Rangeland Issues: A Perspective for the '90s

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As recently as four decades ago, few members of the Society for Range Management (SRM) could have accurately predicted the priority rangeland issues of 1990. Most agreed that the growing global demand for food would continue to drive rangeland management decisions. We were working long and hard to improve our rangeland resources. Efforts were directed toward increased forage production. Indirect benefits were only a secondary consideration. Economists were invaluable in helping prioritize our expenditures.

Three years after the SRM was formed in 1946, Aldo Leopold published his environmental classic, *A Sand County Almanac.* At that time, few people shared Leopold's conviction. We did not deny the author's truth; rather we were disciples of a different philosophy, striving to achieve production goals. Today Leopold's "land ethic" has awakened our social and political consciousness.

Our society has changed. The baby-boomers now hold the plurality vote. Former flower-children occupy influential positions. Most people live in large cities and those cities are passing recycling laws. Few people work directly in agriculture. We spend almost as much on medical care as on groceries. One in seven Americans is 65 years of age or older. Consumers are forcing corporate giants to reassess the environmental implications of their actions.

Rangeland management has evolved with changing societal demands. Some changes we welcomed, some we resisted. During the '90s new rangeland issues will emerge and old ones will resurface to demand our attention. To survive, we must continue to adapt. This article is an analysis of perceived trends that will impact the future of rangeland management.

In his 1982 bestseller, *Megatrends,* John Naisbitt recognized that interest in the environment was a "growing concern" for our information-based society. Public concern aside, the author implied that economic issues would dictate our future. What Naisbitt did not predict was that maintaining our environment would be an economic issue. Global concern for environmental sustainability is on an upward spiral. People vociferously express their concerns about deforestation, destruction of habitat, loss of species with unknown properties, waste-stream reduction, water quality and air pollution. These voices translate into actions at the ballot box and in the marketplace.

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Water

Water is not a new issue to people in the drier regions of the world: rangeland ecologists, farmers, and urban planners in these areas have worried about water shortages for years. Water issues have only recently been acknowledged in many decision centers. Even in nations with vast rangelands, political actions now emanate from relatively humid cities like Buenos Aires, Canberra, Mexico City, Ottowa, Pretoria and Washington. Not until pollution compromised the quality of drinking water in the humid zone did the U.S. capital allow the issue to advance to the national scene. Now, water issues are on the front burner and will remain there.

Rangeland managers have been concentrating on water issues, principally on riparian management, for the past ten years. We are ahead of the curve on riparian issues since only modest public concern about rangeland watersheds has surfaced. We can be sure that as more watersheds are replaced by developments, and as groundwater contamination reaches unprecedented levels, water yields from rangelands will grow in national importance. Each inch of rain that falls on the billion-plus acres of range and grazing land in the U.S. represents about 30 trillion gallons of water! Our imminent challenge is to improve our ability to capture, store, and transport large quantities of clean water.

Biological Diversity, Threatened and Endangered Species and Noxious Weeds

During the '90s we can expect an expanded interest in maintaining unique ecosystems. The nucleus for biological diversity issues in 1989 was tropical and old growth-forests. We witnessed a growing concern for wetland preservation and riparian rehabilitation from diverse groups of the public. These issues will expand to include typical rangeland regions—perhaps the hot deserts or the tallgrass prairies.

Noxious weeds may not seem to be an issue of biological diversity. The environmental caveats they entail, however, are genuine. Noxious weeds have progressed from local agricultural problems to international trade issues. They threaten many of our ecosystems. No longer are solutions within the reach of agriculture acting alone. Yet act alone we must, at least until the public perceives noxious weeds as a clear threat. Even environmental sophisticates currently are unaware of the peril. As rangeland managers we can attest to the menace of certain

weeds, even in well-managed habitats. We need more support and cooperation to solve the problems. As long as people have abundant, inexpensive food, our best opportunity to generate public interest is to hitch noxious-weed issues to the bio-diversity wagon. Perhaps new research will verify an adversarial relationship between the endangered western prairie fringed orchid and the alien leafy spurge. Such a linkage will spawn new coalitions and will enhance our efforts.

The issue of biological diversity will also have a profound influence on wildlife management during the coming years. State wildlife agencies already receive considerable criticism from the nonhunting public. Pressure to manage for a more diverse fauna will continue to escalate. The controversy around wolf re-introduction is just the beginning. Both public and private rangelands will have to provide the habitat necessary for greater numbers of game and nongame species.

Range Condition and Trend

No group is more concerned about the condition of rangelands than are professional rangeland managers and scientists. How we measure and report range condition and trend will remain an issue unique to our clan. Our challenge for the '90s is to devise methods of measuring rangeland condition that relate to highly variable uses that the public can understand.

Improving the condition of range and grazing lands will endure as a priority issue for members of our profession. Simultaneously, agronomic principles of management will become less relevant, especially on multiple-use range lands. There will continue to be less reliance on chemical and mechanical techniques to enhance rangelands and increasing emphasis on biological methods. Integrated approaches for managing brush and noxious weeds will gain prominence.

Integrated Resource Management

For some time, range professionals have acknowledged the need for integrated management. There are good examples of multiple-resource management but there are far more instances where integration has yet to occur. Obstacles include poor cooperation, lack of trust or credibility, and often, inadequate understanding of ecological systems. There is much to learn before integrated management can be universal.

Over the past 40 years, research has helped managers predict plant and animal responses to many treatments. This empirical knowledge has enabled us to improve the productivity and condition of rangelands around the world. Tomorrow's successful managers will require even more sophisticated knowledge. It will be essential to predict whole ecosystem responses to multiple stimuli. To do this, we need better understanding of basic relationships and processes. Investigations in range science will turn a corner this decade. Research will focus more on process—not so much *what* happens, but *how* it happens.

Another critical issue facing rangeland practitioners will be information management. Responsible managers must consider an ever-increasing volume of data, derived not only from research, but also from intensive inventory and monitoring programs. As specialists develop more applications for remote sensing, our data base will expand exponentially. With the advent of Geographical Information Systems (GIS), the staggering reality will be in the hands of on-the-ground managers. Improved methods to store, retrieve, analyze, and apply data must keep pace with demands made on resource managers.

New Products and Uses of Rangelands

Our quest for new energy sources, environmentally sensible packaging materials, waste depositories, low-input crops and landscape materials, and recreational opportunities suggests a growing demand for rangeland products. Balancing traditional use with future demands will present an even greater challenge. On many public and private rangelands, livestock grazing will be venerated as a tool for ecosystem manipulation and subside as a means of agricultural production.

Deputy Secretary of Agriculture John Norton at the 1985 National Range Conference predicted that ". . . diversification of range uses will be the order of the day by the turn of the century." He cited nontraditional crops, mesquite barbecue, and commercial wildlife ventures as examples of new products and uses. Land owners and managers will continue searching for economic and environmentally balanced alternative uses. The entrepreneurs in research, management, demonstration, development, and marketing will be successful.

Urbanization

A re-emerging issue of the '90s is likely to be that of urbanization. The exponential sprawl of urban areas will probably continue, despite efforts to redirect development into decaying urban centers. The environmental significance of urbanization is highly variable. Development means reduction in forest and farm lands, and loss of open space, which creates problems for hydrologic cycles, waste management, environmental quality and quality of life. Where urbanization occurs in arid regions, water availability becomes a critical issue. As our population becomes increasingly concentrated, more people will look at rangelands as a retreat that can provide solitude and recreation. Fewer will rely on those lands as a source of livelihood. Politics and economics will reflect those circumstances.

Economics of Rangeland Practices

One of the real challenges for rangeland managers falls into the province of range economics. At this point there is no acceptable method of weighing the long-term environmental costs of today's actions against the short-term economic benefits. We simply do not know the costs of environmental degradation or the values of restoration, and discounting does not provide an answer. There is little agreement about how to quantify the value of diffuse recreation on rangelands. We have not even attempted to evaluate the subtle benefits attributable to a more peace-

ful, gentler citizenry.

Problems of economic valuation are not unique to rangeland economists; they are pervasive throughout the agricultural sector. We know the *price* paid for Imperial Valley hay delivered to Vancouver and for Iowa corn trucked to a Dallas feedlot—but we do not know the *cost.* What is the cost of thousands of liters of toxic gases emitted during transport? How much do we really pay for depleting the water table in a major aquifer? These tough questions need to be addressed soon, and agricultural economists should be part of an interdisciplinary team that provides the answers.

Air Quality and Global Warming

Air-quality issues will extend to rangeland areas, too. The near-term implications should be minor, limited to smoke and particulates emitted by prescribed and wild fires near cities. In the longer term, air-quality issues might include animal odors, noises, methane production, pollens, and other pollutants we can only imagine.

Certain aspects of the global-warming and acid-rain controversies will become issues for rangelands. Specific topics like atmospheric emissions and fossil-fuel consumption are sub-issues of rangeland improvement and agricultural transportation problems. One unique aspect of the global-warming issues that will impact grazing-land management and animal agriculture is the Global Re-Leaf effort.

Land-use Conversions

Massive tree-planting campaigns by governments and private interests are converting pasture lands to forests. Large-scale conversions such as the forestry portion in the Conservation Reserve Program (CRP), America the Beautiful, Global Re-Leaf and various State initiatives (e.g., one million trees per year in North Dakota) will transform tens of millions of acres. On a national or global level, land-use conversions should not drastically influence crop and animal production or supply and demand for wood. It is uncertain, however, what effect large-scale conversions might have on local communities in targeted regions like the Southeastern U.S.

Equally uncertain is the impact of 30 million acres of cropland converted to pasture under the CRP. The issues surrounding the CRP debates include expansion of the program, extending its life, and allowing economic use of the contract lands. At least in the short term, many pasture and livestock interests will have to accommodate land-use transformations.

Implications

Future rangeland managers will be responsive to an increasingly complex array of environmental, social and economic concerns under the heading of landscape ecology or conservation biology. No profession is better prepared to meet the future than we. As range professionals, we are unrivaled in our multidisciplinary approach to land management. We take pride in our broad-based training and expertise, and in our commitment to the resource. We recognize the need to grow.

Job security should not be a problem for rangeland managers during the coming decades. But practicing the art and applying the knowledge base for rangeland management will not be enough. We need to expand and strengthen our knowledge base. If rangelands are to satisfy society's needs, we must make holistic use of our knowledge and share it with others. There are innumerable challenges and opportunities for rangeland researchers, managers and educators. Those who have the vision to prepare will meet the challenge.

References

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