By Dale Bosworth

A Century of Rangeland Conservation in the Forest Service

The Forest Service has built a rich history of rangeland management and research since its inception a century ago. In fact, the original law governing the administration of national forest system lands, the Forest Service Organic Administration Act of 1897, requires that rangelands be managed for their protection and improvement. Hundreds of Forest Service rangeland conservationists and research scientists have tirelessly worked to support the tenets of this 1897 act by managing these lands for sustainability and various ecosystem services.

On November 8–10, 2004, a centennial forum was held on the Colorado State University campus in Fort Collins, Colorado, celebrating a "Century of Service" by the Forest Service and highlighting broad goals for better rangelands, wildlife, and fisheries management (http://www.fs.fed.us/r2/centennial/). Forum speakers not only acknowledged the past, but also explored how the Forest Service can better serve the public while caring for land in the 21st century. The manuscripts in this issue of *Rangelands* represent a cross section of presentations made at the Forum. Delegates Bob Budd, Ellie Towns, and Ed Marston, who represented the Centennial Forum at the Centennial Forest Congress in Washington, DC, this past January (http://www.fs.fed.us/newcentury/), wrote three of the articles.

The Forest Service stands committed to the mission of sustaining the ecological status, diversity, and productivity of our nation's forests and rangelands so they can meet the needs of present and future generations. As the following papers report, we are concerned not only with the ecological health of our nation's rangelands but also with the social and economic factors concerning rangelands that lend strength and stability to our country. I appreciate the participation of the Society for Range Management, along with other institutions, nongovernment organizations, and agencies in both the Centennial Forum and the Centennial Congress. Clearly, the journey to a future of sustainable rangeland management can only be achieved if it involves collaboration between those who understand and manage our land resources.

Author is Chief, USDA Forest Service, Washington, DC 20250.

Forest Service, Rocky Mountain Region Centennial Forum: Summary Essay[i]

By Ed Marston

To go forward into its 2nd century, we believe that the US Forest Service must first understand what happened during its first 100 years. Fortunately, the Forest Service Region-2 delegation to the Centennial Forest Congress in Washington, DC, who were responsible for this abstract, had the benefit of an outstanding Regional Forum from November 8, 2004, to November 10, 2004—one that portrayed the history and spirit of that 1st century. Thanks to an engaged audience, we got to see today's issues, today's challenges, and the spirit of the emerging Forest Service (Fig. 1).

If the Forest Service were the stock market, we would say that the agency's first 100 years were marked by a long and steady rise to its midcentury point, followed by a boom, culminating in the late 1980s and early 1990s by a shattering bust. The bust took the annual timber cut from 10 to 12 billion board-feet per year down to a few billion board-feet.

Of course the agency can't be fully represented by the size of the timber cut, any more than the dollar value of the Dow represents the United States. But a boom is significant because it is a sign of instability and a loss of balance and sustainability.

The boom was in marked contrast to the agency's early decades. We heard, for example, of an early district ranger who is said to have planted 1 million trees during his career. True or false, this anecdote about a sort of reverse Paul Bunyan sums up what we learned from various speakers: that the early Forest Service was about restoration and protection of land and trees.

We can only imagine the turmoil and pain within the agency when the Forest Service responded to a change in national values and turned to flat-out production of commodities, especially of timber, but also livestock, stored and conveyed water, and, late in the century, recreation.

A word here about recreation. It is interesting that the Region-2 Forum did not have any fights over logging or "overgrazing" or mining. But we did have a fire fight over recreation—about whether it is an always-beneficial use of the land or simply another use and abuse.

It is interesting that recreation is no longer a white knight, but simply another contentious issue for the Forest Service to deal with. The agency has been embroiled in fights over natural resource use for decades as the nation's values shifted from production back to protection. We are sympathetic to the communities and companies and agency staff that were caught in that shift. They were standing on the wrong historical corner just when historic forces changed direction…and they were run over.

This change in historic direction decimated communities and even entire states. It roiled the region's electoral politics. It set one class of people against another and has even influenced our national politics.

[i] Five delegates were selected to represent the Rocky Mountain Regional Forum at the Forest Service Centennial Congress (available at http://www.natlforests.org/centennial), held in Washington, DC, from January 3, 2005, to January 6, 2005; they were Ed Marston, Former Publisher, *High Country News*; Eleanor Towns, Regional Forester (retired), Southwestern Region; John Mumma, Regional Forester (retired), Northern Region and Director (retired), Colorado Division of Wildlife; Bob Budd, Past President, Society for Range Management and Manager of The Nature Conservancy Red Canyon Ranch; and T. J. Rapoport, Executive Director, Colorado Fourteeners Initiative. The delegates presented this essay, written by Ed Marston, at the Centennial Congress. The Rocky Mountain Region Centennial Forum was organized and carried out by a planning committee led by David Wheeler, Group Leader for Rangeland Management, Rocky Mountain Region.

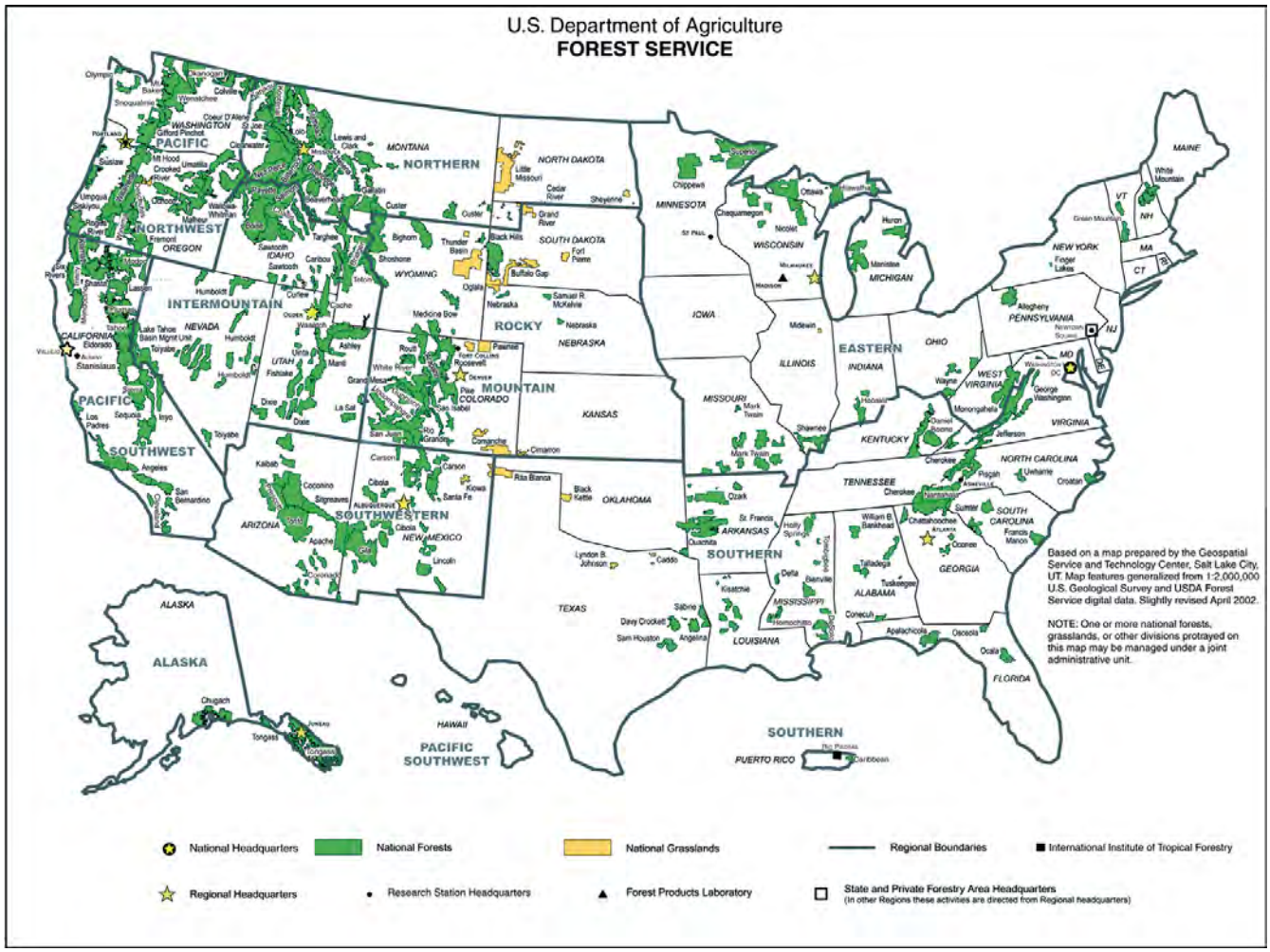


Figure 1. The National Forest System is divided into nine regions: Northern (R-1), Rocky Mountain (R-2), Southwestern (R-3), Intermountain (R-4), Pacific Southwest (R-5), Pacific Northwest (R-6), Southern (R-8), Eastern (R-9), and Alaska (R-10). There is no Region 7. Forest Service Research is divided into seven research stations (HQ in parentheses): North Central (St. Paul, MN), Northeastern (Newtown Square, PA), Pacific Northwest (Portland, OR), Pacific Southwest (Albany, CA), Rocky Mountain (Fort Collins, CO), Southern (Asheville, NC), and the Forest Products Laboratory (Madison, WI).

But that period is behind us. Passions and bitterness have subsided. But so has momentum. We are adrift.

Obviously, there are still conflicts. The Region-2 Centennial Forum could have sunk into acrimony over logging, or fire, or mining, or water, or grazing, or recreation. But we didn't. As a result, we got to make a number of observations that an acrimonious fight would have concealed.

One of the most provocative moments of the meeting came when our Regional Forester held up the 1905 *Forest Service Regulations and Instructions*—the slim, slight, 142-page, vest-pocket-sized bible that District Rangers on horseback used to manage their domain (Fig. 2).

Clearly written by Gifford Pinchot, the agency's founding Chief, this booklet said two things to us. First, that the Forest Service was a civilizing force, carrying the values of the larger society to the frontier. District Rangers were stopping theft and destruction of natural resources in the so-called hinterland just as reformers in cities were stopping child labor, forcing slum owners to introduce running water and ventilation into tenements, and so on. The West at the founding of the Forest Service was part of a reform movement, national in scope.

The small booklet also asks a question: What is the meaning of its small size compared with the 8-foot-long shelf of policy manuals that has replaced it? And what is the relation between the handful of men on horseback who administered the same 191 million acres that are today administered by many more managers and technicians, most of whom are desk-bound.

The answer is that the many, often conflicting, demands society has put on the federal lands have forced the creation of an ever-lengthening manual and behind it, a mountain of handbooks, environmental impact statements, legal briefs, judicial opinions, reports, and books.

It is not just the Forest Service that has bulked up without becoming better able to move the ball. Russell George,

head of the Colorado Department of Natural Resources, told the Forum that although one set of laws and rulings says that Colorado's water is owned by the state, another equally authoritative set says the water is controlled by the federal government. This is typical of our society and is reflected in our laws, which embrace solitude and mass use of the land for recreation; endorse "let burn" and fire protection; and seek to protect endangered species and meet society's material needs.

Russell George said that to overcome the contradictions, federal and state agencies must remember that they serve the same people. The other requirement, he said, is that the various agencies must avoid confronting or trying to answer the big question. Never mind, he said, which governmental entity owns the water. Instead, go to the ditch or stream or diversion in question and solve the problem on the ground. That's the best we can do, he said, and even that is possible only if staffers extend themselves, and if their superiors, such as himself and Regional Forester Rick Cables, give their staff room to be flexible and daring.

This is good; it is admirable, but it is also makeshift.

Can we go beyond makeshift? Beyond maneuvering between laws and policies that, if strictly observed, can only lead to gridlock and can only demoralize and exhaust those who attempt to solve problems using them?

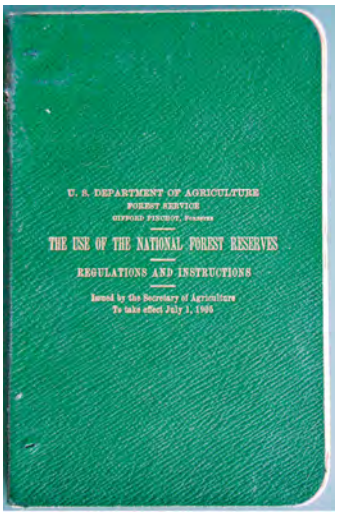
Probably the first step is to recognize that the responsibility is not only the agency's; it is a shared responsibility. From what we saw at the Forum, Region 2 believes that only partnerships among equals can make progress on the ground.

But part of the problem is the sole responsibility of the agency: to improve finance, hiring, firing, and policy making. For, unless the internal wheels turn freely, there will not be enough time to get things done on the ground, with or without partners.

We have no advice to give with regard to internal streamlining. But we do think there is a way in which the Forest Service can prepare for its next 100 years that will go beyond maneuvering between laws: Put environmental impact reports to much better use.

The National Environmental Policy Act of 1969 is an extraordinarily clear, concise, and even poetic law. It calls on the various federal agencies to "achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities." It asks the agencies to do this by using "a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision making which may have an impact on man's environment…"

There is no room to quote further. But the idea is clear: Impact statements should not be narrow, lawyerly documents that people read only under duress. They should be clear, truth-seeking documents that present issues as clearly and even-handedly as possible, using the best minds, best disciplines, and best writers and artists available. Impact statements should be written manifestations of the cooperative, multidisciplinary approach we expect from mature partnerships.



This original 142-page manual written by founding Chief Gifford Pinchot is today an 8-foot-long set of loose-leaf books.

We believe that impact statements, done right, will tell Westerners things about our region that we don't know and that these reports will bind us together in common vision and common purpose.

Is this too idealistic? Is the Region-2 delegation to the National Centennial Forest Congress imagining an agency product that can't exist in today's world? We don't think so.

Not long ago, it would have been difficult to imagine the US Forest Service—which saw itself as king of the natural resource hill—eagerly partnering with other agencies and groups. After all, the Forest Service saw itself as king of the hill.

So a major change in attitude has already occurred. But further change is needed if we are to make additional progress. We are not suggesting a public relations campaign. Or the creation of another rhyming program, such as "Change on the Range." We are not looking for a big, comprehensive, centrally administered fix.

We are saying that when the agency approaches a particular issue imaginatively and openly and puts that approach into an impact statement, there will be a world of people ready to recognize and hail the work and the entity that produced it.

We do not believe we are trapped in a series of no-win situations when it comes to national forests. There are solutions, and those solutions will flow from the ground via partnerships, hard work, imagination, and the dissemination of the achievements in clearly written, honest impact statements of the kind envisioned so many years ago in the *National Environmental Policy Act*.

Author is former Publisher, High Country News.

Natural Resource Management: The Next 100 Years

Conservation accomplishments of the last century and issues for the 21st century.

By Eleanor Towns

Every now and then, we who care about the woods and rangelands should come together to talk about their management. Land is wealth, and how a nation treats land ownership is an indicator of how it governs. The notion of lands belonging to all of us and managed under the executive direction of an elected head of state is central to our brand of democracy and distinguishes us from nations and feudal societies in which land is owned and managed by "the King," who retains the power to bestow it on a favored few.

The Forest Service now manages roughly 192 million acres, and I can say with great certainty that *somebody* cares about every single acre: If you do not believe it, just try to do something—anything—on any one acre. And here is the good news: The land base might be tweaked and adjusted, but its size will remain fairly constant because citizen-owners who value that scarce commodity use their collective interest, love, and vigilance to restrain politicians (and land management agencies) from frittering it away. So, I count retaining these lands in public ownership as a fundamental accomplishment of the last century.

Science and population and use figures indicate that what the current Forest Service Chief calls the four threats to public health and safety and to health of the ecosystem will continue for at least the next 25 years. The threats—*fire and fuels, invasive species, urbanization* or *loss of open space,* and *unmanaged recreation*—are long-term, simply stated, politically neutral, scientifically grounded, and easily understood.

To those four threats to public health and safety and the health of the ecosystem, I would add *drought*, the paucity of water, lifeblood of the West. Most settlers to the New West are moving to counties with large holdings of public lands in which people, critters, and resources compete for that precious commodity. Ninety-six percent of all watersheds originate on National Forest Systems lands, and some of those watersheds need *some* water to keep the quantity and quality of water to which we are accustomed and to address other environmental values. Recreation dominates the economies of states in the intermountain West, but rural interests, whose ancestors settled the Old West, still dominate Western state legislatures and control the water so vital to recreation. Unmanaged recreation is also a national threat to the safety and health of forest and rangeland ecosystems.

In the West there is strong bipartisan resistance when public land law conflicts with state water law. One political party now dominates the executive, judiciary, and both houses of Congress. The current Secretary of Interior was the Attorney General when we were involved in some high-profile water controversies here in Colorado, and her Assistant Secretary for Water and Science represented many of the opposing water interests. So now might not be the time for individual units to annoy the gods with questions that pit state water law against public land law, risking legislation or policy changes that limit the options of line officers throughout the Forest Service. Special-use authoriza-

tion conditions for water uses should be reasonable, scientifically supportable, and relevant to a specific situation on the ground.

Better Serving the Public While Protecting Our Forests and Rangelands?

Set Priorities but Leave Room for Unplanned Work

In the next century, demand for use of the national forests will continue to increase and dollars will continue to decrease, spiking only to meet crises. The agency will never be allocated the amount of money it thinks it needs to do all of what it wants to do. Therefore, when crisis (eg, wildfire) is followed by money that will only last until the next crisis, we will have to do what we promised to get that crisis money. Jerry Schmidt says, "Some of the most important work we do is unplanned." This truism, I add, applies if we are managing land, raising children, or training a puppy.

I remember when the Region watershed folks had what the lawyers thought was a good case for claiming a wilderness water right in northern New Mexico. I politely declined, pointing out that I already had a full plate with wildfire, tribal claims, internal Equal Employment Opportunity problems, and grazing and the related issues of endangered species and riparian health.

Integrate Our Focus on the Threats to Other Administration Initiatives

What staff and organization resources do we need to respond to the next century of challenges? Yes, we "can do," make do, could do, still wanna do. Every Administration thinks we are the captive of the other and consequently has no tolerance for bureaucratic dawdling or resistance. Each Administration, in its zeal to persuade its constituents that it is doing something new and enthusiastically "throwing the bums out," imposes natural resource and performance initiatives. As we respond to this one and that, as we expand and contract, as we centralize and decentralize, we are wearing out the troops. Under Gore, we created enterprise teams. Under Bush, we competitively sourced them to industry. Some of these initiatives require money off the top or kitchen sink data systems with short turnarounds for Service-wide data gathering. With most initiatives, as with Prego, "it" is in there—"it" being something you want and need to do that fortunately fits any Administration's agenda. Look for those links and celebrate them loudly.

Work With Congress to Develop Financial Incentives for Environmental Protection

Perhaps such incentives will be more acceptable to ranchers if they come from a Republican-dominated Congress. For 4 years, I personally worked on financial incentives to help ranchers comply with environmental protections associated with grazing. I had the commitment of three of four Senators and no objection from the fourth. I had cautious commitment of two statewide cattlemen's associations until

an environmental entity publicly demanded the incentives. The cattlemen backed off, not wanting to be seen as acceding to environmentalists' demands.

Take Western water law (please, some might say): After declaring the underlying principle of first-in-time, first-in-right, the rest of that body of law ticks off all the exceptions to that rule. A state legislature that was so inclined could declare that owners who leave water in streams for watershed enhancement (without reference to federally managed lands) would not be penalized for nonuse. And "payment," if "payment" there must be, could be federal tax incentives for environmental protections. When you change the way you look at things, things change.

Reward those who retrofit timber mill infrastructure for small-diameter timber. This nation is smart enough to *use* some land and resources and *save* some and still make money and still make jobs. The greatest nation on the planet allowed ungentried and unlanded people to get rich making lemonade out of the lemons they had, and making the rest of us crave lemonade. In some places, it might be possible and appropriate to produce timber in sufficient quantity so that idle mills can be revived. But we can also reward those who convert mills to handle smaller diameter timber and those who develop and market products fashioned from smaller diameter timber.

Science Should Play a Pivotal Role in Reducing the Threats to Public Health and Safety and Health of the Ecosystem

Research must be adequately funded if it is to tackle questions related to the threats. Researchers must be willing to shift to applied science and to set measurable milestones, remembering that indeed, all is well that ends. We no longer have the money, attention span, or patience for open-ended research projects, or at least those without identifiable achievement objectives against which to measure progress.

Jack Ward Thomas was the first Wildlife Biologist Chief of the Forest Service. "Ologists" across the Service *thought* that

finally natural resource management decisions would be based primarily on the findings of science; however, Jack Ward Thomas, scientist that he was, knew that at any given point in the evolution of man's knowledge of the natural world, we would today know only a fraction of what we would know tomorrow. In fact, Chief Thomas said that all of the complex natural resource controversies of the time were scientific, social, political, legal, and economic, and that the "answers" should not be compartmentalized but should be an amalgam of all of those components—a compromise if you will.

Sometimes as good as it gets is when everybody leaves a little unhappy—meaning everybody *gave up* something they cared about in order to *get* something else they cared about. So, when Jim Maxwell, then District Ranger, told *his* resource specialists to throw their scientific "peas" into his multiple use "stew," it did not mean he thought those scientists were lesser human beings who could not go to heaven.

When We Do Not Control the Parts, We Must Play Nice in the Sandbox

Three-year-olds know this. My brother Woody's grandson loves to spend the day with Grandpa, the gunsmith, learning "man" stuff. Our parents did not know the meaning of time-out, and so on a long drive from Florida this summer, Little Guy kept touching his brother; that is, until my sister found a switch at a rest stop. Little Guy became quite charming and delightful when he figured out he did not control the parts—most especially a switch applied strategically to his little bottom.

In truth, natural resource managers have never been "in charge"; others have always held jurisdiction over critical things that affect our management. We manage the watersheds—we rarely own the water; we manage the habitat—states manage the critters; we manage the surface—we rarely own the minerals; we manage lands, and we might not have legal access to it.

A public that wants fewer taxes will not tolerate interagency duplication and competition. If we are to survive, we will share decision space, staff, dollars, and equipment. We will respect one another's competence and jurisdiction. Those who advise decision makers, those charged with maintaining consistency, those who interpret rules and manuals—including attorneys—will need to look for flexibility in our rules and laws so those on the ground can work with other governments to *solve* mutual problems. Expanding the discussion table to include those who can affect the outcome of a controversy is indeed sharing power and decision space, but getting to "yes" will not be cheaper, easier, or faster.

Lasting solutions will address the values of key parties. Almost every controversy is about the *values* people hold for those acres. The grazing controversy in the Southwest is only partly about the condition of the riparian zones and the upland rangelands—much of it centers on whether or not public policy should allow some to make money from the public's land base. Sandia Pueblo has strong spiritual ties to Sandia Mountain, backdrop for the city of Albuquerque. The homeowners in Northeast Heights had strong concerns about their property values. In the end, 2 years later, the Pueblo got additional legislated protections for land with religious significance and the right to unfettered worship. In the end, homeowners got phones, electric lines, gas lines, cable television, a confirmed road right-of-way—things that affect property values of expensive homes.

You may be advised to avoid precedents at all costs. Well, every new second you live is a precedent. There is no future second in which the world will be exactly like this one.

If only those who pay lawyers only understood that lawyers seldom make money litigating. After they have revved you up with promises of total victory and charged you for every word they write and every piece of paper they copy, after their interest has subsided, after they realize that your issue is going to take a lot more work than you have money, they will begin to encourage you to settle—as will the judge.

At the end of the collaborative day, you will find that at some point you began to listen to the hearts and *fears* of those with whom you disagree, that you *can* do what you were told you cannot, and that tomorrow the sun will rise in the East. In the process, you learn what Woody's grandson already knows: In order to get something he really, really wants, he has to give up something else he really, really wants. Sometimes everybody leaves a little unhappy, and that might be as good as it gets. I can still hear former Regional Forester Gary Cargill saying, "Ellie, all's well that just ends!" Now, folks, if *you* know all of this at the front end of a controversy…well, you finish the thought.

People Who Do Not Look Like Most of You Will Have Tremendous Influence Over Forest Management

One hundred years ago, the Prussian image of Forest Service leaders was one of tall white males. I am smiling because the hand that writes this belongs to a gray-haired ample Black female lawyer.

When we speak of generations on Western land, we must not forget those who were here when the rest of us got here. They, too, have spiritual and economic ties to the land. They, too, have values for the land and a sense of place. Many were displaced, and others *demanded* that they accommodate the cultures of others.

As predicted, Hispanics have become the largest minority group in the country and are on the way to becoming the majority. It has already happened in New Mexico, and it has almost happened in Arizona. Western old-timers are already trying to adjust to the fencing and preservationist values of Easterners and Californians. Coastal communities are being repopulated by large numbers of immigrants from a variety of economic and cultural circumstances whose knowledge of Western ways might be limited to old cowboy movies.

Questions for the Future

Gifford Pinchot, the conservationist, said, "The forest may be handled so as to supply a wide range and combination of uses… . It is the art of producing from the forest whatever it can yield for the service of man." Pinchot's emphasis was on *use* of the woods. Such words contrast with the beliefs of Pinchot's friend and foe, leading preservationist of their time, John Muir, who sought to stop the spoiling of natural areas. Neither Pinchot nor Muir would be surprised to know that in the *next* 100 years the underlying policy struggles that engaged the two of them and "birthed" the agency will continue.

Should the public's lands be used or preserved? Can we both use some and leave some in the "natural state"—even if we can never agree what that is or was? Is there an acceptable balance between those who would use them up and those who would lock them up? Should there be public lands at all? For what purposes should these lands be "public"? For the livelihood and private gain of neighboring citizens? Who should manage them—the States or the Federal government? Private entities? Who should have the most say about how they should be managed? The neighbors who depend on them? The other citizen owners? Local governments who provide services to national and international visitors—despite the fact that Congress never fully funded payment in lieu of taxes?

And what are "appropriate" uses? Who knew we would be permitting "geocaching." Speaking of which, a few years back I was in the woods with the Routt's Middle Park District Ranger when an engineering tech emerged from the woods. He was wearing goggles and had GPS equipment duct-tapped to his yellow hard hat. He was riding an all-terrain vehicle. I turned to the Ranger and whispered, "The mother ship has landed."

What is the responsibility of the user? What conditions must be met in exchange for the *privilege* of using lands owned by the rest of us? Should fair market value be true *unadjusted* fair market value or should public policy reduce the amount we charge for some uses such as grazing or summer homes? How long do we continue summer homes, or do we now have enough presence in the woods? As opportunities arise, should we allow others to compete for the privilege of having a cabin in the middle of the woods? And what is that privilege *really* worth?

Should a private entity be allowed to use the land so long that we risk converting a "privilege" or "permit" or "license" to a "right"? Or should the private user be held to his written agreement to amortize his investment so he has no claims against the government, and so use is *really* limited to the permit's written or statutory term? How do we balance private property rights with our statutory responsibilities for managing surrounding public lands? What type of access must be provided—and at what cost to the surrounding public land?

How Can Science and Research Help Us Reduce Those Threats?

What flexibility can be provided to decision makers seeking intergovernmental solutions to complex natural resource issues? What old rules need to be more flexibly interpreted to allow managers to collaborate on solutions tailored to local matters? What laws? What regulations? For example, can we allow willing ranchers to use grass banks to relieve the stress on the land? Can we buy, trade for, or lease available ranch property to provide grass banks? Can Land and Water Conservation Fund criteria and funding be adjusted so that states can make such acquisitions? Can nonranchers manage some of the grass banks? Can we have intergovernmental grazing permits at the rate of the original agency? Can we waive fees and give tax incentives to those willing to use a grass bank and let the ground rest? What about similar or identical agency rules among range management agencies? I did not say it would not be heresy or that it would be easy. Would it help, and is it possible?

How will our management be affected by the diversity of our users: tribes, land grant communities, citizens to whom the concept of public lands is new? Should there be exceptions to accommodate cultures such as subsistence ranchers in northern New Mexico? Or does that open Pandora's box to those not of ethnic culture asking for exceptions to the Endangered Species Act based on a concept they call "custom and culture"?

Concluding Thoughts

I grew up 90 miles northwest of Chicago. I do not have family history that connects me to Western places, the land, the Agency, or Western culture. Nonetheless, "This land is your Land AND this land is my land." Actually, this land is *not* your land; this land is *their* land. Sometime during the past 30 years, the Forest Service became one of my families.

This Centennial celebration is a milestone in the history of the best governmental entity on the planet—bar none. Yes, I ate the cheese. It was my privilege to have worked for the United States Forest Service. Best wishes to the Nation as we move thoughtfully into the Agency's next century. Some of us will not go far down that centennial road with you, and it was time for us to move on. I left, *knowing* that we are indeed in good hands. I also leave you with words from an Agriculture Information Bulletin: "Where people have cared for the forests—used them wisely and protected, developed, and replenished them in good time—the forests, the land, and the people alike have prospered."

Author is Regional Forester (Retired), Southwestern Region, USDA Forest Service, 333 Broadway, SE, Albuquerque, NM 87102.

Sustainable Management on the Ground

Seven deadly sins and how to avoid them.

By Bob Budd

It is incredible that we are now on the precipice of celebrating the 1st century of the United States Forest Service, both because the organization is so old and, moreover, because it is so young. While asked to speculate on the greatest conservation achievements of the agency in its first 100 years, it is both tempting and hopelessly futile to determine the greatest accomplishments of any entity that reaches a century of service. As we passed the last century mark in this nation, I was both amused and dismayed at the preponderance of wisdom conjured up to select the "best" of the 20th century. We had it all…greatest sex symbol, greatest football team, greatest athlete…pick a category, and we were quick to make lists.

The problem with these lists is that they were all made by people like you and me–folks who had no idea what was going on in 1905 or even 1955, and these lists tend to be overloaded with what might be only average accomplishments by the greatest we have seen in our own timelines. How do you compare the real Babe Ruth you never saw with a Barry Bonds you saw too much? How do we begin to comprehend the thoughts or challenges of Pinchot, Theodore Roosevelt, or those who fought through the Great Depression? By today's standards, Marilyn Monroe was probably overweight (although anyone who has her second or lower on their list of hotties is clearly delusional). Jackie Robinson can be evaluated as a second baseman, among many others, or as a human being, perhaps the toughest man who ever played the game, given the mental and social challenges he confronted and faced largely alone. It is all relative, and we have no way to relate to it all.

One hundred years ago, no one had a clear view of the world in which we live, or in which they lived. The average lifespan of a human was almost exactly the average age of a Forest Service employee today (48), so changes in the environment were either subtle or beyond tomorrow. There were no breaking news briefs, no satellite images of the planet, no hour-by-hour weather reports–what the heck! Most of the maps were drawn in the dirt with a stick. My great-grandmother Budd walked alongside a wagon from Kansas as a girl and watched Neil Armstrong walk on the moon as an elder. At the time she walked across half the continent to an unsure future, the things we now take for granted were *unimaginable*, absolutely beyond comprehension.

Sustainability meant having enough to eat and, in the good years, enough to sell or trade for something else. The calves you sold paid their own way if you were lucky. The hay you made fed the cows that made the calves and the horses that made the hay. Spending money came from the muskrat, beaver, and mink you trapped or the work you could offer someone else. Meat on the table came from elk, moose, and deer. Come spring, after the thaw and before the runoff, a mess of fish was my grandmother's equivalent to live lobsters we now find in Wyoming superstores—an absolute feast, a return from the land, a change of pace and taste. In late summer, the quest became sage grouse—a chance to let work go for a day and provide a delicacy for the table. Sustainability

was more than just food for the table, wood for the fire, and money for clothes and Christmas. Then, as now, there was a need to sustain mind, spirit, and soul. We forget that sometimes, and we often judge our predecessors in the warmth of the world they left us to tend.

Theirs was a world of mixed messages, as is ours today. Religion was a major driver in decisions, to the degree that many cultures were certain that the bounty of the land was solely driven by a benign God, rain followed the plow, and the new land they sought to farm was equivalent to the land they left behind in the fertile Midwest. The Jeffersonian model of yeoman farmer was paramount in the minds of all, and a cornucopian model of economics was not the norm but the rule. The notion that nature could be controlled was manifest, and only a lazy or evil man was incapable of creating the desired mix of patriotism, religion, and business acumen. The resource was limitless, and the notion that anyone, or any multitude, could cut all the trees or drain the streams or build houses on the barren plains was absurd.

And yet, in the absence of geographic information systems, ecological models, fire prescriptions, detailed weather and climate information, grazing management plans, and E-mail, the people on the land a century ago may have offered us a bit of wisdom we should re-embrace. In the absence of all the technological gizmos we have today, they simply followed what they had seen in the natural world.

The motive to graze cattle on the plains of Wyoming came from observation of bison, elk, bighorn sheep, and other ungulates that survived and flourished on the hard grasses of the northern plains. Grazing districts were formed to move cattle from lower ranges to higher country as grasses matured. Irrigation imitated flood regimes that created and maintained river meadows where grasses grew faster and stayed green into the fall. Fire, denounced as "Native burning" by an early Forest Service, was adapted from Indians, who adapted it presumably from what they saw in natural events.

At the time, science was focused mainly on reductionist principles, and the club was pretty much an ordained bunch, confined to the disciplines of physics, chemistry, geology, and basic biology. The Society of American Foresters (SAF) had been formed, but other professional societies, such as the Society for Range Management, Ecological Society of America, and Wildlife Society were not yet created (the Ecological Society was founded in 1915, and the Society for Range Management grew out of the SAF in 1948). In short, we were conflicted by an age of arrogance, enthusiasm, ignorance, and uncertainty.

Out of that world stepped the likes of Theodore Roosevelt, whose hunting diary after the loss of his wife reads like a litany of death; Gifford Pinchot, child of a man who denuded forests of the East; and John Muir, a malcontent who rated both of them inadequate. Their words and their works have been quoted alternately as extractionist and preservationist, taken in the context of our own time (the world of the 10-second sound bite), but in many cases they have been misinterpreted. In many ways, our conservation roots became manifest in creation of the Forest Service. And, within this maelstrom of plunder and preserve, the pioneers of conservation were adamant in the notion that conservation was a fundamental requirement of production and economic prosperity. Later, Aldo Leopold repeated the theme in his many essays about landowners, but the most poignant may be his 1933 essay, *Game Cropping in Southern Wisconsin*.[1]

> *Most of what needs doing must be done by the farmer himself. There is no conceivable way by which the general public can legislate crabapples, or grape tangles, or plum thickets to grow up on these barren fencerows, roadsides, and slopes, nor will the resolutions and prayers of the city change the depth of next winter's snow nor cause cornshocks to be left in the fields to feed the birds. All the non-farming public can do is to provide information and incentives on which farmers may act.*

In spite of Leopold and other's reminders, we find ourselves attempting to regulate behavior and ecological results through negative reinforcement. If we hope to be successful in the next century of conservation, we will have to heed Leopold's advice and focus our efforts on information and incentives. I sense a change at the outset of the 21st century, in which the Farm Bill included programs like the Grassland Reserve. Even the Forest Service was considered a logical partner for distribution of Farm Bill monies, a concept that should be explored more thoroughly. If we want to be successful in conservation of large blocks of habitat, species of concern, and recovery of endangered or threatened species, it is incumbent that we find ways to make those actions profitable. If the private sector fails to create such markets, it is the responsibility of government, and it should be one of the highest priorities.

Perhaps the most pressing need for accomplishing conservation on the ground lies in our ability to function within the cultural constraints we continue to create. Although it is far more pleasant to focus on how to generate responses from the land or the creatures we seek to aid, we must begin to focus as much or more on human systems and their inherent frailties, something I would suggest are the "7 deadly sins" that work against our efforts to conserve natural systems, including natural processes in all their ugliness and glory. Those 7 are blame, fear of failure, perfection, hubris, bias, ridicule, and singularity.

Blame seems to permeate society today—perhaps it always has—but it seems to be more mainstream than ever before. Blame is a poor cousin of responsibility, and although it might salve our own sense of right or wrong, in the end, blame is one of the most destructive forces in our grasp. When we seek to blame, we can become oblivious to seeking results, and in crushing human dignity, we gain nothing at all. Conservation is a team sport. No player is either solely

laudable or liable for the results. Theodore Roosevelt was less without Gifford Pinchot, and Pinchot was less without Henry Graves. If we engage in the conservation of resources by seeking to blame others, we could probably succeed, and in doing so, we will fail the resource miserably.

A recent cartoon by Bil Keane (Family Circus) shows an older brother advising his sibling that "you can learn from your mistakes so be sure to make some." I was taught to ride a bicycle by being pointed down a hill where gravity would assure my progress and crashing into a fence. I was taught to be a gentleman by being slapped, to dance by stumbling on toes, to respect fire by being burned. Those are little lessons, perhaps, but when we *fear to fail*, we fear to succeed, and when we fear to do either, we simply fail. Instead of fearing failure, we must learn to celebrate mistakes with humility and try again.

Recently, I found a nationwide broadcast that tracked the "progress" of a human being who sought to have her breasts enlarged, nose narrowed, chin thinned, belly sucked, lips filled, and cheeks lifted, all in the quest of *perfection*, or someone else's view of such. This process required breaking perfectly good bones, cutting holes in perfectly good skin, stuffing things into the body, and sewing the same human being together again as casually as my 7th grader made a pillowcase. We seem to be obsessed with something other than what we are at times, and often we demand the same of the land on which we work. I once took a group of people to a riparian area that had recovered from an eroded monoculture of bluegrass and weeds to a stand of 6-foot-tall willows with an understory of sedges and rushes and an incredible meadow of tufted hairgrass, only to have one person point out a single dandelion and declare the job "imperfect." All jobs in conservation are imperfect and incomplete. All jobs in conservation are but one hard rain or one long drought from beginning again. As the television ad says, "there is no such place as perfect."

Whether from pride, passion, or otherwise, *hubris* seems to get us into more trouble than most of the sins. We say and hear definitive statements about the natural world that are more often than not pieces of the whole at best. Or, when we find something that works, we tend to overapply the technique. In China, the ebb and flow runs from mandates to cut every tree, then alternatively, cut nothing. We need each other and the knowledge others bring to the table. Arrogance and surety aside, we really do not have a clue about how some of these natural processes work. One of the most important aspects of learning is to admit those things we do not know.

Bias is only deadly when not acknowledged. Clearly, as we deal with natural resource issues in this century, we will be called upon to work with groups that include experts, advocates, detractors, and other interested publics. One of the most important aspects of getting to results lies in simply disclosing bias. When everyone can see where our bias lies, communication and understanding is enhanced. We should also ask ourselves often whether our bias is stronger than the facts at hand.

When we encounter something new, different, or truly scary, one of our best defenses is *ridicule,* and if we happen to be beating the snot out of a monster in a child's closet, it tends to work pretty well. But ridicule is a painful beating to ideas, and most leaders have had their share. Westerners ridiculed Mao's swimming in the Yangtze while he created the largest nation in the world and held it together despite of the mockery. The concept of ecosystem management was ridiculed, as were the ideas of Alan Savory, the shotgun formation in football, and the idea that girls could play basketball or soccer. Yet, in all of those things we choose to ridicule, nearly every one has brought us some greater level of understanding or knowledge, whether the idea itself succeeded or failed.

Finally, in our efforts to "solve" problems, we have allowed ourselves too often to focus on *singular* components of elegant and intricate systems. The Lone Ranger had a silver bullet, but the rest of us do not, so we might as well forget the notion that the simple solution will jump up and whack us on the head (thus allowing us to arrogantly present the answer and avoid blame while hiding our bias and gaining praise for our perfection). The more we look at endangered or troubled species, the more evident it becomes that there is rarely a single factor that will lead to recovery. And, the more singular our focus, the less flexible we become in seeking holistic solutions.

If those are 7 deadly sins, they all simply point to a lack of balance between the fundamental principles of ecology, economy, and culture. There are ways to avoid them or to mitigate their effects.

First and foremost, we must embrace the concept that we are all a part of the system and that simply removing humans from natural systems will not allow them to repair and correct themselves. A classic assessment of this notion is Robert O'Neill's brilliant McArthur Award paper from 2001,[2] in which he analyzes these notions in light of current understanding and concludes in part:

> Homo sapiens *is not an external disturbance, it is a keystone species within the system. In the long term, it may not be the magnitude of extracted goods and services that will determine sustainability. It may well be our disruption of ecological recovery and stability mechanisms that determines system collapse. (p. 3275–3284).*

This view was echoed most recently in *Science*,[3] in which 21 coauthors agreed that:

> *Shifting from a focus primarily on historical, undisturbed ecosystems to a perspective that acknowledges humans as components of ecosystems, together with new research on ecosystem services and ecological design, will lay the groundwork for sustaining the quality and diversity of life on earth. (p. 1251–1252).*

We could argue that this vision is new or merely confirmation of the views of earlier conservation advocates, but the argument would be irrelevant. We got ourselves into this mess, and we will have to figure out how to get out of it.

Second, most of the ecosystems we seek to maintain are disturbance based and greedy for chaotic, often compelling processes. We cannot make a Garden of Eden, and if we could, we could not maintain it. Large-scale process like fire, herbivory, flood, and drought do not defy, but *define* the norms in much of the natural world. Although top-down effects of herbivory might be lost to North America, they remain awe inspiring where systems remain intact in Africa. Although we might have believed we could control fire for a century, that cleansing will continue to occur, and perhaps escalate in intensity and frequency. And, rather than look for someone to blame (preferably someone already dead), we must find ourselves able to embrace the reality and marshal the necessary resources to create and maintain essential disturbance. In doing so, we need to take an experimental approach in our actions.

We like to think we use "adaptive management," but all too often we stop short of results because of fear of failure. If there is a silver bullet out there somewhere, we will never find it if we continue to debate about how to load the gun. Imagine the intrigue we could find and the time we might spend in arguing over the amount of powder, type of casing, grain of bullet, windage, distance, and slope, just to fire the silver bullet! Sometimes you have to shoot the thing and see where it hits, then follow a blood trail, reload, or get back to the firing range.

At the same time we take an experimental view, we should perhaps forsake some of our obsession with "specialization" and seek to become generalists first. Perish the thought, but a roomful of generalists who really care about the resource, regardless of education and background, might be more powerful than an assembly of experts from whom we expect a complete answer. There is an old saying that we should "seek first to understand, not to be understood," and in doing so, we should bring our expertise to the table second, and our passion and larger view of the world first.

All of this points to a learning atmosphere in which we spend equal amounts of time learning and teaching. Our work becomes relevant when we learn from those we aim to teach and teach those from whom we aimed to learn. Essential to achieving this aim is our ability to learn not only from data and experiment, but also from those who have lived on the land. I have been fortunate to have the counsel of Shoshone and Arapaho elders, ranchers, range specialists, hunters, trappers, loggers, and others, whether to interpret and explain, challenge and question, or console. Their data are contained in their heads, to be sure, but more often in their hearts, and we must find ways to retrieve that knowledge. The first step is to value the heartbeat. The second is to seek the data of the mind.

Finally, there is patience. None of us will solve the issues of the day in our own short span on earth. Rather, we should focus on building a human system where we denounce the errors and embrace the challenges. We should seek to offer the next generations heart and hope. If we do nothing more than that, we will have done our part to sustain the lands we love.

Author is Past President, Society for Range Management. This paper was presented at the United States Forest Service Centennial Forum, Rocky Mountain Region, November 2004.

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Crisis Management: Challenge and Controversy in Forest Service History

By Char Miller

History is the language we employ to describe our relationship to the past. It is how we speak to ourselves about previous generations, their lives, perspectives, achievements, failures; but it is also a form of communication the present uses to talk to itself about itself. History, in that sense, allows us to assess our heritage and inheritance.[1]

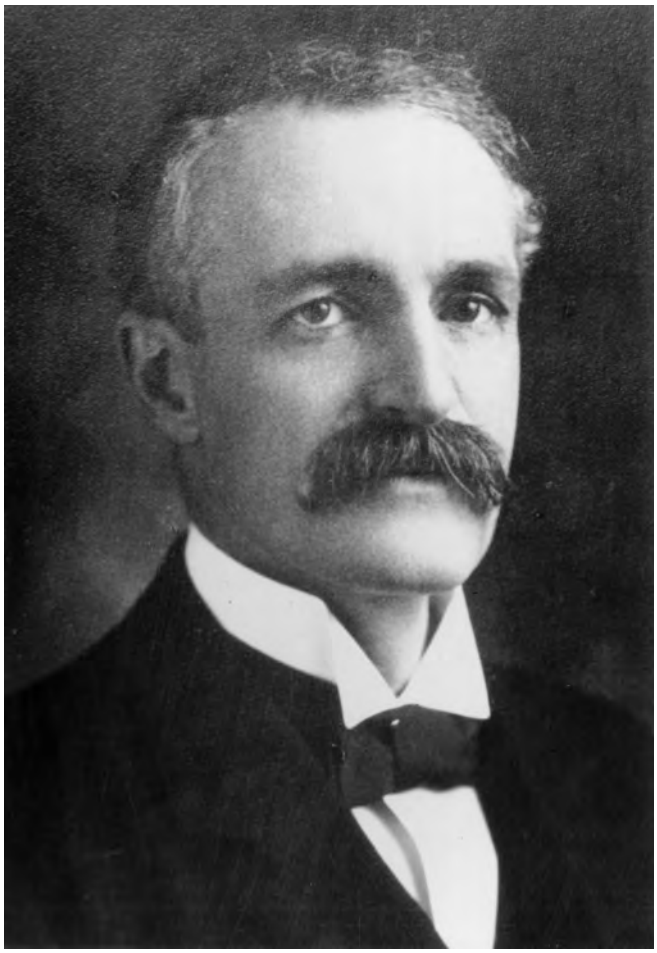
This reciprocal dialog is as evident in studies of individual lives (biography) and assessments of family constellations (psychology) as it is in analyses of social organizations (sociology), and, in truth, because individuals emerging out of familial environments make up the social organisms in which humans live, learn, work, and play, this kind of evaluative discourse cannot help but be multilayered.

And very complicated. Take, for instance, the USDA Forest Service, which in 2005 is celebrating its centennial. How do you track its history? Which language or set of terms best captures its evolution over time? What determines that which it has bequeathed to its employees and the broader public it has served for so long in different eras? (Not to mention its effect on the land under its care.) To address some of these questions, I want to reframe them through a discussion of 4 key challenges that Forest Service leadership has had to confront over the past 100 years.

How Do You Create an Agency?

That query defined everything that Gifford Pinchot and the first leadership team pursued. In 1898, Pinchot became the 4th head of the division of forestry in the Department of Agriculture and immediately began to plan for the creation of what would become the Forest Service. The first task was to build public support for what was in fact a radical idea—creating a land management agency that would regulate the public domain. Hitherto, the public lands west of the Mississippi had been given away, sold cheaply, or lost because of fraud; this privatization was politically acceptable because the stated ambition was that these lands would build frontier communities. But the environmental costs of these land transfers—totaling 1 billion acres—particularly those involving timber and livestock production, mounted across the late 19th century. Fears of a timber famine and dust bowl rangeland conditions, along with a growing conviction that federal intervention through conservation management might rehabilitate battered landscapes, generated pressure on Congress to act. In 1876, it created the small division that Pinchot would inherit 20 years later; in 1891, it established the first forest reserves, and between then and 1897, Presidents Benjamin Harrison and Grover Cleveland added nearly 40 million acres to the reserves; in 1897, a rider attached to an appropriations bill, now called the Organic Act, defined how those new reserves were to be managed.

To capitalize on these initiatives, Pinchot and his staff moved in two directions simultaneously: Without forests to work on—the reserves were located in the Interior Department, and the nation's foresters were in Agriculture—the agency issued Circular 21, offering their professional services to landowners large and small. This would give its agents an opportunity to field test their ideas and secure favorable publicity. They also launched a quiet campaign to transfer the national forests to their care, which received a huge boost in 1901 when Theodore Roosevelt succeeded the assassinated President McKinley. Four years later, the transfer was complete, and the Forest Service was born.



Gifford Pinchot was not only the first Chief of the Forest Service, he is also known for establishing the Society of American Foresters. Photo courtesy of U.S. Forest Service.

That was the easy part. With Roosevelt adding upward of 150 million acres to the national forest system, Forest Service leadership had to construct a multitiered bureaucracy, hire employees at all levels, and commence to survey, manage, and provide minimal fire protection for these lands. They also developed research stations and nurseries to aid its scientific analysis and regeneration of abused terrain. Pinchot and his peers were up to the task. To create a workforce, the Pinchot family donated more than $250,000 to create the Yale School of Forestry (1900), and built a summer training camp on family lands in Milford, Pennsylvania. That same year, Pinchot established The Society of American Foresters and the *Journal of Forestry*, critical markers of professionalization. To further denote foresters' expertise, staff designed a quasi-military uniform, issued the "Use Book" (1905) that described rangers' daily work and authority, and developed a code of ethics, dubbed "Rules for Public Service," to oversee the managers' behavior. Most crucially, to establish precedence for its regulatory power, the agency sued violators in federal court, each of which the Supreme Court resolved in its favor.[2] By 1910, the Forest Service served as a harbinger, novelist Hamlin Garland assured readers of *Cavanagh, Forest Ranger*, of the new nation state, a much-needed civilizing force in the rough-and-tumble West.[3]

Naturally, that was the year Pinchot conspired to be fired for insubordination. After William H. Taft had replaced Roosevelt in 1908, the new president and the forester repeatedly clashed because, in Pinchot's mind, Taft did not share the Roosevelt/Pinchot passion for extending executive branch power or their devotion to conservationism. News of suspicious coal field leases in Alaska led Pinchot publicly to confront the administration, which provoked his dismissal. In this, he had practiced as he had preached: the last advisory in "Rules for Public Service" was: "Don't make enemies unnecessarily and for trivial reasons; if you are any good you will make plenty of them on straight honesty and public policy … ."

How Do You Redefine an Agency's Mission?

Pinchot's shrewd insight and brave words nonetheless left his successors in a bind. Henry Graves, whose European forestry training Pinchot had underwritten, and who had served as his Associate Forester before becoming Dean at the Pinchot-funded Yale School of Forestry, became the second chief. Because he had so long labored in his close friend's shadow, it made sense that he take up the reins. Less provocative and less charismatic than his friend, Graves knew his mission was to rebuild internal morale, reknit the agency's frayed relations with the White House and Congress, and reclaim public confidence. None of that came easily and yet, however hindered by sharp budget cuts and congressional hostility, Graves managed to stabilize the agency, smoothing the way for William B. Greeley to become its 3rd chief in 1920.

Unlike Graves, Greeley immediately picked a series of fights with Pinchot, challenging his still-profound influence in the Forest Service. Only in this way, Greeley believed, could he reform the organization in his own image. More conservative than the founder and more comfortable with the corporate Republicanism dominating the political arena in the 1920s, Greeley promoted cooperative relationships with the timber and grazing industries. He countered Pinchot's faith in rigorous regulation by advocating through the Clarke-McNary Act (1924) an accommodation of powerful interest groups. On the matter of federal authority on the national forests, which Pinchot championed and hoped to extend to private lands, Greeley blasted this notion as "un-American."[4] Years earlier, Greeley had been thrilled to have "lost caste in the temple of conservation on Rhode Island Avenue," a sneering reference to Pinchot's Washington, DC, manse, and he did little to repair their relationship while chief (p. 282).[5] His perspectives on the agency's political purpose, social significance, and economic agenda so dominated professional forestry in the 1920s that an embittered Pinchot resigned from the American Forest Association and stopped attending Society of American Foresters meetings.

Rules for Public Service

1. A public official is there to serve the public and not run them.
2. Public support of acts affecting public rights is absolutely required.
3. It is more trouble to consult the public than to ignore them, but that is what you are hired for.
4. Find out in advance what the public will stand for; if it is right and they won't stand for it, postpone action and educate them.
5. Use the press first, last, and all the time if you want to reach the public.
6. Get rid of the attitude of personal arrogance or pride of attainment or superior knowledge.
7. Don't try any sly or foxy politics because a forester is not a politician.
8. Learn tact simply by being absolutely honest and sincere, and by learning to recognize the point of view of the other man and meet him with arguments he will understand.
9. Don't be afraid to give credit to someone else even when it belongs to you; not to do so is the mark of a weak man, but to do so is the hardest lesson to learn; encourage others to do things; you may accomplish many things through others that you can't get done on your single initiative.
10. Don't be a knocker; use persuasion rather than force, when possible; plenty of knockers are to be had; your job is to promote unity.
11. Don't make enemies unnecessarily and for trivial reasons; if you are any good you will make plenty of them on matters of straight honesty and public policy and will need all the support you can get.

Greeley was much less nimble in his response to a more serious bureaucratic threat posed by an aggressive National Parks Service (NPS). Founded in 1916, and headed by former advertising executive Stephen Mather, the NPS quickly came into its own at the expense of the Forest Service. Proclaiming its mission to serve the recreational needs of the car-crazy culture, NPS moved rapidly to publicize the national parks, develop highway connections between them, and gain public (and therefore congressional) support for its appropriation of national monuments and majestic parklands—then under Forest Service control. So effective were Mather and his managers, and so flat-footed did their Forest Service peers appear, that they plucked one gem after another out of the national forest inventory.

In taping "the pulse of the Jazz Age," historian Hal Rothman has observed, NPS sold "Americans leisure and grandeur at a time when … outdoor recreation increased," an understanding of contemporary needs the Forest Service failed to appreciate.[6] Although individual employees, such as Arthur Carhart, Aldo Leopold, and Bob Marshall, pushed the Forest Service to establish wilderness and backcountry recreation, in general, the agency's goals in the newly competitive environment seemed "undefined and utterly up in the air."[7] Once proactive, the Forest Service had become reactive, a sign of lost momentum.

How Do You Protect the Agency's Existence?

The Great Depression, ironically enough, offered an opportunity for the agency to make up lost ground. Greeley had resigned in 1928, becoming secretary of the West Coast Lumberman's Association—proof of his real allegiances, Pinchot averred. His replacement, Robert Y. Stuart, a Pinchot ally, was chief until 1933, dying in a tragic fall from his Washington office window. Ferdinand Silcox then navigated the agency through the harrowing and hard times, proving an adept administrator. Taking full advantage of a large influx of federal dollars flowing through the Civilian Conservation Corps, among other New Deal funding mechanisms, the Silcox-led organization began to purchase abandoned and abused lands in the South, Middle West, and Great Plains; these new forests and grasslands became employment opportunities for CCC enrollees, who planted seedlings, built shelter belts, repaired eroded terrain, and constructed cabins and trails. The can-do agency was at the top of its game.

Only to be thrown a curve-ball. In the early 1930s, Interior Secretary Harold Ickes pressed President Franklin Roosevelt to support the creation of a new cabinet-level

The Civilian Conservation Corps worked on many forest and rangeland restoration practices in the 1930s. During the same period, abandoned farms that were later to become the Forest Service National Grasslands were being purchased by the Federal government. Photos courtesy of U.S. Forest Service.

Department of Conservation that would absorb all federal land management agencies, especially the Forest Service. Convinced that efficiencies would result, the president approved the plan, muzzled the Secretary of Agriculture, Henry Wallace, and had him prevent the Forest Service from defending itself. In need of allies, Silcox, through Associate Chief Earl Clapp, contacted Gifford Pinchot, then 70, to champion the agency's cause. He did. Between 1935 and 1940, Pinchot and Ickes engaged in one of the most bruising bureaucratic brawls in modern American political history. Over the radio, in newspapers and magazines, and from one podium to another, they pounded each other while rallying their supporters to fight for or against the transfer. In the end, Pinchot triumphed, a remarkable testament to his skilled in-fighting and dogged perseverance.[5]

His victory was not unalloyed. There was a personal cost for at least one high-ranking forester who had cooperated with the old chief's activities. The president never promoted Earl Clapp beyond "acting chief," a position he had assumed following Silcox' death in 1939, because he was convinced that Clapp had orchestrated the stout resistance to Ickes' transfer scheme. In sacrificing his career for what he conceived to be the greater good, Clapp paid a heavy professional price. The same might be said about the Forest Service itself. In its fierce fight for survival, it might have missed an important opportunity to engage in a serious consideration of how conservationism was evolving and how it would be implemented in the coming years; it also failed to reflect on the governmental structure best suited to conserve the lands under its care. As it entered the war years, the agency was intact and independent, but it was also insular in orientation, a quality that would complicate its ability to react to the massive changes that would come in post-war America.

How Do You Ensure the Agency's Continued Relevance?

Those unique pressures came in a rush. Returning soldiers married by the millions, generating a baby boom of immense proportions. This demographic surge, and the housing demand it produced, dovetailed with a shift in the source of timber for the lumber industry. With private supplies largely tapped out as a result of the depression and World War II, public forests were brought into production, and swiftly so. Harvesting during the agency's first 40 years had not topped 2 billion board feet (BBF) per annum. Beginning in the 1950s, timber harvest figures climbed sharply, peaking at more than 12 BBF by the late 1980s. Getting out the cut was now the Forest Service's mission, and it shaped its internal culture, too: A large number of silvicultural specialists and engineers were hired and promoted into leadership positions. Formed in response to late 19th century anxieties about woodland devastation, 50 years later the agency, once a custodial outfit, had pushed to the front lines of hard hat–wearing timber productivity.[8]

To accelerate the amount of sawlogs heading to mills, it instituted clear-cutting on the national forests, a technique that met production targets but damaged sensitive ecosystems and shocked the very suburbanites who lived in the subdivisions built from this wood. As they headed out to these forests on their summer vacations, the homeowners were confronted with the consequences of their consumption—stripped terrain where once trees soared, scoured riparian systems where once they had fished, debris-littered open spaces where they had once hunted. If they had also read Aldo Leopold's *Sand County Almanac* (1949), or, Rachel Carson's more haunting *Silent Spring* (1962), it was not hard to conclude that the human impress on nature was poisonous.

Following WWII, the Forest Service began to place increasing emphasis on timber harvest, peaking at more than 12 BBF in the 1980s. National Forest timber harvests have declined by 84% between 1986 and 2001 and now account for only 2% of timber harvested in the United States (Forest Resources of the United States, 2002, by W. B. Smith et al., GTR-NC-211). Photo courtesy of U.S. Forest Service.

For the most part, ignoring their complicity as consumers in the environmental despoliation they encountered, and yet increasingly better educated in the new science of ecology, this mid-1960s cohort made its demands felt. Those promoting wildland preservation found relief in the Wilderness Act (1964); those seeking expanded protection of stream flows championed the National Wild and Scenic Rivers Act (1968); for proponents of greater controls over public land management, the National Environmental Policy Act (1969) offered hopeful change; and to achieve a more salubrious environment, others applauded the Clean Air and Water Acts of the 1970s. Tallied together, these acts, and a set of related laws and legislation, perhaps most significantly the National Forest Management Act (1976), which compelled public access to land management decisions, meant one thing: The regulators were being regulated.

The Forest Service had never seemed so behind the times. Its leadership, trained to produce large quantities of timber, was ill prepared for the escalating public clamor that it embrace a different form of stewardship. Its claim of scientific expertise, once proudly worn like the shiny brass badges

The Forest Service workforce changed dramatically in the 1990s. For example, the number of foresters declined by 43% between 1992 and 1999 while the number of general biologists and ecologists increased by more than 50%. During the same period, the number of permanent rangeland conservationists dropped by 22% from 437 to 341 employees. Photo courtesy of Susan Salafsky.

on its green uniforms, seemed tarnished by its clumsy public relations ("Lassie" notwithstanding), by its misplaced confidence in its capacity to make the "right" decisions without public input, and by its circle-the-wagons approach even to constructive criticism.[8]

The agency's internal dynamics were in turmoil as well. New environmental laws required it to employ trained professionals in nontraditional fields, among them law, hydrology, wildlife biology, archaeology, even sociology. Some of those hired were women and minorities, whose increased presence diversified an agency that needed greater diversity. As with other aspects of American life, these transitions were turbulent, sparking lawsuits that alleged gender bias, racial discrimination, or reverse discrimination, further troubling agency culture. As it battled with itself and faced ongoing judicial review of its compliance with oft-contradictory environmental regulations, its late 20th century leaders coined the phrase "analysis paralysis" to describe its mired position.[9] That by its own admission it was paralyzed, however, only reinforced its critics' belief that the Forest Service was incapable of change, stuck in a morass of its own making. One prominent analyst has pushed this argument farther, returning to Harold Ickes' original proposal and suggesting that it would make good sense if the Forest Service merged with the Bureau of Land Management and the National Park Service[10]; the agency's future, in short, might be limited; its second bicentennial not assured.

Next Steps

To imagine a more enduring future, the Forest Service must look to the past. Yet if history is the language we use to construct a bridge between then and now, what do these 4 historical crises suggest about tomorrow? What is the agency's legacy, however imperfectly conceived? Start with the first 4 principles Pinchot laid out in his "Rules for Public Service": Collectively they remind us that the Forest Service operates in a contested democratic arena that forces it to respond to new and shifting demands. To survive, it must be as resilient, adaptive, and as flexible as any of the species it stewards on the 192 million acres of National Forests and Grasslands. Because change is the only constant in our lives, a reality that holds true for the agency as well, the Forest Service's ability to evolve has been, and will remain, critical to its long-term sustainability. As Elizabeth Estill, now Deputy Chief for Programs and Legislation, said earlier in her career when defusing a particularly stressful situation: "This is not a crisis. It is business as normal" (J. W. Giltmier, personal communication, March 17, 2004). So it always has been, and always shall be.

The author is Professor of History at Trinity University, San Antonio, TX 78212-7200.

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Back to the Future: Forest Service Rangeland Research and Management

By John E. Mitchell, Peter F. Ffolliott, and Marcia Patton-Mallory

Why a review of the Forest Service entitled "Back to the Future?" As we shall see, the beginnings of range management within this agency were strongly embedded in the principle of conservation. Rangers were charged with the enormous job of getting control of livestock grazing and improving range conditions. Then, as Char Miller and Ed Marston describe elsewhere in this issue, some aspects of the Forest Service shifted part of their focus during the middle of the last century towards commodity production. We need to bear in mind, however, as the title of the following article so aptly states, that agency leaders and staff officers were "doing the best they could" to carry out the mission given them.

Entering the 21st century, we find the Forest Service has returned to its roots of restoration and conservation within a multiple-use context in new and more vigorous ways. This journey to change has paralleled the shifting values that society has held over the past 100 years, and we should expect the same to happen in the future. Ultimately, values are reflected in laws, and laws, in turn, affect policies. Policies cause actions that give direction to organizations, both public and private. Tom Quigley plainly explains the relationship between values and management in his article in this issue.

The Beginning

It is difficult to pinpoint the beginning of range management in the colorful history of the United States. During the great western expansions of the mid-19th century, little regard was given to the nation's resources, which seemed to be infinitely abundant. The opportunity always existed to move on to greener pastures after the land had been stripped of its resources. An understanding of the need for conservation in a land of plenty evolved very slowly. In the 1870s, the American Association for the Advancement of Science and the American Forestry Association became sufficiently concerned about the need to preserve and manage forests that they began to promote these ideas to Congress and in various public forums.[1]

The matter of preserving forests was manifested in the *General Land Law Revision Act of 1891*, which authorized the President to set aside public lands having forests as public reservations called Forest Reserves. The first was the Yellowstone Forest Reserve. By 1900, there were about 40 million acres in Forest Reserves throughout the western states and territories. They were administered by the General Land Office in the Department of the Interior.

Oddly, the 1891 Act did not authorize any funds to be appropriated for managing the Forest Reserves. This caused the General Land Office to issue a regulation that "prohibited the driving, feeding, grazing, pasturing, or herding of cattle, sheep, or other livestock" within any reserve.[1] The resulting consternation within the livestock industry helped fuel an initiative for Congress to pass the *Organic Administration Act of 1897*. This Act recognized that the Forest Reserves were established "to improve and protect the forest, to secure favorable conditions of water flow, and to furnish a continuous supply of timber." Passage of the 1897 Organic Act resulted in immediate regulations that allowed cattle grazing in Forest Reserves if it didn't injure forest growth. However, it wasn't until 1900 that sheep grazing was permitted. In every regulation, livestock grazing could only take place if it was compatible with the purposes spelled out in the 1897 Act—forest health, reliable water flows, and an uninterrupted timber supply.

Although the requirement to manage livestock grazing in a way that promoted forest health and vitality was clearly stated, no body of knowledge existed for doing so. Consequently, those charged with administering the Forest Reserves had to learn how to do so. The need for range research had been identified.

The *Transfer Act of 1905* transferred the administration of the Forest Reserves from the Department of Interior to the Department of Agriculture. Thus, the Forest Service was born, and the National Forests were created. It became the agency's responsibility to figure out how to manage livestock grazing lands under their authority.

Grazing activities remained largely uncontrolled and mostly unregulated immediately after the transfer of the Forest Reserves to the Department of Agriculture in 1905. Albert Potter, the first Chief of Grazing of the Forest Service, developed a grazing-use book that reflected agency grazing policies endorsed by President Roosevelt. These included giving preference to small, local livestock operators and requiring them to have deeded, commensurate grazing land that could be used in conjunction with their Forest grazing. Most sheep operators did not have commensurate property, and their elimination from Forest grazing allowed for a large reduction in stocking on National Forests.[2]

Attempting to remedy this problem and contain the level of grazing, the Forest Service announced in 1906 that fees would be imposed on ranchers for livestock grazing on National Forest lands. These fees were set at 25 to 36 cents per head of cattle and horses with a lower rate for sheep and goats.[1] Forest rangers also controlled grazing by establishing dates for entering and leaving specified rangelands. Grazing revenues exceeded those from timber harvesting every year between 1905 and 1910 and periodically until 1920.

The Office of Grazing Studies was established in 1910 with responsibilities for reconnaissance, administration, and initiation of needed studies on the effects of livestock grazing on the National Forests. James T. Jardine, known for his early research in range inventory methods, was its first head. When Jardine left the Forest Service in 1920, W. Ridgely Chapline replaced him. Six years later, the Office of Grazing Studies relocated within the Forest Service to the Research Branch as the Division of Range Research. "Chappie," as he was called by his friends, stayed on as Chief of the Division for 25 more years.[2]

Livestock grazing increased dramatically on public rangelands with the entry of the United States into World War I. Federal agencies, especially the Forest Service, were under great pressure to help increase the supply of red meat, wool, and leather.[2] Grazing was even allowed in Yellowstone and Glacier National Parks.[1] The increased grazing on National Forests, administered under temporary permits, was encouraged by the Chief in a 1917 letter to the field. After the war, the job of removing excess livestock numbers was long and laborious. A common statement during the 1930s and 1940s was, "There's nothing so permanent as a temporary grazing permit." (B. Hurst, personal communication, April 2, 2005).

SRM Chapline Awards

In 1986, Chappie Chapline established an endowment within the Society for Range Management that the Society translated into 2 awards: the W. R. Chapline Research Award and the W. R. Chapline Land Stewardship Award. Only the Frederic G. Renner Award is considered more prestigious by SRM than the Chapline Awards. Fittingly, the first Chapline Research Award was presented in 1987 to a Forest Service rangeland scientist, Henry A. Pearson, for his work on integrated forest and rangeland management strategies in the South. The first Chapline Land Stewardship Award went to John L. "Chip" Merrill. Unfortunately, Chapline passed away less than 2 months before these first awards were given.[3]

It took years to recover from this action. Fortunately, the Forest Service didn't repeat this mistake in policy during World War II, even though demands for the same rangeland products were just as high.

Early Forest Service Research

An article in this issue by Susan Olberding and her coauthors depicts events leading to the first range research projects that took place in the Southwest, including the establishment of research stations in Arizona at Fort Valley and Santa Rita, and in New Mexico at Jornada. Here, we will examine other pioneering work promoting management tools to sustain livestock use of rangelands consistent with the purpose of the National Forests.

Perhaps the most imminent range researcher in these early years was Arthur W. Sampson, known to his students and colleagues as "Sammy" (Fig. 1). After receiving an MS degree at the University of Nebraska in 1907, where he studied under Frederic Clements, Sampson accepted a position with the Forest Service as a plant ecologist. His first assignment was to study the effects of overgrazing in the Blue Mountain Forest Reserve, located in northeastern Oregon. His ability to observe and understand effects of disturbance on plant communities led to numerous publications, a seminal one published in 1919.[4]

Between 1912 and 1922, Sampson served as the first Director of the Great Basin Experiment Station on the Wasatch Plateau near Ephraim, Utah, which was established to carry out range research on degraded and eroding high mountain watersheds.[5] He was one of the first to report on the effects of grazing on aspen reproduction. W. R. Chapline worked with Sampson at the Great Basin Station before becoming Chief of the Office of Grazing Studies.

After receiving a PhD in 1917, Dr Sampson joined the faculty at the University of California, Berkeley. His research on succession and plant indicators, as well as his textbooks on range management, greatly enhanced rangeland management throughout the West during the early years when

Figure 1. Arthur W. Sampson, eminent Forest Service ecologist, and later, Professor at the University of California. Dr Sampson published numerous papers on the distribution and function of various rangeland plants, plant succession, grazing effects, and range improvement procedures. A summary of his life, written by 10 distinguished rangeland scientists, is published in the November 1967 (Vol. 20, No. 6) issue of the *Journal of Range Management*.

Forest Service Rangers were trying to administer livestock grazing permits.[6] These early studies by Jardine, Sampson, and Chapline provided rangers with 4 basic principles to aid them in this task: proper kind of livestock, proper number of livestock, correct grazing season, and proper distribution of livestock.[7]

Another scientist of Dr Sampson's caliber carried on his work at the Great Basin Station 30 years later. Lincoln "Linc" Ellison was a brilliant ecologist who conducted pioneering research on grazing effects on montane rangeland plant communities. His classic papers on the character of subalpine vegetation on the Wasatch Plateau[8] and on how grazing influences plant succession[9] culminated a distinguished career (Fig. 2). Perhaps Dr Ellison's most notable contribution to rangeland management was manifested in a publication on condition and trend that is still valid today.[10] Trend in range condition must be considered to be downward when the soil is eroding, regardless of the trend of the associated vegetation. This insight caused the Forest Service to consider range condition equally on the basis of the soil and vegetation components. Sadly, Linc was killed in an avalanche in 1958 while at the height of his career.

It is interesting to note that the Soil Conservation Service (SCS), which employed many more soil scientists than the Forest Service, did not consider soil erosion equally with species composition when describing range trend during this period. A logical reason exists for such an apparent paradox, however: The SCS is responsible for helping private ranchers manage their own lands, and most privately owned rangelands in the West are found at lower elevations below the National Forests where terrain is gentler and soils less erosive.[11]

A. Perry Plummer assumed leadership of the Great Basin Station (later called the Great Basin Experimental Range), following Linc Ellison's tenure. During the mid-20th century, work continued to focus on restoration of degraded rangelands.[13] Dr Plummer's work, in great part, provided the impetus for establishing the Shrub Sciences Laboratory in Provo, Utah.[14] During the past 30 years, the Shrub Sciences Laboratory has excelled in research on seed and seedbed ecology, genetics, population biology, and plant taxonomy.[15]

Figure 2. A recent picture of the Wasatch Plateau. Between 1880 and 1905, overgrazing by sheep and cattle was so pervasive that the "Wasatch Range, from Thistle to Salina, was a vast dust bed, grazed, trampled and burned to the upmost."[12] The situation was so bad that serious flooding, unheard of before, occurred in Ephraim Canyon and other canyons almost every other year. Forest Service photo courtesy of C. Johnson, R-4.

In 1922, the Forest Service took over the range research program at the US Sheep Experiment Station near Dubois, Idaho. The Station had been withdrawn from the public domain in 1915 by President Wilson and assigned to the Bureau of Animal Industry (later to become the Agricultural Research Service) to provide a place to conduct research on sheep breeding, grazing management, and reseeding. The Forest Service, under a plan by C. L. Forsling, Director of the Great Basin Experiment Station (precursor to the Intermountain Forest and Range Experiment Station), laid out a series of sheep studies to assess proper use and season of use, carrying capacity and range forage requirements, grazing systems to promote rangeland health, range improvements (including burning), and sheep management procedures. Among the Forest Service scientists who conducted research at the US Sheep Station were George Pickford, Joe Pechanec, Jim Blaisdell, Walt Mueggler, Bill Laycock, Henry Wright, and Roy Harniss. In 1972, the range research at the Sheep Experiment Station was transferred from the Forest Service to the Agricultural Research Service, which had conducted the sheep breeding and other animal-related studies since the Station was established.[16]

Meanwhile, as the importance and use of National Forest resources continued to increase, the Forest Service proposed the creation of a nationwide research program within the agency. This recommendation, along with those of others, led to the passage of the *McSweeney–McNary Act of 1928*. This milestone Act, which afforded research a "recognized separation" from National Forest administration, authorized the Forest Service to establish additional experiment stations and increased rangeland research activities. Specifically, it provided for the establishment of a network of 12 regional experiment stations that would form the "backbone" of Forest research.[17]

In addition to locations throughout the Southwest, Intermountain, and Rocky Mountain regions, Forest Service range experiment stations were established in the West Coast states. The San Dimas Experimental Forest, located in the foothills of the San Gabriel Mountains of southern California near Los Angeles, was established in 1933 and formally dedicated as a Forest Service research site in 1935. Research has been and continues to be oriented toward studying the effects of air pollution from Los Angeles and the frequent occurrence of fire on the inhabiting chaparral vegetation. The San Joaquin Experimental Range on the western slopes of the central Sierra Nevada Mountains of California was established in 1934 to ascertain the possibilities of sustainable livestock (cattle) husbandry in a transitional oak shrub community. A diversity of range improvement studies involving applications of fertilizers and prescribed burning treatments have also been carried out on this 2,000-acre foothills ecosystem.

The Starkey Experimental Forest and Range was carved out of the Whitman National Forest near La Grande, Oregon, in 1940. Originally designated as a facility to study grazing responses to native and introduced forage species, Starkey undertook a major change in mission when future Forest Service Chief Jack Ward Thomas initiated a large study evaluating interactions among elk, deer, cattle, recreation, and forest management. This study continues today. Among the Forest Service scientists who have conducted research on the Starkey are Richard Driscoll, Jon Skovlin, Gerald Strickler, Jack Ward Thomas, Larry Bryant, Tom Quigley, and Marty Vavra.[18]

Senate Document No. 199, *The Western Range,* was an assessment of US rangelands based, in part, on Forest Service research findings and administrative records.[19] This classic report, published in 1936, reached a number of conclusions, among them: 1) that 99% of the 728 million acres of rangeland in the continental United States was "available for grazing"; 2) during the preceding 30 years, 95% of rangelands in the public domain had declined in condition whereas only 2% had improved; 3) the primary cause of rangeland depletion was excessive grazing use, which would have to be dramatically curtailed if trends were to be turned around; and 4) at least 589 million acres of rangeland was eroding "more or less seriously." The apparent incongruity between such an extensive level of downward trend and the belief that essentially all rangeland is available for livestock grazing was obviously consistent with values still prevalent in the 1930s.

Two illustrations in *The Western Range* clearly portrayed the early conservation history on National Forest lands (Fig. 3). The 1st showed rangelands on National Forests to be less depleted than rangelands on public domain, tribal lands, state and county lands, and private ranches. The 2nd shows National Forest rangelands to be primarily in an upward trend whereas those on other lands were becoming more depleted. The authors surmised, however, that rangelands on the National Forests at the time they were set aside 30 years earlier had probably been in even worse condition than lands on the public domain "because of the comparative abundance of water on the National Forests and of the general shortage of summer range."[19]

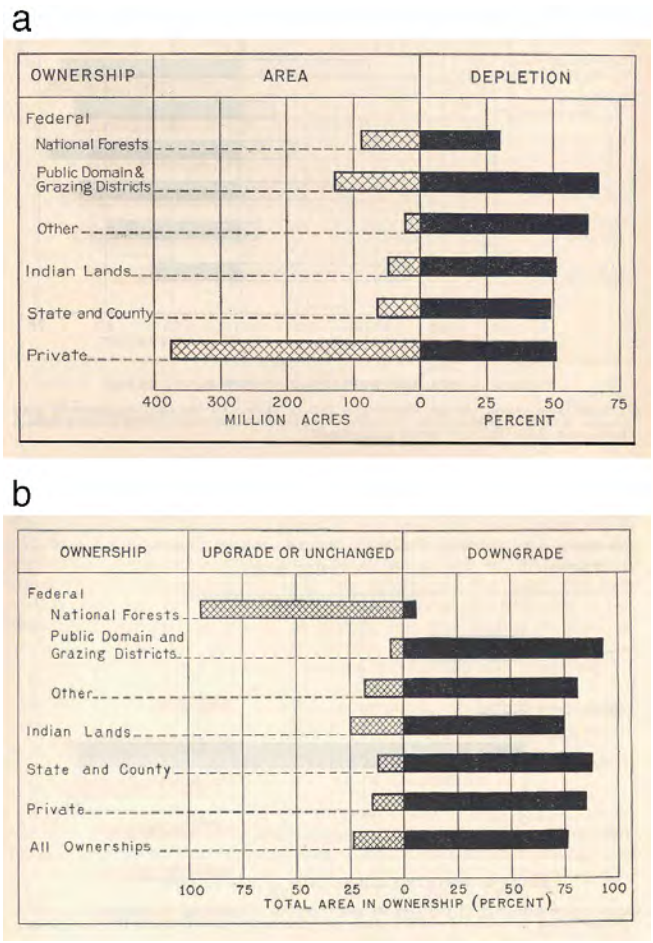

Figure 3. The estimated area of rangeland and percentage of depletion for 6 land ownership categories in 1935 (top), and the trend in depletion for the same 6 categories during the preceding 30 years (bottom).[19]

Speaking of water, with many major rivers in the West originating on National Forests, issues surrounding stream flow, watershed protection, and effects of vegetation cover on runoff and erosion were of high importance to Forest Service leaders and researchers. In 1910, Henry Graves, who had just been selected as Chief after the firing of Gifford Pinchot by President Taft, established the Wagon Wheel Gap Experimental Watershed on the Rio Grande National Forest. Although studies there were short-lived, they opened the way for a rich history of watershed research within the agency. Experimental watersheds at Beaver Creek, Arizona; the Black Hills, South Dakota; Fraser, Colorado; San Dimas, California; Manitou, Colorado; and elsewhere were established before and during the drought of the 1950s. Today, Forest Service research has shifted its emphasis away from rangeland-dominated watersheds that assess water yield in relation to management practices, although scientific

Figure 4. Benmore Experimental Range near Vernon, Utah, 1964. Numerous studies took place here during the mid-20th century on interactions between livestock grazing and crested wheatgrass seedings. Photo courtesy of John Mitchell.

advances are still needed to understand basic infiltration and runoff processes and to apply fine-scale data for reaching useful watershed-level estimates of these processes.[20]

Managing for Livestock Production

By mid-20th century, research interests had expanded from only protection and restoration to include goals related to commodity outputs. After all, 99% of the nation's rangelands had earlier been deemed suitable for livestock production.[19] The range management textbook published in 1943 by L. A. Stoddart and Arthur D. Smith defined range management as "the science and art of planning and directing range use as to obtain the *maximum* livestock production consistent with conservation of the range resources" (italics added).[21] Their second edition, published 12 years later, well after wartime demands for meat and leather had subsided, contained the same definition.

Forest Service range research, like the timber research program, began to place increasing emphasis upon commodity production—in this case, the amount and quality of forage available for livestock. The Desert Experimental Range, located about 50 miles west of Milford, Utah, was established in 1933 to show how the salt desert shrub zone could be managed to enhance sheep production and how different grazing strategies affected the vegetation.[22]

One way of increasing livestock production is to control losses from poisonous plants and annuals that produce forage for only a short period of time.[23,24] During the mid-20th century, large areas of public domain in the Great Basin were planted with an introduced species, crested wheatgrass, for the control of halogeton and, to a lesser extent, cheatgrass. Crested wheatgrass was seeded even more extensively throughout the West, including on National Forest land, to improve production on rangelands degraded by drought and prior overgrazing.

The Benmore Experimental Range was established near Vernon, Utah, in the mid-1930s to study the ecology and management of crested wheatgrass in relation to livestock production systems (Fig. 4).[25] Until 1954 when the Forest Service acquired it, Benmore was administered by several different agencies, primarily the SCS. During this period, crested wheatgrass was considered by some to be "the golden grass of the West." Benmore closed in 1984 just as increasing emphasis was being placed on using native species in rangeland rehabilitation instead of exotics. Slowly, the concept of rangeland "improvement" was being replaced by that of "restoration."

Forest Service research and management interest in livestock production on National Forest system lands significantly expanded in 1954 when Land Utilization Project (LUP) lands were transferred to the agency from the SCS. These lands had been earlier purchased under provisions of the *Bankhead–Jones Farm Tenant Act of 1937* by the Department of Agriculture, primarily as abandoned dust-bowl farms. Congress attempted to address 2 dilemmas when it passed this Act—aiding farm ownership (and sustaining rural communities) and correcting ecological damage caused by farming submarginal lands. The USDA officials believed a controlled grazing program on the LUP lands would help the remaining farmers earn a living adequate for them to stay on the land.

By the time the Forest Service took over the LUP lands, a great deal of effort had been expended by the SCS in seeding abandoned farms to grass, establishing grazing associations, emphasizing proper grazing management, and administering grazing permits. After being transferred to the Forest Service, the LUP lands were formally designated as National Grasslands. Most of these 20 grasslands, now totaling nearly 4 million acres in aggregated area, are located within the Rocky Mountain Region.[26]

The Forest Service has long managed its National Grasslands for multiple uses, including livestock grazing, oil and gas exploration, wildlife habitat, and recreation. Until 1974, their management mostly focused on forage production for livestock, partly because of language in the legislation that created them. Ezra Taft Benson, Secretary of Agriculture under President Eisenhower, insisted that the LUP lands be used for "promotion and demonstration of the benefits of sound grassland management." Language similar to this subsequently made its way into the Forest Service manual (S. Tixier and B. Hurst, personal communication, April 3, 2005).

Congress formally integrated the National Grasslands into the National Forest system when it passed the *Forest and Rangeland Renewable Resource Planning Act of 1974* (RPA). As a result, the National Grasslands not only fell under the provisions of the *Bankhead–Jones Act* but also other acts applicable to all National Forests. During the past 30 years, increasing emphasis has been placed on managing National Grasslands

Who's Who–Leaders in Forest Service Rangeland Science and Management

This photograph was taken at a livestock–big game range analysis conference, held in Ogden, Utah, from April 9, 1956, to April 13, 1956. The photograph was provided by Nancy Shaw, Botanist with the Rocky Mountain Research Station, from the estate of Joe Pechanec. The original is presently framed in the Office of the Director of Range Management, WO.[i]
The attendees in the photograph are listed below:

First row (from left):

- Jim Blaisdell, INT.[i, ii] Range scientist who retired as an Assistant Director. Senior author of a far-reaching article on future directions of range research.[36]
- Lincoln Ellison, INT.[i, ii] Pioneering researcher in ecology and management of montane rangelands.
- R. K. Blacker, R-2.[i] Later was Supervisor on the San Juan National Forest.
- Fred W. Johnson, R-1.[i, ii] Director of Range Management.
- A. L. "Gus" Hormay, CAL.[i, ii] Father of the rest–rotation grazing system.[37]
- Selar Hutchings, INT.[i, ii] Expert on forage inventory and monitoring.
- Charles A. "Chick" Joy WO.[i, ii] Division Chief, Range Management.
- David F. Costello, PNW.[i, ii] Director, Division of Range Research.

Second Row:

- C. E. McDuff, R-3.[i] Director of Range and Wildlife.
- Ken W. Parker, WO.[i, ii] Director, Range Management and Wildlife Habitat Research. Developer of the 3-step method for condition and trend analysis.
- Robert W. Harris, PNW.[i, ii] Assistant Director. Later, he was PNW[i] Director and Associate Deputy Chief for Research, Forest Service.
- Elbert H. "Bert" Reid, RM.[i, ii] Assistant Director. Conducted pioneering work on the succession of green needlegrass and other species in the Blue Mountains of Oregon. Editor of the *Journal of Range Management* from 1969 to 1977.
- L. W. Hornkohl, R-9.[i] Range Conservationist.
- Walter O. Hanson, R-6.[i] Retired as Director of Wildlife Management, Forest Service.

Who's Who–Leaders in Forest Service Rangeland Science and Management (continued)

Third Row:

- Frank Smith, R-2.[i] Supervisor, Rio Grande National Forest. Later was R-3 Director of Range Management and Director of Range Management, Forest Service.
- Clyde Doran, R-2.[i, ii] Retired as Supervisor of Coronado National Forest.
- Avon Denham, R-6.[i, ii] Retired as Director of Range Management, Region 6.
- John Clouston, R-6.[i, ii] Range Staff. Served as the Executive Secretary of SRM between 1957 and 1968 while the Society's headquarters was in Portland, Oregon. In 1968, Francis Colbert was appointed as a full-time Executive Secretary and the SRM headquarters was moved to Denver, Colorado.
- I. Pat Murray, R-4.[i, ii] Ranger. Later, was the Supervisor on National Forests in 3 regions—Caribbean (Puerto Rico, R-8), Shoshone (R-2), and Cibola (R-3). During WWII, Murray was an aide to General Patton, and some say he brought the General's character with him to the Forest Service!
- Barry Park, R-1.[i, ii]
- Wayne West, R-6.[i, ii] Range staff officer.
- Odell Julander, INT.[i, ii] Specialized in rangeland–wildlife interactions, particularly with deer and pocket gophers.
- Ralph Hill, R-2.[i] Assistant Director for Wildlife.
- Frank Curtiss, R-1.[i] Retired as Director, Division of Range Management, R-4.
- E. J. Woolfolk, CAL.[i, ii] Conducted research on rangeland fertilization in California grasslands.

Fourth Row:

- Lowell G. Woods, R-4.[i] Retired as R-3 Director of Watershed.
- George Proctor, R-3.[i] Supervisor of the Carson National Forest. Like Woods, he retired as R-3 Director of Watersheds. A real character!
- Lloyd L. Bernhard, R-5.[i] Range staff officer.
- I. H. "Hap" Johnson, R-4.[i] Range specialist and an exceptional ecologist.
- Lloyd Swift, WO.[i] Director, Division of Wildlife Management.
- Reginald M. DeNio, R-5.[i, ii] Director of Wildlife. Later, "Reg" became Director of Range, WO.
- Basil Crane, R-2.[i, ii] Earlier, had studied condition and trend of meadows in the Sierra Nevada's. Crane retired as R-2 Deputy Regional Forester.
- D. I. Rasmussen, R-4.[i] Director of Wildlife. Started the Dept. of Wildlife at Utah State University in mid-1930s at the same time Dr L. Stoddart established the Department of Range Management. Retired as Director of Wildlife Management, WO.

Fifth Row:

- S. L. "Buck" Cuskelly, R-4.[i] Supervisor, Fish Lake National Forest. Later was Director of Watershed Management, R-4. Died at relatively early age.
- Merton J. Reed, WO.[i, ii] Division of Range Research. Earlier, had worked in rangeland inventory and analysis in California.
- Floyd Iverson, R-4.[i, iii] Regional Forester. Strong proponent of multiple use management.
- Everett R. Doman, WO.[i, ii, iv] Director of Wildlife Management, WO. Pioneering wildlife biologist and rangeland conservationist in R-4. Director of Range and Wildlife, R-5.
- Jack H. Bohning, RM.[i, iii, iv] Range ecologist. SRM President in 1982. Flew fighters and dive bombers in the Pacific during WWII and retired from the Marine Corps Reserve as a Colonel. Jack served on the R-3 range staff where he wrote the *Regional Range Analysis Handbook*.
- Ted Fearnow, R-7.[i] Director, Range, Wildlife and Watershed.
- W. W. "Wally" Dresskell, R-1.[i] Director of Range and Wildlife. Later joined Department of the Interior.
- Allan G. Watkins, R-3[i, iii] Staff officer, Division of Range Management.
- R. E. Courtney, R-3.[i] Retired as Supervisor of the Tonto National Forest.
- C. J. Olson, R-4.[i, iii] Retired as R-4 Regional Forester.
- R. E. Latimore, R-4.[i] Retired as R-5 Director of Range and Wildlife.
- Edward P. Cliff, WO.[i, ii] Chief of the Forest Service from 1962 to 1972. Promoted multiple use management and collaboration between grazing and timber interests. Foresaw the importance of recreation on National Forests. Earlier, he was Chief of Range Management in R-4.[38]
- H. D. Miller, R-8.[i]
- William D. Hurst, WO.[i, ii, iv] Pioneering line and staff officer in R-3 and R-4. R-3 Regional Forester from 1966 to 1976. SRM President in 1970. Both his father, William M. Hurst, and grandfather, William R. Hurst, who was hired into the Forest Service in 1905 by Gifford Pinchot, wore Forest Service green. At the time of this picture, Bill was Assistant Chief, Division of Range Management, where he shared an office with Ken Parker.
- Fred P. Cronemiller, R-5.[i] Ecologist. Later was Chief, Division of Wildlife, R-5.
- Mont E. Lewis, R-4.[i, ii] Highly respected range staff officer. Lewis was also an exceptional botanist, specializing in the genus *Carex*. He may hold the record as a Forest Service volunteer because every day for a quarter century after retiring, Mont either worked in the INT herbarium or was in the field collecting plants.
- Joseph F. Pechanec, WO.[i, ii] Director, Division of Range Research. Later, was Director, INT. Conducted pioneering research in the 1940s on sagebrush ecology and management. First President of SRM. First recipient of SRM Outstanding Achievement Award.
- Herman F. Olson, R-9.[i] Range Wildlife staff

[i] WO = Washington Office (Nat'l HQ), INT = Intermountain Station, PNW = Pacific Northwest Station, CAL = California Station (now Pacific Southwest), RM = Rocky Mountain Station, R-1 = Northern Region, R-2 = Rocky Mountain Region, R-3 = Southwestern Region, R-4 = Intermountain Region, R-5 = Pacific Southwest Region, R-6 = Pacific Northwest Region, R-7 = Eastern Region, R-8 = Southern Region, R-9 = Great Lakes Region. Note: In 1965, R-7 was abolished and most of its forests were assigned to R-9. R-9 was renamed the Eastern Region.
[ii] Charter member of SRM.
[iii] Joined SRM in 1948, but not a charter member.
[iv] Attended 2005 SRM Annual Meeting in Fort Worth.

for wildlife habitat, recreation, and environmental concerns.[26]

The RPA goes well beyond its connection with National Grasslands. It requires the Forest Service to prepare a renewable resource assessment of "the forest and rangeland situation" every 10 years. The 1st assessment was submitted to Congress in March 1976, and a 2nd, more comprehensive, document was published in January 1980. These assessments projected that demand for grazed forage would increase by 40% during the 50-year period between 1980 and 2030—from 213 million animal unit months (AUM) to approximately 300 million AUM. The principal factors driving such a rapid escalation in demand were forecasts for an increasing human population and simultaneous increased per capita consumption of red meat.[27]

An expected 40% increase in demand for rangeland forage influenced the Forest Service to look for ways to augment existing forage supplies without causing adverse effects on other uses. For example, the Northern and Intermountain Regions set planning goals that could only be met by expanding the grazing use of transitory ranges. Transitory ranges are forested areas that produce forage for a few years following timber harvest until tree regeneration establishes an overstory and shades out the understory vegetation. Transitory range can only be used by livestock under conditions that do not harm the tree regeneration, so managers and researchers quickened their programs and studies aimed at increasing grazing on these areas. Elsewhere in this issue, Tom Quigley describes the Oregon Range Evaluation Project, designed to study grazing strategies for producing more red meat.

Even though the Forest Service had placed increased emphasis on managing for livestock production, the slow trend in the condition of rangelands on National Forests and Grasslands continued to improve.[28] By the latter part of the 20th century, invasive species were becoming a rising problem, keystone species like quaking aspen were in decline, fragmentation and biodiversity were new issues to be dealt with, and management of riparian areas had become a high priority.

Sustainable Resource Management

"Back to the Future" began with the environmental movement of the 1970s. *The Wilderness Act* became law in 1964.[29] Then, commencing with the *National Environmental Policy Act of 1969* (which actually passed Congress in January 1970), no fewer than a dozen major environmental laws having a direct or indirect effect on the management of our National Forests were enacted during the following decade. They included the *Wild Horse and Burro Protections Act*, the *Endangered Species Act of 1973*, the RPA, the *Federal Noxious Weed Act of 1974*, the *Federal Land Policy and Management Act of 1976*, the *National Forest Management Act of 1976*, the *Soil and Water Resources Conservation Act of 1977*, the *Forest and Rangeland Renewable Resources Research Act of 1978*, and the *Public Rangelands Improvement Act of 1978* (which established the formula for federal grazing fees still used today).

When the 3rd edition of *Range Management* was published in 1975, the definition of range management had changed to "the science and art of optimizing the returns from rangelands in those combinations most desired by and suitable to society through the manipulation of range ecosystems."[30] This broader perspective of rangeland science and management imposed significantly larger workloads on the Forest Service and other land management agencies, and employees with different skills became needed.

Until the *Federal Advisory Committee Act,* passed in 1972, National Forest officers relied on advisory boards, including grazing advisory boards, for providing citizen input into the way the agency managed National Forests. In particular, the multiple use advisory boards included representatives from recreation interests, wildlife advocates, and nature lovers—in addition to ranchers and timber concerns (B. Hurst, personal communication, April 2, 2005). However, the *National Forest Management Act of 1976*, for the 1st time, allowed anyone to participate formally in the planning process on National Forests, and the tide of society was slowly turning away from the anthropocentric perspective that primarily valued livestock production on public lands to a more ecocentric viewpoint valuing ecosystem services like biodiversity, clean air and water, aesthetic views, and recreational opportunities. The overlapping domains of rangeland research and management were rapidly becoming more complex!

Later, the 1989 RPA Assessment came up with revised supply and demand projections for grazed forage in the United States during the 50-year period ending in 2040. It concluded that per capita demand for beef was leveling off at the same time advances in technology were expected to increase the production of red meat on private rangelands. As a result, the report deduced that additional forage demands could be supplied from the private sector, thus relieving the federal agencies of the expectation of having to plan on producing more forage from public rangelands.[27]

A big change in the way the Forest Service does business was foretold in recommendations contained in a 1990 report by the National Academy of Sciences (NAS) about future needs for forest research. Partly as a consequence of the NAS report, the Forest Service, under Chief F. Dale Robertson, established a fresh approach for improving ecosystem management and research that increased the ties among the social, biological, and management sciences as they related to the management of National Forests.[31] The main premise behind this new direction, called "New Perspectives for Managing the National Forest System," or simply "New Perspectives," was to sustain the values and uses provided by ecosystems by emphasizing ecological principles. Of course, most tenets of range management, established and practiced since the beginning of the agency, are based on sound ecological principles.

In 1992, Chief Robertson made known a new management philosophy for managing National Forests, called "Ecosystem Management." The ideas behind "New

Perspectives" had paved the way for "Ecosystem Management." Behind its overall goal of maintaining ecosystem integrity, the Chief defined 4 specific purposes of ecosystem management: 1) take care of the land by protecting or restoring the integrity of its soils, waters, biodiversity, and ecological processes [by now this should sound familiar!]; 2) take care of the people and their cultural diversity by meeting the basic needs of people and communities who depend on the land; 3) strive for a balance between these first two concepts; and 4) use resources wisely and efficiently to improve economic prosperity. Accomplishing this would necessitate organizational change, cooperation among agencies, better monitoring, and the use of adaptive management.[32]

The strategic objective of ecosystem management, to find the middle ground between protecting the environmental and providing the natural resources needed by an ever-increasing population to maintain its well-being, has transformed to a new concept—sustainable management.

The concept of sustainable management involves considering ecological, economic, and social criteria for assessing the association between maintaining healthy, productive rangelands and the well-being of communities and economies at various scales.[33] The implementation of sustainable management impacts both research and management. Reaching its goals involves a recursive process whereby agencies develop a national strategy (and local plans) for how they will meet the goals of sustainable management, then monitor and assess how well they are meeting the strategy (or goals), then modify the way various programs are organized and administered. Feedback from assessments are then used to confirm or modify the original strategy (or plans), and the process starts over.[34]

At a local level, goals are expressed in resource management plans, required of every National Forest by the *National Forest Management Act of 1976*. These "forest plans" must be revised at least once every 15 years. As an example of how relevant forest plans are to rangeland monitoring and management, the agency reports how well grazing allotments are being managed in relation to meeting, moving toward, or neither meeting nor moving toward rangeland-related components of forest plans—not on rangeland condition and trend.[27]

Nationally, the Forest Service helped conceive and plays an active role in the Sustainable Rangelands Roundtable, a grassroots group of agencies, nongovernmental organizations (NGOs), academicians, and other rangeland stakeholders organized to promote the ecological, economic, and social sustainability of rangelands through the development and widespread use of criteria and indicators for rangeland assessments and by providing a forum for dialogue on issues pertaining to rangeland sustainable management.[35]

At all levels of rangeland administration, it is generally not the ecological questions that are most difficult to settle; after all, we've been learning how to manage rangeland ecosystems for 100 years. Rather, the socioeconomic and legal–institutional conditions pose the biggest challenges. As Ellie Towns observes earlier in this issue, it's the interface of humans and societies with ecosystems that makes managing so much fun! Researchers also face a tough job of showing how various indicators and their interactions actually relate to a desired mix of environmental and economic conditions and human well-being.

So, all things considered, today's men and women entering the suite of professions needed to help the Forest Service provide the ecosystem services (forage; water; protection from floods, erosion, and drought; biodiversity; recreational opportunities; a sense of place, etc) desired by society in the 21st century face an exciting but demanding future. They have technological tools unheard of by those in previous generations, tools such as the Internet, powerful computers and associated software, the global positioning system, and detailed satellite imagery. On the other hand, the challenges are just as great, that is, caring for our National Forests and Grasslands to meet the needs of the present and future generations in an increasingly complex and uncertain world.

Acknowledgments

We are grateful to Bill Hurst, Ev Doman, Stan Tixier, Harold Heady, and Bill Laycock for sharing their experiences and insights about the Forest Service. Hopefully, we have captured a small part of the history that is such an intrinsic part of their memories and intellect.

Authors are Rangeland Scientist and Director, USDA Forest Service, Rocky Mountain Research Station, Fort Collins, CO 80526 (Mitchell and Patton-Mallory); and Professor, School of Natural Resources, University of Arizona, Tucson, AZ 85721 (Ffolliott).

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"Doing the Best We Could With What We Had": USFS Range Research in the Southwest

By Susan Deaver Olberding, John E. Mitchell, and Margaret M. Moore

Retired southwestern US Forest Service (USFS) range technician Bill Kruse spoke the above words when asked about range research work in the 1960s. His remarks indicate the scope of vital work at hand yet with scarce available resources. The USFS rangeland studies program has always eked along with few funds and scientists attempting to do many types of projects designed to sustain and improve rangelands for multiple uses. But the early scientists who worked in the Southwest reads like a "Who's Who" list. This essay covers the southwestern range studies from the early 1900s until about 1970 when rangeland research became funded under other projects like watershed studies.

Before Rangeland Science Began: 1860s–1890s

"…it looked as if a fire had gone through there—wasn't a blade of grass, wasn't an oak leaf in reach of a cow, not one …" said USFS ranger C. A. Merker about the rangelands of Cameron and the Grand Canyon South rim in the 1920s.[1] Beginning in the 1870s, thousands of cattle were moved into the Southwest to feed on the open rangelands. Sheep, of course, had already been in the Southwest for 300 years before the cattle arrived, but sheep numbers also rapidly expanded during the 1880s and 1890s, reaching their peak around 1910.[2] Those decades of heavy grazing altered and deteriorated the range. Drought, a common occurrence in the Southwest, further hindered plant recovery and resulted in heavy livestock losses. Eager settlers sought homesteads, preferably with water sources, and most did not understand the fragile ecosystems of the Southwest and their need for rest.

Vegetation in the southwestern range types was unaccustomed to grazing by large numbers of grazing animals; thus, the plants had not evolved to resist or tolerate high amounts of grazing pressure. People assumed the plant species would naturally regenerate from grazing as they had seen in other regions. However, the bunchgrasses in the higher elevations and black grama grass in the southern areas did not recover. In the Southwest, plants are so susceptible to injury that game trails and wagon ruts stay visible for years, even after the disturbance stops. Native plants have adapted to unpredictable precipitation and await their cue from the summer monsoon season to grow. But in the late 19th and early 20th centuries, hungry, grazing animals and their owners did not wait for the plant's optimal time, and plants were required to work when they should have been resting. The tremendous numbers of hooves treading on the soil promoted erosion and the formation of arroyos because there was very little vegetation to protect the soil surface.

Ranges were denuded in most places, causing statements like Merker's. Foraging animals invaded canyons and steep slopes where juniper trees thrive. Tree and shrub seeds then lodged in wool and hooves and were carried onto the open grasslands where they dropped. The seeds were stomped into the ground, which enabled them to become established. The combination of overgrazing, seed dissemination, possible climate change, and fire cessation caused the junipers to spread across the formerly open grassland.[3,4] In the hot, drier areas, mesquite and other desert shrubs spread the same way, further diminishing the available grass.

By the late 1800s, the deterioration of the western ranges was obvious. Local ranchers voiced concern because their livelihoods depended on sustainable forage. Several visionary

Figure 1. Associate Forester Albert F. "Bert" Potter, eastern Arizona rancher and first administrator of the Forest Service grazing program, with an elk calf in his arms. The caption reads: "This calf appears so docile, one would hardly think that he is vigorous and strong and capable of putting up a strong fight in his own defense, yet this is evidently not his custom." Photo taken on the Teton National Forest, Wyoming by Smith Riley in 1918. Photo courtesy of Forest History Society.

botanists, such as James W. Toumey, University of Arizona,[5] and Elmer O. Wooton, with the New Mexico College of Agriculture (now New Mexico State University),[6] warned of the impending danger of overgrazing the range grasses. Finally, Congress authorized funding for range research through federal agencies in 1895.

Southwestern Rangeland Research Begins

By 1900, federal resource protection agencies evolved, among them the precursor to the USFS. Washington bureaucrats pushed to preserve watersheds and forests but not so much the rangelands. Talk of limiting livestock on the forests to protect watersheds reached the stockmen in the Southwest, and some traveled to Washington to plead their case about needing access to free grass to earn a living but yet also supporting some regulation of the numbers of animals grazing. Finally, Albert F. "Bert" Potter, livestock man from the Holbrook/St. John's area of Arizona, convinced two bureaucrats to see the Arizona rangeland devastation first hand (Fig. 1). The account of this trip by Division of Forestry (now USFS) Chief Gifford Pinchot and Bureau of Plant Industry (BPI) botanist Frederick V. Coville in June 1900 has been told.[7] By the end of the three-week trip, the two Easterners had proved their meddle with the hardy stockmen, and respect for the Westerners was felt by the bureaucrats. As a result, Pinchot asked Potter to join the USFS and direct the establishment of a public lands grazing program.

Bert Potter moved to Washington, DC, but spent a lot of time traveling to western livestock association meetings. He addressed the 1911 National Woolgrowers Association with "the first thing was to check the damage and waste with the least possible curtailment of grazing privileges." Ranchers pushed for policies that applied to local conditions, not nationwide rules. Potter hired former stockmen to develop policy as he thought men who had "ridden the range" would be the best advisors. He needed scientific studies on the range and worked with Coville to form the USFS Office of Grazing Studies in 1910. This division was headed by James T. Jardine, a former Idaho cowboy and recent graduate of Utah Agricultural College, who was initially hired by Coville in 1907 to work on sheep grazing in Oregon's Wallowa National Forest. Jardine was appointed USFS Inspector of Grazing in 1909, Chief of Grazing Studies in 1910 (which later became the Division of Range Management Research), and he visited many western National Forests making management recommendations. Jardine authored a publication with Mark Anderson that is still considered a classic, *Range Management on the National Forests*.[8]

In 1911, Jardine hired men who were to lead newly established Regional Offices of Grazing Studies in the western Districts of the USFS.[9] It was groundbreaking work with no precedence to follow. Jardine met up with these fledgling researchers during the spring of 1911 on the Coconino National Forest in northern Arizona for a five-week training session on range reconnaissance, the nation's first. The scientists inventoried conditions, mapped range types, recorded vegetation, and evaluated range conditions.[10] They quickly realized they knew little of the native plants and their attributes and collected many specimens to study.

Robert R. Hill was one of the team members. He had already been involved in rangeland work for District 3 (now USFS Region 3) when he became the District's Chief of Grazing Studies. In 1910, he and G. A. Pearson, Director of the Fort Valley Experimental Forest Station (FVEFS) located on the Coconino National Forest northwest of Flagstaff, established grazing plots on the Coconino to ascertain grazing effects on tree regeneration.[11–13] By 1912, Hill focused his efforts on permanent sample plots at Rees Tank, Rogers Lake, Frye Park, Black Springs, and Big Fill in northern Arizona.[14,15] Hill, assisted by W.R. Chapline who later became the USFS Director of Range Management

Research, fenced about 2 acres per sample location to exclude livestock and measured vegetation on quadrats within the exclosures. He also set up other nearby quadrats, which remained open to grazing. These plots were monitored for three decades. Hill's conclusions in 1923 were that "The come-back of overgrazed ranges is much slower than most people believed."[14] Periodic remeasurement of these permanent sample plots continued until 1947,[15,16] and Northern Arizona University, School of Forestry graduate student Jonathan Bakker has resurrected this work and remeasured these historical plots (Fig. 2).[17]

Silviculturist G. A. Pearson hated livestock grazing around his trees and initially tried to abolish grazing on the National Forests.[18] He set out to prove his case when he realized this would not occur. In 1910, he established two large study areas, both on the Tusayan (later the Kaibab) National Forest, one at Willaha (in the pinyon/juniper type and a sheep pasture) and the other at Wild Bill (in the pines and a cattle pasture). Various experiments, backed by extensive field records, studied injury to pine reproduction, seedling establishment, forage production, bunchgrass fire hazard, response to protection, and use standards. At the time, USFS field employees kept diaries or notebooks that provide wonderful glances into the activities of these early scientists. One unidentified diarist wrote of his charges, named "Red Eye" and "Herman," at Wild Bill on June 25, 1932:[19] "I notice that these steers would be grazing contentedly and then would reach up and delibertly [sic] eat some juicy pine. They would chew this slowly with evident satisfaction."

Conclusions about the Wild Bill and Willaha studies indicated that pine shoots were not browsed after July 15th, the start of the summer monsoon season, so Pearson suggested withholding grazing until then. He also recommended a limit of a one-night, bed ground to reduce needle browsing; more watering tanks to lessen the impact on trees surrounding the water holes; and providing salt for the livestock. He said inferior grasses supplanted the best grasses because stock ate the best grasses down to the ground so they could not reseed. His summaries showed that influential factors affecting timber reproduction include the amount of "tasty" forage available during the summer months and the length of time livestock are permitted to graze.[20] Pearson's stance against livestock did not endear him to the range scientists, creating a controversy that raged for three decades before his retirement.

Charles K. Cooperrider was among those scientists with whom Pearson disagreed. "Coop" had accepted a USFS position on the Santa Fe National Forest in 1915, hoping to improve his fragile health in the arid Southwest. He quickly realized the dangers of erosion from too many cattle. He would later be assigned to District 3 headquarters as a range scientist, and eventually was Director, but he is remembered today for his watershed studies. "Coop" worked on the Willaha and Wild Bill study areas, coauthored the 1924 Coconino Range Appraisal Survey with R. W. Hussey, led range reconnaissance, surveyed conditions on private range-

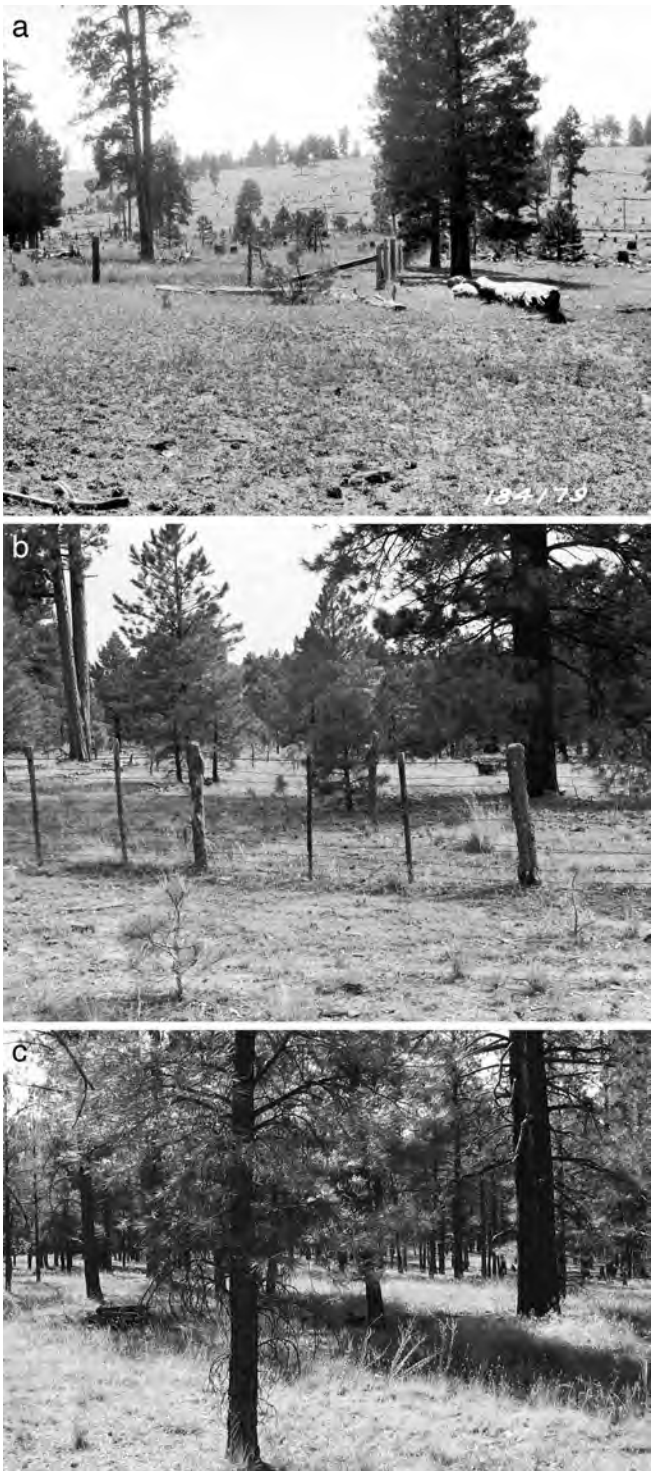

Figure 2. Repeat photographs of Black Springs, one of the original Hill plots established in 1912. The 1923 photo (top) was taken by M. W. Talbot (FS 184179), the 1947 photo (middle) by K. W. Parker (K-1140A), and the 2003 photo (bottom) by J. D. Bakker. The 1923 photo was taken from a slightly different angle than the other photos, although some of the same trees are evident in all photos, especially the large tree to the right and the large forked tree to the left (although this tree is blocked by younger trees in the 2003 photo). The fence was moved 10 m to the right in 1931, and deteriorated between the 1947 and 2003 photos. Historical photos courtesy of USFS Rocky Mountain Research Station, FVEFS Archives, Flagstaff, AZ.

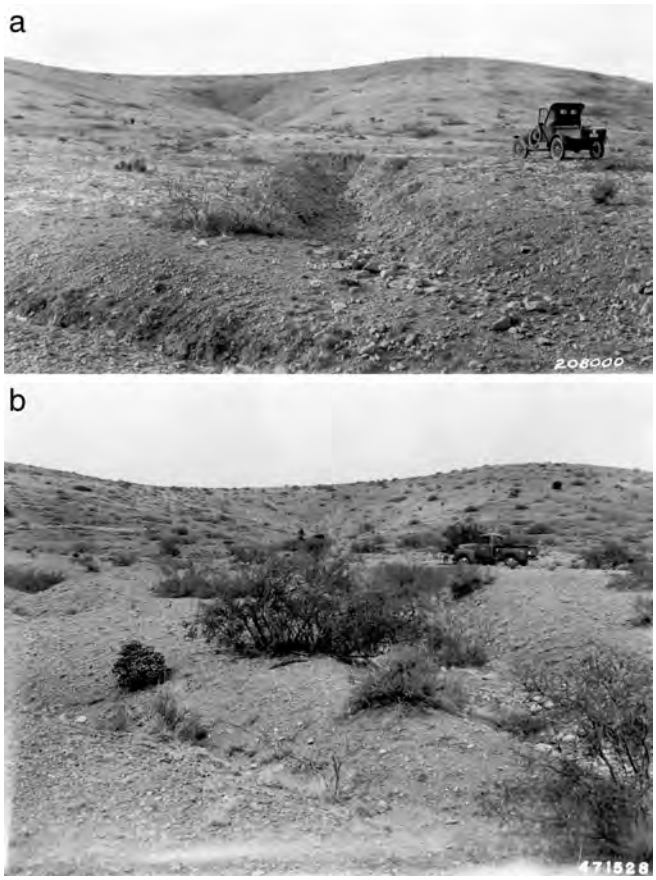

Figure 3. Repeat photos from a private range near the Gila National Forest in New Mexico. The top photo, taken by C. K. Cooperrider in April 1926, shows the cover and erosion. The follow-up photo, taken in October 1952 by J. F. Arnold, indicates the establishment of vegetation in the gullies and a marked increase in shrubby species. Historical photos courtesy of USDAFS Rocky Mountain Research Station, FVEFS Archives, Flagstaff, AZ.

land near the Gila National Forest (Fig. 3), directed the 1931 study of the Rio Grande watershed, established the Parker Creek (later Sierra Ancha) Experimental Watershed in central Arizona, among other projects. When appropriations allowed the USFS to expand its range studies in the late 1920s, "Coop" was assigned to FVEFS as Director of Range Studies where he and Pearson continued their dispute. During World War II, "Coop" went to Mexico with the Guayule rubber project where his poor health worsened, and he died in 1944 at 55 years of age.

Research results emanating from southwestern scientists caused local stockmen, especially sheep raisers, to protest evidence that overgrazing impaired range health. Efforts to discredit the scientists and their work and suppress the findings led to political pressure to close FVEFS. During a joint meeting of the Arizona Woolgrowers Association (of which Bert Potter was once an officer) and the Arizona Cattle Growers Association in July 1920, a resolution passed by the conference members said the Fort Valley Experiment Station was considered worthless because: "…the work has been an entire failure and a useless expense to the amount of approximately $20,000 per annum…be abandoned and that the lands occupied by it be restored to entry…" reported the Flagstaff *Coconino Sun* newspaper of July 9, 1920. A letter from Secretary of Agriculture Edwin T. Meredith to Charles Mullen, president of the Arizona Cattle Growers Association, asked for specifics as to where FVEFS had failed. The apologetic response blamed "some sheepmen" for the resolution that weary cattlemen approved without realizing what they were doing. FVEFS remained open.[19]

Scientist M. W. Talbot, in charge of District 3's Office of Grazing Studies by 1920, was instrumental in the development of rangeland and watershed management as southwestern range work continued to focus on plant identification, evaluations of grazing damage, use studies, and revegetation.[21] In 1937, Talbot revised the 1919 publication targeted to USFS District 3 forest officers titled *How to Judge Southwestern Range Conditions* under the new title *Indicators of Southwestern Range Conditions.* It was published by USDA as Farmers' Bulletin No. 1782. This easy-to-read guide aided both USFS rangers and stockmen.

Rangeland projects in the early years evaluated the seeding of exotics and native species. A 1913 study looked at native plants to see if they would survive and produce seed under cultivation. Research was conducted using other rangeland grazing animals such as goats, horses, and wildlife. For example, Chapline led a 1917 study of goats in New Mexico in response to high demand for mohair wool.[22] He knew the Forest officers wanted him to pull the goats, but he found that controlled grazing was acceptable. Some discussions with goat owners about grazing habits were necessary, however.

In the meantime, another controversial story was unfolding on the Kaibab Plateau in northern Arizona. President Teddy Roosevelt would designate the Plateau as a National Game Preserve in 1906, with focus on the local deer herds. Establishment of the game preserve meant no deer hunting and aggressive predator control, which contributed to an overabundant deer population. Continued grazing (possible overgrazing) by livestock and deer, plus periodic drought, led to a severely deteriorated rangeland, which likely contributed to a deer population crash in the 1920s. In the early 1920s, Forest Examiner S. B. Locke began investigations to examine the interaction of the large deer herds, livestock grazing, and the degrading range condition. He was joined in 1922 by E. A. Goldman, from the Biological Survey, and in 1924, by new Kaibab National Forest supervisor Walter G. Mann. The Forest Service and Biological Survey worked together to study problems associated with the large deer herd, food supplies, and preferences of deer. They built 41 sample exclosures to protect vegetation from deer browsing. Vegetation within these exclosures was inventoried, photographs taken, and fences maintained from 1925 until at least 1948 under the direction of Mann and Odell

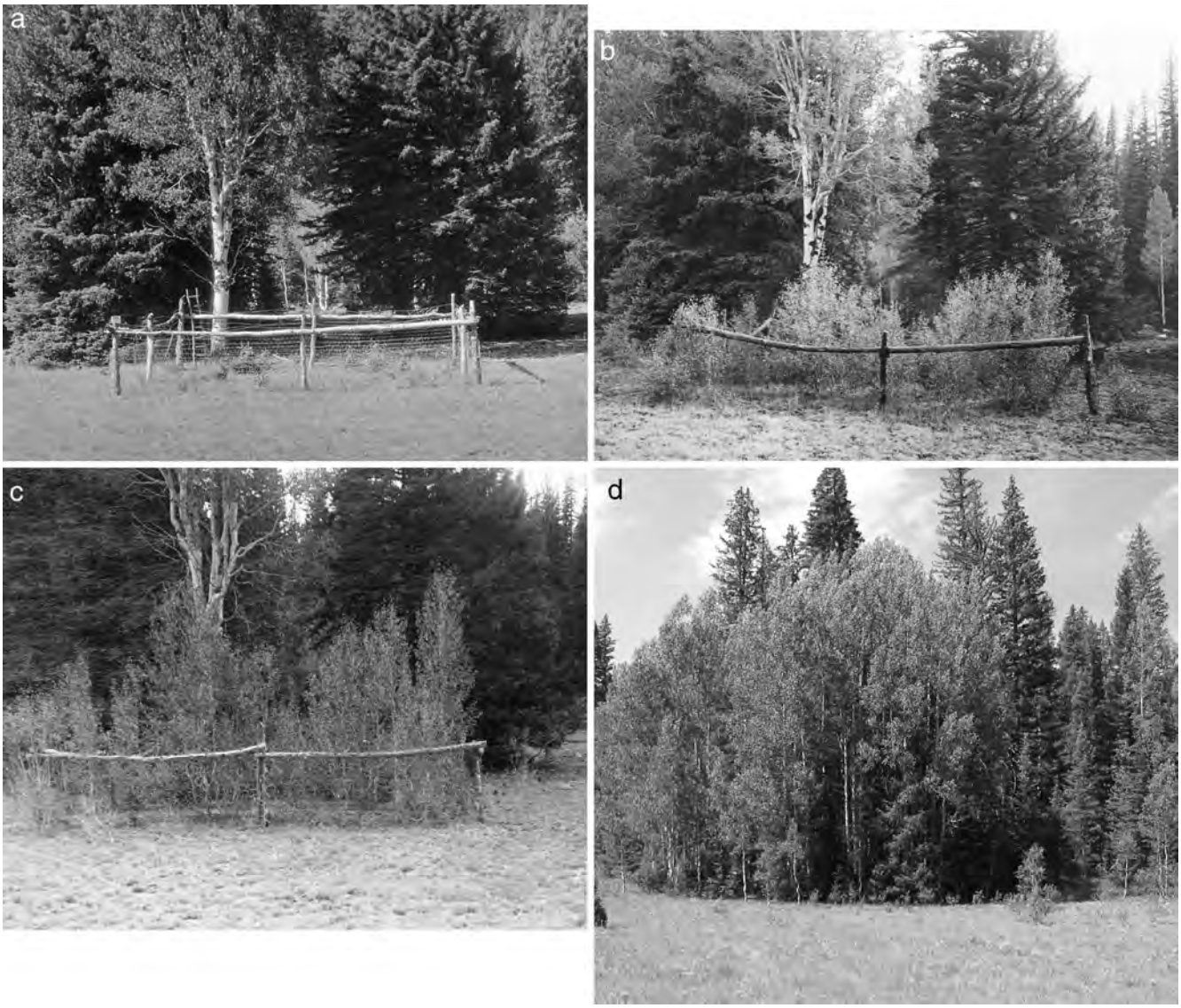

Figure 4. Repeat photographs of Plot #28 on the Kaibab Plateau as part of the range-aspen-deer studies in 1927.[23] Each study area had a closed and open plot, and the closed plot or exclosure is shown here in 1930 (top left; photo by E. S. Shipp USFS 253659). On the top right is a 1942 repeat photo by W. G. Mann (USFS 422883). The photo on the lower left shows showing aspen trees exceeding 4 m by 1948. The lower right photo includes a different field of view (~ 50m out in the meadow) to capture the 76 years of aspen height growth (photo by D. Binkley, 2003). The exclosure fence and posts are still evident under the trees. The open plot is located along the forest-meadow border to the right of the closed plot. Historical photos courtesy of Kaibab National Forest, North Kaibab Ranger District, Fredonia, AZ.

Julander (Fig. 4).[23] During this period, Locke had been in close contact with USFS ranger Aldo Leopold, who visited the Kaibab Plateau in 1941. Leopold wrote a popular account and several scientific articles about the Kaibab deer story.[24]

The Kaibab controversy continued into the 1940s and 1950s when USFS Research range scientists Kenneth W. Parker and Joseph F. Arnold were asked to join the Arizona Game and Fish Department in several studies. A detailed history of the Kaibab deer story and the political, management, and environmental factors that may have played a role in this controversy can be found in several interesting reports.[25–27]

Southwestern Range Research Matures

A new era in range research began in 1928 with the passage of the *McSweeney–McNary Forest Research Act*, legislation that specifically authorized experiments in range management.[28] Expanded funds meant more scientists on more projects. The Fort Valley Experimental Forest Station became the site of USFS Research's headquarters with the new name of USFS Southwestern Forest and Range Experiment Station (SWFRES). This was a temporary arrangement until 1930 when Research moved into rented facilities in Tucson, Arizona. As part of their charge, SWFRES was to coordinate existing range research in District 3, including the Santa Rita and Jornada

Experimental Ranges. In 1940, the USFS also acquired the Carnegie Institution's Desert Laboratory located on Tumamoc Hill near Tucson when Carnegie closed its operations.[29] Later, in 1956, the Desert Lab was bought by the University of Arizona. By 1953, the SWFRES was consolidated with the Rocky Mountain Forest and Range Experiment Station and headquartered in Fort Collins, Colorado. In May 1997, the Rocky Mountain Forest and Range Experiment Station and the Intermountain Research Station in Ogden, Utah, merged to become the Rocky Mountain Research Station.

Forester Edward Clayton Crafts began his USFS career in 1932 at SWFRES when he worked on the continuing study of the effect of livestock browsing on the forest. During his seven years in the Southwest, Crafts created a range use survey of all ranger districts in Arizona to describe range conditions and develop guidelines for the proper use of specific ranges.[30] He was in charge of the Civilian Conservation Corp (CCC) crews, acting as supervising technician for the camp at Mormon Lake where they worked on tree-thinning. Crafts' career eventually led him to being named as Assistant Chief of the USFS in 1950.

Twenty years of efforts in southwestern rangeland policy implementation resulted in praise as stated in District 3's in-house publication, *Forest Pioneer,* of October 1931:

> *The condition of Arizona ranges is rated 95% of normal in a special report issued yesterday by the Bureau of Agricultural Economics, USDA. The state's rating stands out by far the best of 17 western states mentioned in the report…Next best in standing are the ranges of New Mexico, rated at 89% of normal.*

A few years later, Region 3's Chief of Range Management D. A. Shoemaker commented in the *Forest Pioneer* of July 1934:

> *The Forest Service has been receiving many applications recently from people outside of the forests for grazing privileges on National Forest ranges…The stockmen who are asking admittance to the Forests see feed there which is better than that on many of the outside areas…and it is natural that they should want access to it…But these more favorable conditions on the forests are the result of years of careful management…*

Southwestern range studies continued through the 1940s with ongoing research on existing plots and the addition of new plots. Ranger study plots were established in the late 1920s and 1930s, which used permanent livestock exclosures and colocated plots open to grazing to examine range trend, vegetation composition, and cover changes.[31] Repeat photos showed changes visually. As a result of a study begun about 1950 and involving hundreds of permanent transects around the Southwest, K. W. Parker developed the three-step method for appraising trend in range condition. Step 1 involved data collection on a transect. Step 2 analyzed and classified the data, and Step 3 documented the transect and adjoining area with photographs. Favorable initial reaction to this method was received around the West on both public and private lands, but within a few years, the study was discontinued, primarily because of difficulties in interpreting the data.[9,32] Parker's method was expanded to five-phase approach in 1973.[33] Although USFS Districts are not required to remeasure these historical transects, some Districts still use these data as an additional means of examining vegetation change, plant vigor, and erosion.

Experimental Ranges

Santa Rita Experimental Range

Bert Potter and colleague Royal S. Kellogg traveled to Tucson in 1901 to meet with Dr David Griffiths of the BPI and Drs R. H. Forbes and J. J. Thornber of the Agricultural Experiment Station at the University of Arizona to explore part of the Santa Rita Forest Reserve that had been recommended as a possible site for an experimental range. Located south of Tucson, the Santa Rita was officially set aside in 1903 as the nation's first Range Reserve. It was managed by the BPI until 1915, when the USFS took it over. Its desert grasslands contain more than 51,000 federally owned acres and some 1,300 privately owned acres. Because of severe overgrazing since the 1880s, livestock were excluded from much of the Santa Rita until 1915 when the USFS reinstated year-long grazing with cooperators. In 1989, the USFS transferred management of Santa Rita to the University of Arizona which continues studies on this century-old reserve.[34] Literally hundreds of studies have taken place on the Santa Rita to examine different livestock grazing systems, vegetation control and restoration practices, and impacts of small mammals and other consumers.[35]

Jornada Experimental Range

Another major, long-term Experimental Range in the Southwest is the Jornada, located in the Chihuahuan Desert northeast of Las Cruces, New Mexico. In 1904, E. O. Wooton, a visionary botanist with the New Mexico College of Agriculture and Mechanic Arts, began a series of studies in cooperation with C. T. Turney, a rancher who was grazing the Jornada after gaining control of the local water sources. More than 190,000 acres were set aside in 1912 by Presidential Executive Order, thus forming the Jornada Range Reserve. In 1915, management of the Jornada transferred from the BPI to the USFS, and W. R. Chapline established the valuable Jornada Herbarium. The Jornada Range Reserve was renamed the Jornada Experimental Range in 1927. Then in 1954, Jornada management was transferred to the Agricultural Research Service, which manages the facility today along with New Mexico State University. The Jornada Experimental Range is also designated as a Long Term Ecological Research (LTER) site.[36]

Conclusions

USFS Range Research was born in the Southwest because of people like Bert Potter and Will C. Barnes, stockmen who worked to ensure rangeland and ranching sustainability. Initial efforts between bureaucrats and ranchers were harmonious, but tensions soon began and are still with us today. Research, however, has proceeded carefully through the turmoil.

Range scientists first came into the Southwest with the nation's initial range reconnaissance survey. Southwestern Forest Service scientists not already mentioned from the 1910s to the 1970s include Earl Aldon, Jack Bohning, Dwight Cables, Robert S. Campbell, R. H. Canfield, J. T. Cassady, Warren Clary, Pete Ffolliott, C. L. Forsling, G. E. Glendening, B. A. Hendricks, Donald A. Jameson, E. L. Little, Jr., S. Clark Martin, W. G. McGinnies, G. D. Merrick, Enoch W. Nelson, H. A. Paulson, Jr., Henry A. Pearson, F. W. Pond, Elbert H. Reid, and H. G. Reynolds, among others.

USFS range research, per se, ended about 1970, and scientific projects relating to rangeland use began to be funded under the umbrella of watershed, wildlife, and ecological projects with a shift from agricultural (increased forage) to conservation as public image about forest and range use changed. Today's USFS scientists collaboratively work with other agencies and organizations continuing studies under several venues, for example, Northern Arizona University's Ecological Restoration Institute, the Malpai Borderlands Group in southeastern Arizona, Sevilleta long-term ecological research (LTER) site in central New Mexico, and traditional range and watershed departments at New Mexico State University and University of Arizona. Academicians at Arizona State University also undertake teaching and research in rangeland science.

Changing climatic conditions, markets, cultural traditions, and other reasons factor into public lands grazing. Sound research combined with multiple methods must be employed to ensure the best sustainable use of the natural resources in any given area with close attention paid to the extremely diverse climate and topography of the Southwest. It is a complex issue and everyone has his or her own opinion. Edward Crafts said a final determination on whether livestock did harm to pine tree reproduction was never determined one way or the other.[30] Discerning, once and for all, how to manage the range is impossible because so many components affect any given forest and range area, and decisions must be based on the resources of the individual area at that time in its history. Controversy will continue, as will rangeland research, because at any given moment, the value of land ebbs and flows with cultural perception.

For a more comprehensive review of range research throughout the western United States, the reader is referred to the *Journal of Range Management*.[37,38]

Acknowledgments

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Authors are Archivist and Historian, USDA Forest Service Rocky Mountain Research Station, Fort Valley Experimental Forest Station, Flagstaff, AZ (Olberding); Rangeland Scientist, USDA Forest Service Rocky Mountain Research Station, Fort Collins, CO (Mitchell); and Professor, School of Forestry, Northern Arizona University, Flagstaff, AZ (Moore).

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Evolving Views of Public Land Values and Management of Natural Resources

By Thomas M. Quigley

In 2005, the USDA Forest Service celebrates its 100th birthday. For a century, this agency has been charged with managing much of the Nation's forests and rangelands in the public interest. From its humble beginnings with a handful of employees and a clearly stated vision, today the agency's 35,000 employees are responsible for managing more than 190 million acres of national forests and grasslands, for directing one of the world's largest natural resources research agencies, for directing cooperative state and private forestry programs, and for overseeing an international forestry program. The Centennial provides an opportunity to reflect on changes that have occurred over the last century and a chance to consider where management of natural resources in the next century will head. One venue for discussions of Forest Service influence and management was a series of regional Centennial Forums and a Centennial Congress that convened in January 2005. At the Rocky Mountain Centennial Forum, range management and rangeland resources were specifically highlighted. This paper highlights the transitions that have occurred and looks to the future regarding rangeland and natural resource management, with specific emphasis on the role the Forest Service has played, and will play, in this process.

To undertake this examination, it is useful to consider how societal values, organizational values, and personal values have shaped the past and will continue to shape the future management of natural resources.

Societal Values Shape Resource Management

Management of natural resources, and especially the National Forests, is a reflection of society's values. Society's values are evidenced in the mix of laws, policies, budgets, appeals, lawsuits, migration patterns, resource demands, and the ways in which we use goods and services derived from federal lands. Many of the outcomes resulting from the full expression of these values are influenced by the perception of society's values that are held by Forest Service (FS) employees. For instance, policies, regulations, goals, targets, plans,

Time and Tough Decisions Make a Difference

As a forest ranger's son growing up in the 1950s, I spent considerable time with my Dad during the summer. I was there to help count the cattle and sheep in the forest, to fix fence, repair water troughs, set out the utilization cages, put allotment ear tags on cattle, empty the trash from campgrounds, and maintain guard stations. I witnessed large reductions in grazing by cattle and sheep during this time on the allotments my father oversaw. I recall it was not until I hit my teens that I came to realize that riparian areas could actually have vegetation in them at the end of a grazing season. I personally witnessed the gradual improvement in range conditions from the 1950s as I accompanied my Dad to the allotments; through the 1960s as a student in college; in the 1970s as an assistant Ranger, when I had responsibility to manage allotments; in the 1980s as a Range Scientist, working on one of the largest range research projects to be undertaken—the Oregon Range Evaluation Project; and into the 1990s and 2000s, as I have analyzed forest and rangeland conditions in the Columbia Basin. Today, it is my assessment that overgrazing is not the first, or even second, greatest threat to rangeland health. Invasive species, fire, and development now supercede grazing as the greatest threat.

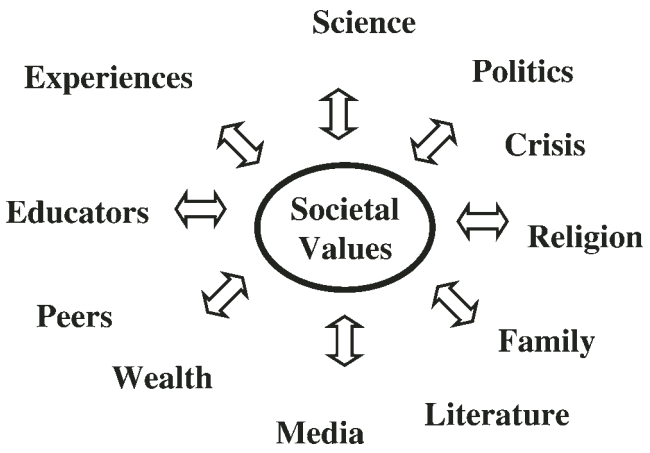

Figure 1. Societal values are influenced directly or indirectly by a variety of elements.

and budgets related to natural resource management and use often have their beginnings rooted in choices made by FS managers, staff, and leaders. Thus, the perception of society's values held by FS employees, especially line officers, can be a useful gauge of likely shifts in resource management and use. If FS employees perceive that there is less societal interest in a particular resource or use, then policies, budgets, and management energy will flow away from that resource. These values, in turn, become ingrained within the culture of the Forest Service and reflected in the organizational values the agency proclaims and rewards.

Society's values play out in various ways, but invariably there is a time lag between the actual shift of values, the perception of those shifts by FS employees, and their expression via agency actions, policies, or laws. Not only is the lag a natural consequence of perceiving and acting, but the policy and legal framework within which change gets made in the United States has been purposely made a cumbersome process to prevent rapid shifts and swings. Getting a law through from conception to passage and implementation is, indeed, a slow process. So we should expect to find any agency operating within the statutes of law to always lag behind major shifts in public values.

Many of the changes that are witnessed on the ground are a reflection of how FS employees view social values. The perceptions held by FS employees reflect society's values and evolve as the workforce changes. One of the quickest feedback loops is in the appropriation process, in which shifts in funding can be made relatively quickly because of the need to fund agencies on an annual basis. Alternatively, the slowest feedback loops happen when major legislation is passed and signed into law.

Organizational values are a reflection of social values in that, if an agency gets out of synch with social values, it is likely there will be changes wrought on them by many sources, not the least of which are court mandates and Congressional appropriations.

It is useful to consider our personal values and the values of society as a portfolio. For instance, in the same way we think about a portfolio of financial investments, societal and personal values comprise many differing components. If we consider the traditional multiple uses of the Forest Service, namely wood, water, forage, wildlife, and recreation, an individual's portfolio of values would consist of separate values for each use. One person might place a relatively high value on rangeland forage for livestock use, whereas another might place a relatively high value on recreation. It does not mean that an individual sees no value in one of the multiple uses, only that there is a relative ranking among the values. If we had the ability to aggregate the individual values across society, we could display the results as a portfolio showing a summary that approximates the relative values for each of the multiple uses. That portfolio would reflect relative value differences, or rankings, among the uses. Just as the value of a financial portfolio changes, so do the individual values for each of the multiple uses change within any given portfolio.

Societal and personal values are influenced by a host of factors (Fig. 1). Individuals and groups within society respond differently to the factors that influence values. Some are strongly influenced by experiences and science information, whereas others are strongly influenced by family and religion. Although experience and science are important, they are not the only, and might not even be the most important, influences.

As individuals or groups gather evidence that shapes their values, the weight of evidence accumulates until it is large enough to determine that a shift has indeed happened. When the weight of evidence gets large enough, there are attempts by agencies to alter their policies, and Congress gets sufficiently motivated to change laws. The change in values can be in either direction, toward more (or less) emphasis on managing a particular resource. Society is not a uniform block of values that suddenly shifts to a new view. Rather, there is a distribution of values among the people. It might take some dramatic event, such as a large fire, major failure,

Some historic drive trails remain as evidence of heavy livestock use in the past. Photo courtesy of USDA Forest Service.

Typical riparian area on Starkey Experimental Forest and Range in 1952. Photo courtesy of Robert Harris.

or catastrophe, to galvanize enough opinions to push the majority of the population to a new value set. Things like floods, fires, wars, and economic collapse can cause values to galvanize and policies to shift quickly. Things like large clear-cutting, overgrazing, and habitat degradation take a longer time to cause the weight of evidence to shift for a majority of the public.

Settlement and Exploitation–Before 1905

Before 1905, America was settling the vast frontier and building a nation. Society's values were interpreted and implemented with results mostly focused on exploitation and expansion of settlement into the West. Timber and rangelands were seen as a "never ending resource." The outcome was clear-cutting trees to make way for agriculture and development, deforestation, flooding, mining for resource extraction, overgrazing, and range wars. With increasing populations in the West, large fires were becoming more of a public issue. The battle of the open range was largely fought during this period. Overgrazing in the mountains of Utah was so rampant that floods and debris flows were blamed in large part on a lack of vegetation. Conservation of resources for future use was a concept that was present but neither widely understood nor valued. Laws and policies were largely centered on disposal of public land and exploitation of resources for economic purposes. Many of the outcomes of these policies were the exact issues that drove early conservationists to press for forest reserves and national parks.

Conservation and Regulation–1905 to 1960

Forest reserves and national parks were viewed as essential to protecting the public interest in natural resources. In 1905 the Forest Service was created to manage 63 million acres with 500 employees. For the first time, federal forest lands were viewed as assets for society rather than as lands waiting for disposal to private interests. Conservation was in the public view, with Congress and the President taking direct action. The mission of the fledgling Forest Service can be summarized as providing "the greatest good for the greatest number for the long run." Grazing allotments were created, permits issued, and regulations established. Managing these lands for multiple use was expected. Gaining control of abuse of the public resource was initially considered a primary role for the Forest Service.

The "Use Book" of 1905, written by Gifford Pinchot, dictated the purposes of the national forests, established the initial regulations for the Forest Service, and essentially proclaimed the agency values. The purpose of the national forests included: a perpetual supply of timber; flow of streams; prevention of unnecessary forest fires; prevention of decreases in summer carrying capacity of range; conservation and wise use of water, wood, and forage; decision of local questions locally; devotion of land to its most productive use; and achievement of the greatest good for the greatest number in the long run.

The life of an early Ranger was focused on fulfilling the vision of the agency through personal work. In a letter dated July 10, 1915, the Rangers of the La Sal National Forest in Utah were given marching orders: "There is a great deal of work to be done on the forest, such as improvement of Stations, trail, drift fence and telephone line construction, maintenance of Ranger pastures, posting of signs, and many

Roads, Roads, and More Roads

When I worked in Colorado in the 1970s as an assistant ranger, I saw what was proposed by the assistant ranger for timber and recreation as the ultimate road network. It had all nonwilderness, forested areas on the district roaded so that no area was more than one-fourth mile from a road. It literally made the forest look like a patchwork of herringbone material. I thought that proposal for roads was over the top, but most in the agency did not. Shifting values demonstrate that this concept would never be proposed today.

Typical riparian area on Starkey Experimental Forest and Range in 1995. Photo courtesy of USDA Forest Service.

other things." The letter goes on to describe how Rangers were expected to work hard and should not be sitting around the Ranger Station reading or otherwise engaged in nonproductive work. The Ranger was the "doer" in those days. The 1905 "Use Book" specifically stated that the Ranger was expected to endure hardship and perform severe labor under trying conditions. "Invalids seeking light out-of-door employment need not apply." There were no large crews to be supervised and rangers were expected to furnish their own stock and have no side occupations. Being a Ranger was considered a 24-hour-a-day commitment. The commitment extended to the spouse of the Ranger who typically minded the Ranger Station in the Ranger's absence.

Grazing receipts exceeded or equaled timber receipts until 1921. Greeley's 1955 book on the Forest Service reported that range problems constituted the bulk of the forester's daily tasks. Overgrazing was rampant. Gaining control of livestock use was a major thrust of the agency from its inception. Range surveys and range allotment plans focused on improving range conditions while remaining committed to providing livestock grazing use. Drive trails on Western forests were used to move millions of sheep from lower elevation winter ranges to higher elevation summer ranges. Many of those driveways today are identifiable for their erosion pavement and early seral vegetation.

Riparian areas were noted for their lack of vegetation. The concept of sacrifice areas, or areas in which overgrazing was to be expected, was deemed acceptable. In fact, it was a step forward in the progression of commitments to begin recovery of much of the Western rangeland.

Small rural towns used to expect cattle drives down the main street. Being stopped on a highway because sheep were trailing toward summer range was a common occurrence in rural settings. Those activities and scenes are now rare.

The 1960s introduced an era in which range managers and agency policy makers believed we could manage national forests to meet all demands. On the timber side, programs and studies were put in place in an attempt to maximize production. This was the era of the regulated forest: Clear cutting was the dominant harvest strategy, thinning to increase growth and production was emphasized, and road building to gain access to old growth timber made the Forest Service engineering staff one of the largest road-building organizations in the world. The Forest Service was convinced that society wanted managed forests. On rangelands, management was designed to maximize the production of red meat to fulfill society's demands. Crested wheatgrass seedings, sagebrush eradication, juniper chaining, and brush control were undertaken on large tracts to increase forage production and eliminate poisonous plants like halogeton. Campgrounds were greatly expanded—the new roads created primarily for timber purposes provided access to areas previously not accessible. States transplanted wildlife to meet hunter demands and to return wildlife to areas that were recovering from prior abuse. Fish hatcheries were introduced to meet the demands for fishing across the West. Laws passed during this period emphasized multiple uses (Multiple Use Sustained Yield Act), planning to meet society demands (Resources Planning Act), and the creation of wilderness areas (Wilderness Act).

Cattle drive through downtown John Day, Oregon. Photo courtesy of USDA Forest Service.

The Generation Gap

While my Dad was a District Ranger and I was an Assistant Ranger, I took my Dad with me to do range survey work on an allotment at an elevation of nearly 11,000 feet in Colorado. At lunch, we took a break and leaned back against a big old spruce tree. My Dad said, "These big old trees make my finger itch. Where's the chain saw? These trees aren't doing anyone any good just standing here." I had thought all along that my Dad and I shared the same conservation ethic and values. It was then that I realized my values were indeed different than my Dad's. That tree was at least 200 years old and would take that long to replace. It did not make sense to me that we might cut that area to provide wood. To my Dad those trees were wasted if they were not "used."

In the broad sense, there were no large outcries from the public to stop putting forward visions of the managed forest to meet society's demands. That outcry slowly grew, but it took several years to accumulate sufficient weight of evidence to convince Congress and the courts that change needed to occur. Laws were forthcoming, but a significant lag occurred.

The Planning Era–1976 to 1993

With the passage of the Forest and Rangeland Renewable Resources Planning Act of 1974 and the National Forest Management Act of 1976, the reality of the National Environmental Policy Act of 1970 and the Endangered Species Act of 1973 took hold of the Forest Service. This era is marked with massive investments in forest planning. Interdisciplinary teams were formed to plan the future uses

of the national forests. Nearly every forest hired economists and more wildlife and fisheries biologists to move the planning forward. Optimization models were developed for virtually every forest, with joint maximization of timber, range, and wildlife as the objective function. The planning regulations introduced the concept of species viability, a concept that, when coupled with the Endangered Species Act, became the primary driver of change in forest management during the 1990s. Downward pressure on livestock grazing continued on much of the Western rangeland during this period. Investment in research on rangelands was substantial. The number of range scientists focusing on Western rangeland issues peaked during this period. For example, in 1985 there were 22 range scientists in Forest Service Research; in 2005 there is just one. Large rangeland investments were undertaken in efforts to maintain stocking rates through increased forage production. The Oregon Range Evaluation Project was launched in 1976 as a 10-year, $10 million investment in response to a national Red Meat Initiative. The stated intent was to determine whether the grazing strategies that were used in the national projection of red meat production were correct. It was assumed that society would be willing to invest federal funds in intensive grazing strategies to meet the demand for red meat.

In 1986, the Forest Service re-evaluated its core values. The Forest Service proclaimed its values to be summarized in the phrase "caring for the land and serving people." Its precepts were to care for healthy ecosystems, have a professional and diverse workforce, care for future generations, and be responsive to the public. Public sentiment was beginning to be more strongly stated regarding intensive use of public forests and rangelands for private gain. The weight of evidence grew substantially stronger, suggesting that wildlife, water, and recreation were beginning to nudge out forage and timber as the highest and best use of the national forests and grasslands.

Ecosystem Management and Gridlock–1993 to 2004

Lawsuits over endangered species habitats resulted in a virtual gridlock of Forest Service timber actions in the Northwest. A new set of issues began to dominate the public discussion, with 1993 being a watershed event in the policies of the Forest Service. In 1993, President Clinton announced the Northwest Forest Plan addressing the Northern Spotted Owl, old-growth timber, and anadromous fish. Ecosystem management, biodiversity, species viability, and endangered species issues dominated much of the policy debate and planning efforts. Large-scale regional assessments were launched in the Northwest, Interior Columbia Basin, and California Sierra Nevada mountains. Emphasis was quickly removed from optimization solutions to large-scale planning efforts. More energy was directed toward simulating the future under varying strategies for managing integrated ecosystems rather than maximizing outputs. The emphasis was on projections of what might be possible while maintaining viable populations of fish and wildlife. Following the implementation of the Northwest Forest Plan, harvest of timber in the Northwest declined precipitously, over 75%. The reliance of counties on receipts from timber sales on federal land was replaced by economic initiatives. Counties with substantial lands in federal timber could no longer rely on receipts from timber sales.

A century ago, the nation was committed to protecting water, ensuring sustainable forests, controlling nonpermitted uses, and assuring that wise use was exercised on the Nation's forests. These values overlap with those articulated in the first "Use Book" of the agency but also differ in some significant ways. In 2004 the Forest Service's proclaimed values are articulated in its goals and mission statement. The stated mission of the USDA Forest Service is to sustain the health, diversity, and productivity of the Nation's forests and grasslands to meet the needs of present and future generations. The primary goals include: reduce the risk from catastrophic wildland fire, reduce the impacts from invasive species, provide outdoor recreation opportunities, help meet the Nation's energy resource needs, and improve watershed conditions. The simple claim of providing the greatest good for the greatest number in the long term remains an underlying theme the agency retains but articulates what that means in today's world differently than it did a century ago.

A rare data set exists that compares values for the multiple use categories through time for Forest Service employees and leadership. In 1989 Jim Kennedy and I undertook one of the first studies of Forest Service values. This study examined whether Forest Service employees 1) actually supported caring for the land and serving people values stated in the 1986 vision statement and 2) believed the agency reward system encouraged employees to follow these vision statement values. The survey was essentially repeated 15 years later, in 2004. Line officers, those with primary decision authority, perceived in 1989 and 2004 that the public values wildlife, water, and recreation higher than it values wood and grazing (Fig. 2). The lowest value was perceived to be associated with grazing.

Ecosystem services and resource use could drive future management decisions. Photo courtesy of Marty Vavra.

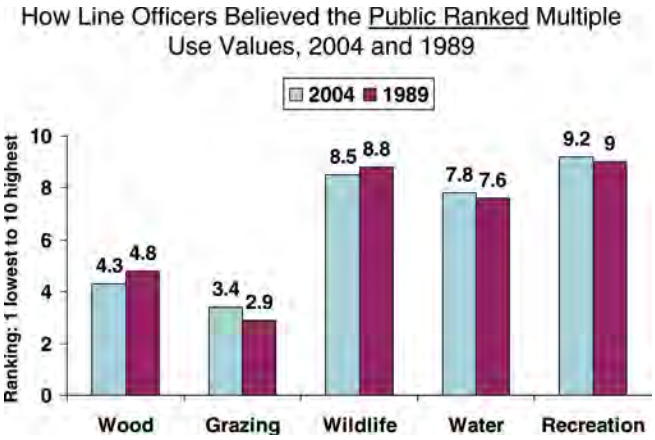

Figure 2. How Forest Service line officers ranked the multiple uses of wood, grazing, wildlife, water, and recreation on a scale between 10 (high) and 1 (low) in 1989 and 2004.

When asked how these line officers believed the Forest Service ranks the multiple uses, in 1989 there was a belief that wood was more highly valued by the agency than the other multiple uses. If this were true, it would be reflected in the budgets, policies, and emphasis at all levels in the agency. When asked the same question in 2004, line officers believed the Forest Service ranks all the multiple uses at nearly the same level, showing a substantial decline in how the agency ranked wood relative to the other uses. This shows a substantial difference still exists between how the line officers perceived the public values and how the agency ranks the public values (Fig. 3).

When asked how the line officers personally ranked the multiple use values, there is considerably more alignment with how they perceived public values than with how they perceived the agency values the multiple uses. There are no substantial shifts between the 1989 rankings and the 2004 rankings for how line officers personally ranked the multiple use values (Fig. 4).

Newer terminology might have overtaken some of the ways the Nation expresses its values about its forests and rangelands. When compared across the perceptions of how line officers believed the Forest Service values, how the public values, and how they personally value these newer outputs, similar trends continue to express themselves (Fig. 5). The Agency and line officers are perceived to value fuels management higher than other outputs, whereas the public is perceived to value landscape beauty above the other outputs. The public is viewed as having lower values for vegetation management and biodiversity than for landscape beauty and fuels management. The Agency is viewed as valuing fuels management and vegetation management above biodiversity and landscape beauty. These contrasts undoubtedly play out in debates about management direction, priorities for action, and policies at all levels. The lag between public values and agency values is persistent and predictable. When does the weight of evidence become compelling enough to shift to new policies, laws, and priorities? One cannot predict when, but there are circumstances that cause the weight of evidence to shift dramatically and could result in shifting policies and priorities.

Thanks…But I Don't Need Your Help

When driving down the Columbia Gorge to make a presentation to a class at Oregon State University, I pulled up behind a car going 65 miles an hour. It was obvious that the car had a flat tire. It was not yet flapping but it was about to. I pulled alongside the car and waved and motioned that the car had a flat. The driver would not look my way or acknowledge that I even existed. I could see this was not going to work. I backed off and scribbled on a note pad "FLAT TIRE". I then drove by the car while holding up the note, but not looking at the driver. After I passed the car, the driver pulled over. I stopped to see if I could help. The driver would not roll down the window, but got on a cell phone and motioned me to go on.

While I, as a scientist, may see that a wreck may be just around the bend, the user might not be interested in hearing my story. Scientists make observations that sometimes result in them shouting and waving their arms about in an attempt to get someone's attention that problems are heading our way. Sometimes the scientist or science gets ignored. Even after the recognition that a problem is indeed around the corner, managers or society might say they will take care of it alone. "Thank you very much but I don't need your help." Sometimes science gets it wrong and there really is no flat tire. Perhaps the tire was a specially build test tire and this was just a test to which the driver had full knowledge. Sometimes there are scientists waving their arms that we need to go right to avoid disaster at the same time that other scientists are waving their arms that we need to go left to avoid disaster and still others are saying to stay the course or disaster will happen. Science credibility is on the line with each shout. In the end, the only thing science has to peddle is its credibility.

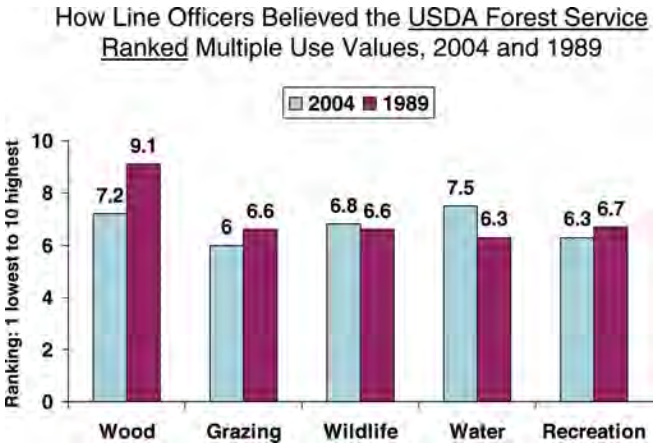

Figure 3. How Forest Service line officers believed the agency ranked the multiple uses in 1989 and 2004 on a scale between 10 (high) and 1 (low).

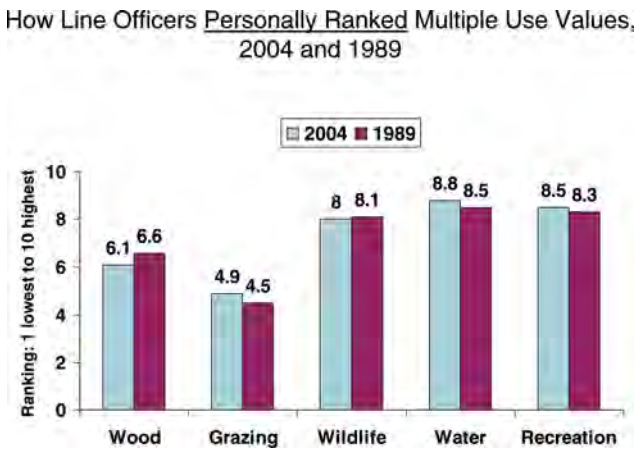

Figure 4. How Forest Service line officers personally ranked the multiple uses in 1989 and 2004 on a scale between 10 (high) and 1 (low).

When asked what the Forest Service should reward, three elements consistently received 50% or higher support from line officers in both the 1989 and 2004 surveys. These included care for ecosystems, professional competence, and building consensus. Dropping from this high level of overlap were care for the development of employees, care for future generations' needs, and being innovative and a risk taker. New issues have pressed their way into the debate and perceptions of line officers. Establishing a consistent set of reward systems that encourages the achievement of the Agency mission and goals is a dynamic process. In 1989, there was not a national strategic plan for the Forest Service. Now, thanks partly to the Government Performance and Results Act of 1993, there is pressure within all federal agencies to link an accountability system to the strategic goals, investments, outputs, and outcomes that are sought by society. A formal process is shaping up to make this linkage a performance accountability system. Perhaps the narrowing of values the Agency should reward is a reflection of this migration from independence across the National Forests to accountability to national goals.

What is the Role for Science?

The Forest Service has one of the world's largest natural resources research and science organizations. The agency has moved more and more toward what is referred to as science-based decisions. Although the decisions appropriately remain in the domain of the Resource Manager, scientists are being called on more and more to offer information pertinent to the decision-making process. Although science remains a primary means for advancing our understanding, it also is appropriately engaged in assessing resource conditions, critically evaluating options managers propose, documenting findings from studies, and transferring technologies into applications useful to managers. New planning rules recently published by the agency call for the use of best available science in its decision making. In its application, this should not result in scientists becoming decision makers but should result in transparent expressions of how, and what, science was used in decision making. Scientists should be better able to understand managers' needs and better target studies aimed specifically at gaps in understanding or toward tools that will make decision making more efficient and effective.

The Future–2005 to ??

In a recent discussion about global forestry issues that are dominated by concerns of sustainable development, I was interested to learn that many of the lesser developed countries are finding solutions to deforestation and fire through community-based forestry approaches. In this context, contractors are not used to oversee the extraction of federal timber and contain fires. Rather, local communities are given the responsibility, and the ensuing benefits, of managing the local forest resources. In that process, local solutions that have local benefits are found to problems, local workers are employed in getting the work accomplished, and local communities decide where, how, and to what extent timber extraction will occur. The result has been a substantial reduction in deforestation; in fact, many of these community forest operations have become certified internationally as practicing sustainable forestry approaches to management and reduction in wildfire. Are there lessons that might be drawn from the solution to these international problems?

There is increasing recognition that fire, invasive species, development (subdividing ranch parcels or forests), and unregulated recreational uses pose real threats to the Nation's forests and rangelands. As ranching becomes less profitable, there is increased pressure to sell the property to developers, thus further fragmenting habitats and resources. What are the incentives to retain private land in an undeveloped state? There is a growing interest in the potential for incentives on wild land to provide ecosystem services. Although no market currently exists to capture revenue from these elements, perhaps markets could develop to enable local communities and individuals to benefit from managing lands to provide a complement of ecosystem services, including the capture and storage of carbon to assist in global climate issues, to provide clean water to a growing population, to reduce the risk of

Newer, Post Industrial National Forest "Outputs" or Achievements, 2004

Post-Industrial "Outputs"	How USDA FOREST SERVICE Values	How PUBLIC Values	My PERSONAL Values
Landscape Beauty	6.4	8.5	7.6
Biodiversity	6.7	5.9	7.7
Fuels-Mgmt	8.7	7.1	8.6
Vegetation-Mgmt	7.9	5.3	8.3

Figure 5. How Forest Service line officers believed the agency, the public, and they personally valued newer outputs or achievements in 2004 on a scale between 10 (high) and 1 (low).

catastrophic fire, and to meet biodiversity goals expressed in the Endangered Species Act.

A sustainable society and natural resources are a clear goal, yet how to achieve an integration of social, economic, and ecological goals remains elusive. The challenge of the next decade and beyond will be to find working solutions to this integration on rangelands, forestlands, and agricultural lands. A part of that job will include determining where and how to use active management to produce goods and services but also to restore ecosystems to provide the ecosystems services we will depend on. Science can help us understand the options, consequences of various actions, and tradeoffs associated with the choices. In the end, as values continue to shift and evolve, policies and laws will appear out of sync with societal values as it plays its never-ending catch-up game of constantly examining the weight of evidence about society's values.

The values in real estate are based largely on "location, location, and location." The values in natural resources are largely dictated by "purpose, purpose, and purpose." It is the expression of that purpose that is constantly in flux and creates so many interesting discussions and debates.

Congress in its wisdom has not unambiguously dictated the purposes for active management on the national forests and grasslands. Rather, there are historical laws that lay out conflicting purposes and new laws that dictate what process to use when planning and implementing management actions. Consequently, agency personnel are left essentially to judge what values should be emphasized and what changes to implement. Groups or individuals who take exception to the process or proposed outcome can, and do, file lawsuits against the agency for the proposed action. The recipe is clear, the Forest Service proposes action and gets sued. If the Agency loses the suit, it pays the costs incurred by the litigants. This cycle perpetuates more lawsuits. If no clear purpose is going to be forthcoming from Congress, then the agencies are left with trying their best to walk the "process" from proposed action to proposed action. The controversy is not likely to be settled by administrative action supported by strong statements of purpose in the law. Thus, the precautionary principle becomes the watchword and its interpretation seems to ignore the reality that the "no action" alternative bears significant risk. This leaves us with the question of whether the forests and rangelands of today are sustainable.

What does it take to pass clear legislation for agency action? The debate about active management to reduce fire risk is a good example. The forest health debate took on real steam in the 1990s when fires and insect and disease epidemics began to change large landscapes rapidly. Although there was congressional interest expressed via hearings and press releases, no significant new funding or laws were passed until the fires of the late 1990s and early 2000s invigorated action on a comprehensive fire strategy pushed by the Western Governors. Legislation was proposed but not passed by both houses of Congress until the fires of Southern California became a nightly news spectacle. Millions of acres of forest and rangeland burned, thousands of homes were lost, and dozens of individuals died. Why should it take a crisis of this proportion to sufficiently motivate new legislation providing clear, unambiguous statements of purpose for active management? It appears that the Healthy Forest Restoration Act of 2003, coupled with large funding increases to implement the comprehensive strategy for fire and fuels, is motivating action and breaking gridlock.

Are there other crises on the horizon that might motivate a statement of clear purpose for the Nation's forests and rangeland? Or will the Forest Service be left to work its way through the bureaucratic process jungle and objective conflicted legislation? Only time will tell.

Although Marion Clawson's classic 1975 book asked the question "forests for whom and for what?" We only need to slightly rephrase the question, "sustainability for whom and for what?"

Author is Director, Pacific Northwest Research Station, USDA Forest Service, Portland, OR 97204. This paper is adopted from a presentation at the Centennial Forum sponsored by the Rocky Mountain Region and Rocky Mountain Research Station of the USDA Forest Service in Fort Collins, Colorado, November 2004.

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A Century of Managing Rangelands on National Forests

Or It Ain't Easy Being a Range Con in the New West.

By Floyd Reed, David Bradford, and Justin McConkey

A century ago, the Forest Reserves were transferred from the Department of Interior to the Department of Agriculture to be managed by the newly established US Forest Service. That same year, on June 13, 1905, the Chief of the Forest Service, Gifford Pinchot, released regulations and instructions for the use of the Forest Reserves. These instructions included the following phrase that has long been considered the primary guiding principle for the management of the National Forests, "In the management of each reserve local questions will be decided on local grounds; …from the standpoint of the greatest good of the greatest number in the long run."[1] The *Organic Administration Act of 1897* provided the legal foundation for the management of the Forest Reserves. (In 1907, the name Forest Reserves was changed to National Forests.) The 1897 Act stated that the purpose of the Reserves was to secure favorable conditions of water flows and to furnish a continuous supply of timber for the use and necessities of the citizens of the United States. Even though timber was of primary concern at the time, the reality was that the greatest impacts and resulting conflicts revolved around grazing on the public lands. The complexities and controversies surrounding use of the forage resources on the National Forest and National Grasslands continue undiminished today. As the Forest Service celebrates its centennial, it is interesting to look back and realize that the basic mission of the National Forest has expanded but remains essentially unchanged since 1905 (see "Forest Service Mission"[2] sidebar).

Forest Service Mission (FSM 1020.21)

Caring for the Land and Serving People

1. Advocating a conservation ethic in promoting the health, productivity, diversity, and beauty of forests and associated lands.
2. Listening to people and responding to their diverse needs in making decisions.
3. Protecting and managing the National Forests and Grasslands so they best demonstrate the sustainable multiple-use concept.
4. Providing technical and financial assistance to State and private forest landowners, encouraging them to practice good stewardship and quality land management in meeting their specific objectives.
5. Providing technical and financial assistance to cities and communities to improve their natural environment by planting trees and caring for their forests.
6. Providing international technical assistance and scientific exchanges to sustain and enhance global resources and to encourage quality land management.
7. Helping States and communities to wisely use the forests to promote rural economic development and a quality rural environment.
8. Developing and providing scientific and technical knowledge aimed at improving the capability to protect, manage, and use forests and rangelands.
9. Providing work, training, and education to the unemployed, underemployed, elderly, youth, and disadvantaged in pursuit of the agency's mission.

When the Forest Reserves were transferred from the Department of the Interior to the Department of Agriculture, the intent was for the National Forests to be working landscapes that provided goods and services for the citizens of this country. During the 20th century, management of the National Forests evolved to complement this concept of working landscapes with the recognition of the multiple uses that were to be provided on the forests. As listed in the *Multiple-Use, Sustained-Yield Act of 1960*, they are outdoor recreation, range, timber, watershed, wildlife, and fish.[3] In our particular field of interest, when we look back to the formative years of the National Forests, the primary objectives of the Range Management Program were well stated, comprehensive, and remain valid today. (See "Objectives of the Range Program for the National Forests and Grasslands"[4] sidebar.)

Recognizing the multiple-use concept and developing the above stated objectives was noteworthy and time well spent, but the reality of the Range Management Program on the National Forests was a great deal more contentious. When the National Forests were set aside, the first order of business was to develop some semblance of control over use of the resources. The early day Forest Rangers were directed to get out on the ground and become familiar with the country (Fig. 1). Additionally, they were instructed to issue permits for grazing use and institute a fee system. Neither endeavor was especially welcomed with open arms by ranchers in the West. A good example of conditions during the early years are characterized in this anecdote by Benjamin C. Heilman, one of the first forest rangers on the Gunnison National Forest. In 1933, Heilman wrote a summary of his 25 years of working for the Forest Service. This account refers to an event that took place on Black Mesa in 1910.[5]

Old time cowmen and timber operators were the principal users of the Forest, and, as their use had never been restricted, they were not favorable to administration, which, as they expressed it, 'Interferes with our business.' A half dozen drunken cowboys thought it would be a proper demonstration of their attitude to pull down and burn a trail sign…I went to a round-up and after the branding was done called them together and asked them what they did with the sign at Mesa Creek. Their reply was 'We burned it, what are you going to do, arrest us?' I said, 'No! I am not going to arrest you, but that sign cost the Government money to paint it and ship to me, it took me a day with a saddle and pack horse to put it up, and we want it left there. If you will replace it with one as good or better, I will not even make a written report of it, but I will tell the Supervisor when I see him. But, I'm telling you this, I am not establishing any precedent, if you continue such acts, I don't know what I will do the next time. I may get meaner than H__l!' They said, 'All right, we will put up a good sign,' and they did put up a better one than had been there.

Objectives of the Range Program for the National Forests and Grasslands (FSM 2202)

1. To manage range vegetation to protect basic soil and water resources, provide for ecological diversity, improve or maintain environmental quality, and meet public needs for interrelated resource uses.
2. To integrate management of range vegetation with other resource programs to achieve multiple use objectives contained in Forest land and resource management plans.
3. To provide for livestock forage, wildlife food and habitat, outdoor recreation, and other resource values dependant on range vegetation.
4. To contribute to the economic and social well being of people by providing opportunities for economic diversity and by promoting stability for communities that depend on range vegetation for their livelihood.
5. To provide expertise on range ecology, botany, and management of grazing animals.
6. To promote the development of grassland agriculture and sustained yield management of the soil, water, forage, fish and wildlife, recreation, and timber resources.
7. To demonstrate sound and practical principles of land use to favorably influence nearby areas and economies.

I am sure no Government property was ever again molested by any of these men and those of that party who are still Forest users, are now good cooperators.

This is an excellent example of item 8 in Gifford Pinchot's *Guide to the Behavior of Foresters in Public Office*: "Learn tact simply by being absolutely honest and sincere and by learning to recognize the point of view of the other man and meet him with arguments he will understand." (See complete list on p. 16.) In today's world this form of conflict resolution is all too often replaced with process-oriented legalities.

Figure 1. Early forest rangers packing into the West Elk Mountains, Gunnison National Forest, Colorado, in 1911. Unknown photographer. Photo courtesy of USDA Forest Service.

For nearly 50 years, there were legal challenges and ongoing controversies. The primary focus of the range program was to reduce livestock numbers and shorten the grazing season as early inventories showed poor plant conditions. Livestock numbers and seasons of use were gradually reduced, restoration programs were implemented, and the science of range management began to be introduced to the National Forests and Grasslands (Fig. 2).

By the 1960s, range conservationists were being hired and put to work providing a more scientific approach to conducting grazing on the National Forests. Rotational grazing systems were initiated that usually depended on substantial structural and nonstructural improvements to make them successful (Fig. 3). In most cases the main objective of the "implementation of science" was to try and improve the productivity to the point where carrying capacity of the rangelands was more or less equal to the permitted use.

It is remarkable to observe the tremendous improvements that our predecessors made. By the late 1960s and early 1970s most of the allotments had benefited from some level of improved management. The rangelands were beginning to recover from past abuse, and conditions were improving across the West (Fig. 3). This progression of enhanced activities was discussed in detail in our article in the August 2003 issue of *Rangelands,* entitled "A Range Management Review."

This brings us to the more modern era of rangeland management in which the 2 senior authors of this article spent their careers. To be successful, range conservationists were expected to blend their botanical skills with an understanding of livestock and wildlife preferences for occupying and using the landscape. Vegetative inventories continued to focus on measuring desirable forage species for use by grazing animals. It then followed that Allotment Management Plans were updated to obtain more even distribution of livestock and to alleviate conflicts between livestock and wildlife. Just like the early rangers, it was imperative that the range cons, more than anybody else, knew their country. They still needed to be able to travel into remote country, usually by horseback, to do a competent job of caring for the resources.

Over the years, those in leadership positions within the Forest Service would comment on the fact that being an effective range conservationist was regarded as one of, if not the most, difficult jobs in the agency. It was universally recognized that to do a responsible job of managing the range program required an individual to be well rounded and conversant in a number of specialties. Communication skills began to be essential in conducting the agency's business, both internally and externally (Fig. 4).

During our careers, things got a lot more complicated. Society demanded a more ecological approach to management of their public lands. The science of rangeland management was continually evolving, and Congress passed a myriad of laws, followed by numerous lawsuits, appeals, and rulings by the courts that had a direct impact on the way rangelands were acknowledged and managed. This all led to a continuing increase in process and detail that had to be documented in increasingly complex and extensive Environmental Assessments or Environmental Impact Statements.

Figure 2. Photo comparison of Trail Gulch. **2a,** In 1949, the allotment was grazed season-long by 244 cow/calf pairs from June 1, 1949, to October 15, 1949. Caption on back of photograph noted, "Stream channel cut-down, willows out, range poor to depleted. West Divide cattle allotment." Precipitation for the year was 110% of average. In 1950, this area was added to Muddy Sheep allotment. Arthur Cramer, September 20, 1949. Photo courtesy of Denver Public Library. **2b,** In 2000, 1,046 ewe/lamb sheep grazed the site for 10 days in mid-July. Precipitation for 2000 was 80% of long-term average. David Bradford, September 20, 2000. Photo courtesy of USDA Forest Service.

Today, a competent rangeland management specialist has to be intimately familiar with a wide spectrum of subjects to provide for the care and management of public rangelands (Fig. 5). The following chart displays the differences between the knowledge, skills, and abilities required to do the job 25 years ago compared with today.

In summary, today's rangeland managers start off needing to know things that we assimilated over a number of years. The junior author of this article has already been exposed to more knowledge in 4 years than the two "older" authors in our first 15–20 years. In short, future rangeland managers will need to know more and prioritize better than we did 15 years ago. The ability to remain focused on the goals of man-

Figure 3. Floyd Reed evaluating grazing use on Sunlight Mesa, Bighorn National Forest, Wyoming, in 1972. The sagebrush was sprayed, cross-fences were constructed, water developments were constructed, and rotational grazing management was implemented in the 1960s. Joe O'Rourke, photographer. Photo courtesy of USDA Forest Service.

aging healthy rangelands, while staying proficient in new techniques—without "chasing rabbits"—will be the challenge for current and future rangeland management specialists. We suggest that the Statutory Mission of the Forest Service, the Objectives of the various programs, and Gifford Pinchot's *Guide to the Behavior of Foresters in Public Office* need to be reviewed periodically to make sure employees stay grounded in the basics that have served the profession so well for the past 100 years. The complexity of the job will continue to increase over time as our society evolves and our knowledge expands. The challenge will be to remain responsive to these changes while attempting to avoid the "analysis paralysis" that has become so prevalent in recent years.

Figure 4. Dave Bradford on a field tour to discuss possible land exchanges and grazing with National Park Service, Forest Service, grazing permittees, and aids for Congressional representatives. Justin McConkey, photographer. Photo courtesy of USDA Forest Service.

Figure 5. Justin McConkey surveys for slender cottongrass, *Eriophorum gracile*, a sensitive plant species. Site is a fen in the West Elk Mountains, Gunnison National Forest, Colorado. David Bradford, photographer. Photo courtesy of USDA Forest Service.

In spite of that, it still remains that a successful rangeland manager needs to know 3 basic principles that will remain constant:

1. KNOW YOUR COUNTRY.
2. KNOW YOUR COUNTRY.
3. KNOW YOUR COUNTRY.

Authors are retired from the US Forest Service as Range Staff Officer, Grand Mesa, Uncompahgre, and Gunnison National Forests (GMUG NF), Delta, CO, with 38 years' experience (Reed); Rangeland Management Specialist, Paonia Ranger District, GMUG NF, Paonia, CO, with 26 years' experience (Bradford); and Rangeland Management Specialist, Paonia Ranger District, GMUG NF, Paonia, CO, with 4 years' experience (McConkey).

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Changes During the Past 25 Years

Rangeland Inventory
25 years ago: Rangeland inventory was centered on the Parker 3-Step Method almost exclusively.
Today: Rangeland inventories are more ecologically based. Soils and plant communities are considered, and attributes are compared to "Desired Future Conditions." The Parker 3-Step transects have been replaced with methods that measure cover and frequency, including both circular macroplots and 100-foot-long linear transects.

Monitoring
25 years ago: Monitoring was of grazing use and normally relied on ocular estimates and percentage of plants used.
Today: Monitoring is focused more on measuring forage left ungrazed, stubble heights, and determining plant recovery from defoliation.

"Creek Bottoms"
25 years ago: Creek bottoms were usually considered sacrifice areas that naturally had to be grazed out before livestock would move into the surrounding uplands.
Today: Creek bottoms and riparian areas have become important. They are carefully considered in planning and conducting grazing use.

Livestock Handling
25 years ago: Salt was usually placed in convenient spots, in large quantities, and close to water to make it easy for the cows to find the salt, and then, they could get a drink right after they ate some salt.
Today: Low-stress livestock handling techniques are being implemented to enhance livestock distribution, avoid sensitive areas, and to improve animal performance. Salt and other supplements have become attractants that are used sparingly and are carefully located to enhance distribution of grazing animals. More and more, livestock are becoming "key tools" in fuels and vegetation management programs.

Grazing Plans
25 years ago: Range-readiness standards were rigid, and when the forage on the National Forest wasn't fully ready to graze, the livestock were forced to remain at the lower elevations, mostly BLM land. Most grazing allotments were divided into relatively few pastures, and the pasture rotation sequences didn't vary much from year to year.
Today: The focus is on plant development and recovery. Land ownership boundary lines are no longer barriers to improved management.

Botanical
25 years ago: The biggest problem we had with noxious weeds was typically Canada thistle.
Today: Skills have expanded to identify numerous weeds and a myriad of rare and/or sensitive plant species that must be recognized in the planning process.

Wildlife
25 years ago: Wildlife was recognized as being entitled to occupy the landscape and was expected to use areas where livestock grazing didn't normally occur.
Today: The needs of many species of wildlife—not just big game animals—and recreational uses are key elements of an allotment management plan (AMP).

Range Improvements
25 years ago: Fences were expected to hold cattle—4-strand barbed-wire fence was the standard. Stock ponds were the standard water development for livestock use.
Today: Improvements, such as temporary, electric fencing, are designed to influence livestock behavior and blend into the landscape to avoid conflicts with wildlife or with recreation. Spring developments to provide good, clean water for improved livestock health and performance are now the emphasis. Secondary, low-flowing water sources are being developed and designed for both wildlife and livestock use.

Technology
25 years ago: The IBM Selectric typewriter worked just as fast as you could push the buttons.
Today: Technology, such as geographic information systems (GIS), global positioning systems (GPS), and a variety of computer software programs designed to "make our lives easier" while organizing and keeping track of large amounts of data are used. This requires a whole new set of skills if a modern, rangeland manager is to stay current with the profession.

Outdoor
25 years ago: Range Conservationists were expected to spend 80% of their time in the outdoors, completing fieldwork. Employee was expected to be capable of walking, riding horses, and using 4 ¥ 2 and 4 ¥ 4 vehicles.
Today: Outdoor and backcountry skills are still essential. All of the foregoing items mentioned lose their value if the individual can't maintain a close contact with every part of his or her assigned landscape.

Goals
25 years ago: Range Cons were encouraged to work closely with the grazing permittees to improve cooperation and get "good use" of the range. Our goal was to have our rangelands in "good condition."
Today: Rather than trying to achieve "good range conditions," contemporary rangeland managers are focused on ecological processes, healthy watersheds, and desired conditions.

Vancouver, British Columbia: Host City for SRM 2006

Meet us in Vancouver for an SRM special–education & culture rolled into one!

By Michael Borman and Cindy Meays

Vancouver, described as "spectacular by nature," is nestled between the spectacular and scenic coastal mountain range and the Pacific Ocean (Fig. 1). Join us February 12–17 for the 2006 SRM annual meeting in beautiful Vancouver, BC. Bring your spouse or special guest, and family. Vancouver offers convenient access to skiing and fishing, exceptional and varied dining options, a vibrant cultural scene, and a multicultural environment that makes the city one of the most desirable places in the world to visit. Vancouver is the host city for the 2010 Winter Olympics.

Figure 1. An aerial view of downtown Vancouver. Photo courtesy of Tourism Vancouver.

Hotels

The Hyatt Regency Vancouver and the Fairmont Hotel Vancouver will be the headquarters hotels. The two hotels are across the street from each other and will house the entire meeting. They offer outstanding accommodations and are within easy walking distance of many of the city's attractions. The Royal Centre Mall, Pacific Centre, and Robson Street, Vancouver's exclusive shopping district, are in the immediate vicinity. Both hotels are within walking distance to parks, Gastown, Chinatown, and Vancouver's entertainment district. Stanley Park is just a few blocks away.

The Hyatt Regency (Fig. 2), with 34 stories and 644 guest rooms, features an outdoor heated swimming pool, health club, and access to racquetball and squash courts. A modern world-class convention hotel, it offers dining choices including the European-style Latte Café & Bistro and the Mosaic Bar & Grill, which features dishes from around the world prepared with a "West Coast flair." Each guest room includes TV, 2-line dataport phones, individual climate control, a hair dryer, bathrobes, umbrellas, a coffeemaker, and other amenities.

Figure 2. Front entrance to the Hyatt Regency Vancouver. Photograph courtesy of the Hyatt Regency hotel.

The Fairmont Hotel Vancouver, one of the majestic railway hotels that were built across the country by the Canadian Pacific and the Canadian National railways, was finished in 1939 in time for the arrival of King George VII and Queen Elizabeth I. It was completely restored in the 1990s and unites the timeless glamour of its era with the luxury and services desired by today's traveler. The hotel offers a state-of-the-art health club, an indoor pool, hot tub, sauna, spa, designer shops, and two award-winning restaurants. The 556 Fairmont guest rooms are spacious and beautifully furnished with reproduction antiques including a large working desk. Each room offers voice mail, Internet access, bathrobes, coffeemaker with complimentary tea and coffee, a TV, and other amenities.

Climate

Warmed by Pacific Ocean currents and protected by a range of mountains, Vancouver enjoys mild temperatures year round. February's average lows are in the mid-30s and highs are in the mid-40s Fahrenheit (0° to 5° Celsius). Winters are wet, but it rarely snows, except on local ski hills.

Skiing and Snowboarding

If you enjoy skiing and snowboarding, Greater Vancouver has three local mountains—Cypress, Grouse, and Seymour—on Vancouver's North Shore. Whistler Blackcomb, site of the upcoming 2010 Winter Olympics' ski events, has been rated the top ski destination in North America and is approximately two hours north of Vancouver.

Host Activities–Tours

The Greater Vancouver area does not have rangelands to offer in the immediate vicinity—they are farther inland—but it does have a variety of agricultural activities that offer interesting tour options. Vancouver itself and the Greater Vancouver area offer a whole host of shopping, cultural, and educational options. The Vancouver Art Gallery features fine arts of past and present centuries. The Pacific Centre offers a central downtown experience that touches every aspect of life, from fashion to food, with boutique-style stores that stretch over three city blocks. Stanley Park covers 1,000 acres of woodlands offering nature trails, gardens, picnic sites, and special attractions at the zoological gardens. It is bordered by a 5.5-mile seawall, which provides cycle and pedestrian paths. The Vancouver Aquarium, located in Stanley Park, is the home of beluga whales, seals, sea otters, seabirds, and touch-pools. Vancouver's Chinatown, one of the largest Chinatowns in North America, features a commercial and market section as well as many different Chinese restaurants. The Museum of Anthropology offers an exciting and comprehensive display of unique art and icons of the West Coast Indian peoples. It features a large collection of Haida and Kwakiutl Indian carvings and totem poles along with an Asian and Pacific artifacts collection. Victoria, located on nearby Vancouver Island, offers the opportunity for a day-long tour, including a relaxing ferry ride. We are checking on fishing opportunities too!

Dining

The two headquarters hotels offer excellent, award-winning dining options. Beyond the hotels, within walking distance, a whole host of dining opportunities are available. A dining guide for Vancouver provides the following list of cuisine options (in alphabetical order): bar and grill, café/bistro, Canadian, Chinese, European, East Indian, family, fast food, First Nations, French, international, Italian, Japanese, Mediterranean, Mexican/Latin, nightlife/casino, pubs, seafood, South-east Asian, Spanish, steak and seafood, vegetarian, and West Coast.

Shopping

The immediate area around the hotels and Greater Vancouver offer a variety of shopping opportunities. Robson Street, a block from the hotels, is Vancouver's answer to Rodeo Drive.

Granville Island, within 10 minutes of the hotels, is a shopper's paradise. It has the pleasant appeal of a bustling covered market and the presence of some of British Columbia's finest arts, crafts, and dining. Chinatown has a variety of specialty shops. Yaletown was once dominated by working warehouses, but is now a trendy place for galleries, spas, high fashion, and dining. Burnaby's Metrotown is BC's largest shopping and entertainment complex. It is accessible by SkyTrain.

Public transportation

The Vancouver transit system, TransLink, is made up of a network of buses and unique services such as the SeaBus and SkyTrain covering over 700 square miles of the greater mainland of Vancouver. TransLink makes getting around the city convenient, easy, and often provides beautiful views of the city!

Currency

Tourism Vancouver recommends all visitors use Canadian currency when traveling within Canada. Visitors can exchange currency at Canadian chartered banks, trust companies, or credit unions, or at offices of foreign exchange brokers, but it is advised to have local currency on hand prior to arriving. Some hotels, merchants, and restaurants accept US or other foreign currency at a predetermined rate, which may differ from the daily rate posted by financial institutions. Most major credit cards are accepted and recommended for purchases, but visitors who wish to pay by cash (US) are advised to check with the vendor before a purchase is made for the exchange rate that is being offered. Cash machines with 24-hour access are available in many convenient locations throughout Greater Vancouver.

- Canadian one dollar coin ("loonie") ($1) = 100 cents
- Canadian two dollar coin ("toonie") ($2) = 200 cents
- Notes are in denominations of $1,000, $100, $50, $20, $10, $5
- Coins are in denominations of $2, $1, $0.50, $0.25, $0.10, $0.05, $0.01

On February 17, 2005, the exchange rate was $1.24 CND to $1.00 US. The exchange is favorable and shopping and dining in Vancouver can be an economically pleasant experience.

Entry Regulations

US Citizens

US citizens and permanent residents require a birth certificate, a resident alien card, or a green card together with a picture ID or passport to enter Canada. A driver's license is ***not*** accepted as proof of citizenship.

As of this writing (February 2005), we are exploring the need for a federal passport for those traveling on official federal business, ie, when agencies are covering the cost of travel, hotel, and per diem.

Watch Membership News and the preconvention *Trail Boss* for information regarding student entry regulations.

International Visitors

Persons visiting from countries other than the United States must have a valid passport and may require other documentation such as visas. Check with the nearest Canadian consulate well in advance of travel.

Border-to-Show Service

In Vancouver, border-to-show customs service is available through our customs broker, Events on the Move. The broker will arrange for convention or meeting material to be forwarded directly to the convention site for clearance. Vancouver is one of only three cities in Canada that offers this invaluable service. Watch Membership News and the preconvention *Trail Boss* for information regarding shipping materials to Vancouver for the trade show and other meeting-related activities. The process can be smooth and easy as long as proper procedures are followed. Events on the Move will provide that service for us.

Final Thoughts

SRM's 2006 annual meeting in Vancouver will offer the usual excellent program of technical sessions, posters, workshops, and symposia. The SRM annual meeting is an exceptional opportunity to obtain continuing education for rangeland professionals. It provides an opportunity to network with fellow professionals. In addition to the professional reasons to attend the SRM annual meeting, this year Vancouver offers the additional opportunity to explore and enjoy a cosmopolitan Pacific Rim city that has been ranked among the most desirable cities in the world to visit. Bring your families a few days early or stay a few days later and enjoy this rare opportunity. More information about Vancouver can be obtained via the following Web site: www.tourismvancouver.com.

The Pacific Northwest Section SRM is excited about the 2006 meeting. We look forward to hosting you and your families in a truly beautiful and exciting city of the Pacific Northwest!

Authors are Local Arrangements cochairs for the SRM 2006 annual meeting and Department of Rangeland Resources, 202 Strand Hall, Oregon State University, Corvallis, OR 97331 (Borman) and 3771 Commonage Place, Vernon, BC, V1T 8M5 Canada (Meays).

SRM Honor Awards

Presented at the Society's 58th Annual Meeting in Fort Worth, Texas, on February 9, 2005.

Frederic G. Renner Award

The Frederic G. Renner Award is the highest bestowed by the Society for Range Management. The award is named for one of the SRM's founding fathers, who served as its 2nd president.

Dr William C. Krueger is an outstanding rangeland scientist and manager. He is well known within the Society for Range Management as a tireless worker for rational and scientifically based approaches to rangeland management.

Dr Krueger has been a member of the Department of Rangeland Resources at Oregon State University (OSU) for 37 years. During that period of time he has served as program leader, then department head in the Department of Rangeland Resources, with the exception of two one-year stints at Humboldt State University and Colorado State University.

During Bill Krueger's long and fruitful career in rangeland resources he has accomplished numerous noteworthy things, several of which are noted here.

Because of his ecologically based studies in animal behavior and plant communities, he was able to effectively eliminate the death loss of hundreds of head of livestock due to acute pulmonary bovine emphysema in eastern Oregon.

In Oregon, he protected the use of "forage prepping" for wildlife (particularly elk) production through the use of judicious livestock grazing, increasing elk habitat several-fold.

He fostered watershed research early on in his career by researching livestock grazing strategies for watershed benefit, demonstrating that livestock herbivory at certain times of the year could be beneficial to such plant communities as willows and other woody plants. Thirty-plus years later he is still active in watershed research, studying the relationships between groundwater and riparian vegetation cover and stream temperatures.

Mort Kothmann and William Krueger and family

Dr Krueger is the only department head that OSU's Department of Rangeland Resources has had in the years since the mid-1980s when it moved from being a program within Animal Science to a stand-alone department. It is appropriate to note that for about 10 years prior to being elevated to departmental status, Dr Krueger was also the program leader for the OSU Rangeland Resources program. During his entire tenure as OSU Rangeland Resources leader, Dr Krueger has never wavered from his stance of believing in rangelands and in the people who are affiliated with them. Dr Krueger established the Oregon Watershed Improvement Coalition, which prompted the environmental communities and the industrial communities associated with rangelands to come together for the common good. He has a faculty of well known and well rewarded individuals whom he has always encouraged and supported. In fact, when one

Mort Kothmann and Jerry Holechek

of his faculty members was recently asked why OSU seems to frequently surface as a premier university in rangeland management, that individual answered that the department's faculty reflect the attitudes of its leader. That leader is Dr William C. Krueger, a man whose leadership and example provide an inspiration for an entire professional society, the Society for Range Management.

W. R. Chapline Research Award

The W. R. Chapline Research Award was established in 1986 to provide recognition to members of SRM for exceptional research accomplishments in range science and related disciplines.

Dr Jerry L. Holechek, during his 25 years as a professor at New Mexico State University, has made numerous contributions to the profession of range management through his research, teaching, and invited talks in the areas of range livestock nutrition, range wildlife management, public rangeland policy, ranch economics, mined land reclamation, grazing management, and range revegetation. He is well recognized internationally for his research accomplishments.

Dr Holechek is the senior author of the textbook *Range Management Principles and Practices,* considered the standard undergraduate range management textbook in the world, now in its 5th edition. Another textbook authored by Dr Holechek, *Natural Resources: Ecology, Management, and Policy,* has been characterized as a virtual encyclopedia of natural research management.

Dr Holechek is an author of 137 peer-reviewed articles in 19 different journals, 3 books, 2 book chapters, 6 experiment station reports, 29 invited papers, and 22 proceedings articles. He has authored a total of 216 papers on range management. He is the 2nd most published scientist in the *Journal of Rangeland Management* (now *Rangeland Ecology & Management*) and the most published author in *Rangelands.* He is among the most widely and heavily cited scientists in the field, based upon the scientific citation index. His research is heavily used by public land management agencies and private ranches.

Dr Holechek has brought his wealth of research findings and practical experience into the classroom, at both the graduate and undergraduate level, where he is rated an excellent teacher. He has served as an advisor to 37 graduate and postdoctoral students. He has coauthored 71 peer-reviewed journal articles with these students. He has advised 19 international students; most now hold key positions in range management in their countries. He has been invited to speak and help design research projects in the Sudan, Mexico, the Czech Republic, and Brazil. Dr Holechek's research has been used to resolve 12 multiple-use conflicts on public and private rangelands in New Mexico, Arizona, Texas, and Nevada.

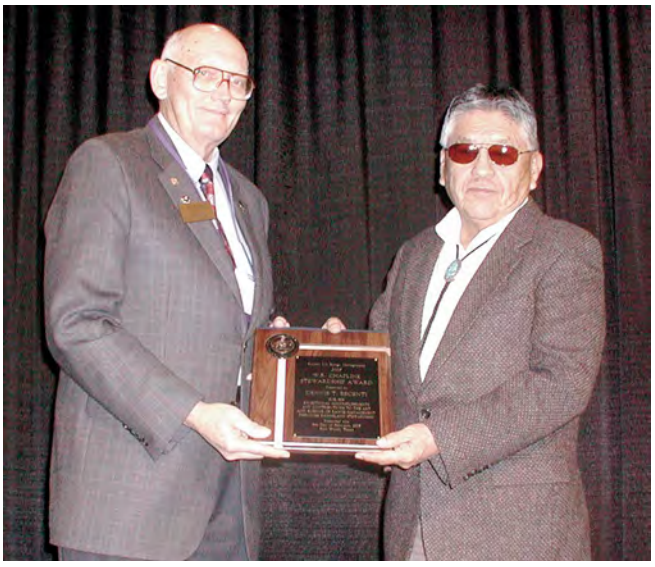
Dr Holechek has run one of the most productive range science research programs. He has integrated biology, economics, and policy into a unique and effective framework. There can be little doubt that his research on integrating macroeconomics with biology has changed, and is changing, basic approaches to managing rangelands and other natural resources.

For his many accomplishments in and continuing commitment to rangeland management, the Society for Range Management is pleased to present Dr Jerry L. Holechek with the W. R. Chapline Research Award.

W. R. Chapline Stewardship Award

The W. R. Chapline Stewardship Award was created in 1986 to provide recognition to members of SRM for exceptional accomplishments and contributions to the art and science of range management through specific rangeland entities.

Dennis Becenti's resume begins with the objective: "To provide leadership in a cooperative environment to help people improve, manage, and maintain rangeland resources for use by this and future generations." Dennis has committed himself to this objective by helping landowners and tribal governments on the Navajo and Hopi Indian reservations



Mort Kothmann and Dennis Becenti


Chuck McGlothlin and Mort Kothmann

improve the management and condition of their rangelands. He has worked for the Bureau of Indian Affairs, the Soil Conservation Service (now Natural Resources Conservation Service), and both the Navajo Nation and the Hopi Tribe. Additionally, Dennis has collaborated closely with universities in Arizona and Utah to further the goals of improved range management and advanced education.

During his career, Dennis has led planning and implementing of grazing management, range improvement, and watershed projects on tribal lands. He has helped Navajo and Hopi ranchers plan and implement grazing management, brush and weed management, erosion control, tree plantings, water storage structures, and wildlife habitat improvements. He assisted the Navajo Nation in developing their first Soil and Water Conservation District and holds the distinction of being the first native-born Navajo District Conservationist on the reservation.

Dennis has always stressed education as part of his work, for his clients as well as his family. He has conducted range tours for members of the tribal grazing advisory committees, land users, and interagency range staff. Throughout his career he has voluntarily taught range ecology and management classes for students at Navajo high schools. Additionally, he saw to it that his children received university educations.

He considers one of his most important accomplishments his work helping the Paiute Tribe to develop a range management plan for their reservation. He also assisted with a film project entitled *A Distant Thunder*, which gave a historical perspective on the Navajo use of land and promoted proper range management.

Because of his work, rangelands on the Navajo and Hopi reservations, which cover large parts of Arizona, New Mexico, Colorado, and Utah, are better managed. Navajo and Hopi ranchers and leaders of the tribal governments are better informed about and committed to the importance of rangelands and methods of modern range management.

For his many accomplishments in and continuing commitment to rangeland management, the Society for Range Management is pleased to present Dennis Becenti with the W. R. Chapline Land Stewardship Award.

The Society for Range Management 2005 Distinguished Service Award

Charles E. (Chuck) McGlothlin, as chair and prime mover of the Society for Range Management's Endowment Fund Board of Governors, has demonstrated extraordinary accomplishments to enhance the Society's financial independence through expansion of the Endowment Fund.

In addition to other fundraising efforts, Chuck has organized and directed 6 (going on 7) silent auctions and 2 (going on 3) major raffles since 1997. Other Board of Governors members have assisted and SRM members have provided substantial support, but the tangible results of more than $75,000 added to the Endowment Fund would not have been possible without Chuck's personal initiative, hard work, organizational skills, and dedication.

For these reasons, SRM's Board of Directors has deemed it appropriate to confer the Distinguished Service Award to Charles E. McGlothlin.

Outstanding Achievement Awards

The Outstanding Achievement Awards are presented by the Society for Range Management for outstanding achievement to members and other qualified individuals and groups working in rangelands. The Outstanding Achievement Awards have been subdivided into two groups: Research/Academia and Stewardship (ranchers, agency professionals, and consultants).


David Ganskopp and Mort Kothmann

Wayne Hamilton and Mort Kothmann

Research/Academia

Dr David Ganskopp has worked to improve our understanding of livestock grazing behavior and factors that influence palatability. He has used his background to help design "prescriptive" grazing strategies and to evaluate the impact of livestock grazing on habitat for other species. Dave's studies have varied from those involving traditional experimental designs to complex geospatial analysis. He has a talent for presenting results to broad audiences and making the material relevant, generally using humor to drive home important points.

Some of Dave's past research accomplishments include the following: 1) a ranking of palatability of natural and introduced bunchgrass species, 2) demonstrating that any presence of reproductive stems in a crested wheatgrass plant will reduce palatability, 3) determining that livestock grazing in the spring can stimulate bitterbrush growth, whereas fall grazing has the opposite effect, and recently 4) pioneering the use of GPS collars to study grazing patterns on Great Basin rangeland. These studies are directly applicable to many decisions faced by rangeland managers.

During his career Dave has been actively involved in SRM, and has given numerous presentations to other scientists, managers, the interested public, and students (from elementary school to university). He also served on the editorial boards of both *Rangelands* and the *Journal of Range Management*, and he worked hard to help authors improve their articles. Dave truly has been outstanding in his achievements.

Douglas Johnson and Mort Kothmann

Wayne Hamilton is a widely recognized leader in the development of prescribed fire, herbicidal, and mechanical technology for brush management in Texas. He was instrumental in developing the concept and protocol for Integrated Brush Management Systems, a comprehensive planning process for managing rangeland vegetation, and in developing 5 decision-support systems, including GLA 2.0.4, WebGLA, EXSEL, ECON, and PHYGROW, that are widely used during planning exercises by rangeland resource managers.

Wayne has authored or coauthored 18 scientific journal articles, 15 Experiment Station or Extension publications, a book on prescribed burning, 8 book chapters, 47 symposium proceedings papers, 11 research reports, and 25 abstracts. He was the senior coeditor of a book published in 2004 entitled *Brush Management: Past, Present, and Future*.

Wayne has taught over 2,750 undergraduate students and 250 graduate students, and served as graduate committee advisor or committee member for 75 graduate students in the Rangeland Ecology & Management Department at Texas A&M University. He has also served as coordinator for his department's Masters of Agriculture degree program, which has awarded 40 degrees. He served as a director of the Texas Section of SRM from 1974 to 1979 and as its president in 1978. Wayne's appointment as director of the Center for Grazinglands and Ranch Management at Texas A&M in 1995 exemplifies his esteem within the Texas A&M University system. Wayne has received 11 significant awards or distinctions in recognition of his leadership, accomplishments, and excellence as a rangeland management educator and scientist, including the Texas Section's 2004 Outstanding Contribution to Range Management award.

Douglas E. Johnson is a 29-year member of the Society for Range Management. He is an individual with tremendous experience as an educator and researcher at OSU, where he teaches several rangeland resources courses, and is active in research projects ranging from weeds to watersheds, from animal behavior to rangeland resources on an international level. The link to all of these diverse interests is an abiding interest in Geographic Information Systems (GIS).

Dr Johnson has become a leading international expert in GIS, and several of his innovations such as "Weedmapper"

Robert Masters and Mort Kothmann

and GIS tracking devices for livestock are mimicked around the globe. Additionally, throughout his career he has had a strong interest in helping developing nations and he has served as an overseas educator and administrator in several.

Dr Johnson is an approachable, friendly man who willingly shares his time and expertise with those who can benefit from such contact. He is intelligent, hard-working, and he is completely dedicated to rangelands and the betterment of the people associated with them.

We are pleased to honor Dr Douglas E. Johnson as a recipient of the 2005 Outstanding Achievement Award.

Dr Robert A. Masters is known for developing integrated systems to manage invasive plants and improve rangelands. He has identified constraints to the establishment of grasses and forbs, developed practices to overcome those constraints, and determined the sequence and combination of technologies to reclaim invasive-plant–infested communities with the goal of increasing the reliability of rangeland restoration programs. He led expeditions in Eurasia to collect leafy spurge specimens used in molecular genetic analyses to determine the Eurasian origins of North American leafy spurge populations. North American leafy spurge genotypes were found to be more similar to those from Russia than from Europe.

This finding supported the need to include Russia in the search for leafy spurge's natural enemies for use in North American biocontrol programs. He determined that herbicides could serve as catalysts to accelerate development of desired plant communities when used with mechanical, cultural, and biological control practices. As a USDA–ARS rangeland scientist, he found that the herbicide imazapic expedited control of key invasive plants and hastened establishment of desirable grasses and forbs. Because of this work, imazapic was registered for use on rangeland and Conservation Reserve Program (CRP) lands. As a research scientist with Dow AgroSciences, LLC, he has had a leadership role in the development of aminopyralid, a new herbicide designated as a reduced-risk pesticide by the US Environmental Protection Agency (EPA), and designed to control rangeland invasive and noxious weeds. His efforts over the past two decades have resulted in development of new tools and strategies to help land managers restore degraded rangelands.

Dr Jack Morgan is internationally recognized regarding the effects of increasing atmospheric carbon dioxide (CO_2) concentration on plant, soil, and water responses in semiarid rangeland ecosystems. His identification of ecosystem response mechanisms has significantly advanced our understanding of how plants and soils are adapting to the changing environments of western rangelands. Dr Morgan's research findings documenting CO_2-induced enhanced productivity, altered species composition, reduced forage digestibility, and improved plant and soil water dynamics in the short-grass steppe have been widely published in the top scientific journals, including a recent invited "Perspective" article in the prestigious journal *Science*.

Dr Morgan has demonstrated that 1) biomass responses to elevated CO_2 were primarily driven by improved water relations and higher water-use efficiency rather than by direct photosynthetic responses, 2) the photosynthetic and growth responses of C_4 grasses may often be no less than that experienced by C_3 grasses given the conditions of high light intensity and limiting soil water, and 3) functional groups based on photosynthetic classes (C_3 vs C_4) are not useful for predicting variable species responses to CO_2 enrichment. These findings have been paramount in advancing the state of knowledge concerning the mechanisms and processes influenced by elevated CO_2.

Jack Morgan and Mort Kothmann

H. Wayne Polley and Mort Kothmann

Jack Alexander and Mort Kothmann

Dr Morgan's scientific findings have already significantly impacted public policy and the future direction of global change research, especially on how management may mitigate effects of elevated CO_2. For these reasons, the Society believes that Dr Jack A. Morgan is most deserving of the Outstanding Achievement Award.

Dr H. Wayne Polley is internationally recognized regarding the effects of several global changes (atmospheric CO_2 enrichment, altered precipitation patterns, intensified disturbances, and plant invasions) on ecological processes that control the productivity and species composition on mesic rangelands. Dr Polley's innovative use of a novel experimental apparatus to study responses of an intact rangeland to a continuous gradient of atmospheric CO_2, rather than to just a few fixed concentrations, provided seminal information regarding the shape of the response curve of rangeland processes to CO_2 enrichment.

Dr H. Wayne Polley's key contributions include 1) the application of stable isotope theory and technology to study mechanisms by which past increases in atmospheric CO_2 have influenced plant–plant interactions and the abundances and productivity of plant species, 2) the development of a relatively simple method of standardizing rates of soil water depletion that provided the first demonstration that CO_2 enrichment could increase survival of seedlings exposed to uniform conditions of soil water content, and 3) the application of an innovative indirect approach to studying CO_2 effects on woody establishment that provided the first field evidence that CO_2 enrichment may promote woody invasion of grasslands by slowing the rate at which grasses deplete soil water.

The contributions of Dr H. Wayne Polley to unraveling the responses of mesic rangelands to global change are a testament to his scientific prowess and to his unique ability to integrate originality into experiments to yield results that are applicable to land managers, researchers, policy makers, and the general public. For these reasons, the Society believes that Dr H. Wayne Polley is most deserving of the Outstanding Achievement Award.

Stewardship

Jack Alexander has been a leader in applying credible science to rangeland management. His contributions have spanned three areas in linking research to land management: as a scientist, he has been an effective and consistent collaborator with agency and academic scientists in the development of new approaches to assessment and monitoring; as a consultant, he has provided first-class support to clients, land management agencies, and fellow SRM members through training and implementation; and as a rangeland management specialist, he has been instrumental in the use and interpretation of rangeland management information in legal decisions that form the basis for land use and management practices on public and private land.

Jack's contribution to the profession of rangeland management has not been limited to practicing professionals. He has played an instrumental role in getting undergraduate students involved in SRM. Under his leadership, "Tapping the Top" has grown into one of the best-attended symposia at the annual meeting. Jack also developed the "Student Employment Workshop" at the annual meeting to give undergraduate and graduate students the opportunity to ask questions about real-world job situations, meet with recruiters, and discuss application and interview do's and don'ts. These programs have been an important part of transforming young people from students to professionals.

Through his efforts as an undergraduate student, graduate student, and practicing professional, Jack Alexander has been a tireless and effective contributor to the betterment of our profession and is most deserving of the SRM Outstanding Achievement Award.

Larry Butler and Mort Kothmann

Dr Larry D. Butler is recognized nationally as the Natural Resources Conservation Service (NRCS) leader and spokesman for rangeland resource management. As director of the National USDA–NRCS Grazing Land Technical Institute Team, Larry provided outstanding leadership for development of the 1997 *National Range & Pasture Handbook*, which is used throughout the United States and in several foreign countries. He played a leadership role in the development of methodology, coordination of training, and technology transfer for the Ecological Site Description Program nationwide. He was largely responsible for writing, producing, and editing a public service announcement on rangelands for the NRCS that garnered $4 million worth of television time. Larry is a respected leader and innovator in the areas of enterprise diversification and multiple uses of rangeland resources. His work and research in these areas has resulted in 13 scientific publications.

Larry has dedicated his career to transferring rangeland management technology to ranchers and range professionals. His commitment to rangeland resources is highly visible on Texas rangelands today, reflecting his dedication of NRCS resources to rangeland conservation practices. As Texas NRCS State Conservationist, Larry has created over 20 new rangeland management specialist positions, has significantly increased the time NRCS field personnel spend assisting landowners, and has contributed to the continuing training and education of these rangeland management specialists by encouraging and supporting their participation in professional organizations like SRM.

Larry's public relations skills have been a positive influence for the Society for Range Management and the NRCS. The 6 awards he has received from NRCS exemplify his leadership, achievements, and significant contributions to rangeland resource management.

George Chavez and Mort Kothmann

For 28 years **George Chavez** has been a highly active member of the SRM. During his few years in Nebraska he served as a director of the Nebraska Section. Throughout over 20 years of professional work in New Mexico, he has served in many positions, including section president.

He has received numerous awards recognizing his outstanding work as a range management specialist.

Throughout his career, George has held to his standard of developing high-quality technical information for management of grazing lands. A key example of this confirmed dedication is his contribution as a coauthor to the 2003 article in the *Journal of Range Management* (Vol. 56:114–125) on developing state-and-transition models for New Mexico rangelands. He was a key participant in developing this program, which continues today.

His activity has been a wonderful example of how a management specialist can meld the art and science of rangeland management to further his profession.

George is a dedicated, energetic, positive, hardworking professional, and a credit to this Society. He is richly deserving of recognition by the Society for Range Management for a career of outstanding achievements.

Tammy DeCock's dedication and passion for rangeland management is clearly evidenced by her many professional accomplishments. She has not only succeeded at interpreting and applying the science of range management to numerous acres of private lands, but she has excelled also as a public educator and passionate advocate of the rangeland management profession. Of particular significance are the leadership roles she has played in developing effective joint NRCS–private-rancher ranch management plans, US Department of Agriculture Environmental Quality Incentive Programs, and an array of rangeland monitoring programs including a state-of-the-art animal nutrition monitoring program fund-


Tammy DeCock and Mort Kothmann

ed by a Grazinglands Conservation Initiative grant. But of equal importance are her work-related and voluntary citizen's public educational efforts wherein she has played key roles in the conduct of local and regional rangeland conservation tours, Montana Range Days, Montana Range Youth Camp, the Old West Regional Plant Judging Contest, and numerous youth 4-H and Future Farmers of America rangeland resource training activities. In addition, she has formally served her profession by serving as president of SRM's Northern Great Plains Section, chair of the SRM Advisory Council, and as a member and chair of numerous boards, committees, and task groups.

Curtis Johnson's contributions to rangeland management include outstanding accomplishments in rangeland analysis and monitoring, rangeland health assessment, and noxious weed control. Through his work in the Forest Service's Intermountain Region, Curt developed cutting-edge analysis and monitoring techniques that, for the past 15 years, have been used as a model for the western Forest Service regions. He is a member of a team of range scientists charged with developing a national monitoring and analysis handbook to provide uniformity and consistency across National Forest lands throughout the western United States. Curt has served on the interagency committee that developed the technical references *Sampling Vegetation Attributes* and *Utilization Monitoring*.

Curt's work with the development of the concepts used to collect understory vegetation information and to read nonforested inventory plots has provided a prototype for a monitoring methodology that can be applied to all wildland range settings. Based on this work, he coauthored the technical reference *Indicators of Rangeland Health and Functionality in the Intermountain West*.

Curt has aggressively pursued the use of advanced digital technology for rangeland inventory, assessment, and monitoring. This includes digital photographic equipment, global positioning systems, documentation of inventory and monitoring data, and audio capture of field notes. This technology is packaged into a "linked system" stored in a multimedia GIS system, which is shared on the Internet or by compact disk. Curt has been the leader in establishment of a weed-free hay policy on National Forest lands in Wyoming, Idaho, Utah, and Nevada. He has championed Cooperative Weed Management Areas to coordinate the control and eradication of noxious weeds on lands of all ownerships. Ninety-five percent of the Intermountain Region is now covered by Cooperative Weed Management Areas. His role on the "Pulling Together" task force has been instrumental in getting additional funding to the ground to facilitate weed control efforts on lands of all ownerships.

Curt's career exemplifies the highest ideals of the art and science of range management. It is with great pleasure that the Society for Range Management recognizes Curtis M. Johnson with the Outstanding Achievement Award.


Curtis Johnson and Mort Kothmann

Bob Thompson's sustained outstanding accomplishments in the science of range management span a continuing career of over 50 years. Bob is an exceptional range botanist, and he has untiringly devoted his life's work to rangeland botany. He started with the Forest Service as a seasonal range technician in Idaho City, Idaho, for the Intermountain Forest and Range Experiment Station in 1951. After working on several ranger districts, in 1962 Bob transferred to the Manti–LaSal National Forest Supervisor's Office in Price, Utah, and has remained there as the forest range botanist for the past 42 years.

His contributions include eminently noteworthy accomplishments in rangeland taxonomy and rangeland inventory and monitoring. Through his work, Bob has become one of the most knowledgeable range conservationists in the field of

Bob Thompson and Mort Kothmann

Dan Merkel and Mort Kothmann

plant taxonomy. He has collected and identified thousands of plants, leading to the discovery of several new species, including 2 species that were named after him: *Talinum thompsonii* and *Arabis thompsonii*. Bob has developed and implemented numerous rangeland inventory and monitoring techniques and methods that have widely influenced data collection and understanding of rangeland management. His greatest legacy is probably the record he has left on the ground in terms of long-range trend studies. He has installed, read, and photographed thousands of different trend studies and has seen to it that they have been monitored over his 50-plus year career. His inventory data and range study efforts have been the basis for bringing hundreds of allotments and numerous winter ranges to proper stocking. His experience and efforts in leading many range revegetation and watershed projects has resulted in thousands of acres stabilized and returned to productive rangeland.

Many of Bob Thompson's achievements have been accomplished without a great deal of fanfare. In his own quiet way, he has just gone about doing his life's work—a work that he loves. He approaches his work with tenaciousness and an insatiable desire to know, which explains his love, humility, dedication, commitment, and even passion for his work. Bob Thompson's career and the work that he has produced exemplify the highest ideals of the art and science of range management and qualify him for recognition. It is with great pleasure that the Society for Range Management recognizes Robert M. Thompson with the Outstanding Achievement Award.

Sustained Lifetime Achievement Award

The Sustained Lifetime Achievement Award is presented by the Society for Range Management to members for long-term contributions to the art and science of range management and to the Society for Range Management.

Dan Merkel began his career with the Soil Conservation Service (SCS) in 1958 in Mullen, Nebraska, as a range conservationist. He worked with rancher Don Cox, who served as president of the Society in 1969. His supervisor was Lorenz Bredemeier, who was the SRM president in 1971. Dan credits these men for helping him develop his career as a range conservationist and his dedication to the SRM.

In addition to serving in range conservationist positions for SCS at the district, area, and state levels, he provided leadership to the Plant Materials program and helped develop the Los Lunas Plant Materials Center in New Mexico and the center at Meeker, Colorado. Dan's last position with SCS was on assignment to Region 8 of the EPA, where he helped the EPA view rangeland management as a positive force in water quality protection instead of a cause of pollution. Dan served as national program leader for range with USDA Extension, where he helped the eastern states change their approaches to grazing land resources to include grazing management.

Dan is a respected leader of SRM. He has attended every international meeting since 1961. He has been active in every section in which he has lived, has served as chair and member of many committees, and served as Society president in 1979.

Dan Merkel's work as a range conservationist and as a member of SRM has made us a better profession and society. The Society for Range Management is pleased to recognize Dan Merkel with the Sustained Lifetime Achievement Award.

Outstanding Young Range Professional

The Outstanding Young Professional Award is presented by the Society to an individual member who has demonstrated extraordinary potential and promise as a range management professional. This award is presented as an encouragement for outstanding performance by young men and women entering the profession of range management.

Chad Boyd and Mort Kothmann

Wendy Gardner and Mort Kothmann

Dr Chad Boyd has proven that he has the vision to address high-profile rangeland issues and the ability to work effectively with diverse groups. At this early point in his career, Chad has already developed a very strong research program, and we can expect him to excel in future efforts as well. Chad has participated in and chaired SRM committees and has organized symposia at annual meetings of SRM and other professional societies.

He has effectively argued that rangeland scientists and managers should be involved in sensitive species habitat issues, and has followed through with his participation in various sage-grouse committees.

While maintaining an active research program, Chad has found the time to participate in many outreach and technology transfer activities. He currently serves on the Oregon Governor's Steering Committee for Sage-Grouse, and on the Southeastern Oregon Resource Advisory Committee. Chad has worked well with livestock producers, environmentalists, state and federal resource managers, Native American tribes, and the interested public. He is equally comfortable giving presentations to scientific peers or to elementary school students.

We as SRM members can all be proud of Chad, and can only hope that we can recruit individuals of his caliber in the future. He has had an impact on rangeland research and management, and has served as a mentor to other budding rangeland professionals. He has provided leadership on issues of great importance to our profession. Chad is the type of person the originators of this award must have had in mind.

Ms Wendy Gardner teaches at University College of the Cariboo in Kamloops, British Columbia. She has the reputation of being an outstanding rangeland expert, a superb teacher, a motivating advisor, an outstanding example of how to live one's life, a good researcher, and a fun person. She is a prolific scientist and writer; she is active in several natural resources organizations in addition to the Society for Range Management; and she is an elite athlete who competes in adventure racing, eco-challenges, Raid the North Extreme, Ironman Canada, and Ironman Hawaii competitions. All these activities combine to make her fit and sharp—and they serve as a marvelous introduction to her students who admire her not only for her academic skills but also for her commitment to fitness.

Ms Gardner's students are well educated, appropriate, and destined for great things. She is able to motivate such students because she, herself, is strong, wise, dedicated, and hard-working.

We are honored to be associated with Ms Gardner and recognize that she is a great example of what is right within the Society for Range Management. She is fully deserving of the accolades associated with being named as an Outstanding Young Professional within this Society.

Dr Lance Vermeire is a rangeland scientist at the USDA–ARS Fort Keogh Livestock and Range Research Laboratory located near Miles City, Montana. He is a native Sooner, having been raised in Bartlesville, Oklahoma. He received his BS in wildlife ecology from Oklahoma State University in 1994, his MS in rangeland ecology from Oklahoma State in 1997, and his PhD in range science from Texas Tech University in 2002. During his very short career, Dr Vermeire has demonstrated an exceptional ability to identify important, researchable rangeland management problems, a keen ability to organize and conduct required research to address said problems, and an enviable ability to transfer new understandings to end users using superior written and verbal communication skills. Evidence in support of these conclusions is rendered by his publications record of 6 senior- and 3 junior-authored refereed journal articles plus numerous articles published in nonrefereed pub-

Lance Vermeire and Mort Kothmann


Dan Rodgers and Mort Kothmann

lications such as *Rangelands,* field-day reports, abstracts, and proceedings. He is also fast becoming a frequently requested technology transfer speaker in Montana and the surrounding region. He has also played a significant role in our Society, serving as Wildlife Habitat Committee chair in 2001 and newsletter editor in 2004, Science Division coordinator in 2002, co-organizer and moderator of 2 science symposia in 2001 and 2002, and member of the Board of Directors of the Northern Great Plains Section from 2002 through 2004. For these reasons, Dr Vermeire is awarded the 2005 SRM Outstanding Young Range Professional Award.

Range Science Education Council Outstanding Undergraduate Teacher Award

The Outstanding Undergraduate Teaching Award is presented annually to the individual who makes the greatest contribution to undergraduate education in the broad discipline of range science. The award is presented jointly by the Range Science Education Council and the Society for Range Management.

The Range Science Education Council and the Society for Range Management proudly present **Dr Dan Rodgers** with the 2005 Outstanding Undergraduate Teaching Award. Since 1980, Dr Rodgers has taught the vast majority of core University of Wyoming (UW) range management courses as well as advising the Range Club, the Rodeo Club, and the Plant and Undergraduate Ranch Management Exam (URME) Teams.

Dr Rodgers is highly motivated to educate students in the science and responsibilities of being a manager of natural resources on rangeland. Early in his career, he worked for the Extension Service. Dr Rodgers weaves this experience into the classroom by relating many "real-world" examples to illustrate rangeland principles and the people who manage them. Students also have the benefit of Dr Rodgers' many contacts made through his Extension experiences, resulting in many summer internship and full-time job opportunities for UW students. Even following graduation, many former students continue to seek Dr Rodgers' guidance in their career paths. Students marvel that he is available day or night, even long after they graduate, for advice and counsel.

At UW, Dr Rodgers manages the student scholarships for the department as well as serving on the college scholarship committee. He serves on numerous college and university committees associated with teaching activities, such as the College Courses and Curriculum Committee and the University Studies Program. He has been recognized at UW for his outstanding advising contributions with both departmental and college awards. Finally, Dr Rodgers serves on the Range Science Education Council and has served on the Society for Range Management Accreditation and Student Affairs Committees.

Dr Dan Rodgers encompasses the good traits a university educator should possess and, therefore, is recognized with the Outstanding Undergraduate Teaching Award for 2005. ◆

Seventh in a Series: Insight From SRM's Charter Members

The Society for Range Management (SRM) History Committee has conducted interviews with many of the Society's charter members to capture their perspective of events leading to and subsequent to the formation of the American Society of Range Management in 1947–1948. Interviews from several of these individuals will be shared for today's SRM members to enjoy and learn from.

SRM Charter Member – J. Kent Giles

Editor's Note: Art Tait interviewed J. Kent Giles in January 2003. Kent lives at 541 S 300 W, Cedar City, UT 84720.

The reason I am living in Cedar City is that this was the last place I worked with the Bureau of Land Management (BLM). When it came time to retire, I decided this was a better place to live than up north where we owned some property.

In the summer of 1947, when the ASRM began, I worked for the Forest Service on the Teton National Forest on the Jackson Ranger District in Jackson, Wyoming, with Doug Wadsworth. Doug was a good friend of mine from the Granddaddy Lakes District in Utah. I was raised in Hanna, Utah, and he was the ranger there. Doug wanted me to come and work for him in Wyoming, because I had previously done range work for him on the Granddaddy District. That winter I went back to school at Utah State for my 4th winter. In the spring of 1948 I went back to Jackson, Wyoming. Doug was in charge of a bug job there and he wanted me to leave school a little early and come up and take over the ranger district for a while since he was involved in a bug job that covered more than 1 district.

I spent the summer there. Actually, I hadn't graduated. There were some elective classes that Dr Stoddart thought I should take. I had more hours than I needed but I didn't graduate. I had taken the civil service exam and the Forest Service had told me they would give me a permanent job. I had turned down a job with the Soil Conservation Service, but it went clear through the summer and into the fall, and the Forest Service said when my name got back from the Soil Conservation Service, they would pick it up. In the meantime, I got an offer from the BLM in Utah. I came to Utah, and interviewed there, and talked again with the Forest Service and they couldn't at that moment give me a job, so I went with the BLM. I started with the BLM in Nephi, Utah, in 1948. It was a district office then, but there hasn't been one there since 1952.

In my last year at Utah State, I was working toward a degree in range management because I felt that was the field I wanted to go into. There was more opportunity there and more along the line that I was interested in. So I decided to get a degree in range management. I was influenced some by Doug Wadsworth, who had encouraged me to go to college. I had worked for him for 6 years before I decided to go to college.

That winter they were having this meeting to talk about the formation of this Society of Range Management in Salt Lake. Some of us as students went with Dr Cook to that meeting. Drs Cook, Stoddart, and Smith were all professors there. Of course, Dr Stoddart was head of the Range Management part of the school. We went down to that meeting and there they discussed the formation of the Society. I don't remember the details of their coming up with leadership. One fellow I remember well was Joe Pechanec. I remember him giving quite a talk. He was with the Forest Service in California at that time. Dr Stoddart also had some things to say. I was part of the meeting and I really enjoyed the things that were said. They brought out the importance of good range management and the fact that not only public land, but the private lands as well, were better suited as rangelands for livestock grazing as well as for wildlife. One point was brought out that was really important: these lands should be managed properly so grazing could continue. We

need to maintain the lands and improve them so people can continually use them. This appealed to me because I had been raised on a ranch and had run sheep and cattle and had been raised with livestock all my life and I knew a little bit about how important it was to have forage for them. To do this, the ASRM was organized.

In response to my expectations of SRM then and whether they have been fulfilled, I feel they tried. I am not sure we were as effective as we could have been, but I am sure members of the Society in their own field locations did a lot toward accomplishing that.

I started working in Nephi, Utah, on the Nephi District for the BLM in December 1948. About that same time about a year later, I got a letter in the mail telling me they didn't have any more money in range at that time, so I was supposed to report to the Salt Lake office as a field examiner in the Utah–Colorado region the next Monday, which I did. I worked from November 1949 to February 1951 as a field examiner, which involved examining the many different lands cases. When I started school, I was thinking of becoming a forest ranger. But during the time I was at Utah State, the BLM was organized and brought together the old Land Office and the Grazing Service. So this put me into the land office of the Bureau in the fall of 1949 until 1951 working on all types of lands cases throughout Utah and Colorado. In 1951, I went back to Nephi where there was a vacancy. The range manager who was head of the office had been transferred and they hadn't been able to fill that job. I was transferred back to Nephi and was there from 1951 to June 1952, when I was selected as the District Manager for the Salt Lake District. I worked there from 1952 to 1961. Then I was transferred to Burns, Oregon, in August 1961, where I was District Manager until 1966. I was transferred to Elko, Nevada, where I was District Manager there and served for 6 years.

In June 1972, I was transferred to the Washington office to serve in the Lands Division. I served as natural resource specialist in the Washington office from 1972 until October 1975. I was then transferred back to Cedar City. Bill Leavell called me and told me they had reorganized the districts in Utah and made about half as many districts as there used to be. They wanted me to come as an assistant to Morgan Jensen here in the Cedar City District. I had wanted to get back into the field away from Washington, so I accepted that and came to Cedar City where I served until January 3, 1986, when I retired. Since then I have lived here in Cedar City. During the period I was with the Bureau I served as a District Manager for 20 years in 3 states.

I was always active in the Society. I was active in the Utah Section while I was here. While in Nevada and the Northwest sections, I helped with the summer camps for the young boys, and helped teach some of their classes. While in Nevada, I was president of the Nevada Section. It was during that time that the name of the Society was changed. It started in Utah and Nevada. The fellow that followed Seler Hutchins on the Desert Range Experiment Station made the recommendation that we change the name to the Society for Range Management. That was in the late 1960s or early 1970s, the year I was president, that the change was made. The resolution went on to the main society and was approved.

I think the SRM is a very good organization for the professional people. I think it has been a good organization for the ranchers, too. There have been many that have been a very important part of the Society. It has been great to have not only the professional people, but also these ranch people that have been a part of it. It has been good for the professionals and ranchers to get together and exchange views and ideas. The Society has done a lot of good for the profession of range management, both for those who were ranchers and those in government agencies and in other positions. I felt real good about it, as a member myself, and in the meetings I attended in the different sections and in the national meetings. There is a lot of good that comes out of the exchange of ideas and learning what other people have done. One thing comes to mind, and that is Gus Hormay. Some people didn't agree with him, but I learned a lot from him. In my opinion, the principles he taught were important to range management. I felt what we were able to do because of the principles he taught really improved the profession. It helped us understand the principles that we need to follow to improve ranges and take care of them and to use the livestock properly on them. There has been a lot of improvement in range management. I saw it through my career even though things changed a lot and we got a lot more uses on the land through the years. Range management continued to be an important use, though it has not been recognized nationally as it should have been. I feel that with a little bit of money that was spent by the government in other places, we could have used that to improve management on the public lands more than we have.

I did see a lot of improvement. In 1952, I went to the Squaw Butte Station. For several years, the Bureau selected people to go to Squaw Butte each year to spend a week or two there just to exchange ideas and see what the Squaw Butte Experiment Range had done. There they had experiments showing what management could do over nature. That really impressed me. I have seen it done a lot on the range since. Through proper management, we can improve the ranges. We can improve on what nature can do, if we just do it properly. In my opinion, doing some artificial improvement of the ranges was good, because it gave us opportunities to seed some areas, which would give us some places to put livestock early in the spring before the native range was ready. I feel we really improved management a lot using some artificial improvements as well as natural improvement through livestock grazing. But, just through proper livestock grazing we can improve the ranges a lot. I have seen that in every state I worked in: Utah, Nevada, and Oregon. There has been a lot of improvement through management, as well as in some cases using artificial improvement to help get a better management system on the range.

I think that it is good for all the people, the ranchers as well as the professionals coming into the government agencies, to be a part of this organization. You get with the people that have a lot of experience, and have seen things change, and they know what will work and what won't work. You learn a lot from rubbing shoulders with those people and getting to these meetings and finding out what these people are doing. It's just a wonderful thing.

I have been a member of the Society up to just last year. I was a charter member. I was there when it was organized. I have been there through the years and it is a good thing. I would hate to see it not continue, because it is a good organization. All the members can learn a lot by becoming active and participating in it.

SRM Charter Member – John Forsman

Editor's Note: These are John's remarks transmitted to Tom Bedell in March 2003. There was no oral interview. John can be reached at 4045 NW 190th, Portland, OR 97229, (503)645-2808.

In 1947–1948, when the ASRM was organized, I was a District Ranger on the Lewis and Clark National Forest in eastern Montana. Livestock grazing was the principal use on the district at that time.

I was raised on my Dad's cattle ranch in eastern Montana so I had an early interest in range and livestock. However, with the drought and depression in the 1930s, ranching was not a good choice for the future. I left the ranch in 1935 and enrolled in the University of Montana Forestry School majoring in range management. I worked summers for the Forest Service.

In 1945–1946 I worked for Tom Lommasson, who headed Range Surveys and Plans in the Forest Service regional office in Missoula. Tom led the effort in our region to organize the American Society of Range Management. I joined and have retained my membership.

The 1st national meeting of ASRM that I attended was in Boise, Idaho. I believe it was the 2nd meeting of the organization. I don't recall the program but I do remember the snowstorm that required an extra day for Lommasson, Forest Supervisor Fred Leftwich, and myself to return home.

I enjoyed my years with the Forest Service. I was a summer employee on ranger districts in northern Idaho and western Montana from 1936 until 1942. During 1943–1945 I was a navigator and flew combat with the Eighth Air Force from England bombing Germany. I spent 1945–1946 in the regional office in Missoula, Montana, on range inventories and 1947–1953 as District Ranger on the Lewis and Clark National Forest in eastern Montana. During 1954–1963 I was assistant and then Forest Supervisor on the Custer National Forest and Grasslands in southeastern Montana and North and South Dakota. Beginning in 1963 I spent 3½ years in the Washington office, Division of Range Management, and my final 10 years as Assistant Regional Forester for Range and Wildlife Management, headquartered in Portland, Oregon. I retired in 1976.

I have always been proud that I am a member of SRM. However, as I think back over the years, except for attending meetings and encouraging others to join, I have done little to benefit the Society. I have never held an office or been a committee member. It's well that others did better to make SRM the good organization it became.

I'm an old guy who, except for dealing in saddle horses, has not been active in range matters for several years. The last national meeting I attended was nearly 10 years ago in Boise. I am not going to try and judge today's range profession. It was great as I lived it and I would encourage young folks to give it a try if it is their 1st choice, and join SRM.

Tom Bedell is a member and former chairman of the SRM History Committee and a member of the Pacific Northwest Section living in Philomath, Oregon.

HIGHLIGHTS

Rangeland Ecology & Management, May 2005

Vegetation Responses to Roller Chopping and Buffelgrass Seeding in Argentina

Lisandro J. Blanco, Carlos A. Ferrando, Fernando N. Biurrun, Enrique L. Oriente, Pedro Namur, Dario J. Recalde, and German D. Berone

Roller chopping and simultaneous buffelgrass seeding is a widespread technique for restoring forage capacity in degraded shrublands of the Argentinean Chaco Arido region. We evaluated short-term effects of roller chopping and simultaneous buffelgrass seeding on vegetation response at a regional scale. We found the application of this technique increased grass yield and decreased shrub cover but did not affect shrub and tree density, species number, diversity index, or evenness. These results indicate, in the short term, that roller chopping and simultaneous buffelgrass seeding rapidly restores forage capacity without affecting species diversity on degraded shrublands of the study region.

Herbaceous Response to Cattle Grazing Following Juniper Cutting in Oregon

Jon D. Bates

The rapid expansion of western juniper woodlands across the northern Great Basin during the past 100 years has reduced forage productivity, thus stimulating management efforts to remove trees and restore livestock carrying capacity. This study measured understory plant recovery subjected to grazed and ungrazed prescriptions following chainsaw cutting of western juniper. The results demonstrated that 1) juniper removal stimulated significant increases in understory plant cover, biomass, and seed production; and 2) early-season, short-duration grazing of cut woodlands did not limit herbaceous recovery. The results imply that juniper cutting had a greater effect on herbaceous dynamics than the grazing application.

Vegetation Cover and Forb Responses to Cattle Exclusion: Implications for Pronghorn

Matthew R. Loeser, Sharon D. Mezulis, Thomas D. Sisk, and Tad C. Theimer

Cattle grazing is often implicated as a factor that reduces vegetative cover and forage for pronghorn. We studied potential hiding cover and forb diversity following 5 years of cattle removal and before cattle use of annually grazed plots. Cattle removal increased horizontal hiding cover by 8% at a distance of 5 m but had little effect at greater distances. Forb species richness was 16% lower because of cattle removal, whereas the canopy cover of forbs was unaffected by cattle removal. In cases where immediate habitat improvements are important to population persistence, additional management actions should be considered.

Relationships Between Chihuahuan Desert Perennial Grass Production and Precipitation

Godfrey Khumalo and Jerry Holechek

Determination of forage production is typically time-consuming and expensive. It has long been recognized that forage production on rangelands is closely associated with annual precipitation amount and timing. Detailed information on perennial grass production and monthly precipitation was collected for 34 years on Chihuahuan Desert rangeland in south-central New Mexico. Our objective was to evaluate the relationship between perennial grass yield and precipitation characteristics for these data using correlation and regression analyses. Our study showed that perennial grass yields could be predicted from total December-through-September precipitation with adequate accuracy for most management decisions.

Evaluation of GPFARM for Simulation of Forage Production and Cow–Calf Weights

Allan A. Andales, Justin D. Derner, Patricia N.S. Bartling, Lajpat R. Ahuja, Gale H. Dunn, Richard H. Hart, and Jon D. Hanson

The Great Plains Framework for Agricultural Resource Management (GPFARM) model was designed to assess impacts of alternative management decisions before field implementation, but its forage and livestock modules have not been tested against field data. Accuracy of simulated forage and cow–calf production was evaluated against 3 years of forage production and 6 years of cow–calf data from the

Central Great Plains. The GPFARM model simulated forage and cow–calf production with satisfactory accuracy at 2 semi-arid–temperate sites. The evaluation lends credibility to the subsequent use of GPFARM as a decision-support tool for assessing impacts of alternative ranch management decisions.

Inference of Animal Activity From GPS Collar Data on Free-Ranging Cattle

Eugene D. Ungar, Zalmen Henkin, Mario Gutman, Amit Dolev, Avraham Genizi, and David Ganskopp

The utility of animal-borne global positioning system (GPS) collars for range science is greatest if the corresponding activity of the animal can be inferred. We evaluated Lotek GPS collars, which incorporate motion sensors to predict activity of cows on extensive rangeland in the United States and Israel using synchronized field observations. The best statistical models used distance and motion sensor data and were able to correctly classify almost all grazing observations, although other activities were sometimes misclassified as grazing. Grazing, traveling, and resting activities of free-ranging cattle can be inferred with reasonable accuracy from data provided by Lotek GPS collars.

Cattle and Salmon I: Cattle Distribution and Behavior in a Northeastern Oregon Riparian Ecosystem

Teena M. Ballard and William C. Krueger

When an endangered or threatened species is present, special care in grazing practices is recommended to avoid damage to the species. Often grazing is prohibited in an attempt to protect the endangered species. We studied cattle grazing behavior for 2 years in a riparian pasture to quantify their activities and to interpret how their behavior would affect chinook salmon during the spawning period. The pasture was stocked at a level that maximizes sustainable grazing. Direct interactions between cattle and salmon were rare. Defecation directly into the stream by cattle was slight. Cattle grazing in this environment did not appear to disadvantage chinook salmon spawning success.

Cattle and Salmon II: Interactions Between Cattle and Spawning Spring Chinook Salmon (*Oncorhynchus tshawytscha*) in a Northeastern Oregon Riparian Ecosystem

Teena M. Ballard and William C. Krueger

It is important to understand the potential impacts of livestock grazing on threatened and endangered species. To prevent damage to populations of chinook salmon, grazing is usually controlled or prohibited in pastures where cattle have access to a spawning stream during the spawning period. We studied direct interactions between cattle and chinook salmon to determine if cattle disturbed spawning salmon or caused physical damage to their spawning sites. There were no apparent negative impacts on integrity of salmon spawning behavior or reductions in salmon spawning caused by cattle grazing near the spawning sites of chinook salmon.

Survival of *Escherichia coli* in Beef Cattle Fecal Pats Under Different Levels of Solar Exposure

Cindy L. Meays, Klaas Broersma, Rick Nordin, and Asit Mazumder

Understanding the survival and transport of *E. coli* in feces on land and in water is important when trying to assess contamination of water by grazing animals. A fecal pat experiment was conducted in July and August of 2003, to investigate the survival of *E. coli* under four levels of solar exposure controlled by using shade cloth. By the end of the experiment (day 45), fecal pats under the 0% shade cloth had the lowest *E. coli* concentrations followed by the 40, 80, and 100% treatments (0.018, 0.040, 0.11, and 0.44 ¥ 10^6 colony forming units (CFU) g^{-1} respectively). Scientific knowledge from experiments directed at the survival and transport can be applied to improve management plans and reduce both the impact of fecal pollution on water quality, and risk associated with human health.

The Use of Brush Management Methods: A Texas Landowner Survey

Urs P. Kreuter, Heidi E. Amestoy, Mort M. Kothmann, Darrell N. Ueckert, W. Allan McGinty, and Scott R. Cummings

Adoption of effective brush management methods is critical to achieving many rangeland management objectives, but landowners have often been reluctant to adopt new practices. A questionnaire was mailed to 1,058 landowners in 49 Texas counties to identify factors that influence land management decisions, especially with respect to brush management practices. Respondents indicated that kind of brush and cost of brush control were important factors affecting the selection of preferred treatment type and that user-friendly information and cost effectiveness had led to the increased adoption of individual plant treatments. This suggests that the adoption of sound rangeland management practices is dependent on the development and effective dissemination of user-friendly information about low-cost techniques that produce quick results.

Seedling Growth of Two Honey Mesquite Varieties Under CO_2 Enrichment

Justin D. Derner, Charles R. Tischler, H. Wayne Polley, and Hyrum B. Johnson

Honey mesquite (*Prosopis glandulosa*) is a leguminous shrub that has invaded many former grasslands in the southwestern United States. An experiment was conducted to determine how varieties from wet and dry environments respond to increased levels of atmospheric carbon dioxide (CO_2).

Although CO_2 enrichment did not exaggerate growth differences between varieties, mesquite seedlings possess the capacity to markedly respond to CO_2 enrichment. The greater root depth of mesquite seedlings, exposed to CO_2 enrichment confers a competitive advantage to these seedlings over grass seedlings suggesting that honey mesquite should continue to aggressively encroach into grasslands in future CO_2-enriched environments.

Fourwing Saltbush Seed Yield and Quality: Irrigation, Fertilization, and Ecotype Effects

Joseph L. Petersen and Darrell N. Ueckert

Fourwing saltbush (*Atriplex canescens*) seed yield and quality are highly variable from harvests of wildland stands. We studied the effects of irrigation, fertilization, and ecotype selection on seed yield and quality and plant mortality in an experimental seed orchard in west-central Texas. Selection of an adapted ecotype was of more importance than irrigation or fertilization, and constancy of superior reproductive traits of parental plants was not exhibited by clones. Identification of effective technology for seed orchards could enhance the quality and quantity of seeds for restoration of degraded rangelands.

Nutritive Value of Desmanthus Associated With Kleingrass During the Establishment Year

E.A. Gonzalez-Valenzuela, M.A. Hussey, and J.A. Ortega-S.

Seasonal variation in production and quality of warm-season grasses is a limitation for livestock productivity. We evaluated the nutrient content of kleingrass and bundleflower mixtures during the establishment year. The crude protein (CP) concentration of *Desmanthus* leaves was greater than Illinois bundleflower; however; the CP on a whole-plant basis was greater in the Illinois bundleflower. Associations had greater CP yield than kleingrass monoculture. The legumes did not affect kleingrass nutrient content when established in association; however, the high CP of both legumes and their high levels of calcium (Ca) and magnesium (Mg) may help improve the animals' diet when grazing kleingrass– *Desmanthus* associations.

Research Note: Plant Adaptation Regions: Ecological and Climatic Classification of Plant Materials

K.P. Vogel, M.R. Schmer, and R.B. Mitchell

Rangeland and restoration project managers often lack resources to determine adaptation areas for plant materials because of the number of species that are used and the large geographical areas that are serviced. Ecoregion and plant-hardiness zone classification systems integrate climatic and geographic variables that determine plant adaptation. Plant Adaptation Regions (PARs) were developed for the United States by merging a widely used ecoregion map and the US Department of Agriculture Plant Hardiness Zone Map. Based on their geographic origin, plant materials can be classified for their general adaptation areas using PARs. A PAR map is available in both conventional and geographic information system (GIS) format.

Research Note: Spring Habitat Requirements of Captive-Reared Attwater's Prairie Chicken

Mitchell A. Lockwood, Michael E. Morrow, Nova J. Silvy, and Fred E. Smeins

Knowledge of range sites and management practices preferred by pen-reared Attwater's prairie chickens is crucial when considering release sites. Fine-scale habitat use of pen-reared Attwater's prairie chickens was evaluated in Colorado County, Texas. Potential release sites should be managed to produce vegetation structure with an obstruction of vision < 15 cm, plant height < 67 cm, litter depth < 2.7 cm, and bare ground < 16%. Otherwise, there is a high likelihood of liberated Attwater's prairie chickens dispersing from release sites.

Research Note: Sire Influence on Juniper Consumption by Goats

Chad R. Ellis, Royce E. Jones, Cody B. Scott, Charles A. Taylor, Jr., John W. Walker, and Dan F. Waldron

Goats avoid eating redberry juniper (*Juniperus pinchottii* Sudw.) when other palatable forages are available but will increase intake of juniper when exposed to the plant for several days. The purpose of this study was to determine the influence of sires on juniper consumption. Freshly weaned Boer-cross goats from different sires were fed juniper in individual pens for 10 days. Heritability of juniper consumption was low. Offspring from different sires consumed similar amounts of juniper on a daily basis. A sire's ability to consume juniper does not appear to affect their offsprings' acceptance of juniper. ◆

Jeff Mosley

Browsing the Literature

This section reviews new publications available about the art and science of rangeland management. Personal copies of these publications can be obtained by contacting the respective publishers or senior authors (addresses shown in parentheses). Suggestions are welcomed and encouraged for items to include in future issues of *Browsing the Literature*.

Animal Ecology

Habitat use patterns of sympatric deer species on Rocky Mountain Arsenal, Colorado. D. G. Whittaker and F. G. Lindzey. 2004. *Wildlife Society Bulletin* 32:1114–1123. (Oregon Department of Fish and Wildlife, 3406 Cherry Ave NE, Salem, OR 97303). Although spatial overlap and dietary overlap were high between mule deer and white-tailed deer, seasonal differences in habitat use patterns resulted in spatial segregation, thereby allowing the 2 species to coexist.

The effect of a condensed tannin-containing forage on methane emission by goats. R. Puchala, B. R. Min, A. L. Goetsch, and T. Sahlu. 2005. *Journal of Animal Science* 83:182–186. (Langston University, PO Box 730, Langston, OK 73050). Methane emission by Angora goats declined when fed forage (sericea lespedeza) that contained condensed tannins.

The influence of mountain lion predation on bighorn sheep translocations. E. M. Rominger, H. A. Whitlaw, D. L. Weybright, W. C. Dunn, and W. B. Ballard. 2004. *Journal of Wildlife Management* 68:993–999. (Department of Range, Wildlife, and Fisheries Management, Texas Tech University, Lubbock, TX 79409). Predation of domestic cattle and conifer encroachment may contribute to high levels of mountain lion predation on bighorn sheep in New Mexico.

Grazing Management

Desert grassland canopy arthropod species richness: temporal patterns and effects of intense, short-duration livestock grazing. G. S. Forbes, J. W. Van Zee, W. Smith, and W. G. Whitford. 2005. *Journal of Arid Environments* 60:627–646. (W. Whitford, USDA-ARS, Jornada Experimental Range, Box 30003, Las Cruces, NM 88003). Short-duration grazing by cattle in late summer reduced insect species richness in the grass–herb vegetation layer but had no effect on species richness of insects living in the canopies of broom snakeweed or mesquite. Cattle grazing in winter had no effect on insect species richness.

Heterogeneous response to preventive sheep husbandry during wolf recolonization of the French Alps. N. Espuno, B. Lequette, M. L. Poulle, P. Migot, and J.D. Lebreton. 2004. *Wildlife Society Bulletin* 32:1195–1208. (CNRS, Centre of Ecological Function and Evolution, 1919 Route Mende, F-34293 Montpellier, France). Confining sheep at night in the presence of several livestock-guarding dogs can prevent most wolf depredations. The efficiency of each of these techniques is drastically reduced when they are not used jointly.

Management of goats for controlling noxious weeds: a primer. S. Williams and B. Jensen. 2004. University of Idaho Extension and Idaho Agricultural Experiment Station CIS 1121. ($2; Extension Publications, University of Idaho, Moscow, ID 83844). Provides helpful tips when considering a prescribed goat grazing program for controlling noxious weeds.

Hydrology/Riparian

Do woody plants affect streamflow on semiarid karst rangelands? B. P. Wilcox, M. K. Owens, R. W. Knight, and R. K. Lyons. 2005. *Ecological Applications* 15:127–136. (Department of Rangeland Ecology and Management, Texas A&M University, College Station, TX 77843). Changes in woody plant cover had little influence on streamflow in Ashe juniper watersheds of the Texas Hill Country.

Hydrologic exchange and N uptake by riparian vegetation in an arid-land stream. J. D. Schade, J. R. Welter, E. Marti, and N. B. Grimm. 2005. *Journal of the North American Benthological Society* 24:19–28. (Department of Integrative Biology, University of California, Berkeley, CA 94720). Results from a Sonoran Desert stream suggest that riparian vegetation may uptake a significant amount of streamwater nitrogen.

Interaction of beaver and elk herbivory reduces standing crop of willow. B. W. Baker, H. C. Ducharme, D. C. S. Mitchell, T. R. Stanley, and H. R. Peinetti. 2005. *Ecological Applications* 15:110–118. (US Geological Survey, 2150 Center Ave, Bldg. C, Fort Collins, CO 80526). Willows recovered rapidly from simulated beaver cutting alone, but willows were harmed when simulated beaver cutting was combined with elk browsing.

Streambank erosion associated with grazing practices in the humid region. C. T. Agouridis, D. R. Edwards, S. R. Workman, J. R. Bicudo, B. K. Koostra, E. S. Vanzant, and J. L. Taraba. 2005. *Transactions of the American Society of Agricultural Engineers* 48:181–190. (Department of Biosystems and Agricultural Engineering, University of Kentucky, Lexington, KY 40546). In central Kentucky, authors concluded that riparian recovery from cattle grazing impacts may require decades of cattle exclusion.

Winter site fidelity and body condition of three riparian songbird species following a fire. I. A. Samuels, T. Gardali, D. L. Humple, and G. R. Geupel. 2005. *Western North American Naturalist* 65:45–52. (282 31st Ave, San Francisco, CA 94121). Wintering songbirds (fox sparrow, hermit thrush, and ruby-crowned kinglet) were largely unaffected by wildfire in a coastal California riparian site.

Plant Ecology

An ecosystem in transition: causes and consequences of the conversion of mesic grassland to shrubland. J. M. Briggs, A. K. Knapp, J. M. Blair, J. L. Heisler, G. A. Hoch, M. S. Lett, and J. K. McCarron. 2005. *BioScience* 55:243–254. (School of Life Sciences, Arizona State University, Tempe, AZ 85287). Without mechanical removal of shrubs, it is unlikely that management of fire and grazing regimes alone will be sufficient to restore grass dominance to former tallgrass prairie that now supports savanna-like vegetation codominated by grasses and woody plants.

Effects of elk herbivory on vegetation and nitrogen processes. K. A. Schoenecker, F. J. Singer, L. C. Zeigenfuss, D. Binkley, and R. S. C. Menezes. 2004. *Journal of Wildlife Management* 68:837–849. (US Geological Survey, 2150 Center Ave, Bldg. C, Fort Collins, CO 80523). Height, canopy cover, litter, and nitrogen yield of willows were reduced by winter elk browsing in Rocky Mountain National Park, Colorado.

Effects of grazing exclusion on rangeland vegetation and soils, East Central Idaho. J. J. Yeo. 2005. *Western North American Naturalist* 65:91–102. (The Nature Conservancy, 116 1st Ave North, Hailey, ID 83333). On sagebrush steppe and shadscale rangelands, bluebunch wheatgrass had greater basal cover inside exclosures on 4 of 10 sites; Sandberg bluegrass had greater basal cover outside exclosures on 5 of 15 sites; and overall, species richness did not differ between inside and outside of exclosures.

Effects of long-term cattle exclosure on vegetation and rodents at a desertified arid grassland site. T. J. Valone and P. Sauter. 2005. *Journal of Arid Environments* 61:161–170. (Department of Biology, St Louis University, 3507 Laclede Ave, St Louis, MO 63103). Four decades of cattle exclusion resulted in greater basal cover of perennial grasses and higher abundance and diversity of pocket mice.

In search of allelopathy: an eco-historical view of the investigation of chemical inhibition in California coastal sage scrub and chamise chaparral. R. W. Halsey. 2004. *Journal of the Torrey Botanical Society* 131:343-367. (Southern California Chaparral Field Institute, PO Box 545, Escondido, CA 92033). "Allelopathy remains a controversial topic today despite hundreds of investigations because of the difficulty in isolating all the possible variables affecting plant growth."

Shrub-steppe vegetation of the East Fork and the Middle Fork of the Salmon River Drainages. J. M. Peek, J. J. Yeo, W. O. Hickey, J. L. Lauer, and J. C. Claar. 2005. University of Idaho Forest, Wildlife and Range Experiment Station Bulletin 82. ($10; Publications, University of Idaho, PO Box 442240, Moscow, ID 83844-2240). Based on research data and field experience from 1970–2003, the authors present a classification of 19 shrub–steppe plant communities in central Idaho's mountain–canyon rangelands.

Using transplanted plains rough fescue (*Festuca hallii* [Vasey] piper) as an indicator of grazing in Elk Island National Park, Canada. J. N. Best and E. W. Bork. 2003. *Natural Areas Journal* 23:202–209. (E. Bork, Department of Agriculture, Food and Nutrition Science, University of Alberta, Edmonton, AB T6G 2P5, Canada). Intensive year-long grazing by native ungulates reduced the height and basal area of rough fescue plants. Grazed plants had 15% greater mortality than ungrazed plants.

Wildfire effects and post-fire responses of an invasive mesquite population: the interactive importance of grazing and non-native herbaceous species invasion. J. A. Kupfer and J. D. Miller. 2005. *Journal of Biogeography* 32:453–466. (Department of Geography and Regional Development, University of Arizona, Harvill Building, Tucson, AZ 85721). Cattle grazing before a wildfire reduced damage to velvet mesquite trees in semidesert grassland of southern Arizona.

Rehabilitation/Restoration

Aboveground biomass removal by burning and raking increases diversity in a reconstructed prairie. D. Tix and I. Charvat. 2005. *Restoration Ecology* 13:20–28. (I. Charvat, Department of Plant Biology, University of Minnesota, 1445 Gortner Ave, St Paul, MN 55108). In reconstructed tallgrass prairie in Minnesota, " . . .raking after mowing in the spring provides an alternative to prescribed burning that has many of the same positive aspects as fire but does not promote aggressive C-4 grasses to the same extent."

Effects of timing of prescribed fire on the demography of an invasive plant, spotted knapweed *Centaurea maculosa*. S. M. Emery and K. L. Gross. 2005. *Journal of Applied Ecology* 42:60–69. (W. K. Kellogg Biological Station, Michigan State University, Hickory Corners, MI 49060). Annual summer burns in a Michigan prairie reduced population growth of spotted knapweed by reducing reproduction.

Soil biological and chemical properties in restored perennial grassland in California. M. Potthoff, L. E. Jackson, K. L. Steenwerth, I. Ramirez, M. R. Stromberg, and D. E. Rolston. 2005. *Restoration Ecology* 13:61–73. (Institute of Soil Science and Forest Nutrition, University of Goettingen, Busgenweg 2, D-37077 Goettingen, Germany). Four years after tillage and planting perennial grasses into California annual grassland, soil microbial biomass and activity had recovered to pre-tillage levels.

Supplemental risk evaluations and status of *Puccinia carduorum* for biological control of musk thistle. W. L. Bruckart. 2005. *Biological Control* 32:348–355. (USDA-ARS, 1301 Ditto Ave, Fort Detrick, MD 21702). Results confirm that the use of *Puccinia carduorum* (an introduced, pathogenic rust) for biological control of musk thistle should not harm rare, threatened, or endangered *Cirsium* species or modern artichoke cultivars.

Soils

Multi-decadal impacts of grazing on soil physical and biogeochemical properties in southeast Utah. J. C. Neff, R. L. Reynolds, J. Belnap, and P. Lamothe. 2005. *Ecological Applications* 15:87–95. (US Geological Survey, Denver Federal Center, Denver, CO 80225). Livestock grazing from the late 1800s to 1974 decreased soil fertility by making the soil surface more susceptible to wind erosion.

Jeff Mosley is Professor of Range Science and Extension Range Management Specialist, Department of Animal and Range Sciences, Montana State University, Bozeman, MT 59717.

The Recipe Corner

Editor's Note: *There are many "family" recipes that are passed from generation to generation that are never seen by outsiders. Many of these recipes would be enjoyed by others. This column is being established to present some of these recipes so others can enjoy them. The following recipe was submitted by Sherry Nash of Fort Collins, Colorado.*

ELK STEW

Because I have 3 hunters and they are usually successful (with some species) I am always trying various recipes. Most I have made up through years of cooking. I just throw in various ingredients that I have on hand and if it turns out and my family likes it then I make it often.

2–3 pound roast
1–2 cups carrots (sliced)
3–4 stalks celery (chopped)
1 onion (diced)
1 head cabbage (shredded)
2 potatoes (diced)
1 package noodles (use your favorite noodle)
2 cans beef consommé
Seasoning items
Montreal Steak® (spice)
Olive oil
Worcestershire sauce
Lime or lemon juice
Liquid marinade
Hot pepper sauce
Soy sauce
Minced garlic
Garlic salt
Ground pepper

Rub olive oil on roast and sprinkle Montreal Steak® on all sides. Brown in a Dutch oven in additional olive oil. Put roast in a crock pot with ½–1 cup Worcestershire sauce, dash of lime or lemon juice, ½–1 cup liquid marinade, dash of hot pepper sauce, ¼–½ cup soy sauce, 1–2 tablespoons minced garlic, and approximately 1 cup water (make sure you have enough liquid to cook the roast). Cook on low for 6–8 hours in crock pot, then remove. In the same Dutch oven that was used to brown the meat, brown the carrots, celery, and onions in drippings. Shred the roast and return the vegetables, shredded roast, diced potatoes, and shredded cabbage to the crock pot. Add beef consommé and water to cover all ingredients. Add garlic salt and pepper according to your taste. Cook on high for an additional 2–3 hours. Add noodles if desired and cook according to package directions. Homemade bread goes GREAT with this meal.

As a side note, the same methods used to prepare the roast for the stew can also be used to just make a pot roast, cooking the meat for the same amount of time and adding potatoes and carrots and anything else you like in your pot roast during the last 2–4 hours of cooking. The liquid in the crock pot makes an excellent gravy. ◆

Thad Box

The Power of Story

Story is the umbilical cord between the past, present and future. —Terry Tempest Williams

Seek ye the counsel of the aged, for their eyes have looked on the faces of the years and their ears have harkened to the voices of Life. —Kahlil Gibran

I always wanted to be a forest ranger. When I was quite young, I was privileged to spend some time with a real bonafide Forest Ranger Hamner Christensen in his surroundings. —Joel Frandsen

With this issue of *Rangelands* we celebrate the 100th Anniversary of the US Department of Agriculture Forest Service. This event is described with statistics, tributes, and listings of accomplishments. That many of those contributions were made by range people reminds us again of the parallel development between the Forest Service and our profession.

That relationship is best told by stories that nourish the old and inspire the young. Terry Tempest Williams, in a 2002 interview, said "Quite simply, the source [of stories] is life. Day to day, day by day. I never stop being amazed by the simple, raw, true power of life." Later, she said, "Story bypasses rhetoric and pierces the heart. We feel it. Stories have the power to create social change and inspire community."

The life story of Hamner Christensen inspired young Joel Frandsen. The story continues, through those who know Joel, to influence land management far beyond the Forest Service. This process is as old as civilization itself. Stories by elders mold the future. It is from elders that each new generation gets its values. Stories define who we are and why we exist.

I was a young professor when I first met W. R. Chapline. I was surprised and impressed when a hero of our profession took a bus seat next to me on a range tour. He said folks called him "Chappie." Could anyone call an icon that? Certainly not I. With each passing landscape, Mr Chapline told a new story: how Gifford Pinchot was persuaded to allow grazing on national forests, how early research tried to estimate carrying capacity, how goats were once an important part of oak control in southwestern forests.

I asked him to talk to my class about early research. When he entered the room, he carried a copy of *The Western Range*. He didn't talk about research. Instead he launched into a story of how and why the publication came about. Students learned that day how politics of agencies determined who would manage America's public lands. And they were introduced to Forsling, Campbell, and other early range stalwarts, not as biologists, but as politicians.

Bill Hurst's memoir, *A Life Recalled*, offers stories of a generation when there was only one ranger on the Manila Ranger District. He was truly a multiple-use specialist, doing all the necessary work on the forest. Joel Frandsen's *Forest Trails and Tales* humorously examines the

work of another generation of range managers. It is from stories like these, not official reports, that values of our profession emerge. They show that our profession is not a job, but the dedication of a life to an ideal. And those stories, told to or read by me, become part of who I am.

I don't like to think I am one of the old folks. Most of my life I have been a youngster among my peers—the youngest graduate, youngest professor, youngest dean, youngest whatever. But statistics show I am almost two years past the average life expectancy for an American male. Records show I have been a member of SRM 48 years—longer than the average age of our members. Data tell me I am older than I feel.

I am, whether I like it or not, one of the elders. Destiny made me one of the keepers of our collective memory—a storyteller. People of my generation, and those older, are blessed (or maybe cursed) to be guardians of our values and traditions. Our role is to pass these to the young in such a way that new generations minimize mistakes as they work in a rapidly changing world. We serve best when we stick to principles.

We older folks have a difficult job. Success depends on how well we can adjust to being elders, relinquishing control and passing the reins to those with energy and stamina who work in a world much different than it was even a decade ago. It depends on how well we resist meddling in details which we are often ill-equipped to handle.

Our role is not to preach. Or to insist the old way is best. Not only may it not be best, it may not even be applicable in today's environment. Teachers should be like those described by Gibran:

> *If he is indeed wise he does not bid you enter the house of his wisdom, but rather leads you to the threshold of your own mind…*
>
> *For the vision of one man lends not its wings to another man.*
>
> *And even as each one of you stands alone in God's knowledge, so must each one of you be alone in his knowledge of God and his understanding of earth.* —Khalil Gibran, *The Prophet*

Young professionals are often lacking in their understanding of the earth. Their comprehension can be enhanced by research much improved over that of Chapline's day. It is guided by science that is much better than was available to me. But it is elders who prevent the young from standing alone. We are storytellers, not rulers demanding the young do as we did. Our stories lead the next generation to think about principles and involve those principles in their work.

It has been said that range management is both an art and a science. The science comes from experiments, carefully designed, implemented, analyzed, and stored in the written record. Application of science is by people actively involved with land use. The art comes from experience. Elders pass their interpretations of history, their demonstrations of professionalism, and their understanding of why we exist through story.

We understand the first 100 years of the Forest Service mainly through life stories of the people who had the vision, did the work, served the land. We understand our profession because of lives lived, not ranges deferred, shrubs planted, or erosion controlled. A day with Mr Chapline changed my understanding of the Forest Service—and my profession—forever.

Stories of people who lived long before range management had a name are equally important. Fred Provenza, at the Salt Lake meeting, quoted Buddha, the Sutras, the Dalai Lama, and Sun Zui in developing his thesis that "…creativity comes from the union of pairs of opposites, as each polarity ceaselessly dies to itself and resurrects anew." He captured wisdom of elders from many cultures and generations to challenge us to think about change and sustainability. He warned that with each generation our profession must be born anew.

Science provides tools. Institutions provide organization. But stories analyze deaths and resurrections, promote rebirth into a changed world. They form the basis for change. They point us to the future. They inspire us to go there. They define who we are. They suggest who we can become.

Never underestimate the power of story. ◆

By Gary Frasier

Frasier's Philosophy

There is a great debate concerning changing the name of the Society. There are a number of reasons for a change as well as many reasons for not changing. This is not the first time the topic has come to the forefront. When the Society was first formed the name was the "American Society of Range Management." The early founders were proud to have a society that expressed their beliefs in the proper management of the nation's natural resources (see "Insight From SRM's Charter Members" in this and previous issues). Later it was realized that the Society was representing an area greater than the Americas and the name was changed to the Society for Range Management. The current debate is over whether the objectives, goals, and vision have changed sufficiently to warrant a change in the Society's name. Have we moved past the vision of our founders?

Much of this issue is concerned with "looking back." The year 2005 is the 100th anniversary of the founding of the United States Department of Agriculture's Forest Service. Several of the feature articles in this issue provide an insight into how the Forest Service came to be and what it has accomplished in the past 100 years. It is interesting to note that many of the SRM's founding fathers were part of the early US Forest Service. They had a vision of not only how to manage the natural resources but also of what scientific documentation was needed to manage the land and of how to inform the public about both the land and its management. We have come a long way. There is still a long way to go. Let us hope the decisions we make today are considered as important 100 years from now as the decisions made 100 years ago.

Everyone associated with ***Rangelands*** hopes that the changes initiated to the publication in 2005 represent the "road to the future." We hear from members when we make an error. This is good. I have had the philosophy throughout my career as a researcher that I will tell you all my mistakes. I do not want anyone to repeat them. I mean to do the same with ***Rangelands***. We will not repeat mistakes and errors in the publication. This also means presenting scientifically correct information. ***Rangelands*** is designed to be read by people who may not be scientifically oriented. As a result of this wider readership, some articles in ***Rangelands*** are being used as expert knowledge in nontraditional situations such as conflict resolutions. In these instances the information in ***Rangelands*** can make a significant impact.

Let the people 50 and 100 years from now say, "They made the right decisions in 2005." ◆

Ask The Expert

Editor's Note: How often have you been faced with reading or hearing about a topic that sounds interesting, but had questions about some of the details? We have selected such a question and have asked an expert on the topic to provide an answer.

QUESTION:

"It is frequently stated that much of our public land is managed for multiple use. What does this mean and how is multiple use determined?"

RESPONSE:

The term "multiple use" is a principle of land management that refers to what services and products are provided on public lands. The issue of what those uses are and how they are determined has been cussed and discussed since the first public lands were set aside for public use in 1891.

The Development of Public Lands

The public lands of the United States were acquired through a variety of means, including the state cessions following the Revolutionary War, the Louisiana Purchase, and the Oregon Compromise, as well as six others. Through these various acquisitions the federal government ended up with over 1.8 billion acres that were classified as public domain. From the beginning, controversy arose over the uses of the public lands: should they be used as a source of revenue or to help settlers easily obtain land? In general, the public domain lands were looked upon as a means to accomplish desirable goals for the country, with the expectation of their ultimate transfer out of federal ownership. Today, of the total land area of the United States (2,271,343,360 acres), approximately 20%, or 454,621,000 acres, remain as public lands or national forests.

The Organic Administration Act of 1897

The Congress passed legislation in 1897 that provided direction for the administration of the forest reserves that were created by the President under the authority of the General Public Lands Revision Act of 1891. This direction provided the primary guidance for the national forests until the 1960s. In 1905 the forest reserves were transferred from the Department of the Interior to the Department of Agriculture to be managed by the Forest Service. The Forest Service issued regulations for the management of the reserves in *The Use of the National Forest Reserves, Regulations and Instructions, Issued by the Secretary of Agriculture, To take effect July 1, 1905.* The concluding statement of the opening section gave the following instructions about how the reserves were to be managed, "In the management of each reserve local questions will be decided upon local grounds; the dominant industry will be considered first, but with as little restriction to minor industries as may be possible; sudden changes in industrial conditions will be avoided by gradual adjustment after due notice, and where conflicting interests must be reconciled the question will always be decided from the standpoint of the greatest good of the greatest number in the long run."

The Multiple-Use Sustained-Yield Act of 1960

In 1960 the Congress passed the Multiple-Use Sustained-Yield Act. The purpose of this act was to expand the policy for managing the National Forests to include outdoor recreation, range, timber, watershed, and fish and wildlife. The act includes a definition of multiple use. The definition is nearly 150 words long. Obviously this simple term is not simple to define.

The Federal Land Policy and Management Act of 1976

In 1976 Congress passed the Federal Land Policy and Management Act (FLPMA). The purpose of this act was to set overall policy for the remainder of the public lands. The definition as written in FLPMA is, "The term 'multiple use' means the management of the public lands and their various resource values so that they are utilized in the combination that will best meet the present and future needs of the American people: making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments to conform to changing needs and conditions; the use of some land for less than all of the resources; a combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and nonrenewable resources, including, but not

limited to, recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific and historical values; and harmonious and coordinated management of the various resources without permanent impairment of the productivity of the land and the quality of the environment with consideration being given to the relative values of the resources and not necessarily to the combination of uses that will give the greatest economic return or the greatest unit output."

The management of the public lands and national forests will likely remain controversial. Due to the diversity of American society there will continue to be a diversity of opinion on how the public lands should be managed. However, the phrase that Gifford Pinchot created for the 1905 Use Book for the Forest Reserves continues to provide as clear a principle on how the public lands should be managed — "for the greatest good of the greatest number in the long run."

Dave Bradford, US Forest Service, Paonia Ranger District, Paonia, CO.

If you have a question on a topic, please send a short note to: Rangelands *Editor-in-Chief, 7820 Stag Hollow Rd., Loveland, CO, 80538 or email: gfrasier@aol.com. If selected, we will attempt to locate an expert for an answer and publish it in a future issue of* Rangelands.

BOOK REVIEW

Caribou Rising. Defending the Porcupine Herd, Gwich-'in Culture, and the Arctic National Wildlife Refuge. By Rick Bass. 2004. Sierra Club Books, San Francisco, CA. 175 p. US$19.95 hardcover. ISBN 1-57805-114-2.

Rick Bass, novelist and prolific western conservation writer, travels to Alaska to witness firsthand the threat to destroy an ancient culture and another ecosystem for petroleum. He considers it an honor to participate in the campaign to defend the Arctic National Wildlife Refuge.

Traveling from his Yaak Valley home in Montana, Bass visits the remote Arctic Village, home of the Gwich-'in people at the base of the Brooks Range, Alaska. He listens to the Gwich-'in natives as they discuss plans by the government to drill in the Arctic National Wildlife Refuge, a spectacularly wild and beautiful place where the porcupine caribou herd gathers each spring to birth its calves. Already in decline, the herd is down to roughly 129,000 animals from a high of nearly 180,000 in the 1980s. The herd is central to the spiritual life of the Gwich-'in people, composed of 15 bands of hunter–gatherers living scattered above the Arctic Circle.

The Gwich-'in are holding on in the Arctic Village, fighting to keep their heads above water. They have been following, and in every way relying upon, the porcupine caribou herd for approximately 20,000 years. They love the land they live on, and now our government has concocted a plan to open the refuge to oil and gas drilling. The porcupine caribou herd has nowhere else to give birth. Everywhere else, in the spring, are mosquitoes and predators, polar bears and brown bears, wolves and wolverines. If the government and energy industry lobbyists succeed in opening the Arctic National Wildlife Refuge to drilling, it is not just the caribou that will vanish, but the Gwich-'in culture and, perhaps, the people themselves.

While visiting with the Gwich-'in people, the author learns how important the caribou are to them. One village leader remarks:

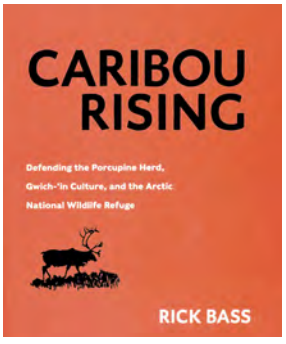
> *We are the caribou people. Caribou are not just what we eat; they are who we are. They are in our stories and songs and the whole way we see the world. Caribou are our life. Without caribou we wouldn't exist.*

Not only did Bass want to meet with the native people and learn about their culture, he hoped to kill a caribou to bring home for meat. He did not accomplish that feat, but he did spend a lot of time walking the land, talking to villagers and their leaders. He visited with Sarah James, a matriarch who is wise in Washington politics, and Trimble Gilbert, an Episcopal priest who kills a caribou for a village-wide barbeque while Bass is in town. He enjoys the company of Jimi, designated the village chief hunter, while traveling upriver searching for caribou.

In *Caribou Rising*, Bass voices concern for a potential assault by drilling for oil on the Arctic National Wildlife Refuge. Bass argues with passion against the current Washington administration's campaign to drill for oil near the Arctic Village. Eloquently, Bass writes:

> *This place, here at the top of the world is, in both scientific and a spiritual sense, the place where the Porcupine Caribou keep coming into the world, year after year. Here, the caribou come into the Gwich-'in world again and again as if issuing forth not so much from that one secret cleft formed by the base of the magnificent Brooks Range and the edge of the Beaufort Sea ice cap and the lichen-furzed sheet of tundra, but instead as if coming up through some vent or shaft or sacred bore-hole below…caribou rising vertically from that lower world, like a blessing…It is this bounty that has shaped Gwich-'in into who they are…as surely as landscape and the animal of time shape anything.*

Bass is the author of 18 books of fiction and nonfiction. In 1985, he wrote *The Deer Pasture*, a collection of 17 essays. Each essay contains a wonderful story of the Bass men and their annual hunting trip in the Hill Country of Texas. I recommend anything written by Rick Bass; his writing is enjoyable and informative.



Jan Wiedemann, College Station, TX, Texas Section, Society for Range Management. ◆

BOOK REVIEW

Lewis & Clark Territory. Contemporary Artists Revisit Place, Race, and Memory. By Rock Hushka. 2004. Tacoma Art Museum, in association with University of Washington Press, Seattle and London. 80 p. US$21.95 softcover. ISBN 0-295-98404-X.

The Tacoma Art Museum, in association with the University of Washington, released this full-color catalog documenting an exhibit at the museum commemorating the journey of Meriwether Lewis and William Clark from 1804 through 1806.

President Thomas Jefferson commissioned the Corps of Discovery when he charged Lewis and Clark to lead an expedition into the Western American continent to the shores of the Pacific Ocean. Jefferson ordered them to open a route for the expansion of trade and to record all that could be gained from exploring all the sciences encountered.

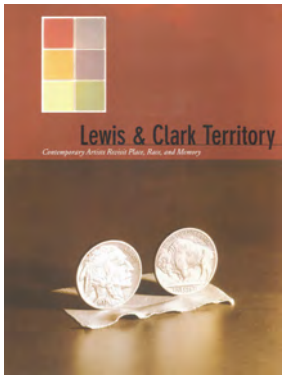
To celebrate this historical journey, the Tacoma Art Museum organized an exhibit featuring 78 works by 30 artists. Drawing from the extensive journals of the Lewis and Clark expedition, the exhibit incorporates 3 themes—place, race, and memory. The catalog includes essays by Rock Hushka, Associate Curator of the museum, and Thomas Haukaas, exhibiting artist and scholar of contemporary Native American Art. The main theme of the exhibit and catalog is explained by Hushka:

> *The exhibition is an intellectual exercise that asks us to consider how place, race, and memory reverberate across the span of two centuries. It is an exhibition about how a selection of ideas and values related to these three themes constitute American culture.*

Featured in the exhibit and in the catalog are highlights from the Lewis and Clark journals, as well as the works of Native American artist Jaune Quick-to-See Smith, Peter Rostovsky, and Michael Brophy. The exhibition features: Lakota Special Boy Shirt (2002), a child's protective shirt made of buckskin, beads, wool, cotton, and thread by Thomas Haukaas; Orca (2002), a glass sculpture by Marvin Oliver; and Inside Out Sally Bag (1997), by Pat Courtney Gold.

Drawing from the 3 themes of the Lewis and Clark journals—place, race, and memory—this catalog is a permanent reminder of the exhibit that explored conditions of the American West by the Corps of Discovery, and the artists of today.

Jan Wiedemann, College Station, TX, Texas Section, Society for Range Management. ◆



Poetry

Editor's Note: The Tonto and Prescott are two U.S. National Forests in Arizona. John N. Spencer was a Forest Service employee, doing range management work on both forests in the 1920s and later. SRM Charter Member William Hurst states, "The poem pretty well describes some of the range conditions found on these National Forests in the 1920s."

Range Appraisal

I had seen how, on the Tonto, cactus grew an inch in a year,
And it took a dozen cactus to produce a yearling steer.
With a cactus to an acre, and ten acres to a chain,
three cows to every yearling, and an inch a year of rain.

This, by ratio and proportion, say as nothing is to one,
Gave a pound per inch of cactus, and ten yearlings to a ton.
Thus, on a cactus acre basis, for a given term of years,
We could check the carrying capacity by the annual
sale of steers.

With this basis for appraisal, the value then was told
By the price per head for yearlings, and the average
number sold;
Which, figures by equation—say 100 equals C,
Minus A and B for handicaps—would give the grazing fee.

But since I've seen the Prescott, my dope is wrong
I've found,
As I failed to class as forage the roots down in the ground.
For on the Prescott ranges, the hungry bovine brutes
Have eaten cactus to the gravel, and are pawing for the roots.

And the cattle are much smaller, so my dope on weights
won't check;
As they always ship their yearlings in cars and double deck.
And they say that west of Prescott, near the Diamond-
and-a-half,
A cowboy saw a rabbit and thought it was a calf.

The inspector said, by checking weights on shipments, he
had found
That their average run of yearlings weighed about a
hundred pounds.
So I'm right back where I started, but I haven't quite lost hope,
Though I have to start all over on this appraisal dope.

–John H. Spencer, 1921

Letters to the Editor

Gary,

Very nice job on the February 2005 issue of *Rangelands*. I have been working my way through it the last week or so and have enjoyed the articles and the new look. That white space and use of color makes it easier on my aging eyes!

I particularly enjoyed Butch Taylor's description of what a range fire must have been like before the Edwards Plateau of Texas was settled. I had no idea Butch was such a passionate and poetic writer.

Thanks for your good work and congratulations on a very good magazine for us civilians.

Ellen Humphries
Texas Cattle Raisers Association

Dear Gary,

Charter Member Weldon O. Shepherd's wife contacted me by telephone recently and said Weldon was worried about one statement in the "Insights" statement by him published in the February 2005 issue of *Rangelands*.

The statement of concern is in the third paragraph, 2nd sentence: "This involved establishing experimental plots and studying density, species composition, forage types, poisonous plants, and range conditions in Ponderosa pine–cane type areas." This should read "of pond pine–cane type areas."

Sincerely,
Bill Hurst

Editor's Note: We are sorry for the error.