

This expert system, written for IBM compatible micro-computers, will have broad application in grasslands and grass-shrublands of the western and central United States. It is intended for use in planning the burn as well as initiation and execution of the burn on-site.

User License

Single machine-single user licenses have been granted to the Soil Conservation Service in central Texas, Welder Wildlife Refuge, Utah State University, and University of

Idaho to test this expert system outside of West Texas. A limited number will be granted to other potential users upon request.

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Professional Bias, Public Perspectives, and Communication Pitfalls for Natural Resource Managers

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I. Recognizing Bias in a Changing Managerial Landscape

Range managers, like other natural resource professionals, sometimes find it difficult to communicate effectively with an ever-broadening range of client publics. Frustrated managers may find themselves blaming certain interest groups, especially those that are relative newcomers to the resource policy debate, for harboring biases that prevent them from accepting "the facts" about natural systems.

Such complaints are not entirely unfounded. But bias is not restricted to any segment or society. We in natural resources have our own characteristic biases. Some are rooted in personal experience, others may be born of long association with the clients we serve. Still others grow out of our professional culture—the way we all are taught to think about natural resources. This paper will examine causes, consequences, and antidotes for bias among resource professionals. As a social scientist who studies forest management issues, I hope to be able to help range managers recognize and avoid the kinds of communication pitfalls that have helped make the debate over Northwest forests so intractable.

Finding the "middle." We live and work in a world that is increasingly polarized. Disputants in resource conflicts typically describe opponents in terms of villainy, taking positions that are increasingly far from the realm of reason or compromise (Clark and Stankey 1991). A National

Audubon Society publication introduced the society's television special on public lands grazing with a blaring headline, "Western Range Reels Under Cattle Onslaught" (NAS 1991). It looked like a review of a new horror movie—*Friday the 13th, Part 10: Night of the Living Cow*. Yet environmentalists don't have an exclusive franchise on hyperbole. The article contained this quote by a spokesman for the National Inholders Association, which led a boycott of the Audubon special's sponsors: "By sponsoring this show, General Electric is declaring war on rural families throughout America." That's ridiculous, too. G.E. wasn't declaring war on anyone; it simply wanted to sell products to people who watch Audubon specials.

In such a polarized world, it's easy to take pride in being "in the middle." But the "middle" is a pretty big place. Exactly where in the middle are resource managers? Is our middle the same as "the public's"? Or do our biases put us someplace other than where we think we are?

Vining and Ebreo (1991) recently examined this question in a random telephone survey of Illinois residents. Respondents were asked to rate the importance of various national forest outputs (timber, water, wildlife, etc.). Environmental group members and Mark Twain National Forest employees were also surveyed, and the results were compared.

Managers gave roughly equal weight to every output; i.e., they espoused a standard multiple-use philosophy. However, both the environmentalists and the general public placed greater value on things like wildlife and scenery—the so-called amenities—and less value on

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commodities such as timber. It's worth noting that the public's responses more closely resembled those of environmentalists than managers. The authors also asked members of each group to predict how the other two groups would respond to the survey. Managers predicted their view would more closely match the public's than was actually the case. In other words, "the middle" wasn't where the managers thought it was.

A nation of environmentalists. A useful, if unscientific, indicator of the national trend toward environmentalism can be found in the decisions by McDonald's Restaurants to discontinue styrofoam packaging and to advertise that its hamburgers do not contain rain forest beef. Public opinion polls consistently show that about three-fourths of Americans call themselves "environmentalist," and two-thirds agree with a statement that "threats to the environment are as serious as environmental groups say they are" (Dunlap 1991).

Likewise, the resource management professions increasingly attract environmentalists. The trend is reflected in the incoming freshmen classes of range, forestry, and wildlife programs (Box and Thomas 1991) and the rise of the AFSEEE reform movement within the Forest Service. Younger professionals are increasingly critical of traditional resource management philosophies. In surveys of Forest Service employees, Kennedy and Quigley (1989) found a steady trend whereby the newest employees were the most environment-oriented, while those with the longest tenure were the most commodity-oriented.

However, there's also evidence that, as managers spend more time in an agency, their perspective shifts. Political scientists explain this phenomenon in terms of "capture theory," which argues that agencies can come to be controlled by one of its client publics. Fortmann (1990) argues, for example, that Cooperative Extension grazing specialists in California have come to identify so strongly with ranchers that they resist changes that threaten the traditional ranching lifestyle if ecological conditions warrant a change in management. Similarly, when I've asked professional foresters to judge the scenic impacts of forest management, their answers match those of the general public *except* when rating the impact of traditional harvest practices like clear-cutting. Most people find clearcuts ugly, but foresters don't. They believe in the science that says clear-cutting can be a good thing to do in the woods. As a result, their professional values have shaped their personal views about beauty.

II. Why Communication Often Fails

If managers think they're in touch with the public when they're not, it's a surefire recipe for failure. Lawsuits, appeals, protest rallies—all reflect our failures to meet the expectations of one or more client groups. Most such failures can be traced to a lack of understanding. And while no group has a monopoly on misunderstanding, it's part of the resource manager's stewardship role to try to identify and remove obstacles to understanding which can interfere with proper protection of natural resources. The remainder of this paper addresses four such obsta-

cles which can be traced to professional biases and values:

—We often rely too heavily on technical expertise to solve all problems.

—We erect language barriers between us and those we serve.

—We send conflicting messages to the public.

—We fail to understand the relationship between social values, the meanings people assign to natural resources, and their perceptions of how management activities can affect those social values.

The cult of expertise. Reliance on technical knowledge is a reflection of professional culture. Every resource profession has as one of its core beliefs the notion that there's a solution to every problem, and that only science can help us find it. This scientific-rational approach to problem-solving is what made systematic management of natural resources possible. It's been drummed into us since our very first introductory course in college. Almost inevitably we adopt a value system that places enormous emphasis on technical expertise about the complex natural systems in which we work.

Unfortunately, such a value system has side effects. One is that it makes us look arrogant in the public's eyes. We may see ourselves as public servants, sharing the fruit of our experience and expertise, but it's human nature to be resentful when someone says, "Pay attention, because I know more than you do." Even worse, our value system can trick us into believing we're the *only* ones who know anything about an issue. When we lament our failure to "get the truth out to the public," as Bonham (1991) did in a recent issue of *Rangelands*, we imply that the public is misinformed and/or ignorant. Too often, the next step in the thought process is a belief that to accede to public wishes is to abdicate professional responsibility—even on the public's own land—since the public is too uneducated, or too emotional about natural resource issues, to know what it really wants.

In an effort to examine common beliefs about public criticism, Fortmann (1990) examined several years' worth of formal protests filed against proposed forestry operations regulated by the State of California. She focused on three assumptions: that the general public is uninformed or incorrectly informed about forestry; that protests of forest management activities come mostly from a small cadre of non-local environmental activists; and that most of the concerns expressed in those protests had to do with aesthetic or sentimental values.

In fact, two-thirds of the complaints came from neighbors and local residents, while just 4 percent were generated by environmental activists. Only about a quarter of the comments concerned amenity issues such as recreation, scenery, or old growth; more than half were scientifically grounded, well-informed arguments over technical issues such as erosion, water quality, or road safety. Fortmann's work shows that the public isn't always in need of being educated. Providing even more education isn't necessarily going to make people suddenly see

things our way.

Language barriers. A second communications problem has to do with the language used in interacting with the public. Beware the pitfalls of jargon. Even the most common terms—for example, “animal unit month”—can sound nonsensical to someone who’s never heard them before. When jargon is used without interpretation, the best that can happen is that the audience will be confused; the worst is they’ll assume it was done deliberately.

Jargon exists because it offers experts a parsimonious way to express complex ideas. Yet people in different professional disciplines can use the same word in different ways. Compare, for example, how three disciplines use the term “rotation.” In range management, the site is rotated while the managed species remains the same. In crop science, the site remains the same while the managed species is rotated. In forestry, neither the managed species nor the site changes; the rotation occurs by removing individuals and restarting the growth cycle. Even within disciplines, some of our most commonly used terms are fuzzier than we may think they are. As Heady (1990) points out, even the definitions of range, rangeland, and range management are still being argued.

Finally, some jargon may be perceived as intended to soften the true meanings of the activities they describe. In forestry, for example, when a “prescription” calls for “treating” the hardwoods that compete with commercial conifer species, what it means is that we’re going to *kill* the hardwoods. The quasi-medical terminology is unfortunate if the opponents of a “treatment” activity believe it’s used to obfuscate instead of illuminate.

Mixed messages. Each of us acknowledges that we don’t know everything about any facet of the natural systems we manage. We admit it among ourselves; usually we admit it to our publics. But one consequence of a scientific-rational worldview is that it implies a single “true” answer exists—if we don’t have it now, we’ll get it eventually. This view doesn’t really account for inevitable differences of opinion. What happens when the public hears “experts” giving conflicting answers to the same questions? If one can’t decide which expert to believe, doesn’t it make sense to disbelieve all of them?

The problem may be worsened as we attempt to meet competing multiple objectives. National park managers, for example, encourage people to visit preserved remnants of vanishing ecosystems, yet at the same time tell visitors that recreation adversely affects the ecology of those settings. Such mixed messages reflect tangled legal mandates, but to the public they may simply be symptoms of managerial schizophrenia.

Values, meanings, and perceptions. The fourth barrier is that managers tend to assume all publics share our value systems—that is, that everyone believes in the scientific-rational paradigm of resource management. But value systems differ. And when they differ, two people can see the very same facts and draw very different conclusions.

Values help people put their world into context. We

assign meanings to objects based on our values. Those meanings, in turn, influence our perceptions of any activity that might affect those objects. Figure 1 shows how different values can lead to different conclusions about grazing on Steens Mountain, which rises 9,000 feet above the eastern Oregon desert. The left side of the chart represents someone with a spiritualist value system, who sees natural resources as a medium that enables him to contact the moral/ethical center of the universe. The right side represents someone having utilitarian values which emphasize the utilization of natural resources to benefit human society.

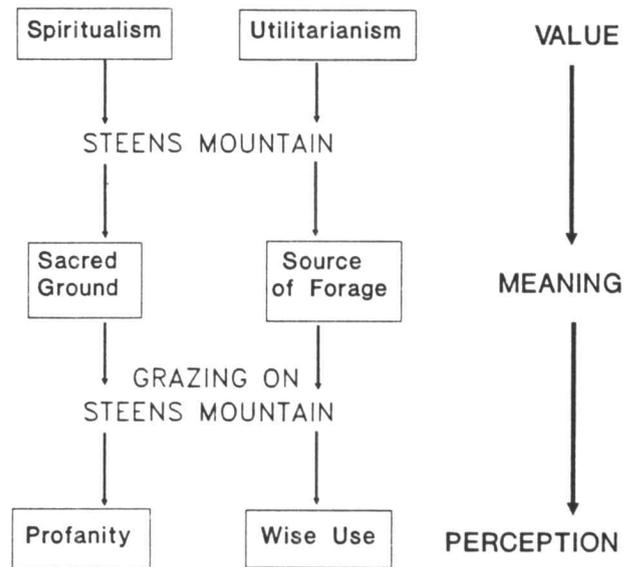


Fig. 1. How differing values can lead to differing perceptions.

The spiritualist’s value system leads him to view Steens Mountain as sacred ground, awesome and nurturing because of its great size and watershed features. The utilitarian sees the mountain as an excellent source of summer forage. These are alternative, but equally reasonable, meanings to give the resource based on the facts presented. Yet how would these two people perceive grazing on Steens Mountain? For the spiritualist, cattle may represent profanity, a befouling of the sacred landscape. Meanwhile, the utilitarian may see those same cattle as the instruments of wise use. One set of facts, two different conclusions. It’s a conflict for which science is never going to have an answer.

III. It’s Not Too Late

At this point it may seem that I’ve painted an awfully dreary picture of the state of relations between resource managers and their publics. How can we ever resolve such conflicting perceptions? Are we doomed to miscommunication? Must we abandon our own cherished value systems?

The answer is no. But we do have to admit to the reality of other value systems, and acknowledge that they’re part of the managerial landscape. And we must broaden the realm of debate. Natural resource managers must do a

better job of sharing our perspectives—and sharing them in a way that allows us to also see the value context that shapes them.

Four things are needed if we are to provide effective natural resource management in a multi-value-system world: a search for common ground; an ecosystem perspective; an integrated approach to management, research, and education; and a more equitable and comprehensive level of attention to social values.

Common ground. Even if they don't share the same value systems, competing publics do share some visions of a preferred future. For example, everyone wants to avoid large-scale desertification of arid rangelands. We can identify shared visions by broadening the realm of debate—by not focusing so much on narrow technical issues—and by learning to listen to our publics even as we offer our advice.

Ecosystem perspectives. This solution has gotten lots of attention lately. The Forest Service's New Perspectives program, for example, seeks an "ecological path to forest management" (Salwasser 1990). No one is yet sure where that path might lie, or where it might lead us, but it's significant that we're trying to follow it. What is clear so far is that it will require a more holistic view of management, at larger spatial and temporal scales, and that management should not reflect desired future outputs or products, but rather desired future conditions (Maser 1991).

Integration. Holistic, macro-scale endeavors will surely require an integrated approach to management, research, and education. Big issues must be approached in a big way, and that means cross-disciplinary teamwork. No longer can we simply turn loose a pack of experts to work concurrently within narrow ranges of expertise. Yet truly integrated research is still uncommon, in range management as in other natural resource fields.

Not long ago I searched the *Journal of Range Management* for articles on integrated research. Nearly 100 papers appear in that journal each year, but only about three of four a year fit my criteria for integration, which focused on simultaneous production of multiple resources (e.g., forage and game birds). As a result, many cross-disciplinary questions remain unanswered. What do we know, for example, about the recreational and aesthetic impacts of livestock grazing? The answer is: surprisingly little.

The single-discipline approach can leave surprisingly big gaps in our science. Warren and Myserud (1991) recently noted that after centuries of summer grazing, we still don't have much scientific knowledge about how sheep behave in forests. The problem can be traced to disciplinary biases. Range scientists are plant people, who infer what livestock are doing by watching what happens to the food. Livestock scientists tend to work in the lab or the paddock, rather than the field. The folks who really know how to monitor animal behavior in the field are the wildlife biologists—but what self-respecting wild-

lifer is going to apply for a grant to radio-collar some sheep?

Social values. Finally, natural resource managers need to pay better attention to social values, i.e., the broad range of outputs that various elements of society want natural systems to be able to provide. Some of those values may be associated with commodities like timber or forage or minerals. Others of them may not fit very well into an economic model—things like scenery, recreation, or spiritual renewal, which collectively add up to that thing we call "quality of life." What we in forestry have learned, to our chagrin, is that the failure to effectively identify those values and manage for them can lead to unacceptable consequences—unacceptable for the resources themselves, and for the agencies and people who manage them.

The issues that embattle range managers, while difficult, have not yet reached the kind of frenzy that characterizes the battle over America's forests. Public rangelands lie farther from most major population centers, and the demand for social values has not been so great. But there are signs that the battle is heating up. If the "Cattle Free By '93" movement fizzles, new movements will soon take its place. There is still time for range managers to respond proactively, rather than reactively, to increasingly volatile issues. But constructive dialogue must begin quickly, before the shouting match begins in earnest.

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