reinventing" of federal agencies. Historical perspective can make a contribution to this process. Historians are frequently asked about the statement that those who forget the past are condemned to repeat its mistakes. In our longing to be appreciated we historians are much tempted to agree. But if we were to agree to this notion it would have us believe that history is a predictive science. Actually, most of us are inclined to be impressed by the unpredictability of events, and the importance of contingency in history—one thing happens in part because of other unforeseen events.

Be that as it may, we still believe that decisions informed by some historical perspective are likely to be better decisions. The following comments were written in light of the current discussion in the Soil Conservation Service about changes such as ecosystem-based assistance, new partnerships, and the question of who our primary customers are—or should be.

In the discussions of reinventing New Deal agricultural agencies, one has to be impressed with the rate of change since their creation. From the beginning of the mechanical revolution in American agriculture inspired by the Civil War, we have seen the biological and chemical revolutions added. The life span of the 60-year-old Soil Conservation Service has coincided with ever-accelerating changes in equipment, methods, chemicals, planting materials, and the structure of agriculture and the farm. Undoubtedly there must be change to accommodate these realities. Not to try to adapt would be irresponsible.

However, the issues the agency faces today are not completely novel. Rather many of today's questions have an earlier variant. There are enduring dilemmas for

the agency (if we can have enduring conservation practices, surely we can have enduring dilemmas).

The Soil Conservation Service's current emphasis on ecosystem-based assistance falls in this category. At its core, this issue is a variation on an old theme or dilemma: *to what extent are the things the Soil Conservation Service does for the benefit of the individual, and to what extent are the operations for the benefit of the whole nation?* In the 1930s, Hugh Hammond Bennett became the first Chief of the Soil Conservation Service (1933 to 1951), before the revolution in hybridization, use of chemicals, and other production-increasing methods. His generation of conservationists was sincerely concerned that if the rate of soil erosion and exploitation continued, the nation might at some future point be incapable of producing enough food. Correcting this trend was to be their contribution to society.

If we are to believe Bennett's statements to Congress, he viewed agricultural problems in a rather static manner. In his statements to Congress Bennett gave estimates as to how long it would take to finish the soil conservation job. Once built, he predicted, the terraces would stay in place, the land removed from crops to forest or pasture would not revert, and the majority of farmers would continue a type of general farming with a variety of crops and some cattle or hogs. All of these provided possibilities for conservation.

Today, it is obvious that the general, or mixed farm, was not destined to be the norm. Specialization predominates and has its advantages in efficiency and income, but it also has its consequences in the ability to transform land and its flora and fauna in wide areas.

The idea behind ecosystem-based assistance derives in part from the changes we've seen in the landscape. The new variation on the ideal proposes that we keep in mind values for broad areas, be

they watersheds or ecosystems, when we consider the cumulative effects of individual actions. Valuing the health of the whole in planning the specific is a new variation on the fact that the conservation activities of the federal government are to include a contribution to the nation or to the society. It is a more recent version of society's interest in having the federal government support for this operation.

However, helping the individual is also central to the agency's prospering. The persistent political skirmishes that the Soil Conservation Service had in the late 1940s and the 1950s with other U. S. Department of Agriculture agencies and their allies—when its very existence was at stake—demonstrate that the political support from the conservation districts was crucial. The source of much of this support came from the fact that the agency maintained the ideal of directly assisting the landowners, thereby giving them the idea that they had some direct stake in the agency's survival.

If it is agreed that such support is critical to the agency's future, this fact presents another dilemma. The current trend seems to be for smaller budgets and fewer people. Maintaining this type of direct contact should be one of the main objectives of any reorganization. Ease of communication has improved over the last 60 years; any change should facilitate fewer layers of supervision and more frequent direct contact.

Also in considering ideas about regional offices, one must remember that the source of much of the earlier external objection no longer exists. Then, the Extension Service and the land-grant colleges objected to the direct line of authority from Washington to the field. Actually, the hidden agenda was to absorb the SCS into the Extension Service. For those people who prefer a type of regional organization now as a means of leveling the organization, there still may be plenty of internal opposition, but the earlier external opposition from other USDA agencies no longer exist.

Another continuing dilemma SCS seems destined to face is the best way to organize the work spatially. Which is more important, the natural interactions of watershed and ecosystems or the political realities of county and state boundaries? SCS's original organization grew out of "problem areas" that Hugh Bennett had identified. He started experiment stations in those locations and later added demonstration projects. Some of the early conservation districts were organized along watershed boundaries.

The advent of forming partnerships, especially greater cooperation with non-profit and public-interest groups, has recently been emphasized. At the beginning of the decade of the 1990's, former SCS chief Bill Richards initiated SCS's working closely with industries on conservation tillage and with organizations of farm managers. But the public perception sometimes overlooks the historical developments and earlier innovations in this area. Orville Freeman's administration of USDA during the early 1960's prodded SCS and the districts to assist urban and suburban development. Norm Berg, former chief of SCS and the districts in Maryland were leaders in establishing sediment- and erosion-control

standards in the 1970s, and in areas like New England, a large part of the work is assisting communities.

The continuing dilemma is how to sort out the resources and allocate them. One can probably expect as much contention as consensus over this issue. On that point I recall an interview with the late Gordon Zimmerman, former executive director of the National Association of Conservation Districts, in which he said to me how displeased he was to see good SCS employees going to work in newly-created R & D areas in the mid-1960s. But, fortunately, the districts' national organization has embraced greater involvement in rural development and assistance to communities and urban areas.

While there may be changes needed in SCS, there are still some principles that will remain central to governmental conservation efforts. The first chief of SCS, Hugh Bennett, wrote about the principles to guide SCS in the volume *Soil Conservation*, which was published shortly after the creation of SCS. Bennett explained: *The responsibility for such a national program falls upon both the nation and the individual. National responsibility involves the protection of society's interest in a natural resource of vital importance to the whole people. Govern-*

ment functions properly in discharging this responsibility. Equally strong, however, is the interest of the individual in the land he owns. National action may be led and aided by government, but the soil must be conserved ultimately by those who till the land and live by its products. Without a widespread recognition of this later responsibility, any governmental program of soil conservation must be doomed to eventual futility and failure.

He said "a natural resource." As the name change to Natural Resources Conservation Service will indicate, the agency wants to be concerned with more than one resource. But the other parts still appeal. He explained the interests of the nation and thus justified the role of the government. While regulations, under whatever name, will have a place in agriculture, yet the suggestion that progress in conservation will still require some personally-felt commitment on the part of landowners is an enduring verity.

Finally, having a vision of what to do, and announcing it clearly, are important. On that score we can have some sympathy with today's leaders of the organization. Certainly Hugh Bennett and his colleagues faced opposition, usually from other agencies within USDA, but they had a clearly understood objective. And they were part of a broad movement of federal activism in agriculture.

Today there is questioning about many roles of government. There is more contention about how personnel and resources should be used. As we look at the budget landscape and the skepticism (in my opinion cynicism is not too strong a word) about government, we should ward off feelings of depression, or panic, and acknowledge some appreciation for what is in place. Consider the current structure of federal employees in virtually every county working directly with landowners. Then consider the reception a proposal to create such an organization would receive in Congress today. On that point we can be thankful.

Douglas Helms has been the National Historian for SCS since 1981 and works at the national headquarters in Washington D.C. He was an archivist at the National Archives prior to his tenure with SCS, specializing in assisting researchers with the records of USDA. His Bachelor's from the University of North Carolina and his Master's and Ph.D. from Florida State University-Tallahassee are all in history.

This article was originally Helms' presentation at The Pinchot Institute for Conservation held at the Forest Service's Grey Towers National Historic Landmark, Milford, Pennsylvania (October 12, 1994).

BASIC FUNDING and STAFFING FIGURES for SCS/NRCS

The SCS faces two challenges: (1) the national Performance Review's challenge to reduce the number of higher grades in government and increase the employee-to-manager ratio and (2) to meet the agency's reinvention goal of reducing the size of National Headquarters (NHQ), national technical centers (NTC), and administrative staffs. The idea is to put more resources at the field office level.

The budget for FY 1995 for SCS is \$727.6 million, which is a reduction of \$532.9 million from FY 1994. In response to the downsizing and reorganization, and to the reduced budget, SCS offered a buyout of employees from April 1-16, 1994 and 1,034 employees took the offer. SCS instigated another buyout program which lasted from November 1 to December 30, 1994. This buyout was limited to 500 employees and targeted to higher graded positions and those in the NHQ, NTC's and in administrative positions.

As of September 30, 1994, the whole U.S. Department of Agriculture had a total permanent workforce of 91,000. The total permanent workforce for SCS was 11,933.

Of that SCS group, 3,193 are women—or 27 percent.

SES	4 (plus two who completed training but are not placed)
GS-15	9
GS-14	29
GS-11/13	839
GS-07/10	1146
GS-01/06	1166

Of the total workforce in SCS 1,821 are minorities—or 15 percent. Of this total 596 are female—or 33 percent.

Numbers/categories of women are as follows:

Soil Conservationist	692 (316 at GS-11 and above)
Soil Scientist	82 (42 at GS-11 and above)
Civil Engineer	60 (44 at GS-11 and above)
Agricultural Engineer	34 (8 at GS-11 and above)

There has been a high turnover in the top state positions in 30 percent of the states. Since June 1994, Chief Paul Johnson has filled 16 of these positions: Four women, four minority males, and eight white males. This increases to eight (from two in 1992) the numbers of women in the top state positions.

Data courtesy SCS/NRCS Human Resources Operations Branch

ONE COUPLE'S EXPERIENCE IN NORTHERN NEW HAMPSHIRE OUTLINES THE BENEFITS, THE RIGHTS, AND THE DRAWBACKS FOR BOTH MANAGEMENT AND THE JOB SHARERS.

JOB SHARING

MARY ELLEN CANNON
TOM BURKE



We split one full-time position making soil maps. We work in Coos County, New Hampshire which borders Vermont, Maine, and Quebec Canada. The county is a rural area north of the White Mountains composed mostly of paper company lands, individual private wood lots, and old-style New England towns. A few dairy farms and paper mills still survive. The communities are feeling small but steady development pressure from being only three hours north of metropolitan Boston.

Unless they work in a natural resource field, most folks have no clue as to what we do. We explain about using stereo pairs of aerial photographs to see shapes of land, traversing landscapes and digging holes, drawing soil boundary lines on photos, writing a book to accompany maps and interpretation tables. We explain about compiling soil maps and editing soil data entered in the geographic information system (GIS) at the University of New Hampshire. If eyes have yet to glaze over, we'll mention water table monitoring studies volunteers help us with on wet soils and on dense basal till (hardpan) sites.

Outside of and inside of the natural resource field, splitting one full-time position strikes many as a novel idea. Filling one position with two part-time employees allows federal managers to cut down on overtime and respond to employees' needs for more flexibility in scheduling and shorter work weeks. For SCS in New Hampshire and ourselves, job sharing was an untested idea—theoretically possible but somewhat akin to asking for the moon. Our three year experience as a married couple job sharing in northern New Hampshire shows that "asking for the moon" can have surprisingly positive results.

The bottom line, of course, is meeting work goals. Through our job share arrangement, we

have successfully met goals equivalent to a full-time soil science position. We hold in high esteem the SCS staff who let us get a job done in a work arrangement that gives us both time home with our son.

The background

Mary Ellen joined the Soil Conservation Service in 1988 as a full time soil scientist on the National Cooperative Soil Survey staff in Coos County. In 1991, when she was expecting our baby, Tom was working as a part-time chapter one math teacher with seasonal trail crew work in the White Mountain National Forest, plus a night course in math to teach for a local technical college. We foresaw no full time teaching or permanent National Forest position for Tom.

Tom suggested he stay home with the baby and Mary Ellen work full time. Though logical, his idea did not account for the fact that Mary Ellen might feel jealous of his time with the baby. As our wrangle over what to do continued, SCS sent Tom a letter of inquiry for availability to work as a soil scientist in Lima, Ohio. Tom was still on the register for soils jobs, but SCS Ohio rejected a part time arrangement idea that Tom presented. Mary Ellen then proposed it to SCS in New Hampshire. To our—and everyone else's—amazement, Mary Ellen's project leader, the two State Soil Scientists, State Conservationist, and eventually folks at headquarters in Washington DC all agreed to the job share. Tom competed for the job with a rating of 100; no one else was on the roster for part-time in New Hampshire. Five months after Phil was born, we officially began our part-time job share employment—Tom as a GS-7 and Mary Ellen keeping her GS-9 grade.

On the job

Our first task as permanent part-timers concerned scheduling our work hours. Since soil survey work requires being in the field all day, splitting the day in half was never an option for us. Instead, our project leader suggested we work full days in a single block, perhaps on alternating weeks. We thought this would be fine except that by law, part-time employees can only work 32 hours per week. As a result, rather than working Monday through Friday every other week, we began working Friday one week and Monday through Thursday (32 hours) the other week. Although confusing to explain to people who see us out mapping or in town during our time off, we like the arrangement and report to work on correct work days.

Once we figured out our schedules, we then discussed our specific assignments with our project leader. To avoid potential conflicts (and to keep our marriage together as well) we opted to keep our assignments as separate as possible. This was easy to do since for soil survey work, we can map soils in different locations and share soil augers, probes, and the truck. During the winter season when snow covers the ground and we cannot map accurately, we compile our separate acres and write different sections of the soil survey manuscript.

We, of course, communicate about work in progress with each other regularly since we initially shared the same desk, manuals, and file drawers. We each have a desk now as our first supervisor left and no new people were added to the staff. Also, we communicate regularly with our project leader for situations outside of soil survey work such as who makes soil presentations and on-site investigations. People generally know that if Mary Ellen is in

the office, Tom isn't there (and vice-versa) and they usually know that they will get either person depending on whose work week it is. (We've surprised a few people by actually being seen together.) Essentially, separate assignments along with regular communication allows us to work independently and, we think, increases our effectiveness on the job (as well as keep us sane).

From the management viewpoint

An immediate payoff for SCS is that adding Tom to the staff increases expertise in forestry, teaching, and math modeling. One inherent drawback with our job sharing arrangement, however, is that our project leader gets saddled with more paperwork such as separate performance appraisals, separate map reviews, and an extra time sheet to mull over than he would have for one full time person. Joe Homer, our supervisor, is gracious about extra appraisals and generous with on-the-job training. On the bright side, Joe tells us we look "fresh and ready to go" through our long winter season of compilation and manuscript writing. John Handler, our first supervisor who left for a promotion (and not just to give us both a desk) was also supportive. Two different State Conservationists in the New Hampshire State Office Staff, first Dave Mussulman, now Dawn Genes, support job sharing. Our State Soil Scientist, Steve Hundley, Althea Weeks, our Human Resource Manager, two different Federal Women's Program Managers, first Miranda Gryniewicz, now Lynn Howell, and Susan Wood, the State Administrative Officer—all have "gone the extra mile."

In 1994 alone, splitting Mary Ellen's full time soil science position with Tom saved SCS \$1,432 on salary plus \$1,214 to \$1,675 on health care benefits depending on the plan (we lose Tom's half of health care benefit as it is prorated but not combineable with Mary Ellen's half to make a full family benefit). Also because we stay under 40 hours in a work week, SCS pays us each straight time rather than overtime for hours beyond our half-time schedules. Summer 1993 we volunteered to work 100 extra hours to complete a needed mapping project and saved SCS some overtime money. Time sheets were wild with flex-time, part time, and extra hours. Sheelagh Connolly, Budget Assistant, found the appropriate sections of the manuals for part timers and we all know how to do it now.

A problem that reoccurs maybe two or three times a year is who is authorized to go to workshops, staff meetings, required field map

reviews, and the specific training needed to fulfill our employee Development Plans. Our dilemma as job sharers is that if we both attend required meetings, SCS loses some productive time from our position with both part-timers working on the clock at the same time. As individuals, we benefit from both being trained at the same time but as part-timers, we're aware that SCS is "double-training" for one position. We're happy that the New Hampshire SCS staff has encouraged us to both attend meetings anyway, figuring the long-term benefits out gain the short-term extra costs. (Given the salary and health benefit cost savings of our job share, SCS still comes out ahead despite double training.) Occasionally, if a meeting is not required but interesting, we may both attend with one of us going on our own time (getting a sitter for our son, Phil) or the person working takes the notes. Either way, when meetings come up, we, and management, deal with them on a case-by-case basis.

We're lucky that colleagues in general are supportive. We haven't felt discrimination (although perhaps a little resentment) for being part-timers in a full-time world. This might be due to an exceptionally progressive SCS staff in New Hampshire or partly due to the nature of soil survey work which is somewhat solitary.

In terms of our future with SCS, there are unknowns in terms of advancement as job sharers. The possibilities are there, however. The regulations say that job share teams may apply for any position and must be considered; each member of the team must make "best qualified." It's hard for Tom to visualize us job sharing a supervisory position so we suspect others might not be able to envision it either. Mary Ellen, on the other hand, can visualize job sharing a supervisor's role, and believes that by analyzing the separate tasks that make up a job and deciding upon a structure for sharing tasks, any job can be shared successfully. Job sharers who supervise would need to let employees know up front and in black and white who to come to for what and when.

Is job sharing growing in SCS?

Clarissa Watson, Family Work and Life Coordinator at SCS National Headquarters in Washington DC says there is no count on the number of job sharers in the agency but it is probably a very small number. Her task is to pull together all the policies that promote balance in living for employees and job sharing comes under her umbrella. She praises top

management for supporting employees in their quest to lead balanced lives. She notes "Paul Johnson, Chief of the SCS, is very family oriented." She looks towards an SCS where varied work arrangements such as job sharing, flex-place, maxi-flex, and 5-4-9 schedules are used more widely.

Six years ago, in 1988, SCS held a conference "Towards Workforce 2000" in Reno/Sparks, Nevada to recommend strategies that ensured a balanced workforce. Later, in 1991, the Work Force Diversity Task Force considered how to chart a course towards increasing diversity, broadening opportunities for employees, and expanding SCS services. In both instances job sharing had been recommended as helping to achieve these goals. As these policies develop, perhaps job sharing situations will become more common.

Personal satisfaction

We hope to continue job sharing until Phil is through grade school. We like spending every other week with Phil and so far have been able to live on our two part-time paychecks. Being job sharers has forced us to be a little more organized than we probably would be otherwise. No one from National Headquarters has said, "You are a test case—if this works out there will be more job shares; if not there will be fewer." However, we feel (and Steve Hundley has mentioned it too) that people may ask or wonder if the job share has been positive or negative for SCS. We want to make it positive. Back to the bottom line—we accomplish our goals within a work arrangement that allows us to meet our family commitment. SCS saves some money, our supervisors sound happy, and we like having our job. Life is good.

Mary Ellen Cannon earned a BS in Agronomy from The Pennsylvania State University in 1981. Tom Burke earned a BS in Forest Resources from University of Idaho, 1979. They met at Montana State University while earning masters degrees in soils in 1983 and 1984 respectively. They married to go to Peace Corps together as volunteers in Tunisia from 1984 to 1986. Tom worked in a soils lab there and Mary Ellen worked with children at an orphanage. Tom and Mary Ellen worked for competing engineering firms as soil scientists in southern New Hampshire from 1986 to 1988.

They now split a soil science position mapping soils for The National Cooperative Soil Survey of Coos County on non-federal lands.

Job sharers are part time employees with prorated benefits. *Job Sharing for Federal Employees*, published by the Office of Personnel Management in December 1990 (CE-991) describes benefits and pitfalls to avoid in job sharing. Job sharing may be a short term or an indefinitely timed work arrangement. Any job can be shared. Following are a sample of SCS job shares.

Mississippi

Margaret Rice enjoyed job sharing from March 1990 to June 1992 with Charlie Breland. Margaret explains: "We finished soil mapping in Perry County and were to move over to Greene County which is known for its large production of marijuana. We were not going to move ourselves, just our work. But Charlie did not like the idea of being so far away from her child during the day." Margaret also adds that the 95 degree 80 percent humidity days also played into Charlie's decision to resign. When they completed soil mapping in Perry County, Mississippi, the job share ended. Margaret returned to full time work on a National Resource Inventory and now works as a full time soil scientist again.

Idaho

In Moscow, Idaho, Carrie Mosley, a soil conservationist, job shared for about a year. Her partner decided to resign when she was expecting a third child, largely due to the cost of day care for three. Carrie says, "I really appreciate Idaho SCS letting me try the job share." At her request Carrie continues on part time status. She spends mornings on conservation work then returns home to children. She thinks both she and the children benefit from that schedule.

Judy Schoonover, Human Resources Manager for Idaho SCS, explained that although the supervisor of the job share at first wasn't very positive about the idea, he was willing to give it a try. Judy never heard anything negative about it from then on. She also recalled her own experience working full time as a personnel clerk with her first child and then working 32 hours per week with her second child. She laughs now about the difference a second child made and said "Job sharing is wonderful for people who have families." She wishes it had been an option 12 years ago.

Oregon

In Oregon, Sue Reams and Brandi Baird are two soil scientists job sharing one position on the soil survey in Corvallis. After eight years with the SCS and a completed soil survey under her belt, Sue finds job sharing a good alternative to resigning. Job sharing allows Sue time for her new baby and makes nursing her simpler.

The soil survey Sue worked on in Roseburg, Oregon was near completion when her baby arrived. Sue was able to set up a computer at home and work part time there and one day a week in the office completing the manuscript to accompany soil maps. When the manuscript was completed, a new survey started in Corvallis. Sue mulled staying home with the baby or

going back to work full time. She and her supervisor considered options, one of which was job sharing. Brandi Baird, a former summer co-op student Sue had previously enjoyed working with, came to mind as a partner. Brandi was working temporarily with the US Forest Service in California and wanted to come back to Oregon for the SCS. Although she had rehiring rights, there were no job openings for entry level soil scientists in Oregon. Sue proposed splitting her position; she and Brandi started job sharing in August 1994.

Sue mentioned an advantage of their job share for SCS in Oregon is that it fills a need to diversify the workforce by bringing on another woman as well as giving the survey party another voice reading the landscape—a win-win situation. Because of low turnover, Sue had been the only woman soil scientist out of a soils staff of 15 in Oregon. The job share also averts losing an experienced professional.

Sue and Brandi have separate job descriptions reflecting their experience levels and split goals 60/40 with Sue taking on more of the goal. They each work 20 hours per week with overlapping hours on Wednesday to talk over soils and landscape relationships together with their supervisor. SCS saves money on salaries because Brandi is starting as a GS-7 while Sue is an experienced GS-9 soil scientist.

Well Courtney— Looks like you're covered with a Cecil sandy loam, eroded phase. Get your alluvia! butt in the tub right now!



The soil Scientist at Home

6/94
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JOAN PERRY

AN INTERVIEW BY DAINA DRAVNIKS APPLE

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

WiNR: You are the Director of the Pacific Basin for the Soil Conservation Service. Where is your office located?

Perry: I am located in Agana, Guam, but I work throughout the Pacific Basin. That's a very broad area of many small islands, a lot of water, and not a whole lot of land area.

WiNR: Give us an idea of how large an area it would cover.

Perry: Think about a map of the United States. The area (including ocean) would be just about the same. That includes the Carolines, Marianas, and the Marshalls. And then I have an additional area, the islands of America Samoa that I am also responsible for in the South Pacific.

WiNR: So the area is equivalent to the land mass of the Continental United States?

Perry: It's actually larger, but it includes mostly ocean. The land area put together is no bigger than the smallest state in the nation. Three islands are what you would consider large—Guam, Pohnpei, and the island of Babelthaupt. But there are many islands that make up these trusts and protectorate lands—about 2,200 of them. Micronesia means "small islands." Using the U.S. map again to orient us, the Carolines would run east and west from California through Maryland. The Marianas would be about where Missouri is and would run north and south. Palau is the furthest west, next to the Philippines and Yap, and then into the Marianas and then into Chuuk. Then there are Pohnpei and Kosrae and then into the Marshalls, which are a big, broad group of chains—three different island chains. You could consider them as three broad vertical arcs extending from New England to Key West. These are all areas that have some affiliation with the United States, generally trust responsibilities.

WiNR: Give us a little background: what does that mean exactly?

Perry: For the most part, these are islands that came under the oversight of the United States or were ceded to the United States after a war. For instance, the Carolines and most of the Marianas became what they called a "strategic territory" under a United Nations mandate after the end of World War II (1947), because they had been Japanese since 1920 under a mandate from the League of Nations.

After that, the U.N. said that the United States should manage those islands.

WiNR: It sounds like a realignment of power.

Perry: As a group, they have had many, many colonial governments—maybe five colonial governments in the various islands. The Germans, the Spanish, the British, the Japanese, as well as the Americans had colonies there. Guam, for example, became part of the United States after the Spanish-American War, but that was a considerably earlier war in 1898.

WiNR: Is Guam a trust territory also?

Perry: Not what they call a trust territory, but a territory of the United States. It is an organized, unincorporated territory. It is organized because Congress passed the Organic Act in 1950, which set up its form of government and gave the people of Guam citizenship. They did that because certain leaders—Baltazar Bordallo and Francisco Leon Guerrero—came from the island and assumed a very assertive role in challenging the United States to allow them to be self-governing. They are now, up to a certain point. I, as a longtime American citizen in Guam, for instance, cannot vote for President of the United States. My delegate to the House of Representatives is a nonvoting delegate. The Constitution of the United States applies only as provided by the Organic Act.

WiNR: Is that similar to Eleanor Holmes Norton's status? She represents Washington, D.C.

Perry: It's similar. Our representative Robert Underwood can vote in committee and can vote on the floor, because of a recent determination, except when it matters. When there is anything that affects the territories, or if their votes would make a difference in how the vote went one way or another, then they are denied.

WiNR: That's neutralizing them.

Perry: They felt pretty good about just getting that far. Of course, what they would like to do is to be able to vote on the floor just like anybody else and have value.

WiNR: The United States still claims to have a strategic interest in Guam, if I remember correctly.

Perry: Yes, there are military bases on the Mariana Islands. I think that is probably the reason why the United States has been in that area so long. The SCS works with the military only under specific agreements related to particular jobs.

WiNR: Did your early life lead you to Guam?

Perry: I think so. My father worked for Goodyear Tire and Rubber Company. Goodyear has a special affiliation with our agency, but of course I didn't even know about SCS as a kid. As a youngster with my family, I traveled all over—and so did my husband. After we married, we both wanted to go back overseas. He is a land surveyor, and he applied for a position as the territorial surveyor for Guam. We all thought this would be a real lark—a little island in the middle of the Pacific. He sent the application over and then forgot about it, but they selected him. That was in 1965. I was a young teacher with a degree in political science and a mother with three little children then. Later we moved to Saipan in the Commonwealth of the Northern Marianas.

WiNR: How did you migrate into the Soil Conservation Service?

Perry: That happened when we went back to the mainland after nine years in the Islands. We thought our children ought to get back in American schools and learn to speak English. I had taught just about every grade in the Islands, and I was in adult education at that point. I had been principal of a small school. As a result, when I got back to Oregon, my level on the pay scale was rather high, and no one wanted to pay me—an entry position—at that high level. I don't know if school districts are still like that. So I thought, "Oh, well, I'll try something different." I sent a 171 to OPM, waited, then went to work for SCS as a writer/editor in the West National Technical Center in Portland. That's how I started working for SCS—as a GS-4 temporary. I was impressed by the kind of staff they had and the technical work they were doing. After two or three months, they started sending me to different states to help people with preparing project plans. I helped organize their writing.

WiNR: Did you have to pick up additional course work to work on the technical stuff?

Perry: The state conservationist in Oregon wanted me to work in his office to help them do the same kind of thing, writing plans. I told him, no, that I was going back to school at Oregon State. I got a degree in general agriculture with an emphasis on soils and agronomy. I worked for SCS while I was in school in a field office in Corvallis. That was a wonderful experience—good university, good work situation. My family was living in Vancouver, Washington, near Portland, Oregon. I had three teenagers at this time. My husband took care of the kids while I was gone, and I would take the Trailways Bus down to Corvallis and stay during the fall and winter weekdays and study like crazy. I left all my books at school and came back home on the week-

ends. In the summer, I worked full-time for SCS.

WiNR: So that was the beginning?

Perry: Yes. The beginning of 20 years with SCS. After I finished school and had the agricultural courses I needed to qualify for a soil conservationist, I worked for a couple of years in the Portland field office, then Hood River, Oregon. The state conservationist offered me a district conservationist position in 1976. I was the second woman DC in the Soil Conservation Service. There was one other in Texas. There weren't many women in our agency at that point, except secretarial positions. I had noticed in school that women were available and educated to do the work, but they didn't begin hiring them into the professional positions until the 1980s. Next, after Hood River, I was a DC at grade 11 for five years in Washington County, Oregon. That was a big county with a large staff and a very active program.

WiNR: When did you start thinking about going back to the Islands?

Perry: Mel Williams, who was responsible for the Soils program at that time at the SCS West National Technical Center told me that SCS work was beginning in the Islands, and that they were talking about doing a soils survey in Micronesia. They did finally advertise a Resource Conservationist position for our area so I went back in 1984.

WiNR: What is the significance of the Soil Conservation Service presence in that area? Can you give me a little history about why it's there and why it's important?

Perry: We are there because of the trust responsibilities that the United States Government has to these people and to these islands. When these islands came under the administration of the United States, our government was required to oversee the protection and development of their resources, as well as their search for political self-determination. As a part of this care for the resources, they had an obligation to provide some kind of technical assistance to help people make decisions. When Dr. R. Muniappan and the University of Guam decided to have soils surveyed in the islands, they made contacts, and the first thing the Department of Agriculture did was direct them to the Soil Conservation Service. At that point, the agency agreed to sign a memorandum of understanding and initiate a soil survey in Guam. When I arrived, there were already two different teams of soil

Joan Perry is Director of the Pacific Basin operation for SCS, (now NRCS). She oversees a far flung Pacific Ocean group of islands whose political status and natural resources interests will amaze you. She has been with the agency for a long time and is one of their highest ranking women.



scientists in Micronesia. I had the responsibility of going into Guam and organizing a conservation program and a soil and water conservation district, to begin with, and then moving into the other six islands. We have developed conservation programs in the other entities as well. For example, one of the entities that we help is a sovereign nation, the Federated States of Micronesia, which has four states. They have 15 years of Compact payments from the U.S. government, and then it is going to be time for them to stand on their own.

WINR: Can you explain what you mean by Compact payments?

Perry: Yes. The responsibilities and obligations have changed since self-determination has taken place and since these island nations have been formed. As they left the broad protection of the United States, they signed a Compact of Free Association—a law that Congress passed, which said that the United States would provide military protection for the islands, and that they also would assist them with different kinds of capital improvement projects and some technical assistance. In those first compact agreements, the Soil Conservation Service is listed by agency name. Local governments knew us and they knew something of the programs and wanted that help. The Forest Service and the SCS were both listed by name in the compacts.

WINR: The Forest Service has a Tropical Forestry Project there. Marge Fallanruw of the Pacific Southwest Research Station heads that in Yap.

Perry: Yes, she's a friend of mine. The Forest Service and SCS have done all kinds of good work together. We don't talk about Team USDA, we live it every day. The Pacific Island forester is Len Newell; he and I have cooperated to develop a program of assistance in agroforestry extending through all the islands of Micronesia and through the international forestry program of the Forest Service. Our own international activities in the Soil Conservation Service have been extended to other parts of the Pacific. We set our agroforestry objectives together. We share the salary costs, the travel costs, and it has worked beautifully. Len and I would love to see it expand, but we are having a hard time even holding on to what we have. I keep telling myself: "Look what USDA Under Secretary Jim Lyons says!" He keeps sending people these messages. "We should work together." This is a perfect example of that principle working.

WINR: Other than collaboratively working with the Forest Service, what do you do mostly? What is the bulk of your job?

Perry: My job has changed radically over the years. Now that I am in a leadership position, I have tried more and more to work with our clients to help them develop programs to meet their needs so that we can find funding and technologies. For instance, the last two years, I have gone to Taiwan and Indonesia to research new ways of doing things because the traditional mainland technology and conservation systems aren't appropriate—they don't fit on our small farms in our very tropical environment for farmers with no cash and no credit. Our Asian neighbors have been practicing commercial agriculture for a far longer period of time than these small islands where I'm working. Re-



Joan Perry with Felix Juan and Jesus Terlaje, Soil and Water Conservation District leaders from Guam.

member, our farmers practiced subsistence agriculture; it was a way of life and still is for many of the islands.

WINR: Give us an example of how you introduce new things.

Perry: Let me tell you about a project Len Newell arranged with the U.S. Forest Service. He set up a program where he brought island leaders—religious leaders, political leaders, people who were important in the community—to the Philippines to see some of the areas that had suffered tremendous devastation because of poor use of the land. These island folks were shocked. They had never seen anything like that—the very steep hills that were barren and severely eroded, completely nonproductive. The Philippine farmers were scratching out a living. We made some great conservation converts with Len's ideas there. SCS also has sent people for training, to learn different kinds of useful practices in the Philippines and in Taiwan.

WINR: What impresses you about Taiwanese agriculture?

Perry: They have some wonderfully productive pear and citrus orchards in the southwestern side of Taiwan. But that is fairly recent. Sun Yat Sen, their leader, told them that every man had to have land. At that point most of the farm land became 2-hectare parcels. So the farmers were unable to install conservation systems that were very practical. In the sloped land, which is the middle ground, really very steep, they built bench terraces, planted fruit trees, then they planted whatever cash crops they could. But bench terraces are hard to maintain, and they are very labor intensive. You cannot use even a little cart because the benches are so narrow—there is only walking room for collecting the fruit. Today, in those old orchards, they have combined a lot of the units into one large field, in a sort of cooperative arrangement. Where there were bench terraces, they eliminated every other row.

They shaped the land to put in what we call a hillside ditch, which has a broad base like a small terrace, maybe four feet wide, with appropriate slopes and the depression on the back slope so the water can be moved safely to an outlet. Then they planted it all to *Paspalum notatum*, which is a sturdy grass and really suited to that area. They developed equipment to fit, a small-engine little tractor with a truck on the back so they can put the fruit or prunings in it. One farmer can take care of a parcel of land without any additional labor. They have done a wonderful job in combining both economic development and conservation practices. The farmer can feel comfortable with his life, and at the same time, he has resources.

The interesting thing is that they had based a lot of that on the early kinds of technology that SCS in the US had been advocating. They brought it all over there, and then successfully adapted. What I was trying to do was to pick up what they had done, and pull it back over to the islands and eliminate those 30 years in between.

WINR: What other kinds of problems do you work on?

Perry: We are doing some very innovative things in animal waste management. On our islands piggeries are everywhere. These little hog operations are six sows, or maybe just two. The folks just sweep or hose out the waste. If it's right next to a stream, that's where it goes. The population is increasing, so they are beginning to have some real water quality problems. People have been coming to SCS for assistance. Our engineers devised several demonstration areas to teach farmers to separate solids from liquids and compost the solids. The liquids

then run through two small tanks, so they get some anaerobic treatment at different levels. Then the effluent outlets into a highly vegetated waterway, and takes a little while to get out to the stream. At that point it is treated, so it is clean enough to go into the stream. It is great! I think it is going to make a big difference. This solution comes after years of trying to figure out how we were going to get these folks to try—because everything we had recommended earlier was met with “oh, it’s too expensive; it’s too big.” But this is inexpensive and has simple engineering.

WiNR: Where do you get your engineering expertise?

Perry: Six years ago, I hired an engineer named Jay Cobb. Jay is just marvelous. Recently I hired a Chamorro man, also a graduate of Oregon State. Chamorro means a *clean-shaven person* in old Spanish. The Spanish came into the islands years and years ago and named the people Chamorro.

WiNR: Are there any other agencies available for help to the islands? Do you get any help from the East-West Center, for example? The former president of the Federated States of Micronesia was on their board several years ago years ago. I met him in the East-West Center.

Perry: Yes, we do get help. It is an institution developed to encourage exchange of learning and innovative thought between Asia, the Pacific Rim, and western nations. They have numerous students from Micronesia, and they have a lot of expertise in our region. I stop in there often to collect materials. Their staff are often visiting at the universities in the Basin, evaluating resource development. I have used some of their models. The MacArthur Foundation has also supported environmental activities in the islands for years. They have been very successful. U.S. Agency for International Development is there. We have similar goals. When we went to Taiwan, the travel expenses of the group that I sponsored was paid for by the Foreign Agricultural Service for the U.S. Department of Agriculture. After I was there the first time, Taiwan started paying for our help. Isn’t that great? They have paid for some of our own scientists and engineers to go over and receive training in conservation.

WiNR: How many people are on your staff, what is its structure, and what kinds of roles do they play?

Perry: Our staffing plan shows that I have 30 positions. I have really about 25 full-time positions that I can afford. I have lots of

part-time co-op students or WAE (when actually employed) intermittent kinds of folk who work with us. It is a fairly small staff. We are spread out over such a big area that it is a very diffuse system. The Pacific Basin Office, which is similar to a state office of the Soil Conservation Service, is small, only 11 people. There are four field offices: in Guam at the university, in Saipan for the Commonwealth of the Marianas, one in Pohnpei for the Federated States of Micronesia, and there is one in American Samoa for those islands. The field offices have a District Conservationist, a soil conservationist, and a technician. Those are the typical job titles. They also have the Soil and Water Conservation District employees and volunteers of various kinds who work with them on different kinds of activities, depending on the field office staff and their programs. The islands of the Marshalls and the Republic of Palau we serve directly from the Basin Office. In the Basin Office, we have a team, the Ecobase Team. We are all TQM converts these days, and it’s working and functioning so well! There are nine of us who work together as a technical team. The team itself provides assistance to clients, drawing on different individuals and also involving individuals in their particular community. For instance, this past week, they have been in Pohnpei, working on an island resource study. They have used an economist, Dan Perrin, who is a resident and works there at the resources office for the Federated States. He served as a member of the team. There is a biologist from the field office in Saipan who is also a member of the team. The soil scientist, the agroforester, and the engineer are from my office. So they review alternatives together.

WiNR: Because of your varied programs, do you attract a lot of volunteers and students?

Perry: We get lots of co-op students. And we do get local people who want to volunteer—in some areas, SCS wives or husbands. That’s a big help. In Saipan, the Soil and Water Conservation District hired a retired SCS person who just walked in the door.

WiNR: What is your budget?

Perry: A little over \$2 million at its highest. That includes watershed operations funds, which are devoted to particular construction activities like delivery systems for irrigation or wetlands mitigation. A good chunk of that will not be there when the projects are over, but it is enough to provide a lot of good help now.

WiNR: Do you have a lot of tourist development going on there?

Perry: Yes, tourism is the biggest means of economic support on the islands.

WiNR: Is that a problem for resource management?

Perry: It could be. It already has been, to a certain extent, in the Marianas. But the Commonwealth of the Mariana Islands and Guam have become at least semi-independent because they have been able to generate income from tourism to support their government. The other islands are further from the mainstream—transportation is a little more difficult, and people haven’t really discovered those islands. Nor are there the hotels and all the infrastructure you need for tourism to be successful there at present.

WiNR: Club Med hasn’t discovered it yet?

Perry: Club Med has come by ship to the Marianas and probably will stop in Palau if they haven’t already—everyone wants to build a resort in Palau. We who work there are worried, because they have these beautiful mangroves protecting the lagoons and the fisheries which might be damaged. I do think controlled development is going to work, however. They have to have that development to survive. The wonderful part for me was that I was able to see the growth over a period of time and watch it develop and help to lead that development. Now in Palau there is a steering committee for the Soil and Water Conservation District and they are anxious to have us come down and help because of the development. October 1994 ushers in the first year of their independence. One fellow worried, “Every square foot of Babelthaupt is going to be dug up for roads and power poles.” Slightly exaggerated, of course, but it is a unique and beautiful terrestrial habitat and marine ecosystem.

Photos of Joan Perry:

Page 26, with Felix Juan and Jesus Terlaje, District leaders from Guam; page 28, with the Mayor and Lt. Governor at groundbreaking at the Talofoto Watershed Project; page 29, with members of the conservation steering committee in Palau.

WINR: How is downsizing affecting you, or is it?

Perry: Up through last year, we were in a growth mode. Every year there would be another program that we were working on that was suddenly authorized, and we were able to get a little more funding and add a position. Or we had funds from EPA coming in. But things are going to be different now, from next year on, because we are going to see reductions. There will be programmatic changes that will cause reductions also. I am concerned. It already has had some effect on our staffing this year, because it has made changes in the way I thought our assistance would develop over a period of time. I had anticipated possibly resident positions in another couple of locations so we wouldn't have to spend so darn much time traveling. I had already told the folks, for instance in Palau, that I will provide them more consistent assistance next year since their requests are valid. They need the help, and when somebody asks for it, I really want to respond. People will do longer term TDY, probably.

Even though we can work successfully in areas where we don't have offices, that intermittent continuity of assistance does not allow for some kinds of resource management programs to get established. Without our full time presence, we are trying to help other people do the needed things; they have to learn, and they have to want to stay with the projects over a long period of time, however.

WINR: How do you communicate with each other over these vast distances? Do you have an electronic network?

Perry: What works best for us is just a fax machine because you can tell if what you have sent has been received. That has been a life saver. Of course we have telephone communications through the islands, but the long distance costs to Palau or to the Marshalls are quite expensive. We use computers, but we also have problems with reliability. Power may be on or off in Pohnpei or Samoa; you're not sure. We are right on the Pacific Plate in the subduction zone, so we have earthquakes and volcanic activity. Because we are between the Tropic of Cancer and the Tropic of Capricorn, we have tropical convergences of wind and rain near the equator which generates typhoons and tropical storms. And mail is irregular, too.

WINR: When was Pacific Basin established as a separate entity?

Perry: When I started working in this program, we were part of the Hawaii state



organization. After the program became more developed for the Commonwealth of the Northern Marianas and Guam and Samoa, the State Conservationist in Hawaii and I promoted the idea of a separate authorized area. The cost of having this as a separate unit was not all that much different because of costs for travel support from Hawaii. I could show a lot more staffing and consistent assistance with that travel money to a much larger area.

WINR: How many women do you have working in the organization?

Perry: We have some; not as many as I wish. There are nine women out of 32. This includes our full-time and temporary employees. There are 23 men. One woman who is a biologist and another is a soil conservationist. The administrative coordinator is a woman.

WINR: How do the grades fall out.

Perry: Most of the GS 12s are male. I am the only 14. When they have the buy-out for 14s, 15s and 16s, I told them, "You're not going to get anybody out of the Pacific Basin, because I'm not ready yet." As for Asian Pacific Islanders, we have a few. Again we should have more here. With all the students we have, I am hoping that some of them will come back and work for us. Right now I have two young women islanders who are studying to be engineers.

WINR: Are professional women pretty much accepted? Are there any problems for female administrators?

Perry: I never had any problem. In the Carolines, I guess it is possible, but it is a matriarchical society largely. The women legally control the land and the other things, such as jewelry, that represent wealth to them. The men are usually the politicians

and the leaders and the fishermen. The women, in many of these islands, are the farmers. The Marianas have a little different system, because they were colonized by the Spanish. As a consequence, their culture and parts of their language are Spanish. Ninety-five percent of the people are Roman Catholic. They have fiestas. The men are dominant and macho. So that is different. If anyone were going to have trouble, perhaps it would be there, if the individual does not understand the society and its customs.

WINR: What kind of impact are changed trade agreements, like NAFTA, going to have? What do you see that doing to agriculture?

Perry: There is a terrific interest in export. I guess that is the major effect that NAFTA has had, but it is subject to all kinds of agricultural export limitations. In many of our islands, the melon fly is present. The major crops are perishable fruits and vegetables. Most of the projects being organized for agribusiness development are food processing that would allow them to export processed agricultural produce and eliminate the concerns regarding insects and shipping of perishables. We have an extraordinary year-round growing season although we have a heavy rainy season.

WINR: Where would producers make the most money.

Perry: Probably agriculture associated with tourism, for fresh goods like flowers and fruit for hotels. They can market the farm itself—e.g. "Visit the fruit farm." Also foods that can be processed to be marketed to the little stores near the hotels or at the airport for tourists to buy and take home. People from Japan and Taiwan are accustomed to bringing back a gift for everybody in their family so they could take home local products. The grower, processor, the packager, the com-

mercial artist and advertising and retail persons would benefit. We get lots of airplane and ship traffic because Guam is a communication and transportation center.

WINR: What keeps producers from exporting these same fresh items?

Perry: I'm not sure we can compete with large scale producers. We have all kinds of bananas—every kind of delicious banana you can imagine. But they do not raise them in very large quantities since the farms are small. So the volume of the production is sufficient to take care of local markets and export within the islands of the Pacific area. It is also sufficient to help feed the Navy, the military, and the airlines who stop by.

Our producers are very limited-resource farmers. There are a few very successful people and many who are struggling: no money, no credit, small parcels of land, problems with water. They have very basic problems such as insufficient irrigation water during the dry season, soil quality problems, and steep slopes in some areas.

WINR: Is anybody forming co-operatives?

Perry: Yes they have. And they have discovered that where they had one large co-operative, for example, the Guam Farmers Cooperative, they had more problems than their present system of several small organizations for marketing. The Pohnpei co-operative does well marketing black pepper. In Guam, there is a green farmers co-op and 15 or 20 little co-ops which have been successful. In the small ones, farmers get nine or 10 growers together, and then they can meet one market, perhaps two markets. They are usually living in close association so they can plan their crops to avoid duplication.

WINR: What are the things that make you successful in this part of the world?

Perry: One thing that has helped a great deal, particularly in these past years, is that I have been successful in hiring a remarkable staff. They are very, very competent. I finally discovered that the Peace Corps is a tremendous mother lode for the kind of people I need.

WINR: Is that where most of your staff comes from?

Perry: A lot of them, yes. Former Volunteers know how to function independently and how to work together as a team. They have initiative, don't let simple problems upset them, because they are accustomed to addressing difficulty. Another rea-



son I have been successful is that I lived in the tropics as a child. I am used to living in places where the power goes off and people don't show up to work because their cow died. I think to be adaptable is very important. My management style now is far more relaxed than it used to be. But maybe being more directive and pushing was important when I started, just to initiate the activity, find the funds, and get people to help. But in the last few years, I have tried very hard to allow the group to manage the program so we can do it together. It has been very fruitful.

WINR: How long has the group been together?

Perry: For almost three years. We are going to stay together a little bit longer. But in another couple of years, some people will be moving into the system, because those folks have career development needs. Six years in the islands is all you can ask of anybody when they are in the formative period of their careers.

But what is also happening is that I am picking up more resident people in the islands and who consider the islands their home. That makes a difference.

WINR: What will happen if you decide to leave, and someone comes who isn't so much at ease?

Perry: One of the things that Denny Burns—a previous Assistant Chief in SCS—and I decided to do a number of years ago was to try to have a flow through the system to introduce a number of people to our activities so more people would be familiar with the operations. It does take somebody who has a little different point of view. There are 11 languages out there and all kinds of different customs.

WINR: How many languages do you speak?

Perry: I speak three languages—English, Spanish, and a little bit of Chamorro. I am trying to learn Mandarin Chinese, but it is very slow.

WINR: What is SCS doing now that will pay off broadly in the future?

Perry: We are concerned about technology development for our area and are promoting a cooperative venture with Hawaii and the Caribbean. We want to look at our commonalities—and at the different kinds of systems developed just to meet the needs of each local people. Over time, as we learn more and put the new knowledge to work, conservation in the islands will be more adaptive.

And conversely, we are picking up on some of the old ways that are so very useful; a lot of the things we recommend are built on historical culture and tradition. Many of the mulching and planting systems that are most successful are traditional practices.

WINR: Do you conduct research?

Perry: We do trials with different kinds of plants for conservation practices. We have two farm areas, one in the highly acid tropical soils and one in the soils over limestone. The purpose is to take selected native species and the existing imports and test them: to improve soil quality and soil fertility, and to stabilize and enrich some of our eroded or barren areas. The agency also does conservation trials with various kinds of practices such as those for animal waste management, using plants in the treatment process.

WiNR: Is the erosion from over-farming?

Perry: A lot of the land was originally damaged from shelling and bombs in World War II—and then from use—sometimes in sugar cane plantations. Tapioca is called a food bank in a lot of our islands. You can harvest it at any time. It will grow in poor soil and ash—it's a sure thing, so they plant tapioca.

But it's like planting corn. Years and years of corn depletes your soil if you don't have inputs and rotation. We are searching for acceptable ways to introduce new species and practices. And we are doing trials with wind-break plants. We are also identifying native species that are important for the island culture such as fruit producing plants which can be used in conservation practices. This work has international implications, because we can transfer some of these uses to others.

WiNR: Are there a lot of trees in these islands?

Perry: Yes. Small trees in the typhoon belt, gnarled, because they are so badly wind damaged. Up against the cliffs around the high islands on the right side where they are protected, there are some. But in other areas, in some of the high rainfall islands that are away from that wind belt, there are wonderful tropical forests and huge trees.

WiNR: Are they exploited? Do they get harvested, or are they pretty much left as tropical forests?

Perry: There have been plantations, but they are smaller units in mahogany and teak. Teak never was particularly successful, but the mahogany is beautiful in a number of the islands and it has been harvested fairly successfully on a small scale. Nothing major, like in Fiji or some of the islands where they planted Caribbean pine and it had problems. We haven't had that type of use. The most significant impacts that have occurred to the forests have been through construction, the tearing out of the mangrove for wood to build homes. Also, a big problem is solid waste management—from people filling the reef areas and the mangrove shoreline with all kinds of really damaging waste products. People also set fires in the woods. There are a lot of hunter-gatherers, so if you go forage or collect your beetlenut or the breadfruit, or whatever you are going into the woods for, it's easier to go through sword grass after it has burned. People in the island like to hunt. After it is burned, the deer come out, and are visible. And there is slash and burn agriculture, too.

WiNR: What trees would average farmers plant?

Perry: The big tree fruits that people keep planting are breadfruit, citrus, mango. Bananas are not a tree. The biggest tree in all of Micronesia is the coconut. People still sell copra. In the Marshall Islands, the government subsidizes copra. They subsidize the farmers 50 percent of the international price and then they bring back what they purchase, and part of it goes to the export market, and part of it goes for local production of things like perfume. In other words, the government pays the producer twice the international price for the product.

WiNR: What is copra?

Perry: Copra is the meat of the coconut that has been removed from the shell and dried, usually over a fire or in the sun for a long period of time. That has been the mainstay of island economies in Micronesia for eons. In the old days, the whaling boats stopped to collect bagloads of copra. When I first came to Micronesia, it was still a good money-making market crop.

WiNR: Some of the island products would be considered exotic to most mainlanders, I suppose?

Perry: Probably. Peppercorns do well. Rambutan is like a lychee, only bright red. There are a lot of exotic fruits. Some coffee.

WiNR: How do you manage on the home front?

Perry: I have a lot of stamina. My husband is wonderful, an amazing support. Our son Mike is schizophrenic. When he was a teenager, he became very ill the second year that I was in school at Oregon State. You can imagine how horribly disruptive that would be to the family. It was probably one of the major calamities in our life, but it also brought us all very close together.

My husband Ron and I both need to work. We are both people who are active and interested, and our kids are intelligent. Even after he was ill, my son took his junior year in college. We all helped each other. But there were times that were pretty tough. He is still living with us. He works. He is content with his own life. But it is not the kind of life course that we would have hoped for him when he was younger. That is one of the reasons we have stayed in the islands. It is far more comfortable. People are very accepting. They don't mind personal differences as much. They take care of each other. They have extended families. People recognize when somebody has a difficulty, and they

help. Mike still drives a car and if something happens, people help him. My husband has his own mapping business now—mostly aerial photography. We have a very contented life style and at the same time, a lot of challenges.

WiNR: Did you ever do a tour at SCS national headquarters?

Perry: No.

WiNR: So you didn't have to have your card stamped. That is one of those myths that you have to come to Washington before you go out to manage *out there*.

Perry: I was lucky—I had a line to the islands. I went as a resource conservationist and just worked upward into the job.

WiNR: What is in the future for you?

Perry: I am going to stay in the islands, if I can. As long as my job is challenging and I have some excitement in what is happening. It is very fulfilling, and I am very comfortable. I have had other opportunities, but I made that choice.

Interviewer Daina Dravnieks Apple is currently Project Manager in charge of reducing the Forest Service Handbook and Manual Direction in response to a recent Presidential Executive Order. She was formerly the Assistant Regulatory Officer for the Forest Service Information Systems and Technology Staff, Washington, D.C.

Her 18-year career in the Forest Service includes serving as Management Analyst for the Regional Engineering Staff, Region 5, San Francisco; Regional Appeals Coordinator in Region 5, San Francisco; Economist at Pacific Southwest Research Station, Berkeley, where she published studies on public involvement in land use planning; designed administrative systems; conducted organizational analyses and developed organizational designs; and conducted strategic workforce planning.

Her B.Sc. in Political Economy of Natural Resources and her M.A. in Geography are both from the University of California, Berkeley. She is currently Chairperson of the Communications Committee, and has served as Chairperson of the Continuing Education Committee, of the Society of American Foresters National Capital Chapter; she was President of Phi Beta Kappa for Northern California and served as National Secretary; and she is a member of Sigma Xi Scientific Research Society.

A NEW ERA. PERHAPS AN UNFAMILIAR NAME. BUT AGROFORESTRY'S TIME HAS COME.

AGROFORESTRY: WE OWE IT TO OUR CHILDREN

JANA M. JOHNSTON

There is a lot of talk about sustainability in agriculture and the need to be applying more environmentally sound farming practices on our decreasing land base. Agroforestry offers our farmers an opportunity to do just that. Agroforestry is a land management system that combines perennial trees with annual agricultural crops for a more sustainable production method. The USDA Natural Resources Conservation Service (NRCS), formerly the Soil Conservation Service (SCS), works under the premise that what we do now on earth should be done with our children in mind. Conservation is aimed at maintaining or bettering our natural resources for future generations to use and enjoy. Agroforestry uses the lifespan of trees to introduce an element of long-term stability to what has traditionally been an annual production system. But what is agroforestry?

Agroforestry: a definition

Many definitions exist for agroforestry, but all of them generally discuss the combination of trees and agriculture in time and space. For example: Agroforestry is the combination of forestry with agriculture or pasture in a land management system that maximizes the combined long-term yield of desired products. Or to say it another

way: Agroforestry is the intentional growing of trees in combination with crops and/or forage. These definitions leave a lot of flexibility on how the system is organized on the ground and what products are produced.

For example, picture a farm with crop fields, pastures, and a homestead. On the crop field, corn and wheat are produced in rotation. The pastures produce forage for a herd of cows. The homestead consists of the barn, corrals, equipment storage and the farmhouse. This is a typical agriculture system.

Now picture a three-row windbreak around the corn field which protects the field from wind erosion in the spring, increases the relative humidity over the field for better crop growth in the summer, reduces the chances for crop blowdown in the fall, and keeps snow from blowing off the field in the winter for better soil moisture replenishment. In addition, the farmer is keeping the trees in the center row of the windbreak pruned so that when retirement comes, a harvest of high quality veneer logs will contribute significantly to the retirement fund.

Around the pasture, a dense planting of pine and fir trees help protect the calves from frigid winds that can cause high mortality in the fragile young animals. In addition, the trees protect the cows from the cold winds of winter and help reduce the

feed requirements needed to maintain weight. In the summer, the shade helps reduce heat stress thus increasing weight gains. The farmer harvested every other tree in the pasture about seven years after planting for a Christmas tree sale. Those monies helped pay for badly needed farm equipment.

The homestead is protected from drifting snow in the winter with dense plantings of trees around the north and west sides. Along the south, fruit and nut trees help shade the house from the summer sun while producing delicious products for the kitchen. The east side is devoted to attracting and feeding wildlife year round with various tree and shrub plantings.

This is a typical agroforestry system. Windbreaks however are not the only planting arrangement applicable. Some examples of other system designs include:

- Perennial filter strips along streams to filter agricultural chemicals and nutrients or animal wastes;
- Grazing under an orchard to reduce grass habitat for fruit pests;
- Random trees in a pasture to provide shade from hot summer sun;
- Nursery stock planted between every six rows of corn—which is called alley cropping—and can include combinations of many species for a wide variety of products;
- Living snow fences to

reduce snow drifts on roads using trees and shrubs instead of traditional wood or metal fencing;

- Wildlife plantings along fence rows and in odd shaped areas of fields.

A couple of other systems that use "working" trees are bio-engineering and biomass energy production. Bio-engineering can be thought of as replacing typical structural engineering with the roots of living vegetation. For example, steep hillsides can be stabilized and protected from erosion by establishing trees, shrubs, and grass. The trees and shrubs are planted in a terrace pattern across the hill allowing their roots to bind the soil together. The vegetation also slows down water movement and increases infiltration into the soil.

Another example is the reduction of irrigation tail water which often contains toxic salts and minerals. The tail water is applied to tree plantations that evapotranspire a portion of the excess water thus reducing the amount needing to be treated before release into natural waters. This method, using eucalyptus, is being practiced in the San Joaquin Valley in California to help protect the Kesterson Wildlife Refuge. In addition, the ground water level is being reduced (where needed) by further plantings of trees for evapotranspiration.

A similar system is used to filter nutrient-rich water from animal waste lagoons and from commercial fish production ponds. The solids are allowed to settle in the lagoon and the water is spread over areas of perennial vegetation. Often a shallow area in the pond supports cattails, reeds, and rushes as an initial filter. Then the water is spread out over grasses and often willows. Finally, trees utilize the remaining water and nutrients. Trees surrounding the fish pond also provide shade and produce organic matter for fish production.

In more humid areas, trees are planted on closed landfills to evapotranspire water from the top soil. This allows winter rains to refill a soil "reservoir" before moving down into the garbage, preventing a possible leaching problem into the groundwater.

Biomass energy production is currently in a "Catch-22" situation. Fast growing trees like the poplars and alders offer an opportunity for biomass production on marginal farm lands. The technology exists to utilize this biomass in energy production, but energy companies are hesitant to locate in areas until a guaranteed supply of biomass exists. Landowners are hesitant to convert to biomass plantations until a guaranteed market exists. Biomass plantations are primarily associated with pulp production for paper manufacturing in today's limited market.

Solutions to U.S. agricultural problems

Some of the concerns about modern agriculture can be directly addressed by implementing agroforestry systems. Historically, U.S. agriculture was dominated by small family farms with each farm producing a variety of products for local markets. As more powerful machinery became dominant, larger and larger farms developed in

order to take advantage of the economies of scale inherent with these machines. This led to large fields of one crop over large areas of the landscape. This monoculture creates many problems because of the lack of diversity. There is a limited amount of genetic diversity within one brand of high yielding crop. This is coupled with a limited number of brands. The resulting monoculture creates the possibility of a disease or insect sweeping through an area and destroying all of that year's crop. However, if the landscape is broken up with windbreaks, permanent field borders, and filter strips, these would create natural barriers to the spread of harmful agents.

Related to this monoculture, agriculture is more and more dependent on chemicals to achieve the high yields. The ability of insects to rapidly mutate to adjust to a changing environment creates the need to use more and different insecticides to keep up with the mutations. This is very expensive for the farmer as well as being detrimental to beneficial insects. While crop rotation practices help reduce some types of insect infestation, other insects are windborne and can travel significant distances to alternative crop fields. Since the insects are primarily dependant on wind to carry them very far, windbreaks around fields help to intercept the insects and drop them on the field in the lee of the windbreak. This creates an opportunity for integrated pest management (IPM) since the farmers can now predict where the insects will first hit their fields and concentrate control efforts within the windshadow of the trees. This reduces the amount of chemical used and the area needing treatment. A few insects may survive, but their movement across the field and their economic impact will be greatly reduced.

Chemical fertilizers have greatly improved the yield potential of agricultural systems. However, there is a reduction in soil organic matter and soil structure due to a decrease in organic fertilizer (manure) application. The organic matter is important for holding soil particles together to create soil structure. Soil structure in turn creates porosity which allows for better water infiltration and aeration of the root zone. The organic matter also helps to hold fertilizers within the root zone and increases biological activity in the soil from both nitrogen cycling bacteria and soil mixing earthworms. While one windbreak or field border will not supply enough leaf material to significantly impact the organic matter of large fields, a more intensive agroforestry system such as alley cropping could help stabilize the organic matter. This system is very effective when nitrogen fixing trees such as black locust, red alder, or acacia are combined with reduced tillage methods that help retain crop residues on the soil surface.

Soil erosion from both wind and water causes tremendous damage to the natural resources of the country. Displaced soil clogs our streams and lakes ruining fish and other aquatic habitats. Sediment in the water also increases the price of water treatment for drinking supplies. Blowing soil reduces air quality and "sandblasts" delicate crops. The movement of soil by erosion generally reduces the productivity of the contributing fields since that soil is moved to areas not in crop production. Overall in the U.S., soil erosion dumps nearly 64 million tons of soil per year into the oceans.

With the implementation of agroforestry systems, the perennial nature of the woody materials will help protect the soil from erosive winds and will help filter out sediment from overland flow

water before it reaches the streams. In hilly country, farmers are building expensive terraces to help reduce water erosion. These terraces can be built by planting trees and shrubs along the contour and allowing the soil to back up against the vegetation.

Recent reports about the vagaries of the commodities markets gives a good indication of the fluctuating nature of agricultural prices. In a bad year, crop failures abound and the commodity's price is very high for the few farmers able to produce a crop. In good years, the glut of product on the market drives prices down. One year of either situation rarely causes extreme hardship for the farmer, but several years in a row can put a significant number of farmers out of business.

By introducing an alternative tree crop into the farming operation, periodic bad times can be leveled out by marketing the alternative crop. This crop often is a lumber product but can also include fruit, nuts, decorative boughs, medicinal chemicals, or forage. For farms based on animal production, tree crops can help replace part of the forage requirement for the animals during drought years when pastures are unproductive. For example, the honeylocust produces very nutritious pods which are highly palatable to cattle.

There is an increasing problem with finding and keeping quality farmhands due to the seasonal nature of the job. With agroforestry systems, much of the tree management can be done in the winter months such as pruning for black walnut veneer production. This creates a steady employment opportunity and increases the likelihood of keeping employees year round.

Water quality has been an environmental concern for many years. The leaching of agricultural chemicals (both pesticides and fertilizers) into our aquifers, streams, and

lakes causes severe ecosystem degradation. By incorporating deep rooting trees into the agricultural system, much of those chemicals can be intercepted below the crop root zones and used before reaching our critical water resources. The increased organic matter in the soil from the tree's roots helps hold pesticides in the biologically active portion of the soil until they are degraded. Fertilizers are picked up by the tree roots and help improve growth while keeping the chemicals from polluting the water sources.

Global warming and decay of the ozone layer are broad-based environmental concerns. The planting of trees can help fix a significant amount of carbon dioxide while releasing oxygen. In urban settings, trees help cleanse the air of pollutants that otherwise would rise into the atmosphere. Black walnut, common hackberry, red maple, and white fir are just a few of the species tolerant to air pollution. In all cases, trees benefit humans by improving the aesthetic conditions of the area and many would credit trees with improving quality of life.

Current status of world agroforestry implementation

Worldwide, agroforestry is not new. Native peoples in the tropics practiced agroforestry before it ever had a title. Often houses are surrounded by "homegardens" which consist of several canopy layers and an understory of vegetables all of which provide a variety of food stuffs for the household. In areas with steep slopes, natural terraces were developed by planting and maintaining grass, shrubs, and trees on a contour across the field. Soil is then held by this vegetation creating a more level farming surface. Living fences protected livestock and provided fuel wood for villages. The fences

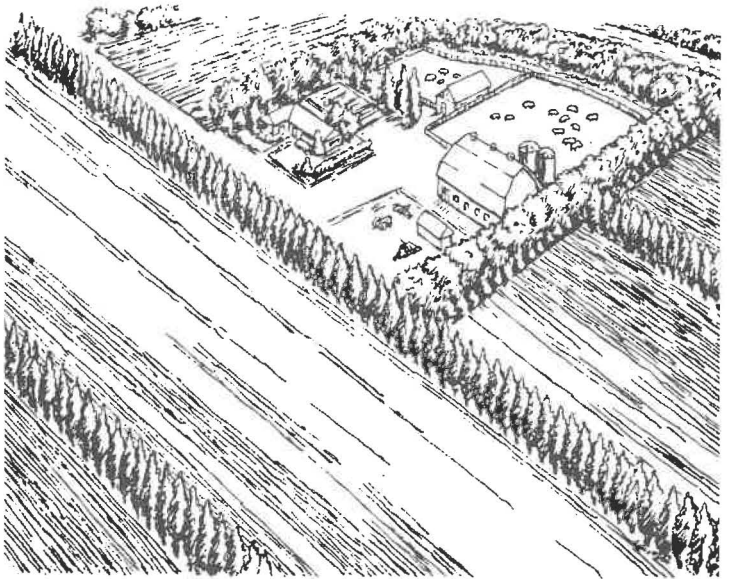
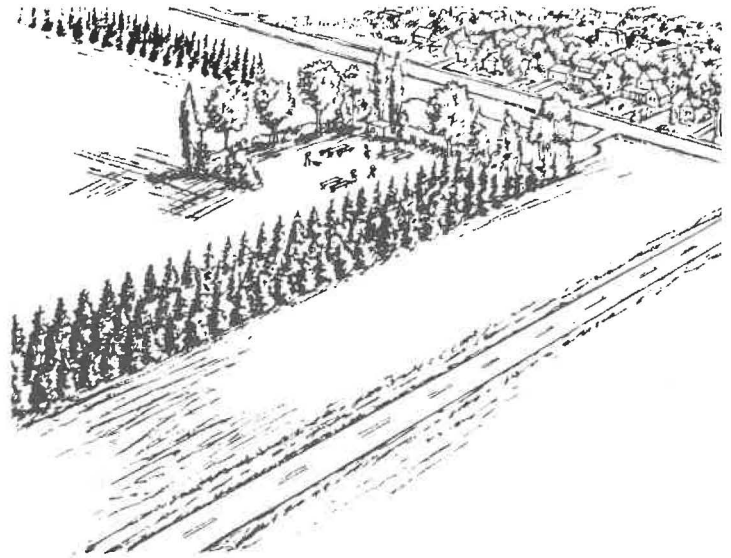
consist of closely spaced, rapidly growing trees. The trees are coppiced (cut at a height of about four feet) for the fuel wood. The stem is left to resprout which maintains the natural fence and starts a new fuel wood crop.

On the continents of Africa, India, Asia, and South America, as well as Central America, agroforestry has been researched and applied extensively. In addition to the previously detailed systems and those mentioned above, there are many more systems that meet site specific needs throughout the world. However, many of these systems are designed for humid tropics or hot, arid regions. Temperate zone research is relatively young.

China is one of the leaders in temperate zone agroforestry research and implementation. They have used trees to repair the damage caused by centuries of food production for a large population. Systems include windbreaks, terraces, and sand dune stabilization. Australia and New Zealand have invested in extended research in temperate zone agroforestry emphasizing high intensity production methods and pastoral systems. Many of their tree products are high quality veneer logs and other fine lumber.

In the United States, research under the name of agroforestry has just begun. However, since its inception in the 1930's, the Soil Conservation Service (SCS, now NRCS) has worked extensively in the agroforestry field. The NRCS is the leader in windbreak technology as a result of the Dust Bowl years. In addition, NRCS advocates the use of riparian filter strips, vegetative streambank stabilization, and hedgerow plantings.

These practices have been considered part of a resource management system, but never labeled as agroforestry systems. In addition, these practices are



rarely designed to produce alternative crops from the perennial vegetation.

Efforts are currently underway in NRCS to expand our knowledge and implementation of agroforestry systems. The NRCS's move toward ecosystem-based planning lends itself to the inclusion of agroforestry systems. The NRCS and the U.S. Forest Service sponsored the Agroforestry and Sustainable Systems Symposium and Worksession held in Fort Collins, Colorado in August 1994. Participants discussed ways of educating NRCS field personnel and forming partnerships with other entities in the hopes of increasing agroforestry research and implementation.

Two areas currently exist where NRCS can have an immediate impact on agroforestry implementation. The first area is in windbreaks. Historically, windbreaks are designed to be essentially static. They are planted, maintained and renovated—or removed. Under an agroforestry

system, they would be planted to species that yield crops, such as annual fruit or nut type crops and longer term lumber type crops. The windbreak would be "rotated" as the lumber crops are harvested by planting additional rows. For example, the initial windbreak planting would be three rows: one row of slow growing evergreen (e.g. douglas-fir, blue spruce, eastern redcedar), one row of high quality veneer wood (e.g. black walnut, pine, ash), and one row of fruit producing species (e.g. elderberry, apple, cherry). When the veneer wood is 10 years old, an additional row of veneer wood is planted. The original row of veneer wood is harvested at year 20 and another row of veneer wood is planted. This sets up a ten year rotation of high value lumber with an annual yield of fruit while protecting the annual grain crop in the field.

The second area of immediate impact deals with the Conservation Reserve Program. This erosion

control program takes land out of crop production and plants it to perennial vegetation, either grass or trees. In areas with sufficient rainfall, many of these CRP acres were planted to trees and at the end of the contract, these trees will be 10 to 15 years old. In many areas, the trees are about a third of the way through a rotation for lumber. Much of the establishment cost has been paid for by CRP and it is a matter of covering the land rent through the rest of the rotation.

With the increased need for private grazing land due to changes in grazing on federal land, these landowners have the opportunity to implement an agroforestry system. The trees are large enough that the cattle or sheep are unlikely to damage them provided the area is managed for proper grazing use. The grazing fee would depend on the quality and quantity of the forage, but would likely cover the expense of management. In addition, fees can be obtained from hunting, camping,

fishing, and skiing permits. At the end of the rotation, the trees can be harvested for high quality lumber.

Conclusion

As partnerships or coalitions increase and demonstration projects are developed, the benefits of agroforestry will be more widely recognized. Beyond the need to address certain natural resource concerns, the American people are clamoring for sustainability of our lifestyles. Those lifestyles include inexpensive food, clean water and air, and nice places to live. Agroforestry systems can help us retain these necessities when included in an ecosystem-based land management plan.

As our population and cities continue to expand, there is no better time than now to plan sustainable urban systems. This urban expansion also forces our farmers to produce more food on less ground or on marginal ground in an increasingly difficult economic environment. Agroforestry offers some solutions to the problems, but there must be an aggressive push for implementation now. Our children are not getting any younger.

Jana M. Johnston is a Soil Conservationist with the USDA Natural Resources Conservation Service in Provo, Utah. She provides technical assistance to landowners in planning resource conservation practices for a wide variety of situations. Her Master's is in Forest Biology from Purdue University. Her thesis was titled "An Expert System for Agroforestry Tree Selection in Indiana." Johnston's Bachelor's is in Forest Management emphasizing silviculture from the University of Washington, Seattle.

Drawings courtesy of the USDA Forest Service, Rocky Mountain Research Station, Agroforestry Center.



SOIL SCIENTISTS IN LOVE

DZ

ABOUT THE SISTERS

The Wright sisters were born in the Midwest and lived in Coldwater, Michigan until 1960 when the family moved to Miami, Florida. They remained in the Miami area until their high school graduations in 1966 (Gail), 1968 (Mary Ann), 1971 (Patty), and 1974 (Tess).

Patty Wright-Koll, the author, pictured right, is a soil scientist with the Soil Conservation Service in Northwest Minnesota. She started with SCS in 1988, mapping soils on the Marshall County Soil Survey in Warren, Minnesota (20 miles from North Dakota and 60 miles from Canada). She is currently completing work on the Polk County Soil Survey and her next project will be with the Red Lake County Soil Survey starting in April 1995. From April to November, usually she can be found out in the field with her hand tools and 4-wheeler or probe truck. The last few years have brought additional responsibilities: she is the only remaining field soil scientist to complete the Marshall County Soil Survey and is now sharing acting Project Leader responsibilities for Polk County. Patty serves on the Federal Women's Program Committee and as the Alternate FWP Manager in Minnesota. She has been a representative to the State Safety and Health committee. Prior to working for the Soil Conservation Service, she worked seasonally with the Forest Service in Deadwood and Spearfish, South Dakota. She was also employed by the Florida Department of Agriculture in Plant Quarantine and Protection from 1982 to 1985. She earned her Bachelor's in Soil Science/Agronomy from Utah State University in 1980.

Tess Wright-Byler lives in the Denver area and is employed as a hydrologist for Ch2M Hill, a private consulting firm. In addition to field work and sampling, designing groundwater protection plans, preparing environmental reports, and giving speeches all over the world, she participates in career fairs to encourage young women to go into the sciences. Her undergraduate work was in geology from Florida International University (1979); her Masters of Science in hydrology is from George Washington University (1986).

Mary Ann Wright works for the State of Utah in Salt Lake City as the head of the Abandoned Mine Program. She supervises a staff of eight including four project managers, inspectors, and realty specialists. She has been the director of the program since its inception in 1981. Mary Ann served as president of the Association of Abandoned Mine Land Programs. She has testified in Congress and made presentations to the state legislature. Most of her work deals with complicated land and scientific issues that arise in the sealing of abandoned mines. Her Bachelor's in sociology is from St. Mary's University in South Bend, Indiana. She received her Master's at Indiana University in ecology/zoology.

Gail Wright-Wilder has been a fund-raiser and administrator most of her career. She works with financial information and analyzes data, an important skill in her fund-raising work. She also is skilled in grant-writing. After graduation from St. Bonaventure's University in Olean, New York, she taught school for a short time, then returned to Miami to start her career in fundraising. She currently is setting up a consulting business and assisting her husband in another business venture. She is a certified trainer for the National Society of Fund Raising. She has spoken at national conventions to over 2500 people and does customized training for hospitals and businesses.

Sisters in Natural Resources



The early years

What would make three sisters out of four choose a nontraditional science career in the 1970's? If our parents had been scientists, it would have been easier to understand. My father, however, ran a dime store and later went into the insurance business. My mother was a full-time homemaker until her late 40s.

Parental expectation did play a part, however, in our career decisions. Every one of the nine children in the family (there were five boys, too) were encouraged, even expected, to do well in school, not necessarily, however, in the sciences.

My eldest sister, Gail, tells a story of the competitive spirit instilled in her by my father upon moving to South Florida when Gail was 12 years old. My parents enrolled her in a Catholic grade school near Homestead Air Force Base. My father told her that she would have to work extra hard to keep up with the "Air Force boys." She remembers thinking that no boy was going to be better than she was! She set a standard for the rest of us that was pretty tough to live up to. I remember report card time. My father would pore over each letter grade and say things like "I really like the A's here but I think

this B could be turned into an A next time, don't you? Heaven forbid if there was a C! We knew my father didn't like C's, so we did our best to avoid them.

We were a family of readers. Our house overflowed with books: contemporary fiction to the classics. My mother, especially, was an avid reader. She was the one that we went to for help with homework. If things were tough, we knew we could talk to Mom about it.

My father was always seeking ways to improve himself and his business. He took night courses and read self-improvement books. Although neither of my parents completed college, it was a high priority that each child go to college and have careers. Despite this expectation, my father has traditional values and couldn't understand why not one of his daughters opted to be a stay-at-home mom!

Ah, sweet youth

I asked each of my sisters to describe their early life. Gail recalls babies and diapers and responsibility. I also thought of all the kids and noise. When Mary Ann thinks of her life in Florida, she envisions the many canals, pine woods, and lime and avocado groves we used to explore.



Sisters

Photos: Gail, left; Mary Ann at work on right; Tess, next page

She thinks of the Everglades and snorkeling and canoeing in the Florida Keys. Tess said that it was an "adventure." We remember playing games with our brothers in abandoned strawberry fields near our house. Our favorite was a place we called King's Castle. It was just a pile of dirt and rocks from an excavation that our imaginations had turned into a castle fortress. Seeing an alligator in the canals was not uncommon and occasionally we'd come across bobcats and cougars in the fields or woods. There was a lot of freedom and exploring. There was no way that our mother could keep track of all nine of us and we took advantage of that.

During the course of interviewing my sisters, I heard some stories about our family that I had never heard before. Gail related this one: My father took the five children that he had at the time to a lake to swim. A man asked if "all five of those boys" were his. My father answered that they were all his, alright, but three of "those boys" were girls! The error made by the man was understandable because we all sported short assembly-line haircuts.

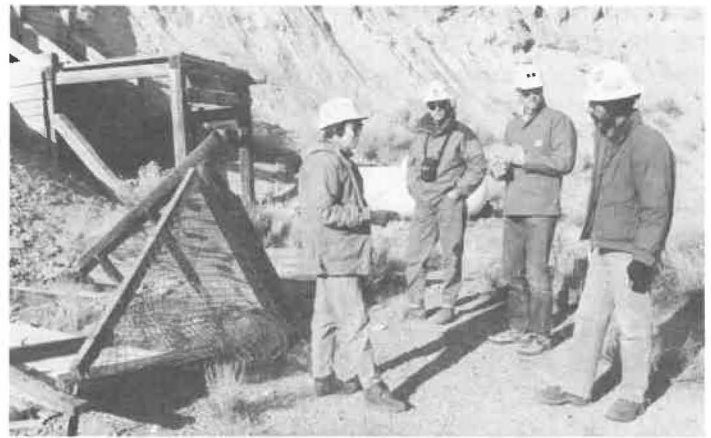
In a way, my father ran the household like a military camp. (We actually were awakened each morning with my father whistling Reveille.) Short hair was easier so boys and girls alike sat at the kitchen table to be sheared super-short. After thinking about it, I wondered how the man at the lake made such a mistake. Didn't he know that the boys had their heads buzzed with an electric razor while the girls had their hair clipped above their ears with barber scissors?

High school choices and Influences

Mary Ann and Gail both attended the same Catholic girls school located on Biscayne Bay in downtown Miami. Mary Ann remembers going down to the sea wall and watching dolphins between classes. She never forgot the serene beauty of that experience. They both did the typical 1960s activities such as going to football and basketball games and cheerleading. Academic excellence was important and Mary Ann took advanced biology and college level math courses. Her biology teacher, Mrs Knight, led an ecology unit studying sea life and the plant communities of the Florida Everglades: sawgrass, dwarf cypress forests, and pine woods. This experience fascinated her and made her want to choose biology as a college major.

Tess and I attended the same large public high in Miami but never at the same time, since she was in ninth grade when I graduated. Back then, I wanted to attend college and become a nurse. I wasn't influenced directly to go into the natural sciences until later in my college career.

I mentioned to one of my sisters that I didn't think I really had an interest in the sciences in high school and she teased me by saying that "You were definitely more interested in your clothes and hair!" But that was not entirely true. I remember biking to Matheson Hammock Park to explore the mangrove hammocks, swim, and watch the shore birds. A favorite place to go with friends was Fairchild Tropical Gardens and the Redland Fruit and Spice Park.



The exotic tropical plants and spice trees have a romantic allure that I have never forgotten. Later when I traveled, I was always interested in learning about the trees and plants of the forest, desert, or prairie wherever I was.

Tess was bent on the non-traditional even in high school. She didn't go the cheerleading route, but did work on the school paper and chose to spend her summers slogging through the Everglades with the Youth Conservation Corps (YCC). Once I went along to pick her up at the YCC camp. Florida summers are extremely hot and muggy and the Everglades are thick with mosquitoes. There Tess was with her long-sleeved, uncomfortable field shirt and pants, and mosquito netting. She was my younger sister but I remember watching her with admiration. Her YCC experience was more than clearing trails and building barbecue pits. The instructors made it an exciting learning experience by involving them in freshwater ecology studies and marine biology projects. She wrote the following when she was in the 11th grade after her YCC summer: "Once you experience the environment, it is clearer as to why you would want to preserve it."

Tess knows exactly what influenced her: a research paper for a high school economics class on water resources. She discovered things like saltwater intrusion and the precarious position the South Florida water supply was in. She spoke with an employee of the State of Florida and decided that he had a job that she would like to have one day.

College years

Interaction between the sis-

ters was limited while we were attending college. Tess and I switched schools several times for various reasons. She moved closer to home while I kept moving farther and farther away. Tess started out with a scholarship to the University of Tennessee. It was a one year scholarship, so she returned to Florida after the first year. She attended the University of Florida but ended up coming home to Miami to finish at Florida International University. Unlike me, however, she kept her geology major.

FIU proved to be a good experience for her. She went to Haiti for a class trip and the school co-op program gave her experience with the Environmental Protection Agency in Washington D. C. She found her work with EPA highly satisfying, convinced it was top of the line technically since they were using premier consultants and the latest technology and research. The EPA was established in 1974 and Tess worked there from 1979 to 1981.

Mary Ann wanted to study biology as an undergraduate but didn't receive much support for that decision while in college. Her undergraduate degree is in sociology but upon graduation she immediately went to graduate school to study wildlife biology. That decision was partly a result of meeting with a group of friends and going birdwatching in her senior year. Just as she loved watching the dolphins at the sea wall, she found animal behavior fascinating.

She did her research on the white-tailed prairie dog in Southern Utah. I went to visit her at the research site. She lived alone in a tiny travel trailer in the middle of a prairie dog town—no running

water and the bathroom site she had set up was in the wide open range. Not a tree around for miles! Although we didn't get many visitors, I had just come from the big city and had a hard time getting used to this "bathroom."

We watched the cute, amusing, prairie dogs together and she explained her research. After watching them all summer, Mary Ann was very familiar with their patterns. We also went on hikes and looked at the birds, plants, and animals of the desert. Later I visited her at Utah State University where she and friends were studying various wildlife. One was studying the Alaskan Brown Bear and had just returned from his research site. I was able to see slides of his research and of the scenery in Alaska. I soaked up all of these experiences like a sponge.

I began by taking nursing courses but soon lost interest and decided that sociology would be my major. When I took a job in Everglades National Park, I had to limit my classes to two days a week. I worked as a cashier and hostess in a place called Flamingo at the very tip of Florida. It was a 50 mile drive to the community college so I found myself choosing TV-offered courses such as Man and Environment or Cultural Anthropology. I still planned on being a social worker when I transferred to the University of West Florida but changed my major to Environmental Science second semester after I spent the summer working in Mount Rainier National Park—then visiting my sister Mary Ann at her prairie dog site. I decided I just had to have a job where I could work outside.

The following summer, I found another park to work in, Galveston Island State Park with the Texas Parks and Wildlife. I worked at the entrance station and in the campground, but I spent my lunch breaks sketching the prairie range plants and wildflowers and trying to identify them. The following year, after visiting the west once again, I decided at the last minute not to go back to Florida to finish school, but to attend Utah State University where my sister Mary Ann had gone.

I had never felt that my sisters had directly influenced me in my career choice. Now that I am writing about it, it is completely obvious, of course, that the changes that I made in my career and interests were in part, if not largely, a result of the experiences and influences of them.

Present position and most interesting work projects

Tess is a senior hydrologist. Her most interesting project was a job in Puerto Rico. It was an RCA (Resource Conservation Recovery Act) determined project. She prepared an environmental report on the extent of groundwater contamination by an oil refinery. She also is writing technical guides for site perimeter investigations for the Texas Department of Natural Resources. She had just finished up a project with a large hog operation to determine the extent of aquifer contamination and advise protection measures.

For three years, she gave presentations to girls in grades 5-9 in a Department of Education Project called "Expanding Your Horizons" designed to raise the self-esteem of young girls at an age when it has been shown to drop compared to boys of the same age. Her latest adventure was a trip to Italy where she gave a talk at an International Resource Hydrologist Conference on pesticide contamination in groundwater.

Mary Ann is the director of the Abandoned Mine Reclamation Program in the Division of Oil, Gas and Mining with the State of Utah. Her biggest concern at work lately has been hosting the annual conference of the Association of Abandoned Mine Land Programs.

Two projects that were personally satisfying to her were first, the resolution of a three year entanglement of environmental, legal, cultural resource, and land ownership issues that brought a family together who hadn't spoken to each other in years. And second, when a Boy Scout was lost for five days in an abandoned mine, she was able to get the Boy Scouts to change their policy on exploring abandoned mines. The experience resulted

in greater education to the public on the danger of unsealed mining shafts. Her office wrote an educational booklet and school presentations are given yearly.

Gail has been in fundraising for over 20 years. The profession has changed from fewer than 20 percent women to now over 50 percent. She has seen the profession become more complex due to greater regulation by the government and IRS rules. She has seen her job change from a people-oriented profession to a regulation-mandated one. (Soil Conservation employees can relate to that!) Her biggest project now is getting the consulting firm up and running and doing the same for her husband's new business venture.

I am a field soil scientist with SCS. My most interesting projects are being out on my four-wheeler and getting stuck in the mud. I dig the holes, classify the soils, and draw the lines on the map. It is somewhat more complicated than what I am making it out to be. I'm beginning to appreciate the field and scientific knowledge that I have gained in my six years as a soil scientist. I haven't given a talk in Italy yet, but I can get up in front of 20-25 people and talk about soils, safety, or the Federal Women's Program.

Today

The process of interviewing my sisters has been exciting and fun. I asked them questions that I don't normally ask and learned more detail about the joys and frustrations of their work: how they feel about being supervisors, using humor, and their work environment. I was able to connect with them on another level, as working women, women in nontraditional fields as "sisters in natural resources." Here are our musings.

On working in a male-dominated field

Tess- "At first men don't want to send you to the field and you have to beg to be sent out." Her first trip to the field occurred during a blizzard. She got stuck in a snowdrift but a woman helped her out. After begging to get out, she wasn't about to turn around. They were all shocked when she showed up at the site.

Mary Ann- "Most of the time, I don't even think about it. Sometimes I'm surprised to see that I am the only woman but I'm glad there is at least me there." She usually has one or two women on her professional staff. She still finds some frustration in mobility and advancement but some things have improved: "Fifteen years ago, men got away with degrading remarks. The sexual harassment issue has raised awareness in this regard."

Gail- "I wasn't taken seriously at first. When I first started out I was 26 years old and single. They didn't believe that I could really do the job."

Patty- "Well, it is lonely sometimes." I love the connection that organizations such as the Federal Women's Program, the Association of Women Soil Scientists, and publications such as *Women in Natural Resources* give. I think there needs to be more feedback and communication between men and women, supervisor and employee. Subtle sex bias can still exist. Sometimes it is not so subtle when you hear that comments have been made such as "women shouldn't be soil scientists." Then you know you up against some *serious* attitude adjustments.

On working for the government versus private business

Tess- "In both cases it is your duty to interpret regulations in a fair, unbiased manner. In



Sisters

private industry it is sometimes tricky calling it as you see it and keeping clients happy."

Mary Ann- "I sometimes consider going private. Health insurance is a big concern for me at this time."

Gail- "My perception is that professionals working for the government are underpaid. The government needs to raise salaries to retain competent employees."

Patty- "I'm comfortable being a government employee. I think a lot of us are here because we like our jobs, not because we are trying to make big bucks. I think most SCS and other government employees are competent and dedicated."

Personal characteristics that have served us well

Tess- "My adaptability. I'm flexible, I can do things NOW, if asked."

Mary Ann- "My ability to get the facts, weigh them, and come to a decision. I'm very thorough. I also can work with a wide variety of people."

Gail- "I think that my honesty and integrity are important in this business. I'm tenacious and will stick with difficult projects and people. I have good organizational skills."

Patty- "I have a great tolerance for working under harsh conditions: heat and mosquito infested places (just like Tess did in the Everglades) or in freezing temperatures in November and December. If I get stuck, I get myself out or get help. I don't give up or get discouraged. The work I do is physically demanding at times, but I rise to the challenge and keep in good shape. I have plenty of time to think in my job and I come up with a lot of ideas. People aren't always ready for them, but not to have a vision at all would be worse. I take on extra projects and try to do a good job in everything I do."

A personal attribute that you would like to change

Tess- "I would like to learn how to play the game of office politics. If you don't learn to be political, you make things more difficult for yourself."

Mary Ann- "I would like to be able to project more confidence to others. I know that I am capable. I can handle million dollar budgets, resolve complicated land issues and testify before Congress, but I don't have a bold demeanor that makes people sit up and take notice."

Gail- "I wish I were more patient and more flexible. Sometimes it is hard to break me out of my mold."

Patty- "I wish I could express myself as freely verbally as I do in writing. I think my quietness is sometimes misunderstood."

Management style

Tess- "I use a low key, supportive, non-threatening approach. I'm seen as a peacemaker and am often given the tough clients to handle."

Mary Ann- "I'm empathetic to employees' needs but there comes a time when the job has to get done and decisions have to be made. I get input from my staff and make the decision."

Gail- "My management style is supportive and encouraging. I like to see employees increase in confidence and have an opportunity to blossom. It is easier for me to be the boss. It is hard for me to sit back and watch when I see the wrong decisions being made by a supervisor."

Patty- "I think that women must tread very softly in supervising men. I'm overly conscious in any situation when I'm organizing a project not to appear bossy. I don't think that "bossy" is in my nature but if I show some assertiveness, I see men get defensive. So, I tone it down even more and sometimes apologize or explain even though I believe I shouldn't have to do this."

Using humor

Tess- "I try to use humor but it doesn't always come easily for me in working situations."

Mary Ann- "Yes, I use humor to diffuse tense situations. When an especially difficult project has my staff at each other's throat, we joke about it and it makes it easier."

Gail- "I've picked up a sense of irony from my husband. I use cartoons about fund raising when I give my talks. I have always had the ability to laugh at myself. When I was a student teacher, I was tall and skinny and wore bright red glasses. I didn't feel that confident next to the regular classroom teacher who was well-liked. During class one day, I was trying to explain *The Legend of Sleepy Hollow* and Ichabod Crane. I told the class about the gangly, goofy-looking Ichabod and said that he looked 'just like me.' The class laughed and I felt much more relaxed after that."

Patty- "I've been hearing a lot about humor lately and have been trying to use it. I often personalize my messages and add a touch of humor. My imagination helps me to see the extremes of everyday situations but it is subtle and is not always picked up by others."

Having a mentor

Tess- "The whole YCC camp and staff provided a mentoring experience."

Mary Ann- "I don't have one specific person to call a mentor. I model off the successful traits of several people. No one person is perfect."

Gail- "One of my supervisors was an excellent role model and mentor. He nudged me along and helped me to grow in my position by giving me more and more responsibility."

Patty- "The only mentor I can think of (other than my sisters) was my 8th grade science teacher, a woman and a Chinese American. She was gentle with us and seemed to expect good behavior. As a result, we behaved for her. She instructed us to write a creative story using scientific facts (science fiction?). She thought the story I wrote about the planet Venus was excellent and selected it to be read

to the class. I think she was one of only a few teachers who singled me out to praise me and show confidence in me."

Discussing our jobs

Tess- "I think that it is great to have a sister in a related field. Our paths then seem destined to cross. When the firm I worked for in New York heard that Patty was a soil scientist, they asked if she would be willing to relocate. I hadn't previously gone into the details of my work with Patty or Gail. I've briefly mentioned projects to them. I discuss more with Mary Ann because our fields are closely related. We also are located closer geographically. (Tess is in Colorado, Mary Ann in Utah). Once, my firm bid on a job that Mary Ann's Division was coordinating. Another reason is that Mary Ann's husband is a consulting hydrologist also."

Mary Ann- "I've learned a lot from Tess about air quality and drinking water. I've told Gail about some of the frustrations that I've experience in professional advancement. I came to visit Patty last summer when I had the Abandoned Mine Association meeting in Grand Forks, North Dakota (near where she lives). We had time to talk and I learned more about what she does."

Gail- "It often seems like family matters dominate when we get together or talk on the phone. We share frustrations but not details of specific projects."

Patty- "Writing this article has keyed me into the details of my sister's jobs. I can't believe what I was missing by not doing so before. I brag about my sisters sometimes. If someone mentions anything like hydrology, mining, Colorado, Utah or Miami, I'm quick to tell them about my sisters."

Balancing career and family

Tess- "I think it is a difficult thing to do. For some reason, it is harder for women. Men usually put their career first and it is the woman who puts her career on hold. I've made the choice to work part time and by doing so have put myself in a box and limited my career advancement. I'm waiting for my kids to go to

college and then I'll be president of the company! Usually we are balancing three things: Home, Work and Family. I've been able to balance the work and family but am not doing much on the home front."

Mary Ann- "When you find the answer to this topic, let me know!"

Gail- "I'm able to do it with the support of my husband. We divide tasks along our skills and interests. (He happens to enjoy cooking and grocery shopping.)"

Patty- "It gets stressful. The more responsibility that you have in your job, the worse it is. In the last year or so, I've been bringing work home and working longer hours. I changed my schedule from one where I would get every other Friday off to a flexible schedule. Now I rarely take the Friday and lose credit hours. There just isn't enough time to get everything done at home. Remodeling work on our house is moving very slowly."

Postscript

After doing the interviews with my sisters, I'm left with admiration and awe. These women who are my sisters, with whom I grew up and fought and borrowed clothes, are pretty high-powered, impressive women! But I don't think that my sisters think of themselves as high-powered or impressive. Half the time, they are worrying if they are doing a good enough job in their work, family, and relationships.

The same woman who gave the paper at the conference in Italy (Tess) gets up early and jogs with her son on his paper route so that he will be safe. The one who is handling million dollar budgets (Mary Ann) is trying to set up a homework schedule for her nine-year old, while struggling with a fussy two-year old.

We, as women who care about the world around us, volunteer for things in the community or at school or agree to take on another project at work. We are constantly trying to balance work, family and community—and somehow we pull it off.

Patty Wright-Koll

For the first time in its 104-year history, Yosemite National Park in California will be run by a woman. **Barbara J. "B.J." Griffin** is the new superintendent, but had worked there earlier. She is a 20-year veteran of the National Park Service and served most recently as director of the Mid-Atlantic region which encompasses 30 sites including the Gettysburg battlefield and Shenandoah National Park. Yosemite has a \$16 million budget, a work force of some 2,500, and covers an area about the size of Rhode Island.

Jennifer M. Belcher is Commissioner of Public Lands for the State of Washington. The state's legislature meets to budget funds every two years. As she prepares to assess priorities for her presentation to the legislature, she notes in a public letter inviting input, that the "Department of Natural Resources (DNR) is more than a state agency budget; it's a budget for the many public institutions such as schools, counties and universities that depend on revenue generated by DNR, for the people who depend on resources for jobs and community stability, and for those who depend on Washington's resources for their quality of life." A universal theme, these days.

Polly T. Strife (pictured) — Director of Environmental, Health and Safety Affairs for Digital Equipment Corporation, has joined the international policy board for the Institute for

Environment and Natural Resource Research and Policy (IENRRP) established at the University of Wyoming. The institute was created to provide a unique marketplace for issues, research, debate, innovation, policy, technology, and consideration of the public good on matters related to protection of the environment and development of natural resources. The policy board is comprised of outstanding representatives of business and industry, education, government, and environment and natural resource constituencies. Polly Strife manages Digital Equipment Corporation's worldwide environmental public policy, external relations, and communications programs. She has been with Digital since 1979, and prior to her current title, she managed the company's worldwide hazardous materials transportation program. She is chair of the Global Environmental Management Initiative and on the advisory board for the Environmental Forum. Her Bachelor's in public communications is from Syracuse University and her J.D. is from Suffolk University Law School.



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HOW CAN A STUDENT LOOK FAR ENOUGH AHEAD TO PREPARE WISELY FOR A NATURAL RESOURCES CAREER? WHAT ATTRIBUTES ARE NECESSARY TO START UP THE CAREER LADDER?

POSITIVE ATTITUDES ARE EVERYTHING

JANET SIOMA

When I read the "request for articles" on women in the Soil Conservation Service (SCS), I put it aside not knowing what I—a person who has just a few years of experience—could contribute. While I am on the front lines as a Soil Conservationist in the Frederick Soil Conservation District Field Office in Maryland, I am not involved with decision-making on large scale projects—yet. But then I thought of a recent experience that had made me organize and verbalize my own attitudes about a working life.

On July 27, 1994, I boarded a tour bus and was handed a microphone to initiate a tour of conservation practices in Frederick County. I was pleased to see that most of the faces looking back at me as I stood at the front of the bus were women and minorities. They were SCS student interns from our SCS National Headquarters (NHQ) located in Washington, D.C. The Frederick County Field Office was chosen for the tour due to our close proximity to Washington. NHQ conducts these field trips once a year to introduce each new group of interns to what SCS is all about—assisting the farm community.

I started the tour by asking the audience questions and soon learned that the interns were office-bound and that most of them grew up in a city. I also found out that they were at a critical point in their education. They were choosing majors and looking at what career to pursue. Then they began asking me questions. They seemed intent on learning how I got into my career.

I mentally sorted through all the good and bad advice that I had been given as a student not so many years ago. What had worked for me? What hadn't? How did I stay on track as I studied, planned, and worked toward a career? What do I wish I

had been told when I was choosing a career as a young student?

I made a decision on the spot to shift the discussion from the passing farm fields to describing different types of positions in the Soil Conservation Service. I highlighted the work of biologists, botanists, landscape architects, foresters, engineers, computer and public affairs specialists. I talked about how to tailor their course work to the government positions they might want to pursue and gave them practical advice about filling out SF-171's (the government job application form).

While I was talking to *them* about career planning, it became apparent to *me* that somewhere along the line I had developed—maybe even codified—some positive attitudes about further education and the working life.

1. Don't be afraid to reach for an unusual goal.

Too few women think of the non-traditional opportunities in the natural resources field when they are choosing their careers. Why is this? Why not go with your heart when something brings into focus something you are already interested in? In my own case, I had stopped at a display booth from the Soil Conservation Service when I was in high school which planted the seed of interest in me to become an agronomist. When I told my high school teachers I had decided to major in agronomy in college, they didn't even know what the word meant. But through additional research, the seed that had been planted at the SCS booth began to grow and I decided this was exciting and was what I wanted to study.

2. When you do go for that goal, go for it as if your life depended on it.

First, find out what it takes to reach your goal. If you want a particular position in the natural resources field, find out from someone *presently working in that field*

what courses you need to meet the job requirements and what prerequisite courses you might take. Ask them about internships, summer programs, co-ops, and other ways to gain experiences in the field as you learn. Trust them: as you explore the merits of different colleges, at least you'll have the proper information to make decisions about what you want, whether you can get it at that college, how long it will take, what sorts of field experiences they provide, whether there is a graduate program (in case you really get into it), how much it will cost, and any financial help they might have.

Then, once you begin your college or university, study as hard as you can to get the knowledge you need to perform the job. Be pro-active all during your student life. Even if the instructor/professor is not exactly up to speed about the real world, you still can benefit from information s/he has to share and the contacts s/he has made in the field.

You also have control over mastering the information divulged in textbooks: you should actively outline chapters, answer questions at the end of chapters, form questions in your mind for further research when you go to the library, and prepare questions for classes. In other words, work at learning your career as if your life depended on it. You'll never regret this. A side benefit of becoming an excellent student is that once you are out of college, you know how to teach yourself. This is crucial in an ever-changing field such as natural resources.

3. Have confidence in yourself.

Let's assume you've completed your degree and are out of school. You may have completed an internship in your field, and you have landed that first job in your chosen field. Now have the confidence in yourself to be able to perform that job. The only unknown when you first begin any job is the management style of your

boss and other little quirks about how the job gets done. But *everyone* goes through this transition on every *new* job regardless of age or experience. You'll be very lucky if you land in an office where the employees remember how it was to be the new employee; usually they will treat you like a third thumb until they realize you know what you are doing. This process takes time and tends to break down the confidence of a lot of people.

It took me over a year to even come close to feeling comfortable with my first position. There is so much to learn, you have to be open and flexible. But most importantly, you must continue to believe in yourself even when you are feeling overwhelmed. Trust yourself that you are not only doing the best that you can, but that once you know how the job is done, you're going to be terrific! Valuable. Appreciated.

4. Don't fake knowledge.

Trust others to be decent people. If you don't know the answer to something, be truthful and tell your "customer" that you don't know the answer but you do know where to find the answer for them. Then make sure you have some sort of system in place to prompt you to get back to them with the answer. Most people appreciate this honesty and will respect you even more for it.

5. Rely on yourself. It is up to you.

It is up to you (not your supervisor) to make sure you get the on-the-job and specialized training you need. It is up to you to actively pursue professional society membership in order to stay on the leading edge of your field. It is up to you (frequently) to study your job description and performance criteria and *fix* one or both if they don't reflect what you are expected to accomplish. It is up to you to network with people in higher positions and develop lifelong, professional relationships with them. It is up to you to build bridges and not to burn them throughout your career. It is up to you to do the best job you can. No one else can do these things for you.

When you rely on yourself, something pretty amazing happens: your career advances because you are the one who controls it. You haven't waited for other people to do the right thing for your career, you have proactively made decisions that propel you forward.

The ideal work situation would be one where your boss and co-workers watch out for you and tell you when there are new things on the horizon that might interest you. However, if you sit around waiting for other people, you'll end up just sitting around.

After you begin working, *you'll just know* what additional training you need, whether or not you are completing the job the way it is described, where you might be able to find new experiences and opportunities. Just go for it. Call or write letters of interest asking for more information about an opportunity. Set up an appointment with your boss to discuss it. Think big. Think bold.

Remember this: when you chose to go into a career in natural resources, you broke out of the mold of traditional women's careers. You thought big and bold back when you made that first decision, took that first step. So...what's holding you back now?

6. Proactively reevaluate your career.

Whether you are many years into your career, or just starting out, sometimes it is helpful to reevaluate your career to see if it is working for you. Is your career what you expected? Is it more? Less? Are you treating problems like challenges and managing them? Are you ready for something new? Does the something new require additional training? If so, can you get the training through coursework or on-the-job? Who can you network with as a mentor in a new field and who can introduce you to this person? Are you happy?

What I told that busload of touring people was that working in a natural resource protection field matters—no matter at what level you work. You choose your career because of who you are and what your beliefs are. As you get into the work, you develop a passion for the

protection part of it. This is what we are all about and it just gets better as we advance in our careers and experience important things getting done.

I think everyone got off the bus smiling, perhaps changed. It was one of the high points of my career—so far—to know how much I enjoy what I do. I have the interns to thank for making me think through my student and work life—and then asking me to articulate it.

Janet Sioma has worked in different fields (accounting, insurance, plant research) and in many parts of the country (New Jersey, Washington, Florida, California) before joining the Soil Conservation Service as a Soil Conservationist in the Anne Arundel Soil Conservation District Field Office in 1993. In March 1994, she was transferred to the Frederick Soil Conservation District Office. Her Bachelor's is from Delaware Valley College of Science and Agriculture (Pennsylvania) in Agronomy and her Master's in Plant Science is from the University of Delaware-Newark

Photos: Sioma in the office, and the interns on the field trip.



Editorial

by Judy Johnson

(continued from inside front cover)

The work will continue to focus on private lands, but I see a growing emphasis on working with private and public partnerships. For example, the new NRCS has recently put in place an Ecosystem-based Assistance (EBA) planning policy which clearly sets forth the parameters for a broader approach than was possible while developing some programs under deadline, such as the Highly Erodible Land plans. In addition, the new Customer Service Plan is a small, but important beginning in the process of aligning customer needs and wants with the skills and services the Natural Resources Conservation Service has to offer. If plans for the new Social Sciences Center—affiliated with a university—come to fruition, the agency will then consistently seek and analyze customer opinions and measure the information gathered against established Customer Service Standards.

We've already spent many months listening to customers at various forums and focus groups around the country. A number of common themes emerged: support for a single natural resources plan on a piece of land; flexibility to better address regional differences with regional solutions; continuation of a voluntary, incentive-based approach to problem solving; and more local involvement and local control with fewer Federal mandates. An approach for developing a single plan is already being tested and focus groups are being held to see how farmers and ranchers think the idea will work. The Service is also moving to establish a regional administrative and program-delivery structure which would address and solve natural resources problems as they appear on the landscape—to break down barriers sometimes caused by political boundaries and permit free flow of ideas and technology.

Much attention is being given to the idea of consolidation and simplification of programs at the Washington level—of creating a "tool kit" which communities could look to for some financial help with natural resource problems. This idea clearly responds to customers who have urged

"one-stop shopping." The new Natural Resources Conservation Service will administer several programs formerly handled by ASCS as a first step to this goal.

But there is a long way to go to tie together a package of assistance which carries fewer Washington strings, permits more local input and control, and assures accountability. Watch the upcoming Farm Bill debate to see if the concepts can be translated into reality.

As implementation of the reorganization plan moves forward for the Natural Resources Conservation Service, there will be many teams spearheading the various tasks. Some issues can be dealt with rather quickly, some will evolve over a period of a year or more. The illustrations above show that forward momentum is in evidence on several fronts already, and that's good news.

As the (former) SCS 60th Anniversary is celebrated in April 1995, the new Natural Resources Conservation Service identity will be unveiled along with the mission, guiding principles, and vision. Adding excitement to this celebration will be the release of Harmony II, the successful multimedia campaign which this time has a Native American theme featuring the heartbeat of mother nature.

Prominent in helping urge Congress to establish the NRCS was the National Conservation Partnership. The Partnership is made up of the National Association of Conservation Districts, the National Association of State Conservation Agencies, and the Federal Extension Service which formally joined forces with SCS to create this alliance in February 1994. Members have pledged their support to a set of Guiding Principles and are providing training on strategic planning, marketing, and total quality management. A team of internal consultants has worked in 15 states so far analyzing barriers to stronger partnerships and developing appropriate strategies for improvement. In order to qualify for assistance, all of the leadership of the state partnership must sign a joint application for assistance. The recent reports from participating states are positive.

Work teams of every description have formed to address prob-

lem solving with a new set of tools as a result of the training on Managing Quality and the Roadmap to Problem Solving. Leadership at all levels supports the principle of empowerment, and while its not always clear to us just what this concept means, the new Natural Resources Conservation Service will surely be stronger over time for looking to employees to contribute all their good ideas and keep decision-making close to the customer.

Women in natural resources fields are playing a larger leadership role now than two years ago when *Women in Natural Resources* first featured SCSers—and there will be more opportunities. The most important thing career oriented women can do today is to get involved; don't sit on the sidelines and wait for someone to call. For example, the NRCS has several leadership development programs for which women (and men) are encouraged to compete. The government wide Women's Executive Leadership Program (WEL), or a state or regional agency Leadership Development Program, offers a chance to participate in a planned program for approximately a year, and often provides eligibility for promotion without further competition. In addition, our agency is always encouraging women to apply for the teams traveling abroad since we have a strong commitment for diversity representation. Most federal agencies encourage submitted proposals in response to posted international assignments—many of these last for short periods—and the opportunity is also available to plan a team which includes state or local partners. A detail with another unit or another agency is a way of broadening perspective. I have a woman from the Forest Service working in my shop for a short term detail. She has an interest in strategic planning and all it took was a couple of visits with key people to arrange it.

This brings up networking—we need to put a special emphasis on it. One of the Washington-based women's network groups is WILMA (Women in Land Management Agencies). As the title suggests, this group cuts across numerous government departments. One member moved to

Denver for a new assignment, so she started WILMA West. I know that many women have started a local Women in Natural Resources group. Why not start one of these?

Don't miss Daina Apple's interview in this journal of Joan Perry, one of the highest ranking women in the Service. I value it because I had the great opportunity to participate in the 1994 Pacific Basin Association of Conservation Districts Conference—held on the island nation of Pohnpei. I provided training on marketing, and Jim Schwartz from SCS Wyoming did training on Coordinated Resource Management. Even though I have known Joan for many years and had heard her talk about SCS work in the Pacific Basin, I had not fully grasped the magnitude of this work and Joan's unique mix of leadership skills until I observed them first hand.

One last word on career advancement—I would advise all women to have and work from an individual development plan. Your employer probably provides an opportunity for skill building and resources, but remember—you need to have a life-long commitment to education. This was brought home to me recently after my family got nursing home care for my Dad. The bulletin board slogan in the dining room read: "You're Never Too Old to Learn!" On a recent visit, a 94-year-old woman whom I have known since childhood, quizzed me at length about the national elections. But what really stopped me short was that this woman, a leader in a small farming community in Iowa for her whole life, wanted to know all the details about USDA reorganization—because she had always prioritized staying current.

We all have to keep our learning curves on a good incline because even if your work place is not undergoing the structural remodeling we are at NRCS, political change, science, or technology can overtake us and strand us in a place we don't want to stay—if we haven't planned for change. Women have so much to offer the natural resource and environment arena. And I know we will invest in ourselves in order to step up to the challenge.

DUNES BECOME THE DEFENSE AGAINST SOME OF THE VERY FORCES THAT CREATED THEM. ACCUMULATIONS OF SAND EXCEEDING SIX FEET IN HEIGHT WITHIN A 24-HOUR PERIOD ARE NOT UNCOMMON.

CREATING DUNES REQUIRES LONG-TERM COMMITMENTS

BRUCE NICHOLS

Ann Horner Granados (pictured right) is every conservation agency's dream person. She is a Soil Conservation Service Earth Team Volunteer, unpaid, but committed to the protection of natural resources—in her case, the preservation of the dunes in Ocean City, Maryland. Granados has directed the Worcester Soil Conservation District's dune stabilization effort for 15 years. Granados realized the need for beach dunes when she lived in and managed the Sea Watch Condominium. Sea Watch fronts directly on the Atlantic Ocean, has 400 housing units, eight commercial establishments, enclosed and outdoor pools, and a staff that fluctuates between 15 and 40 employees. At one time, the Sea Watch Condominium paid more taxes than the Town of Berlin, Maryland—and boasted more people in the summer than Ocean City had in the winter. Ocean City's seasonal population grows to the second most populous city in Maryland, behind Baltimore. Economically, the town is an important revenue, tax, and jobs source to the State of Maryland.

Granados became aware of the potential for wind and water to totally destroy the oceanfront, including Sea Watch, her home. A storm event could eliminate Ocean City's water-based recreational opportunities which undergird the economy, endanger public safety and health, and inflict environmental degradation to a degree unequalled in any other Maryland geographic location because of the exposed aggregate of human habitation. Already there was a steady erosion and loss of beach (some three feet a year).

In 1980, Granados began seeking answers. The mayor had an answer—jetties—but no other technically responsible individuals seemed to agree with him. Granados searched the private and public sectors for technical solutions. About that time, I wrote an article about this issue. I am the SCS District Conservationist for Worcester County, and a River Basin Biologist by training. In the article, I asked property owners to call who wished help understanding the provisions of



the Sediment Control Ordinance dated April 19, 1971. Granados called. She hadn't been fully aware of this ordinance which read, in part:

Prior to the issuance of building permit, a plan for erosion and sediment control shall be first submitted and approved by the Worcester Soil Conservation District.

Prior to construction of any structure on any lot, parcel or tract in the Beach Erosion Control District, the owner, building or developer shall construct a sand dune as specified.

All areas east of said "dune line" between +5 feet above mean low water and +16 feet above mean low water not covered by a building or structure and not paved shall be planted in vegetation suitable to the environment of the location. Said vegetation shall be acceptable to the Worcester Soil Conservation District.

Said covenant shall require the owner, his successors, heirs and assigns to conduct maintenance according to the requirements, as they may be established by the Worcester Soil Conservation District.

Violations: Any private person, partnership, corporation or officer of the municipal government who disturbs earth or commences any activity regulated by this ordinance, in violation of this ordinance shall be subject to a fine not exceeding five thousand dollars (\$5,000.00) or one year imprisonment for each and every violation.

Granados, armed with this ordinance, recruited the United States Department of Agriculture, Soil Conservation Service, for a technical analysis of the Sea Watch beach. I drew up a plan to incorporate sand fencing, planting, and fertilization to establish a protective dune. The Sea Watch staff worked to

establish the basic features for dune formation in the late winter of 1980. However, everyone was somewhat skeptical about how a dune would develop, or what would happen if and when it did. During the next spring and summer with winds and ocean weather, the dune began to grow and protect a part of the beach from storms. Granados became a convert. "The natural forces of sand movement and vegetative stabilization created a dune which offset the damaging forces of the storm. Waves went around the Sea Watch property not over it," she stated, impressed.

A continuous (and expensive) nine mile protective dune line was needed, however, to protect the entire town of Ocean City. Any break in this defense would lead to the destruction of property. It seemed like an impossible quest. As president of the town's manager's organization, and with the aid of the Worcester Soil Conservation District, in 1981, Granados helped motivate the citizens into developing the Ocean City Dune Stabilization Committee with herself as chair.

She organized the group into a coordinated educational instrument gaining broad support and government action. She worked with town, county, state, federal, and elected officials to secure a unified approach to dune development. She set up an annual appearance before the town council to detail dune defense accomplishments.

In her drive for public awareness, Granados developed an award for the person who was the best dune promoter of the year; she helped the committee design and distribute a technical publication, *The Ocean City Dune Stabilization Committee Dune Packet*, to anyone who expressed an interest in learning about dune stabilization. The dune packet was successful because it was the only technical document available with a detailed description of the total task of dune formation from one end of the town to the other. The publication targeted 1987 as completion goal for the dune defense line. In addition, she requested a proclamation from Maryland Governor, Harry Hughes, declaring a "Dune Day" during tourist season.

On November 9, 1983 the Governor hailed the committee's accomplishments

'Cape' American Beachgrass

Conservation Plant for
Mid-Atlantic Sand Dunes



Soil Conservation Service
U.S. Department of Agriculture
Program ACP No. 1-452

before several hundred spectators and the news media. He declared "Dune Day," but confused the crowd as they thought he had said "Doom Day!" Granados worked with Mayor Kelly and Governor Hughes to plan and finance dune development.

In 1985, the committee installed fencing and plant materials to develop a small demonstration dune in front of the boardwalk at 3rd Street. Residents of Ocean City fondly called the growing dune "Baby Dune."

By 1987, Baby Dune had grown to approximately 16 feet above the original sand level and weighed in at 1,481 tons. The committee scheduled an "event" to dedicate Baby Dune to promote the total dune program. Maryland Governor William Schaefer, Congressman Roy Dyson, and a cross section of state and local officials, convened at 3rd Street to talk of their devotion to protecting the beach with dunes. When she spoke at this event, Granados stressed that not only would they have to work to build the dunes, but there would also be a need to actively maintain them—especially after each storm—once constructed. This meant proper fencing, vegetative coverage and fertilization.

Baby Dune continued to grow, demonstrating a technology which helped generate millions of dollars for beach protection. It became a rallying point for those wishing to establish dunes and for a new potential plan to replenish the beach with sand pumped in from offshore deposits. This plan was in the formation and review status, but seemed to be stalled there.

In 1988, the dune committee experienced a *fortunate* setback: they had constructed a successful second demonstration dune at 48th Street, using several experimental techniques. However, the property owners later removed the dune to increase their recreational area. After removal, a storm destroyed the boardwalk as well as a wall protecting the swimming pool on the property that once had been protected behind the dune.

Granados seized this event to drive home the importance of

a protective dune program. She published news articles, and wrote TV and radio spots. The beach replenishment project became a reality and the plan to pump sand onto the beach moved ahead.

In March 1989, a block-long dune created at 91st Street was planted by the committee with the assistance of 125 volunteers. Called the "Governor Schaefer Dune," the project demonstrated a new method of planting that involved sprigging 'Cape' American beachgrass and preseeding 'Atlantic' coastal panicgrass into the sand 1.75 inches in depth. This was the first dune ever planted this way and it developed with surprising rapidity.

With the projected completion of the beach replenishment project, Granados felt that the job of dune promotion was entering a new phase. She believed another function of the dune committee would be to help develop the National Flood Insurance Program's information brochure titled "Living With Dunes."

Although Granados and the dune committee viewed—with great pleasure—the completion of sand pumping activities and the planting of vegetation, they pressed for a dune maintenance manual. In September 1991, a first draft of a potential manual was finished and reviewed by the dune committee. They revised it, but were then unable to find the means to complete and publish a final draft.

Granados moved the project forward by enlisting Congressman Wayne Gilchrest to meet with federal and state officials. As a result of this meeting held May 4, 1994, the Maryland Department of Natural Resources requested a follow-up meeting in July. At that meeting, Granados presented the committee's draft document, a pictorial of species to be grown on the dunes, which was developed with assistance from Tim McCabe, Soil Conservation Service Information Specialist. The U. S. Army Corps of Engineers and State of Maryland representatives subsequently supported publication.

The dune committee continues to be active, expand its membership, and provide a focus in

the longterm undertaking of protecting the dunes. Approximately \$8 million dollars per mile has been spent to protect seven and a half miles of beach. This cost includes two major storm events and the subsequent repumping to replenish lost sand. Dunes have been constructed from 37th Street to the Delaware Line. The lower end of the beach from 37th Street to the Inlet is protected by a seawall composed of steel and cement.

Granados has been, and continues to be, the central person heading up the Worcester Soil Conservation Dune Stabilization Committee. Political, technical, economic, and educational expertise have established her as the "guru of dunes." A recent Ocean City publication with Granados' photograph occupying the entire front-page may also have influenced this title. She was pictured sitting on the dunes with her legs crossed in a typical yoga position.

The "guru" has identified her future charge. She and the committee will continue to work for the establishment of a long-range plan which assures that the most economically efficient and technically sound methods are applied to maximize dune protection. With \$60,000,000 of public funds already expended, mainly on the pumping of sand and to repair storm damage, the committee works to develop and implement a long-range plan to manage the dune system.

Envisioned is a funded work committee with functional independence from any individual

government agency and composed of residents and technical people capable of interpreting the needs of the dunes. The work committee must be able to redirect maintenance activity when new technology dictates—maintenance costs are anticipated to be approximately \$5 million dollars per year.

Plans include creating a dune manager to collect data, file reports, work with contractors, and handle public complaints. He or she will also include public education and coordination of volunteers.

Granados is a remarkable Earth Team Volunteer for the Soil Conservation Service. Her longterm commitment to dunes creation has now stabilized many of the beaches of Ocean City, Maryland—and her work continues. She is the perfect example to point to when someone asks: "What can I, one person, do that will make a difference to the protection of the environment?"

Bruce Nichols is District Conservationist (since 1980) in Worcester County, Maryland, and has worked for the Soil Conservation Service for 23 years. He is a noted expert in shoreline stabilization—not only with ocean beaches and rivers, but also along shorelines of the Chesapeake Bay. He and his District Office staff are researching differences in the hydric soils along the Bay that are vital in supporting submerged aquatic vegetation. Nichols' Bachelor's is in wildlife biology from the University of Florida-Gainesville.

What is the Earth Team?

The Earth Team is the volunteer arm of USDA's Soil Conservation Service. Anyone 16 years of age or older who is interested in conserving natural resources can join full or part time. Most Earth Team Volunteers work out of one of the more than 3,000 Conservation District field offices throughout the United States.

Becoming an Earth Team Volunteer can sometimes be a "down and dirty" job. A Volunteer might find themselves one day up to their knees in mud doing surveying work, wading through manure the next day in an effort to help design a barnyard loafing lot, and staring at a computer screen the third day with data entry of conservation plans. Earth Team Volunteers—depending on their skills, talents, and interests—can volunteer for a wide spectrum of jobs: GIS analysis, conservation planning, educating school children, writing news articles and delivering them to the local paper.

The Earth Team is particularly attractive to people who haven't made up their minds about a career (38 percent are young people under 17) or to people who are retired (47 percent are seniors) and would like a second career in something they have always enjoyed: the outdoors. Many of these people thrive on their conservation work, and go on in natural resource careers or, if retired, stay for years on Conservation District staffs as Volunteers.

Last year, more people volunteered for the Earth Team than ever before. In the State of Maryland, for example, 266 people volunteered 12,101 hours toward conservation of natural resources. At the minimum wage, SCS gained \$52.6 thousand dollars—not small change in this era of shrinking budgets.

*Kathleen Diehl, Public Affairs Specialist
Maryland SCS*



One year-old stand of Atlantic coastal panicgrass that was direct seeded on sand dunes

WE MET IN RUSSIA TO FOCUS ON CRITICAL ENVIRONMENTAL CONCERNS. WE TOOK AS A BASIC ASSUMPTION THE FACT THAT SOLVING THESE PROBLEMS WOULD AND SHOULD INVOLVE WOMEN.

A RUSSIAN SYMPOSIUM: WOMEN AND THE ENVIRONMENT

SANDRA K. MARTIN

The flights to Moscow were exhausting. Connections were brief and very hectic. The longest leg of my journey from Washington State to Russia was a flight from Cincinnati, Ohio to Frankfurt, Germany; eight hours in a hot, small space, filled with cigarette smoke and not a few drunks. The transfer in Frankfurt was a bewildering blur of vast tarmac, mazes of corridors, and long, long lines to enter boarding areas. The sun was hot and bright in the mid-morning sky, but my internal clock said "it's 2 am!"

The symposium, "Women, Politics, Environmental Action" was held in Moscow, Russia on June 1-3, 1994. Nearly 200 women and men from the Commonwealth of Independent States (formerly the Soviet Union), the United States, and a dozen other countries convened to hear papers on 1) the state of the environment in Russia, 2) women's roles in sustainable development and environmental restoration, 3) philosophy, and 4) grass-roots organizing.

The symposium was the beginning of a two-year project organized by members of the University of Wisconsin System Women's Studies Consortium, the Russian Association of University Women, Women for Meaningful Summits (USA), and Women to Support Ecological Programs (Russia). The two-year project seeks to form linkages between women in the former Soviet Union and in the U.S., focused on environmental policy and management. Collaborative efforts will be developed to facilitate Russian women's direct

involvement, and leadership, in reforming environmental policy and management, and in pursuing sustainable development in their home countries.

I felt a distinct physical thrill when we touched down at Sheremetyevo Airport, and I finally saw Moscow through the windows of the plane. I saw mile upon mile of tall, blocky buildings extending to the horizon. There were piles of refuse and old, worn equipment along the length of the airport property and beyond. Thick grass, shrubs, and stands of birch trees crowded down to the tarmac within yards of the terminal building.

We disembarked into the terminal, past a trio of young military police looking us over. People stood silently in line to go through Passport Control and Customs. Silence follows naturally from the exhaustion of international air travel, but I soon realized that a crowd of several hundred spectators, waiting on the other side of Customs, was nearly silent, as well. I passed through a narrow lane in the waiting crowd. Along the open lane, individuals held signs in various languages, announcing their expectation of specific visitors. After a small eternity, I saw a hand-lettered cardboard sign with the title of the symposium upon it. A small blond woman held it, and smiled and answered me in English when I asked if she was there to assist us.

My relief was palpable. I had been warned of the difficulties of safe and reliable taxi travel from the airport in Moscow. I had the address of the Academy of Administration where the

symposium would be held and promised hotel rooms awaited, but I could not even read the letters of the alphabet, nor understand more than "yes" and "no" in Russian. Without assistance, I very much doubted my ability to maneuver safely in this strange city.

The symposium was held in a former training center for the Central Committee of the Soviet Communist Party. The fenced and guarded compound held two high-rise hotels and two expansive office buildings with meeting rooms, conference halls, restaurants, and tourist services. A rising crime rate in Russia led the symposium organizers to choose this facility for its relative security. The center usually housed several simultaneous conferences and meetings, and throughout our stay there was always an international mix of people walking in the compound and hallways. The center provided translation services, another important reason for holding the symposium there.

After a two-hour wait for other arriving symposium participants, eight of us were herded outside by our two Russian contacts. The pleasant, middle-aged women were both English teachers, and the group conversed as well as we could, over the roar of the ancient mini-bus engine and our all-too-apparent exhaustion. Mostly, we stared out the windows at what we could see from the Ring Road as we traveled east, circling Moscow from the south. I saw the same tall apartment buildings I had viewed from the air. Closer, they seemed worn and old, in disrepair; many had unfinished construction in upper levels. The buildings stood at least a quarter mile from the highway, and

between was a green belt, filled with cultivated gardens. The English teachers told us that these gardens have always played a role in the food supply for Muscovites, and are also an important source of recreation. The owners of the gardens did not necessarily reside in the nearby apartment buildings but commuted long distances, sometimes staying all day or even overnight when they had the time. Each garden had a small shack or shed, and these were used to make tea, get out of the rain, and more often lately, as a residence for days on end. Inflation has made the gardens a necessity for many people to feed themselves; thus the produce has become more valuable and susceptible to rising theft.

We drove on and on, 45 minutes at a fast pace. We seemed to be on the edge of this gargantuan city, in an open area with natural vegetation sparsely scattered among the apartment buildings. Almost nothing seemed new, in the best repair, or modern. Most of the vehicles were tiny, old, European-looking cars and massive, old trucks, with a smattering of military-green vehicles. Most were full of people, traveling as fast as possible, on a wide road with no lanes marked, and no lanes acknowledged. A few late-model Jeeps, Range Rovers, and even a Mercedes Benz, occasionally sped past the Russian-made cars and trucks.

After exiting the highway, we drove on crumbling overpasses and roads with no curb or sidewalks to the fenced compound of the Academy of Administration. Our guides led us to the front desk of the hotel, where we checked in without benefit of oral communication (no English spoken by the

staff). Luckily, numbers are recognizable in both English and Russian and so our hotel rooms were successfully located.

After checking in, a small group of newly-arrived Americans and I set out to find a restaurant or other source of sustenance. Our guides had told us that the meeting buildings contained such businesses, but they had left to begin the long trek to their own homes and we were on our own. It was after 8 in the evening by then, though at the northern latitude of Moscow, it was still quite light. We wandered through empty hallways in the ornate building, turning away from the many dark, unlit corridors and found a few small cardboard signs attached to the marble walls. These were, of course, in Russian, but had some hopeful symbols of plates, forks and coffee cups, and arrows pointing down yet more empty hallways. After an hour of wandering, with our only human encounter being two old ladies in a coat check room, we returned to our hotel, tired, discouraged, and hungry. Dinner was to be a granola bar and some mineral water we had traded some candy for from our airport guides.

Over 200 participants attended the symposium, with 120 registered from the Commonwealth of Independent States and nearly 70 from outside the former Soviet Union. These latter conferees were primarily from the United States, but also from Canada, Australia, South Africa, South Korea, India, Germany, Switzerland, Poland, and the United Kingdom. Holding the symposium in Moscow boosted the Russian attendance, as travel is difficult and very expensive.

A planning seminar was held on the day before, and the day after, the symposium. Invited participants discussed and selected projects for cooperative solution that focussed on environmental restoration and improving public health. Within the scope of a specific project or projects, the goal is to improve the ability of Russian citizens to impact processes that create or exacerbate environmental hazards. The symposium organizers were particularly interested in empowering Russian women, and to train

them to increase their participation at local, regional and national levels in all aspects of environmental restoration.

At this planning seminar, more than a dozen Russian and Commonwealth speakers presented a list of ecological disasters and attendant public health problems. Karine Danielian, Minister of Environment for Armenia, told us that resources were so limited that her country had yet to make a complete survey of the impact of the 1989 earthquake, and requested that a cooperative project be developed to survey the situation and generate maps to illustrate the extent of the damage. She suggested we plan to monitor and then improve the reproductive health of the Armenian population.

This focus on reproductive health was reiterated again and again throughout the day. The consequences of decades of ill-use of natural resources was most immediately obvious in the high infant mortality rates and incidence of birth defects the Russians reported. The need for research was noted, but the greater need for practical applications and direct improvement of people's lives was emphasized. A few around the seminar table acknowledged the linkages between safe food and water, breathable air, thriving children, and healthy ecosystems, but most participants were medical doctors or bureaucrats focussing solely on the human condition.

Maria Cherkasova, Director of the Center of Independent Environmental Programs in Moscow, has recently been working with handicapped children in environmentally hazardous areas, but is a scientist trained in ecology. She noted that the public focussed on health issues because it was immediate, and the suffering was easily understood. She also stated, however, that people could not be the only issue of concern, as pollution of natural resources was the fundamental cause of many of the health problems.

Minister Danielian agreed with this, and submitted additional projects for consideration by the seminar group. Conservation of

rare and endangered wildlife would be the second priority after documentation of environmental damage caused by the earthquake. As a third priority, she suggested environmental education, especially at the university level, be selected as a focal project. Most of the first day of the seminar was spent on listening to the Russian participants present suggested projects. The majority were focussed on public health problems of women and children.

Lunch was called at 1 pm, and we were led by a symposium organizer to a cafeteria where we pointed at plates and bowls of potatoes, soup, and unidentified meats on institutional cafeteria serving tables. Tea was available in small glasses with large dollops of sugar dissolving on the bottom. The cashier waited with little interest as we Americans fumbled together with fistfuls of bills, trying to assist each other in the act of payment. We sat in a group of mutual bemusement at our predicament of buying unknown foods with little knowledge of what we were paying for them. This was my first meal in 24 hours, and I cared little about what I was eating. The soup was fatty and the meat required abandonment, but the mashed potatoes and bread were familiar and I liked the sweet, sweet tea.

Slowly over the next few days, we Americans became adept at ordering foods with gestures and muttered thanks, and at finding the cafes that had the best selection. With the exchange rate at 1900 rubles to \$1, meals cost as little as 50 cents for eggs, bread, and hot cereal in the morning, to as much as \$3 for dinner with imported German beer. Coffee was found only in special cafes and bars, and was available only as espresso, but this also was inexpensive and a capuccino or latte could be bought for 10 cents.

The opening session of the symposium was held in a large hall with steeply inclined rows of desks equipped with ear phones. Through these we heard the translations into English on one channel, and into Russian on another. A half a dozen officials and organizers welcomed the participants in sequence, including Chitra Ghosh (President of the

International Federation of University Women), Francoise Belmont (Regional Director of the United Nations Environment Program), Leonid Smirnyagin (Counselor of the President of the Russian Federation), Sarah Harder (Women's Studies Coordinator from the University of Wisconsin at Eau Claire), and Natalia Mirovitskaya, (Institute of World Economy and International Relations in Moscow).

Alexei Yablokov was one of the first speakers, and as Chairman of the Commission on Ecological Security for the National Security Council of the Russian Federation, he knowledgeably presented a summary of the environmental situation in Russia and the Commonwealth of Independent States today. It was a veritable litany of horrors, and was to be repeated and acknowledged by other Russian speakers throughout the next 3 days. Mr. Yablokov told us that life expectancy in Russia has dropped from a high of 70 years in 1964 to 67 years today, with 30 percent of this decline attributable to environmental degradation. Russia, he reported, "holds the record" for water pollution, including problems with nuclear reactors and nuclear submarines submerged off the north coast. Waste water from the city of St. Petersburg is dumped in local waterways without any purification. The Volga has ceased to be a river, but is rather a series of ponds connected by artificial channels. Fish in the Volga are toxic, degraded by the dumping of pesticides from agriculture and heavy metals from industry. Forty percent of the ground water in Belorussia is contaminated with pesticides and other contaminants. The Aral Sea has nearly dried up because of the rerouting of water for agricultural use.

Mr. Yablokov noted a few environmentally positive trends, including improvements in air quality in some cities in the last few years, and a reduction in the use of pesticides. However, these changes are the result of economic recession and not positive choices for environmental improvement, e.g., many farmers can't afford pesticides, and industrial production has decreased in many cities

with a concomitant improvement in air quality. At the same time, private ownership of autos is on the rise and auto emissions are increasing, often negating any improvement in air quality. The good news, according to Mr. Yablokov, is that crop production has not declined with reduced use of pesticides, and this argues for continued reduction of pesticide applications.

Mr. Yablokov noted a deteriorating level of biological diversity in Russia. An example is the case of the Siberian tiger. In 1993, 350 tigers existed; today there are 200. The tiger is subjected to poaching, and extinction is predicted in five years. Russian forestry officials claim that reforestation proceeds at a rate equal to timber harvest, yet "foreign experts" quoted by Mr. Yablokov claim that 12 million hectares/year are cut over, and if this harvest rate is sustained, Siberia will be deforested in 50 years.

All of these problems and a multitude of others, were, Mr. Yablokov claimed, the result of the militarized society that had dominated the former Soviet Union for 70 years. Economists, he noted, think in terms of "5 year plans," but what is needed is policy that is human-oriented and much longer in temporal scope. He concluded that the Ministry of Environment in Russia is currently working on a new policy of sustainable development for the environment.

Pre-trip information had led us to believe that our hotel would accept travelers' checks in payment, but once we arrived we found that this was not the case. While food, transportation, and goods were all very reasonably priced, considering the currency exchange rate, hotel rooms still remained pricey, even by American standards. This all meant that the hotel expected payment of over a million rubles for a 5-night stay. The Academy of Administration complex included a small bank that we had found—with not a little frustration—on the first day of the symposium. Like all businesses and offices in the complex, it lay behind a nondescript door down a dark and nondescript marble

corridor. When we found it, we also found that although the young women in the glassed-in office would exchange some American dollars for rubles, they would not exchange travelers' checks and also would not exchange for more than 100,000 rubles (about \$50.00).

Word had spread through the quickly gelling American network that a private bank in a nearby shopping center would exchange travelers' checks for rubles. I got detailed instructions on traveling the half-mile to this bank, and five of my American colleagues and I eagerly formed an adventurous band intent on finding this bank.

Late in the afternoon, we walked out of the main building entrance of the Academy compound, past an armed guard and a huge statue of Lenin's head. The sun was finally appearing after two drizzly days. We walked through the grassy, untended area that borders so many busy streets, then under a wide boulevard in a pedestrian tunnel. Masses of people streamed by us, intent on getting to the Metro station below the street. We bought bus tickets in the Metro station, and moved on through the crowd to the other side of the street.

We found the bus stop and waited a few minutes in a surging crowd for Bus #62. We boarded, and gave the 10 cent (200 rubles) tickets to no one, as the system is by honor. We found the shopping center we were seeking, which had been described in contrast to the normal Russian suburbia we had been traveling through. It was a brand new U.S.-style enclosed mall called, rather ironically, "Park Place." We entered and it was like leaving Russia behind. The bank was small by western standards, but it was new and clean, and full of computers and other familiar office equipment.

We finished our banking and moved on to the "Garden Supermarket," which was one of a small chain of western-owned shops in Moscow to supply the growing American and European community with imported foods and goods. A childcare center was next door to the market. The children all spoke English with American accents, and the brightly colored room was full of

books, toys, and child-sized furniture. Later we were told that the upper floors of the shopping center held apartments favored by western business men and their families. The center had its own satellite uplink for communications with far-distant home offices. It was a cocoon of America or western Europe in the outskirts of Moscow.

A reception was held the first evening of the symposium. There were tables set up around the periphery of the room, covered with a spread of traditional Russian delicacies, champagne, vodka, and wine. People stood surrounding the tables, quickly and eagerly consuming the food and drink, in animated conversation with each other, but nearly all groups were exclusively from one country; the language barrier was in full effect.

A small dark-haired woman invited me to come over to her group, and she filled a small plate with some food for me. A man kept filling my glass. We all smiled broadly, but the group I had joined was speaking rapidly in Russian. The woman who had invited me began to speak in sometimes-halting English, and we engaged in what was to be my longest conversation with a non-English speaking participant at the symposium.

My new colleague was Oral Ataniazova, an obstetrician/gynecologist from Karakalpakstan. She had studied English for only 10 weeks, and I was amazed and humbled by her skill. She spoke Russian as well as several dialects and languages from the central Asian region she came from. She described the difficult conditions for living in general, and for conducting professional work, in her republic. She told me about high levels of pesticide residues and the negative effects she saw every day of these on maternal and child health. She had come to recognize the need to extend beyond treating her patients, to trying to prevent the health problems from occurring in the first place by cleaning up the environmental problems at their roots.

The symposium continued for three complete days, with concurrent sessions in various

halls and meeting rooms of the Academy of Administration. The best facilities provided simultaneous translation through use of microphones, earphones, and off-site interpreters, but occasionally we were reduced to using interpreters in person, sitting next to the speaker and translating each sentence as it was spoken. As some of the speakers addressed esoteric topics involving philosophy, political theory, social ecology, and the fundamentals of ecofeminism, the laboriously slow side-by-side translation often assisted us by providing additional time in which to digest the meaning and content of the presentation.

There was a tremendous diversity of presentations, but in general, I felt that many of the American speakers presented theory, philosophy, and transcendental themes, while the Russians spoke pragmatically, addressing current environmental situations.

The few speakers from other countries often focussed on the relationship between women, reproduction, and the agricultural environment. These relationships can be re-stated this way: women give birth, and they and their children need to eat wholesome foods to insure the continuity of the village, the population, and the culture. Women therefore have fundamental connections to the ecosystems they live within because their reproductive capacity is impacted by toxins. Their children's health and wellbeing is also impacted, and women should be empowered to take direct control of both producing food and cleaning up the food production process. Examples of this empowerment were given for central America, India, South Korea, and Australia: local women formed local groups that organized (1) to stop logging, (2) improve agricultural production, (3) decrease dependence on pesticides, and (4) improve local farming and ranching practices.

Angelina Antipova, of the Institute of Geography of the Russian Academy of Sciences, displayed a recently constructed map of the Russian Federation with population density, natural resources, and land use overlaid. The map illustrated patterns of

association between industry, population centers, and pollution. She noted that "satisfactory conditions" exist in many forested and taiga regions, and that these areas need to be protected.

During the third day of the symposium, a new friend from America experienced a medical problem, and I and another colleague offered to assist her in locating the American Medical Center, a private clinic operating in Moscow and servicing the western community. Americans traveling for any length of time in Russia are routinely cautioned about using Russian medical facilities, and are often counseled to carry their own hypodermic needles and syringes because of a general lack of supplies and a lack of sterile conditions in many Russian hospitals and clinics.

We took the Metro from near our Academy compound to downtown Moscow. A 30 minute ride past seven Metro stations at a heart-rattling speed took us to Red Square Station, a cavernous and ornate facility. We emerged from the Metro on the edge of a vast street, seven or eight lanes wide. The yellow wall of the Kremlin, an imposing ancient walled city, was visible across the boulevard.

We turned away from the Kremlin to walk two blocks to the Intourist Hotel, an amazing place complete with a huge electronic sign above the entrance flashing many enticing messages, including "Casino!" every few seconds. Two burly security men in colorful "mod" suits stood near the entrance, keeping the status quo inside the Intourist. We entered without a problem, and negotiated our transportation at the taxi desk.

We traveled on wide, busy streets for about 30 minutes to the southwest, and I enjoyed the opportunity to see some of the city besides what I could spy from the 25th floor of the Hotel Yugo Zapad in the Academy of Administration. We saw the Russian White House, which I recognized from watching the siege on CNN just eight months before. In fact, workmen swarmed over the front parapets and fences, perhaps repairing damage caused by tanks and gunfire.

The taxi dropped us in a residential neighborhood, and we found a clean, if crowded, modern medical facility. Our colleague's medical problem was attended to, and we were given directions to the nearest Metro station. We walked through a city park, observing a neighborhood more upscale than anything we'd yet observed. But even here we saw piles of concrete slabs littering side streets, and most buildings were in need of repair.

We rode the Metro back to Red Square. As we neared the square, the crowd thickened and became noticeably cosmopolitan. At the end of the street, several onion-domed buildings stood with bright gold and silver adorning spires and windows. As we turned the corner, Red Square opened up before us, a huge expanse of cobblestone, with the magnificent walled Kremlin along the western edge. G.U.M. department store walled the opposite side of the square, and the fabled St. Basil's cathedral sat at the south end, its onion domes the embodiment of Russia to western eyes. Lenin's tomb sat squatly in the center of the lengthy Kremlin wall, its smooth rock walls in stark contrast to the ancient splendor of the Kremlin.

We went into the grounds of St. Basil's cathedral, and paid the equivalent of 25 cents to tour inside the building. Later, we toured through G.U.M. department store. This vast, three-storyed mall held several avenues housing stalls and small stores offering imported goods and Russian souvenirs. The store obviously serviced tourists, but the imported goods attracted the many Russians we encountered within, as well. There were lines for entry into a few small stores, but only those selling costly imported goods.

A few stalls offered Russian souvenirs, including lacquered boxes and pins, gaily printed shawls, and carved wooden toys. I had seen the same type of goods available at shops inside the Intourist Hotel, and at the Academy of Administration. As part of the symposium, a Russian women's artists' cooperative had set up an arts and crafts market near our meeting rooms. Sweat-

ers, quilted items, printed shawls, carved wooden jewelry, and the famous Matryoshka dolls (smaller and smaller hollow, painted wooden dolls inside each other) were offered on small tables for our purchase.

The next day, I left Moscow the same way I had arrived, through Sheremetyevo Airport. A taxi driver ferried us from the Academy to the airport. It was a bright Saturday morning, and thousands clogged the Ring Road. After arriving at the airport, we waited; first through customs, then through the ticket desk, another wait for passport control, and a final line to board the plane. Six hours later we strolled out into the heat of an early June Saturday in New York City's Kennedy Airport.

Postscript: Lead Russian organizer Natalia Mirovitskaya reported that there was good media coverage and favorable evaluations of the symposium from the Russian side. The symposium was mentioned several times at another conference of European-Russian environmental non-governmental groups and businesses, held a week later. Sergey Nikolaev of the Society of Nature Conservation Central Council in Moscow called it "the most intellectual in the last years." Many people, especially women, praised the symposium for its efforts to involve and integrate Russian citizens with western proposals for projects. Russians actively participated in the symposium; they were not simply tutored in what to do and how to do it.

This symposium was plagued with difficulties involving simple travel to the site, logistics, and basic communication among participants who did not speak a common language. But in spite of these problems, the symposium was wonderful. It was awe-inspiring to be a part of an international group that met to focus not only on critical environmental concerns, but took as a basic assumption the fact that solving these problems would and should involve women. Women have unique skills and perspectives to offer to problem-solving processes. This viewpoint was restated again and again by

speakers from many countries, and by both male and female speakers, as well. I left the meeting feeling empowered, united with like-minded women across national boundaries, more aware of the impressive strength and breadth of knowledge and skills held by female colleagues from across America. Most importantly, I felt hopeful. Hopeful that the future can include successful solutions to daunting environmental health problems, and to the need for sustainable development in every aspect of economic progress, in Russia, and around the world.

Since 1989, Sandra Martin has been a Research Wildlife Biologist with the Pacific Northwest Research Station, USDA Forest Service. Her other professional experience is as a college instructor, adjunct professor, and consulting biologist. Her professional interests include wildlife habitat ecology, the impact of land management activities on wildlife, philosophy of science, and career issues for women. Martin's degrees are: Bachelor's in Forestry from University of California-Berkeley, Master's in Wildlife Ecology from the University of Montana, and Ph.D. in Wildlife Ecology also UC-Berkeley.



A CRISIS MANAGEMENT PLAN IS NOT CREATED OVERNIGHT WHILE THE CRISIS IS DEVELOPING. INFORMING THE PUBLIC, ACTIVATING EMERGENCY PLANS, AND ORGANIZING FUNDING AND STAFF TO WORK IN CONCERT REQUIRES ADVANCE PLANNING—AND QUICK EXECUTION.

SCS REACTS QUICKLY TO TEXAS FLOODS

GAIL T. CHANDLER



Anywhere from 15 inches to over 30 inches of rain fell in a three-day period October 14-17, 1993, over 35 counties in southeast Texas, resulting in devastating floods that claimed the lives of at least 20 people. Rivers of raging fire and billowing clouds of poisonous black smoke caused by an exploding gas plant east of Houston added to the appearance of Dante's Inferno.

From day one of the torrential rains, the USDA-Soil Conservation Service quickly responded to the crisis. As neighbors would, SCS employees immediately began filling sandbags and helped to move furniture. Americorps participants—who work for a program similar to the Peace Corps—at the time were assisting SCS with a shoreline erosion project in that part of Texas. Their volunteers were diverted to unload and deliver supplies for the Red Cross. At least one SCS field office served as make-shift sleeping quarters for emergency personnel. SCS employees in areas not affected by the flood contributed dry goods and cleaning supplies to those who lost everything.

Because field offices are staffed with soil and water conservation experts in almost every county, SCS was in a position to compile local damage reports immediately. A team of experts at the state level from water resources, pro-

grams, contracting, engineering, and public affairs was quickly formed to compile the reports and to help local field offices assist local governments under the Emergency Watershed Protection Program (EWP).

EWP is a SCS program which provides technical and financial assistance to local units of governments to repair the numerous gullies and other watershed damage caused by the rains. The purpose of EWP is to remove threats to property or public safety. EWP is activated whenever an SCS area conservationist reports a short-duration natural phenomena—such as a flood, hurricane, fire, or volcanic eruption—to the state office. At that point, the state office makes the formal request for EWP funding to national headquarters. After damages are assessed and if funding is available, funds are allocated to the requesting state.

Where there is a clear threat to life and property, immediate action is taken. Otherwise, the proposed EWP sites are prioritized and designed. Bids for construction are granted and construction work begins. Then the EWP sponsor, through a prearranged agreement, either pays the entire bill and is reimbursed 75 percent of the cost by SCS, or the SCS does the contracting itself and the sponsor reimburses SCS 25 percent of the total cost.

To get information out quickly and efficiently, the Emergency Watershed Protection team, assisted by public affairs, developed an information plan identifying specific audiences (both inside SCS and external) along with a message for each specific audience. Every discipline involved was asked the question, "Who do you need to reach with information?" By asking this simple question, a list was created for those inside of the agency, and those outside. SCS insiders included area conservation-

ists and district conservationists in the disaster counties, national headquarters, the regional technical center, other SCS employees, and the watershed inspection team. External communication customers identified were construction contractors, sponsors of existing watershed protection structures such as East Bay Bayou Drainage Project, potential sponsors for channelization projects or floodwater retarding structures, elected government officials, other state and federal agencies, and the general public.

Next, the EWP team was asked the question "What do you want to tell them?" for each communication customer identified. Many of the internal SCS people simply needed to be kept informed of the latest developments. Other agency internal customers needed specific information, e.g., engineering authority for engineering design limitations, contracting procedures to hire construction crews, EWP eligibility requirements (which state that an EWP measure must retard runoff to prevent soil erosion or flooding and reduce threats to life or property). There were also specific concerns such as endangered species and cultural resources like historical sites.

External customers required different information and to have it presented in a nontechnical format. Potential sponsors such as city or county government officials needed to know who the SCS is, details about EWP and how to apply for it. Sponsors of existing watershed protection structures needed to be reminded of their operation and maintenance responsibilities. Contractors required information about EWP environmental concerns. To help coordinate clean up efforts, other state and federal agencies had to be kept informed as well as the general public.

After the potential communication customers and their messages were identified, then the means of getting the message to the particular audience was addressed. The Natural Phenomena

Report, compiled daily at the state office from reports from the field, and a weekly newsletter, written by the public affairs staff for this crisis, would serve both internal and some of the external communication customers to keep them informed.

An existing EWP information kit, created after the 1992 floods in Central Texas, also served specific internal and external customers such as district conservationists, congressmen, and potential sponsors. This kit contained brochures describing EWP, eligibility requirements, and the application process along with a corresponding video. It also contained educational booklets about the watershed protection program and services provided by the SCS. Fact sheets summarized who the SCS is and EWP. A press packet containing fill-in-the-blank news releases, public service announcements, and a generic slide show script was also included in the EWP information kit. By day two of the flood, each field office in the disaster counties as well as their Congressmen had received their EWP information kit by overnight mail.

The state EWP coordinator reached the apprehensive general public with weekly news releases and TV and radio interviews arranged with the major Texas media markets in Houston, Bryan/College Station, and Waco. Construction signs on the approved EWP sites inform the public with the message that SCS is at work helping their community. EWP teams and construction inspectors wore jackets with "EWP TEAM" and the SCS logo on the back for higher visibility. To offer a message of assurance, as construction of the approved EWP sites begins, groundbreaking ceremonies, media tours, and dedication ceremonies will be scheduled on targeted EWP sites.

By being on location and by taking the time earlier to develop an information plan, SCS was able to respond quickly and efficiently to the flood crisis in Texas. Of all the communication tools identified in the information plan, only four fact sheets and one brochure needed to be created after the flood started. All other publications, fact sheets, and videos were already in existence. After the crisis is over, (and it is not as this is being written), the information plan will be reviewed, evaluated, refined, and further developed into an even more useful crisis management instrument.

Gail T. Chandler (one of four Texas area public affairs specialists with the USDA-Soil Conservation Service) is currently stationed in Temple, Texas. She and the others develop information programs to increase urban awareness of SCS programs and benefits of soil and water conservation. Chandler also provides direct assistance to SCS staff in the form of information plans and product development. In her 15 years with the SCS, Chandler previously worked in the field as a soil conservationist and district conservationist. Her Bachelor's in equine science is from Northwestern State University in Louisiana. Prior to coming to work for the SCS, Chandler was a ranch manager and horse trainer.

Photo: Flooding Naconiche Creek downstream from U.S. Highway 59 (near Nacodoches, Texas).

MISSOURI UPDATES FROM THE MID-WEST FLOOD OF 1993

The tenacity of Missouri producers continues to amaze agricultural experts as several thousand acres of crops were planted in 1994 on land that many said would never raise a crop again. Yields remain to be measured, but losses can be expected. However, there is still a significant amount of land, especially along the Missouri River, that is not farmed, reclaimed, or suitable for government purchase through any existing program. The Missouri Department of Conservation and the U.S. Fish and Wildlife Service continue to show interest in purchasing land from willing sellers.

SCS (now NRCS) is working with 127 landowners to complete emergency Wetlands Reserve Program easements on 13,718 acres of land. Funds have been obligated on 100 tracts comprising 10,487 acres.

The Emergency Watershed Protection Program (EWP) has provided much needed assistance in Missouri. The Emergency Wetlands Reserve Program compensates farmers \$700 per acre in exchange for a permanent easement that would keep their sites as wetlands. In all, EWP restoration activities will protect 291,000 acres; 55 projects protect local infrastructure such as roads, bridges, electric power stations, etc.

As of November 1, 1994, there were 502 eligible EWP projects in the state, of those 435 had been awarded for \$6.8 million. About 400 contracts have been completed and 54 more are to be awarded.

Regarding levee repairs, there were 183 at \$3.5 million with 14 contracts along the Missouri and Mississippi rivers. Some \$3.2 million went to restore agricultural drainage ditches and to remove logjams. Four contracts for \$139,000 are to repair eroded streambanks that threatened roads, bridges and homes. More than a third of SCS assistance has been along smaller tributaries of the Missouri and Mississippi.

Six of the seven Emergency Project Offices have been closed, but continuing flood work will run through SCS area offices. The Columbia Emergency Operations Center closed December 1994.

Charlie Rahm, NRCS, Columbia, Missouri



Even falcons have bad days

For many spring seasons, I enjoyed rising early to visit sage grouse leks across the Snake River Plain. My job, in the tradition of many western biologists over the years, was to count the number of males and females attending the various breeding grounds.... On this April morning, I crossed a familiar lava flow on a one-lane, winding track. It was the only way in and out of a large park of sagebrush surrounded by broken lava. The park is called Paddleford Flat. Paddleford has several sage grouse leks, but one in particular always attracts birds... As the light level slowly increased, the strutting males became easy to count. I looked around the area for the dark, huddled females that are much harder to see. Suddenly, I noticed a medium-sized bird perched on the edge of a lava outcrop, perhaps 150 yards away. In the still-dim light I wasn't sure what it was, but there weren't too many possibilities. Within a few more minutes I could see it was a falcon—most likely a female prairie falcon, but possibly a peregrine. The falcon was facing the lek.

I turned my attention back to the grouse and made repeated counts until I got three or four that came out the same... Just then, the falcon flew off her perch and headed straight for the lek... I watched with excitement as I anticipated a kill right before my eyes. The falcon came in, accelerating steadily with strong wing beats. She dropped down to no more than 10 feet off the ground. A quick glance at the displaying males showed they had not seen her approach. They were all still in full swing. As the falcon neared the lek, she flew slightly upward and then back down, right toward the head of a male on the edge. In that instant I saw that the grouse were still unaware of the falcon. They were so intent on displaying that the predator was on them.

Or so I thought. For as the falcon stooped for the grouse's head, in the fraction of a second before death, the grouse, well, the grouse ducked. I mean it just ducked, like you would duck a friend taking a playful swipe at your head. That male hardly even changed his posture—his air sacks remained inflated and his wings were erect. As the falcon passed over and gained altitude, the target grouse went right back to full strut... Meanwhile, the falcon had gained altitude, turned and was plummeting back toward earth. The falcon closed on her quarry from a steeper angle and greater speed than before. At the last second, the grouse...ducked. The falcon kicked back into an ascent. At this point, I was puzzled. I wasn't sure if I was watching an inept falcon or a sage grouse pushing his luck. I was soon to learn the answer. For the falcon climbed again, turned again, plummeted again... and the grouse ducked again. The falcon repeated this performance a half dozen more times. But subsequent flights were less high, the arcs became shorter and the whole effort became halfhearted at best. At the same time, the sage grouse had to duck less and less. On the last swoop, he simply ignored the falcon.

Then, as if perplexed by the situation herself, and unwilling to accept being a failure as a ruthless killer of grouse, the falcon landed on the lek, right in the middle of the displaying birds.

I began to feel badly for the falcon, for the sage grouse paid no more attention to her presence than they would have to a jackrabbit pellet. She was not only greatly outnumbered, but was really rather small compared to the B-52's of grouse. But she wasn't through yet! After sitting on the ground no more than a half minute, she attacked, she attacked...or rather she charged...well, she hopped vigorously toward the male who had dared to duck. Naturally a male sage grouse who was unafraid of a diving falcon would have nothing to do with a hopping one. He continued to ignore the predator. The falcon then turned and hopped toward another male, and then another.

She sat in the middle of the lek for another minute. She didn't move. She just sat there, thinking, I suppose, perhaps wondering what had gone wrong. She finally flew off, and I wonder to this day if she ever recovered her self-esteem.

....Terry Rich, *Idaho Wildlife*, Fall 1994.

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And how did the 1993 rains affect production in Iowa?

Unlike central Asia, where a heavy monsoon season is normally followed by a good harvest, a rainy year in the Midwestern United States doesn't necessarily presage a dry one. This year, however, Iowa's weather was "as close to perfect as you could hope for," said Garren Benson, an agronomist at Iowa State University in Ames. It's especially welcome now in Iowa and its neighboring Midwestern states, where relentless rains and flooding devastated crops last year in 1993. Led by Iowa, U.S. farmers already may have brought in the largest soybean crop in history—more than 2.4 billion bushels.

They're heading for a record corn harvest...estimated at 10 billion bushels, a stunning 58 percent increase over last year's 6.3 billion. The previous high was 9.48 in 1992. Corn, or maize as it is more generally known, is one of the most versatile and valuable of all crops. In Mexico, Latin America and parts of Africa, it is a staple. While new uses of corn stir the imagination (plastics, fuel, film, paint, tires, detergents, sweeteners, starches), it is an old one, feed for livestock, that remains number one. More than 60 percent of the US corn crop goes into putting meat and fish on tables at home and abroad. Benson says that "corn is the best feed grain because of its very high yield and energy content. Animals thrive on it."

The US produces 35 percent of the world's maize. Next comes China, the combined countries of the European Union, and the former Soviet Union. About three-fifths of all corn exports come from the US. If Iowa were a nation, it would rank number two to the US in exports. The Pacific Rim region in Asia, home to a majority of the world's people, is emerging as the fastest-growing market for US corn. As standards of living go up there and in other developing countries, the need for maize will rise, too, because affluent people tend to eat more meat. In China, for example, meat consumption has increased 10 percent annually.

...David Mazie, *National Geographic News Service*, November 28, 1994.

Chernobyl update

Last May, eight years since the deadliest nuclear accident in human history, the government of the Ukraine reversed its decision to close down Chernobyl's two remaining active nuclear reactors. Their decisions was based on the fact that its economic and urgent need for electricity outweighs the

risk of further damage to its land, water, and people. The Group of Seven industrialized nations responded to this proclamation by placing the matter on their current agenda, while the International Atomic Energy Agency (IAEA) organized an International Conference to discuss the nuclear power option in Vienna September 5 to 8, 1994, 40 years after the start of the first civil nuclear powerplant.

Chernobyl scattered the equivalent of 100 atomic bombs of Cs137; radiation continues to leak into the surrounding countryside and cancer rates in the Ukraine, Belarus, and Russia far exceed the predictions. The most recent studies performed by independent ecological experts have focused new attention. Furthermore, the increase of other diseases like diphtheria, and deformities indicate the weakening of the immune system of the people living in the surrounding areas. According to a recent study, 70 percent of the children born in the area suffer from one malady or another; babies are born with liver and stomach cancers, cleft palates, and deformed limbs.

Eight years after the core meltdown in reactor number 4 and five years after a fire devoured the turbine room in reactor number 2, reactors number 1 and 3 are still on line. All the while the sarcophagus (10 stories high and 59 feet thick), which encases the hot remains of reactor number 4 is crumbling. The radioactive runoff seeps into the watershed, and the runoff flows directly to the Dnipro River, the source of drinking and irrigation water for 38 million people. Government officials, apparently concerned more about political consequences, allow people (in 25,000 square kilometers with 10 to 15 times normal radiation levels) to plow radioactive dust, eat radioactive vegetables and feed radioactive hay to animals.

Following the initial explosion, 95 percent of Chernobyl's ongoing damage is caused by the ingestion of contaminated foods. According to scientists knowledgeable about the conditions, another nuclear catastrophe is all but inevitable because of the deteriorating infrastructure of the archaic nuclear plants and the demoralization of the people responsible for safety procedures. The political system that sacrificed all of four to five million victims to Chernobyl continues to disregard the sanctity of healthy humans on an ever increasing scale.

...World Ecology Report: *Critical Issues in Health and the Environment*, Fall 1994.

Ducks fare well in the wet mid-west

Different species of ducks make different use of ponds and wetlands. There are dabbling ducks and diving ducks. Dabbling ducks, also known as puddle ducks, feed in shallow water, dipping their heads just below the surface to eat plants, insects and small fish. They build their nests on uplands near the water. Mallards, pintails, teal, gadwalls, widgeons, and shovelers are dabblers. Diving ducks like the redhead and canvasback, on the other hand, plunge into deep water to feed on the bottom and make their nests on floating mats of vegetation.

The dabbling ducks took a double hit when the wetlands were drained and their nesting areas converted to farmland. The loss, combined with a prolonged midcontinental dry spell, sent breeding populations into a tailspin. The number of Northern pintails shrank by nearly two-thirds; that of blue-winged teal, widgeons and mallards dropped by nearly a third each, and the population of redheads by nearly a quarter. By the 1990s, North American ducks seemed in serious trouble. The climate was more favorable and the habitat more stable on the eastern and western ends of the continent. But far fewer ducks breed there.

Governments have joined forces with private organizations like Ducks Unlimited and the Nature Conservancy to restore wetlands in the prairie pothole region, an especially important development for diving ducks. But the Conservation Reserve Program has brought the biggest habitat dividend by far. The program paid farmers to protect formerly cultivated land that lay fallow, often because of fallen crop prices. Although the main purpose of the program was to prevent soil erosion, it turned out that as the grasslands grew back, an abundance of thick cover was created for ducks, as well as other birds like meadowlarks, black terns, bobolinks, and sandpipers. Along with the grasslands and birds there returned a variety of wildflowers, small mammals and invertebrates.

Foxes, which hunt a small area intensively and are the greater threat to ducks, gave way to coyotes that hunt a larger range and plunder fewer nests. At the same time, the biological enrichment that followed the regrowth of grasslands has been good for creatures like meadow voles and white-footed deer mice, offering predators a broader menu. Though the historic floods of 1993 cause havoc with the upper Mississippi basin, the summer rains also filled many dry

potholes and other wetlands. A snowy winter (1993-94) further increased the number of spring ponds in prairie Canada and the north-central United States to six million, according to the Fish and Wildlife Service—47 percent more than a year before and a third more than the long-term average of 1955 through 1994. In Montana and the western Dakotas, the heart of the duck-producing region, the number of ponds was double the long-term average. In a standard survey area encompassing the northern midcontinent and Alaska, the population of breeding ducks among the 10 most abundant species jumped to an estimated 32.5 million in 1994, up 24 percent from last year and five percent above the long-term average.

....Science, *New York Times*, October 11, 1994

Their cheating hearts

Most studies of college cheating indicate that the percentage of cribbers has not changed much over the past 20 or 30 years. About 60 to 80 percent of college students admit, as they did during the 60s and 70s, to having fudged an exam, term paper, or problem set at least once during their four years. What's different is the attitude. Cheaters used to at least pay lip service to conventional remorse. But now, "there's a new ethics," says Stephen Davis, a researcher on cheating and a psychology professor at Emporia State University in Kansas. "It's, 'If I pay for it'—the stolen exam, the faxed answer sheet, the compact disc's worth of canned notes that can be cut and pasted into something resembling a term paper—'it's mine, and if I turn it in, it's not cheating,'" he says. "That's the difference."

Or, as a Virginia Military Institute cadet told *The Washington Post*: "Most cadets don't believe the honor system is

practical for 1994. Not lying, cheating or stealing doesn't seem to get you anywhere in this day and age."

"Your average cheater isn't interested in getting an A," says Nick Cullather, a history professor at Indiana University, Bloomington. "Your average cheater is interested in getting a C. So they tend to cheat off of other dumb students. They'll sit next to one of their friends and copy. Once or twice I gave some guy a take-home exam, and the score went down—that's how I knew he was a cheater. For a cheater, copying out of a book involves more work than he wants to do. It involves looking in the book."

Perhaps the most intriguing defense of cheating comes from India: It's egalitarian. Higher-caste members tend to score higher on entrance exams and ultimately obtain more government jobs than their lower-caste fellow citizens, so cribbing fulfills an important leveling function by allowing lower-caste members to cheat their way into schools and jobs.

....Charlotte Allen, *Lingua Franca*, July/August 1994

Who's in, who's out: wallet clout

In Christopher Buckley's satiric novel *Thank You for Smoking*, beleaguered lobbyists for tobacco, guns and alcohol dub themselves the MOD Squad—for the Merchants of Death. They regularly gather for lunch to smoke, drink and bemoan their underdog status in a capital overcome by political correctness. But in real life, the Mod Squad is ebullient these days. Guns, tobacco, and alcohol are big winners in the Republican takeover of Congress.

Hundreds of gun lobbyists and their allies whooped and hollered as one pro-gun-control Democrat after another went

down to defeat. Having suffered the passage of the Brady bill's waiting period on handgun purchases and the crime bill's ban on assault weapons during the past two years, the NRA struck back with fury, pouring more than \$3.2 million into GOP congressional campaigns. Record numbers of NRA members ran phone banks, distributed leaflets and knocked on doors... Of the 24 priority races they targeted, the NRA won 19.

Makers of alcoholic beverages also had reason to celebrate. Before the election, they worried about a doomsday scenario of new taxes on beer, wine and spirits to pay for ambitious social programs such as health reform, but health care is not even mentioned in the GOP's "Contract with America." For the tobacco industry, the election was the best news in years. The likely new chairman of the committee that oversees the health panel is Rep. Tom Bliley, whose district's biggest private employer is Philip Morris. But Bliley's rise provides only a hint of how well positioned tobacco is in the new Congress. The tobacco industry became the single biggest supporter of the Republican National Committee, contributing more than \$600,000 in soft money since last July.

For decades, trial lawyers' political clout—and fund-raising prowess—has helped preserve a legal system that encourages excessive litigation, giant jury awards and not coincidentally, soaring legal fees. Efforts to reform the system have been blocked repeatedly in the Democratic Congress—and trial attorneys have spent millions to preserve the status quo. In 1994 alone, *Newsweek* estimates, lawyers and their political-action committees contributed at least \$40 million to state and national office seekers—mostly Democrats—committed to beating back legal reform. Republicans have championed tort reform for years—in part because it stands to benefit businesses and insurance companies that now get stuck paying out huge awards.

Environmental issues stir strong passions. Alaskans Sen. Frank Murkowski and Rep. Don Young will likely head respective natural resources committees. Both have called for oil drilling in the Arctic National Wildlife Refuge. Both want to expand logging in the old-growth Tongass National Forest and to allow exports of Alaskan oil. Together they have taken contributions of nearly \$500,000 from oil, timber, and mining interests since 1991. "The environmental groups may be on the

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losers' list," adds a Young spokesman, "but the environment won't."

....Michael Isikoff, Rich Thomas, Daniel Glick, Patricia King, Paul O'Donnel, *Newsweek*, November 28, 1994.

Our kind of gal

The group that Harriet Lawrence Hemenway brought together in Boston almost a hundred years ago to protect wild birds could be fairly described—ornithologically, at least—as a congregation of reformed sinners. William Brewster, New England's eminent ornithologist, confessed to having "killed thousands of birds without suffering more than an occasional qualm." George Mackay, a noted conservationist, once shot 243 coots in one hunting session and, just for sport, used to bag bluebirds, hummingbirds, orioles, and mockingbirds. And for years, Harriet Hemenway wore feathers in her hats.

Hemenway was one of Boston's elite, a forcible woman of conscience always ready to right a wrong—her own or anybody else's. But she had never felt any guilt about wearing feathers until, in January 1896, she heard one of the many descriptions that were circulating of a Florida heron rookery after hunters had raided it for the bird's long plumes. "In the mud," reads one, "lay the lifeless form of eight of the birds...the skin bearing the plumes stripped from their backs. Flies were getting in their work and they swarmed up with hideous buzzings.... Young orphan birds [clamored] piteously for food which their dead parents could never again bring them. A little one...lay with its head and neck hanging out of a nest." The awful scene, multiplied thousands of times, spelled the deaths of countless birds to satisfy women's fashion. Horrified, Mrs. Hemenway knew what she had to do. She took her "Blue Book" of Boston Society

from her mansion and went across the street to her cousin Minna Hall. There, as they later recalled, "we marked the names of the ladies of fashion who would be likely to wear aigrettes in their hats," and who might "join a society for the protection of birds." Out of these marks in the social register grew a substantial part of the modern American environmental movement.

By family, Harriet Hemenway had considerable social clout and by temperament, a quick willingness to use it. Her grandfather, Amos Lawrence, built up textile mills and a large fortune. Her father, founder of colleges and the town of Lawrence, Kansas, was a devoted antislavery agitator. Her husband's family was equally rich and public spirited.... Bostonians grew accustomed to Harriet Hemenway's shows of independence; taking Booker T. Washington into her home when the black leader could not find proper lodging in Boston; or denouncing lordly Henry Cabot Lodge as a "wicked, wicked man" because he opposed the League of Nations. Even when sitting for her portrait with John Singer Sargent...she is holding a water lily—a semiotic allusion to what was known then as a "delicate condition," something regarded as a very private matter by most women, who would not choose it as a time to have a portrait done, let alone use it as an announcement. Not Mrs. Hemenway. She was quite happy to go public with her pregnancy.

....Joseph Kastner, *Smithsonian*, July 1994

Farm subsidies cost 12 billion last fiscal year

Ask 100 taxpayers, and 95 won't see why rich corporate giants and inefficient small family farmers alike should receive welfare payments in the guise of crop subsidies. Nor will they fathom the logic of pegging

subsidy checks to the size of farms, so 80 percent of taxpayer handouts go to 20 percent of farmers—the biggest, wealthiest landholders.

Agricultural spokespeople and promoters constantly blame urban dwellers for not understanding farmers. City folks say they understand plenty, and they don't like it a bunch.... Even insiders agree the system is out of control, a government unto itself, impervious to reform. With that, it's difficult to convey to taxpayers and consumers the blessings of today's farm programs.

....Frank Bartel, *Spokesman-Review*, November 6, 1994

Women who work a little and women who work a lot

The newest data from the Bureau of Labor Statistics (BLS) show that while the number of women who collect any kind of paycheck nearly doubled, climbing to 57

million over the past two decades, the number of women working at two or more jobs (or "job packaging" as economists say) has quintupled, soaring from less than 650,000 to more than three million. Similarly, the number of women working in their own businesses—many of whom do so as a second job—nearly tripled, rising from 1.38 million to more than four million. Among women, managers and professionals have the highest rate of multiple job holding; 23 percent of women (and 26 percent of men) report that they hold a second job because they enjoy the work and are trying to gain experience or build up a business.

In 1992, 63 percent of all single mothers were receiving AFDC compared with 79 percent 20 years earlier. A new report from the Institute for Women's Policy Research shows that while poor women with children often do rely on welfare, particularly on the Aid to Families with Dependent Children (AFDC), they,

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too, are drawing income from more than one source. The study, based on an analysis of the government's Survey of Income and Program Participation from 1984 to 1989 revealed that only 14 percent of able-bodied women on welfare were not in school, working, or looking for work. About 43 percent of single mothers who received welfare during a two-year period were also employed for at least 300 hours, earning an average of \$4,304 and combining these earnings with \$3,674 in federal assistance. Regulations allow recipients to keep roughly one-third of their earnings as additional income, which doesn't exactly reward the work ethic. A more sensible alternative would be to allow working welfare moms to keep more of their earnings, further encouraging them to work. As more women work, so do more poor women.

...Heidi Hartmann, *Working Woman*, December 1994

Who gets to be the French weed connection?

The Forest Service will team up with the Agricultural Research Service (ARS) and Montana State University to expand research on the biological control of noxious weeds. There will also be a link to the ARS Biological Control of Weeds Research Laboratory in Montpellier, France. Most of the exotic weeds impacting western rangelands came from Europe and Eurasia, so the potential for finding biological controls there is high. Noxious weeds are an increasing problem at higher elevations and in wildland ecosystems. Weeds can impact reforestation and damage important watersheds. The University of North Dakota estimated in 1993 that leafy spurge growing on rangeland cost North Dakota \$87.3 million. In Montana, the cost is \$4.5 million. The Congressional Office of Technology Assessment estimated that the annual national cost of exotic weeds is about \$3.6 to 5.4 billion.

...David Tippets, *Forest Service Research News*, November 16, 1994

All about responsibility

To achieve a healthy level of self-esteem, you must be able to accept who you are and be confident about your decisions and behavior. But there is another important ingredient in the development of self-esteem that is often overlooked—the ability to take responsibility for your future. To live self-responsibly, you must be able to influence your behavior freely in three major areas:

- taking action in ways that will help you reach your goals
- being accountable for your decisions, priorities, actions
- thinking for yourself by examining and actively choosing the values that will guide your life, rather than blindly accepting whatever you're told by family, friends, or a culture.

Since being responsible for yourself requires effort, thought and a range of difficult decisions, many people convince themselves that it is an impossible challenge. Some blame others for their problems. Others hope that someone will come along and make everything right.

Self-responsibility should not be confused with the popular New Age notion that we have caused everything that happens in our lives. This false belief can be calamitous for self-esteem, leading us to reproach ourselves for all kinds of things that are outside our control. To be intelligent about living responsibly, we must know our boundaries. There are cases in which we really are powerless to achieve the results we want. We must evaluate what aspect of the situation we have control over, act on that part and let go of the rest. Proper self-responsibility should not be confused with taking inappropriate responsibility for others—that is an act of irresponsibility toward oneself.

The principle of self-responsibility entails a profoundly important moral idea. Taking responsibility for our own existence implies respect for other people—they do not exist simply to satisfy our needs—nor should we tolerate those who treat us that way.

...Nathaniel Branden, *Bottom Line*, December 1994

CALL FOR PAPERS

The Association for Temperate Agroforestry will hold its 4th Biannual meeting in Boise, Idaho July 23-26, 1995

Focus for the papers and posters will be generally—but not limited to—temperate zone agroforestry in North America and world-wide.

A short abstract is due April 1995.

For information about papers or posters, please contact program chair Linda Hardesty, Department of Natural Resources, Washington State University, Pullman WA 99164-6410 (509-335-6632) or conference chair John Ehrenreich, Range Resources, University of Idaho, Moscow ID 83844-1135 (208-885-7600).

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The second International Arctic Ungulate Conference will be held August 13-17 1995 at the University of Alaska-Fairbanks. It will incorporate the International Reindeer/Caribou Symposium and the Muskox Symposium. For information contact David R. Klein, Alaska Coop. Fish & Wildlife Research Unit, University of Alaska, Fairbanks AK 99775-7020 (907-474-6674).

Instructors/Counselors and Trip Leaders are needed for the National Wildlife Federation's summer camps for youth and teens in Colorado and North Carolina. Contact Tara Wintermeyer, Wildlife Camp, NWF, 1400 16th St NW, Washington DC 20036-2266 (800-245-5484) for details of salary, dates, qualifications.

Did you go to the Women in Natural Resources Conference in Dallas in 1985? Next year is the 10th anniversary of that historic meeting sponsored by the Society of American Foresters, Women in Natural Resources journal, the Forest Service, and others. We are planning a focus issue about the women who attended and presented, and about the activities planned there (and later, hopefully, executed). If you have something to contribute to that issue of the journal, or know of someone who should be urged to contribute, contact Christine Thomas (715-346-4185) or Dixie Ehrenreich (208-885-6754) with your ideas.

The Association for Temperate Agroforestry
VOL. 16, No. 2

will hold its 4th Biannual meeting in Boise, Idaho July 23-26, 1995. Focus for the papers will be generally—but not limited to—temperate zone agroforestry in North America and world wide. For papers and posters information, contact program chair Linda Hardesty at 509-335-6632.

HERS Mid-America, The Summer Institute for Women in Higher Education Administration will be held June 25 through July 21 1995 on the Bryn Mawr College campus. For information contact Betsy Metzger at the University of Denver-Park Hill Campus, 7150 Montview Blvd., Denver Colorado 80220 (303-871-6866).

The Global Warming International Conference & Expo, April 3-6, 1995 will be held in San Francisco. For registration materials write GWIC, PO Box 5275, Woodridge IL 60517-0275 or fax request to 708-910-1561.

Every year, more than two million acres of

American farmland disappear under housing developments, shopping malls, and the like—and with that land we lose not just food production but also scenic open space and wildlife habitat. To some extent, urban and suburban sprawl are to blame, but so is poorly planned, piecemeal development that produces widely scattered communities. A nonprofit organization, the American Farmland Trust (AFT) hopes to reverse this trend with a series of new public policies that provide incentives for farmers to protect their land. The group has identified communities across the country that have been particularly successful in combating farmland loss.

To find out about AFT and get their publication called "Twenty ways local governments can retain farmland" call 800-886-5170.

For years the \$8 billion video-game market has been very female unfriendly. There are now a few titles for girls only, notably from Sega of

America. Nintendo only has boy heroes and no new titles for girls. Earlier efforts to include or insert girls (Barbie or damsel in distress) have been disappointing. Now there is Crystal's Pony Tale about a pastel-colored magical pony that the player rescues from a witch and so on. And there is Ecco: The Tides of Time, which is an adventure game about a female dolphin. Still in the works are some CD-ROM games like Counting on Frank about a math-loving girl named Ginger.

Sustainable Forests is an international conference to be held June 5-9, 1995 at Sault Ste. Marie, Michigan USA and hosted also by Sault Ste. Marie Ontario Canada. For information contact Joan Jaffit in Canada at 705-759-2554 x 747 or Don Gerrie in the US at 906-635-2802.

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

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