Forces Shaping Range Management

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It was my privilege to present the first annual H. Wayne Prichard Lecture to the Soil Conservation Society of America in 1978. At that time I talked about "Resources for Food and Living: Sacrificed by Default." Many of the issues I discussed 9 years ago are still important today. As a matter of fact, I could go back not just 9 years, but 20 or 30 or 40 years and find many of the same concerns expressed by the leading conservationists of the day.

The fact that we are still raising the same issues and concerns should tell us a few things about our society and our profession: (1) our message has no earth-shaking significance to society, or (2) those occasional nods of agreement are from the choir or from laymen in the audience who are dozing, or (3) could it be that the subject is unpalatable?

My assigned topic for today is "Forces Shaping Range Management." Dull, but important! To catch and hold your attention I must not talk about just plain "forces" but earth-shaking, dynamic, maybe scandalous forces shaping range management.

Perhaps we do not have a "Watergate" or an "Irangate", but what about a "Barbed-wire Gate"? Who controls that key access to the resources in the South Forty? Who let the cattle out and the undesirable critters in? Why are *Chrysothamnus nauseosus* and *Salsola pestifer* growing in our *Bouteloua curtipendula* pasture?

In this presentation I will group the forces shaping range management into 3 broad categories and illustrate each category with some current examples.

A. Economic Pressures: *"If your outgo exceeds your income, your upkeep will be your downfall."*

B. Political and Social Expediency: *"If you haven't found out everything there is to know about the soils and vegetation in 10 years of study you have no business spending additional tax dollars on the research or technical assistance programs."*

C. Environmental Concerns: *"If we continue in the direction we are going, we are liable to end up where we are headed."*

A. Economic Forces Shaping Range Management

American agriculture and natural resource industries are in more trouble today than during the great Depression of the Thirties. Ranchers and range managers are caught in the middle of this economic disaster. Unless a positive approach to these problems is designed promptly, we are in danger of further loss of family farms, substantial reduction in agribusiness, and other serious adverse impacts on our rural communities. In addition, a significant tax-payer backlash is developing because of the $26 billion level of farm subsidies.

The major difference between the economic situation today and that of a few decades ago is **the "startling" realization that the United States is a part of a global economy** and we don't know how to cope with this interdependence. Ed Schuh of the World Bank said recently, "Our economy is subjected to international forces beyond the reach of domestic policies."

Of primary concern in the international arena are the world food surplus, high subsidies to farmers in foreign countries—particularly the European Economic Community (EEC), and critical trade barriers in potential markets such as Japan. Agricultural exports to the 30 industrialized countries have definitely slowed. The new opportunities for markets now are in what we call "the other 94 countries"—the low- to middle-income countries. As the per capita income of these LDC's increases, they tend to purchase more U.S. products—accounting for about 40% of our agricultural sales at present.

What does all this concern about the economic plight of our farmers and ranchers, the world food surplus, and our increasing dependence on the global economy mean to range management?

1. It has led to **depressed prices** and limited markets for livestock products.
2. Low income "out on the range" reduces the interest and enrollment in range management, **provides an excuse for Congress** to cut technical assistance to ranchers and generally reduces the career opportunities in range science.
3. On the positive side, this same problem of surplus food has **stimulated a return to a conservation reserve** and provided incentives for the planting of marginal lands back into permanent vegetation. Hopefully, this change will bring "sod-busting" to a standstill! Every few years we must "relearn" the lessons of the Dust-Bowl period about marginal lands, erodible soils, and conservation principles.
4. Depressed agriculture, along with mining, manufacturing, and communication technologies has **produced a flurry of "protectionist" activities.** Over 300 bills have been introduced in Congress this past year to restrict imports. Paul Volker, recently replaced chairman of the Federal Reserve Board, stated his concern for the movement as follows:

> I hope we are fully aware of the risks [in protectionism]. The results would be no better than in the 1930's; then, one protectionist measure bred others, and world trade and economic activity were depressed together. Our effort, instead of retreat, must be directed toward opening other markets, and toward assuring [that] trade can proceed on fair and reciprocal terms.

5. The abundance of crops and livestock products has

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provided an opportunity to promote the other multiple-use values of range lands. Part of this new emphasis is good in that it forces ranchers and public land managers to look at wildlife or other alternative uses of range resources.

6. We now see renewed and more **emotional arguments for the complete elimination of domesticated livestock from all public lands** since, according to the new environmental protectionists, the food is not needed, and livestock grazing is leading to further damage to the resource base. I will attempt to counter this argument later.

7. The last major impact of the depressed agricultural economy and low incomes that I want to mention is both negative and positive. This is the **increased interest in the search for innovative approaches** to cost reduction and new management techniques. It is encouraging to see ranchers become more knowledgeable about the vegetation and more conscious of the need to integrate animal husbandry, range science, and practical economics. However, I join with many of my fellow range ecologists in sounding a note of alarm at the "gullibility" of some producers and range technicians who fall victim to the belief that there is a **miracle grazing system,** a **miracle grass,** or a **miracle range animal** or a combination of all three, that will convert more than 100 percent of the biomass produced on the range to salable animal products. I call this the "SNE Syndrome"—for Supernatural Event. Others have labeled it simply the "S Syndrome" with the pie-shaped fence design as the symbol of progress.

While the jury is still out on these innovations, it is well to remember that many new techniques may not be cost-effective under today's economic conditions. There is a move back toward what is now called "Low-Input" agriculture to keep production costs to a minimum. Also, some research indicates that soil erosion may become a problem with these new intensive stocking systems unless long-term stocking rates are held within reasonable levels. In any case, economic forces will continue to put pressure on the scientific and technical communities to find better ways to increase biomass production, convert a reasonable portion of the photosynthetic energy to man through livestock, and leave an appropriate part of the vegetation to sustain wildlife and other biological populations. Any and all new approaches must place a high priority on soil and water conservation. We owe this consideration to future generations.

B. Political and Social Forces Shaping Range Management

I will illustrate the pressures from the social and political arena with 3 examples:

1. New Mexico State University lost the key portion of the Fort Stanton Experimental Range to the development of a new airport for Ruidoso. The study of vegetation change with 10 years of protection from grazing and over 15 additional years of sophisticated research went down the drain under pressure from development money and politics. No one argued against the fact that Ruidoso needed a new and safer jet-capable airport. However, there were alternatives for the airport location. But, the long-term range ecology studies can never be replaced. **It seems strange that, at a time when we have such a high level of environmental consciousness, society is so willing to sacrifice under political pressure one of the few remaining opportunities to study man's impact over time on a key ecological zone.**

Fort Stanton is not the only large ecological study area under political pressure. A somewhat similar situation has occurred at the Miles City, Montana, Range Experiment Station. Where will the pressure end? How can we counter the shallow philosophy that says, "If you haven't found out everything there is to know about the soils and vegetation in 10 years of study, you have no business spending additional tax dollars on the project"?

2. The second example of political forces shaping range management is in the international arena. For many years range scientists have been trying to get the US Agency for International Development to place a higher priority on resource conservation and sustained livestock production. This effort on our part was almost completely squelched by 1985 when the Administrator of USAID called a few of us to Washington to respond to the following statement.

> *In light of* **the failures over the past fifteen years of interventions designed to manage the rangelands in Sub-Saharan Africa, should AID try to promote development of sustainable extensive livestock production systems in that region?... One alternative raised has been for USAID to desist funding extensive livestock development programs altogether.** (emphasis added)

Needless to say, our panel responded with strong recommendations for USAID to continue funding range/livestock projects in Africa and we made suggestions for changes in the project design. Our recommendations went virtually unheeded. Over the last 5 years **USAID has systematically phased out nearly all range programs in all of the Third World countries.**

My concern about the neglect by USAID of the range/livestock sector and/or resource conservation in general has also been recognized by the ten western universities that constitute the Consortium for International Development (CID). These CID universities are in the planning process to pull together a major conference on "Sustainable Food Production Systems in Arid and Semi-Arid Lands." Dr. Fee Busby is chairing this group. But, we are moving far too slowly!

In the meantime, the major US environmental groups have discovered that a large amount of money is going into international development assistance programs all over the world and they want a piece of the action. A rather strange alliance has been formed between these environmental organizations (such as the Sierra Club, the Audubon Society, and the Natural Resource Defense Council) with the PVO's (Private Volunteer Organizations) to pressure USAID to "line-item" a portion of their development assistance budget for environmental protection. This alliance, working with Congress, has been able to influence USAID more effectively than the university community, the scientific societies, and all of the agencies of USDA.

Speaking for NRDC and on behalf of 4 major environmental groups representing over 5 million members (compare that to the SCSA or SRM), Tom Stoel made a recent appearance before the House Committee on Foreign Affairs stating that these organizations are "... deeply concerned about the

ongoing crisis in Africa, **a crisis due in large part to the deterioration of the natural resource base while human populations grow at unprecedented rates."**

No one could have stated the issue better. But, do we want NRDC to write the natural resource agenda for the Third World countries? Where are the professional range scientists, the foresters, the soil conservationists, and the applied ecologists? Do we want the pendulum to swing too far toward "environmental protection" or can we continue to promote "management" and "wise use" with the basic needs of mankind as a part of the formula?

Responding in part to pressure from the new "alliance" as well as the continued challenge from the universities and scientific societies, USAID has prepared a Sector Strategy paper for Africa under the title, "Plan for Supporting Natural Resources Management in Sub-Saharan Africa." This is a fairly balanced document **except that there is virtually no mention of range management and little recognition of the important role of livestock.** Apparently, USAID is still smarting from the past project reviews which uniformly state that "range/livestock projects have been failures in the developing countries."

Let me summarize this section of my talk with a few of the points which I submitted to USAID as a result of a recent joint meeting with key agency officials, the PVO's, and these environmental organizations:

1. Major attention to natural resources and environmental issues by USAID is long overdue. However, a "balanced" viewpoint is essential. The **only reasonable approach to conservation and the environment is "management" not "protection" per se.** This implies the need for research, education, and public understanding with mankind as an essential element in the formula.

2. There is no doubt that the desperate attempts of many poor people in Sub-Saharan Africa to produce their basic food needs and obtain wood for cooking are leading to resource deterioration. **This problem cannot be corrected at the local level unless the countries strengthen their institutions and re-direct government policy.** This means creating an "incentive to conserve" as well as an "incentive to produce" for the farmer and pastoralist.

3. Conservation programs and environmental protection cost money. In the short-term, production may actually decline under a "sustained" approach to natural resource management. Most countries are not willing to make this sacrifice to control livestock numbers and/or to restrict the cultivation of sub-marginal lands.

4. The somewhat arbitrary separation of "natural resources" from "agriculture" in USAID programs is a mistake. Natural resources (soils, vegetation, water, energy, and climate) are the basis for the production of all food, fiber, forest, and fuel products. There is, however, a need to understand that different conservation treatments are called for on "range and forest" lands and response times are much slower.

5. The important role of livestock and range management is not properly treated in the natural resource documents. The emphasis on "Agro-forestry" and tree planting by the PVO's is great but does not provide an answer to all of the resource deterioration problems in Africa.

6. It is important to recognize that **part of the desertification process is probably due to a long-term geologic trend and will continue regardless of man's activities. At the same-time, mankind is accelerating the process.** It will be expensive to halt or even slow down the process in the low rainfall zones. However, I still believe that, by proper management, man can operate in arid and semiarid lands without contributing to desertification or the further destruction of biological diversity.

7. **If every crop and livestock project under USAID sponsorship had a stated objective relating to conservation or sustained production, pressure from environmental groups would be minimized.**

8. It must be understood that projects with conservation or environmental objectives will require a longer time-frame for evaluation. Can the Agency re-adjust to this requirement for time as well as the possibility of reduced short-termed economic gains?

9. There is still a need to design some projects to study and better understand the nature and perturbations of large ecosystems—particularly those systems which transcend country boundaries. The Agro-Ecological Zone approach is one way to illustrate overlap. However, the important relationships across these zones (from high rainfall to low rainfall areas) is also critical—particularly if you examine the role of water systems and the air environment.

Many of these recommendations made to USAID are also appropriate to the U.S. as we face new economic, social, and political pressures.

I am pleased to say that the World Bank has now launched a new environmental policy. The May 15, 1987, issue of *Science* stated it this way:

> The changes culminate four years of congressional hearings and constant badgering by environmentalists who have long held that many Bank projects have negative effects on the environmentalists who have long held that many Bank projects have negative effects on the environment and on indigenous people...

The article further states that economists and environmentalists do not understand each other's language. How true!

C. Environmental Forces Shaping Range Management

I want to move now to my last point—environmental forces shaping range management. During the frontier period of land settlement in America, and for many years thereafter, the emphasis of research, extension, and government programs was on increased production—food production to meet the needs of an expanding country. However, at some point in American history, poorly defined by time lines, our people became aware that we had reached the Pacific Coast and settled most of the land in between. We began to realize that our land resources were not unlimited and that our policies of "exploitation" were leading to indiscriminate sod-busting of marginal lands, overgrazing by livestock, and general neglect of the valuable resource base. We moved then, gradually at first, into some concepts of conservation—defined as proper and sustained land use.

The shift in American policies from exploitation *per se* to conservation was accelerated by the Dust Bowl disaster of the 1930's. Great "evangelists" for conservation emerged with names such as Hugh H. Bennett, W.C. Lowdermilk, and Gifford Pinchot. These leaders helped establish the Soil Conservation Service, the present organization of the U.S. Forest Service and approaches to both public and private

land management which incorporated the "conservation ethic."

These early concerns about conservation were focused primarily on practices to sustain the "productive" capacity of the environment, i.e., preservation of our important land, water, and vegetation base. The second dimension of the environmental complex, i.e., concerns about the "absorptive" capacity did not come into proper focus until the so-called environmental movement of the 1960's and 70's. During this period and extending into the present time, serious questions have been raised about water and air pollution, major changes in biological populations, and perturbations in ecosystems. The importance of protecting endangered species, reducing chemical pollution, and preventing possible climatic change are now areas of public concern and subjects of research projects.

The next phase of the conservation and environmental movement will be focused on the need to better understand natural and man-influenced ecosystems—systems which operate in the biosphere and geosphere. We know far too little about the hydrologic cycle, energy flow, air pollution, and the potential for man-caused climatic change. Regional and country boundaries are meaningless in terms of the operation of these large and complex ecosystems.

The range profession can justifiably be criticized for not taking a more aggressive stand on environmental issues. While we have been busy studying the basic relationships between vegetation, soils, and animal production, accumulating file cabinets full of information, we have allowed lawyers, nature lovers, and environmental protectionists without any scientific background in ecology to become the experts and the proponents for environmental concerns. We have been talking to ourselves and exchanging ideas about the complicated ecosystems which we are studying and trying to manipulate. In the meantime the more extreme environmentalists are making emotional appeals to Congress and the general public—with good results.

As our scientists move into more sophisticated studies of large ecosystems, the interactions between vegetation and the environment become even more important. **I cannot over-emphasize the necessity to obtain base-line vegetation and soils data in each ecological zone—and to follow up with long-term studies of vegetation change.** Only studies of change through time will provide a solid base for decision-making.

After I retired from the Presidency of NMSU in 1984, I contacted Texas A & M to express a desire to go back to the Texas Range Station near Ozona to re-run the vegetation analysis on the pastures where I started my graduate work in 1950. Texas A & M has assigned a graduate student this year to help with this analysis. Although the analysis is just beginning, a few observations after 37 years of elapsed time will illustrate my point about long-term vegetation studies. Keep in my mind that this study in Texas is in a tobosa-buffalo grass vegetation type with a rainfall average of about 18 inches. I am not stating that these generalizations apply to all range types:

1. The differences in species composition caused by soil or "site" differences are more pronounced than differences caused by grazing treatment.

2. Even though annual vegetation production has varied from year to year due to rainfall, the tobosa sod cover is essentially the same as I measured in 1950 and as measured by Dr. V.L. Cory in 1938 (50 years ago).

3. Overall brush species have increased substantially during the period. But, of special interest is the fact that a mesquite tree which I measured as 1 foot high in 1952 was still 1 foot high 35 years later.

My greatest disappointment, almost amounting to shock, was that most of the range scientists that followed me at Texas A & M have changed the grazing treatments every few years, allowed the fences on enclosures to fall, and even lost some of the plot locations which go back 50 years to 1938. Data that can never be replaced! A casual examination of the new "pie-shaped" research design—after all the old pasture fences have been destroyed—appears to ignore soil diffrences and past grazing treatments. Is this a reflection of the "SNE" or "S" syndrome that I mentioned earlier? Fort Stanton was lost by political pressure. The Texas Range Station is lost to short-term "scientific" efforts seeking an ecological miracle.

Before Texas A & M removes my Ph.D. let me move to my final point. Scientists, environmentalists, and conservationists of all kinds have finally created in society as a whole, an "environmental awareness" that has always been needed. major changes in our approach to resource conservation are urgent. Now the question is, How will we respond?

Will we move toward "protection" *per se* or will we continue to emphasize research, understanding, and "management"? "Wise use" of resources or protection?

Will we move toward more legislation and regulation or can we accomplish most of our objectives with education and evangelism?

Can we design an agricultural program that provides an "incentive to conserve" as well a an "incentive to produce"?

Somehow, we must try to attain a better balance between economic objectives and environmental constraints. **This balance will be attained when we learn how to place proper monetary values on the basic resources in a clean environment, and when we can demonstrate that soil and vegetation degradation will affect the long-term economic returns to society.**