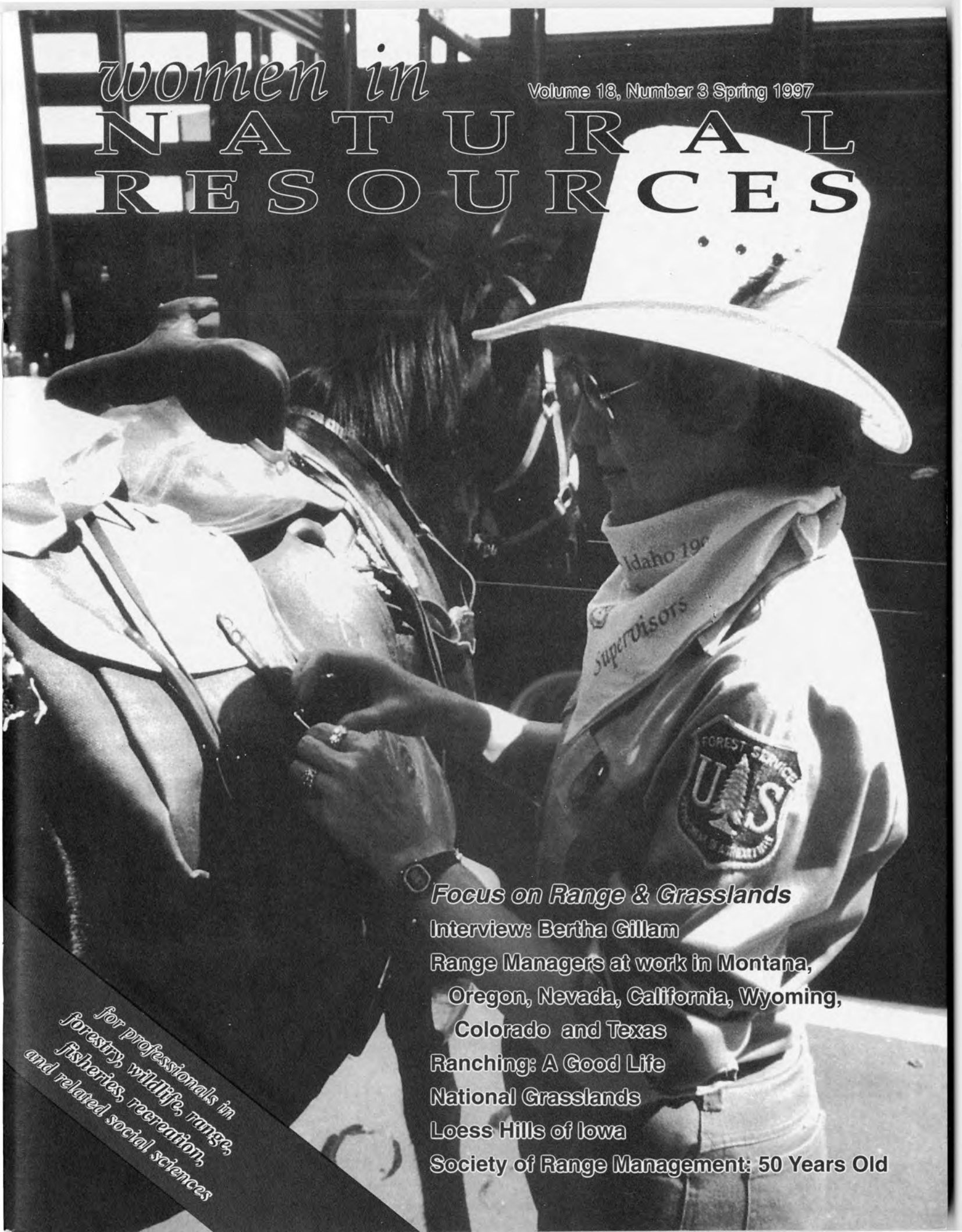
Volume 18, Number 3 Spring 1997

women in NATURAL RESOURCES



Focus on Range & Grasslands

Interview: Bertha Gillam

Range Managers at work in Montana, Oregon, Nevada, California, Wyoming, Colorado and Texas

Ranching: A Good Life

National Grasslands

Loess Hills of Iowa

Society of Range Management: 50 Years Old

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

Editorial
Linda Hardesty
Associate Professor
Washington State University

*f*ive *b*illion rangeland managers

In the 50 years since the birth of the Society for Range Management, the world's human population has doubled to over 5 billion. We have twice as many people wanting more than ever from a shrinking rangeland base. In a 1984 *Rangelands* article, Thad Box (then Dean at Utah State University) and I pointed out that Francis Colbert's 1977 statement that range is a *type* of land, not a *land use*, was unclear in many circles. Astonishingly, this is still true today, in an era of increasingly obvious valuing of rangelands for services and characteristics that cannot be separated from the land. Landscape and ecosystem integrity and biological diversity have become explicit goals, and shifted our view of "unproductive" lands. Solitude, aesthetic relief, and outdoor adventure become increasing valuable as they grow scarce. Rangelands are emphasized as a source of essential commodities such as clean air and water. Yet we still need traditional rangeland products: food, energy, minerals, fiber, and sadly, military reserves and waste disposal sites. How is it we are surprised that conflict characterizes rangeland management?

Rangeland management's integrative nature draws quirky minds and feeds the curious and creative. At a recent convention reception for SRM's founding members, I was impressed by their freshness and vitality. Love of the resource, respect for land and people, and a commitment to service are still the foundation of our discipline. Over these 50 years, our profession has remained remarkably true to its original aims, although our means to those ends have changed in intriguing ways. Our perception of what constitutes a rangeland ecosystem has expanded to include ever more subtle processes such as microbial and genetic ecology. New tools and concepts explore rangelands over wider geographic and temporal scales.

We have the ability to generate and manipulate more data than ever, but that does not seem to have solved our problems. Did we foresee that decades of data on range condition might become excruciatingly difficult to interpret in light of changing concepts of succession? Testimony to the diversity and dynamism of our profession is the ongoing effort to revise the SRM's glossary of range management terms. We seek consistency with previous editions and other glossaries in which we have collaborated, but rapid evolution within our discipline makes consistent definitions elusive.

But where do science and common sense link together? GIS and computers let us see more in terms of time and space, but we see less of real landscapes in person. Patient, clever field observation provided much of the fundamental knowledge we use today. Is it safe to assume newer tools can replace such slow, expensive, low tech essentials? In an era of rapid information transmission, we can know more, but have less time to process information, reflect and make careful judgments. How will we cultivate citizen scholars, such as Aldo Leopold, to interpret our reality for the future? What do we risk if we do not value contemplation today?

A paradox is that we have always defined our profession in terms of meeting society's needs. Society sure took us at our word. Now we are transitioning from managing resources for a public who was largely uninvolved, but knowledgeable of the land, to dealing with publics that have less knowledge of the land, but more vocal concern for it. Public involvement seems to work better in principle than in reality, a dynamic that plagues all democratic undertakings in a world of 5 billion diverse people. I sense frustration breeding a backlash against people "who don't know what they are doing" intruding into the professional's domain. Ironically, for decades we lamented that "the public" did not recognize the value of rangelands, and now that they do, we chafe at the consequences.

As a profession, we are becoming less distinct from our partners in the other natural resource disciplines. Perhaps we will cease to exist in our current form, but endure as ever more integrative resource managers. If we focus on a single use of the land (livestock grazing), decline as a profession is certain. If we focus on resource management (including appropriate livestock grazing), then perhaps not. Our science, and the wisdom and communal will to use its products judiciously, will determine not only the future of our profession, but the future of the ecosystems that support all earthly life.

Linda Hardesty is an Associate Professor of Range Management at Washington State University, Pullman, and a WiNR Editor.

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WOMEN IN NATURAL RESOURCES

Spring 1997

Volume 18, Number 3

FEATURES

DEPARTMENTS

The cover photo is of
Bertha Gillam
Director
Range Management Program
USDA Forest Service
Gillam is preparing to ride in Boise during Idaho's Centennial Celebration

FEATURES

Photo above: A 30 million year-old titanothere bone (extinct rhino-looking animal) is just one of the many scientifically valuable fossils found on the national grasslands.
Photo by Jerry Schumacher, PA, USDAFS

LETTERS & *stuff*

Congratulations on the Fall 1996 issue of WiNR. I was so pleased to see my article on Spiritual Values of Wilderness there, and to see two pictures of one of my former vision questers (Fran McTamany) in another article. WiNR is a new source of kinship for me as I read about the struggles and achievements of other women working in natural resources. I am the Netkeeper of the Wilderness Guides Council (RileyMR@aol.com) and do hope to connect with some of these sisters (and brothers, too) in followup dialogue about the importance of protecting the spiritual and healing qualities of wilderness. *Marilyn Riley*, Ross, California

I found a job from your jobs bulletin last month. Thanks, and keep 'em coming. *Carol Betts Brown*, Nashville, Tennessee

If you are a job seeker and a subscriber, please note: If you are currently searching for a job and would like to be put on a list to whom we fax WiNR job flyers the day they are sent to the printer, fax us with a request to 208-885-5878. Names will be purged after two months. *No email requests.*

CORRECTION: In the 18:2 issue, Peace Corps' focus issue, Centre Technique Forestier Tropical was misspelled in Sarah Workman's article, Forestry Extension in Burkina Faso and Beyond. Our apologies.

SILVICULTURE — University of Maine

Associate Scientist, Assistant Research Professor, or Associate Research Professor of Forest Resources, 12-month, full-time, non-tenure track position. The Cooperative Forestry Research Unit, an industry funded program, has been an integral part of the College of Natural Resources, Forestry, and Agriculture at the University of Maine for over 20 years. The CFRU is seeking an individual to advance a strong, industry-oriented research program in quantitative silviculture. The successful candidate will work directly with state's major forest industries, focuses on field-oriented research projects, continue existing long-term projects, and will establish new studies as appropriate. Must have a strong background in silviculture, forest biometrics, and statistics. A thorough understanding of forest productivity, vegetation management, and applied growth and yield modeling is required. Individual must be willing to conduct technology transfer activities for essential user groups. Strong communication skills necessary.

The mission and objectives of the position may be fulfilled in one of two ways. Apppointment at the faculty rank is preferred, and will require a Ph.D. with at least one degree in silviculture or a silviculture-related discipline. Post-graduate training and experience in a private industrial setting is highly desirable. Appointment at the Associate Scientist level requires an MS degree and a substantial amount of post-graduate experience in operational silviculture. In addition, the candidate must demonstrate willingness to pursue Ph.D. in the field of silviculture. Required: driver's license, willingness to work occasionally in inclement weather, physical abilities to conduct on-site field research and evaluations. Salary: for faculty appointment it is commensurate with qualifications; at the Associate Scientist level it is $30,000 to $35,000 per year; annual reappointment contingent on continued funding.

Application review begins August 1, 1997 and continues until a suitable candidate is found. Forward letter of application, personal resume, and names of three professional references to: Dr. William D. Ostrofsky, Cooperative Forestry Research Unit, College of Natural Resources, Forestry, and Agriculture, University of Maine, Orono ME 04469-5755. *An EO/AAE*

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Positions Available
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Twelve Month/Tenure Track Replacement Positions

GIS/Wetlands or /Inventory – Assistant Professor
Faculty position at the assistant professor level. Approximately 50% teaching /50% research. Candidate will have experience with geographic information systems (GIS) and technology for management of forest resource problems. Will teach introductory undergraduate and advanced graduate courses in applied uses of GIS for forest resource students, and have additional expertise in either the area of wetlands (delineation, management, or protection) or natural resource inventory (mensuration, biometrics, or modeling). The candidate must have a Ph.D. and one degree in a forest resource management field is preferred. Strong analytical, quantitative, and communication skills are required.

Wildlife Ecology and Management – Assistant Professor
Faculty position in wildlife ecology and management focusing on upland game birds, small game mammals, and/or furbearers. Instruction (50%) will include undergraduate and graduate courses in fish and wildlife populations, integrated forest resources management, small game management, and wildlife seminar. Research (50%) will focus on the ecology and management of upland game birds, small game mammals, and/or furbearers. Advising of undergraduates and graduate supervision is required. A Ph.D. with at least one degree in wildlife with a management focus is required. Demonstrated excellence in instruction and ability to acquire extramural support is required.

Quantitative Forest Management
Faculty rank commensurate with qualifications in quantitative forest management with emphasis in growth and yield modeling, forest biometrics, and operations research. Instruction (50%) of undergraduate and graduate courses in biometrics, quantitative decision sciences, growth modeling, and mensuration. Research (50%) and graduate supervision will focus on assessment, management, and modeling of accelerated pine plantation production. A Ph.D. with extensive experience in quantitative forest management, acquisition of extramural funds, and excellence in instruction is required.

Forest Resource Policy
Faculty rank commensurate with qualifications. Expertise in the analysis of policy issues associated with forest resource use and management is essential. Responsibilities are 50% instruction/ 50% research. Includes undergraduate and graduate courses in forest resource policy, development of a nationally recognized research program in an area of natural resource policy with relevance to forest resources leading to publication in appropriate scientific journals and extramural funding. Will cooperate with private firms, public agencies, and conservation groups. A Ph.D. in a natural resource/social science discipline, including political science, law, sociology, economics or a related field is required. Strong analytical skills and one degree in forestry or research or professional experience related to forestry are required.

New Twelve Month/Tenure Track Positions – Forest Productivity

Forest Fiber Supply Assessment – Assistant Professor
Research faculty position responsible for research to meet end-users' demands for accurate and timely assessment of fiber supply in Georgia and Southeast. Expertise in biometrics, mensuration, forest inventory, remote sensing and geographic information systems is required. Must establish an active research program in forest fiber supply assessment directed at the estimation of current and future fiber resources in Georgia and SE. Cooperation and coordination with state and regional inventory units will comprise an essential outreach component of this research. Supervision of graduate students is required .

Forest Productivity/Physiologist – Assistant Professor
Faculty position to conduct research on the processes that affect forest stand productivity. Focus of research is to improve our understanding of the physical and biochemical processes that control forest production, including carbon gain and allocation, wood formation and quality, nutrient and water uptake and metabolism. Development of biologically based models of tree and stand growth for determining efficient strategies for increasing fiber production in intensively managed stands and for predicting production under alternative management scenarios is essential. Applicants should have a strong foundation in both tree physiology and mathematical modeling. Advisement of graduate students and the ability to work as a research team member is required.

Molecular Genetics/Genomics – Assistant Professor
Research faculty position in molecular genetics/genomics focusing on accelerated development of genetically superior southern forest trees by identifying genes that speed growth and reduce damage from insects and disease. Candidate will collaborate with a team in forest biotechnology and forest productivity. Opportunities exist for extensive interactions in a new interdisciplinary bioinformatics initiative. Candidates must hold a Ph.D., have postdoctoral experience, and have demonstrated ability to obtain extramural funding for high-quality research in plant molecular genetics. Experience with forest trees and demonstrated ability to supervise graduate students is desirable.

Forest Harvest Scheduling – Assistant Professor
Research faculty position in forest harvest scheduling. Responsible for the development and conduct of a research program directed at the development and use of mathematical harvest scheduling algorithms. Issues such as adjacency and green-up requirements included in the Sustainable Forestry Initiative of the American Forest and Paper Association must be incorporated into this research effort. Candidates must hold a Ph.D., have at least one degree in forest resources, and have demonstrated ability to obtain extramural funding and supervise graduate students.

Soil/Site Productivity – Assistant Professor
Faculty position with expertise and experience in soil-plant interactions applicable to the understanding of root development, nutrient uptake and physiological response to soil conditions controlling productivity of managed forests is required. Responsibilities will include the supervision of graduate students, ability to work on a team, and to develop an active research program supported by extramural funding. A Ph.D. with one degree in forestry and terminal degree may be in forest resources, ecology, plant physiology or soil science.

The University of Georgia
The University of Georgia is a land grant institution composed of 13 schools and colleges including the Graduate School. Enrollment is 30,000 undergraduate, graduate and professional students. The Daniel B. Warnell School of Forest Resources is a professional school with 49 faculty, 250 upper division undergraduates and 130 graduate students. The School offers the bachelor of science degree with majors in forestry, wildlife, fisheries, and forest environmental resources. Graduate degrees include the master of forest resources, master of science, and doctor of philosophy. The School maintains an 800-acre research forest less than 10 minutes from campus and 25,000 acres of forest land across the state that are used for teaching and research.

Applications
The review of applicants' curriculum vitae, statement of teaching and research interests, letters of evaluation from three references, transcripts of all college-level work, and reprints of selected publications begin on July 1, 1997. Complete application packages received by this date are assured consideration. To apply or to obtain more detailed position descriptions, contact:

Arnett C. Mace, Jr., Dean
Daniel B. Warnell School of Forest Resources
University of Georgia, Athens, GA 30602
phone: 706-542-4741
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In our area of Montana, *it's possible to* ***graze*** *most of the* ***winter****, if there is enough forage.*

Ranching, a **good life,** but a a challenging one

As told by Theo Yanzick to Barb Beck

When your livelihood depends solely on forage production and forage harvesting, it makes for many challenges. Having been in the cattle and sheep ranching business all my life, I have had to adapt to many changes in the techniques for managing forage and the animals which use the forage for their subsistence.

I was raised on a cattle ranch in southeastern Montana, and was proud when my father received the "Soil Conservationist of the Year" award. With this background, I seem to have a inbred nature for caring for the land as well as the animals. Dad homesteaded a small place located in Carter County, Montana near Capitol, which sits close to the South Dakota border, and about 40 miles north of the Wyoming border. Alzada, our nearest "large" town, had a population of about 50.

When my Dad first homesteaded in 1919, the land was hardpan and sagebrush. Rainfall was and is scant. The area, which is considered prairie, receives only about 11-13 inches a year. We had only the snowmelt and rain for water. When I was a kid, we raised about 100 head of cattle. After that, dad added considerable land to his operation by buying out other places. In that arid country, a rancher needs a lot of acres to support each animal. My mom never much worked outside, but was a strong source of encouragement. Her contribution has been keeping the books, dealing with the BLM permit, and doing the paperwork, all of which she still does.

I was always helping my dad with the livestock, haying, seeding, and harvesting and was genuinely interested in all of these activities. We worked to establish a dense vegetative cover using several methods. We would feed hay that was mature enough to have some viable seed. When excreted, this seed produced new starts. We would also mechanically rip the ground to create seed bed. Finally, we took advantage of the trampling action of hooves to churn up the soil. To complement these activities, water management was of upmost importance. Damming, diking, spreader ditching and keeping the water movement slow and out of the low places enhanced the growth of trees and grasses. By using the water carefully, we were able to cultivate crested and western wheat grass—good forage for our cattle.

I was part of this improvement by helping plant the seed and observing how far the water reached. Much of this observation was done on horseback with my father when we checked to see if the dikes needed extending, or the diversions needed changing to deliver the water more efficiently. I guess I just always had an interest in these types of projects.

I attended country grade school in the 1940's, but when it came time for me to go to high school, there was no local option. I went away to high school in Belle Fourche, South Dakota, about 75 miles from home. Quite a few ranch kids traveled there for school. We returned home on the weekends. I really missed the ranch while I was at school. I went on to graduate from Black Hills State College with a degree in Physical Education, Math and Biology.

My husband Bruce and I now ranch in Stillwater County, south of Absarokee, Montana. Our place has 585 deeded acres. In addition to that we lease 1200 acres of private land and have a 100-head permit on the Bad Canyon Allotment of the Custer National Forest. We run 150-200 head of cattle and some sheep, maintaining a flock of between 50-70 breeding ewes. Our wool is marketed through the Stillwater Wool Pool which grades fleece based upon quality. This way, the buyers know exactly what they are getting. Maintaining quality is very important.

Raising cattle and sheep in our operation depends entirely on grass and hay. In our area it's possible to graze most of the winter, if there is enough forage. Supplemental feeding is occasionally necessary. Most years we have plenty of hay, but this year due to the tough winter, we have had to buy hay like many others, to get through the winter. It's difficult when hay prices climb to $125 a ton, as they did this year! To complement and support our livestock operation, we plant grass and alfalfa on a rotational basis.

Bruce and I have applied many of the techniques I learned from my parents. Of course, living in a climate with more rainfall, we have seen a faster response to many of the plant projects. For increased production of both grass and hay, we have introduced domestic species to complement our native ranges. We plan to try varieties that are more nutritious and palatable in test areas. We have improved some of our range. By placing feed in areas covered by heavy sagebrush, the cattle trample the sage enough to kill it. We also put salt and supplement stations in dense sage stands and move the salt stations often. This also damages sage plants. We've discovered that where sagebrush grows prolifically, we have some of the best soils for grass.

It seems there is never a slow time on the ranch, especially since our kids are now grown and gone. With the exception of

neighbors helping each other, Bruce and I pretty much work the place by ourselves. We have no hired help. Each year, the cycle of work repeats itself with the seasons. From March to May we are calving and then in May we go right into lambing. Late spring is a particularly busy time with fertilizing, planting and repairing fence. In June we add weed spraying to the list of chores, to keep the noxious weeds from spreading.

During the summer months, we are irrigating and haying. Our cattle are turned out into Forest Service pastures during the summer and early fall, and have to be checked regularly by horseback. Our allotment contains some rugged ground ranging from 5500 to almost 8000 feet in elevation. In mid-October we have to gather the cattle and bring them down from the high country as directed in our Forest permit. Last fall we had to plow a trail for five miles through the snow to get the cattle home. Later in the fall, we sort and ship our cattle, helping our neighbors do the same. The cattle we retain are also worked, wormed, given shots and prepared for the winter. We mend fence again in the fall. With winter comes the checking and feeding of cattle on the range.

We deal with many agencies in our day to day operation. This includes the Forest Service, the Natural Resources Conservation Service, and Montana Fish, Wildlife and Parks. We run 100 head of our cattle on a Forest Service permit. That has been a real challenge. We are using cattle to harvest a renewable resource. With all the federal rules and regulations it has been a trying experience. We run our cattle together with four other permittees on the Bad Canyon Allotment. Through conversion of cow/calf pairs to yearlings, and a reduced grazing season we have taken a substantial cut in our permit. Although Bruce and I are still running the same number of animals, we now run 60 cow/calf pair plus 40 yearlings, where before we ran 100 cow/calf pair. Since a yearling consumes less forage, we have taken a cut in the amount of forage we can take from the National Forest.

With reduced numbers allotted and time spent fencing and developing springs for water sources, grazing on a National Forest permit has almost lost its cost effectiveness. These improvements do nothing to enhance the capital value of our deeded lands. It's hard to convince the feds that livestock have heavy use areas, regardless of how one tries to change their habits. Nature seems to have a way of keeping these areas stable, even though they seem abused. Common sense adjustments can ensure these resources remain in a healthy condition. Management in grazing any area needs to have some flexibility.

In addition to fencing riparian areas, and developing water sources, our Grazing Association has hired a herder as a condition of our Forest permit. The herder keeps the animals out of the sensitive riparian areas. As a result of all of our efforts, the Grazing Association has received awards from both the American Fisheries Society (AFS) and the Forest Service. The AFS award (1995), was for protection of the Yellowstone cutthroat trout. This sensitive fish is found in waters within our permitted area. The 1992 Forest Service award recognized the association for good land stewardship.

Our ranch has a long-term conservation plan. This plan was developed with assistance from the Natural Resources Conservation Service, (formerly the SCS), through the Great Plains program. We have made many general range improvements on a cost-share basis with the NRCS. These projects included such things as cross-fencing pastures, seeding pastures, developing springs, and spraying to reduce sage brush.

We work with the Montana Department of Fish, Wildlife and Parks (FWP) through our local game warden. We have always allowed the public to hunt on our ranch. Because of this, when we experience damage from game, we are eligible to receive fencing materials from FWP to protect our haystacks. This year we also participated in the department's Block Management program for hunters. Through this program we receive a modest compensation for allowing hunters on our property. We have a good relationship with the local warden and are pleased to get some compensation for the wildlife we support on our ranch.

Turning to the future, I'm very concerned with the consistency of our product in the beef industry. We need to understand what the consumer wants and then produce it for them. We especially need to cater to the convenience needs of today's consumers. For instance, I'd like to see more fast-food beef products for the home. I also believe that as livestock producers we may need to form more marketing cooperatives to move our products. As ranchers, Bruce and I have to know what we are producing, and select the breeds and genetics of the stock which fit the environment we ranch in, all this while satisfying the consumer. Good knowledge of our product will allow us to make changes to improve quality and consistency. As a woman involved in food preparation, I know that products can be inconsistent for a variety of reasons. To satisfy our consumers, we in the beef industry need to address the fact that sometimes our products are not consistent.

Women have made great strides in the agricultural fields and their ideas are usually as well accepted as men's. However, I think the way in which we present our ideas probably has to be more convincing and maybe more scientific. We still have to "feel out" the best way to get our ideas across. Being on the County Farm Service Agency Board, I have heard my fellow committeemen say that we women add a different perspective to agricultural ideas and decisions. I am always reading agricultural publications for new ideas and forage species that might complement our ranch. Our county has a range group and my husband and I try to attend some of the meetings. They provide a lot of helpful information.

In recent times, ranching has become a complex business. It's not just a way of life. With escalating costs of production, and a low price for what we sell, we are constantly fine-tuning our way of operating. It seems ranching has become a rich man's hobby and the true ranchers, the ones that make their living from the land, can barely compete. When drought and blizzards or other natural hardships occur, some ranchers go under. For many, even with governmental assistance, when disaster hits, the margin may not be sufficient to recover.

In this time of land stewardship, caring for the base of production, the land, is important. Even with some occasional abuse it will respond and heal and produce just as it has for many generations.

I'm proud to be a rancher. The life is not easy, but it certainly is fulfilling.

Theo Yanzick and her husband Bruce have three grown children and five grandchildren.

Barb Beck is a WiNR Editor and lives in Red Lodge Montana.

COWS, CONTROVERSY, AND *CONSENSUS*

ELAINE ZIELINSKI

We are all so busy and get so close to the natural resources work we are doing, we often do not feel we have the time to really think about the natural resource management direction we are taking (or is it the direction natural resource management is taking us?). In both our personal and professional lives it is important to periodically step back and ask ourselves, "Where do we want to go? Are we on the right path?" Last year, 1996, was Bureau of Land Management's 50th Anniversary and this celebration gave our agency the chance to evaluate how far we have come in 50 years and to recognize the changes that have occurred in the way we manage America's public rangelands. Having spent last year both looking at our past and planning for our future—my conclusion is that we are on the right path—we are headed into a new and exciting era of rangeland management.

The Bureau of Land Management (BLM) administers what remains of the nation's once vast land holdings—the public domain. Of the 1.8 billion acres of public land acquired by the United States, two-thirds went to individuals, corporations, and the states. Of that remaining, much was set aside for national forests, wildlife refuges, national parks and monuments, and other public purposes. BLM today manages some 270 million acres, as well as 570 million acres of mineral estate. Much of the land was located in the eleven westernmost states, and most of it was described by the General Land Office as arid, broken, mountainous, or grazing in character. (The General Land Office and the Grazing Service merged in 1946 to form the BLM.)

The 270 million acres of land that were once only thought to be useful for livestock grazing and the "lands that no one wanted" are now also appreciated for the recreational opportunities they provide, their critical fish and wildlife habitat, their cultural values, and their mineral potential. They include such treasures as the Steens Mountains in Oregon, the recently designated Escalante-Staircase National Monument in Utah, and the Birds of Prey National Conservation Area in Idaho—to name a few. These changes in values have been brought about by a variety of societal changes including increasing populations, greater public interest in the environment, and through an evolution of natural resource knowledge and experience.

Over the next 10 years, the populations and economies of western states, where most BLM lands are located, are expected to prosper and grow faster than any other region of our country. According to a popular newspaper, *USA Today*, between 1995 and 2000, 27 states are expected to grow by at least five percent. By the year 2025, California will increase by 56 percent, Arizona by 52 percent, and Nevada by 51 percent. To look at this in a more historical perspective, in 1946 when the BLM was organized, there were 141 million people in the United States and now there are over 260 million. This population growth has—and will further—increase the pressure on public lands for the variety of services and goods that they provide. Moving from a rural west to an urban western landscape appears to be the wave of the future and it has resulted in conflicts at the ground level between those who have traditionally used public lands for grazing and those who now want to see these lands used or preserved for other purposes.

In addition to increases in population, the last 50 years have also born witness to (1) a heightened interest in natural resources and (2) changing views on how public lands should be managed. These changing values and increased interest in environmental issues have led to the passage of over 20 *major* natural resource and environmental laws that now guide our management of public lands. In 1946, there were basically two laws—one that dealt with grazing and one that dealt with forestry. In talking to one of BLM's attorneys, I asked him how to best describe the changes in the laws governing public land management over the last 50 years and he said, "Well, when you stacked the laws up in 1946, they measured about a quarter of an inch. Now they are a better part of 12 inches." The laws, which make up this rather large stack are complex, sometimes in conflict with each other, and have greatly influenced the way rangelands are managed.

We in the Bureau of Land Management have also learned a great deal over the years about the function of the lands we manage. We recognize that the lands we manage are made up of many complex, interconnected parts. When we look across the range we see the sagebrush, soil, lupine, insects, juniper, birds, and white pine and we try to understand their interactions and support their functions when we make management decisions. Seeing the interconnections and importance of managing the entire natural system has also made its mark on rangeland science. Riparian areas were once considered sacrifice zones and the emphasis was placed on managing the uplands. Now we know that riparian areas are *critical* in the recharge of our groundwater and for providing habitat for a variety of plants, fish, and wildlife. By encouraging the health of an entire natural system—a forest, a wetland, or rangeland, we are ensuring the health of the many pieces that make up that system.

Families and communities are a necessary part of these ecosystems and many people across the country derive their income from public lands. It is my belief that by promoting the overall health of the landscape we will improve our ability to meet the needs of the communities and the families we serve over the long term. However, increases in population, the greater interest in public lands, and our evolving knowledge of how natural systems function, have all contributed to the national debate over the management of natural resources. Many of our historic clients, such as the ranchers who have traditionally derived their livelihood from public land grazing, view these changing times as a threat to their valued way of life. That is why it is extremely critical to bring the many divergent groups together to open up a dialog and try to forge solutions to the many natural resource issues we face. It is my hope that we are moving away from the bitter fighting and moving toward operating openly and maintaining a dialog which encourages us to work toward the goals we can agree on.

An excellent example of what can be achieved when all sides come together to work on an issue, is the progress that has been made in the Trout Creek Mountain area in southeastern Oregon. Several years ago, the BLM, in conjunction with ranchers, environmental groups, and federal and state agencies, formed a partnership known as the Trout Creek Working Group to identify management strategies for 543,860 acres of public land. This effort was initiated at the local level by the people most affected and concerned about rangeland health. In 1991, the Willow/Whitehorse cutthroat trout was identified as endangered and consultation with the U.S. Fish and Wildlife Service began. The Trout Creek Working Group developed collaborative management strategies to address the cutthroat trout, riparian conditions, and grazing issues. Changes were made in grazing systems, season of use, fencing, and water developments to address resource needs in the allotments. There were also voluntary deferments of grazing on the part of the ranchers. These changes have resulted in significant habitat recovery. Now there is an upward trend for fisheries habitat and riparian vegetation in the area. The streambanks of the Trout Creeks have willows and grasses coming back, trout can be seen swimming in the stream, and cattle dot the landscape. The BLM will now reactivate 952 animal unit months (AUM) of livestock grazing this spring. (An AUM represents the amount of forage needed to sustain one cow, five sheep, or five goats for a month.) While this work was not easy—and tough decisions were made—coming together in this manner is the only way we will be able to forge these types of lasting successes. A commitment was made by all parties to improve the health of their rangelands and streams, while also sustaining the ranching operations.

Building on the cooperative successes of the Trout Creeks, a National Riparian Service Team, made up of BLM and Forest Service employees, has been created to spread the word on the importance of riparian health and to encourage solutions to rangeland health problems by involving diverse interests. For example, they conducted a review of Willow Creek in Idaho at the request of the environmental group Pacific Rivers Council and the Sawtooth National Forest. This team, which is based in Prineville, Oregon, holds workshops throughout the west for state and federal land managers, ranchers, environmentalists and just about anyone that is interested in their message. They teach a course on the process for assessing the proper functioning of riparian and wetland areas, and they encourage the many different interests to find common methods for evaluating the health and condition of riparian areas. The team recognizes and shares with others the importance of integrating ecological, economic and social factors and the need for participation of all affected interests. Their focus is improvement on the ground through a better understanding of healthy functioning systems or, as Wayne Elmore, National Riparian Team Leader likes to say, "Healthy streams through bringing people together."

Along a parallel track, and also indicative of a new era of range management was Secretary of the Interior Bruce Babbitt's Healthy Rangelands effort. In 1992, Secretary Babbitt met with ranchers, environmentalists and many others across the west to explore new rangeland management approaches. Among the proposals that resulted from this initiative, was the establishment of 24 Resource Advisory Councils (RACs) throughout 11 western states. These councils of 15 citizens from all walks of life (ranching, recreation, conservation, tribal, academia, and local government) are working with the BLM on all aspects of natural resource management, providing advice and guidance on issues that are of critical interest to the councils, to the thousands of people they represent, and to BLM. Although BLM has had advisory councils in the past, these new councils better reflect the many interests and benefits derived from public lands.

One of the first charges for the RACs has been to work with the BLM in developing *Standards for Rangeland Health and Guidelines for Grazing Management.* The standards, which are expected to be in place nationwide by late summer, 1997, include some very basic elements of rangeland ecosystem function. They focus on: maintaining or restoring hydrologic function of rangeland watersheds, including their upland, riparian and aquatic components; maintaining or restoring the essential ecological process of nutrient cycling and energy flow; achieving water quality standards, and maintaining or restoring habitats where necessary for native species including threatened and endangered and other special status plant and animal species. Guidelines for grazing management will guide the use and treatment of these lands in order to meet the standards I have just described.

Rather than looking at one particular piece of the landscape and rating it in fair, poor, good or excellent condition, we are trying to identify natural systems and assess their overall health and function. The standards and guidelines are designed to outline a logical thought process to determine if problems exist, what the causes of the problems may be, and point out possible solutions to those problems. Ultimately, we are trying to achieve the overall physical, functional, and biological health of the system.

The standards clearly define our direction, not only in the traditional "range" context but among all the disciplines and eventually all the uses of these lands. These standards help document the evolution of range management that has taken place over the last 50 years. Standards and guidelines are being developed in order to describe for permittees, and the many others interested in these rangelands, what we are trying to achieve on the ground. Rather than looking at one particular piece of the landscape and rating it in fair, poor, good or excellent condition, we are trying to identify natural systems and assess their overall health and function. The standards and guidelines are designed to outline a logical thought process to determine if problems exist, what the causes of

the problems may be, and point out possible solutions to those problems. Ultimately, we are trying to achieve the overall physical function and biological health of the system.

I believe these standards will create a higher level of interaction and understanding among disciplines. As a product of close consultation with the RACs, these standards and their associated guidelines will address the variability of our rangeland ecosystems in a socially and economically achievable way.

From the creation of the National Riparian Team, to the establishment of Resource Advisory Councils, and the development of new standards and guidelines for grazing management, BLM is entering a new era of rangeland management. We have taken new scientific information on the way ecosystems function, and a better understanding of the economic and social role natural resources play in local communities to develop new objectives and different ways of reaching those objectives. We recognize there are more people interested in "the lands no one wanted" —than ever before. In order to move away from the often polarizing debate that seemingly surrounds natural resource management decisions, it is vital that we continue to work together and move forward with better, more informed decisions. As we head into the 21st century, I am encouraged by the commitment I see on the part of many people to let go of past differences and focus on improving the resources on the ground that we all depend on for life and livelihood.

A 19-year veteran with the USDI, Bureau of Land Management, Elaine Y. Zielinski was named State Director for Oregon/Washington in March 1994. She is the second woman State Director in the history of BLM. Beginning in 1989, Zielinski served as Deputy State Director for Lands and Renewable Resources in BLM's Oregon State Office. As Associate District Manager in BLM's Eugene District Office from 1986 to 1989, she was responsible for resources on 325,000 acres of public lands in western Oregon. From 1982 to 1985, Zielinski served as Chief of Planning and Environmental Coordination for BLM's Colorado State Office in Denver, Colorado. Prior to that, 1977 to 1980, she was Environmental Coordinator in the Colorado State Office in Denver where she worked on documents for coal and range projects, as well as rights-of-way for energy and water projects.

Zielinski's Master's is in business administration from the University of Colorado, and her Bachelor's in mathematics is from Blackburn College in Carlinville, Illinois.

NEWS & NOTES

Do Environmentalists Go Too Far?

The Independent Commission on Environmental Education released a survey of environmental textbooks and resources widely used in K-12 classrooms. The verdict: "Environmental education materials are often factually inaccurate, superficial, or designed to persuade rather than to inform. The survey cited a class project that told students: "Experts believe that by the year 2000, most of the world's oil may be depleted." It quoted a textbook that boasted it would introduce high-school students to environmental science—think about this—"without the use of mathematics or complex scientific information." (Now there's a promise many educators will have no problem keeping.) Many parents have seen their children regurgitate (a form of recycling) enviro mumbo jumbo. One day, your elementary-schooler refused to go to McDonald's because the packaging contributes to bad landfills. Or your child writes a local pol—the idea of some programs is to turn children into activists—that the Earth is running out of trees or oil. While some teachers stick to science, many texts instruct teachers to teach children not to think, but to fear: fear chemicals, fear pesticides, fear technology, fear development, fear the future. A junior-high text warned students global warming will cause "only the tops of very tall buildings" in New York to stand above water.

Debra Saunders, *San Francisco Chronicle,* April 20, 1997

Insects Are Needed. And Wanted.

Entomologists with the Pacific Southwest Research Station are working to discover answers to the complex issues of insect behavior and their relationship to forest ecosystem health.... Defoliating insects often reach epidemic levels and can denude a significant component of the forest tree canopy, or may even affect the success of regeneration. However, defoliators also serve as a primary food source for many wildlife species. Bark beetles can affect forest stand density and diversity, and in some cases, create snags or openings that are beneficial for wildlife habitat. Wood-degrading insects (termites, wood-inhabiting beetles, and carpenter ants) are among the predominant decomposers of large pieces of wood in the Sierra Nevada Ecoregion. They usually follow bark beetles in the succession of organisms contributing to the early stages of tree degradation. When successfully established, they greatly accelerate the decomposition process. Along with wood-degrading fungi, dampwood termites weaken root systems and woody tissues to hasten the conversion of standing, dead trees into coarse debris on the forest floor. This transformation drastically alters wildlife habitat as it imparts nutrients to forest soils.

Arthropod species abound in the Andrews forest, 50 miles east of Eugene, Oregon. There are more than 3,4000 described so far, compared with 143 back-boned animal species such as birds and mammals and 460 species of vascular plants, mainly conifers and flowering plants... "In one square yard in a mature forest at Andrews, there are more than 100,000 individual oribatid mites," said Andrew Moldenke, an Oregon State University entomologist. "Without arthropods' influence in cycling nutrients, you could get some bottlenecks with all the nutrients tied up in trees or dead logs and not available for roots to take up, " said Timothy Schowalter an OSU ecologist. "We think that's part of the problem with forest health in eastern Oregon. Most of the nutrients have gotten tied up, and now so many trees are competing for limited water and nutrients that something's got to start turning over that material and putting the nutrients back into the soil. The insects and diseases are helping to do that."

Michael I. Haverty, Patrick J. Shea, Connie Gill, and Nancy Jacobson, *Forestry Research West*, March 1997

Downsized Families

American families will continue to grow smaller in the next century. Today, married couples with children are a scant and still declining 36 percent. Marrieds without children are a growing 52 percent; female householders are 9 percent, males 2 percent.

1995 Census, *Newsweek*, April 21, 1997.

(News & Notes continued page 38)

Research in Progress
Focus on The Loess Hills of Iowa

Editor's Note: In this issue, we feature the writings of 5th and 6th grade students from Mr. Don Groff's extracurricular computer group at Woodbine Elementary School in Woodbine, Iowa. These stories are part of a research project the students have conducted on the Loess Hills, a fairly unique geological formation in their region. Their goal is to make people throughout the world more aware of the Loess Hills. Mr. Groff, a science teacher at the school, also has the group conducting research projects on monthly precipitation, average height and weight of fifth graders, the number of women in science, and the number of cattle in the United States. The students are also learning to make home pages for the World Wide Web.

Members of the group would like your reaction to their article. They can be reached by e-mail at "groff@tiger.woodbine.k12.ia.us." Mr. Groff writes that "the Internet has opened a whole new world for a small town of 1500 and a student body of 600 (K - 12)." *Jesse Micales,* Research in Progress Editor, Photos by ***Annette Knott.***

The Loess Hills - An Introduction

Seth Gorham

The Loess Hills are a world treasure found in Iowa, China, and Germany. The plant life in the Loess Hills area of Iowa is a big part of the ecosystem of the Loess Hills and includes over 400 woodland and prairie plant life-forms. Before people came to the region, it was all prairie grass, but the Indians let it burn so now it is five percent prairie grass. Despite this burning, we still have dominant grasses like little bluestem, buffalograss, and big bluestem. Non-dominant grasses are short soapweed, yucca, purple beardtongue, prairie clover, and puccoons. Cottonwood, gray dogwood, red and bur oak can be found in the woodland part of the Loess Hills.

But don't think that plants are the only life in the Loess Hills! Wildlife is a big portion of the Loess Hills ecosystem. The Loess Hills are home to rare animals like the bald eagle, ornate box turtle, the plains pocket mouse, and the southern bog lemming. Other mammals are the white tail deer, red fox, coyote, shrew, gopher, squirrel, field mouse, and vole. Some of the birds are the dove, cardinal, woodpecker, chickadee, eastern wood peewee, wild turkey, bluebird, yellow warbler, sparrow, and western meadowlark.

The way we cut into the Loess Hills for roads is straight up and down so there is less erosion when it rains. The Loess Hills are all over Iowa, but we have the most loess soil (up to 200 feet deep) in the western part of the state. The Loess Hills run from Sioux City to the Missouri border.

You can see our homepage at: http://www.woodbine.k12.ia.us for more information.

Describing the Loess Hills

John Sullivan, Derik Peterson, Darrel Hansen, and Cody Watkins

You will find the historic, beautiful, natural wonders here in Iowa, China, and Germany. They are called the Loess Hills (pronounced "luss"). Over 95 percent of all the Loess Hills in the world are owned by individuals in Iowa and China.

Loess is from the German word for "loose and crumbly." Wind-blown silt was gathered from dry riverbeds or old glaciers and lake beds and deposited as loess. The difference between Iowa's hills and China's silt is the color. Iowa's silt is yellow and China's is brown. The hills were formed by melted glaciers. When they melted, the water came rushing down the valleys making the Loess Hills. Iowa's deposits came from the Missouri River.

Unique Characteristics of the Hills

One of the unique characteristics of the hills are the "catsteps." They result from a variety of reasons. The hills' soil has very few clay particles, which are called the "bonders" of the soil. Without the clay, the soil can erode more than other soil causing sloughing and a little earth slide that makes steps in the hills. The hills are very erodible, which means that the hills lose a lot of soil each year. When it rains at a bad time, the hills can lose 30 to 35 tons of soil per acre. The soil is swept away with the water.

The Plants and Animals of the Loess Hills

Many animals live in the Loess Hills. The bald eagle was spotted in the 1980s. The ornate box turtle is a rare turtle. Another animal is the plains pocket mouse. Another rare animal is the southern lemming which was spotted during the 1980s. Before being observed, scientists thought these animals were nonexistent in the Loess Hills. A favorite animal is the white-tailed deer. Some other animals are the red fox, coyote, shrew, gopher, squirrel, and field mouse. Birds are also found in the Loess Hills. The red cardinal is a beautiful bird. Another bird is the woodpecker, which uses its beak to make a home. The chickadee is decreasing in numbers because we are cutting down its main food—the thistle. Other birds found here are the mourning dove, the eastern wood peewee, the wild turkey, the bluebird, the yellow warbler, the sparrow, the western meadowlark, and the eastern kingbird.

An Interview with Mr. Darrel Hansen

We interviewed Mr. Darrel Hansen. He grew up in the Loess Hills and played on them with his five brothers and sisters.

The hills did not have deer until the 1940s. The deer were on the south side of the hills. There were no trees on the south side. The trees started growing more than fifty years ago. All Harrison Country was grassland at one time. Darrel's family didn't know what the Loess Hills were when they were young. The hills had a 40 - 75 percent slope. Darrel was a tour guide for the Loess Hills. Tours normally start at the Welcome Center in Woodbine, Iowa.

The Geology of the Loess Hills

Mary Smith and Amanda Lenz

The Loess Hills' history began when extraordinarily deep blankets of silt first were deposited in the western portion of Iowa. Much is told on how the silt was lifted by wind and then shaped by water; on the huge mammals that wandered the valleys and climbed the slopes; on the plant communities that migrated to and from the Loess Hills—needles and broad-leaved trees from the east and north, grasses from the west and south. The history of the Loess Hills is one of inhabitants, climate, and landscapes constantly responding to one another.

The loess of which the Loess Hills are composed is mostly quartz silt. These are small grained particles that are somewhat bigger than clay but not as large as grains of sand. Quartz is the most abundant mineral. The accumulations of loose, unconsolidated, light weight silt are remarkably homogeneous, commonly lacking rock, gravel, and the horizontal stratifications so typical of soil and rock layers. Even though the loess color below the upper soil layer is often a uniform brownish yellow, the color can range from brown to gray. Some deposits are strongly molten.

Although the loess deposits consist of uniform-sized grains, a microscopic examination of loess from the eastern and western Loess Hills would show differences in particle size. Coarse silt, difficult for the wind to hold aloft, first dropped and is the most concentrated in and near the most western bluffs. The concentration of smaller, lighter clay, and fine silt particles increases with the distance from the floodplain.

The Importance of the Loess Hills

Brent Dunlop and Kellon Clark

The Loess Hills are important for a lot of things. Some of those things are rock mining, farming, and cattle pasture.

The steepest hills are next to Missouri Valley, Iowa and are the least helpful to humans. There are many animals living in the Loess Hills because the hills have just the right mixture of minerals. There are three ecosystems in the Loess Hills: woodland, prairie, and wetland. The hills have many endangered species. There are many ecosystems in the Loess Hills that are decreasing in size. There used to be 30 million acres of prairie which covered half of Iowa. Now only one percent of the prairie is left.

The Loess Hills are the most important region in Iowa for rare and endangered plants and animals. In the soil of the Loess Hills, plants need to have deep roots, a thick covering, few leaves, and hairy stems and leaves to survive. Loess means "wind blown soil" that forms good topsoil for growing plants.

There is one great source that has produced the Loess Hills. Our loess was covered by great sheets of ice during the Ice Age. The loess of which the Loess Hills are made is mostly silt quartz and tiny grain particles. Erosion has cut patterns into hills ever since they were laid down. The hills have been reshaping to this day. The reshaping has gone even faster since the hills are good for farming and cattle pastures. One can easily see when deep loess responds to forces of water because of the horse-shoe shape that they form in harmony with the physical properties and erosion patterns described in the future section.

What are the traits and shapes of the Loess Hills? There are steep slopes on both sides of the Loess Hills that make

Below: Mr. Don Groff's after school computer group.

them steep and wavy. A number of side ridges, or side spurs, stretch outward from the branching ridge line and are steeply pitched and wavy. A cross country hiker can clearly feel the steepness of the hills even though their appearance may be hidden by the expanding forests.

An Interview with Pam Cates: Naturalist for the Harrison County Conservation Board

Ross Clark and Brittany Miller

The conservation board is a county agency responsible for the county parts and other natural areas. As the county naturalist, my job involves environmental education in Harrison County Schools and public environmental education throughout Harrison County. It also involves publishing environmental information, such as our newsletter, The Prairie Hills Journal.

I have been working for the Harrison County Conservation Board since 1972 and am still very enthusiastic about being a naturalist. We have so many wonderful natural resources here—especially the Loess Hills and Missouri River.

Field trips are a favorite part of my job, especially to the Loess Hills. I enjoy taking people of all ages out into the hills. I think the first-hand experience of standing on a windy prairie hilltop and feeling the beauty of the place does more to promote conservation than anything else. I also love going into classrooms and presenting programs on any natural subject. I love to be with the kids. It gives me hope because they do care. Probably one of the best compliments I've had is from a girl who wants to be a naturalist because of me.

I am also a trained guide for the Loess Hills Hospitality Association (LHHA) out of Moorhead, Iowa. I became involved with the LHHA about two years ago. I went through the training sessions and have given tours to groups coming from Nebraska and across Iowa. Each group is always impressed with the Loess Hills. Sometimes they are more than a bit surprised by the rugged, breath-taking views. I love doing the tours and showing off our local national treasure. The people on the tours come here to enjoy themselves, and they are always a lot of fun.

Last summer I was fortunate to be involved with the first Loess Hills Elderhostel. The Elderhostel was sponsored by Iowa Western Community College and organized by Carol Brockman. I spent one week with this over-55-year-old group touring the hills. We also had many Loess Hills related activities.

For more information about tours, contact LHHA at 1-800-886-5441.

Loess Hills Calendar Project

Don Groff

We are currently doing a project to send a free Loess Hills calendar and information on the world treasure to schools in the United States and the rest of the world that send us their mailing address. Our e-mail address is: groff@tiger.woodbine.k12.ia.us. We have over 80 calendars to mail, and our only request is—send us a picture of the students or yourself holding the calendar. We would like to know what you think of the information.

Grasslands—
It takes soul to love a Prairie

Mary H. Peterson

Ever since the Great Plains were first called a desert, people have gone a long way toward turning them into one. The Great Plains...are bigger than any name people give them. They are enormous, bountiful, unfenced, empty of buildings, full of names and stories. They extend beyond the frame of the photograph. Their hills are hipped...their rivers rhyme. Their rows of grain strum past. Their draws hold springwater and wood and game and grass like sugar in the hollow of a hand. They are the place where Crazy Horse will always remain uncaptured. They are the lodge of Crazy Horse.

Ian Frazier
Great Plains

INTRODUCTION

Five years ago, I returned to the prairie. I had grown up in the eastern Dakotas, but had not lived or worked in the Great Plains for over fifteen years. Having worked in the forested mountains of the Cascade Range, the Wallowas, and the Rockies, I had forgotten the beauty and tranquillity of the vast expanses of open prairie in the northern Great Plains. It is like stepping back into the middle of a Willa Cather novel.

Home on the range once again, I've had the opportunity to learn and understand, for the first time in my life, the significance of the prairie ecosystem in North America and the role of public lands within that ecosystem. As Supervisor of the Oglala, Buffalo Gap, and Ft. Pierre National Grasslands, the Nebraska and Samuel R. McKelvie National Forests, and the Charles E. Bessey Tree Nursery, I have come to appreciate the diversity and the beauty of our public grasslands.

It has been said that "anyone can love the mountains, but it takes soul to love the prairie." America's 20 national grasslands are becoming popular as more people become aware of the wonderful resources (like fossils) and opportunities associated with these public lands administered by the USDA Forest Service.

Ranch families graze cattle under a permit system which contributes to traditional lifestyles and economies of rural communities. Recreationists travel for miles to hunt, hike, bike, and photograph the national grasslands. Several national grasslands provide oil, gas, and minerals to meet the nation's needs. All of these activities take place within a multiple use framework mandated by law.

Nebraska's Oglala National Grassland view

The 20 national grasslands managed by the USDA Forest Service total 3.85 million acres. They are located in 12 states: North Dakota, South Dakota, Nebraska, Kansas, Oklahoma, Texas, Wyoming, Colorado, New Mexico, Idaho, Oregon, and California. They are associated with 10 national forests and seven regions of the Forest Service. I have the opportunity to help chart the course for three of these national grasslands.

National Grasslands

NAME	NFS	ACRES	STATE
1. Butte Valley NG		18,425	California
2. Comanche NG		435,319	Colorado
3. Pawnee NG		193,060	Colorado
4. Curlew NG		47,756	Idaho
5. Cimarron NG		108,175	Kansas
6. Oglala NG		94,480	Nebraska
7. Kiowa NG		136,417	New Mexico
8. Cedar River NG		6,717	North Dakota
9. Little Missouri NG		1,028,051	North Dakota
10. Sheyenne NG		70,268	North Dakota
11. Black Kettle NG		30,710/ 576	Oklahoma/Texas
12. Rita Blanca NG		15,576/ 77,4213	Oklahoma/Texas
13. Crooked River NG		111,352	Oregon
14. Buffalo Gap NG		595,538	South Dakota
15. Fort Pierre NG		115,997	South Dakota
16. Grand River NG		155,075	South Dakota
17. Caddo NG		17,784	Texas
18. Lyndon B. Johnson NG		20,309	Texas
19. McClellan Creek NG		1,449	Texas
20. Thunder Basin NG		571,971	Wyoming

(Reference: Land Areas of the National Forest System, September 1994)

RESOURCES AND USES OF THE NATIONAL GRASSLANDS

The national grasslands play economically and ecologically significant roles within the United States.

Economic significance...

Commodity and amenity benefits from the national grasslands have contributed to the social systems and economic base of many neighboring communities. Grazing is probably the stereotypic use associated with the national grasslands, and it does remain an important use since 1.3 million AUM's are grazed annually on our national grasslands. However, the

national grasslands also provide many other uses. The national grasslands are significant contributors to the nation's oil, gas, and mineral production: 1.26 million acres of national grasslands are leased for minerals and they have over 1800 producing oil wells. The Thunder Basin National Grassland in Wyoming has five producing coal mines, including the nation's largest. Mineral sales from national grasslands exceed $210 million annually.

People are beginning to discover the national grasslands for their recreation opportunities. They receive over one million recreation visitor days. There are 22 campgrounds, 14 picnic areas, several boat ramps, and many miles of trails within our national grasslands. Visiting the national grasslands can be a novel experience. They provide an opportunity to explore the sweeping seas of grass stretching from horizon to horizon, to stop and look closely at the mixed array of prairie plants and wildlife. For those who enjoy getting away from it all, the grasslands host unique opportunities: rock-hounding for colorful agates, hunting prairie game, viewing the prairie chicken's courtship dance, or biking rolling prairies and intermingled badlands.

Visitors can learn more about the beauty of America's undiscovered public lands at the National Grasslands Visitor Center. This interpretive facility, located in Wall, South Dakota, focuses on providing national grasslands information and interpreting their special history, resources, attractions, and management. The visitor center features over 20 exhibits and several films highlighting Great Plains history, prairie plants and animals, recreational opportunities and management activities on the national grasslands. This facility is the only visitor center dedicated to interpreting the national grasslands.

Ecological significance...

Seventeen of the 20 national grasslands lie within the Great Plains. The Great Plains is the nation's largest ecosystem and the one most characteristic of the United States. It is considered by some to be the most changed and fragmented.

The national grasslands hold important components of the remaining native prairie vegetation within the Great Plains. Most native prairie has been converted to non-native vegetation through farming and the invasion of noxious and exotic vegetation. These remnants of native prairie also contain many rare or endangered plants such as the western prairie-fringed orchid and blowout penstemon.

The national grasslands provide habitat for many game and non-game animals, threatened and endangered species, and breeding birds. Currently 64 species are listed as "threatened" or "endangered" in the Great Plains. Over 700 other species are declining, some severely. The black-tailed prairie dog is a good example. From an ecosystem perspective, prairie dogs are one of the few species that don't just live in a habitat—they create one. Some refer to them as a "keystone species." The habitat they create is key to the survival of numerous other species, including black-footed ferrets. Prairie dog populations have been extirpated from over 95 percent of their historic range and most of the remaining range is located on isolated parcels of public lands within the Great Plains.

The most endangered mammal in North America, the black-footed ferret, has recently been reintroduced in the Buffalo Gap National Grassland in South Dakota, and another reintroduction site on the Thunder Basin National Grassland in Wyoming is being studied. Black-footed ferrets rely on prairie dogs for their food and shelter. Four federal agencies are working to help this species recover. Several litters have been born in the wild since reintroductions in South Dakota began in 1994.

Grassland birds show steeper declines than any other group of grassland species. Of the 435 bird species that breed in the U.S., 330 breed on the Great Plains. Great declines in some species (from 14-91 percent) are due to two conditions: 1) loss of critical habitats, and 2) hybridization due to forestation of the Plains. The status of other species groups is generally unknown; however, it is suspected that prairie fish, reptiles, and amphibian populations are also declining. In addition, most of the butterflies on the T&E species lists are located in tallgrass prairie.

The international black-footed ferret recovery program flourishes in Buffalo Gap NG

History & Significance

Eastward from the Rocky Mountains sweeps a sea of grass, the Great Plains. To the west are broad intermountain rangelands, the Great Basin. Within these regions are the 20 national grasslands—nearly four million acres of publicly owned lands. The grasslands are not solid blocks of National Forest System lands. They are intermingled with other federal, state, and privately-owned parcels. This mixed pattern of ownership contributes to their uniqueness.

These lands were once home to many Indian tribes, including Kiowa, Comanche, Pawnee, Cheyenne, Arapahoe, Crow, and Lakota. To the Indians, grass was eternal. Buffalo, which thrived in this country, were the lifeblood for a number of Indian tribes. The abundant buffalo herds were testimony to the power of grass. By the end of the 1870's, Indians had lost their historic use of the lands as cattle barons replaced the buffalo with cattle. Prospectors, trappers, soldiers, railroad builders, and a host of others seeking their fortunes in the west helped push back the last frontier as they crossed and claimed these lands.

As if drawn by a magnet, the people came...

Late in the 19th century, another group of people came to the Great Plains. Under the Homestead Act of 1862, land was provided to individuals who would live on it and make certain improvements. Initially, settlers were limited by the Homestead Act to 160 acres each. Later, the size increased to 640 acres. Most of the first homesteads were located along the river drainages where there was water, shelter, and wood. After these prime areas were filled up, the later homesteads were filed on land that has since become known as "submarginal" for farming. These new settlers, called "sodbusters" by some, attempted intensive farming to raise cultivated crops rather than livestock. The cattlemen and sodbusters fought many local "range wars" over control of the land.

Most of the homesteaders had little experience in agriculture or they had farmed where moisture was abundant. They expected to make a living on the same size of farm, using the same farming practices as they had in the east or in Europe. Rainfall was only half as much as

they were used to, and accordingly, production was lower. They also discovered that winds blew constantly, winters were bitter cold, and very little shelter was available. Add to this the fact that planting crops every year gave the soil no chance to replenish its nutrients. At first, nature was cooperative. In the early 1900's precipitation was above average and the newly-broken ground produced good crops.

But the land began to move...

At the end of World War I, the situation for the homesteaders began to change. Lower demands for agriculture products, along with the great distances to market, diminished their profits. During the mid 1920's, rainfall decreased drastically, newly planted crops did not sprout, and bare soil was exposed to relentless winds. With little vegetation to hold it in place, the soil began to move as never before. The Dust Bowl with its black blizzards plagued the Great Plains for nearly a decade. The financial crisis created by the Great Depression coupled with nature's intense drought, made the situation on the Great Plains even worse. By the early 1930's, as many as 70 percent of the homesteaders were delinquent in their taxes. Hundreds of thousands of them were forced to leave. The disaster throughout the Plains received national attention when the dust storms darkened the skies of much of the east, including the nation's capitol. The need to reclaim the land and help people suddenly became apparent.

Where can you get land for $4.40 an acre?

The first source of relief came from the National Industrial Recovery Act of 1933 and the Emergency Relief Appropriations Act of 1935. These Acts allowed the federal government to purchase damaged or abandoned land for an average of $4.40/acre. Destitute families were relocated and the damaged lands restored. These government-purchased lands were called Land Utilization Projects (LU's). The LU program was designed to bring about sound land use by making adjustments that would achieve a balance between rural economic needs and the natural resources. The LU program was first administered by the Resettlement Administration. In 1937, the Bankhead-Jones Farm Tenant Act (BJFTA) gave custody of these lands to the Secretary of Agriculture and authorized more extensive conservation efforts. Administration of the LU projects was transferred to the Soil Conservation Service (SCS) the following year.

The greatest conservation success story in the United States...

From 1933 to 1943, nearly 10 million acres of drought-stricken and wind-eroded lands were purchased by the federal government under the BJFTA and nearly 24,000 families were relocated. During this period, hundreds of thousands of acres were reclaimed, shelterbelts were planted and erosion control devices were installed. Civilian Conservation Corps and Work Project Administration members accomplished many of the improvements. The homesteaders who managed to survive the difficult times also participated in the recovery of the lands by forming grazing associations to administer grazing and develop conservation practices that endure today. By 1945, these lands once again supported soil-stabilizing grasses.

The establishment of the National Grasslands...

In 1954, as part of the reorganization in the Department of Agriculture, a review of the LU Projects was made to determine where they could be best administered. Certain lands most suitable for specialized uses were transferred to the National Park Service and the Fish & Wildlife Service. The LU's in some western states were transferred to the Bureau of Land Management for administration in conjunction with public domain lands. The remaining LU Projects were transferred to the Forest Service. Thirteen of these LU's, primarily in reforested areas in the south, were given National Forest status.

On June 23, 1960, nearly four million acres of LU Projects, primarily located in the Great Plains region, became "national grasslands" to be managed by the Forest Service as part of the National Forest System. Their purpose is to serve as demonstration areas, to show how lands classified as unsuitable for cultivation may be managed for forage, wildlife habitat, prairie woodlands, energy and minerals, water and outdoor recreation to the benefit of both the land and people. The national grasslands were given their colorful names on April 1, 1961.

The national grasslands are the sequel to the hard experience of the "Dust Bowl Era," and exemplify new thinking about natural resource management in grass country. They consist of 24 former LU Projects, where the federal government, the states, and the local people have worked to rebuild on the ruins of drought-stricken and wind-eroded lands. The projects began as parts of USDA's emergency rehabilitation programs in the 1930's. Submarginal farms and depleted rangelands were purchased, the destitute were resettled, and slowly over the years the prairies were restored.

AUTHORITY

The basic authority for managing the national grasslands is Title III of the Bankhead-Jones Farm Tenant Act. Portions of Title III confer on the Secretary of Agriculture broad discretionary authority to develop regulations, delegate authority, and take other actions to carry out the intent of the BJFTA. The Code of Federal Regulations further affirms the BJFTA philosophy that "grassland agriculture" must be done in conjunction with "sound and progressive principles of land conservation and multiple use" and "sustained yield management of the forage, fish, wildlife, timber, water, and recreational resources."

Two laws passed in the 1970's apply to the national grasslands and have major impacts on the management of the national grasslands. The Renewable Resources Planning Act of 1974, and its amending legislation, the National Forest Management Act (NFMA) of 1976, state...

Toadstool Geologic Park, on the Oglala NG in northwest Nebraska is a popular destination for guided tours with a fossil/geology theme

"The 'National Forest System' shall include.....the national grasslands and land utilization projects administered under Title III of the BJFTA....."

These acts required the Multiple-Use Sustained Yield Act of 1960 be applied to the development and administration of renewable resources on National Forest System lands, including the national grasslands. The National Environmental Policy Act, the Endangered Species Act, and the National Historic Preservation Act also apply to national grasslands management.

Recreational Rockhounding is a popular activity on the Buffalo Gap NG

THE FUTURE

Native prairie areas evolved under grazing and natural or human-caused fires. It is certain that forage will continue to be grazed under a permit system on the national grasslands. National grasslands also remain very rich in mineral and oil and gas resources, so it is also likely mineral exploration and development will remain important uses on national grasslands.

Recreational uses of the national grasslands are beginning to increase: hiking, biking, photography, birding, hunting, fishing, rock-hounding. Fossil, prehistoric and historic resources abound and many new cultural sites are being discovered. Our grasslands are rich in fossil bearing formations of the Cretaceous, Jurassic and Cenozoic eras. Remains of marine fossils, dinosaurs, and early mammals can be found on many of them. National grassland managers are implementing the Forest Service's Paleontological Resource Initiative to manage fossil resources for the future. The Initiative includes strategies for inventorying, protecting, conserving, and interpreting our nation's fossil heritage. It includes active research and demonstration projects. Such demonstration sites include Picketwire Canyonlands on the Comanche NG in Colorado and Toadstool Geologic Park on the Oglala NG in Nebraska.

Many of the national grasslands are being managed to protect these important legacy resources and to provide active interpretation and research exploration opportunities to the public. Such sites include the Santa Fe Trail on the Kiowa and Rita Blanca NG's (New Mexico, Oklahoma, Texas) and the Hudson-Meng Bison Bonebed. The Hudson-Meng Bonebed, located on the Oglala National Grassland, contains the largest concentration of bones from an extinct bison species in the western hemisphere associated with human artifacts from the paleoindian period, approximately 10,000 years ago. Plans call for construction in 1997 of a bonebed enclosure over a portion of the bonebed. This construction will protect a large part of this important archeological site and allow it to be available to the public year round. In addition to salvaging bones and human artifacts, scientists excavating the site will be helping to unravel the mysteries surrounding the deaths of up to 1,000 bison in this small prairie draw and discovering the environmental changes that occurred in this prehistoric prairie over the last 10,000 years.

Watchable wildlife opportunities focusing on non-game and neotropical migrants, with year-round viewing are becoming popular while hunting opportunities for deer, antelope, waterfowl, and upland birds still abound. Mountain bikers and hikers are beginning to realize off-season possibilities on generally warmer, snow-free prairie locales.

Most national grasslands are heavily intermingled with private lands so land exchange programs are occurring on several of them. Land exchanges allow the Forest Service to consolidate important areas within the prairie ecosystem such as wetlands, riparian areas, woody draws, and critical habitat areas. They also concentrate public land ownership resulting in benefits to recreational users. There are numerous administrative benefits like reducing landline surveys, increasing access to public lands, reduced signing, etc. The Forest Service can more effectively manage livestock grazing systems within the larger contiguous land blocks to provide for a wider range of multiple uses.

More than 65,000 acres of grasslands on Nebraska National Forest units have been exchanged for a similar number of private land acres. One important by-product of land exchange on the Buffalo Gap NG in South Dakota was the ability to manage prairie dogs more effectively while reducing the impacts of prairie dog colony expansion to private lands. This, in turn, paved the way for the Buffalo Gap NG to have excellent potential to play a part in the national black-footed ferret reintroduction and recovery efforts.

Changing social values for the prairie ecosystem...

Many people living and working on the prairie share a utilitarian concept of land use. In the early round of Forest Plans for the national grasslands (completed in the early 1980's), the major constituency for the grasslands were commodity groups—oil and gas and mining industries, livestock industry, and wildlife sports enthusiasts (antelope, deer, waterfowl, and upland birds.) These groups continue to show active interest in national grasslands' management.

Over the last 10-15 years, desires for managing national grasslands have somewhat changed as a prairie constituency has been developing. The Western Governors' Association Great Plains Partnership has been set up to get states, federal agencies, private landowners, and conservation interests working together in the Great Plains to address community or regional resolutions to natural resource conflicts within the Great Plains and to prevent future ecological "train wrecks" (such as the spotted owl in the Pacific Northwest) from occurring. Many national conservation interests have become involved in prairie issues. While there continues to be an interest in some of the traditional resources and uses of our national grasslands, there is also a growing interest in preserving natural prairie ecosystems in roadless and undeveloped condition including wilderness, wild and scenic rivers, or special interest area

Mountain biking is growing in popularity

designations. We can expect to see more interest and involvement of groups and individuals in conservation of biological diversity on the Great Plains and our national grasslands.

Grassland Management Challenges...

Congressional legislation (the Public Rangelands Management Act) has been proposed to create a separate management structure within the Forest Service to manage the grasslands as entities separate from the National Forests. Interest groups with conflicting values for managing grasslands all have their own views on how best to manage grassland vegetation and resources. Some would like to see livestock grazing as a dominant use. Others would like to see buffalo grazing play a larger role or see the grasslands managed more heavily for wildlife habitat. Some would promote grassland wilderness areas where grazing was prohibited and natural processes allowed to take place.

Some would like to see the national grasslands opened to commercial and non-commercial vertebrate fossil collection while others would like to see fossil resources managed only for education, research and interpretation. Some would like to see the natural role of fire in grassland ecosystems restored to national grasslands. Others are afraid of private and public forage losses if the use of prescribed fire in national grasslands increases. There is also controversy in several other natural resource areas: (1) How increased recreational use will conflict with livestock operations and vice versa; (2) How noxious weeds and exotic plants should be managed on lands within and surrounding national grasslands; (3) If and how predators should be controlled on national grasslands; (4) How aspects of biodiversity should be protected within prairie ecosystems; (5) Should wild and scenic rivers and other special interest areas be designated within national grasslands? As people better understand prairie ecosystems and resources, and the problems we are facing to sustain them, conflicts on use, preservation and protection arise. We are likely to see or hear more about these challenges in the future.

Forest Service Emphasis for the Future...

Current efforts in the national grasslands are aimed at ecosystem assessments and ecosystem level planning to carry out our Forest Service land ethic to "promote the sustainability of ecosystems by ensuring their health, diversity, and productivity." These efforts will guide us in providing sustainable benefits to the American people by protecting ecosystems, restoring deteriorated ecosystems, and providing multiple benefits for people within the capability of ecosystems.

Recognizing that the challenges faced by grassland managers in the Great Plains are quite different than those of their alpine counterparts, the Forest Service has recently formed a Great Plains Ecosystem Research Center in Rapid City, South Dakota. The main focus of the center is to collaborate with universities, state game agencies, Indian tribes, and other federal agencies in providing research information to land managers in the Great Plains. The Great Plains is one of the most changed and impacted ecosystems in the U.S. Promoting the sustainability of grassland ecosystems by ensuring their health, diversity, and productivity is in the best interest of the public who owns these lands and cares about their management.

Public interest and use of the national grasslands has increased dramatically over the last two decades. The NFMA directed the Forest Service to develop land and resource management plans for all National Forest System lands. Most of these plans were completed in the mid-1980's with an extensive public involvement process and they are presently being implemented. The purpose of these plans is to address local, regional, and national issues related to national forest and national grassland management and to define a mix of management activities that will promote the sustained use and protection of natural resources. These plans are needed to address conflicting desires between a variety of national grassland user groups. The national forests and grasslands must be capable of supporting a wide range of natural processes and human activities.

An ecosystem approach to planning...

NFMA requires national forests and grasslands review, and in most cases, rewrite their management plans every 10-15 years. In order to streamline the three- to five-year process, address the Great Plains as an ecosystem, and reduce planning costs, several Forest Service units in the Northern Great Plains are combining efforts to write their plans. The Nebraska and Samuel R. McKelvie National Forests, the Oglala NG, the Thunder Basin NG, the Buffalo Gap, Fort Pierre, and Grand River NG's, and the Little Missouri, Cedar River, and Sheyenne NG's have combined to form a multi-forest planning effort between three forests and two regions of the Forest Service to develop land and resource management plans for the next 10-15 years. This effort will include extensive public involvement. Geographically, these Forest Service administered units encompass nearly three million acres within the Northern Great Plains. We can reduce costs, increase efficiency, improve consistency, and take a more ecological approach to managing grassland units with many ecological similarities. One team will be writing one EIS for this planning effort. The planning team is stationed at the Supervisor's Office of the Nebraska National Forest. Three management plans and records of decision will result in May, 1999.

Mary H. Peterson has been Forest Supervisor of the Nebraska National Forest (headquartered in Chadron) and associated units since January 1992. The units include the Fort Pierre and Buffalo Gap National Grasslands in South Dakota, the Oglala National Grassland, Nebraska and Samuel R. McKelvie National Forests and the Charles E. Bessey Tree Nursery in Nebraska.

She has worked for the Forest Service for 22 years in various positions: forestry technician, forester, silviculturist, district ranger, deputy forest supervisor—on nine national forests and three national grasslands in Idaho, Colorado, South Dakota, Washington, Oregon, Montana, and Nebraska. She is a member of the National Grasslands Council of the USDA Forest Service. Peterson's Bachelor's in Forest Resources is from the University of Minnesota.

Photos by Jerry Schumacher, Public Affairs Specialist, Nebraska/McKelvie NF, Forest Service

The Society for Range Management: The *First* Fifty Years

Jan Duck Wiedemann

A NEW SOCIETY

As early as the 1930's there was avid interest in western rangelands and their management. Several groups and individuals seriously considered organizing a society of range men. Because of the general feeling that there were an insufficient number of range men in the United States to support a strong society, however, none of these efforts bore fruit. It was not until 1946 that such an effort was initiated which was successful.

Several new governmental organizations had been formed under New Deal legislation during the 1930's that were charged with addressing various land use problems on both public and private lands within the western public lands states. These organizations together with the Forest Service, the Bureau of Indian Affairs, and western-state experiment stations, began an inventory of rangelands in the west. As a result of this expanded interest and activity in range surveys, interagency range committees were formed to develop a standard set of inventory procedures.

Meetings were held to plan western-wide range surveys and to discuss matters such as the status of range management as a profession. These meetings became regular occurrences, but were halted in 1941 by World War II. When the war ended and as servicemen returned to their jobs, the need for renewing these meetings was recognized.

The desire to start an organized Society was rekindled in 1946 and 1947. At the first meeting on March 28-30, 1946, 66 range men representing five colleges and several state and federal agencies met in Moscow, Idaho, for an Interagency Range Management Conference. One of the panel discussions in the conference was The Need of a Range Management Organization. Members of the panel appointed an executive committee to inquire further into the type of organization that range men wanted. Members of the panel included Charles A. Fite, Gene F. Payne, Joseph F. Pechanec, Vernon A. Young, and Harold F. Heady as leader.

Joe Pechanec, the Society 's first president, stated (in Vol. 1, No. 1, *Journal of Range Management,* 1948) that there didn't seem to be a place for range men in existing societies in the late 1940's. He wrote that "It was plain that something had to be done," so a few dedicated organizers initiated a membership drive that gave birth to the American Society of Range Management (ASRM). In 1970 this name was changed to Society for Range Management (SRM).

Committee members began contacting other range men about forming a range-oriented organization. By the end of 1947, arrangements were completed for an organizational meeting to be held in Salt Lake City, Utah on January 29-31, 1948. A completed draft of the constitution and bylaws was presented and the Membership Committee began an active membership recruitment campaign.

ORGANIZATION

The Constitution and Bylaws of the Society adopted in 1948 provided a governing Council composed of six councilmen (two of whom were selected each year) and three officers, who were elected annually, consisting of a President, Vice-president, and Treasurer. Beginning in 1982, another office was established, that of Second Vice-president, which automatically succeeds to the presidency in two years.

In 1950 the Board of Directors decided that an Executive Secretary was needed. They abolished the Treasurer position, merged its duties with those of Secretary, and authorized the appointment of the first Executive Secretary, W. T. White, effective January 1, 1952. White was succeeded by John G. Clouston in March 1957 when White became ill. These men served the Society on a part-time basis. As the Society grew and the secretarial duties increased it became evident that a full-time Executive Secretary was needed.

Initially Society headquarters were located in Portland, Oregon where the first executive secretaries, W. T. White and John Clouston, resided. This lasted from March 1952 until July 1968. When Secretary Clouston announced his impending retirement, the need for a permanent location was investigated by the Planning Committee. Upon recommendation to the Board at the Annual Meeting in New Orleans, Denver was selected for the headquarters location, although some Board members advocated locating in Washington, D.C. At a 1967 Summer Meeting the matter was discussed and a motion to locate in Washington was defeated. In 1968 offices were set up at 2120 South Birch Street. Society-owned quarters at 2760 West Fifth Avenue were then occupied until purchase in 1987 of the current SRM Headquarters building located at 1839 York Street, Denver.

With the move from Portland to Denver, the first full-time Executive Secretary appointed was Francis T. Colbert. Subsequent secretaries have been David A. Smith, Lorenz F. Bredemeier (acting), Floyd F. Kinsinger, and Jan Duck (acting), and Peter V. Jackson, III in January 1983. In March 1983, the Board authorized a change in title from Executive Secretary to Executive Vice-president. When Jackson retired in 1992, he was replaced by current Executive Vice-president Charles B. Rumburg.

SOCIETY SECTIONS

According to the Bylaws of the Society, Sections, composed of members, may be established in any locality. A petition for establishment of a Section must be signed by at least 50 members of the Society who reside or work in the area to be included in the proposed Section. Organizationally, most of the sections are patterned after that of the Society.

Local sections were asked to send officer-representatives to be nonvoting observers at business sessions during annual meetings and board meetings. At the 1953 annual meeting, officers and representatives of all 16 sections of the Society organized an unofficial body. This group continued to meet each year during the Annual meeting until 1962 when the Board authorized a Council of Section Officers which would serve in an advisory role to the Board. In 1965 the Council requested a name change to the Advisory Council.

While the Advisory Council cannot commit the Society to any course of action, it has proved helpful in giving the Board support. The Advisory Council meets both separately and jointly with the Board at the annual winter and summer meetings. At the joint meetings, the Council presents its recommendations to the Board which then decides upon the disposition of those recommendations.

The Wyoming Section was the first to be organized and approved in December 1948. Colorado, Utah, Texas, and Pacific Northwest organized and were added in 1949 and seven more in 1950. Most sections hold at least two meetings per year, usually an indoor technical-paper type program and one or more meetings which usually involve field tours. Section educational programs are directed toward youth and most award one or more scholarships annually. Several assist in planning and conducting annual range, conservation, or natural resource camps for youth.

International sections in other continents were encouraged for a time, until it became apparent that the Society could offer few services, other than the journals. The Society started helping overseas countries to form their own range management societies.

SRM MEMBERSHIP

Membership in the Society is open to anyone engaged in or interested in any aspect of the study, management, or use of rangelands. From the beginning, membership requirements have been broad. Little more than an expressed interest or participation in any of the various aspects of range management is accepted as qualifying a person for membership.

Charter members include those who had paid their 1947 and 1948 dues by July 1, 1948. Two women were included in the original membership list of 487. Susie Abe was representing the Washington State College Library and Dr. Ada Hayden, was a botanist at Iowa State College. Dr. Hayden was actively affiliated with the Society until her death in August, 1950.

From the start the largest number of members were employed by the Federal government in some nine agencies. Ranchers, livestock associations and students were also among the first group of members. Numbers showed a steady increase in academically trained and technically oriented members. Throughout the years there have been continued efforts to recruit and retain rancher members.

There are several membership categories and the dues are determined by the section the member wishes to join. Through the years membership classification has changed with the inclusion of commercial and institutional membership. There are special dues for student, family and apprentice members.

MEETINGS

The first annual meeting of the Society was held on January 29-31, 1948, in Salt Lake City, Utah. Annual meetings for the general membership have been held during the winter since the organizational meeting in 1948 and were usually near the center of the western range states. A commemorative postage stamp was issued at the annual meeting on February 2, 1961 in Salt Lake City. Release of the stamp was at the urging of the Society to demonstrate a positive step in putting range conservation before the general public.

In 1972 the Board of Directors adopted a new meeting rotation schedule among the five regions. Host cities are selected five years and three years in advance for the winter and summer meetings. The host section is responsible for all meeting arrangements with assistance from the Denver office.

In February 1997, the Golden Anniversary of the Society for Range Management was celebrated in Rapid City, South Dakota. Educational presentations included workshops, symposiums, technical session papers and posters. A bonanza silent auction was held, the first ever International mixer, and a great musical/comedy show followed the gala banquet. Charter members of SRM who were able to attend were awarded gold 50-year pins by the Endowment Fund, Board of Governors at the President's Reception. A Parade of 50 Presidents Gallery was part of the meeting's historical photo display.

PUBLIC AFFAIRS

The Society sought ways to properly and effectively participate in the public arena. Two important issues had to be addressed. First was to ensure that any positions taken by the Society reflected the values held by its members. Second was to find ways the values embraced by the membership could be effectively communicated to other individuals, agencies, and organizations. In 1950 a Resolutions Committee was formed and

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charged to draw up a set of resolutions voicing Society sentiments with respect to range improvement activities, programs, and cooperation. In time, a statement of concepts and positions of the Society was published in the booklet, Benchmarks.

Contained in this booklet were topics covering Rangeland and Range Resources, Education, Rangeland Inventories, Livestock, Wildlife and Water. In 1984 the term Benchmarks was dropped and the title changed to Policy and Positions Statements of the Society for Range Management. Policy Statement has been defined as a carefully derived statement of principle to guide decisions and actions of the Society for Range Management, and Position Statement as "an unequivocal statement of posture or attitude in regard to a specific issue within the parameters of a policy statement of the Society." Also, a Resolution is a "formal expression of opinion . . . , which requests and encourages action upon some matter judged by the Society to be within its purview."

Either individuals or sections may make proposals for new policy and these must be brought to the Board. Final authority for developing policy statements is reserved to the Society. Sections may formulate position statements or resolutions that apply specifically to their geographical area. These actions must be consistent with Society policy and must be filed with the Executive Vice-President.

YOUTH PROGRAMS

The first action within the Society to educate youth to an awareness of range management was taken by the Pacific Northwest Section in 1950. Plans were announced for developing a plant identification contest. The first high school youth camp was sponsored by the Pacific Northwest Section in 1951.

By 1968 there were at least five section-sponsored youth camps and these camps are still held during the summer in many sections. Several youth camps held in 1996 include the Colorado Section when they hosted their camp in Divide with 47 high school students participating. The Kansas Range Youth Camp was held in July and attended by 219 students, and the Nebraska Range Youth Camp, their 33rd annual, had 47 high school students. The Northern Great Plains section hosted a Range Youth Camp and so did the Nevada Section with 23 high school students.

The high school Range Forum is a program of contests and awards given to participants in Range Camps, Range Judging Contests, or to outstanding 4-H and FFA range projects. Top winners are sponsored by the sections to attend at a forum during annual meetings. A major goal of this forum is to recognize youth for outstanding accomplishments in range activities. Students participate in a plant judging contest and present student papers.

The Texas Section of the SRM

A Sample of Highlights and Women's Contributions

Currently there are 20 sections within the Society and the Texas Section is one of the largest with more than 500 members. Organized in 1950, Harold F. Heady was elected as the first chairman. By 1954 there were 159 members and the section published their first newsletter. The first Youth Range Camp was held in Junction, Texas in August 1955 with A. H. Fred Walker and R. Q. Jake Landers, Jr. as camp directors; 14 boys attended. In 1958, the Texas Section recognized V. A. Young, Head of the Range and Forestry Department, Texas A & M, for his "Outstanding Contribution to Range Management." Through the years the section's highest award has been given to ranchers, agency personnel, researchers and teachers.

Two Texas Section women have been recipients of the Outstanding Young Range Professional Award. Melony C. Sikes, who was Soil Conservation Service Range Conservationist, from Hondo, was presented the Outstanding Young Range Professional Award during the 1995 Annual Meeting. Sikes was active on numerous Texas Section committees and served as editor of the section newsletter *Grassroots*. In 1996, Dr. Karen Launchbaugh, Lubbock, received the same award during the 1996 SRM Annual Meeting in Wichita, Kansas. Launchbaugh was an assistant professor at Texas Tech University for more than three years, where she taught range management courses and was a coach for the range plant identification team. She has recently moved to the University of Idaho where she is an assistant professor.

Another Texas section member Colleen Schreiber, Ag Editor for the *West Texas Livestock Weekly*, San Angelo, currently serves as a director on the Board.

During the 1995 SRM Annual Meeting, in Phoenix, Texas section member Jenny Pluhar was presented the Fellow Award which is bestowed upon members in recognition of exceptional service to the Society and its programs. Pluhar, a range consultant, lives with her family in Canyon, Texas was the first woman member of the Texas Section Board of Directors and she currently serves as secretary. She also serves on the editorial board for the SRM publication *Rangelands*. An active society member for 16 years, she has served on numerous society and section committees as a member and chairperson: with youth as a director at the Texas Section Youth Range Workshop, and the Society's Student Affairs Committee. Under her direction and leadership, the SRM Masonic Scholarship was initiated and continues to grow in prestige. The student-professional interaction, *Tapping the Top*, was her brainchild and is a program that matches students with professionals in their field of interests. Pluhar's work with the High School Youth Forum, Plant Identification and Undergraduate Range Management Exams, and awards given by various federal agencies to winners in these events, are all examples of her other efforts. She is a volunteer 4-H leader and plant team coach. She coauthored the book entitled *Texas Range Plants*, which was written to assist 4-H, FFA, and others with identification of range plants economically important to Texas rangelands.

Jan Wiedemann, Texas Section Archivist

RECOGNITION AND AWARDS

The Honor Awards Program of the Society recognizes members and nonmembers who have made notable contributions to the science and art of range resource management. The Frederic G. Renner is the highest award given. This award was established by the second president of the Society, Frederic G. Renner, when he provided an endowment of $10,000 for this purpose.

Along with the Renner Award, which is presented during the Annual Meeting, the W. R. Chapline Research Award, W. R. Chapline Land Stewardship Award, Outstanding Achievement Award, and Fellow Award are also presented. Other special awards are given, including student level awards which are presented to winners of the range plant identification contest, undergraduate range management exam, student display contest, undergraduate public speaking contest and the graduate student paper contest.

PUBLICATIONS

The *Journal of Range Management* appeared in October 1948, and is a forum for articles, technical and management notes, viewpoints, and book reviews. The Society's

1993 Youth Range Workshop Participants in Junction, Texas.
Photo by B. Rector

second publication began in 1969 as *Rangeman's News* for publishing range news, Society business, and related topics. In 1978 the new name *Rangelands* was approved by the board. From time to time since 1964, the Society has published books and pamphlets on range subjects. The Society has assisted in preparation of material published by other organizations through joint sponsorship of symposia and publication of resulting proceedings.

The Society published two books in 1996. *Rangeland Wildlife* and *Grazinglands Hydrology Issues: Perspectives for the 21st Century*. The Society has completed an agreement with the Soil and Water Conservation Society to develop and publish a comic book for rangelands for 4th, 5th, and 6th grade students. The first Membership Directory was published in 1996 and will become an annual publication.

PROFESSIONAL STANDARDS

Strict educational and training requirements for membership in the Society were rejected at the Society's founding in favor of a generous membership policy which required little more than an expressed interest in the objectives and aims of the Society. Attention needed to be given to the establishment of standards for colleges and universities to judge their competence to train students in the discipline and requirements for certification of range consultants. The formation of codes of conduct for Society members was addressed: the Standards of Conduct for SRM Members Providing Public Service, and a 10-point Code of Ethics was approved.

Accrediting range departments at colleges and universities offering range management instruction is under the Accreditation Committee. This committee provides an in-depth review of the range department as well as its parent institution and closely associated departments. Currently there are at least 10 accredited universities.

Range Management Consultants are certified by the Society as competent professionals. In the late 1970's the Professional Affairs Committee began developing criteria for a certification program for rangeland consultants as a step toward improving the profession and safeguarding both the public and the environment. In April 1996 there were 57 certified consultants.

FINANCES

As early as 1948 a Finance Committee was formed and the early years of the Society were ones of financial soundness and simplicity. Newly appointed Executive Secretary, W. T. White, in 1952 applied for Federal tax exemption and approval was granted within the year. Executive Secretary Francis T. Colbert discovered the wrong tax-exempt classification prevented the Society receiving foundation support. After following completion of certain legal and procedural formalities, the Internal Revenue Service granted a Section 501 (c) 3 classification under the revenue code which granted tax-exemption to the Society beginning January 1, 1971. In 1982 the Finance Committee chaired by John R. Hunter, recommended that the Society institute an endowment fund. Members voted approval for a change in the Bylaws for formally establishing the SRM Endowment Fund and empowering the Board of Directors to "establish and maintain trust, memorial, scholarship or other types of fiduciary funds . . . " Currently the Endowment Fund has a balance of more than $200,000 and is used for special projects. At the direction of the Endowment Fund Board of Governors a portion of the interest earned in the fund will be used for special projects. In 1996 the Board approved publication of a book and agreed to finance an annual award for membership growth.

Through the years, SRM has experienced financial difficulties and has had to look closely at their operation. In 1980 the Society found itself in financial difficulty, and when this predicament was conveyed to the membership at the 1980 Annual Meeting in San Diego, the membership responded by initiating a program for soliciting donations to alleviate the immediate situation pending further actions. Belt tightening and other more permanent measures were taken.

MY DENVER EXPERIENCE WITH SRM

In May 1981, I began working in the Society headquarters as the Administrative Assistant. On December 31, Executive Secretary Floyd Kinsinger resigned when he accepted a position with Utah State University. During a January 1982 board meeting I was asked if I would be the Acting Executive Secretary for the Society. I asked, "For how long?" and the Board said no more than six months. President John Merrill and President Elect Jack Bohning both agreed to give their full support and so did each Director. Since I did not have a natural resource or agricultural background (except four years working in the Agronomy Department at Oklahoma State University with Range Science professors and students) my range management knowledge was limited. Limited or not I took the challenge.

My first major task was to prepare for the 1982 Annual Meeting in Calgary, Alberta, Canada. The financial statement was ready, certificates, and awards were prepared and the Board had their agenda. Pat Smith, Publications Editor, and I left Denver with the temperature -14 degrees and we were greeted in Calgary with temps

Wiedemann on a Range tour of New South Wales, Australia

of -25 degrees—and by warm and friendly Canadians. President John Merrill had a spectacular banquet planned, complete with a Canadian Mounted Police escort for members of the head table.

During the meeting in Calgary, Jack Bohning took the reigns as President. He and his wife Arline made frequent trips to Denver that year from their home in Prescott, Arizona and we would meet about once a month to go over Society business. Jack was extremely supportive and he was an able leader as President of the Society.

The Arizona Section hosted the 1982 summer meeting in Flagstaff. During that meeting several candidates for Executive Secretary were interviewed, but the Board did not feel they had their man. Thus, I continued on for another seven months.

While serving as Executive Secretary, I was able to attend several section annual meetings. It was always a pleasure to be a part of their meetings and represent the Society. These sections were so diversified, not only in how they conducted their meetings, but in their respective locations. I remember the South Dakota meeting held in the famous Wall Drug Store in Wall, and the freezing rain storm out of Rapid City the next day. The warm, humid weather in Long Beach, Mississippi where the Southern Section held their December meeting, and the Wyoming Section meeting when it snowed and my flight out of Laramie back to Denver was canceled. Meetings and locations may be different in the sections, yet they all have the same goals and purpose to recruit and maintain members, inform and educate our Society on the appropriate use and care of rangelands.

During 1981-1982, Society membership was 5,310, the annual budget was $460,000. We didn't lose ground and didn't gain much ground, but I always said my job was to hold us together and that is exactly what I did. Sometimes it was easier holding the Society together than our headquarters building at 2760 West Fifth Avenue. We replaced an air conditioner compressor, survived a major water leak, numerous roof leaks, and a small fire in an outside fuse box. At that time we had a renter in the west half of the building and of course the Society was responsible for maintenance.

The Trail Boss

THE ROLE OF WOMEN

In 1987 Marilyn J. Samuel, was elected as the society's first woman director. Succeeding directors have been Barbara Allen-Diaz, Linda H. Hardesty, Meg B. Smith and Angela S. Williams. Meg Smith, rancher from Glen, Montana, is currently serving her second year on the board. In her nomination for a director statement, Meg credits the SRM for playing a positive role in her life, from the High School Youth Forum and College Plant Identification Team days, to the present. As a rancher and range manager, Meg has relied on the organization and its publications to provide her with information and research.

Newly elected board member, Angela Williams, is with the Natural Resources Conservation Service, in Oklahoma. She states that, "the Society has been my nucleus for professional development and alliance, while I have always believed in the mission and abilities of this Society." Angela feels the diversity of the general membership within the Society is a great asset. Society President John C. Buckhouse, who is Professor, Department of Rangeland Resources, Oregon State University, commented on how women contributed to the Society: "Women have a long and valued history in SRM. Many sections have or have had female presidents. In the current cohort, 25 percent of those asked to assume committee roles are women. The stance of the board of directors is that SRM is a society of persons interested in the well being of rangeland and in the professional development of the people who are interested in these rangelands."

Currently, the Society has 4,400 members. Of the 443 female members who supplied demographic information, 85 percent live in the 18 western states, plus a few in Brazil, Argentina, Mexico, Canada, Iceland, Denmark, England and Australia.

The majority of the female members work for federal agencies with more than 100 reporting they were range conservationists. There were 21 women ranchers, 16 ecologists, two botanists, and one nurse practitioner. Occupations ranged from a research professor, range technicians, biologist, manager of an association, a reclamation specialist, a geothermal coordinator, to a 4-H agent. Members represent a diverse group of women working toward the goal and objective of taking care of our rangeland resources.

SOCIETY EMBLEM AND MOTTO

I have always been intrigued by the Society emblem, "The Trail Boss," and how it became the official emblem and motto of the Society. In the 1949 Annual Report to the Society, the Secretary suggested a need for an emblem and motto. When Frederic Renner received a typewritten copy of the program for the 1950 Annual Meeting for printing, he responded. Renner attached a photograph of Charles M. Russell's drawing of "The Trail Boss" to the program instructing the printer to reproduce it in the center of the printed program cover. The 1950 program with the The Trail Boss drew favorable attention and permission was obtained from Renner to use it as the Society emblem. The Trail Boss was registered in the office of the Commissioner of Patents as the official trademark of the American Society of Range Management. Renner, who was an authority on Russell's life and work, felt the drawing expressed qualities which were particularly appropriate to the newly formed Society. Importance of strong leadership, the necessity of all hands working together, and a willingness to travel uncharted trails.

Jan (Duck) Wiedemann has been a member of the Society for Range Management since 1977, has served as Administrative Assistant in the Denver headquarters office, and was Executive Secretary (Acting) 1982-1983. She has been Archivist for the Texas Section since 1988, serves on the SRM History, Archives, and Library Committee and is currently on the Rangelands *Editorial Board. Wiedemann lives in Vernon, Texas and is currently assisting in writing a 25-year history of the Vernon Regional Junior College. Her B. S. in Secondary Education is from Oklahoma State University.*

Do Different Breeds of Livestock Have Different Dietary Preferences?

Karen L. Launchbaugh, Charles A. Taylor, and Scott D. Hohensee

Livestock managers have selected animals for desired characteristics and culled undesirable animals since the beginnings of livestock husbandry. Early selections gave us breeds of animals specifically designed to produce milk, meat, wool, or hair. Different breeds have resulted from selection of production characteristics, behavior, color, size, and resistance to disease, pests, or environmental extremes (Boice, 1973). However, animals have rarely, if ever, been selected for their diet characteristics.

We reasoned that if breeds look different outside, they might also look different inside with respect to digestive characteristics. Furthermore, if breeds differ in their digestive characteristics they may also differ in their diet preferences. Indeed, research on cattle (Herbel and Nelson, 1966; Winder et al., 1996), sheep (Warren et al., 1984), and goats (Warren et al., 1984; Pritz et al., 1997) has revealed that breeds differ in the plants they consume.

Many range improvement practices are aimed at changing existing range vegetation communities into ones that more closely meet the dietary needs or preferences of livestock. Brush management, for example, is designed to convert shrublands to grasslands which are more useful for livestock grazing. Reseeding or interseeding native range to increase forage quality for livestock or wildlife is another common practice. Understanding the dietary habits of different breeds might help livestock managers to select the animal to match the range, rather than changing the range to match the animal.

Another implication of selective grazing by livestock is range plant community changes. For example, the increased abundance of woody plants in western North America is often attributed to the preferences of livestock for grasses and avoidance of woody plants (Archer and Smeins, 1991). Thus, understanding how breeds differ in their diet habits could have profound ecological implications. The detrimental effects of livestock grazing could, perhaps, be alleviated by selecting appropriate breeds of livestock.

In the last century, several species of juniper (*Juniperus spp.*) have increased in dominance on millions of hectares in western North America (West, 1991). Juniper invasion is of concern to rangeland managers because increased juniper density or cover can reduce herbaceous forage production (Dye et al., 1995) and watershed value of land (Thurow and Hester, 1997). However, the control of juniper by mechanical and chemical means is often economically infeasible and can have negative ecological impacts.

In several areas of Mexico and southwestern United States, biological control of juniper is sometimes accomplished with goats grazed at high stocking rates. We hypothesized that the bio-control of juniper could be accomplished at lower stocking rates if a breed of goats could be identified or selected for its juniper preference. Furthermore, if breeds of goats capable of eating large quantities of juniper could be identified, livestock production in juniper-dominated rangelands could become more ecologically sustainable because diet preferences would more closely match forage availability. To test our hypothesis, we examined the amount of juniper that goats of different breeds would willingly consume.

Spanish Versus Angora Goats

Our research was conducted in central Texas where Angora goats are the most common breed produced for their harvest of high quality hair (mohair). Spanish goats, common throughout Texas and the Southwestern Unites States, are produced for their meat and in some instances, cashmere. Research conducted at the Texas A&M University Agricultural Experiment Station south of Sonora, Texas, has shown conclusively that Spanish goats will eat more juniper than Angoras. Riddle et al. (1996) examined the consumption of ashe juniper (*Juniperus ashei*) and redberry juniper (*Juniperus pinchotii*) and found that Spanish goats ate more juniper than Angora goats in every season except winter. Pritz et al. (1997) similarly concluded that Spanish goats naive to juniper will consume more juniper, on average, than naive Angora goats when given nothing else to eat (Fig. 1).

It is difficult to explain why Spanish goats generally eat more juniper than Angora goats. The answer may lie in the fact that Angora goats were bred and selected for their production of hair whereas Spanish goats have been selected primarily for meat production. Hair production is a more energy- and nutrient-demanding activity than meat production. Therefore, goats selected for high mohair production may be physiologically different than those selected for meat. These physiological differences could lead to differences in diet selection.

Spanish versus Ibex Goats

With this logic, we hypothesized that a breed of goat that had received less selective pressure might consume even larger amounts of juniper than Spanish goats. To test our hypothesis we examined juniper consumption by Ibex goats. The term "Ibex" refers to several breeds of wild goats native to Eurasia. These wild goat breeds gave rise to domestic goats. Ibexes were imported into North America by zoos and game ranches where they were coveted for their long recurved horns.

METHODS

Eight Spanish and 8 Ibex goats were raised from birth in pens with no access to juniper. The goats referred to as Ibex goats in this research were cross-bred goats with 3/8 Ibex, 3/8 Spanish, and 1/4 Angora genetic origin. The goats were weaned at 4-5 months of age and the experiment commenced 3 weeks after weaning. Goats were individually penned and offered ad libitum access to a 19% crude protein pelleted feed for 3 days before the trial.

Two 5-day trials were conducted in which goats were offered redberry juniper leaves from 8:00 a.m. to 12:00 noon. The leaves were stripped from branches before the trial and stored in a freezer. Juniper consumption was measured each day with adjustments made for moisture loss. Sub-samples of juniper were oven dried so that consumption could be expressed on a dry matter basis. Goats received no additional feed during the 5-day trial. At completion of the first 5-day trial, goats were again offered a pelleted feed ad libitum for 9 days.

Fig. 1. Intake of redberry juniper (expressed as g. fresh juniper per kg body weight) by Spanish (n=24) and Angora (n=24) goats naive to juniper during a 5-day acceptance trial (from Pritz et al., 1997).

Fig. 2. Redberry juniper consumption (expressed as g. of dry juniper per kg body weight) by Spanish (n=8) and Ibex (n=8) goats naive to juniper.

Fig. 3. Redberry juniper consumption (expressed as g. of dry juniper per kg body weight) by Spanish and Ibex goats during the second of two 5-day trials.

Then, another 5-day juniper consumption trial was conducted. In the second trial, juniper was presented as before, however goats were supplemented with the pelleted feed (2% of body weight) in the afternoon to meet maintenance requirements. The effects of breed (Spanish or Ibex), day of trial (1-5), and trial (1 or 2) were compared statistically with a repeated measures analysis of variance (Hicks, 1982).

RESULTS

Breeds did not differ in juniper consumption in the first trial when compared over all 5 days (P=.93; Fig. 2). However, Spanish goats ate more (P<.05) juniper than Ibex goats on the first day and then radically decreased juniper intake for the final 4 days of the trial. When day 1 was removed from the statistical analysis, Ibex goats ate marginally more (P=.10) juniper than Spanish goats.

The greater juniper consumption by Spanish goats on day 1 may have partially resulted from the tame nature of the Spanish goats in this trial. The Spanish goats appeared to adjust well to the experimental pens and were rarely alarmed or agitated when researchers approached the pens for feeding. The Ibex goats, on the other hand, were obviously uncomfortable when researchers approached the pens. The docility of the Spanish goats may have made them more likely to consume juniper on the first trial day. The Ibexes may have been more wary of the food offered. As the Ibex goats adjusted to the experimental protocol, they readily accepted juniper and were less affected by the human observers.

The lower consumption of juniper by Spanish goats on days 2-4 may be explained by an aversion to juniper resulting from the large amount consumed on the first day of the trial. When herbivores become ill after ingesting a plant they form a dislike for the plant called a conditioned flavor aversion (Launchbaugh, 1996). The more ill an animal gets the stronger the aversion (Launchbaugh and Provenza, 1994).

The essential oils in juniper are know to cause illness and create conditioned aversions (Pritz et al., 1997). Because Spanish goats ate more juniper than Ibex goats on day 1, they may have become ill and formed a dislike for juniper whereas Ibex goats were apparently not averted to juniper.

In the second 5-day trial, Ibex goats ate consistently more juniper than Spanish goats (P=0.04; Fig. 3). Both breeds ate more juniper in the second trial, when they were fed a supplemental ration, than in the first trial, when only juniper was offered (P<0.05).

It is apparent from this result that hunger is not a sufficient motivation to increase juniper consumption by goats. Supplementation of vitamins, minerals, protein and carbohydrates often enhance an herbivore's ability to detoxify or tolerate phytotoxins, like essential oils (Launchbaugh, 1996). Thus, the supplemental ration offered in the second trial probably gave goats a greater ability to eat juniper.

SUMMARY

Do different breeds of goats express different diet habits? In our examination of juniper consumption by goats, the answer is "yes." Angora goats generally ate less juniper than Spanish goats which ate less than Ibex goats when offered only juniper to eat. Ibex and Spanish goats therefore hold promise for the management of juniper-dominated rangeland. It has long been recognized that the selection of the proper species of livestock is important in the careful management of rangelands. However, based on these results, savvy range managers may also need to select the correct breed of livestock. Very little research has focused on differences between breeds or the inheritance of diet selection characteristics. If large differences in diet selection exist among breeds of livestock, selection of the breed most suited to the vegetation complex may represent a low cost, sustainable mechanism for altering range utilization (Winder et al., 1996).

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Karen Launchbaugh (right) started her academic career at Texas Tech University and recently moved to the University of Idaho to continue teaching and researching range management as an Assistant Professor. Launchbaugh's interest in range science started in high school through her participation in range camps and range judging activites in North Dakota. All of her academic degrees were received in range management or range science (B.S., North Dakota State University; M.S.,Texas A& M University; Ph.D.,Utah State University). Karen main research interests are range animal nutrition and behavior.

Charles Taylor is currently the director of the Texas A&M Agricultural Experiment Station at Sonora, Texas. Taylor has researched sheep and goat management issues in Texas for more than 25 years and has directed more than 25 graduate students in their research. He received his B.S., M.S. and Ph.D. in range science at Texas A&M University.

Scott Hohensee grew up in central Texas and received his B.S. in Range and Wildlife Management at Angelo State University. He is currently a M.S. degree candidate in Wildlife Management at Texas Tech University.

INTERVIEW

BERTHA GILLAM

AN INTERVIEW BY DAINA DRAVNIEKS APPLE

WiNR: I'd like to ask a very basic question. What is range management? In the past, it's been understood to mean grazing and livestock management.

Gillam: Managing the use of rangeland forage by domestic livestock is just one aspect of rangeland management. It's often erroneously perceived to be all that we do. Rangelands are the *resource*, and grazing is a *land use*. Rangelands are wonderfully varied: they provide clean water, recreation, energy and minerals, as well as providing habitat for diverse plant and animal species, and forage for livestock and wildlife. The ecological processes and the natural beauty and open spaces of rangelands provide for diversity and esthetics, and ecosystem integrity.

WiNR: How much rangeland is there?

Gillam: Rangelands constitute a substantial part of the world we all live in—more than 40 percent of the earth's total land area. There are 770 million acres in the United States, comprised of both public and private land. The bulk of the federally owned rangelands are managed by the Bureau of Land Management (BLM) and the Forest Service. The Forest Service manages more than 97 million acres in 33 states, and the BLM manages 170 million acres. In addition, we also have acreage outside of the grazing "allotments" (designated areas of use for livestock) that have range management objectives. More than 98 percent of livestock grazing occurs in the western part of the country; most of the Forest Service's permitted grazing is in 16 western states with only 1.1 percent occurring in the eastern forests.

WiNR: Is the Forest Service the only agency that manages national grasslands? How many acres are we talking about?

Gillam: We're the only one and we manage 3.85 million acres on 20 national grasslands.

WiNR: Where are they located? What's their history?

Gillam: Eastward from the Rocky Mountains lies the Great Plains. To the west are broad intermountain rangelands, the Great Basin. The 20 national grasslands are located within these regions of 12 states: 17 are found on the Great Plains, while three are further west in the Great Basin lands of California, Oregon and Idaho. After seeing a forested or mountainous area, you might think there is really nothing there but flat land and grass. But after you're there a while, you really appreciate it. Ranchers and farmers settled the plains and the Great Basin. The settlers discovered that the grasslands were productive in wet years, but subject to serious drought and bitter winters. The government acquired them in the 1930s when severe drought, coupled with the Great Depression proved too much for the submarginal farming operations. The government purchased the lands, resettled destitute families, revegetated, and stabilized soil erosion—an outstanding success story. I remember walking over fence lines. The sand had piled up so high it covered the fences, but you could still see just the tops of the posts as you walked over the land. Many remnants of the old homesteads are still there. The lands should stay in natural vegetation; they were really marginal lands for farming. Livestock grazing is an important part of the economic stability of many small rural communities.

WiNR: Why do grasslands have special emphases? How does the Forest Service treat them?

Gillam: There is this growing public recognition of the crucial role of the national grasslands for maintaining the biological diversity within the Great Plains prairie ecosystems. The Forest Service recently established a National Grasslands Council as a result of finishing a review of the national grasslands and talking to about 300 people who had an interest in their management. Some work is underway. We are beginning to recover ferrets and are working to maintain our prairie dog communities. Many of the birds are ground nesters, so we have to maintain cattle or wildlife grazing at a certain level to protect their habitat. And we

need to pay attention to recreation values: bird watching tours, driving or walking tours, photography, viewing prairie dogs. They are rich with minerals, and oil and gas resources. People hike on the grasslands and enjoy the scenery. Many of the grasslands are rich with fossils, prehistoric and historic resources, and many cultural sites are being discovered.

WiNR: Range management continues to be one of the program areas in the Forest Service that seems to generate a lot of controversy. How do you envision the Forest Service dealing with public feelings and attitudes about grazing and other rangeland issues?

Gillam: Collaborating with citizens, the owners of public lands, is a continuous process. I believe part of our role is to involve people and increase people's understanding and awareness of the multiple uses provided by the rangelands. Permitted livestock grazing is an important tool and land use that we use to alter rangeland vegetation to achieve specific objectives. We must demonstrate on the ground that management can bring all rangelands into satisfactory condition.

WiNR: Why do some segments of the public see grazing cattle as a real problem?

Gillam: There are several reasons. Public perceptions have evolved over time, and some favor using rangelands more for other uses such as recreation. Some members of the public believe the grazing fee constitutes a subsidy. I think some people don't want to see cows out there, and it's always going to be an issue. But it is a legitimate, multiple use and a permitted use. We just have to be sensitive to people's needs and ensure that grazing is done in an environmentally sensitive manner.

WiNR: You said earlier, "Grazing is a vegetation management tool?" Explain.

Gillam: Yes. Livestock grazing is both a land use and a management tool that can be used to alter rangeland vegetation to achieve specific objectives. In some areas, livestock grazing has been most effective in removing noxious weeds and stimulating natural vegetation. For example, large blackberry plants which had invaded the Appalachian trail that crosses the "Balds" in North Carolina, were grazed by domestic goats and a breed of cattle; they helped restore that ecosystem to its native vegetation.

WiNR: Your title is Director of Range Management. Where are you in the hierarchy and how many people work for you? What are your responsibilities?

Gillam: I report through the Associate Deputy Chief to the Deputy Chief for the National Forest System. There are 16 people assigned to the National Headquarters Range Staff. Ten are physically located in Washington DC and includes a professional staff of five rangeland resource specialists and two rangeland ecologists. A technical support group of three rangeland specialists are located in Fort Collins, Colorado. Three members of the Interagency Forest Service/ Bureau of Land Management/Natural Resources Conservation Service Riparian Service Team are located in Prineville, Oregon.

My role is to provide national direction and leadership and to bring about needed changes. I have responsibility to implement an ecosystem approach to rangeland management and stewardship. I am the "visionary" with a strategy for carrying out the agency's goals and objectives, as well as those of USDA in Natural Resources and Environment's mission area. We certainly have some of the biggest challenges in the Forest Service occurring in range management. We've just discussed the debate over grazing of domestic livestock which will continue to increase perhaps. I am currently focusing on an improved rangelands inventory and monitoring system essential for information needed to improve rangeland condition. I will continue to emphasize the management and protection of rangelands, particularly riparian ecosystems. We have to develop very specific goals and objectives to demonstrate how we are going to be successful in implementing a program of work and of being held accountable for achieving results on the ground. The vision statement the Range staff uses is: "sustainable healthy rangeland ecosystems that meet the needs of society."

WiNR: How will you go about doing it?

Gillam: We can no longer look at each discipline or program area, separately. We must bring all the disciplines together to solve the complex problems and resource issues: range resources with wildlife and fisheries' needs—especially endangered and threatened species; restoring native vegetation; riparian integrity. To get to the place where we can manage them from an ecosystem perspective, our work has to be based on a partnership approach, and there has to be a strong emphasis on professionalism. Throughout my career, I've focused on quality land stewardship, quality resource management on the ground by skilled professionals, and I've provided conservation leadership.

WiNR: You mentioned partnerships. What do you mean specifically?

Gillam: Over the years several different kinds of partnerships developed. One of the most successful has been the Seeking Common Ground partnership, which involves demonstration projects to manage big game and livestock interactions and common habitats. We know that the competition for food

Bertha Gillam is Director, Range Management, Washington Office of the Forest Service.

and space between wild ungulates and domestic livestock will continue to be a major point of controversy on western rangelands. This partnership is with the wildlife community, state farm bureaus, with the Rocky Mountain Elk Foundation, state game and fish departments, and others.

WiNR: There now is considerable interest in the effects of noxious weeds. Weeds are generally thought of as a "range" problem. Why the heightened public interest now?

Gillam: Invasive plant and animal species are now viewed as the biggest threat to the biological diversity (ecological stability) of ecosystems. Noxious and invasive plant species are taking over native plant habitat. And it is a huge economic problem. Leafy spurge, for example, has engulfed all the rangelands in some areas, causing serious economic impact on livestock producers. We do have now some biological control for leafy spurge, so that shows promise. Livestock producers are not the only ones who are nervous about this weed spreading development: our natural areas, including parks, preserves, wilderness areas, wildlife refuges, and urban green spaces are all adversely impacted.

WiNR: Your role and that of your staff has expanded considerably to include federal interagency responsibilities for noxious weed and invasive species control. Can you tell us more about the programs?

Gillam: I chair the USDA Weed Coordinating Committee, and the committee recently developed a noxious weed strategy involving seven different agencies in USDA. We have an 18-month implementation plan and are reporting the progress on that every six months to Deputy Secretary Rominger. We also have a national commitment, called Pulling Together Partnership, which has come about through the work of the Federal Interagency Committee for Noxious and Exotic Weeds. That committee is made up of 15 different agencies in five different U.S. departments working to coordinate how we are going to manage this aspect of a very serious problem.

WiNR: Give us an economic and landscape idea of the scope of this problem.

Gillam: It's believed that invasive and noxious plants have infested over 100 million acres and the area affected increases by eight to 20 percent annually. Invasive weeds are estimated to infest 17 million acres of Federal rangelands in the west and are expanding at a rate of 4,600 acres per day. You can see from that that there is considerable concern about what that would mean for our environment and food and fiber production. I want to emphasize again that weeds are not devastating only for the grazing sector: in wildlife refuges, for example, habitat loss of native vegetation has contributed to the loss of wildlife species that depend on native vegetation.

On the island of Hawaii, we have seen quite a dramatic displacement of native species. Hawaii has the greatest concentration of threatened and endangered species. So for a place like Hawaii, which depends on tourists who go there to see vegetation and wildlife, they are especially concerned. We recently went to Hawaii with Deputy Secretary Rominger to see the problem first hand and to see what USDA could do to work cooperatively with them to develop solutions. We looked at some work that the Animal and Plant Inspection Service does to stop non-native species from being taken into Hawaii. They inspect with beagles at airports, searching for all kinds of materials that might be brought into the state. Over the past two years, as a direct result of USDA programs, 2000-plus different varieties of species were intercepted.

It's encouraging to see them plant some of the native vegetation back—for example, the acacia koa tree—to provide habitat for endangered bird species. There is an area of *myconia* plant on the Big Island; they have an opportunity to eradicate that. They also have a concern about the brown tree snake, which has wiped out nine of eleven of the native bird species on the island of Guam. The effort now should be to continue to prevent other non-native species from coming in and getting established.

Helicopter tour of the Big Island in Hawaii with Jack Ewel (left), Director, Forest Service Institute of Pacific Islands Forestry. Introduction of over 1,000 alien species threatens unique ecosystems.

WiNR: Is it too late, do you think? If it's gone this far, how can we reverse it at this stage?

Gillam: I think it's too late to completely eradicate some species that now occupy large acres. But actions must be taken now to control perimeters of infestation, prevent future invasions, and successfully restore the impacted areas. We must increase the public's understanding, increase their awareness. It can be as simple as pulling the weeds. I remember in Montana, people went along the trails in the wilderness area and pulled every spotted knapweed that they could find. I guess that's one of the reasons why the initiative USDA in coordination with the Department of Interior and the National Fish and Wildlife Foundation developed is called Pulling Together Partnership. USDI and USDA put money into a fund which facilitates challenge cost-share grants and local partnerships with the Forest Service's neighbors to manage weeds across all jurisdictional boundaries in a more cost-effective way. We have these great opportunities to work with counties and cost-share our monies. We're looking forward to the National Fish and Wildlife Foundation as a partner to leverage resources for us to use.

We also have a Forest Service strategy which has as one of its goals to develop and promote a consistent integrated pest management program at all levels of the agency and to ensure consideration of invasive and noxious weeds in planning and project analysis.

WiNR: I recently read about how long the lead time is for development of biological control organisms—plants and/or animals. It's usually 10 years before the APHIS will clear one because of the complicated, time consuming testing.

Gillam: Yes, it takes several years. When pest species come to another area, such as

from Malaysia to the US, they come without the factors controlling them in their native lands, without their "predators" so to speak. Classical biocontrol programs seek to find natural enemies in the country of origin of the pest and introduce these natural enemies as control agents. But we also have to be careful that these new organisms don't prey on or damage our native plants and animals.. It is worth the wait, as in many cases biocontrol agents are the only hope of gaining long-term control over established pest insects or weeds.

WiNR: What specifically are we doing to educate? Are we handing out pamphlets, for example, to hikers?

Gillam: There are several programs. We have Weed Awareness Weeks in many different places. We have a successful weed-free hay policy that mandates certified weed-free hay be used by visitors and permittees on most forests. We're also putting pamphlets at trail heads to indicate to hikers that they need to be sure that their boots are clean before they walk into particularly wilderness areas, wherever they're coming from. And since hikers need to be able to identify these nonnative species we have posters with noxious weeds pictured on them so they can help us eradicate those. We are working with roadbuilders. Their equipment has been a main source of transporting weeds. All along the roadbed—when they are finished with construction—areas have been overtaken by noxious weeds. So we are asking them to wash their equipment. We have found that people will really help us manage if they understand the problem and if we tell them how they can help.

WiNR: What about school programs?

Gillam: A group in the Intermountain Region of Idaho and Montana and various other states, have pamphlets and training programs for teachers to use in the grade schools. I think that's one of the most effective tools. It just takes more teachers to start using the programs. On the other hand, we must educate others who use invasive plants as ornamentals.

WiNR: What would be some examples of ornamental, invasive species?

Gillam: Purple loosestrife was imported as a garden ornamental and is now a problem in all 50 states. Kudzu, obviously, became established when somebody planted it to stabilize soil. There are many others in various places that just got established because people thought they had a useful purpose—or they're pretty. Japanese honeysuckle is quite pretty. Even thistles are pretty. But native vegetation has no way to compete against the noxious weeds which are extremely aggressive. Some of them even produce toxic substances that keep other plants from growing; Canada thistle is one of those. And many have seeds that lie dormant for years and years. Then, when they're mechanically disturbed through timber roads or skid trails, for example, they emerge.

WiNR: By the year 2005 or 2010, what will be the expected federal expenditure if we don't do something now to control weeds?.

Gillam: Some people predict it will be the biggest budget item for land management. If a concerted action is not taken now to begin to prevent and control, the future costs from environmental damage and reduced agricultural productivity and competitiveness will be incalculable—some lands may be unrecoverable.

WiNR: What kind of academic background and professional experience prepared you for this very unusual job? It's a lot more than taking care of cows and grasses.

Gillam: I have a bachelor's in botany and a master's degree in botany and ecology. I have done graduate work in range management. With that, I have worked as a botanist; knowing taxonomy is one of the basic foundations for being able to manage rangelands—you must be able to identify plants. The ecological background helped me understand how systems work, a direction the Forest Service is moving toward through ecosystem management. I have worked as a range conservationist, a forest botanist, a district ranger, a deputy forest supervisor, and a forest supervisor managing a variety of programs. I also think that my experience beginning in 1992 as assistant director of land management planning increased my knowledge and ability to work with the Department, Congress, and others to successfully develop and implement national programs, which is what I'm doing now. Most of my Forest Service experience has been on various forests, but I also worked on the Pawnee National Grasslands in Colorado, where I primarily managed livestock grazing, minerals, mining, and oil and gas activities there.

WiNR: How many different forests have you worked on, in your various positions?

Gillam: The Bighorn, Arapahoe-Roosevelt, Black Hills—on two different assignments—the Wasatch Cache, and the Bitterroot. Five different forests in three different regions, in five different states.

WiNR: Of all the line positions you've held, which was the most challenging, and why?

Gillam: I would say the most challenging was the forest supervisor's job on the Bitterroot due to the public controversy over clear cutting and working with polarized publics. My conflict resolution skills came in handy.

WiNR: Don't clearcutting controversies go back to the early 1970s?

In 1990, preparing to ride in Idaho's Centennial Parade in Boise: Forest Service Forest Supervisors from left, Bill Morden, Tom Kovalicky, Bertha Gillam, and Fred Trevey. John Mumma, Regional Forester for the Northern Region, is in the center.

Gillam: Even earlier. The Bitterroot made fame in the mid to late 60s over the clearcutting and terracing controversy. It was a stormy period known as the Bitterroot Controversy, and when I went there in the fall of 1988, I found the issues of timber harvest methods and the effect on visual quality were still not resolved. In the early 70s, clearcutting was dramatically reduced on the forest because of the controversy, and most harvesting was done by partial cutting practices; timber sales projects were implemented with very few challenges. However, monitoring indicated the partial cutting practices were not biologically acceptable. During the forest planning process in the 1980s, these issues began to be addressed, and the polarization intensified between timber industry groups and environmental interests. The Forest Plan was approved in 1987, but these groups did not feel the Plan resolved the issues regarding harvest practices, allowable harvest quantities, and entry into roadless areas, and carried their concerns down to the proposed projects. In the late 1980s, the challenges began to intensify and in 1989, all of my scheduled timber sales were administratively appealed.

WiNR: Appealed—meaning injunctions?

Gillam: No injunctions were imposed, but the sales couldn't be implemented until the appeals were reviewed, resolved, or worked through the appeals process. It was a stressful time for me and the community. The timber industry was concerned about what they thought was a severe timber supply problem, while the environmental groups pushed hard for changes in management practices they felt were harmful to the environment. So I worked with the community, appellants, and intervenors, to see what resolutions could be reached. We established a good dialogue with the appellants and they agreed to negotiate, with intervenor participation. Formal negotiations lasted about two and a half months, and we resolved three of the four sales under appeal. The negotiations were successful in that they brought the groups and individuals with differing opinions and values together, and the appeal resolutions relieved the immediate sawlog supply problem. I learned that we needed to have higher quality environmental analyses supporting our decisions. The negotiated agreements also laid the framework for a "New Perspectives" approach for better riparian management and alternatives to clearcutting, which were more visually and biologically acceptable.

WiNR: Were the appellants mostly local people?

Gillam: Yes, but there was also interest, of course, from national groups as well.

WiNR: Can you describe the nature of these conflicts?

Gillam: Much of the controversy in the Bitteroot Valley was because of aesthetic values: concerns with logging, particularly clearcutting and its effect on the scenic quality, but there were also concerns about water quality and wildlife. During the 1970s and 1980s, the demographics and character of the Bitterroot Valley changed dramatically, much like other parts of the west. The valley attracted new residents for its scenic beauty and rural nature, and most of the homes were located in the Bitterroot National Forest viewshed, with many homes adjacent to the national forest lands. Approximately 80 percent of the forest lands where timber harvesting occurred, could be seen from the narrow valley floor: clearcuts were visible from every angle as you drove down the highway. Along with the changes in demographics, there was the mixing of people with diverse value systems—those who continued to make a living from commodity based industries, like timber and ranching—and those who wanted to preserve or conserve the natural resources on which the economy of the area had been based.

WiNR: Were those who objected mainly environmentalists?

Gillam: The four timber sale decisions appealed in 1989 were appealed by a newly formed environmental group, but clearcutting and visual quality was a concern to other residents. Each drainage had homes just outside the Forest boundary, and each stream had a concerned citizen group to work with it. Using creative silviculturists and landscape architects, we began to modify prescriptions for timber stands, used alternatives to clearcutting whenever possible, and healed old wounds by softening old, obtrusive clearcuts. I hired biologists and ecologists. In 1991, I launched a regional pilot project for implementing landscape and ecosystem analysis processes, using GIS technology as a tool to develop management options on sensitive visual areas on the Stevensville Ranger District. We demonstrated we could manage forests in an acceptable way, and built some citizen coalitions and partnerships.

WiNR: Forest Service line officers come under incredible personal pressures under such circumstances, don't they?

Gillam: I found on the Bitterroot that the Forest Service became the focal point for establishing some kind of equilibrium between the old and new residents. I personally became a facilitator of the change, and more often than not, the person to whom folks directed their anger and frustration. Anytime you're a change agent and you're a reformer, there are always stresses that come with that change. I try to bring about needed change in a "timely" manner. It can be perceived by some as being good and others as happening too fast. I think that all line officers now are under pressures from all segments of society as people expect more and more from the public lands. I think that our responsibility is to ensure that we are managing using ecologically sound principles. We must do an excellent job of environmental analysis and involve people in our decisions. We need to consider peoples' needs, their wants, their desires, but we must make the best decision that we can for the resources to maintain healthy, diverse, sustainable ecosystems. And those decisions are not always popular, but I think that's the role that all line officers must play.

I also believe we have to be creative and efficient in how we manage our workforce and be sure we have the right mix of skills to accomplish our program goals and to improve credibility. The Bitterroot, for example, was a small forest in terms of personnel with limited expertise. So I established Centers of Excellence on each of the four districts: West Fork for wilderness — 50 percent of the Forest was wilderness; Stevensville for landscape ecology and GIS technology; Sula for range management; and Darby for timber management.

WiNR: The term, center of excellence, is very recent, but you used it almost 10 years ago?

Gillam: And I used the term "ecosystem management" even then. It was not always received well by some, but received with great pleasure by others. We spent time

discussing the concepts and principles with our publics—who were well aware of New Perspectives and were interested in the topic—to reach a common understanding of the new approaches we were trying.

WiNR: What does the picture look like these days for career opportunities in range?

Gillam: With the downsizing in all the agencies now, I'm not sure that there are many opportunities in the federal agencies. People who have range science, botanical skills, who understand watersheds, who understand riparian areas, and wildlife are needed, however. I think range professionals have those skills. I also know that those skills in our agency are declining. I'm encouraging the Forest Service—perhaps through the cooperative education program—to keep folks in the pipeline so that we always have those skills.

WiNR: How many women work in Range in the Forest Service?

Gillam: An estimated 20 percent of those working in Range are women. There are approximately 500 employees in range conservation and the range technician job series. However, there are other professionals, including botanists, ecologists, wildlife and general biologists doing range work.

WiNR: A question frequently asked by women is, "Do I need to know how to ride a horse?"

Gillam: One of the most important partners the range professional works with are grazing permittees. I think that it's important that you can get on a horse, go out and ride the range with them, discuss grazing systems, their operation, and most of all, to monitor whether the resources are being protected and the permittees are meeting their obligations. We are partners with them, we want them to understand what our job is, and we need to understand their business. Some allotments are 150,000 acres in size, and you will not cover that on foot. Especially in managing wilderness grazing, you have to have a horse to get around. In some other areas, you might be able to use a pickup, but it really is the relationships with ranchers and other partners that you're trying to build so horseback riding is a good skill to have.

WiNR: What about nonfederal opportunities for people studying range?

Gillam: There are many ranching operations who will hire range managers. Many owners of the larger ranching operations have range management degrees, and they certainly are in the business to make money. So they hire the most professional expertise they can get.

WiNR: Would most of them be interested in a more ecologically aware approach? Or would it be more livestock management?

Gillam: There are both. Many ranchers now realize that there is a need for change and they must operate in an environmentally sound way. They are beginning to think seriously about how to change their grazing practices to improve riparian conditions. As they look at their operations, they find they gain most with productive, healthy rangelands: they get better weight gains on their cows with fewer numbers, and make more money sometimes than when they had larger numbers and the range was in poorer condition. I talk to them all the time, and they're telling me how they're moving their cows more often, so they have to have people out there who understand ecological principles and when proper utilization of the forage has been reached.

When we talk about grazing controversies and general concern about rangelands, you'll find that most of the controversy revolves around deteriorated riparian areas. So it's incumbent upon us to implement grazing systems that can improve, restore, and maintain healthy riparian areas. Right now the BLM, the Forest Service, and the Natural Resource Conservation Service have a Riparian Service team going out to look at the proper functioning of all of our streams in the western part of the country, to help us better address concerns with grazing—and threatened and endangered species. When a problem is found, sometimes it's a matter of just changing seasons of use; other times it requires a large, long-term investment in fencing and alternate water supplies.

WiNR: Removing them from the riparian area increases the cost of getting water to the cows, which increases the cost of doing business, doesn't it?

Gillam: It does increase the cost of doing business both for the agency and the permittee. The incentive to do it is that the resources are being protected and the permittee can continue to graze. We can develop springs or ponds. We can put in water tanks, sometimes wells, at various places. But you must have the water distributed so that the cows can be distributed so they're not overgrazing any one particular area. The permittee must take responsibility for monitoring their own activities to be sure that they are in compliance with the terms and conditions of the permit. We have well established utilization standards to follow. Some forests—for example, the Bighorn in Wyoming—now have mandatory permittee monitoring, and in other places, it's voluntary. The Forest Service and permittee agree on measurable goals and objectives to achieve proper resource conditions. After agreeing to these goals and objectives, permittees carry out their end of the bargain through monitoring and changing their operation. It's working well. So we are beginning to implement more permittee monitoring programs throughout the Forest Service.

Cattle grazing on the Oglala National Grasslands. Photo by Jerry Schumacher

WiNR: What's the term of most permits?

Gillam: Ten-year permits; most of them are reissued at the end of 10 years over long periods of time. Permittees can waive their permit back to the Forest Service if they sell their ranch, base property, or their cattle. That permit may be issued to the new owner, if in fact they meet the qualifications. So we have a pretty stable, long-term grazing program.

WiNR: How long has the Forest Service been in the range business? Historically, has it been an important program?

Gillam: Actually the Forest Service has been managing rangelands for nearly 100 years. So it's one of the longest-running programs. The Forest Service initiated the first range surveys and the first scientific range research in 1897 in the Cascade Mountains of Oregon. Managing grazing on the Forest Reserves began in the early 1900s. In the late 1980s with the Change on the Range Initiative, there was the beginning of ecosystem management, even before New Perspectives and ecosystem management really became a popular term in the agency. Range professionals were committed to ecosystem management long before the rest of the Forest Service was.

WiNR: I'm reminded that in the late 1980s I interviewed Barbara Allen Diaz, then and now a professor at Berkeley, who had been a range ecologist in Region 5. She described the first ecological classification system that she developed in the Forest Service before ecology and ecosystem management were mainstream concepts. It reverberates with what you were just saying.

Gillam: Classification, inventory, and monitoring are still necessary for us in range, to assess rangeland health. We have been working with the Natural Resources Conservation Service and BLM to develop consistent terminology and methodology for assessing rangeland ecosystems. The three agency heads have signed a Memorandum of Understanding to formalize an Interagency Rangeland Health Committee to accomplish that particular goal. We know folks don't understand why we do things differently, and we want to demonstrate that we can work more effectively and efficiently across organizational boundaries.

WiNR: Do you think that rangelands are in good condition generally?

Gillam: There are vast acreages in good condition that are managed well. However, we need to restore those that are clearly not in satisfactory condition—many are in riparian areas. Recent scientific judgments tell us we need to do more work before we can assess their health. The report that the National Research Council did on rangeland health awakened us to the seriousness of the need to have improved and consistent monitoring methods. So the Interagency Rangeland Health Committee efforts will focus on that particular report and those recommendations. We have not been helped by the fact that rangeland research has diminished over the last few years and it's time that we increased research on our rangelands.

WiNR: What kind of range-related research should the Forest Service be doing?

Gillam: We have many listed, threatened, and endangered species and we know very little about some species' habitat requirements. We're debating utilization standards and stubble height right now, so we need some more help in determining what is a good standard to measure. We need research to help us design monitoring systems and to develop protocols to determine what the vital few things are that we need to monitor that are indicators of rangeland health. We have to look more at sustainability of ecosystems. I think we need to have more studies on the use of fire in rangeland ecosystems, how we can better utilize it as a tool, or how we can simulate that, if in fact we're not able to use fire.

Gillam speaking to students at the College of Natural Resources, Utah State University, April 1997

WiNR: Give us an example of one of those.

Gillam: Pinyon juniper and other shrubs are increasing their densities. Some of it's due to overgrazing and partially because fire has been removed from the ecosystem. We need to have some research done on the effects and have solutions for how we can restore those areas.

WiNR: Where does the Society of Range Management (SRM) come into this picture—including the need for research? As the professional organization, they presumably would have some influence.

Gillam: They should and do play a major role. SRMs mission and objective are good land stewardship, and they are interested in federal lands as well as private lands. I have encouraged them to help us maintain our professional credibility. I have asked them to support us when we're making good decisions, even though they may be unpopular decisions, because we are using good science. We must base our decisions on good science, and they must help us have the best science to make those decisions.

It would be helpful if SRM were more integrated with members representing other disciplines and other professional societies. For example, the Society of American Foresters has a Range Ecology Working Group which draws range professionals. SRM could bring groups and associations together so that we're all focused on the right objectives and the right goals to manage and sustain our range resources. I'm hopeful that they will pursue that in the future.

WiNR: Do you care to comment on the recent very public resignation of former Chief Jack Ward Thomas from the So-

ciety for Range Management? A lot of people are very interested in what happened there.

Gillam: SRM signed a letter to support passage of S.1459 Public Rangelands Management Act. The Chief was deeply concerned and thought that it was not appropriate for the Society to support a bill that would obstruct effective and efficient management for the sustainable, multiple use of the public rangelands. He was concerned that the Board would take action without consulting its members. He felt it was the worst piece of legislation to surface in Congress. The Chief thought the bill would have major adverse impacts on the agency and resources in a number of ways: (1) by preventing the public from participating; (2) locking the Forest Service into a regulatory regime that could not address resource conditions; (3) impede the ability to evaluate range conditions and adjust livestock operations; (4) create grazing advisory councils who would represent livestock interests and exclude others; and (5) strip the National Grasslands from the National Forest System.

WiNR: What's the status of that now? Has SRM reconsidered?

Gillam: The bill died when Congress adjourned. SRM did not withdraw their support publicly for the bill. They put together an ad hoc committee to look at what is appropriate for the society to do in response to such things as legislation and asked former Chief Thomas to serve on the committee. SRM published the "SRM Plan for Public Rangelands Input" in the March, 1997 *Trailboss News* which listed principles they considered essential to public rangelands or policy. They also said that they will follow their bylaws.

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WiNR: In addition to your Range responsibilities, you now are in an Acting position with the Forest Service. What does it entail?

Gillam: I have been Acting Associate Deputy Chief for National Forest System since January 1997. I am a member of the Chief and Staff Team, and have responsibility for several staff programs: Range, Timber, Wildlife, Fisheries and Rare Plants, and Watershed and Air Management, and Ecosystem Management Coordination. I provide national leadership for developing policy and direction, and oversight and monitoring of agency programs of the field units.

WiNR: Is it easy to keep up with family and friends—and the wide, open spaces—with all your Washington DC responsibilities and travel schedule?

Gillam: My family life continues to be a challenge—and to be exciting. Up until the last few years, most professionals in the Forest Service were expected to move to achieve leadership positions. Consequently, I had a dual career commuting marriage, sometimes referred to as "love-on-the-run" for many years. My husband still spends a majority of his time in Wyoming and we continue to support each other's work interests and have a positive outlook. Being in the east, however, means we are closer to our daughter and her family in Ohio and other relatives in Missouri.

I readily admit I miss the western wide open spaces and my friends. I chose a natural resource management career because I love working in the field directly with people and making decisions that contribute to good land stewardship. But, I have also enjoyed working in Washington and value the relationships and friendships I have developed here.

It's important to have people in leadership positions in Washington who have a field perspective—and I've worked both as a District Ranger and Forest Supervisor. With the support, interest, and leadership provided by the Administration, the Secretary, and former Chief Jack Ward Thomas, the Range Program expanded and flourished. I could not have imagined nor dreamed of having a better opportunity to make a difference for the resources.

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She is currently in the Environmental Science and Public Policy Ph.D. program at George Mason University in Virginia. She has been active in the Society of American Foresters National Capital Chapter and has served as Chairperson of several committees; is a member of Sigma Xi Scientific Research Society; and was elected President of Phi Beta Kappa Northern California Association, and National Secretary.

Consensus-based management. Does it ***mean*** *anything*?

*r*esource *a*dvisory *C*ouncils

JONNE HOWER LOWEREY
BRENDA LINCOLN WOJTANIK

Rangeland management has had a turbulent ride during the 1990's. The development of citizen advisory councils or Resource Advisory Councils (RACs) was one of the most important aspects of the Department of the Interior's Healthy Rangelands Initiative that went into effect last August. These new regulations are intended to protect the health of public land, balance the multiple uses of public land, protect the long-term viability of rural communities, and bring citizens into the decision-making process.

Nationally, 24 RACs have been established; funding and oversight is from the Bureau of Land Management. Three RACs have been established in eastern Washington and eastern Oregon where we work for the BLM.

In keeping with the new buzz-word of *customer-based service*, RACs in Oregon and Washington advise *both* the BLM and Forest Service on a broad range of resource management issues. Oregon and Washington are the only states in which the Forest Service is a full partner in the RAC process. Visionary leadership of the Forest Service's Region 6 and BLM's Oregon/Washington are providing this opportunity in blurring the lines.

What do the RACs do? and How does this work? were questions frequently heard following the national announcement by teleconference of Resource Advisory Councils in September, 1994.

Although there are several different models, each Resource Advisory Council, by charter, is encouraged to work in a consensus-based manner. The 15-member Council, includes an individual who represents one of the following groups:

grazing permit holders
those associated with transportation or rights-of-way
developed outdoor recreation
the commercial timber industry
energy and mineral development
national or regional environmental groups
dispersed recreational activities
archeological and historical interests
wild horse and burro interest groups
local, county, or state elected officials
a state agency managing natural resources
a Native American Tribe
academicians in natural resource management
the public-at-large.

The Charter groups the 15 members into three separate categories and requires a majority of each group to approve a Council recommendation to the federal official designated to work with the Council. If the Council feels that the official is not taking their advice, by unanimous vote of the entire Council, the RAC can provide a recommendation directly to the Secretary of the Interior.

What do Resource Advisory Councils do? As one of our colleagues glibly observed: *They do what their middle name says. They provide advice.* If all 15 individuals, representing the diversity of interests, are in agreement, that consensus provides powerful direction to agency officials.

How does it work? Well, another colleague claims that the amount of time to prepare and implement a plan, including appeals and litigation is the same amount of time needed to forge consensus before the decision is made. In other words, it is a lengthy process, sometimes messy, but always enlightening.

It remains to be seen what the Councils would do if asked for advice for which they were unable arrive at consensus. Obviously, one alternative would be to provide a split-decision. However, since one of the criteria for selection to be on the RAC was a demonstrated commitment to collaborate in seeking solutions, the hope is that Council members will remain at the table and continue to communicate, learn, and collaborate. The term—*forge consensus*—begins by creating consensus with awareness and knowledge, helped along by common agreement on the objectives. Small agreements build towards larger ones. Always, the agreements are tested, defined, and refined. That is the *forging* process.

The first assignment given to the RACs by the Secretary of Interior was to develop standards for rangeland health and guidelines for grazing management. Referred to as Standards and Guides, these Standards describe rangeland health and identify the grazing management guidelines to achieve it. Although there were fallback standards developed in the Healthy Rangeland Initiative, each RAC was encouraged to develop locally-specific standards and guides. In Oregon and Washington, these Standards and Guides will soon be released for public comment.

One of us has worked with a RAC for the past 15 months; members come from a huge chunk of real estate—all of eastern Oregon, with RAC boundaries drawn along hydrologic basins. This Council provides advice to three BLM Districts and four National Forests. Getting together for a meeting requires some to travel a full day just to get to the meeting site. Resource issues discussed can encompass remote rangeland utilized by traditional ranching enterprises to dry-site forests or high-use scenic recreational areas.

Are the RACs working? The answer is *yes—and the jury is still out.* As with any new organization, the RACs are still evolving. There is strong support and buy-in from the federal resource management agencies. Trust is continuing to build and grow both among the Council members and between Council members and federal agencies. Hopefully, when the jury is in, we will have succeeded and ultimately relationships will be strong and our decisions will be more accepted, understood, and better for the resources we manage.

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REVIEWED BY

Jonne Hower

Coyotes and Town Dogs: Earth First! And the Environmental Movement

Susan Zakin

Viking, Penguin Group, New York. 1993.

&

Uncommon Ground:

Toward Reinventing Nature

William Cronon, ed.

W.W. Norton, New York. 1995.

These two books may represent two different poles of the debate over natural resource management: leave it alone and let nature take it's course—or intervene with management actions such as thinning, harvest, or grazing. And, like this argument, the books are poles apart. Both books intrigue and both outrage. Can't we all discuss the same issue, get on the same playing field, playing the same game, with the same set of rules *just once*?

Coyotes and Town Dogs is a history of the conception, development, and evolution of Earth First! Susan Zakin spins a tale of beleaguered buckaroos who follow a shining vision of the holy grail of ecosystem management and wilderness protection but end as *ecoterrorists*. In true New Journalism style, Zakin takes the reader along a quick journey through the high and low points of the early life of a large cast of characters. Awareness and outrage grow. Jobs come and go. Friends coalesce. Environmental actions happen. (I wanted and *needed* to see a cast of characters in the order of their appearance.) Reading this book reminded me of watching soap operas. I continually had to go back and check: who was he, what job or which group did she represent ... or had it changed since the last reference? Clearly, the author is consumed by behind-the-scenes political maneuvering.

The book spans more than a decade and traverses the continent innumerable times, landing in unlikely places such as Goose, Wyoming, Ann Arbor, Michigan, and northern California; the halls of power and influence in Washington, D.C. contrasted with the buckaroo bunkhouse, a chartreuse, decrepit farmhouse with a wraparound porch in Rosslyn, Virginia.

By contrast, *Uncommon Ground* first left me yawning as I struggled to stay awake, but then provided much to reflect on. A result of an interdisciplinary seminar (sponsored in part by the University of California's Humanities Research Institute), the book is heady and far-removed from the nitty-gritty actions of *Coyotes and Town Dogs*.

Fifteen scholars each contributed a major essay to the volume. Several of the essays will cause those of us who work on-the-ground in natural resources to snort: e.g. Looking for Nature at the Mall—A Field Guide to the Nature Company. In the essay Touch the Magic, (a look at the marketing of Sea World) the question of the buying and selling of nature is discussed by Susan G. Davis:

Definitions of nature and the solutions to its problems are now massively authored by the private sphere of conglomerate, corporate culture, at the same time the corporation claims to further the public good.... Finding a new environmental ground depends on the contentious debate ...

Taken together, these essays pose the question of defining Nature. One essay examines the influence of Frederick Law Olmstead (a landscape architect) by examining areas which, although either constructed or reconstructed, are now considered natural: New York's Central Park, Boston's Fens and Riverway, Niagra Falls, the Biltmore Forest. Another essay examines virtual nature and the relationship between the *person looking* and what the person looks *at*.

The section of *Uncommon Ground* that I was unable to relate to as a resource manger had to do with modern society, race, and the politics of environmental groups. In Nature as Community, Giovanna Di Chiro writes about community action projects such as housing, schools, drugs, and neighborhood security. Although I acknowledge these are concerns, it's a big stretch to consider them environmental. (See what I mean about defining the issue and being on the same playing field?)

The questions examined in *Uncommon Ground* ultimately affect the management of our public lands. But, I wonder if these scholars are even in the same country, much less on the same playing field as the buckaroos in *Coyotes and Town Dogs*. Both books, however, contribute to a thinking person's life in resource management.

As for the buckaroos—you may love 'em or hate 'em, but *Coyotes and Town Dogs* is a good read. And, while not an easy read, *Uncommon Ground* challenges us to define what we are doing.

Jonne Hower Lowrey is a Women in Natural Resources editor. She works for the BLM and lives in eastern Oregon.

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*P*artnerships and **conflict resolution** **dampen** the ***fires*** from old frictions

BLMs Kremmling (Colorado) Resource Area works on a **wide front** of collaborative projects aimed at getting healthier range lands

Linda Michael Gross

The BLM, an agency of the United States Department of the Interior, manages 270 million acres of the nation's public lands, one eighth of America's land surface. Most BLM-managed public lands are located in the 15 Western states: Alaska, Arizona California, Colorado, Idaho, Montana, North Dakota, South Dakota, New Mexico, Oklahoma, Nevada, Oregon, Washington, Utah and Wyoming, although small parcels are scattered throughout out the eastern United States. BLM also manages 570 million acres of subsurface mineral estate.

BLM is mandated under the Federal Land Policy and Management Act of 1976 to manage public lands for multiple uses, while protecting the long-term health of the land.

Across kitchen tables, in land management offices, over fence posts, and in large meeting rooms, an evolution is occurring on the range. Rather than finding reasons to disagree or take sides, people are finding common ground and seeking solutions.

What is that common ground? It is community-based decision-making. In the Bureau of Land Management (BLM), Kremmling Resource Area (KRA), Kremmling, Colorado, I have had the opportunity as the Area Manager to work with many different partnerships—some outside of the legal boundaries of the public lands—to improve the health of the land through range management. Aldo Leopold clearly envisioned these types of partnerships when he said "the only progress that counts is that on the actual landscape of the back forty." Three examples of working partnerships—Owl Mountain Partnership, Kemp-Breeze Partnership, and the Sherman/Knorr Ranch Partnership—are particularly instructive.

OWL MOUNTAIN PARTNERSHIP

Owl Mountain Partnership is the most encompassing and oldest of KRA's collaborative efforts. It covers 375 square miles of public and private lands. Owl Mountain partnership started in 1992 as a result of an effort from the North Park Habitat Partnership Program (HPP). HPP is a state-wide program authorized in 1990 by the Colorado Division of Wildlife to alleviate rangeland forage and fence damage problems caused by big game animals. Private landowners, State and Federal agencies meet together in HPP committees to find solutions and provide funding for projects designed to minimize wildlife and livestock conflicts. The various HPP committees are formed along geographic boundaries and are funded by big game license fees.

Members of the North Park HPP attended a Livestock/Big Game symposium on Seeking Common Ground in September 1991 in Sparks, Nevada which spurred stakeholders along Owl Ridge to resolve livestock-big game issues; they applied for a grant from Seeking Common Ground. Seeking Common Ground is an ad hoc group that formed as a result of the Sparks symposium. It is a conglomerate of private and public groups whose goals are to better address issues involving livestock and wildlife, and seek appropriate private and government funding to accomplish this mission. Representatives to this group include

United States Forest Service
BLM
American Farm Bureau
International Association of Fish and Wildlife Agencies
National Cattlemen's Association Public Lands Council
Rocky Mountain Elk Foundation
Wildlife Management Institute
National Fish and Wildlife Foundation.

In reviewing the grant application from North Park HPP, the sponsors of Seeking Common Ground saw a greater opportunity for the project and asked if they would consider becoming a demonstration area for cooperative ecosystem management. The HPP committee agreed, then formed a separate steering committee and created by-laws necessary to start down this bumpy road. The very large Owl Mountain Partnership was comprised of three area livestock producers, North Park Habitat Partnership Program, BLM, NRCS, US Fish and Wildlife Service, US Forest Service (USFS), Colorado Division of Wildlife (DOW), Colorado State Land Board, Colorado State Forest Service, Colorado State University and Colorado Extension Service, Jackson County, small landowners, area businessmen, North Park Soil Conservation District, the timber industry and the environmental community.

There were public meetings, newspaper articles, one-on-one discussions, trust and distrust in the development of their process, goals, and mission. The largest obstacle was the mistrust of government and the concept of ecosystem management. Was this effort heading toward government taking away private property rights or was there something to be gained? The committee worked through these concerns and developed a mission statement, basic fundamentals necessary for a successful community based land stewardship, and basic goals to govern the working group and guide the planning process.

The development of a mission statement, fundamentals, and goals

Our mission *is to serve the economic, cultural and social needs of the community, while developing adaptive long-term landscape management programs, policies, and practices that ensure ecosystem sustainability.*

To resolve the government/private property issues the following fundamentals were developed:

Fundamental 1 Increased trust must be developed between local stakeholders and all levels of government.

Fundamental 2 Ecosystems allow harvest and use of appropriate natural resources on a sustainable basis.

Fundamental 3 Local people being affected must be involved and empowered to make decisions and implement actions that will contribute to sustaining the social, cultural, economic and ecological systems on which they depend.

Fundamental 4 Environmental education is a crucial element of management because it is a process of mutual learning about interactions and interdependencies of socio-cultural, economic, and ecological systems that support mankind.

Fundamental 5 Issues that drive an ecosystem management effort must, in large measure, originate from the community's grass roots, where a sense of place and community ties to a natural world are best expressed.

Goals *were also developed to govern the working group and to guide the planning processes:*

Goal 1 Create partnerships that build trust and teamwork to achieve ecosystem health and resolve conflicts which will serve the economic, cultural and social needs of the community.

Goal 2 Develop and implement an adaptive ecosystem management plan across political, administrative and ownership boundaries based on identified issues and needs.

Goal 3 Document the implementation process of ecosystem management and communicate knowledge gained from the Partnership to partners and the public.

became the partnerships' acceptable concept of ecosystem management. This was no easy task as there were many different ideas on what ecosystem management was and how to get there.

The committee, having laid this ground work, proceeded to define a process and framework to complete an ecosystem management plan. It was expected to take five years and be implemented in stages. However, it has turned into a long term planning process with an emphasis on project implementation.

•Phase 1 Data and Inventory: the collection and interpretation of data needed to resolve issues. This includes collection of vegetative data (upland and riparian), livestock and wildlife use, development of a GIS data base, identification and mapping of specified wildlife habitat and neotropical bird inventories. Data collection is on-going and includes the development of research proposals to address how to measure the health of the land (soils studies).

•Phase 2 Planning: using data to develop plans or projects to resolve issues. This includes ranch management plans (all ownerships), grazing strategies for specific BLM permit areas, waterfowl management plans, and smaller water developments and vegetative management plans.

•Phase 3 Projects: projects designed to implement the plans and resolve issues or conflicts. These include spring developments, water pipelines, stackyards, grazing systems, and fencing. Owl Mountain's success has been based on its ability to implement projects and focus on the back forty and not just planning.

•Phase 4 Monitoring, analysis and education: designing the methodology and criteria to measure successes and failures at resolving issues and improving the health of the land. The partnership has been effective at publicizing results in workshops, public and agency meetings, and within the academic community. This is a dynamic process, the phases are not discreet and projects have been implemented when and where appropriate.

The partnership has taken on several issues within the planning area. They successfully worked with the BLM to produce the Hebron Slough Management Plan designed to resolve controversial issues between grazing and waterfowl habitat. They have looked at options and plans to (1) manage small acreages to increase wildlife forage; (2) to incorporate both the public and private components of permittees to improve the vegetative conditions and distribution of livestock and big game on the range; (3) develop individual ranch management plans for the ranches within the area. They have looked at issues, problems, and sustainability of both the natural and human environment. In doing so, they have implemented projects ranging from stackyards to soil mycorrhizal studies.

Identifying resource issues and possible solutions has been the easiest task for this group—interactions between people and government agencies the hardest. Politics, turf, budgets and constant battles for trust has been difficult and frustrating. The partnership has learned many lessons, including their ability to resolve issues and move toward practicing ecosystem management on a local level.

KEMP-BREEZE PARTNERSHIP

The Kemp-Breeze partnership is a smaller partnership involving several livestock permittees, Colorado Division of Wildlife, and the BLM. When the DOW acquired the Breeze Ranch from the Denver Water Board for fishing access, the DOW, BLM, and livestock permittees saw an opportunity to look at

livestock grazing and wildlife needs in this area. The intent was to keep the ranch and BLM permits in a ranching operation that would be compatible with big game winter range. The combination of the DOW ranch, private ranches, and BLM permits gave the stakeholders greater latitude in resolving these conflicts.

Livestock/big game conflicts have been an issue for many years in Colorado. Colorado DOW has been liable for compensation to private owners for wildlife damage to private property since 1931. These conflicts are not confined to private lands but cross over into public land management as animals do not understand political or private land boundaries. The issues include adequate forage, distribution of big game/livestock, fence damage, big game consumption of private hay and forage resources, and herd size. BLM saw opportunities to incorporate livestock permit areas, private ground, and the DOW's newly acquired Breeze Ranch to benefit the health of the land and move away from a continuous grazing system. The DOW saw this as an opportunity to improve forage conditions for deer and possibly eliminate some game damage claims from private property owners. The ranchers saw this as an opportunity to continue to lease the Breeze Ranch from the DOW and improve the economics of their operations. Each had something at stake and something to offer in the solution.

The group agreed on their goals to improve habitat for livestock and deer and get better distribution of grazing. The DOW offered its lands to increase the potential to reduce big game livestock conflicts and increase winter forage. The BLM brought grazing allotments into the solution to improve forage and grazing distribution. The ranchers brought their private land with the hopes of improving the economics of their operations. The intermingled ownership pattern in the area made the private land integral to a positive resolution.

The Middle Park Habitat Partnership Program Committee concluded stakeholders were willing to resolve the livestock/wildlife issues so they enlisted the help of Michael Frisina, a Montana Fish, Wildlife and Parks employee. Mike is considered an expert in developing livestock grazing systems that are compatible with or enhance big game habitat. His research has shown that often an elk herd will successfully graze behind cattle under a rotational system.

Mike visited the site, reviewed information, and provided a basis to begin discussions on which system or systems would be best for this area. He recommended a nine pasture grazing rotation system (inclusive of all land ownerships) where three pastures are rested each year, three pastures grazed during the growing season, and three pastures grazed following plant dormancy. This grazing system would provide six pastures of available forage for elk during critical winter periods and still meet the needs of the livestock operators.

The group will look at the options discussed by Mike Frisina, devise measurable goals, develop a monitoring plan, and improvise to find a solution that works. Our hopes are to implement a system in the spring of 1997. Solutions do not come overnight and we have to look at many different effects to each stakeholder, including the wildlife. The US Fish and Wildlife Service has asked to join this process and incorporate some of their adjacent allotments.

SHERMAN/KNORR RANCH

The final partnership discussed here includes as few as three stakeholders but will accomplish much toward improving the health of the land. Following one of the Holistic Range Management Workshops provided by the Middle Park HPP, Marshall Sherman, one of the Kremmling Resource Area's livestock permittees, approached the BLM to look at options to improve the health of his allotment and private lands, increase economic viability, and decrease soil erosion. The BLM joined with him and the NRCS to look at implementing a high intensity short duration grazing system discussed in the HPP workshop—an opportunity to find out what works and what does not.

A pasture management system using the principles of holistic resource management, existing vegetation, and site conditions was developed for the ranching operation. The goal of the system was to improve the health of the land and the economic viability of the ranching operation. The final objectives and monitoring parameters are being developed as we study the pasture options and impacts.

The 1996 grazing season was our starting point: we began a pasture rotation system—with mixed results. Although the system met our objectives, we had some unexpected results. We are modifying the program to provide adequate water distribution on some pastures to get the results we want. We have learned that by using the whole operation rather than just the livestock permit area, we get overall healthier lands.

In a speech to the Press Club in October 1996, Mike Dombeck, then Acting Director of the BLM, stated, "Whatever future generations receive, they receive according to our willingness to give it." Local community-based land stewardship is a road that we can travel to have sustainable, healthy lands, clean water, and clean air to give to our heirs. Partnerships take time, energy, and a willingness on the part of government agencies to take risks and share in the decision making process. Whether it happens a ranch at a time or in a large partnership, whether over a fence post or in a large forum, the outcome is the same; we move down the road toward healthier lands. I believe that working with the whole rather than the parts will better serve us all in the future.

Since 1993, Linda Michael Gross has been the Area Manager at Kremmling Resource Area, Craig District, Bureau of Land Management, USDI, Colorado. Her other professional experience is 17 years as a Forester with the Forest Service in Oregon and California plus working in planning, recreation, other resource management, appeals and litigation, and timber management. She has a Bachelor's in Public Administration from Southern Oregon State College and a Master's in interdisciplinary studies with an emphasis in Forestry and Watershed from Oregon State University.

Photos: p 35, folks from Owl Mountain discuss possibilities; pp. 36-37, at work on projects.

News & Notes
continued from page 8

Politics of Gender

On a cold afternoon in late November, 20 days after the 1996 election, Vice President Albert Gore held a private meeting with the leaders of 100 women's organizations at Jackson Place, a conference center around the corner from the White House. The off-the-record meeting was a decisive, climactic moment of the '90s. As exit polls had revealed, the gender gap was no longer a vague theory: Men and women did cast very different ballots. So different, in fact, that if either group had voted alone, men and women would have elected different presidents... a record 16-point difference. Even though President Clinton was the beneficiary of the gender gap, the women in the conference room were the real stars of the election. For all the talk about soccer moms, the group du jour of the 1996 campaign, these were the women who had worked in the trenches—writing checks, running telephone banks, conducting polls, researching position papers. This was, after all, the year that *Emily's List*, founded 12 years ago in order to raise money for women candidates, collected more than $6.7 million in contributions and became the largest political action committee in America.

Now it was payback time and everyone in the room knew it. "Four years from now," Gore said, "things will be measurably different for women in this country because of this vote." It was an open acknowledgment by the newly re-elected Vice President of that old political maxim: To the victor belong the spoils....

However gratifying...there are still many unanswered questions about what the gender gap really means. Who, for example, are its beneficiaries? Will more women be elected to public office? Or will candidates who champion women's issues be elected, regardless of gender? In fact, do women even respond to the idea of their votes and their dollars promoting women in public service? The numerical gains made by women in this election were relatively small. The number of women in the US Senate remains fixed at nine—fewer than 10 percent. In the House women picked up three seats, not enough to cause much of a shift in power. There is one more women governor, and only 42 more women in state legislatures than before—in the whole country... A closer look at how women voted in the 1996 campaign reveals that despite all the talk about the feminization of the '96 campaign rhetoric, women don't vote for women, they vote for issues, and surprisingly, their concerns aren't that different from men's. Like men, a majority of the women who voted for Clinton did so not because they trusted him but because they believed the economy was on track. The differences that underlie the gender gap involve what men and women perceive as solutions to economic problems... Women don't have time to be single-issue voters. Their concerns go beyond such narrow interests as taxes, welfare reform, or even abortion policy to larger issues involving jobs and family security. Politically at least, women see their future through a wide-angle lens.

Jan Jarboe Russell, *Working Woman*, April 1997

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The Science Wars

The critics of science say that the practice of science—the questions it asks, the way it interprets observations, even what counts as data—is subject to the political, cultural and social influences of the times. If society considers females passive, say the critics, then scientists will tend to see the same characteristics in the egg. And if social values mean that an intact nuclear family is best for kids, then most scientists look for, find, or give more credence to examples of birds or other species where that holds true. It is not that evil scientists intentionally set out to enshrine the prejudices of the day in their research conclusions. But as mere mortals, they can-

(*continued on page 48*)

Let's Get....

Barb Springer Beck

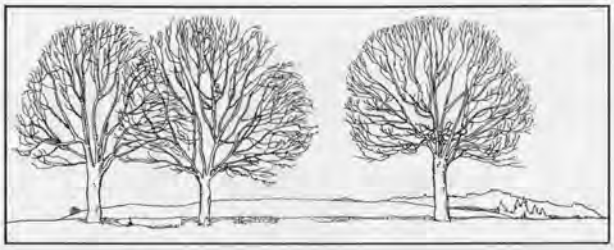
When you started your career were you in a position which was physically demanding? Does your work still make demands of your body? You may have started your career, or may still be involved in physically challenging activities such as trail construction, hatchery operations, campground maintenance, range management, leading interpretive hikes, historic structure restoration, timber sale layout, or law enforcement. Maybe you even chose your first job in part because of the physical challenges, I know I did.

My first job in the natural resources field was in the field, literally. As a seasonal archeologist for the Forest Service in Montana, I conducted surveys for roads, timber sales, mines, grazing permits, recreation developments, and a variety of other proposed projects. Working outside, and being able to use my physical as well as my mental abilities made for extremely satisfying work. On occasion, I had opportunities to perform other demanding duties such as firefighting, tree planting, and wildlife surveys.

The demands of my job, combined with my participation in sports, allowed me to maintain a high level of fitness, appropriate weight, and manageable levels of stress. My energy level and self confidence were high, and I was rarely ill with even so much as a cold. That changed for me over the years as fieldwork became less critical to each successive position, and time spent in meetings, at the keyboard, and stress levels all increased. As if this weren't enough to deal with, increasing age and decreasing metabolic rates complicate the situation further. So, what is the good news in this bleak picture? There's plenty!

Regardless of whether your job provides you with physical chal-

Physical!!



lenges, you can adopt an active lifestyle. Being active is something you can engage in at your own level, on your own time and at your own rate, or if you prefer, with others. The cost can be as cheap as a new pair of tennies and a time commitment. Women (yes including you!), can reap many benefits from regular physical activity. These benefits include among others, an enhanced body image, weight control, self-confidence, and increased resistance to disease, fatigue, and anxiety. According to Corbin and Chase Rutherford (1992), active people "were self-motivated, had more such self-regulatory skills as goal setting, greater efficacy, and support from spouses..."

It seems every magazine you pick up these days has at least one article on fitness. I think it's because there really is something to it. Short-term advantages of regular exercise, such as improved cardiovascular condition, muscle tone, weight maintenance, better sleep and the social benefits have been evident for some time. We are still discovering the long-term value of exercise toward disease prevention. For me, motivation to remain active results from the stress relief, self-confidence boost, and opportunity to participate in activities with others. I find that there is a mind-body connection as well. After challenging and exerting my body, I am able to think more clearly and concentrate better. If you chose to be active, you will experience your own unique combination of rewards.

So, what are you waiting for? It's time to get started. I'm no fitness instructor, but here's what works for me. First of all, build exercise into your everyday tasks. If you work in a building with several stories, take the stairs rather than the elevator. Walk to the grocery store if it's close and you need only a few items, and rather than just turning your dog loose in the yard after work, take her for a walk. You'll both enjoy it.

For exercise with more emphasis on cardiovascular fitness, I chose a combination of solitary and team activities, and vary my activities with my mood, the time available, and the season.

Start each activity with some gentle stretching. Studies have shown that flexibility is a key element in preventing injury. Because I love to be outdoors, whenever possible, I plan my fitness activities outside with walking and hiking as my year-round staples. In the winter, I'll cross country ski, skate, and shovel snow.

Since I have access to a gym, when the weather is uncooperative there are a variety of machines that can offer me a good cardiovascular workout. I also play racquetball. It's a great waist whittler. If you do spend time in a gym, add some strength training to your workout. You'll be stronger, and you'll retain muscle mass—the calorie burner. In the summer, there's even more opportunity to be active outside. Pick some fun activities like bike riding, tennis, or softball. I've learned to choose activities I find fun. The simple fact is that, the more enjoyable your activities are, the more likely you are to stick with them.

If you prefer a less vigorous workout, stretching is still the place to start. You can even stretch at your desk or during breaks at work. At home, in the morning or evening, stretching can be the start of a gentle exercise routine with exercises to tone and maintain muscle mass, rather than add muscle. As we age, it's important to maintain adequate strength to do daily lifting and carrying tasks, and to maintain a level of fitness to remain injury-free.

Of course we each face obstacles to getting started and staying with a regular exercise program. Some of these may be a matter of motivation and some may involve other factors, or even be beyond your control. For me, access to facilities and concerns about personal safety while I'm traveling are real problems. It probably goes without saying, but you should never risk your safety for a workout. If you're in unfamiliar territory, ask about facilities within the hotel such as pools or weight rooms and their security. The desk clerk can also steer you to outside walking paths or parks which should be safe. If you can, find someone attending the same conference or training and convince them to explore with you. There may be a shopping mall in close proximity where you can walk without fear. Ask the hotel to shuttle you there.

Finding time may be a very real barrier for you. What if you spend several hours a day commuting, or have small children that require your time and attention as soon as you arrive home from work. If you can't take the kids with you, or all of your daylight hours are used up on the road, lunch time may be your only option for activity. Access to a gym or club will allow you to vary your activities. If you don't have a facility to use, pack your walking shoes and take a brisk walk over the noon hour either by yourself or with a cohort. Twenty minutes will be enough to invigorate you and provide some benefits.

If motivation is your barrier, try making a plan, or consulting a professional who can help you design an individual plan. Set reasonable, short-term goals, experiment to see what works for you, and reward yourself. If your excuse is "I don't have time," my question for you is, "Are you busier than the President?" He found time to jog before his surgery, and appears to enjoy good health and a high level of energy (despite his french fry consumption).

Each of us faces an ever-changing set of demands for our time and energy. There simply may be times when we are pulled in all directions, not feeling well, are down or injured, or can't seem to find the motivation. When this is the case, and hopefully these times won't be too frequent or long lasting, we need to recognize this and allow ourselves to recover. Part of valuing our physical selves is respecting our potential as well as our need for rest.

While health benefits are often the motivator for becoming active, feelings of enjoyment and well-being, in addition to health benefits, are likely to keep you going. For a little bit of sweat, you'll have a pay back. If you are already active and reaping the rewards, keep it up! If not, it's never too late to start!

Barb Springer Beck is President of Beck Consulting, a firm that specializes in meeting facilitation, and managing personal and organizational change.

Nobody told me I'd have to **answer protest letters, settle trespasses,** and fend off or **forget "pink dress"** comments

Karen Hepp

The sun has yet to rise over the mountains and I can hear my six- month-old daughter cooing in her crib. Why does she have to be an early riser? I stumble out of bed and begin my day. I have to take two showers this morning. Anna blessed me with her morning breakfast...in my hair, on my clothes, and on the couch. Jack, my four-year-old son is just getting up and will want to watch cartoons. So much for the early morning news. Doug, my husband, left earlier. He is building a house in the mountains for a local couple.

I decided to take advantage of one of the last of Wyoming's beautiful autumn days by riding my bike to work. I didn't get very far before I looked down and saw my flat tire. Fortunately, the truck is ready to go.

The office receptionist greets me with a smile, hands me my phone messages and informs me that I have a couple of meetings before I head to the field. As a rangeland management specialist working for the Bureau of Land Management (BLM) in the Worland District, I always have several issues to attend to before going to the field. The livestock grazing permittees I work with want to visit the first thing in the morning. Or, they want to talk at the end of a ve-e-ery long day. And, in between those morning and evening sessions, I get an awful lot of other have-tos done.

Worland District is located in northwestern Wyoming, in what locals refer to as the Bighorn Basin. Statewide, the BLM in Wyoming has four districts involving 10 resource areas and one state office. The Worland District headquarters includes the Cody Resource Area located in Cody and the Bighorn Basin Resource Area located in Worland. I work in the Bighorn Basin Resource Area under the Branch of Resource Use and Authorization. My resource area consists of nearly two million acres. I am one of its eight rangeland management specialists and am responsible for resource health on approximately 250,000 acres. I also work closely with three wildlife biologists and one fisheries biologist. In addition to these resource specialists, I often have to coordinate with as many as eight other specialists including the Forester, Hydrologist, Natural Resource Specialist, Outdoor Recreation Planner, Archeologist, Realty Specialist, Geologist, and the Soil Scientist.

My job is to develop resource activity plans and monitor livestock (sheep, cattle, and horses) activities on the public lands within the Bighorn Basin Resource Area. The land is diverse. It ranges from desert ecosystems, which receive five to nine inches of precipitation, to mountainous ecosystems with more than 20 inches of precipitation. Furthermore, these lands are intermingled with private and state-owned lands. This makes managing the lands even more challenging. I'll try to illustrate...

My day begins with a brief land-use-plan meeting, if that's even possible. Brevity is not what comes to mind when you think of a government meeting of any sort. At the meeting, we discuss the fact that various organizations, county commissioners, and permittees are protesting the final environmental impact statement and proposed resource management plan developed for our planning area. For more than a year, whether warranted or not, we've been steeped in controversy over its contents—or rather—what is believed to be its contents. We held public meetings, open houses, and formal and informal meetings with many folks, including members of the local ranching community, mineral and timber industries, environmental groups, and representatives of local governments. We've even had meetings with a task group appointed by the four counties represented in the proposed plan, to clarify the proposal, and the issues and comments brought up during the public comment period. We received 494 comment letters on the draft, 48 hearing testimonies, and 81 petition signatures. We've received 13 protests on the final. I am the livestock and vegetation specialist for the proposed plan. I look forward to spending several days in more meetings and answering protest letters.

No sooner is that not-so-brief meeting over that I get word the leader of the noxious weed team (of which I'm a part) needs to meet, briefly. Next spring's weed inventory is the topic. There are estimates that noxious weeds such as Russian knapweed and leafy spurge, are spreading on BLM lands at a rate of over 2,300 acres per day. If cooperative weed management efforts are not dramatically increased, the approximately 8.5 million acres of public lands administered by the BLM presently infested with noxious weeds will increase to 19 million acres by the year 2000. Our group has inventoried over a quarter-million acres of nearly three million acres of public, private, and state lands in the district so far. This is being done in cooperation with several county weed and pest agencies, the Wyoming Game and Fish Department, ranchers, and other local supporters. So far, approximately 17,000 acres in the basin are known to be infested with noxious weeds. Besides chemical control, the team has used biological control of Russian knapweed using nematodes, and leafy spurge, using goats.

I'm digitizing last year's inventory data to BLM's Geographic Information System, so that I can produce maps for this year's field season. The maps and data from the inventory are shared with whomever are interested. With this information in the system, the team can track the weed infestation over the years and treat or retreat these areas.

As I pass our soil scientist in the hall, he informs me that the grass seed has

arrived. We will be doing emergency rehabilitation on the grazing allotments that were burned in the 1996 wild fire. The fires were the worst anyone can remember, burning nearly 105,000 acres of land within the resource area. Since I had Anna this spring I was not available to fight fires, unlike most years. Instead, my contribution to the fire program was developing the livestock and vegetation impacts and environmental consequences of the fire rehabilitation environmental assessment.

Just as I head out the door to the field, the receptionist pages me. A livestock permittee would like to license up to graze sheep in one allotment and cattle in the other. As he leaves, another permittee comes in with a proposal for a livestock watering project on his allotment. This will require an environmental assessment and several visits to the field. This project is included in the resource activity plan that I completed on his allotments last year. I also explained that because this summer's fires burned up a portion of his allotment, he will need to stay off the burned area for two years. I could see that this is not what he had in mind.

A resource activity plan is a program that applies to livestock grazing on the public lands. It may involve one or all of a rancher's allotments in his or her operation. The plan is developed with the involvement of the affected rancher, and may involve the resource advisory council, the State of Wyoming, and interested publics which may include county officials, conservation districts, other landowners, recreationists, and any other folks expressing an interest in the area affected by the plan.

The following is one goal from a resource activity plan I developed with a rancher a couple of years ago:

Improve watershed conditions in the Kirby Creek and Zimmerman Buttes allotments by improving the health of key upland plant species.

Goals provide an overview of the long-term intent of the plan. The resource objective developed to achieve this goal is:

Increase the frequency, density, and composition of bluebunch wheatgrass, needle-and-thread grass, and Indian ricegrass by the year 2000.

The objective was developed to measure the progress toward the above goal. It was designed to be measurable over the evaluation period. A key area was identified and a study was set up to address this objective.

In addition to goals and objectives, the resource activity plan includes resource management actions, which are tools used to meet the objectives and goals. They assure continuation of livestock grazing and diversity for wildlife by providing for long-term plant productivity. In this case, the permittee has agreed to a pasture rotation with desired utilization and stocking levels. Together we will pursue dependable water sources, a possible prescribed burn, and modification of net wire fences. The document allows flexibility to the extent that the grazing program is followed and the permitted AUMs are not exceeded. The rancher must agree to coordinate these changes with the BLM.

The monitoring program in the plan is designed to measure progress in achieving the objectives. To meet the objective I stated before, the permittee and I will collect actual use data which consists of use by livestock and wildlife; precipitation data from a rain gauge located near the allotment; utilization data which helps determine livestock and wildlife distribution and identify problem areas where salt, water, and fences may be

beneficial. Trend data will be collected in the key area. Trend will tell you whether you are moving toward or away from the potential of the area to produce vegetation. In this case we are using changes in frequency, density, and composition to indicate the direction of trend in the key areas, and likely the allotment.

Finally, we review the resource activity plan annually with those involved. The results of the studies and evaluation will be used to justify future livestock use adjustments if needed. Together we determine if the goals and objectives are still realistic or appropriate, if the actions are accomplishing the objectives and goals, and if the monitoring program is functioning as planned.

At last, I'm headed to the field to complete the riparian monitoring required in another activity plan I completed a few years ago. The allotment was one of the major contributors of sedimentation into the Bighorn River prior to the implementation of the activity plan. One of the goals of the plan is to:

Limit sedimentation in the Bighorn River to levels associated with geologic erosion and eliminate that portion associated with livestock grazing.

The riparian area along the creek, which flows into the river, had previously received heavy utilization of grasses, cottonwoods, and willows. Since vegetation traps sediment, it is important to leave enough to handle the run-off from the flash flood storms that frequent this resource area. One objective developed to meet this goal is to:

Increase or maintain the amount of willows, presently 982 feet, by the year 1999.

One management action used to meet this objective was to limit utilization levels on the willows. This was determined by using the Twig Length Transect. This fall, the wildlife biologist and I tagged 10 ungrazed willows and then measured the new twig growth on these willows. Tagging allows us to relocate the willows and monitor them while the livestock are grazing in the allotment. Later in the grazing season, we meet with the

rancher to determine the use on the willows by measuring utilization on the willows we tagged. This gives us a percentage of the use on the new growth of willows. We are looking for 50 percent or less use on these willows. More than this, will result in stressing the willows and they are less likely to recover from use. We are interested in healthy willows for the protection and recovery of the creek through the trapping of sediment and the anchoring of the bank. Relocatable photo points along the creek is another way to monitor change in the riparian area over the years. We return to these areas and retake the photos, noting change. There are several different methods that can be used to monitor the changes in the riparian areas to determine if objectives are being met.

While on my way to the allotment I have a flat tire. (Have I been here before?) I knew I would have to change the tire myself because if I called in for help I would owe someone a big favor. It took me almost an hour to change the tire. During that whole time not one person passed me on the two track. On to finish my monitoring. Thank goodness the weather is beautiful.

As I return to the office, I notice a familiar truck. It reminds me that I have to settle a trespass with a local rancher. He feels the BLM has been picking on him. I explain that I was collecting precipitation data when I spotted his cows in another permittee's allotment. I brushed off his comments of why my field clothes were not the required pink and other snide remarks.

A few years ago, I was negotiating an activity plan on an allotment where resource concerns had been identified through monitoring. The rancher and I could not resolve the resource concerns on an informal basis. As a result, I was involved in the first grazing decision in the district which resulted in a reduction of permitted livestock use based on monitoring data. The case went to the Administrative Law Judge but was dismissed at the request of the rancher. We prefer to avoid this kind of situation.

Time to go home to Doug, Jack, and little Anna.

Since 1989, Karen Hepp has been a Rangeland Management Specialist for the Bureau of Land Management in Worland, Wyoming. She earlier worked as a seasonal Rangeland Management Specialist for the Forest Service in The Bighorn Mountains, Wyoming, and for the Soil Conservation Service as a Soil Conservationist in Lyons, Nebraska. Her Bachelor's in natural resources (range and wildlife management) is from the University of Nebraska.

Karen Hepp
On being a woman in range...

There are 48 rangeland management specialists in Wyoming, eight are women. Few BLM women rangeland management specialists have been in this field longer than I have, at least in Wyoming. When I first started with the BLM, I was one of two women rangeland management specialists in the Worland District. This isolation or lack of a network, resulted in some experiences that could have been avoided or minimized if I had had other women resource professionals to talk to—or perhaps a mentor. That's why I'd like to leave you with a bit of personal philosophy that may help if you have—or plan to choose a career in the natural resources.

I spent five years in college learning about plants, livestock, soils, wildlife and other resources. Nobody told me I'd have to answer protest letters, settle trespasses, and fend off or forget "pink dress" comments. People have blamed me for low cattle prices, high taxes, and unemployment. Develop a tough skin. Don't take it personally.

My recommendation to anyone who chooses natural resources for a career, especially one in the government, is to learn more than just the sciences. It has been 13 years since I graduated from the University of Nebraska. I'm sure many colleges have expanded their programs to address the emerging natural resource issues since I graduated. Choose some courses on—and get practice in—public speaking, debate, negotiations, and writing skills. Study the National Environmental Policy Act and other environmental laws. Analyze what it takes to be a team player. Be prepared to end up in court even if you follow the required procedures. As a matter of course, plan to involve the public EARLY in solving resource issues. But don't forget that you have a responsibility to uphold the regulations and policies established by Congress. Recognize that you must have a basic knowledge of your resource area's concerns on recreation, wildlife, engineering, hydrology, and soils just to name a few, in addition to your specialty.

Remember that the public lands are for all to use. It should not be a battle between big government and the land user. There will always be differences of opinion on land decisions. Whether it's about use of willows being 25 percent or 50 percent, use common sense or available data to make recommendations on natural resource issues to your supervisor.

People need to know that you are a part of the community and not just your agency. Tonight, my son has swimming lessons. He will be seeing one of his buddies there who is a son of a permittee I work with. The head nurse of obstetrics in the hospital where I delivered my little girl is the wife of a permittee here in my district. I live in a small community of less than 6,000 people. It is not easy to enforce the public land regulations required as part of my job and still participate in the community. I may trespass someone one day and stand next to them serving meatballs at a church function the next.

You must have integrity, tact, humor, patience, and a tight lip. I don't always have these qualities every day. Sometimes, a situation taxes most of my reserves. I have had to assert myself in situations I never would have imagined.

I leave you with what I believe is one very important role for women in all professions. Be supportive of, and encourage other women to pursue their goals. Seek out other women and network, mentor, and offer support. I believe that as a woman I bring many qualities to my profession that would not be there if it was not diversified. I am a wife, mother, and professional who is successful in the goals I have chosen for myself. Let's actively support and encourage other women to do the same.

*b*ully for us.....

a *w*atershed

that's *w*illing!

Ellen Hammond

Bully Creek, shown here running near Westfall, Oregon, is a tributary to the Malheur River and drains 540 square miles. The land is beautiful, with gently sloping ridges and small narrow canyons. Most of the creeks run through private land, while BLM manages the uplands.

Collaborative approaches to natural resource management are alive and well in Oregon, mostly in the form of watershed councils and similar entities. Their holistic view recognizes the interconnectedness of natural and cultural resources. Their cooperative approach is the best way to resolve complex and far-reaching land management issues. "Business is booming" in watershed work due to an enthusiastic Oregon governor and a motivated citizenry.

This "business" also supports a new type of professional, the watershed council coordinator, of which I am one. I have worked since August 1996 for the Malheur County Soil and Water Conservation District (MCSWCD) in the southeastern corner of Oregon. I provide administrative and technical support to the Bully Creek Watershed Coalition and the Malheur-Owyhee Watershed Council.

I enjoy watershed work. It is challenging, and I and my partners have learned much from each other. I have always been well-accepted, and being a woman has never been a hindrance, but my background as a wildlife biologist has been a mixed blessing. It gives me credibility with agencies and environmental groups but frequently results in initial uneasiness from many landowners. Having grown up in Portland, Oregon's largest city, does not help my image either. Fortunately, my knowledge and love of eastern Oregon and my respect for its inhabitants shows in my work. (Also, I learned how to open barbed-wire gates out on the range 16 years ago as a sheepherder in central Oregon!)

Bully Creek is a tributary to the Malheur River and drains 540 square miles in the northern part of the County. Malheur County covers 10,000 square miles and includes 29,000 people. It is one of the largest and least populated counties in the United States, covering more land than Delaware, Rhode Island, and Connecticut combined. The Malheur River drains 5,000 square miles, most of that in northern Malheur County. The Owyhee River drains the rest of the county and portions of Nevada and Idaho. Most of this area is hilly, semiarid range land. Rainfall is 8-40 inches per year, depending on elevation. The Bureau of Land Management (BLM) manages approximately 70 percent of the land, which is primarily leased to ranchers for grazing. Most of the river valleys are privately owned. The city of Ontario is surrounded by 400 square miles of heavily irrigated, highly productive farmland. Agriculture in Malheur County generates 3/4 of a billion dollars annually.

Culturally, Malheur County is the Old West. The Oregon Trail passed through Malheur County, and many residents are descendants of the pioneers. The majority of inhabitants are ranchers or farmers. Their concerns focus on having enough water and rangeland to support agriculture. Agencies and environmental groups primarily are concerned with meeting State water quality standards and restoring range and riparian ecosystems. On the surface these concerns seem to conflict, but a healthier watershed can produce higher quality forage and more dependable water supplies.

Ranchers in Malheur County have a long history of working with agencies to improve rangelands. Primarily they work with the BLM, MCSWCD, and Natural Resources Conservation Service (NRCS). The most important management tools are the ranch plans, which include a resource assessment and actions to improve range and riparian areas. Land improvements result in better economics for the rancher, for instance through higher calf weaning weights.

Along Bully Creek, the land is beautiful, with gently sloping ridges and small narrow canyons. Most of the creeks run through private land, while BLM manages the uplands. The watershed has been grazed for over 100 years. The town of Westfall numbered 500 stockmen and hangers-on at the turn of the century, but now is a ghost town with only a few weathered buildings. Approximately 16 ranchers currently own land or hold BLM leases within the watershed. All run cattle, except for one sheep ranch.

Resource issues are many. Bully Creek is on the 303(d) list for high fecal coliform counts and high water temperatures. (The ability of streams in Oregon's high desert to meet the temperature standards is hotly debated.) Cheatgrass and sagebrush have taken over perennial grasslands, junipers are encroaching on

Smiley Wilcox's Clover Creek Ranch, in the northern part of Bully Creek Watershed.

riparian areas, many streambanks lack adequate vegetation, aspen groves are dying, and streams and springs have dried up. BLM has reduced cattle numbers on many allotments to try to improve range and riparian areas. Elk numbers are increasing rapidly in the watershed and have greatly exceeded the number desired by Oregon's Department of Fish and Wildlife (ODFW). Many ranchers complain of trampled fields and destroyed haystacks.

In 1989, Smiley Wilcox and several other Bully Creek ranchers began working with the NRCS Range Conservationist, Barry Nord, to develop ranch plans and implement projects. Smiley Wilcox owns 17,000 acres and relies on a very small percentage of BLM lands, making this an ideal area to try new techniques without waiting on BLM's planning cycle. Over the next six years, Smiley and neighboring ranchers received over $75,000 through Barry's help for a variety of projects. Funding was obtained from the Governor's Watershed Enhancement Board, Oregon Department of Agriculture, Oregon Department of Fish and Wildlife, Rocky Mountain Elk Foundation, Oregon Hunter's Association, Mule Deer Foundation, Oregon's Soil and Water Conservation Commission, and the USDA Agricultural Conservation Program. Many of these funds required a cost-share arrangement. These funds helped improve thousands of acres of rangelands for livestock and wildlife through a variety of well-planned, specific projects based on the ranch plan. Management activities included: spraying 1600 acres of dense sagebrush, controlling junipers on 650 acres, planting bitterbrush and mountain mahogany on 150 acres, planting 10 acres of riparian vegetation, installing 20,000 feet of pipeline for off-stream water troughs, building 25,000 feet of cross-fencing and installing three cattle guards to better manage cattle grazing

In 1994, Smiley and eight other ranchers in the Bully Creek watershed formed the nonprofit Bully Creek Watershed Coalition, Inc. to improve rangelands. The Coalition is not an Oregon Watershed Council; it was formed by ranchers, for ranching needs. These ranchers own 65 percent of the private land and most of the BLM leases in the watershed. They were getting impatient with BLM; BLM's planning cycle did not mesh with rancher's desires. In addition, the Vale BLM District was just beginning to write a Resource Management Plan and had committed most of its resources to this large endeavor. Personnel and funds were not available for range improvement projects. Ranchers hoped they could more effectively solicit help by becoming a nonprofit corporation, and they received 501(c)(3) status in 1995.

Shortly after Coalition formation, the MCSWCD agreed to coordinate Coalition efforts and serve as a bridge between the ranchers and agencies. One of the first requests from the Coalition was a Plan that would include a watershed assessment and a strategy for achieving specific Coalition goals. The Plan is unique in that it was initiated by the ranchers; other such plans are usually initiated by outside entities. A small technical committee has written the draft Plan, which is currently under review.

The Coalition received its first grants in 1995. They received $10,000 from the National Fish and Wildlife Foundation with a $10,000 match from the Rocky Mountain Elk Foundation. Half of the funds were used in a cooperative project with ODFW to radio-collar elk and track their movements. The other half was shared among Coalition members to develop springs on six ranches, install water troughs and pipeline, and write two Environmental Assessments for cross-fencing in a BLM Wilderness Study Area.

What Oregon is Doing for Watersheds

In the last few years, Oregon has put much effort into improving water quality. The Governor's Watershed Enhancement Board (GWEB) was created in 1987. GWEB is made up of10 members from state natural resource boards and commissions and other state and federal agencies. GWEB provides technical and financial assistance to watershed councils and promotes education and public awareness about the concepts and techniques of watershed enhancement.

The 1995 Legislature, through House Bill 3441, defined Watershed Councils as voluntary local organizations appointed by County Courts to address watershed issues. Last year, Governor Kitzhaber spearheaded the ambitious Healthy Streams Partnership, which "will integrate private sector energy, resources and knowledge with the public sector to improve the health and function of aquatic systems and enhance beneficial uses of water for future generations."

Oregon's Department of Environmental Quality has primary responsibility for meeting State water quality standards as required by the 1972 Federal Clean Water Act. In 1993, the Legislature passed Senate Bill 1010 to provide the legal structure for the Oregon Department of Agriculture (ODA) to fulfill some of the responsibilities laid out in the Clean Water Act. SB 1010 authorizes ODA to develop and carry out an agricultural water quality management plan for agricultural lands where a water quality managment plan is required by law. This includes streams, such as the Malheur River and its major tributaries, that are listed as water quality limited under Section 303(d) of the Clean Water Act.

Bully Creek ranchers are concerned about their 303(d) listing. A recently defeated ballot measure would have required landowners Statewide to fence livestock off from creeks on the 303(d) list. The 303(d) listing for most of Bully Creek is based on a few samples that were collected in 1979. To better understand Bully Creek's current water quality, the Coalition began a water quality monitoring program with the Oregon Department of Environmental Quality, Oregon State University Cooperative Extension, the NRCS, and the Bureau of Reclamation. The Bully Creek Plan will also include a strategy for getting Bully Creek off the 303(d) list.

A novel approach that Bully Creek is championing is the creation of joint BLM-private ranch plans. An Allotment Management Plan (AMP) is required by BLM for grazing on their lands, but many ranchers have no definitive plan for their own lands. The private ranch plans fill that need. But, the BLM's AMP and the private ranch plan do not necessarily dovetail. To bridge that gap, several Bully Creek ranchers have requested joint ranch plans. The first one, for Bev and Chris Davis, has just been started. The BLM and NRCS Range Conservationists are meeting together for a complete resource assessment and comprehensive ranch plan. The Davis' are very progressive and are eager to improve range and riparian areas, while running a sustainable ranching operation.

Some people will ask why public funds should be used to help private ranchers improve rangelands. The public derives a benefit from well-managed rangelands, which support healthier wildlife populations and result in improved water quality locally and downstream. Bully Creek ranchers do not get rich from raising livestock. Many Bully Creek ranches are worth hundreds of thousands of dollars. Buying these ranches often requires huge loans for land and cattle and equipment. Cattle operations, especially with today's depressed prices, often cannot cover the thousands of dollars needed for range and riparian improvements. By supporting rancher's efforts, the public is supporting the health of entire watersheds.

Ranchers in the Bully Creek watershed deserve our praise for seeing a need for range and riparian improvements, forming the Coalition, requesting technical assistance, and working together and with others in a cooperative partnership. They have shown that they are, indeed, "a watershed that's willing."

Ellen Hammond is Watershed Council Coordinator, (since August 1996) for the Malheur County Soil and Water Conservation District (MCSWCD) in the southeastern corner of Oregon. She has worked for the Forest Service and the Tennessee Valley Authority. Her Bachelor's in Fisheries and Wildlife Biology is from the University of California-Davis.

Photo: Ellen Hammond, right, preparing to move cows with her riding partner, Kit Kamo, a former Malheur SWCD Director.

The Legacy of Arizona's Santa Rita: the Oldest Experimental Range

Al Medina and Rick Fletcher

The Santa Rita Experimental Range (SRER), the oldest in the U.S., was established in 1903 in southern Arizona to protect the native rangeland from grazing and to conduct research on problems associated with livestock production. Accumulated information on ecology of the semidesert system at SRER is more complete than for any other tract of comparable size and diversity. Research results have worldwide applicability to other semidesert regions. Much of the current knowledge of range and wildlife management of semidesert grassland ecosystems is derived from SRER research.

The 53,159-acre range is located about 35 miles south of Tucson, characterized by small areas of steep, stony foothills and a few isolated buttes, but the greater part consists of long, gently sloping alluvial fans. Elevations range from 2,900 to 5,200 feet. Velvet mesquite is the dominant overstory species on 20,000 to 30,000 acres where shrub-free grassland dominated 80 years ago. Mesquite and prickly pear cactus are major species above 4,000 feet. Lower elevations are dominated by creosote bush.

SRER was originally contained within the Santa Rita Forest Reserve, as established by Presidential Executive Order of April 11, 1902. In 1905, the forest reserves were transferred to the Department of Agriculture and consolidated with the Bureau of Forestry to form the Forest Service.

On July 1, 1910, President Taft transferred lands, then known as the Santa Rita Range Reserve, to the Bureau of Plant Industry, which was subsequently transferred to the Forest Service, Branch of Research, in 1915.

Beginning around the turn of the century, range investigations centered on forage production, plant phenology, plant inventories, carrying capacity, erosion, livestock behavior and range conditions.

An annotated bibliography of research publications on SRER dating back to 1901 is now available from the Rocky Mountain Station and the University of Arizona Library. They contain valuable insight into range and forest conditions in the western United States. Nearly every forest in the southwest is described in terms of problems: grazing, tree production, and watershed condition. Included are original records, maps, and hand-written notes from scientists.

Excerpted from *Forestry Research West*

Range Conditions *Have Improved Measurably* Over the Last 20 Years *b*ut lack of trust *Between People* in Range Country is *still* a problem

Jane Schmidt

Jane Schmidt Talks About Her Country: *This area is still in the Great Basin, but it's a transition zone, and most of our country is typical of the Sierra Nevada Mountains, with mixed conifer forests interspersed with aspen, mixed shrub communities, sagebrush, and plenty of streams with meadows. We deal with cattle operations for the most part, a few sheep. Most of our permittees reside in Nevada where they have their home ranches, and graze on summer allotments in the California Sierra's while they're putting up hay during the summer on their private lands.*

A lot of us who joined the Forest Service in the late 1970's to "manage the range" were naive in the sense we felt we were outside—or above—mainstream America's problems and conflicts. We were hired on as Range Conservationists, and we expected to work in a field where ecology, and not human relations was the main emphasis.

My friends and I lived in small, isolated, boom-and-bust towns across the "Battle Born" state of Nevada; we shared visions of working outdoors, loving both the vast sagebrush landscapes and our partnership with the agriculture business and its close ties to the land. It was a time of being accepted as part of the small communities we lived in, such as Ely, Elko, and Austin, and a time where range issues didn't generate much attention, either internally or externally with the public.

If we had been familiar with the history of the Forest Service, we may have better understood the fiery origins of the range program, tied to early day range wars. We might have realized we entered the Forest Service during the calm between storms. And we may have anticipated we were perched on the edge of the next phase—an eruption of change and conflict.

The "wake up, Cinderella" call has come at different times for people in range management. When the call comes is highly dependent on where you work, as the Forest Service is not a singular entity, but a vast collection of somewhat independent units, able to absorb or resist changes from inside or outside the agency, depending on the whims of the local leadership. One thing is certain, by 1996 the erupting controversies surrounding range management had left its calling card at all the agency's western outposts. Range conflicts have been catapulted into the spotlight through litigation and featured on *Newsweek* magazine cover stories. Locally in Nevada, we've had litigation on numerous subjects, some encompassing larger issues such as state's rights in the west, water rights, and on the "takings" issue, where plaintiffs argue that government decisions on public lands affect the use of private property. National Forests in Nevada, California, and Montana have long endured litigation initiated by various conservation groups, dissatisfied with a slow pace of change in the range program or frustrated with some Forest's reluctance to enforce changes. In the southwest, the Diamond Bar cattle allotment in New Mexico has generated extreme conflict for the whole region, and clashes over the trade-offs between range conditions and the rancher's economic situation have reached a peak.

Over the last 20 years we have seen an increasing crescendo of concern voiced by both the public and agency people over unsatisfactory conditions on public rangelands. Riparian issues were already the major focus when I attended Oregon State University in 1977; however, riparian issues have continued to steadily build momentum since then. Twenty years ago in Nevada, there were no grazing utilization standards to establish the Forest Service's position that grazing in excess of certain levels causes physiological damage to forage plants and is not sustainable over the long run. For example, under our most common grazing systems, grasses in riparian areas in unsatisfactory condition are grazed to a maximum of 55 percent of the weight of the plant; in satisfactory condition, up to 65 percent could be allowed.

Publically defining this position in Forest Plans and then enforcing the utilization standards on the ground was a major commitment to sustainability by the Forest Service. I'm proud of those people who took the risk and took a stand, because anyone brave enough to take a stand is subjected to endless critique and challenges. Despite numerous challenges including litigation, these utilization guidelines still define a basic standard of sustainability for grazing on the National Forests in Nevada. The majority of permittees have chosen to make the investment to graze sustainably. They are rightfully proud of their achievements and the improving range conditions resulting from their hard work. We have many examples on the eastern Sierra Nevada of allotments which looked like dust bowls from the turn of the century well into the 1960's; today these areas are highly productive for watershed, wildlife, and livestock values—and they continue to improve.

Twenty years ago the phrase "cow-cops" had not yet been coined; today, range managers chafe at the label and its connotation of such a narrow view of range management. Agonizing decisions have been made to suspend or cancel some grazing permits, to insure all areas are being managed sustainably and that we're consistent with all the permits we administer. These suspension or cancellation actions have been taken for numerous reasons, from permittees leasing their allotments to other ranchers (not allowed under Forest Service regulations), to leaving livestock on allotments after they were asked to remove them, or exceeding the utilization standards. However, the tedious and difficult task of increased administration has paid off with often dramatic improvements on our rangelands.

Range managers in the 1970's said they had a holistic viewpoint because they saw the webs tying livestock, wildlife, and watershed together. Whenever you touch one spot on a spider web, the reverberation is felt throughout the rest of the web. Today, that vision of "holistic" has been radically expanded because of the added emphasis of not only threatened and endangered species, but also sensitive plants, animals, and fish. Managing cultural resources on rangelands has expanded the web even further, and it will continue to grow as we evolve.

So range managers today are evaluating how to manage livestock grazing to provide for willow regeneration along streams (to provide cover for wildlife, nesting for birds, strong root systems to stabilize banks, provide food for fish), to manage for key plant

communities (grazing at different times of the year changes animal behavior and they graze different plants), and to avoid trampling cultural resource sites (place salt to draw animals away from favored areas). It's still more of an "art" to do a good job of juggling all these aspects; science gives us a basic understanding of some of these interconnections.

I believe one sign of the changing times which has affected range over the last 20 years is the greater integration of the feminine—not female—but feminine aspect into every aspect of our lives. This is an understanding that there are two kinds of equally powerful ways to act in business, by being active or receptive. Numerous collaborative processes have emerged in range including "Coordinated Resource Management Planning" and "Holistic Resource Management" and what they share is a decision-making process based on consensus and mutual respect for our differing needs. It is a way of working together based on hope, not fear. One of the finer moments of 1996 was the "Sharing Common Ground" symposium, highlighting successful collaboration efforts to resolve livestock/big game conflicts in the west. The bright future in range lies in using this receptive approach; quick-fix solutions imposed on disenfranchised players is an inappropriate method to solving problems on our rangelands.

We've seen a new sense of excitement and commitment in many private landowners in how they manage their range. A progressive operator using Holistic Resource Management in North Dakota eagerly gave me a tour to showcase his ranch. He, and many others, have walked the talk and have taken financial risks because they have tremendous faith that doing business differently will create a landscape which is diverse and productive. Compared to his neighbor's deteriorated rangelands, his results were awesome. Healed gullies, dense and vigorous vegetation, and increased water in streams during the summer are some of the rewards for his intensive management. In range, we count on our operators to be able to make shifts to deal with changing markets, and our success on public rangelands will depend largely on their ability to adapt. They *are adapting* by changing their products to meet new demands, more intensively managing their livestock, and finding entirely new markets by actively managing the big game or fisheries resources on their private lands.

So, from where I sit, I see very positive improvements on most of our rangelands from the time I started with the Forest Service. The work is not even close to being done, but we need to appreciate how much range conditions have improved. A solid foundation for building positive working relations is being laid in many areas across the west. I know the rate of change across the Forest Service varies considerably, but now change seems inevitable.

Where do the challenges and the focus of the future in range management lie? In stark contrast to the positive results seen in successful collaborative efforts, in many areas of the west our relationships with one another have deteriorated. This is where the future points us, re-focusing on the personal relationships to an even higher degree. Range issues have fallen prey to the false advertising and mud-slinging characteristic of a dirty campaign. The lack-of-trust issue and fear issue have escalated, and they've been highlighted by media seeking to satiate a market increasingly addicted to sensationalism. For many people working in range, they've seen the once friendly and accepting small communities they live and work in turn angry and distrustful; entire communities are poisoned with blame and accusations. When people choose to look at themselves as victims and act out of fear, they are destined to fail. We need to avoid the global rhetoric and stay focused on the one-on-one relationships. We know we do change the world by changing our part of the world.

The Forest Service has been blown in to the computer age, just like other businesses. It's hard to remember that there were no computer terminals parked on every desk 20 years ago. It's a tool with exciting capabilities and the inherent ability to overdose people with information. I think we're struggling, just as other businesses are struggling, with all this new access to knowledge. Knowledge and wisdom are separate entities, and they don't always travel together!

The explosion of noxious weeds over the last 20 years continues to seriously threaten to turn a huge part of the west into a total biological desert, devoid of deer, elk, birds, small animals, and insects. Picture a wasteland of weeds, with poor watershed conditions and lacking any diversity and you're seeing what has already happened to millions of acres of formerly diverse and productive rangelands in the west. Yellowstar thistle, a poisonous invader, has taken over 10 million acres of northern California in only 10 years. Spotted knapweed blankets much of the Bitterroot Valley in Montana, and now covers about 4.5 million acres in Montana alone. It was introduced in 1920. About 46 million acres in Montana are susceptible to this knapweed invasion, and the state spends over a million dollars a year just trying to contain the spread of noxious weeds. It will take diligence and cooperation to control the future expansion of noxious weeds. This is one battle which may be a catalyst for bringing all the factions in the west together for a common goal.

Our public rangelands have within them the inherent wholeness and capability to regenerate and realize their potential. I think range managers have the role of working to heal and cure the land when it has deteriorated in condition. There's lots of talk about "rangeland health" these days, yet I'm not sure range managers directly see themselves in the role of one who tries to heal or cure these lands. Many of us prefer to describe our role as "studying" or "analyzing." I think we'll see these ideas evolve in the future. We have a lot to learn about these concepts; it's appropriate to "cure" when we have a noxious weed infestation and the weeds need to be removed through radical action such as spraying chemicals. This approach is similar to surgery in the medical profession, where something is "pruned" to allow normal growth to resume. "Healing" is about acting as a facilitator, and working with the land to find its inherent ability to restore itself; lands which have been misused in the past often only need some slight change in management (such as changing the time of year livestock graze an area) to fully recover and regenerate on their own. In this case, aggressive programs to "fix" problems with stream structures, miles of new fences, or planting exotic species to improve ground cover are not necessary and are often a waste of money in an attempt to force the land to conform to our preconceived notions.

For me, personally, some things haven't changed at all over the last 20 years. I still love agriculture, it's close ties to the land, the animals, and the strong, skilled people the business produces. And I still hate new subdivisions eating up valley meadows and spreading onto deer winter range. Living on the booming eastern Sierra Front, this is a daily occurrence. Not everyone agrees with me, but I will take an agricultural field, in any condition, over a sprawling subdivision, any day. And when I look to the future of our western rangelands and what threatens its jewel-like offerings, the real threat is our expanding, unsustainable lifestyles in the modern west. We're at a major crossroad in time and with a sense of urgency we must choose the right path. It's my hope and my intention that agriculture will provide the anchor tying us all to the land, and help lead the way toward a future of sustainable living in the next century.

Jane Schmidt is a Range Management Specialist on the Humboldt-Toiyabe National Forest, in Carson City, Nevada (Carson Ranger District). The District covers 400,000 acres in western Nevada and eastern California. Schmidt's Bachelor's is from Oregon State University in 1979 in Range Management. Earlier, she worked in range in New Mexico and Montana.

not escape their influence. Science, say its critics, is therefore a "social construct" and its discoveries and conclusions have no special claim on truth. To many scientists, those are fighting words. But they have been slow to react. The early criticism came from academic fields like women's studies and literary criticism that few scientists pay attention to, so they didn't even realize they were under attack until the 1980s. When they finally woke up to the bombardment, they found the criticism so patently stupid—gravity is an opinion, a social construct, and not a fact?—they ignored it, figuring that everyone else would too. But everyone else didn't. "The science critics began to have an influence among undergraduates and on the curriculum," says primatologist Sarah Blaffer Hrdy of the University of California, Davis. So scientists launched a counterattack...

As the extremists on both sides are frozen out, the more thoughtful criticisms of science are winning over even some physicists, astronomers and biologists. One of the world's leading journals of science, *Nature*, editorialized recently that scholars who describe science as a social construction "should not be dismissed" since "fashionable ideas" do affect what "becomes accepted as scientific truth." Most often, such factors are brought to bear on emotionally or ideologically charged subjects, like sex or race. Countless studies have "proved" the intellectual inferiority of women, blacks, or immigrants. But values have also skewed other sciences. Primatology: *Old think*— Baboons show how human ancestors behave. Bonding of aggressive males held troop together. Females contributed little to cohesion and weren't worth studying. *New think*— Study all individuals to understand troop. Primates that are less aggressive and not male-dominated, like bonobos, offer equally valid clues to our ancestors.

Sharon Begley, *Newsweek*, April 21, 1997

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$50 Million Buys a Lot

A sprawling mass of Nevada that covers more ground than the cities of Las Vegas and Reno combined goes on sale offering bidders a big chunk of the state for as little as $50 an acre. But unlike the state's metropolitan areas, the land that's up for grabs is remote. No roads, no power, questionable water. "This is cowboy property, eight to 10 miles off the freeway," broker John Blom said at a meeting with potential bidders in Las Vegas. It's land the government gave to the Central Pacific for completing the transcontinental railroad in 1869. The Santa Fe Railway quietly sold about 1.4 million acres 18 months ago and it was bought by Nevada Land and Resource Company of Reno. The joint venture of San Diego-based Western Water Co. and Morgan Stanley Real Estate Fund instantly became one of the largest land owners in the state for something in the range of $50 million. The 101 parcels, ranging in size from 155 acres in Elko County to 714 acres, also in Elko County, are scattered across 340 miles of desert from east of Reno to Wells, most of them within a fairly short drive—or horseback ride—of Interstate-80. John Houston, a director of Nevada Land & Resource Co., said the proximity of the railroads or the interstate offered retail or industrial potential to some potential bidders. For others, the sheer remoteness was the lure. "These are checkerboard sections. A square mile all to yourself and it touches other corners of square miles that touch nothing," said Houston.

Tom Gardner, Associated Press, March 20, 1997

Early Agroforestry

Prior to the arrival of Europeans in New England, native peoples in the region practiced various forms of shifting cultivation and fallow management. While certain groups were more migratory than others, many used controlled burning of the forest understory to enhance habitat for game animals, to clear fallowed sites for re-cultivation, and to create favorable conditions for berries and other gatherable foods. They engaged also in selective felling, planting, and cultivation of trees for a range of products that contributed importantly to their subsistence, particularly nuts and maple sugar. Traditional linkages are apparent between shifting cultivation and forest farming in the northeast.

Louise Buck and Amy Waterman, *The Temperate Agroforester*, April 1997

Rabies

Although the lethality of rabies seems self-defeating, since any virus that kills its host ultimately destroys its own environment as well, the course of the disease is part of the microbe's survival strategy. The rabies virus can infect someone only through a break in the skin—the kind that occurs with a bite. Insane, aggressive individuals are more inclined to bite, which suits the virus perfectly. "No other disease so completely manipulates its stricken host, while barely leaving a trace of its presence," veterinarian Cynthia Mills asserts in the January-February 1997 *The Sciences.*

The stage of the rabies life cycle in which the virus hides in the victim's tissues is known as the eclipse phase. Where the virus goes and what it does during this phase remains uncertain, says Charles E. Rupprecht of the rabies laboratory at the Centers for Disease Control and Prevention in Atlanta. Ultimately, Rupprecht says, the virus sheds its outer layers and injects its genetic material—five genes made of ribonucleic acid (RNA) bound with protein—into the host's nerve cells. The virus then creeps from nerve cell to nerve cell toward the brain at a pace of 10 millimeters a day, Mills reports. Once it arrives, it begins to replicate. The exploding population of viruses causes encephalitis, an inflammation of the brain marked by swollen, leaky, blood vessels. The virus makes its way back down the nerves to the salivary glands, where it awaits entry into a new host.

Steven Sternberg, *Science News*, February 8, 1997

Alabama Bliss

With a deer herd estimated at 1.3 million and a liberal bag limit which allows hunters to take a buck a day from mid-November to the end of January, it's not a surprise that deer hunting in Alabama is big business—a multimillion dollar business. A study by Auburn University has shown that 40 of Alabama's 67 counties receive *major* economic impact from deer hunting.

Mike Bolton, *Outdoor Alabama*, Winter 1997

Arctic Ecosystem in Peril

The Arctic Goose Habitat Working Group reports that (1) overabundance of several populations of arctic-nesting geese in North America is causing major damage to arctic habitats used by geese and other wildlife; (2) a "trophic cascade" of events resulting from overgrazing and grubbing by some Arctic geese, creates soil salinity and moisture conditions that make affected Arctic landscapes look like deserts; (3) this habitat damage is increasing in extent and will not be corrected or reversed by any known phenomena.

Mike Johnson, *North Dakota Outdoors*, March 1997

Forest Products for Sustainable Forestry will be held at Washington State University-Pullman July 7-12, 1997. Contact International Union of Forestry Research Organizations /WSU Conferences and Institutes, PO Box 645222, Pullman WA 00164-5222.

Cornell hosts the 5th Agroforestry Conference August 3-6, 1997 Contact them at 118 Fernow Hall, Ithaca NY 14853-3001 (607-255-2810: fax 607-255-0349).

The World Organization for Women in Science is an independent, non-profit, non-governmental organization which aims to promote the role of women in the development of science and technology in Third World countries. For information write them at PO Box 586, Strada Costiera 11, 34100 Trieste ITALY.

American Fisheries Society's annual meeting will be held August 1997 in Monterey California. The theme is "interfaces," highlighting the interconnectiveness of disciplines, environments, cultures, and nations. Call Jennifer Nielsen 408-655-6233 or jnielsen@leland.stanford.edu. for details.

World Wise Schools is a program to match Peace Corps Volunteers with teachers and classes grades 3-12. PCVs interact with information and teachers get videos, suggested activities, etc., suitable for the age group. Call them at 202-606-3294 or email DPINFO@PEACECORPS.GOV.

FAO has a training package on use of gender analysis (using the individual rather than the household) for foresters, planners, rangers, extensionists and others going into resource development work. Email FAO at Helen.Gillman@fao.org for costs/details.

The Agroforestry for Sustainable Land Use conference focuses on fundamental research and modeling for temperate and mediterranean applications. It will be held in Montpellier France 23-28 June 1997. For information fax Daniel Auclair at 33-67 59 38 58 or email auclair@cirad.fr.

The Design and Environment Conference focuses on the links between the design of the built environment and the transformation to a sustainable society. The meeting will be held December 5-8, 1997, University of Canberra Australia. Email Dr. Janis Birkeland jlb@design.canberra.edu.au or fax 06 201 2279.

The Natural Areas Conference is August 27-30, 1997, Portland, Oregon. Contact Natural Areas Association, ATTN: 1997 Conference Information, PO Box 23712, Tigard, Oregon 97281-3712; e-mail Kathleen Bergquist, Conference Coordinator, at kbconnor@ix.netcom.com.

The Canada-U.S. Fire Safety Summit will be held in Rossland, British Columbia Canada 30 September to 2 October 1997. Call for papers until June 15, 1997. Contact IAWF, PO Box 328, Fairfield Washington 99012 email greenlee@cet.com or call 509-283-2264.

The Society of American Foresters conference will meet in Memphis Tennessee October 4-8, 1997. Contact SAF at 301-897-8720 ext 109 or email perld@safnet.org. SAF Women in Natural Resources will have an informal luncheon this year on Monday, October 6, from 11:45 am to 1:15 pm in the convention headquarters hotel. Registration must be received by September 5, 1997. To register, send name, organization or school, mailing address, telephone, fax numbers, and email address to: sfriedman@reeusda.gov. A minimum $5.00 contribution to help defray costs would be appreciated. Make checks payable to Sharon Friedman, the treasurer for this event, and send to 6056 Hardwick Place, Falls Church, VA 22041. For information, contact: Melody Mobley phone 202-205-0999: fax 202-205-1045: email starya@aol.com.

Dryland Pasture, Forage, and Range Network News is a newsletter jointly published by many international ag program organizations. They welcome articles. Contact them at S.Christiansen@cgnet.com.

The World Wilderness Congress will be held in Bangalore, India October 18-24, 1997. For information contact them at www//wild.org/wwc or email wild@fishnet.net.

From November 12-15, 1997, the Society for Ecological Restoration will hold its conference in Ft. Lauderdale, Florida. Among field trips offered: Everglades, Big Cypress and the Caribbean. For information contact SER at 608-262-9547 or ser@vms2.macc.wisc.edu.

KIOSK

The journal *Vegetatio* was founded 50 years ago as the first international journal in plant ecology. The name has just been changed to *Plant Ecology, an International Journal*. More information about it can be found at http://www.wkap.nl or email plantecology@iastate.edu.

The North American Association for Environmental Education conference is in Vancouver British Columbia, Canada August 15-19, 1997. For information phone 937-676-2514 or email jthoreen@igc.apc.org.

Greening of the Campus II will be held September 18-20, 1997 at Ball State University, Muncie, Indiana. Contact them at 765-285-2385 or http://www.bsu.edu/events/.

The Soil and Water Conservation Society meets July 22-23, 1997 in Toronto, Ontario, Canada. For information contact SWCS at 515-289-2331 ext 15 or http://www.swcs.org.

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