Range Society for Range Management

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SRM Election Results

The Elections Committee composed of Stan Tixier (chairman), Bill Laycock, Thane Johnson, and Floyd Kinsinger met in Denver, December 6, to count election ballots. New officers elected are as follows:

President-Elect (1980)	John "Chip" Merrill
Directors (1980-82)	F.E. "Fee" Busby
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Directors John Artz and John Bohning will leave the Board in February, 1980.

The following members of the Colorado Section served to count ballots: Tom Eaman, Bob Wagoner, Lee Carr, Allan Strobel, Bob Buttery, Dave Wilson, Dave Kathman, Ed Dennis, Dick Antonio, Wendell Hassel, and Don Smith.

Ballots and tally sheets are retained in the Denver office for review. A total of 2,057 ballots were cast or approximately 37 percent of the voting membership.

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The **Society for Range Management**, founded in 1948 as the *American Society of Range Management*, is a nonprofit association incorporated under the laws of the State of Wyoming. It is recognized exempt from Federal income tax, as a scientific and educational organization, under the provisions of Section 501(c)(3) of the Internal Revenue Code, and also is classed as a public foundation as described in Section 509(a)(2) of the Code. The name of the Society was changed in 1971 by amendment of the Articles of Incorporation.

The objectives for which the corporation is established are:

-to develop an understanding of range ecosystems and of the principles applicable to the management of range resources.

-to assist all who work with range resources to keep abreast of new findings and techniques in the science and art of range management.

--to improve the effectiveness of range management to obtain from range resources the products and values necessary for man's welfare;

—to create a public appreciation of the economic and social benefits to be obtained from the range environment; and

-to promote professional development of its members.

Membership in the Society for Range Management is open to anyone engaged in or interested in any aspect of the study, management, or use of rangelands. Please contact the Executive Secretary for details.

Rangelands serves as a forum for the presentation and discussion of facts, ideas, and philosophies pertaining to rangelands and their resources, uses, study, management and practices. Accordingly, all material published herein reflects the individual views of the authors and is not necessarily an official position of the Society. Manuscripts from any source nonmembers as well as members are welcome and will be given every consideration by the editors. **Rangelands** is the nontechnical counterpart of the **Journal of Range Management**; therefore, manuscripts and news items submitted for publication in **Rangelands** should be of a nontechnical nature and germane to the broad field of range management. Editorial comment by an individual is always welcome and subject to acceptance by the editor, will be published as a "Viewpoint."

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COVER: Rangeland on the edge of Silver Lake in southern Oregon. This picture was taken by Robert Hostetter in extremely cold December weather.

State Grasses

Danny Freeman

Perennial grasses are very basic to the well-being and future of the Society for Range Management. For that reason, about two years ago, I thought it would be fun to write a story on the various state and provincial official grasses. This turned out to be a major undertaking because there are so few. There are none in Canada or Mexico. Bob Lodge says the Canadian Provinces have official flowers and beasts but not grasses. Alicia Castillo reports that there are no official grasses in Mexico but says the most important grass in the state of Chihuahua is *Bouteloua gracilis*, commonly called *navajita* in Mexico, and known as blue grama in the United States.

None of the eastern states in the United States have official grasses, and only nine do in the 19 western states. The ten not having official grasses are: Arizona, California, Colorado, Idaho, Kansas, Utah, Oregon, Washington, Alaska, and Hawaii. However, the first six of these are working to get one named. In Arizona the Arizona Section, SRM; state chapter of the Soil Conservation Society of America; and the Arizona Cattle Growers Association have narrowed the field down to sideoats grama and bush muhly. The California Section, SRM, through Pete Sands, chairman, State Grass Committee, is actively seeking legislative action and has a sponsor for a bill making purple needlegrass (*Stipa pulcre*) the State Grass named. A State Grass committee for the Idaho Section, SRM, has been named



Photo by John Speck, University of Wyoming. Closeup of Wyoming wheatgrass.



Photo by Peter Sands, University of California at Davis. *Purple needlegrass.*

with Jens Jensen serving as chairman. That committee is working hard to get an official grass named. It most likely will be Idaho fescue. The Kansas/Oklahoma Section, SRM, through Bob Lippert, and Bob Nicholson, is working to get the Kansas state legislature to name big bluestem (*Andropogon gerardi*) the official grass of Kansas. And the Utah Section has gone into motion to get a State Grass selected.

There is an interesting story in each of the nine states with official grasses. We learn how and why the grasses were chosen, their value and extent in the state, the organizations responsible for getting the grasses named, and when they were officially approved.

Wyoming

Twenty-seven years ago Governor Barrett designated 1952 as *Wyoming Grassland Improvement Year.* During that year the Range Management Department of the University of Wyoming was set up to act as a clearing house for an exchange of ideas throughout the state concerning the best grass to be named as the State Grass of Wyoming.

Wyoming Range Management Series No. 55, issued by the University in February 1953, showed that *Agropyron smithii*, christened Wyoming wheatgrass, had clearly won the decision to become the State Grass. From that time (1952) it has been the State Grass. It is commonly called western wheatgrass in other states, but not in Wyoming.

Esthetically it has a nice symmetry both in the spike and the individual spikelets—it would look good on a coat of arms. It is a pretty, tall, proud-looking grass. Wyoming wheatgrass was chosen as the State Grass because it occurs throughout the state except in areas above 7,500 feet elevation. Alan Beetle says, "It is well adapted to dry, alkaline soils, grows in deep soils and in poor soils, too. Above all it has nutritive value and has raised many a herd of animals and held many acres of good mother earth right in Wyoming where it belongs."

Further information about why and how this grass was named the State Grass of Wyoming can be found on page 9, *Rangeman's News* for October, 1969.

Nebraska

Nebraska was the first state in the United States to have the state legislature name an official grass. Little bluestem was so named in 1969. It was chosen because it occurs naturally in every county in the state. Range surveys show it furnishes more total forage than any other single grass in Nebraska.

The Nebraska Section, SRM, and Nebraska chapters of SCSA sponsored the bill, which was written by Stan W. Matzke and introduced by Maurice A. Kremer and Wayne L. Schreurs. It was the shortest legislative bill ever signed into law in Nebraska. It simply read, "Little bluestem known as *Andropogon scoparius,* is hereby declared the official state grass of Nebraska." Its final reading was on May 1, 1969, and it was signed into law by Governor Norbert T. Tieman.

A writeup on this action is on page 1, *Rangeman's News* for August, 1969. Others who worked to get the bill passed were: Robert W. Eikleberry, D.E. Hutchinson, Arnold Heerwagen, Donald Atkins, Don Cox, and Peter Jensen.

South Dakota

In South Dakota a special SRM committee was set up to get a grass named as the State Grass. Western wheatgrass (*Agropyron smithii*) was designated as the State Grass and the bill, cosponsored by James D. Jelbert and Walter D. Miller, was signed into law by Governor Frank Farrar on Feb. 18, 1970.

Western wheatgrass was chosen because of its adaptability and occurrence on a large number of range sites throughout South Dakota. It produces high quality hay when moisture is adequate and provides year-around grazing for livestock. Among the desirable and abundant grasses, its vigorous rhizomes make it one of the most tolerant to grazing and droughts. Grazing abuse, however, especially in May and June, will decrease its abundance. When growing conditions improve, following drought and/or overgrazing, it may rapidly recolonize areas having less than 15 inches of annual precipitation, but it can temporarily invade areas previously occupied by tall grasses when they are forced out by severe conditions.

A short story about this grass appeared on page 1, *Rangeman's News* for June 1970. It told about how the strong rhizomes and robust seed of South Dakota western wheatgrass will in time move westward and undoubtedly replace the ecotype that had been labeled Wyoming wheatgrass!

And finally, there is a complete writeup of western wheatgrass by Patricia J. Latas and Robert A. Nicholson in the February 1976 issue of *Rangeman's Journal*.

Texas

Sideoats grama (*Bouteloua curtipendula*) was named the State Grass of Texas on April 1, 1971, by Texas Senate Concurrent Resolution No. 31. The Texas Section, SRM, and State Council, SCSA, were cosponsors of the project.

According to Bob J. Ragsdale, this highly palatable mid-grass is found in all parts of Texas except extreme East Texas in the pineywoods vegetation areas. It is a key range grass and desirable as a forage plant for domestic livestock and wildlife. It flowers from June to mid-November and has both a rhizomatous and non-rhizomatous variety.

Oklahoma

A concurrent resolution designating Indiangrass (*Sorghastrum nutans*) as the State Grass of Oklahoma was adopted by the State Senate on January 24, 1972, and two days later by the House of Representatives.

From James B. McCampbell: "Indiangrass is found in all of the 77 counties in the state. A native, perennial, warm-season



Photo by Bob Ragsdale Texas A&M University Sideoats grama.

tallgrass, it is also a decreaser plant on bluestem ranges. It is nutritious, readily eaten by all classes of livestock, and furnishes cover and protection for numerous kinds of wildlife. Generally, it is not used for food by wildlife."

From Ernest C. Snook: "Indiangrass has been in the past, and remains today, one of the most productive, palatable, and important native grasses in Oklahoma. It is also one of the most beautiful grasses in the state. Oklahoma means "Home of the Red Man" and this state has more Indians than any other state. So, it is befitting to have Indiangrass as the State Grass."

New Mexico

Stan Tixier, president of the New Mexico Section, SRM, was the big pusher to get a State Grass named in New Mexico. The effort was spearheaded by the New Mexico Section, with Bill Courier and Bill Fallis out in front. Later, however, other groups came in with their support. Mainly, these were user, conservation, and environmental groups. The New Mexico Cattle Growers played a big role in the process.

Many grasses were considered, but since blue grama was so valuable and so abundant throughout the state it was chosen over the others. It is highly palatable and nutritious to all classes of livestock and big game.

The bill naming this grass (*Bouteloua gracilis*) as the State Grass for New Mexico was signed into law by Governor Bruce King on March 16, 1973.

Montana

In Montana it all started in the spring of 1972 when Joe Zacek, range conservationist for the Soil Conservation Service, gave a talk at the Montana state convention of the Parent-Teacher Association. He mentioned that since Montana was a range state it should have a State Grass. Toni Hagener (Mrs. Louis W.), a participant from Harve, Hill County, and chairman of a community development group called FORUM, was impressed with the idea and took it to her community action group. That group took it from there and gained the support of many organizations, including the Montana Wilderness Society, Montana Rural Areas Development Committee, Montana Stockgrowers, Montana Woolgrowers, and the Montana chapter



Photo by Joseph H. Robertson, University of Nevada at Reno Indian ricegrass

of SCSA. In addition, many individual members of the Society for Range Management worked on this statewide worthwhile project.

Many grasses were considered but bluebunch wheatgrass won out because it occurs state-wide and is one of the most plentiful grasses in the native complex of vegetation. It grows on most soils in the state and is good feed for all classes of livestock and game. It greens up early in the spring and is also good forage in late fall and winter, although it is not very palatable in summer as it tends to get dry and rough then.

The following spring the Montana state legislature passed a bill naming bluebunch wheatgrass (*Agropyron spicatum*) the official State Grass. Governor Tom Judge signed the bill on March 22, 1973.

Nevada

The Nevada Section, SRM, was instrumental in getting an official grass named for the state of Nevada. On April 19, 1977, Governor Mike O'Callagan signed the bill which states: "The grass known as Indian ricegrass (*Oryzopsis hymenoides*) is hereby designated as the official grass of the state of Nevada."

The grass is found growing throughout the state and is considered an important forage species for all classes of livestock and for big and small game animals. In early times the seed of Indian ricegrass was an important source of food for Paiute and Shoshone Indians. They ground the seed into meal for use.

A complete writeup of this grass, by Joseph H. Robertson, appeared in the October 1977 issue of *Rangeman's Journal*.

North Dakota

Western wheatgrass (*Agropyron smithii*) was chosen as the official grass of North Dakota because it is one of the most common and abundant grasses in the state. It is a native, cool-season, sod-forming grass with very strong rhizomes. Its leaves

are stiff, flat when green, rolled when dry, strongly ribbed on the upper surface, and feel rough to the touch.

Western wheatgrass grows from one to four feet tall and roots down to a depth of five feet or more. It yields about four times as much as blue grama in North Dakota; on overflow sites it can produce up to two tons of good quality hay per acre. It is one of the most tolerant of the desirable grasses in the state in reference to grazing pressure and drought.

In the old days before modern trucking and improved grasses, hay from this grass was known as race horse hay. Hundreds of tons of this hay were shipped by rail annually to race horse men in Kentucky. Because it was a strong feed it brought premium prices.

The North Dakota Chapter, SRM, was responsible for getting this grass named the official State Grass. The committee responsible included: Warren Whitman, Clayton Quinnald, William Barker, Kenneth Dohrmann, J.C. Shaver, Dee Galt, and Clair Michels.

The bill was signed into law by Governor Arthur Link on April 22, 1977.

Alaska and Hawaii

Even though there is no effort at this time to have a State Grass named in Alaska and Hawaii I think it appropriate and interesting to mention an important grass in each of these states. According to David Swanson, if a State Grass were named for Alaska, in all probability it would be bluejoint (*Calamagrostis canadensis*). This grass has a long history as a valuable grass in Alaska as it was used for feeding livestock by the Russian settlers as early as 1795 on Kodiak and Unalaska islands. It also provided hay for the horses used during the gold periods in Alaska and Yukon Territory, Canada. It was and still is the most common grass around the state, and its abundance makes it popular.

Bluejoint makes a fair hay for horses but cattle and sheep do not care for it much. Wildlife uses it to a small extent. It is a heavy producer on grassy meadow sites, where it may exceed 6,000 pounds per acre per year of dry herbage. It grows to 7 feet tall sometimes even taller.

Bluejoint has a sentimental value, as it has been used by miners, trappers, reindeer herders, Eskimos, and Indians. Some of these uses have been mattress stuffing, dog bedding, and filling chinks in log cabins. It ranges from 69 north latitude south throughout the state, through Canada, and as far south as New Mexico.

Phyllis Charles reports that one of the more interesting grasses in Hawaii is piligrass (*Heteropogon contortus*), sometimes referred to as twisted beardgrass or tanglehead. It is not known for sure if this grass is native to Hawaii but it has been known there for many years. It was used by early Hawaiians for thatching their houses, and at present it is found in all Hawaiian islands. We know it is a native from Texas to Arizona and it probably is in Hawaii as well.

Piligrass is a branching, erect, shallow-rooted perennial that grows in rather large bunches, 1 to 3 feet tall. The one-sided, often nodding seedheads have conspicuous overlapping scales below and exhibit stout brown tangled bristles 2 to 4 inches long.

Piligrass is a palatable forage when young and in dry areas where feed is not usually abundant. Cattle will also graze it when it is old and dry. However, because of its shallow root system it is easily pulled up by grazing animals.

The Way It Was

Hershel M. Bell

Editor's Note: This article is a tribute to the early rangemen—those who were in the business 40-50 years ago. The author is commended for writing it for present rangemen and women to read so they may understand the history, evolution, and progress of range management.

RANGE MANAGEMENT, with its history of developmental events, is no less than a phenomenon of distinction. The past half century may well be designated as the time period for this historically significant development. This is not to say the precepts of the profession have reached their final form, but they are far removed from those early vintage innovations that are worthy of preservation. Suffice to say, there is nothing to be gained in reiterating even the identity of those early devices, but to forsake them would be a tragic blunder.

This historical review is not an attempt to justify any development that was brought into being, nor to discredit the highly specialized, scientifically supported techniques now in common usage in the profession. It is, however, fair to say the earlier techniques and procedures, along with program development and rancher participation, did identify the needs and pave the way for the highly developed field of Range Science of today.

Paramount to the discussion of this subject is the recognition of those early patriots whose tireless efforts were scarcely known until programs came into being requiring treatment and management of all lands, with rangeland often being the dominant sector. Particular renown goes to those people of the United States Forest Service who were earlier relegated to the grazing resources of Forest Reserve lands (now National Forests). A commendable job they did and the fruits of that work will live forever, firmly embedded on the rangelands of the country.

With the advent of various Agricultural Programs, involving land use and treatment, rangelands eventually came in for recognition as to their importance to the welfare of the country. At first, the vastness of the responsibility seemed overwhelming, especially in those areas where precedent had not already been established as to needed evaluation and management.

It had been clearly established that rangeland was confined to the seventeen western states, a belief long since dispelled. Likewise, regulated use of those lands along with investigations and research was confined to established areas and projects on public lands, primarily under the leadership of the U.S. Forest Service. This left much of the remaining rangeland little advanced from the open range era of ranching.

WITH THE ADVENT IN THE 1930's of such programs as Land Utilization, Agricultural Adjustment Administration, and the Soil Erosion Service, rangeland was due its share of consideration of whatever was to be the reward. These programs were later realigned, with Land Utilization being incorporated with other agencies and becoming nonexistent. The AAA programs became Agriculture Stabilization and Conservation (ASC), while the Soil Erosion Service became the Soil Conservation Service.

Of first concern to the overall program for rangelands was the working with private landowners. Thus far rangeland programs had been applied primarily to public lands. Not only was the private land concept a new experience for those responsible but an entirely new innovation to the rancher owning and operating his ranch. This was especially true of the operation where both private and public lands were involved on the same ranch.

New in the concept of a wide-spread program of conservation treatment and management for rangeland was the significance of mechanical devices. As a result, such devices in use on cultivated land were clouding the minds of many in responsible positions. Naturally, early attempts at adjustments to and applicability of these mechanical practices began to appear over the country, but limitations and feasibility of their use were soon to be known.

It was the leadership of those early stalwart compatriots of Ecology, Botany, and the more contemporary field of Range Science that paved the way for the real crux to the situation. It was the simple but diligent use of the vegetative resource of the land that could well be the bulwark of preservation.

The immensity of the job at hand began to become comprehensible through the efforts of those who had already pioneered the field. Perhaps of first importance were the procedures already established by the Forest Service in identifying integral parts of a range as tangible segments of an area that could be reckoned with in a workable manner. This, of course, came about through the development of range survey procedures procedures that had been developed, tested and put to use on vast areas of public lands. In addition, progress had already been made within some of the newer programs, some to a very significant degree. Surveys on Indian Reservation lands was an example of merit.

THE YEAR OF 1935 MAY WELL BE DESIGNATED as the time of great expansion in the field of rangeland treatment. It was then that states other than those with public land status became involved. Likewise, it was the time when the need for

The author graduated from New Mexico State University in 1927 and taught agronomy, soils, and range management at Texas Tech University until he joined the Soil Conservation Service in 1935. While with the SCS, until his retirement in 1967, he worked in the field of range management. Since retirement he has written a book, *Rangeland Management for Livestock Production*, and is working on another, a biographical history of his father, who was in the ranching business all his life.

Author's Note: The grid system of mapping vegetation as described in this article was originated and perfected by the Forest Service in the 1920's and early 1930's. However, in 1935 aerial photographs came into being and their use gradually replaced the grid system for mapping range vegetation.

qualified people became a problem. To be sure, there had been the normal flow of college graduates in the field of Range Management, but that was not enough to fill all needs of the greatly expanded program on rangeland.

It became necessary to recruit people from various fields of academic training, preferably those with some basic training in plant science. Training programs were initiated where there was urgent need for venturing into the consideration of rangeland treatment. At the outset, this was primarily in connection with newly initiated programs such as the Water Facilities Act of the early 1940's.

Range Surveys was the point of initiation in these training programs. In fact, surveys were stressed to the point they constituted the greater part of the range program. As a result, usually very little attention was given any phase of range use and management. This is not to say this was all bad. If nothing else, it provided a means for the individual to get the range resource broken down into segments that could be seen, analyzed, and inventoried. Without such a procedure, there was no logical beginning point for the proper consideration of rangeland. Furthermore, without the degree of detail, the soundness of the survey data, and the results of the compilations, it is questionable that any concrete and usable results could have emerged from the survey. Nor would there have been identified those all-important facts that led to more precise and simplified procedures of range inventories.

The preciseness of the survey was baffling to the untrained individual, including the administrators responsible for initiating a training program. This fact can best be verified by a brief description of the procedure to be followed. First, reasonably accurate boundaries of the range to be surveyed or mapped were necessary. The survey would be made by the grid method, whereby distances between lines to be traversed would be pre-determined. It was necessary to establish the grid and proceed along that line with only very slight variances permitted. To insure this accuracy, use was made of the "jacob staff," a single pointed shaft of near eye level, and with a simple telescope mounted on the top end. The grid line was maintained by an accurate reference to the angle of deviation from the true grid that might occur. Since in at least some instances this technique was an infringement into the field of engineering, engineers were assigned to help on the training program.

A S TO THE RANGE INVENTORY, the plane table was necessary as a mount for the map and a work table. At the outset, this necessitated use of a tripod, which ultimately was discarded in the interest of lightening the load transported by the surveyor making the survey. As the grid was traversed, recorded information was by vegetative types and sub-types, with a separate write-up or fact sheet for each separation. At any point where the vegetation changed enough to identify a distinctly different composition as to kinds and amounts of plants, a line of demarcation was placed on the map; such a line was extended in either direction as far as such change could be ascertained. It was the connection of these lines of demarcation as each grid was traversed that ultimately completed the vegetative map of the range.

Within each delineation of homogeneous vegetative characteristics, a listing of the kinds and amounts of each different plant noted was recorded on a prescribed form. This recording included the scientific name according to approved symbols; for example, *Bcu* meant *Bouteloua curtipendula* (sideoats grama). The density as measured or estimated by eye as to percent of the ground covered by plants was recorded. This estimation was fortified by the use of the ever-present twelve-inch square grid, carried along as a guide and check for this technique. By the time the entire range area had been thusly traversed, all type and sub-type lines connected, along with physical features encountered such as water locations, buildings, fences, etc., the physical inventory had been recorded and was ready for an analytical diagnosis of the range.

It SHOULD BE NOTED this inventory merely recorded the vegetation encountered along the traverse of each established grid line. No recording was made as to the kind and condition of the soil or the condition of the vegetation. Perhaps the greatest deficiency was the failure to recognize invading plants, other than possibly the identity of poisonous plants if known to have come into the area from a distant source.

From the data collected, each species encountered was dealt with individually as to the extent of determining its relative abundance in the total composition. Then as a further refinement of the inventory, each species was given by prior investigations a palatability rating based on several factors, but primarily as to how well stock would graze it in comparison with all other species in the composition. These ratings were not necessarily related to their degree of use in varying percentages in the composition, in spite of the fact that a plant with low palatability may become quite palatable if there is nothing else for the animal to graze.

From these data—density, plants, and palatability—a forageacre value was established for the range. Then came the longsought determination—the carrying capacity of the range. For a given type of country, representative of the range being surveyed, there had been determined previously a forage-acre requirement for that type of range. This figure had been arrived at by the selection of similar type range that had been treated and used in a manner that had resulted in a high type range, and for which the operator of that range had reasonably good stocking rate figures. A survey of that range, related directly to the known stocking rate, would give a reasonably reliable forage acre requirement figure for that type range—thus, a figure to be used for stocking rate determinations for any survey on that type range.

It should be noted little or no consideration was given to the productivity of the range surveyed. Likewise, other than to the presence of noxious plants, was there any consideration given invading plants. The matter of seasonal palatability was of little concern. The assumption was that the grazing animal would make the choice as it grazed the range. Although the changes of vegetation from one type to another did identify differences in range productivity and thus range sites, there was no conscious indication that this was of extreme importance to the survey. Neither was there gleaned from the survey any hint of range management practices other than the determined stocking rate.

Needless to say, this type survey was not the most satisfying experience one could have. It can be said, however, that perhaps there has never been a more significant era of personnel development than when this procedure was being learned. It certainly taught the surveyors to identify plants. Of first importance, not only did the surveyor have to look at the range, but he had to see what he was looking at. Besides, he learned the relationship of species on a range, and the characteristics of range trends. At no time before or since have more groups of people learned vegetation and the significance of it than when these groups were involved in the making of the surveys.

As agricultural programs expanded, the element of time in making range surveys became important. At the same time the value of the survey to the rancher became an important consideration. Was the survey for the land operator or merely a record for the agency? This question was asked many times. These points became increasingly important, particularly in the working with operators of privately owned and managed lands. Very quickly in this undertaking, it became quite evident that in regard to range surveys the undivided attention of the rancher could not be maintained for a very long period of time, certainly not long enough for him to grasp either the procedures for making the survey or the end results derived from it. This led to a lack of interest, and in time a lack of participation in any such program.

TO IMPROVE THE RESULTING RELATIONSHIP with those all-important individuals, much thought and effort began to be fed into the range survey procedures. As additional innovations began to surface, there was an immediate sense of frustration felt among the range men themselves, as well as developing concern in the interest of efficiency among the administrators. It became increasingly evident there had to be a bond of understanding between the gatherers and presenters of scientific information and the individual who was to use it in a practical ranching operation. This fact is no less true today even with the availability of vast amounts of highly specialized information concerning the range.

Procedures and techniques for rangeland treatment and management have evolved into what may well be considered a part of everyday range management principles. Ranchers have come to recognize range inventory findings as basic to the day-to-day management of both their range and livestock. But perhaps the greatest importance has been the development of range management practices that are related directly to findings of the inventory, and are, in fact, applied and adjusted throughout the grazing period according to the scientific reaction of the grazing resource.

This can be attributed to greatly improved procedures for gathering range information, and—even more importantly—the methods and techniques of presenting that information. Besides, ranchers themselves have become more conversant with scientific and sophisticated principles of range management. In summation we can say that range surveys through evolution and improvement have been a means of bringing the ranching and range manager closer to the objective of better range management. The future looks bright.

Places to Go

A "Call for Papers" announcement will be forthcoming for **SEVENTH NORTH AMERICAN PRAIRIE CONFERNCE**, which will be held *August 4–6, 1980,* in Springfield, Missouri, at the Southwest Missouri State University.

Concurrent sessions will include subjects on prairie management, ecology, preservation, floristics, and faunistics, landscaping with prairie plants, and survey and classification. THIS IS SRM'S CHANCE TO SHOW OUR STUFF! Enter your papers on practical management systems for the prairies.

Deadline for papers will be *March 1, 1980*. For specific information, get on the mailing list by contacting:

Dr. Paul Redfern Seventh North American Prairie Conference Department of Life Sciences SMSU Springfield, MO 65802

Co-sponsors of this Conference will be: Southern Section, Society for Range Management, Missouri Prairie Foundation, and Southwest Missouri State University.

The **FOURTH INTERNATIONAL SYMPOSIUM ON LIVESTOCK WASTES** will be held in Amarillo, Texas on April 15–17, 1980. The Symposium, sponsored by the American Society of Agricultural Engineers along with 27 cooperating organizations, will be held at the Amarillo Civic Center.

An estimated 600 participants from the United States and 30 foreign countries will be in attendance. Technical sessions will cover such topics as converting wastes to energy, using manures for fertilizer, control of odor from animal wastes, systems for collection, storage, and utilization, and legal considerations.

An equipment exhibit is planned to acquaint participants with new equipment to handle and treat livestock waste problems.

Tours of area livestock enterprises will be available before and after the Symposium.

Registration information will be available in late January from the American Society of Agricultural Engineers, Dept. ISLW, P.O. Box 410, St. Joseph, Michigan 49085.

To encourage the production of high quality wildlife films, the University of Montana Student Chapter of The Wildlife Society, *Feb. 25-Mar. 2. will host the* **THIRD ANNUAL INTERNATIONAL WILDLIFE FILM FESTIVAL.** Amateur and professional films pertaining to wildlife will be judged by a panel of highly qualified film makers and biologists. Winning entries will receive awards, and the results will be internationally publicized.

The deadline for submission of applications and films is February 1, 1980. All entries must have a predominantly wildlife theme and have been produced or released in calendar year 1979. Judging will be held prior to the Festival, and the winning films will be shown during the week of the Festival at the University of Montana.

Information, rules of eligibility, and application forms will be available after October 1 by writing:

Wildlife Film Festival Wildlife Biology Program University of Montana Missoula, Montana 59812 (406) 243-5272

A symposium on **ADEQUATE RECLAMATION OF MINED LAND?** is scheduled for March 26 and 27 in Billings, Montana, at the Ramanda Inn. It is sponsored by the Soil Conservation Society of American and Western Agricultural Experiment Station Land Rehabilitation Committee. For registration write to *Chris Cull*, *Western Energy Co., Colstrip, Montana 59323.*

Opportunities to Improve Rangelands

Joseph L. Schuster

According to recent reports nearly three-quarters of the rangeland of the U.S. is in fair or poor range condition; that is, it is producing less than 60% of its potential forage. The implication is that productivity of our rangelands is declining. But increases in population, economic activities, and income have boosted the demand for nearly all resources from our nation's rangelands. Any accompanying decline in the rangeland area intensifies the pressure even more. We cannot cope with this pressure without making significant changes in management. Positive action must be taken now if we are to satisfy potential demands for range products without damage to the land and environment.

My observations are biased by my experience as a range conservationist for the Soil Conservation Service in West Texas during the drought of the 1950's, but I feel that our ranges are in better condition now than when the conservation movement began. Credit for the improved range conditon should be given first to the ranchers who apply the technology and the finances to conserve our land resources. However, it must also be attributed in large part to the agency personnel who made the appropriate technology available to the private land manager or applied it to public lands. But it is the rancher who makes the management decisions and reaps the rewards or bears the failures.

Despite some reports to the contrary, public rangelands have also improved. This improvement would probably have been greater except for political pressure from special-interest groups. The resultant well-meaning but unrealistic regulations that restrict professional judgement of land managers have imposed excessive administrative constraints. If agency personnel could dispense with unnecessary activities such as OSHA reports and environmental impact statements, they could get on with the more important task of effective land resource management. Somehow we must let well-qualified agency people get back to the task of managing public lands without edicts and pressure from a well-meaning public who is not technically capable of sound natural resource management.

Ranchers are also subject to the impact of political maneuvering and excessive regulation. The rancher is not only a true ecologist but puts his money and dedicates his life to producing food, fiber, and amenities for the rest of the nation. How can the public justify any action to deny them such tools as 2,4,5-T for brush control and 1080 for coyote control when ultimately the public will suffer from higher meat prices and reduced range productivity?

The 1976 assessment by the Forest Service showed that demands for range products will increase above the levels that can be supplied with present management programs and existing facilities. About 1.1 billion acres or 54% of the land area of the U.S. is rangeland or noncommercial forest useable as range. About 70% of this range is under private and nonfederal ownership. The land under private ownership is generally the most productive land. Therefore, efforts to increase range productivity should concentrate on the private land sector,

especially since legal constraints and policy presently preclude most opportunities for maximizing livestock production on federal lands. This approach is in concert with our freeenterprise system, which has made our country the great nation it is. Given the proper incentives, our producers can and will apply the technology and effort to improve their land and produce the goods and services desired by the public without detriment to our environment.

Federal Agency Opportunities

There is ample opportunity for agencies of the Departments of Agriculture and Interior to properly manage lands for which they are responsible, and to provide technology and incentives to private land owners. Their progress on public land depends upon investments in good management, research, and physical facilities. Their role with private lands is to set a good example and to help people help themselves.

Resource Inventory and Monitoring

The first step in placing public and private range management on sound footing is an assessment of the potential productivity, current condition, and trend. A national assessment such as required by the Resources Planning Act of 1974 (RPA) and the Resources Conservation Act of 1978 (RCA) would be the basis for comparison and serve as a basis for policy recommendations for future management direction.

The importance of a soil survey as the basis for a land inventory cannot be over-emphasized. Land is the basic resource and must be accurately assessed and classified so that land use and treatment can be based on land capability. The Soil Conservation Service has a land capability classification system and a range site classification system related to soil taxonomy. This system permits identification of land management problems, recommendation of conservation alternatives, determination of best use, and sound assessment of the potential for various uses of land. The current RPA assessment should make use of this system.

Additionally, monitoring systems should be developed which incorporate new and developing technologies such as remote sensing. Such new technology should allow improved soil surveys, range ecosystem delineation conditon and trend surveys, and monitoring of other natural resource systems.

Education of Public and Producer

Developing range livestock resources through public education may be the most effective community resource development tool available in many rural areas of the western states. It certainly presents opportunities for improving range conditions by teaching current technology. Many sound technologies are not being utilized to their potential to improve rangeland productivity. They are locked up in files, books, reports, and technicians. A more effective program of extending this technology should be devised. The existing USDA land-grant system probably has been the most effective system yet devised, but efforts toward extending range knowledge should receive more attention.

Increasing result demonstration efforts should also be considered to seek new, innovtive ways to intensify educational

The author is a professor in the Range Science Department, Texas A&M University, College Station.

This article is based on a paper presented at a Symposium "Rangeland Policies for the Future," sponsored by USDA and the President's Council on Environmental Quality, Tucson, Arizona. January 28-31, 1979.

effort about range. Result demonstrations are exceptionally effective for promoting application of latest technology and provide large-scale tests for new research. A concentrated effort to identify, document, and publicize examples of successful application of range improvement practices will accelerate their acceptance by producers.

Technical Assistance

Although the technical assistance provided by Federal agencies has resulted in significant progress in the adoption of range management practices, there are many opportunities to increase such technical assistance. More emphasis should be given total range management planning assistance. The systems approach, an integrated approach to planning and management, should be utilized more fully.

The number of well-trained range technicians who furnish direct assistance to land managers should be increased. Although additional innovative techniques of presenting technical assistance would improve their acceptance, the transfer of range management information to land owners can be accelerated by increasing the competency level of the range technician. This can be accomplished by employing highly qualified range professionals and emphasizing continuing education. Current Civil Service standards for range conservationists are too lax. The result is employment of individuals with minimum training in sound range management technology, and worst of all, little motivation. Agency administrators should demand improvement of this situation.

Federal agency assignments and responsibilities in range matters need to be more clearly defined. The value of range should be stressed, especially on forested ranges where other uses have received priority. The multiple-use concept must be practiced rather than being a "paper or lip service" action. Funds and range-trained personnel must be made available to agencies so that land owners can be assured of sound technical assistance.

Improved Financing

Financing is a primary limiting factor to implementation of range improvements. High interest rates and the lack of intermediate-type loans, which match repayments to the schedule of returns expected, prevent ranchers from applying many improvement practices. Consideration should be given to federal participation in offering of guarantees and lower interest rates on longer-term loans with built-in flexible repayment plans.

Incentives

Technical assistance cannot be fully utilized when financing and low economic returns discourage short-term investments in conservation and production practices. Our cost-share programs should be encouraged because they allow implementation of range management practices that cannot be installed otherwise. I recognize the proliferation of cost-sharing practices and the controversy that exists concerning conservation versus production practices. However, most rangeland has a relatively low capacity to absorb inputs profitably, and the rancher cannot always justify conservation practices without obtaining returns on his investment. We must, as a society, be willing to invest in the future with cost-share programs which will assure conservation of our range resources. Returns to society will be reflected in increased rancher and community stability. Generally, the longterm agreements through the Great Plains Conservation Program have been most successful. This program should be extended and examined for opportunities to offer incentives for both conservation and ecological improvement practices.

The requirements concerning best management practices

(BMP's) called for by the Section 208 planning program of the Water Pollution Control Act Amendments should be examined for opportunities to incorporate ecological range improvement with water pollution control practices. Cost-share incentives may be necessary to motivate ranchers to utilize the best management practice. Application of the proper set of best management practices will not only conserve our soil and water, but increase range productivity. Implementing BMP's to forestall erosion, to safeguard water quality, and to meet the goals of PL 92-500 is a critical challenge facing our nation today and has great potential for improving rangeland productivity.

Research Opportunities

In 1977 a national planning committee of the Agricultural Research Policy Advisory Committee found that in the 8-year interval from 1967 to 1975, the emphasis devoted to range and forage research declined from 674 to 639 scientific man years. and that there has been a substantial decline in the Research Problem areas that have a direct input to improving range and forage resources. If our nation's ranges are to reach their potential, there is an urgent need to initiate a coordinated. nationwide research program in range management. This will require strengthening of the Land Grant-Cooperative State Research Service system. The current trend of competitive funding through extramural or competitive grants must not replace, but should add to, the Cooperative State Research Service-Agricultural Research program. Range research in the Agricultural Experiment Stations backed by state dollars, federal dollars, and grants is the best approach to securing long-term improvement of our range resources. A competitive grant system will help, but this program should not be allowed to detract from the pragmatic research program of the State-Federal Experiment Station system.

The need for regulatory and definitive research should not displace management-oriented research. We need new innovative efforts (both basic and applied) in management and biological research applicable to range. Most past research has focused on component parts of the ecosystem, primarily investigation of factors which affect proper stocking and development of range improvement practices as separate entities. Future research will require greater emphasis on an interdisciplinary approach within the system's framework." The realization by range professionals and laymen alike that range management includes resource management for all products and uses such as livestock and wildlife grazing, recreation, and watershed is long overdue. The challenge is to integrate range research efforts with that of other disciplines and to place it in perspective for society.

Management Opportunities

Intensive management with application of the latest research technology is essential for improving productivity of our ranges. More intensive management requires more competent management expertise. Agencies must strive to obtain better trained personnel and to provide their personnel with continuing education while providing technical assistance, education, incentives, and better financing to producers. Education and technical assistance should include statistical and decisionmaking assistance whereby each range use is integrated with all other uses within an ecologic and economic framework. Given the economic incentive and the management tools necessary, the rancher will improve the productivity of his rangeland and provide society a ready supply of its products while protecting the environment.

Seasonal Versus Continuous Grazing on Annual Vegetation of Northern California

Harold F. Heady and Michael D. Pitt

Jared Smith, writing for the 1895 USDA Yearbook of Agriculture, was the first to suggest seasonal grazing plans on rangeland. He advocated rotational grazing as one means of improving range conditions in the Southern Great Plains. The rationale for such seasonal grazing was that many world grasslands evolved under intermittent grazing pressure from migrating herbivores. Animals such as bison in North America and wildebeest in East Africa, used a given range during a short period, perhaps overused it, then moved to a new range in a pattern that more or less repeated itself yearly. Migrations became fixed in the behavior of many animal species, which subsequently exerted seasonal grazing pressures to which vegetation became adapted through natural selection. Seasonal grazing plans developed as range managers attempted to fit domestic animal species into naturally evolved plant and animal communities. The belief was that range productivity could be increased and damage decreased if grazing patterns were as near as possible to those under which the vegetation evolved.

Almost no information is available on the effect of seasonal grazing use on annual vegetation in California when other factors such as stocking rate and improvement factors are held constant. Nonetheless, a commonly heard suggestion is to concentrate grazing animals in the early spring to discourage the undesirable annuals and to encourage the more desirable species. Therefore, a study was conducted at the Hopland Field Station in Mendocino County, California, which is located in the central portion of the northcoast mountain ranges, to test the relative effects of continuous versus repeated seasonal grazing.

Beginning in the 1965-1966 grazing season, 3 pastures, enclosing approximately 15 acres (6 ha) each, were grazed by sheep on a seasonal basis during the months of March, April, and May, respectively. Seasonal grazing in the pastures was repeated during the same month in all 3 years of the study, which terminated in 1968. Gates between the pastures were opened on the first of June each year to permit free animal access to all the pastures from the beginning of the dry period until March 1. During the same spring period of rapid plant growth, March – May, another pasture encompassing approximately 37 acres (15 ha), was grazed continuously from March throughout the dry summer months. Stocking rates in each of these grazing trials had been previously adjusted to equalize (1) lamb weights at 120 days of age, and (2) equal ewe weight loss at the end of the dry period.

Results

Continuous and repeated seasonal grazing produced similar patterns in foliage cover, standing crop, and botanical composition measured in ungrazed vegetation at the end of each growing



Pasture S-6, grazed heavily in April, has the appearance of ungrazed grassland in June, when this photo was taken.

season. June cover in those pastures grazed on a repeated seasonal basis showed the same yearly differences as cover in the pasture grazed continuously. Total standing crop in June also responded similarly to both kinds of grazing treatments over the 3-year period.

Similar trends in cover and standing crop for continuous and repeated seasonal grazing reflected similar botanical composition among all pastures, regardless of grazing treatment. The relative proportions of desirable annual plants such as soft chess (*Bromus mollis*), wild oats (*Avena barbata*), filaree (*Erodium* spp.), and clovers (*Trifolium* spp.) were remarkably alike under both grazing treatments. The same results of similar botanical composition also occurred for undesirable annual plants such as silver hairgrass (*Aira caryophyllea*), ripgut (*Bromus rigidus*), and goldfields (*Baeria chrysostoma*).

Although temporary seasonal differences in botanical composition, standing crop, and cover may have existed among the 3 pastures grazed during March, April, and May, the significant overall conclusion demonstrated by this study is that an annual grassland, divided into 3 pastures grazed seasonally, responded identically to an undivided annual grassland grazed continuously. Moreover, ewe performance and lamb weaning weights in the pasture with yearlong-continuous grazing were consistently better than animal performance in the pastures grazed on a seasonal basis.

Similar conclusions were also reached at the Hopland Field Station from studies investigating the impact of different grazing intensities on annual vegetation. Four pastures grazed at

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Ungrazed standing crop and foliage cover in June of 3 years. Pastures were grazed during the same 1-month period each growing season or continuously.

moderate, 1½, 2, and 2½ times the moderate stocking rate all exhibited identical trends in cover and botanical composition, regardless of grazing intensity. Only the pasture grazed at the heaviest stocking rate displayed any reduction in productivity during the study, and even this decline disappeared soon after normal stocking rates were resumed.

Changes in productivity and botanical composition of annual vegetation are determined primarily by annual weather patterns. These patterns, particularly total precipitation, caused the similar trends in cover and standing crop for both the continuous and repeated seasonal grazing treatments. The absolute differences in standing crop between the units grazed continuously and seasonally reflected natural pasture differences, and were not produced by the grazing treatments. Although seasonal grazing systems can produce rapid changes in forage production, this change persists only so long as the grazing treatments continue. Since there is a new generation of annual plants from seed each year, no possibility exists for plants to develop vigor that carries over from one year to the next. Moreover, within the annual type, the desirable and undesirable species mature throughout the spring season, and grazing to reduce one plant group while favoring another is difficult on a permanent basis. This fact, combined with better animal productivity under continuous grazing, suggests that repeated seasonal grazing systems in California annual grasslands may not provide enough benefits to warrant the time and expense required to establish and maintain these grazing systems.

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Range Technology Must Be Extended

Bob J. Ragsdale

"What a man hears, he may doubt; what he sees, he may also doubt; but what he does, he cannot doubt..." This is the philosophy of Dr. Seaman A. Knapp, who pioneered an informal education method of teaching farmers and ranchers. This paper considers the application of Dr. Knapp's philosophy to current range technology.

Much research has been conducted in the field of range and rangeland problems. A continuing and expanding interest in rangeland around the world dictates that research will remain in existence and, hopefully, be increased. New scientific information and technology has been developed and more will be forthcoming. How will this new information and technology be used? It could be placed in file cabinets, hidden away in research publications, or it could collect dust in libraries. Range users and managers must use it; but first, there must be an operative vehicle to get it into their hands.

There is a method of informal education which can get new technology into the hands of the private land owners and get it adopted by them. It is a program which is conducted by a state Extension Service cooperatively with the United States Department of Agriculture, a land grant university, and the lay people who apply the information to their local needs. The mechanics of the program discussed hereafter will be of the Texas Agricultural Extension Service. Program results from Sutton County, Texas, will be used to illustrate the adoption and practical application of new information and technology.

First, let us take a brief look at the organization of the Texas Agricultural Extension Service. The Texas Agricultural Extension Service is a part of Texas A&M University System, the land grant university in Texas, and of the Science and Education Administration of the United States Department of Agriculture. County Extension workers are located in most of the 254 counties in Texas. Eight specialists are responsible for range science: three serve the entire state while five have responsibilities for specific geographic areas. The basic individual is the county Extension representative who works with the people in delineating problems, developing educational programs, and implementing these programs to solve local problems. The specialist staff, available at area and state levels to support and service the county programs, may also determine problem areas and convey the need for more intensive studies to the researchers of the Texas Agricultural Experiment Station. In addition to the county workers and area or state specialists, supervisory, service, and administrative units are also present. Extension education is a part of all levels of governmentcounty, state and federal-and receives funding from all three.

Extension programs developed for all citizens—adult and youth—are directed primarily to agriculture and home economics, but include related areas. These educational programs are based on the problems as perceived by the laymen. They are long-range in nature, but specific goals are established and

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Editor's Note: This article is based on a paper the author presented at the First International Rangeland Congress at Denver, Colorado in August 1978.

worked on each year. These lay people are selected and organized into groups to study major agricultural commodity needs as well as other problem areas dictated by the county situation. Range programs may be handled by a Range Committee, but also they may come under natural resources, forage, livestock, or wildlife committees. Smaller over-all committees exist to coordinate the activities of the commodity and special interest areas. Together, these committees form the county program building effort at the "grass roots" level.

Many teaching methods are included in Extension educational programs. Some of these are:

a) Media releases through newspapers, radio, and television to reach large audiences;

b) Individual contacts by telephone, letter, and personal versations to reach key individuals

c) Tours and field days to observe research and demonstration results, as well as show techniques and practices;

d) Publications to provide written subject matter information; and

e) Demonstrations, result and method, to teach new technology and methods.

The demonstration is the basic and key Extension method of teaching.

The effectiveness of a sound Extension program was illustrated in Sutton County in Southwest Texas, which is primarily rangeland. The area, like much of Texas, has experienced a steady increase of certain noxious plants, both woody and herbaceous, over the past 75 years. It is a county where the range forage supports cattle, sheep, goats and white-tailed deer on the same land. Extension programs have been utilized for many years with strong emphasis on range management, livestock production, deer management, and wool and mohair improvement. A unit of the Texas Agricultural Experiment Station which conducts range research is located in the county.

Key members of the Range Committee of Sutton County are ranchers, most of whom serve as directors of the local soil and water conservation district, the Soil Conservation Service personnel, and the director of the Texas Agricultural Experiment Station unit. Some of the rancher-members also serve as demonstration cooperators.

With the advent of the herbicide 2,4,5-T in the late 1940's, the development of a recommendation for its use to control brush, primarily mesquite (*Prosopis glandulosa* Torr.), and the resulting education programs, this method of controlling brush was adopted and used by ranchers in Sutton County. When the herbicide mixture picloram and 2,4,5-T became available, and research indicated it was more effective than 2,4,5-T alone, the Sutton County Range Committee wanted the ranchers to change to this material to speed up range improvement, the overriding goal of woody plant control. Specialist assistance was requested by the Committee to provide guidance in planning and

conducting result demonstrations to show the effectiveness of the new herbicide mixture of picloram and 2,4,5-T.

Demonstrations planned and conducted involved certain respected, innovative, and progressive ranchers who were willing to try the new herbicide mixture. Applications using 2,4,5-T alone compared to the herbicide mixture were made at a number of strategic locations in the county. Extension Range Specialists and Soil Conservation Service personnel were utilized to assist in the evaluation of the demonstrations. The results were disseminated to other ranchers through a County Demonstration Handbook and at publicly conducted field days. The end result of this Extension-sponsored demonstration was a near 100% shift to the new material, and an increase in livestock production from the treated acreage, and no harmful effects to wildlife or wildlife habitat, which further illustrates the benefits of extending new technology.

Bitterweed (*Hymenoxys odorata* DC), an herbaceous plant, causes death losses in sheep most years; losses may run as high as 15-20% of the flock. Research has shown that deferred-rotation grazing, as well as combination stocking, can reduce death losses. Research has also shown that 2,4-D is effective in controlling bitterweed under certain conditions. Latest research investigations indicate that a cool-season application of this herbicide shows promise for controlling the plant. The Range Committee followed the previously mentioned procedure and,

with specialist assistance, designed a demonstration to show the value of controlling bitterweed using 2,4-D with a deferred grazing program. The rancher-cooperator deferred a pasture during the warm growing season and treated it with 2,4-D in early winter. When evidence of bitterweed toxicity was noticed, sheep were concentrated in the demonstration pasture. Bitterweed was not completely controlled, but the amount consumed by each sheep was drastically reduced. As more desirable forage was available, less supplemental feed was required; less labor was needed to handle the flock; and the pasture furnished forage in late winter-early spring for replacement heifers. Death losses were greatly reduced—the major goal of the demonstration. An economic analysis indicated it was a favorable program.

Results were again disseminated in the Demonstration Handbook, toxicology seminars, sheep production short courses, and by newspaper releases. More importantly, a number of other ranchers adopted similar programs.

In summary, a comprehensive and progressive Extension education program can result in new technology and scientific information being put into practical and successful use by farmers and ranchers—the direct benefactors of such advances in research. Through this approach, the philosophy of the Texas Agricultural Extension Service of "Helping People Help Themselves" is put into practice.

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I certify that the statements made by me above are correct and complete.—*Floyd E. Kinsinger,* Managing Editor.

VREW from the Start

John E. Larson

THE VEGETATIVE REHABILITATION AND EQUIPMENT WORKSHOP is an informal group concerned with developing and testing revegetation equipment and providing information about suitable equipment to land managers. VREW has actually been around for quite a while and was formerly called the Range Seeding Equipment Committee. The group includes federal and state agencies, universities, industry, professional organizations, and private citizens.

VREW meets each winter, usually just before the Society for Range Management meeting, to discuss activities and accomplishments, present new information, and recommend future action. The workshop is closely affiliated with USDA Forest Service Equipment Development Centers at San Dimas, Caif. (SDEDC), and Missoula, Mont. (MEDC), where much of the project work takes place.

VREW's roots go back to World War II, when more wool and beef were needed to sustain the war effort. With increased demand for sheep and cattle, increased productivity from National Forest rangelands was sought. However, many of these lands, already suffering from a long history of abuse, could not support additional livestock without substantial improvement. Large-scale seeding programs were implemented to accomplish the necessary improvement.

The programs proved successful, but it was soon discovered that available equipment, which was designed for crop production on farmland, was inadequate for rangeland. The rigors of rocky ground, steep slopes, and dense brush took their toll in broken implements. The poor performance of the equipment no doubt resulted in considerable frustration and some profuse swearing.

In 1945, Forest Service (USFS) administrators and researchers from western regions met to discuss the need for a major effort to test, adapt, or develop equipment suitable for range seeding. They invited the staff of the Forest Service Equipment Development Center, then at Portland, Ore., to participate. A committee was formed to which Equipment Development Center personnel provided equipment and expertise to solve rangeland equipment problems. This committee became known as the Range Seeding Equipment Committee. In 1975 it was renamed the Vegetative Rehabilitation and Equipment Workshop (VREW), reflecting its expanded scope.

The committee met formally in December, 1946, in Portland, Ore. Members drew up a charter in which they agreed to: consider, evaluate, and assign priorities to equipment problems suggested by the Forest Service Regions; prepare a program of work each year for the Portland Center; and provide specifications for the most desirable equipment for range seeding. In 1949, the committee expanded its objectives to function as a clearinghouse for information exchange and act in an advisory

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capacity in range seeding and undesirable plant control policies and procedures.

ABOUT THIS TIME, SEVERAL OTHER AGENCIES that were experiencing similar equipment problems became interested in the committee. The Bureau of Land Management (BLM) participated in the 1949 meeting and began to contribute funds in 1951. The Soil Conservation Service (SCS) and the Bureau of Indian Affairs (BIA) began attending meetings in 1949 and 1952, respectively, and funded projects beginning in 1955. In 1955, the committee voted to retain its informal structure to foster broad participation and a free exchange of information. Today, a list of participating Federal agencies would resemble a bowl of alphabet soup, including most of the agencies involved with natural resource management.

Participation with State agencies, universities, manufacturers, energy companies, seed suppliers, ranchers, and consultants is actively sought. These people often support VREW by providing equipment and materials for testing and by contributing with field operations and evaluation, in addition to VREW workgroup memberships.

VREW projects generally involve either evaluation of commercially available equipment adapted for wildland use or development of new equipment to satisfy special needs. Projects are approved and funded according to priorities determined by the contributing agencies. Project proposals come from a variety of sources, including surveys of field personnel, spinoffs from previous development work, or suggestions from researchers, ranchers, and other interested individuals. The proposals are submitted each year to the VREW exploratory committee, which determines their feasibility. Promising proposals are then forwarded to the two USFS Equipment Development Centers for cost estimates. Finally, they are referred to the VREW steering committee for approval and funding.

Projects are assigned to various workgroups within VREW. The workgroups supervise or perform most of the project work. They meet periodically to review the progress of their projects, plan for future projects, and exchange information. In addition, each VREW workgroup summarizes its activity in a report at the annual meeting. These reports are published each year and are sent to the membership. They are available on request.

Over the years, VREW has been responsible for developing many types of rangeland equipment. Some of this equipment is now manufactured commercially and widely used. The best example of this is the rangeland drill. The project was initiated in 1951 to develop a grain drill capable of sustained operation on rangelands. The prototype was developed from a modified commercial grain drill constructed for the Fremont National Forest in Oregon. It featured heavy-duty, single-disk openers and independently suspended disk arms that could ride up and

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over any obstruction. The prototype was completed in 1952 and has remained basically unchanged, although modifications and refinements such as deep-furrowing disk arms, optional grain and fertilizer boxes, depth-control bands, and brush guards have

increased its efficiency and versatility. Rangeland drills are currently used throughout the western United States and in several foreign countries for range improvement and disturbed land reclamation. The project was terminated in 1974 following publication of the service and parts manual by SDEDC and the operations handbook for the rangeland drill by the BLM. However, commercial manufacture and development still continues.

CURRENT VREW PROJECTS COVER A BROAD SPEC-TRUM, from the development of a portable vacuum seed collector for harvesting brush and grass seed, to the evaluation of aerial ignition techniques for use in wildlands. Emphasis is now being placed on developing equipment for reclaiming strip-mined land and revegetating disturbed areas in arid climates. The difficulty of establishing permanent, diverse vegetative cover on these area is a continuing concern to land managers.

The modified Hodder gouger is one of several projects dealing with this problem. This project was initiated by the BLM Energy Mineral Rehabilitation Inventory and Analysis Program (EMRIA). It involved testing and improving a gouger developed at Montana State University (MSU).

Gouging, or pitting, creates a series of depressions in the soil that collect moisture and provide shelter for plant establishment. The problem was to create enough depressions of sufficient size and with adequate spacing for effective revegetation of large areas. A cooperative effort by the MSU staff and MEDC engineers produced the modified Hodder gouger, featuring automatic blade action, adjustable blade configurations, and hydraulic depth control. These features allow the depressions to be formed in a variety of sizes and patterns.

The modified Hodder gouger is also equipped with a seed box capable of metering many kinds of seed at varying rates. The gouger was tested in 1977 at the Western Energy Company mine at Colstrip, Mont. It proved capable of producing many large depressions while seeding a variety of species at the prescribed rate. The modified Hodder gouger is now being operated by the

The modified Hodder gouger.

BLM and continues to provide efficient treatment of disturbed lands.

Besides developing and testing equipment, VREW provides information about techniques and equipment for revegetation. This information is contained mostly in various Equip Tips, Project Records, and other reports produced by the Equipment Development Centers. Examples of VREW publications include the VREW annual reports, operations handbooks, service and parts manuals, and equipment handbooks. Perhaps the best known among these is the *Range Seeding Equipment Handbook*, which has recently been updated as the Revegetation Equipment Handbook. This handbook describes a broad range of revegetation equipment, from plant control and seeding to seed collection and transport. It also outlines techniques for using the equipment, discusses equipment capabilities and limitations, and lists manufacturers or sources of information.

There is a trend in VREW to provide more information useful to land managers and to gather and distribute such information more actively. Several handbooks are forthcoming concerning other aspects of land rehabilitation. These publications should prove valuable to land managers when planning and implementing land treatments.

Until complete rehabilitation of disturbed lands has been demonstrated, or progress in equipment technology comes to a halt, the need for new ideas, better equipment, and up-to-date information will persist. So, if you're out on a project and your equipment breaks down and you think, "There must be a better way," look into VREW. Chances are, there is a better way. VREW is dedicated to solving equipment problems and has the expertise available to deal with most land rehabilitation situations. For more information concerning VREW, contact the workshop chairman, *Ted Russell, Forest Service Range Management Staff, P.O. Box 2417, Washington, D.C. 20013,* or come to the Society for Range Management winter meeting a few days early and attend the workshop. You will learn of the latest equipment developments for land rehabilitation.



Extra 'Hands' for the Rancher

Pat Phillips

As agriculture interacts with its increasingly complex environment, the nature of agriculture itself becomes more and more complex. Agriculture is a highly complicated enterprise, requiring a broad range of technical knowledge. The modern rancher is required to perform many functions. In addition to being an efficient manager, he must be a marketing specialist, engineer, lawyer, accountant, veterinarian, financier, mechanic, and technician. Lack of expertise in any of these disciplines can result in damaging and even irreparable loss to him.

While it is impossible for one person to attain the required proficiency in all of these fields, there are large amounts of staff assistance available. Staff refers to all elements of an enterprise that help the manager to work most effectively in accomplishing the objectives of the organization. Therefore, the purpose of this article is to outline the myriad of sources of staff assistance available to the rancher, the realm in which this assistance can be useful, and functions for which it can be obtained.

For organizational purposes, the description of the staffing services is divided into the classifications of the external environment of agriculture: economic, technological, sociopolitical, and ethical. Also, a general classification is added for staff sources that do not fall under any of those categories. The economic classification of the external environment is further divided into divisions by enterprise functions: production, marketing, and finance.

We should consider that in many cases, the decision of which classification to assign to each staffing agency is an arbitrary one, since each agency may be helpful in more than one, or all of the categories listed. It is hoped that this system or classification will aid the rancher in surveying the numerous sources of staffing assistance available to segments of the United States' rancher's operation.

Economic Staff Assistance: Production

Animal and Plant Health Inspection Service (APHIS) conducts regulatory programs to insure quality of meat products for human consumption and protect animal health for the benefit of man and his environment.

- Administers laws dealing with animal health and quarantine, meat inspection, humane treatment of animals, and control of diseases and pests.
- Conducts the Veterinary Services Program.
 - Evaluates and controls communicable disease outbreaks in livestock.
 - (2) Certifies the health of exported livestock.

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The Federal Crop Insurance Corporation (FCIC) provides feed grain crop insurance against losses due to unavoidable causes such as weather, insects, and disease.

The Farmer Cooperative Service (FCS) helps ranchers help themselves through the use of cooperative organizations.

- FCS gives ranchers technical assistance in organizing new cooperatives.
- FCS informs ranchers on improving cooperative management through its monthly magazine, Farmer Cooperatives.

The *Forest Service* works in cooperation with state and local governments and agencies, forest industries, and private landowners in the protection, reforestation, and management of 631 million acres of forested land and associated watershed area.

- The Forest Service insures that burned areas get emergency reseeding to prevent massive erosion and siltation.
- The Forest Service improves rangeland for millions of livestock and game animals.
- The Forest Service provides technical assistance to ranchers that manage forested land and desire to maximize both efficiency and conservation.
- The Forest Service conducts cooperative programs with State forestry agencies, the Soil Conservation Service, and local water conservation districts.

The Bureau of Land Management (BLM) is responsible for the protection, orderly development, and use of resource lands and resources under multiple use while maintaining the environment.

 The BLM manages and leases timber, minerals, livestock forage, watershed development, recreation and cultural values, and wildlife habitat.

Fish and wildlife agencies provide valuable staff assistance to the rancher in developing a wildlife conservation program. This assistance aids the rancher in increasing profits through hunting fees, leases and a more complete use of resources.

Economic Staff Assistance: MARKETING

The Agricultural Marketing Service (AMS) administers broad standardization, grading, product inspection, market news, regulatory and related programs for marketing decisions.

- Its Marketing News Service provides current information on supply, demand, quality, condition, and other pertinent information on farm products at specific markets and market areas.
- The AMS has established grading standards for more than 300 agricultural products.
- The AMS insures that reasonable rates for product trans-

portation are obtained from transportation regulatory boards.

- The AMS protect ranchers from financial loss or personal injury resulting from careless, deceptive, or fraudulent marketing practices.
- The AMS insures that the rancher receives the highest possible price for his product by orderly marketing practices, adjusting the supply to the demand, avoiding unreasonable price fluctuations, and purchasing surplus commodities.

The *Packers and Stockyards Administration* enforces the Packers and Stockyards Act of 1921, which provides guidelines to insure fair business practices to aid ranchers in obtaining the true market value of the livestock that they produce.

- The Packers and Stockyards Administration supervises the marketing operations of 2,000 private livestock-buying yards 5,500 meatpackers and 15,000 livestock commission firms and dealers.
- It is responsible for the posting and bonding of public markets.
- The Packers and Stockyards Administration tests scales to insure their accuracy.
- It audits books to insure the financial stability of firms subject to the act.

The *Commodity Credit Corporation (CCC)* stabilizes and protects ranch income and prices, assists in maintaining balanced supplies of agricultural commodities, and facilitates the orderly distribution of commodities.

- The CCC makes payments to ranchers growing feed grain crops when actual prices for these commodities fall short of the target price.
- It administers loan, purchase, and disaster payment programs for feed grains, wool, and mohair.

The Foreign Agricultural Service (FAS) operates a world-wide network of market reporting and analysis that covers over 100 foreign countries.

- The FAS informs ranchers on international conditions such as foreign agricultural production, trade, competition, and policy conteingencies.
- Its information is available through FAS publications.

The Office of the General Sales Manager (OGSM) compiles and publishes information from private exporters of agricultural commodities relating to export sales and transactions.

The *Economic Research Service (ERS)* conducts a national program of economic research and analysis relating to the production and marketing of farm commodities.

- The ERS analyzes supply and demand, agricultural finance, farm inputs, pricing and policy, and long-run projections.
- Its analysis deals with agriculture as a whole, and not just certain commodities.
- The ERS also considers the international scene and its effect on American agriculture.

The *Statistical Reporting Service (SRS)* reports information on price, production, supply, and other quantitative figures for approximately 150 crop and livestock products.

- The SRS reports items such as price indexes, parity prices farm employment, and farm wage rates.
- It publishes approximately 550 reports annually.

Economic Staff Assistance: FINANCING

The Farmers Home Administration (FmHA) provides credit to rural Americans that are unable to obtain credit from other sources at reasonable rates and terms.

- FmHA provides youth project loans that aid ranchers under 21 years of age in establishing and operating modest-size ranches.
- Through its Emergency Loan Program, FmHA provides emergency loan to ranchers for losses, operating expenses, and other needs arising from natural disasters.
- It guarantees loans to ranchers made by legally organized lenders.
- The Farmers Home Administration finances ranchers in buying land and in making improvements upon this land.
- The FmHA finances ranchers in resource conservation pursuits and recreational development.

The Rural Electrification Administration (REA) provides selfliquidating loans, technical assistance, and dependable electric and telephone service to rural people at a reasonable rate.

- REA finances the construction and operation of generating plants and distribution lines to provide adequate electric service to rural areas.
- It guarantees loans from certain other non-REA sources to finance electric and telephone facilities.

The Agricultural Stabilization and Conservation Service (ASCS) administers specified commodity and related land use programs designed for voluntary production adjustment and resource protection.

- The ASCS administers price, market, and farm income stabilization.
- It provides loan purchases and payments for feed grains, wool, and mohair whenever market prices fall below set target prices, or if natural forces prevent planting or result in a low yield.
- The ASCS establishes acreage allotments and marketing quotas designed to balance commodities produced with the demand.
- Through its Forestry Incentive Program, the ASCS provides for the cost-sharing of tree planting and timber improvement.
- Through its Water Bank Program, it enables ranchers with eligible wetlands to receive annual payments to preserve and improve inland fresh water and designated adjacent areas.
- The ASCS provides emergency assistance programs.
 - (1) It makes available CCC-owned feed grains to eligible ranchers at reduced prices or by donation.
 - (2) The ASCS cost-shares with ranchers carrying out emergency conservation practices to rehabilitate farmlands damaged by natural disasters.

The Federal Land Bank Association (FLBA) provides long-term loans secured by first mortgages on ranch real estate.

- FLB loans are granted for periods of from 5 to 40 years.
- Repayment plans are suited to the borrower's needs, production potential, and security offered.
- The rancher is required to purchase stock in the association equal to 5 to 10 percent of the loan.

 Interest rates are closely tied to rates of interest in the national money and capital markets.

The *Banks for Cooperatives* form a credit system devoted solely to meeting the financing needs of agricultural cooperatives.

The *Production Credit Association (PCA)* is composed of locally owned cooperatives which finance loans for up to 7 years for almost any expense related to ranching.

- The rancher is required to purchase association stock equal to from 5 to 10 percent of the loan.
- Loans are made on a budget basis, whereby advancement of cash is tailored to the cash-flow of the individual to reduce interest.
- PCA's furnish some assistance in preparing cash-flow projections.

The *commercial banker* also provides much general financial assistance to ranchers.

- Commercial bankers comprise the major institutional groups of agricultural financiers.
- Commercial banks provide ranchers with an ever-increasing amount of invaluable staff assistance through their agricultural specialists.
 - (1) Bank specialists provide management counsel to ranchers.
 - (2) Bank specialists analyze credit needs and loan requests.
- The major limitation on utilizing commercial bank financing is the limited size of loans available.

Life Insurance Companies provide long-term financing for large loans such as real estate loans to ranchers.

Savings and Loan Associations provide long-term financing for large loans such as real estate loans to ranchers.

Other Financing Institutions provide some financing for livestock producing and marketing operations.

Credit Unions provide medium-termed financial assistance to ranchers.

Investment Banks provide a means for the rancher to sell stock if he decides to incorporate.

Trade Credit with Dealers provides short-term financial assistance to ranchers for current assets purchased.

- It is convenient.
- It is cheaper than that obtained from other financial institutions.
- Trade credit gives the rancher access to a larger total credit.

The *Professional Accountant* provides the organized accounting information that is necessary for the rancher to make decisions.

Technological Staffing Assistance

The USDA-Science and Education Administration (SEA) develops the necessary technology for ranchers to produce efficiently while conserving the environment.

- SEA strives to protect and improve the yield and quality of field crops.
- It conducts research to reduce livestock disease and pests.
- SEA discovers improved management techniques.
- SEA strives to reduce water pollution due to livestock wastes.
- It conducts marketing research to expand markets, to

protect agricultural products in marketing channels, and to improve marketing techniques.

 The SEA strives to develop improved mechanization and farm construction methods.

The Soil Conservation Service (SCS) conducts a national soil and water conservation program in cooperation with landowners, regional resource groups, and other government agencies.

- Its programs are conducted through technical assistance to approximately 2,950 locally organized conservation districts, covering over two billion acres in all 50 states, Puerto Rico, and the Virgin Islands.
- The SCS provides ranchers with soil maps and other resource data.
- It provides information on practical alternatives for land use.
- The Soil Conservation Service aids in developing the National Cooperative Soil Survey.
- It tests plant species for use in conservation treatments.
- The SCS prepares stream-flow forecasts, flood predictions and the installation of watershed projects to reduce erosion.
- It cost-shares conservation practices under 3- to 10-year contracts with ranchers under the Great Plains Conservation Program.
- The SCS assists ranchers in developing recreation facilities on private land.

The State Agricultural Extension Service disseminates the results of research conducted by the state Agricultural Experiment Station through:

- Education of the public through group meetings, demonstrations, tours, publications, mass media and community newspapers.
- Education of youth through the 4-H program.

The scientists of the *State Agricultural Experiment Station* focus on a multi-disciplinary approach to research in the fields of agricultural production, marketing, natural resources, home economics, nutrition and rural development.

State Land-Grant Colleges and Universities conduct research to broaden the knowledge of agricultural production, marketing, natural resources, home economics, nutrition and rural development, and conduct programs to extend it to the rancher.

Industrial research by *farm and ranch equipment-producing companies* provides staff assistance to ranchers by producing new and improved tools for accomplishing work on the ranch. This research is of special value to the rancher because the resulting products must be useful to the rancher for the industrial producer to compete with other members of his industry.

Through the journals of *professional scientific organizations* such as the Society for Range Management and the American Society of Animal Science, ranchers are kept informed of current advances in ranching technology.

Serving as the largest agricultural library in the United States, the *National Agricultural Library* contains the latest literature available to keep the rancher abreast of current agricultural advances.

- It contains 1.5 million volumes.
- Publications are received regularly from over 120 governments.
- The National Agricultural Library prepares two monthly publications.
 - (1) Bibliography of Agriculture.
 - (2) National Agricultural Library Catalog.

The *Bureau of Indian Affairs* actively encourages Indian ranchers by working with them in the development and implementation of programs for their economic advancement and for full utilization of their natural resources consistent with the principles of resource conservation.

Socio-Political Staffing Assistance

Attorneys-at-law aid the rancher in operating legally under the laws, regulations, and government agencies that compose his socio-political environment.

- Attorneys assist in Income Tax preparation.
- They assist in estate planning.
- Attorneys assist in avoiding liability.

Producer Organizations also assist the rancher in relating to the entirety of his socio-political environment.

- These organizations aid ranchers in discouraging, tracking, apprehending, and prosecuting livestock thieves.
- They represent the legislative needs of ranchers through their influence on the State and Federal government.
- They lend assistance by relating to the rest of society the needs and problems of the rancher.
- Through their livestock production magazines and breed journals, ranchers are kept informed of current events and developments in the ranching industry.

Ethical Staffing Assistance

The *Minister* of the rancher's religious denomination assists him in determining the code of ethics that he will follow and how to apply that code of ethics.

General Staffing Assistance

The State Departments of Agriculture furnish special valuable staff assistance which is especially pertinent to the state in which

the rancher resides.

Private Consulting firms advise the rancher on a specific problem in return for monetary renumeration.

- They usually consist of a small core of permanent personnel which are readily expandable through the practice of bringing additionally needed consultants in as the specific job requires.
- They are paid on a cost-per-hour basis, or on a predetermined fee set for the job.
- The rancher has legal recourse against the private consulting firm only if gross negligence of the firm can be proven.
- Private consulting firms may prove valuable in evaluating or supervising a project in which staff assistance from another source would require many different opinions, therefore becoming "piecemeal" and possibly not detailed enough.

Conclusion

From the preceding listing of staff sources and the example of use on the staffing concept, it can be seen that there are copious quantities of assistance available to the rancher. It can also be observed that the management concept of staffing can be of great use in ranching. Obviously, the process of utilizing this assistance is a dynamic and continuing process, subject to the knowledge of the rancher and his skill in utilizing the staffing concept. Therefore, as the rancher progresses from one situation to the next, he should constantly be consulting different staff sources and gathering the relevant data needed to make intelligent, well-informed decisions. It can be further observed that, while in most industries a manager's staff occupies a permanent position in the industry, the rancher's staff may be more likely to be utilized on a temporary basis.

Today's ranching industry is known to be one of the most independent but risky forms of business in existence. However, with proper use of the staffing concept, risk can be minimized while profit is maximized.

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Transformaciones Ecologicas de los Ecosistemas Aridos

Reginaldo De Luna V. y Roberto Nava C.

Dentro de los aspectos de sobrevivencia que el hombre elige, existe una gama de alternativas a desarrollar. Cada alternativa es en sí una decisión arbitraria ya que se basa en hechos que han ocurrido bajo otra situación diferente, por lo tanto la comparación de unidades básicas ecosistemáticas, no coincide ni con su anatomo-morfología y funcionamiento, ni con las estrategias que el hombre utiliza en otra unidad que es la que se pretende transformar.

El humano es un elemento seleccionador de oportunidades (estrategias), a veces arbitrarias y poco reflexivas y en ningún caso son complementarias con la naturaleza existente o ecosistema por ser decisiones únicamente encausadas a un beneficio personal, sin considerar que cualquier alteración sufrida en el ecosistema será reflejada, en un corto tiempo, como respuesta acorde a un desencadenamiento que fue ocasionado por un estímulo provocado por el agente seleccionador del recurso natural que es el hombre.

El ser racional no se preocupa en determinado instante cuál será el futuro de la tierra, se preocupa sí, pero de cómo adquirir una mayor cantidad de energía para el establecimiento de mejores decisiones para su beneficio personal, y de esta forma va adquiriendo un mayor y mejor poder de instrumentos y técnicas para cosechar el recurso natural que se presenta con ciertas restricciones para los demás miembros de una sociedad, por carecer simplemente de información pertinente. Por lo tanto la información existente es encausada no a solucionar problemas de los recursos naturales, sino que constantemente es influenciada a la destrucción, creadno así un desequilibrio en la distribución de riqueza que al no ser bien reinvertida, contribuirá a la desetabilización de una zona.

Las técnicas cada vez más sofisticadas, han ido reemplazando a la mano de obra de personas con menos recursos, y en cada instante las soluciones se han alejado de una alternativa acorde a su agobiante problema, al no existir una estructura ordenada en el sistema de valores de energía por ser dicho valor una riqueza encaminada solamente al beneficio de humanos con mayores facilidades, creadas éstas por el mismo sistema de decisiones previamente establecidas en una sociedad.

Es en sí la transformación el problema?

Cada ser humano contiene un funcionamiento interno y a veces opera como una máquina programada y a lo único a que está sujeto es a satisfacer sus necesidades, siendo sus movimientos y actividades encaminadas directamente a la satisfacción total de su estancia sobre la tierra, pero su estancia sobre la tierra ha sido tembién relativa; adquiriendo conocimientos parecidos a otros seres, a veces casi idénticos, manteniendo ciertas relaciones, desempañando la misma actividad y frecuentando los mismos nichos. Finalmente una serie de causas producen una misma sociedad, la que posee una economía, una producción, producto de las interrelaciones con las unidades ecológicas. Los ecosistemas silvoagropecuarios del desierto chihuahuense presentan una diversidad de alternativas producto de una sociedad actual, que prevalece en dichas áreas, y dadas sus necesidades, está programada a la satisfacción de obtener recursos naturales para su sustento. Es posible que una sociedad carezca de la información efectuada no esté acorde a las relaciones óptimas del hombre y la naturaleza, resultando que las acciones de transformación en el ecosistema no son las apropiadas en un determinado tiempo, al no considerar que toda acción implica un costo y una razon física ecológica, económica y/o social de existir.

Sin embargo, nuestra sociedad demanda ciertos atributos que han desaparecido, por no considerarse las relaciones eficientes en el manejo de los recursos naturales. Concluyéndose en establecer otras alternativas como creando otro hombre capaz de extraer otros recursos de la naturaleza, como metales o elementos industriales, etc., esto sería una alternativa, otra sería aprovechar la experiencia que actualmente tiene el hombre y readaptarlo al recurso natural del desierto estableciéndole transformaciones ecológicas, cualquiera de estas alternativas implica establecer una serie de definiciones y conceptos para su transformación, debido a que los ingresos de energía que el hombre establece en un ecosistema, puedan no entrar en la forma que es requerida para un mejor funcionamiento tanto en la naturaleza o en el elemento activador de la naturaleza, que es el hombre.

De lo anterior se desprende que será necesario establecer con anterioridad a la transformación, una serie de rutas y estrategias que concuerden con la sociedad y sus problemas, ya que con trabajo y buenas disposiciones de establecer algo positivo para una sociedad, se puede convertir en una transformación negativa por no estar acorde a las necesidades emanadas de la sociedad.

La gran gama de ecosistemas áridos, y el estado en que se encuentran, son realmente problemas catastróficos, debido a que no es posible crear información y resolver el problema inmediatamente, ya que los problemas obedecen a otra serie de aspectos a veces no considerados, por lo tanto se deben crear especialistas con criterios generales en las transformaciones ecológicas del desierto, y no profundizarlos en temas que aporten mayor confusión de la ya existente, ya que las acciones pertinentes para resolver un problema es producto no de una disciplina, sino de una gama de disciplinas que se conjugen en un momento (tiempo-espacio).

Antecedentes del recurso natural

Los recursos naturales renovables presentan alternativas complicadas, sin dejar de ser interesantes para quien lo observa todo en conjunto, y al estructurarse cada una de las partes de la unidad básica, es fásica, es fácil alejarse de las necesidades de

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vida cotidiana. Es un sendero a veces complejo que se recorre vez más solo, a medida que se progresa en la comprención de los recursos naturales.

A veces sería motivo de gran satisfacción explicar a quienes se interesan en investigación, planeación y desarrollo de los recursos naturales, todas las posibilidades que existen y sus alternativas de utilización, pero lo comunicación falla, y las interpretaciones son encorrectas por ser el universo que está ante el interpretador distinto, cambiando conceptualmente las unidades ecosistemáticas básicas. Mientras el hombre se ha profundizado aparentemente en el estudio de la naturaleza, significativamente se ha alejado de su comprensión llegando hasta el punto crítico de atomizar o pulverizar las unidades ecosistemáticas, estudiando las partes de la unidad, sin centrarse en el problema principal de los recursos naturales renovables. Con esto no se pretende despreciar el esfuerzo realizado, ya que dentro de la unidad básica de trabajo los esfuerzos encaminados bajo cierta alternativa han sido satisfactorios. La acción antropogénica sobre los recursos naturales de los ecosistemas áridos es reflejada a través de las arquitecturas originales que conserva el recurso natural, el cual ha evolucionado siguiendo alternativas de maduración de sus seres, cambiando así paulatinamente la adaptación del ecosistema natural a su medio ambiente. Cada elemento del recurso natural está regulado independientemente de los demás, y la magnitud de sus atributos varían al modificar el medio que los rodea, ya que cada uno de éstos forma a su vez parte del ambiente de los demás.

Las unidades de paisaje formadas por el recurso natural, y demás factores ambientales generan las condiciones apropiadas para el desarrollo de los elementos en el recurso natural, existiendo mecanismos de ajustes de cada uno de los individuos de las poblaciones naturales en su reproducción, siendo regulada por la natalidad, mortalidad y migración. En ocasiones dichos elementos modifican su morfología y tamaño, al modificarse el medio donde se desarrollan mostrando así gran plasticidad al medio ambiente.

Los ecosistemas áridos deberán ser considerados como el conjunto, donde uno de los componentes es el recurso natural *per se* y los otros contienen elementos naturaleza muy diversa donde se destacan por su importancia los aspectos relacionados con el hombre organizado, social, cultural y politicamente. No es posible por lo tanto pretender estudiar el recurso natural en forma aislada del resto del conjunto, puesto que el objetivo principal de la buena utilización de los ecosistemas áridos es mejorar al elemento más importante del ecosistema origen, que es el hombre organizado, social, cultural y políticamente.

El estudio de los recursos naturales, tiene que plantearse como una actividad permanente, en la que el grado de conocimiento va aumentando considerablemente, y las alternativas tienen que ser encausadas en diversa forma; ya que al incorporar un recurso natural a su explotación, es conveniente considerar la relación que existe entre los diversos factores de la naturaleza y sus asociaciones y usos con el hombre. En el ámbito científico de los recursos naturales cada uno de los nichos ocupados por investigadores es justificado, y generalmente se escucha que los economistas no tienen información porque no es la pertinente la que existe, y los biólogos no establecen las investigaciones acordes por la falta de información de los productos en el mercado, etc., y los especialistas de recursos naturales no establecen las investigaciones correctas por la falta de investigación ecológica. El hecho es que muchas investigaciones están aisladas del mundo real y solo se concretiza en repetir información proveniente de diversos centros de adiestramiento en países muy adelantados, concluyéndose en establecer programas de ciencia ficción que no tienen-nada que ver con el planteamiento de problemas de los recursos naturales del desierto mexicano; cayéndose desgraciadamente en soluciones simplistas en exceso, sin pretender darle importancia a otros factores ambientales y de manejo que son decisivos en el aumento de la producción.

Ciencia y Tecnología los Recursos Naturales

Dado que existe una gran diversidad de enfoque y planteamientos de cómo encararse a la utilización de los recursos naturales, es de gran importancia tratar de plantear soluciones sin sentimentalismos y fundadas en cada una de las experiencias de los recursos naturales, considerándose no caer en la subjetividad del problema, ya que lo que se pretende es obtener el máximo de beneficios de un ecosistema, sin destruirse, o sea manejando ecológicamente los elementos que lo integran.

La gran diversidad de talentos en el hombre han sido el producto de la evolución de su origen sobre la faz de la tierra, y así la gran diversidad de plantas, árboles, formación de suelo y demás factores que se conjugan en el ecosistema, ha sido la evolución de dicha unidad sobre el (tiempo-espacio).

Cabe mencionar que en este instante la ciencia y las técnicas tienen una gran amplitud de especialización, y que el humano encargado de planificar la investigación está totalmente ocupada en temas tan importantes como la utilización de herramientas potentes para la extracción más eficiente de los recursos naturales, apoderándose de ellos en un corto tiempo, creándose así concentraciones tan altas de energía que se manipulan los ecosistemas no a como lo requiere la unidad ecológica, sino a manera de obtener más ganancias para quien los extrae, por lo tanto, las investigaciones a menudo no son las adecuadas para resolver un problema ya que no importa el buen funcionamiento de la unidad ecológica sino el apoderarse de los recursos naturales y así dominar a otros ecosistemas con un contenido menor de energía.

Por otra parte, muchos investigadores han permanecido estáticos en su disciplina, y su planeación del uso de los recursos naturales, no siendo posible utilizarlos en la solución de un problema. De allí que toda una universidad planificaba sus programas de estudio desde un punto de vista muy utópico, tratando de servir en la problemática del país, solo que al avanzar los problemas el paciente ecológico ha adquirido una enfermedad crónica, que requiere de diversos especialistas de un nuevo enfoque en la planeación, y que al carecerse de ellos, las formaciones académicas seguirán equivocadas para la resolución de problemas.

Existenen nuestros tiempos grandes cúmulos de información, la cual es considerada como ciencia, pero ésta no contrubuirá en nada por no ser la información que se requiere desde el punto de vista social, económic y ecológico, por lo tanto antes de realizar una transformación es importante centrar a los técnicos a que consideren el recurso natural junto a los problemas que existen, ya que no es fácil sostener que con ciencia se resuelva el problema, y que será necesario establecer en cada ecosistema una sociedad que reciba entrenamiento académico; de la amenazante aniquilación atómica, del crecimiento demográfico, de la escasez de alimentos, del manejo ecológico de los recursos naturales renovables, y desde el punto de vista sí es necesario la ciencia, pero la que resuelve problemas del mundo real, en donde los proyectos de investigación no sean com islas perdidas en la inmensidad que no se relacionan en nada con anteriores y ulteriores investigaciones de los recursos naturales.

Fundamentos de la transformación

El mejoramiento del ecosistema origen, requiere de la consideración del manipulador que es el hombre: tanto en lo social, cultural y políticamente, además de considerar las características del recurso natural y su relación con los aspectos de organización del hombre, ya que el objetivo en la investigación de recursos naturales debe de orientarse a una resolución práctica de los problemas, y en esto último, radica el énfasis que debe dársele a los estudios experimentales; el papel de los investigadores debe ser el centrarse en unidades básicas ecosistémicas planteando en forma integrada los fundamentos del cambio de la unidad básica, dado que el cambio es provocado por una decisión a veces arbitraria y poco reflexiva y dicha decisión tiene costos que son traducidos generalmente en pérdidas o ganancias de energía.

La estabilidad económica de cualquier país, es y seguirá siendo por mucho tiempo, su alimentació como médula principal de desarrollo y por lo tanto la ciencia de los recursos naturales siempre será de gran valor, además de otros valores como la educación.

La enseñanza de los problemas que agobian a cualquier país en desarrollo, es la herramienta más importante que refuerza la unidad fundamental de desarrollo ya que existe una gran diferencia racial y cultural, politica y religiosa. Unido al desarrollo intelecutal de una cuenca o región, el desarrollo technológico del hombre aumenta considerablemente, y con ello la presión sobre los recursos naturales producto del alto grado technológico que no siempre es satisfactorio para establecer un verdadero desarrollo, por lo tanto cabe mencionar que entre el hombre y el recurso natural siempre existe un óptimo, pero que en ocasiones ni el recurso natural es considerado como tal, y lo único que se pretende es transformar al residuo de los ecosistemas con plantas introducidas, con otra serie de complicaciones para el hombre que tiene que establecer el intercambio de energía y sobrevivencia en el desierto. Es de considerar que cualquier estrategia que se desee establecer puede ser benéfica, solo que a corto plazo será efectiva mientras no se hayan agotado las nutrientes que se han acumulado en el ecosistema.

Las relaciones biocenósicas, sobre el ecotopo, deben de considerarse dado que un equilibrio existente al no ser manejado acaba con todos los elementos benéficos en el ecosistema, llegándose a pensar que todo lo que esiste en el ecosistema no sirve, y hay que establecer una fitocenosis nueva, importando además una zoocenosi de ecosistemas más ricos, y que con ello se solucionará el problema, sin analizar que las características de recursos y habitat no siempre serán los apropiados para culquier transformación elegida por el humano, y si dicha elección no es adecuada se concluye con un rotundo fracaso, aunque la intención haya sido en todo momento dirigida a solucionar un agobiante problema, por lo tanto es importante en cualquier transformación de ecosistemas, elegir le mejor alternativa de transformación ecológica, ya que se puede aplicar toda la energía que se quiera, solo que cuando la elección de operadores no es la correcta, el funcionamiento del ecosistema reflejará en un tiempo considerable, una respuesta acorde a la buena o mala transformación elegida-producto a veces de una decisión acalorada- tal vez pensando en que la naturaleza de producción del ecosistema no está regida por leyes físicas y biológicas.

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Better Oral Communications For Range Managers Series—No. 5



The Audible You

Charles L. Spencer, Jr.

An inflexible rule of public speaking is that one must be engaging in order to be effective. That is, a large part of the good impression you hope to create will derive from *how* you say your words. And You will seldom get a second chance to create a good *first* impression. Hence the mechanics of a talk—its delivery—are extremely important in being an effective public speaker.

Let's review some of the things that will help you become the kind of speaker you like to hear: warm, friendly, sincere. . .and convincing. These things can be found in nearly every situation in oral communication, not just in public speaking. Consider a homely example. You and I are eating lunch together. I want one of the rolls that are on the table by your elbow. In my request, I would want to use proper vocabulary, some vocal variety would be nice, my rate of speech would be important, a gesture toward the rolls would be beneficial, and direct eye contact certainly wouldn't hurt. If I get the roll, I've communicated; if I don't I didn't, and I would know that some elements of my request need to be changed.

Whether you want to ask for a roll or motivate an audience, the same elements apply. The delivery of a talk is a compound of preparation, vocabulary, voice, eye contact, body language, notes, and props. Used properly, they'll help you create a favorable impression-the goal of all public speaking.

Preparation. Try in advance to gain as much information about the physical conditions of the meeting place as you can, and then arrive well before the appointed time to get everything properly coordinated. Make certain that the person presiding has any special instructions for the talk, and the necessary information to introduce you properly. Be aware of how the audience will be seated in relation to you, what kind of lectern you must use, and where you will be seated before the talk. Be sure that the microphone works (unless you are exceptionally adept at projection, use the microphone if one is provided; your audience will appreciate it). Know that any props you plan to use are functioning properly and in their places. Is the lighting right and the heat comfortable? (Too-warm rooms mean drowsy listeners: you may have to shorten the talk or work even harder at delivery). In short, leave no stone unturned in assuring the best possible physical conditions for your talk. Remember the Scout motto 'Be prepared' and put it into effect.

Vocabulary. If you're talking range management with your peers, you can use the vernacular of the trade—buzz words. But if you're talking to your son's first grade class, your vocabulary

must be different. What I'm trying to say is that you will lose your audience if you speak under or over its level of understanding. As Clayton Marlow pointed out earlier in this series (*Rangelands*, Oct. 1979), you must know your audience and adjust your approach to it. If you do not, you'll be wasting both your time and that of your listeners. The real time waste can be determined by multiplying the number of listeners by the number of minutes spent together.

In general, choose vocabulary which will allow you to talk to your listeners, not at them. Use humor if it fits. A story or a joke is not necessary, but if you know one which reinforces the message, by all means incorporate it. But do it right: make it appear spontaneous. And preserve spontaneity throughout the talk by taking care that your vocabulary does not contain too many uhhs-terrible time wasters and distractions.

Voice. The most important asset of the audible *you* is your voice. No one else has the same vocal signature; it is uniquely your vehicle of communication. The range of tone, inflection, rhythm, and modulation employed—your vocal variety—gives color and emphasis to your words. So make sure you use a vocal variety natural to you and appropriate to your material. No one likes to listen to a monotone.

Try to develop a low-pitched, resonant speaking voice. One way is to imitate a good radio announcer. Make sure your material is delivered with the right inflection: the voice must sound different when telling a story than it does when issuing a command. Use different rhythms; seldom will you want to be either a stilted orator or a motormouth. Don't be afraid to pause—then continue the march of your speech. And remember that sometimes you can convey power with a shout, sometimes with a whisper. Both can be effective.

Almost everyone has access to a recorder these days. Listen to your vehicle of communication. Is it getting you the mileage needed?

Eye Contact. Looking directly at your listeners makes them want to believe you. This is especially important during the opening of your talk, when you must establish yourself, and during the closing, when you must conclude the message. Commit the opening and closing to memory so that you can be looking directly at your listeners.

Look at all of them. Strive to look at every member of the audience at least once during the talk. If you can't look people in the eye, look right above their heads or at their foreheads. When you find a receptive face, spend a moment to make sure that individual is with you. Then move to the next point of contact. Again, effective oral communication is almost a one-to-one encounter, even though there may be thousands there.

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Body Language. Remember that old draft poster 'Uncle Sam Needs You'? Recall how effective that pointing finger was? That was because the body message of Uncle Sam—appearance, stance, gesture—reinforced the word message.

Body language begins with your appearance. Make sure that your image conveys the message you want it to. If there is any question about the occasion, always dress up, never down. And don't be exotic: a 'white sport coat and pink carnation' has limitations. Stance is an important aspect of body language. A speaker making a very important point while slouching, hands in pockets, is simply not convincing. Stand erect but relaxed, and talk to your audience much as you do in conversations. Finally, appropriate gestures will reinforce your words, just as inappropriate ones will defeat them. An effective gesture should always convey some reserve of power, and it must appear spontaneous.

Practice delivering body language; it is just as important as practicing the verbal message. Do it 'live' before the mirror even to the extent of wearing the clothing you'll have on during the talk. Speak to that person in the mirror with all the oral and physical strength you have. If you can convince your reflection, you can probably convince the audience.

Make sure your body is sending the same message as your words. If it does not, people will instinctively believe the body, no matter what words are used. The body is a powerful tool in public speaking; make it underline every word with conviction.

Notes. Be certain that notes are an aid to speaking, not a crutch. If you need them, then by all means use them. But use notes properly so they don't become a distraction. In other words, make notes be just that—notes.

Decide whether you are more comfortable with cards or paper. Number each prominently. Keep notes flat in a briefcase, never folded in a pocket. Never clip notes together because flipping the sheets over will cause a distraction, particularly in front of a sensitive microphone. As you make your opening, slide the first sheet off the second so both are exposed. As you finish one, smoothly place two on top of it exposing three. This will allow you not to be hobbled by your notes, so that you can pay full attention to the audience, giving your talk an air of spontaneity.

Props. If appropriate and used properly, visual aids can reinforce your message, but be sure that they do not become only a distraction. A prop that is too small or too complex to convey the point desired is worthless; if it cannot be readily appreciated by everyone in the audience, discard it. Always carry tools, equipment, and spares to make sure your props work and will keep working. Prop failure will inevitably create a distraction, and may make you look foolish. For instance, a marking pen that runs out of ink is not very helpful. Again, as elsewhere in effective public speaking, practice the use of your props.

Aside from the common distractions of physical conditions and malfunctioning props, beware of pencils, pipes, eyeglasses, keys or anything else you fiddle with. If your listeners gets more interested in your 'prop' than in what you're saying, you'll lose them. Remember that every distraction you permit is a block to effective oral communication!

Practice, and practice again, the delivery of your talk preparation, vocabulary, voice, eye contact, body language, notes and props—until it becomes almost second nature. Then you can weave your message throughout the talk tying the opening to the conclusion with a nice bow, and present the package to your audience. You can achieve genuine oral communication. But remember that it's all up to you, not the audience. It's rather like the old itinerant preacher who traveled from church to church with his small son. After the service, an elder in the church arose and thanked the preacher for his fine sermon. In appreciation he was given the day's offering, which turned out to be the dollar he had put in the box. His son looked up and said, "Gee, Dad, if we had put more into it we would have gotten more out of it."

Prepare and deliver. You're the quarterback and your audience is the receiver. You'll never score without being an effective passer of your message. Make the audible you as enjoying, and therefore as effective, as you can.

Tilling May Improve Annual Plant Rangelands

Stanley E. Westfall and Raymond D. Ratliff

Will tilling or stirring up the surface layer of soil increase herbage yields on annual plant rangelands? Will tilling affect species composition? We know sulfur in the form of gypsum will increase herbage yields substantially (Bentley et al. 1958; Westfall 1966). What we need to know is whether tilling alone or in combination with fertilization is as effective as fertilization alone.

This study compared herbage yields and species weight composition from tilling and fertilization on the Westfall ranch at Bailey Flat, Madera County, in central California, in the Sierra Nevada foothills.

The study site was used for a previous study on the Westfall ranch. The elevation there is 1,200 feet. The soil is moderately shallow vista sandy loam, of granitic origin, and annual rainfall is about 22 inches.

The previous fertilization was in 1958; because of the elapsed time there was no residual effects (Bentley and Green 1954).

Two replications of each treatment (a) unfertilized and tilled, (b) fertilized and untilled, and (c) fertilized and tilled were used in a randomized block design. Unfertilized and untilled served as a control. Gypsum was applied before tilling at the rate of 550 pounds per acre, an amount equal to 96 pounds sulfur per acre. The soil then was tilled to about 3 inches deep with a rotary tiller. The soil was treated in late September 1966, before fall germination occurred.

Twenty soft chess plants in each of the eight study areas were measured in 1967. Herbage consumption by a large population of Beechey ground squirrels prevented clipping the plots in 1967. Height of soft chess was measured, however, before extensive rodent use occurred.

Herbage on five 1-square-foot plots was clipped in each of the eight study areas at peak of growth in 1968 and 1969. The clippings were air dried, then sorted to estimate total weight and species composition. Individual species sorted were soft chess (*Bromus mollis*) and filaree (*Erodium botrys*). Remaining herbage was sorted into groups: legumes, other grass species, and other broadleaf species.

Data from each year were analyzed by analysis of variance. Replications in the study were not enough to lend statistical validity to tests for differences between treatments. The results, however, do provide indications as to where real differences might be found with more intensive study.



The fenced study site on the Westfall ranch at Bailey Flat, California. The rocky, brushy hills in the background yield less herbage than the study site, which is representative of the more productive areas of the ranch.

Heights of soft chess in 1967 were about the same on the unfertilized and tilled and control plots, but plants averaged 2 inches taller on the fertilized and untilled and fertilized and tilled. These data suggest that tilling did not stimulate height growth of soft chess.

Total herbage yields in 1968 and 1969, however, indicate that tilling may have some beneficial effect either alone or in combination with gypsum. In both years, average yields from tilled plots were more than from the control, and yields from fertilized and tilled plots averaged more than from fertilized only plots. Averages over the 2 years support these statements.

Data suggest that tilling may also influence species weight composition. Yields of soft chess were considerably more from all treatments than from the control in both years. Data from yields of other species are more difficult to interpret. But pounds per acre of legumes and other broadleaves in 1969 indicate that effects of the full treatment—fertilized and tilled—may be longer lasting than either partial treatment.

In 1967, we observed that areas fertilized with gypsum produced large proportions of legumes. In the earlier study at the ranch, legumes comprised 87% of the herbage the first year after fertilization with gypsum, and 88% the second year. In the present study, fertilization does not appear to have had any effect the second year (1968), and neither partial treatment-

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We acknowledge the help of Ĉhrystal A. Burns, formerly of the Forest Service's San Joaquin Experimental Range, in sorting species and species groups.

fertilization or tilling—appears to have had an effect in 1969. Precipitation in 1968 was about 11.9 inches—36% below the long-term average. Low precipitation in 1968 may have resulted in lack of fertilizer response that year. The response of legumes to the full treatment—fertilized and tilled in 1969—appears to be the result of interaction between the two partial treatments. Tilling may extend the time hold-over effects will be obtained.

Although a more intensive study with more replications is needed to test these indications, our data suggest that tilling annual plant rangeland may increase total herbage yields and alter species weight composition. Annual plant rangeland fertilized with sulfur, however, will give higher yields than unfertilized areas in drought years (Woolfolk and Duncan 1962). Gypsum fertilizer, therefore, may be more reliable than tilling to increase yields. But the full treatment—tilling and fertilizing may just be better than fertilization alone.

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B

Management Program for Leafy Spurge

Daniel L. Noble and Daniel C. MacIntyre

Leafy spurge is a tenacious perennial weed problem on rangelands of the northern Great Plains, with nearly 2½ million acres infested in North America (Noble et al. 1979). This weed, with a distribution center in the Caucasus Region of the U.S.S.R. (Croizat 1945), is distributed across the northern hemisphere from China in the east to the U.S. and Canada in the west. It is found in 25 states in the United States and has reached economic importance in 14 states, with an estimated control cost in 1978 of 10.5 million dollars. Interest in this serious problem is indicated by passage in 1979 of resolutions by both the Montana and North Dakota legislatures and the Old West Regional Commission supporting accelerated research and application programs for development of an integrated pest management (IPM) program¹ to control leafy spurge.

Current control measures for leafy spurge on range and wildlife land depend heavily on herbicides²-2,4-Dichlorophenoxyacetic acid (2,4-D), picloram (Tordon), and glyphosate (Roundup). These chemicals are expensive and some infestations are increasing in spite of herbicide treatment. It is not clear whether this is due to leafy spurge tolerance, methods of application, or both. Furthermore, repeated application of these chemicals on rangelands, particularly habitats involving water, may result in confounding environmental problems.

The need for an IPM program which would utilize biological and cultural controls in addition to herbicides is apparent. Also

Although this report discusses research involving pesticides, such research does not imply that the pesticide has been registered or recommended for the use studied. Registration is necessary before any pesticide can be recommended.



An organization diagram showing interrelationships of subject matter for an integrated pest management program.

needed is a reemphasis of range management techniques effective against pests—regulations, early detection and eradication, and maintenance of quality rangeland competitive against invasion from noxious weeds.

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¹ The proposal is a joint effort supported by the U.S. Forest Service and the Science and Education Administrition-Agriculture Research with additional support from state and local agencies.

² The use of trade, firm, or corporation names in this article is for the information and convenience of the reader. Such use does not constitute an official endorsement or approval by the U.S. Department of Agriculture of any product or service to the exclusion of others which may be suitable.

Strip-Mine Impoundments for the Birds

Richard A. Olson and William T. Barker

Natural wetlands of the glaciated prairie pothole region, in the eastern portion of the Northern Great Plains, are one of the most productive ecosystems of the world. These rangeland ecosystems are especially important for producing waterfowl and other wildlife, as well as providing water for livestock, irrigation, and various recreational activities.

A major factor contributing to high waterfowl production on these natural wetlands is the presence of well-developed wet meadow, emergent, and submerged wetland plant communities which serve as attractive waterfowl habitat. Extensive development of wetland plant communities provides nesting cover, protective cover, brood rearing cover, and food sources to both resident and migrating waterfowl.

Compared to the glaciated prairie pothole region, natural wetlands are rare in the unglaciated rangelands west of the Missouri River in North and South Dakota, eastern Wyoming, and eastern Montana. However, thousands of rangeland water impoundments are prevalent in the form of stockdams, dugouts, and coal strip-mine ponds. Their principal function is for livestock watering. A management plan for the wetland vegetation of these unique rangeland ecosystems, however, can provide additional assets in the form of improved wildlife habitat and enhanced recreational opportunities such as hunting, trapping, and bird watching.

Developing Management Plans

There is a growing demand to develop management schemes for the wetland vegetation on these rangelands impoundments, especially strip-mine ponds. As strip mining for lignite and sub-bituminous coal increases to meet future energy requirements, more rangeland water impoundments will emerge. Ecological information must be collected on these little-known rangeland ecosystems before management plans for wetland vegetation can be developed.

In response to the need for devising management guidelines, the Rocky Mountain Forest and Range Experiment Station, U.S. Forest Service, Rapid City, S. Dak., and North Dakota State University, Fargo, jointly combined efforts to collect ecological information on the wetland plant communities of rangeland strip-mine ponds and stockdams. Wetland plant communities on strip-mine ponds and stockdams were studied at Beulah and Bowman, N. Dak.; Colony and Sheridan, Wyo; and Firesteel, S. Dak., during the summers of 1976, 1977, and 1978.

The objectives were to determine the wetland plant communities of rangeland impoundments, their characteristic and structure, their relationship to various physical, chemical, and biological factors, and to develop guidelines for managing wetland vegetation.

Plant Community Characteristics

Several differences in wetland plant community development

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are apparent between strip-mine ponds and stockdams. First, strip-mine ponds lack wet meadow and shallow marsh plant communities such as foxtail barley (*Hordeum jubatum*), prairie cordgrass (*Spartina pectinata*), sedges (*Carex spp.*), and rushes (*Juncus spp.*). All stockdams display these outermost wetland plant communities around the basin margin. This is especially significant for waterfowl since sedges and rushes are preferred nesting cover.

Second, strip-mine ponds have extremely narrow bands of emergent vegetation such as cattails (*Typha* spp.) and bulrushes (*Scirpus* spp.) compared to broad, extensive zones of emergent vegetation on stockdams. Retarded development of emergent vegetation reduces the amount of escape and brood rearing cover essential for superior waterfowl habitat.

Third, submerged plant communities such as the pondweeds (*Potamogeton* spp.) and water milfoil (*Myriophyllum exal-bescens*) are restricted to a narrow band close to shore on strip-mine ponds. In contrast, submerged plant communities of stockdams are more extensively developed. Restricted development of submerged vegetation limits the amount of food sources available to waterfowl both directly and indirectly. Tubers, the underground stems of pondweeds, are preferred waterfowl foods. Also, reduced area of submerged vegetation limits the production of plant dependent aquatic invertebrates, a highly preferred high-protein food required by ducklings for growth.

Finally, strip-mine ponds exhibit fewer wetland plant communities, fewer plant species within each community, and a more concentric pattern of community development around the pond margin. Stockdams, in comparison, have many more visually detectable communities in a complex, mosaic pattern. Reduced variability of wetland vegetation may be less attractive to waterfowl, as reflected by lower waterfowl utilization on strip mine ponds.

Environmental Explanations

The expression of any plant community is governed by a host of complex, interacting environmental variables. Resource managers must identify and manipulate these major variables in managing wetland vegetation of rangeland impoundments.



Steep basin slopes on rangeland strip-mine ponds and natural fluctuating water levels are major factors causing the absence of wet meadow plant communities.



Gradually sloped basins of stockdams, coupled with a fluctuating water regime, promote extensive development of wetland plant communities and waterfowl habitat.

A common factor inhibiting wetland plant development on strip-mine impoundments in the east is highly acidic basin water resulting from oxidation and subsequent leaching of toxic spoil material from anthracite and bituminous coal fields. The water in Northern Great Plains strip-mine impoundments is more alkaline, probably due to less acidic overburden overlying the younger lignite and sub-bituminous coals. In most cases, acidity is low enough and does not inhibit wetland plant growth.

However, a major factor governing the development of wetland vegetation on Northern Great Plains strip-mine ponds is basin slope. Interacting with naturally fluctuating water levels, basin slope influences wetland plant development by regulating water depth and permanence within zones of wetland vegetation.

Basin slopes are normally extremely steep on strip-mine ponds compared to stockdams. Since wetland plant development is closely linked with moisture conditions, extreme basin slope limits the amount of shoreline area having favorable moisture conditions under fluctuating water levels. This results in narrower emergent communities, restricted submerged zones, and lack of wet meadow communities.

In the case of submerged vegetation, deep water near shore due to extreme basin slope limits the amount of light penetration reaching submerged plants. As a consequence, photosynthesis is severely restricted with increasing depths, limiting community development to narrow bands near shore.

Also, seasonal water level fluctuations are of lesser magnitude on strip-mine ponds compared to stockdams. This stability limits wetland plant development since smaller areas of shoreline are exposed or inundated during extreme water level ranges.

Three factors probably account for subdued water level fluctuation on strip-mine ponds. First, unlike stockdams, underground springs feeding strip-mine ponds buffer the loss of basin water from evaporation and transpiration. Second, greater water depth and smaller surface area of strip-mine ponds may suppress water surface areas. Finally, the rate of water loss from a wetland basin varies directly with the length of shoreline per unit area and inversely with basin slope, since most water loss occurs through transpiration by marginal emergent vegetation and evaporation from exposed shoreline soil surfaces.

Natural summer drawdowns, resulting in mudflat exposure, offer several advantages for improving waterfowl habitat. Exposed mudflats encourage the establishment of many wetland plant species from seed. Once germination and establishment occur on a mudflat, many wetland plant species continue to grow and reproduce by root sprouting, even under flooded conditions. Cattails and bulrushes often colonize new wetland areas in this manner.

Mudflats exposed from a natural drawdown quickly develop more favorable growing conditions for wetland plants compared to submerged soils. Decomposition of residual plant materials proceeds rapidly under the aerobic conditions of exposed mudflats, quickly releasing essential growth nutrients for future plant utilization. Under submerged conditions decomposition of plant material is much slower, resulting in a build-up of organic residues. Fluctuating water regimes prevent an accumulation of organic debris while contributing to higher soil fertility.

Fluctuating water regimes also create a variety of environmental conditions favorable to a wider number of wetland plant species. This condition is a major reason for the mosaic pattern of wetland plant community distribution on gradually sloped stockdams. A greater number of wetland plant species attract a greater number of waterfowl by providing more diversified habitat.

Another inherent problem limiting the development of wetland vegetation on steep-sloped basins is erosion. Spoil banks are commonly void of terrestrial vegetation or at most only sparsely vegetated. As a result, erosion of unstable soils is rapid on steep basin slopes. A fast rate of sediment deposition into the basin causes a constantly shifting substrate to which wetland plants anchor. Continual disturbance of the substrate by sediment loads hinders the development of wetland plant communities.

Suggestions For Improvement

Correcting basin slope and manipulating water levels are the major factors to consider in managing wetland vegetation on rangeland impoundments. Both factors interact to determine habitat favorable to wetland plant development.

Plans for the construction of future rangeland impoundments should include provisions for gradually sloping the surrounding shoreline. Future strip mining activities should include plans for setting aside top soil for overburden material until after contouring has been completed. This may reduce the amount of toxins leached into a basin from the oxidation of spoil materials.

On existing rangeland impoundments, particularly strip-mine ponds, shoreline contouring is recommended to encourage enhanced wetland plant development. Installation of weirs or other water control devices on present and future impoundments will permit deliberate manipulation of water levels to create artificially induced mudflats.

Summary

Development of wetland vegetation on strip-mine ponds and stockdams is governed by a host of complex, interacting environmental variables. However, basin slope plays a major role in the expression of wetland vegetation on rangeland impoundments by determining the area of shoreline exposed under natural summer drawdowns; water depth and permanence within zones of wetland vegetation; and the rate of sediment deposition on the substrate occupied by wetland plants.

We must realize the additional potential assets offered from managing wetland vegetation on these rangeland impoundments. Contouring basin slopes and manipulating water levels will enhance the development of wetland vegetation, permitting greater multiple uses on rangeland impoundments. With proper management, strip-mine ponds can be converted into more productive ecosystems for all interests.

en breve

COORDINANDO EL MANEJO DE GANADO CON EL RECURSO PASTIZAL

(M. Vavra y R.J. Raleigh. 1976. J. Range Manage. 29:449-452)

El crecimiento de la población demanda un incremento en la disponibilidad de carne roja y el pastizal es una de las fuentes principales para su producción. Por lo tanto, una mejor utilización del rescurso pastizal podria aumentar la producción de carne roja a partir del agostadero.

En el Oeste de los Estados Unidos todos los sistemas de manejo de ganado son similares. La calidad de forraje generalmente es mejor durante primavera en la región del norte, pero después de la época de lluvias es mejor en el sur. El objectivo de este estudio fue por lo tanto, optimizar la producción de ganado mediante un manejo coordinado de este con el pastizal de tal forma que se utilizaran eficiente los períodos cortos cuando el forraje ofrece su máxima calidad. En este estudio, fueron considerados como parámetros, el destete precoz, duración de la época de empadre, época de parición y tipo de suplementación. El destete precoz reduce el retardo de crecimiento de los becerros cuando estos son puestos antes de lo usual en un forraje de óptima calidad o bién cuando se les administra una alimentación predestete.

En un estudio de este tipo realizado en el Sureste de Oregon. el promedio de ganancia diaria fue mas del doble en becerros destetados durante las primeras semanas. En otro localidad del Noreste de Oregon, los becerros fueron destetado alrededor de 160, 185 y 215 dias de edad. El destete a los 185 dias fue la mejor practica de manejo para las condiciones de ese lugar. Un período corto de empadre podría ayudar a lograr una mayor eficiencia en el manejo del forraje. Con esta práctica, los becerros al destete son mas uniformes y solamente requieren un manejo y un programa de alimentación. El control de la época de parición es un medio adecuado para realizar un buen manejo; si esta propiamente sincronizada, los becerros pueden hacer uso de un forraje de alta calidad y a la vez evitar temperaturas desfavorables. El papel de la suplementación es fundamental, el programa de suplementación en el Sureste de Oregon es de 120 dias con una ganancia adicional de 45 kg en cada novillo. (Resumido por T. Ghermanzein, Estudiante graduado en Ingeniería Agricola, Oklahoma State Univ.)

SIMPOSIUM SOBRE METODOLOGIA EN PASTIZALES PARA UNA MAXIMA PRODUCCION DE GANADO: MANIPULACION DEL GANADO Y MANEJO DEL FORRAJE PARA UNA OPTIMA PRODUCCION

(R.J. Raleigh. 1960. J. Anim. Sci. 30:108-114)

Una producción óptima de ganado en condiciones de agostadero puede ser lograda únicamente a través de un manejo compatible de forraje y ganado. Unicamente después de conocer los relativos cambios en la disponibilidad de nutrientes, el ganado puede ser manejado de tal manera que se puedan obtener los máximos ingresos a partir de los recursos forrajeros disponibles. El objetivo de este estúdio realizado en la estación experimental Squaw Butte en Burns, Oregon, fue el de evaluar periódicamente el forraje a través de la época de pastoreo y adaptar estos datos a los requerimientos del animal con el objeto de establecer un programa que permita una producción máxima de ganado a partir del recurso pastizal.

El forraje fue evaluado químicamente y en términos de producción animal a través de la temporada de pastoreo. El nitrógeno y energía digestible del pastizal disminuye desde un nivel capaz de permitir ganancias hasta de 1.0 kg diario en ganado de sobreaño, hasta un nivel de mantenimiento en Octubre.

Los animales que recibieron suplementos de energía entre Mayo 10 y Junio 11 ganaron 0.2 kg diarios por cabeza sobre los animales sin suplemento en un mismo tipo de pastizal. El suplemento proporcionó diariamente 1000 kcal de energía digestible. Los becerros nacidos en el otoño promediaron al destete 70 kg mas sobre los becerros nacidos en el verano, aunque necesitaron \$10.00 dólares adicionales por concepto del suplemento invernal.

Estos resultados indícan que es factible manipular al ganado basados en el conocimiento de la calidad del pastizal y adaptarlo a los requerimientos de los animales para incrementar su producción. (*Resumido por Hussein Zawi, Estudiante graduado en Manejo de Pastizales, Oklahoma State Univ.*)

SUPLEMENTOS INVERNALES LIQUIDOS Y SECOS PARA VACAS EN PASTOREO

(*R. Totusek, J.W. Holloway y W.E. Sharp.* 1971. Okla. Agr. Exp. Sta. Misc. Pub. 85:36-41)

Actualmente existe gran interes por el tipo de suplementacion individual controlada debido al constante aumento del costo de la mano de obra. El objetivo de este estudio fué el de comparar en condiciones de agostadero los suplementos líquidos conteniendo urea y biuret, con un suplemento seco a base de proteínas naturales. Tres pruebas fueron conducidas en la estación experimental cercana a Stillwater, Okla. durante los inviernos de 1968-69 y 1969-70. Se utilizaron vacas Angus Hereford, las cuales parieron durante el siguiente verano a la suplementación.

En la prueba I se comparó un suplemento con 25% de proteina natural proporcionado manualmente, con un suplemento líquido de 30% de proteína de la cual. 28.1% fué en forma de urea. El consumo del suplemento líquido se controlo con un lamedero especial. Las pérdidas de peso observadas durante el invierno fueron similares en ambos tratamientos. En la prueba II se compararon 3 tratamientos de alimentacion autocontrolada conteniendo cada uno 30% de proteina cruda. Uno de los tratamientos utilizó sólo proteina natural y los otros dos urea o biuret en una cantidad equivalente a la mitad de la proteina proporcionada. Se encontraron diferencias significativas en los pesos corporales; las vacas que consumieron proteina natural ganaron más peso que el grupo con suplemento líquido de urea. El grupo que consumió biuret fué el que menos ganancias obtuvo. En la prueba III se utilizaron los mismos tratamientos que en la prueba Il mas otro tratamiento líquido adicional. Las vacas de los grupos con suplementos líquidos perdieron más peso, seguidas por los grupos con proteina natural, urea y biuret respectivamente.

En general, los suplementos líquidos fueron menos satisfactorios que los suplementos con proteina natural; sin embargo, los resultados fueron sorprendentemente buenos tomando en cuenta su elevado contenido de urea. Los suplementos secos con urea o biuret arrojaron resultados satisfactorios y reflejan el potencial que existe para incrementar la utilizacion de fuentes de nitrógeno no protéico en la alimentación de ganado en agostadero. (*Resumido por Orlando Forero, estudiante graduado en Nutricion Animal. Oklahoma State Univ.*)

Range Management Goes to Africa

Donald L. Huss



Delegates, lecturers and those often irritable but dependable drivers who got us safely from place to place in spite of road, traffic, and wildlife hazards.

Twenty-six delegates from Tanzania, Kenya, Uganda, Sudan, Zambia, Botswana, Swaziland, Gambia, Sierra Leone, and Ghana participated in 3 weeks of training in range management in Tanzania. Their training was part of an overall training course in pastures and fodder crop production sponsored jointly by the Grassland and Fodder Crop Bank of the Food and Agriculture Organization of the United Nations (FAO) with the generous contribution of the Swedish International Development Agency (SIDA). The range management part of the Course, held at the Ministry of Agriculture's Dairy Training Institute near Arusha, followed lectures by an Australian team in tropical pastures and fodder crops at the University of Dar-es-Salaam, Faculty of Agriculture at Morogoro. Range Management training was conducted by an international and local lecturing staff generously sprinkled with Society for Range Management members.

In addition to the author, who arranged the Course and who acted as Team Leader, the international lecturing staff consisted of Martin H. Gonzalez, Head of the Department of Range Management, National Institute of Livestock Research, and Director of Rancho Experimental La Campana, Mexico; Lucas J. Ayuko, Head of Range Management Division, Kenya; and, Ian R. Lane, Lecturer in Animal Production, University Dar-es-Salaam, Tanzania. All but Lane are SRM members. Local lecturers from Arusha were L.M. Parkipuny and James A. (Al) Martin, Director and Range Specialist respectively, Masai Range and Livestock Development Project; Salum Juma Salum Ally, MATI Tengeru and R.S. McCandliss, Project Leader, USAID. Lecturers from

The author is a regional range management officer, FAO of the UN, Regional Office for the Near East, Cairo, Egypt.

Dar-es-Salaam were Milton Pate, Range Specialist, Texas A&M University, Livestock Development Project; Justice A. Rwebangira, Tanzania Livestock Development Project; and Gail Pate, DVM. Both Martin and Pate are SRM members.

The Course stressed the practical and applicable aspects of range management and their importance in respect to livestock and wildlife production, soil and water conservation, and desertification control and rehabilitation. These were demonstrated various times and from different angles by means of lectures, field demonstrations, slide presentations, and movies. The first part of the Course pertained to fundamentals essential to the understanding of range management concepts, practices, principles and interpretations. These were described and later demonstrated in the field. These prerequisite subjects were followed with discussions of range management techniques and practices essential to an overall development and improvement programme for the countries concerned.

Field practicals were conducted on the lands of the Masai Range and Livestock Development Project and the National Ranching Company's Manyara Ranch. Wildlife management as related to range management was covered via a 4-day safari to the Serengeti Wildlife Research Institute on the Serengeti National Park, Ngorongoro Conservation Area and Manyara National Park. Lectures were given and field observations were directed by renowned international and local wildlife scientists.

A part of the curriculum pertaining to delegate statements regarding the range situation and range management development and management programmes in their countries clearly showed that those who are interested in fostering and advancing practical range management on a worldwide basis have their work cut out for them. Supposedly, the delegates were leaders or at least instrumental individuals in the development of livestock industries and natural resources in their countries. Yet, many stated that their countries did not have rangelands; but upon questioning it was determined that ranges indeed produce the bulk of their meat and milk supplies. Only Kenya, Sudan and Tanzania have formally trained range scientists and while this cadre is capable of conceiving a ranch development program, its numbers are too few to fully implement one. Only a few countries have range use policies and departments with mandates to execute them, but these efforts are hampared by a deficiency in

Water-A Critical Factor in the Arid Southwest Energy, Rangeland,

Larry Seymour

The vast Chihuahuan desert covers the Big Bend area of Texas plus much of Mexico. This area consists of many large ranches. In the past most of these ran sheep, but in the last 20 years many have converted to cattle because of predators. In addition, this area supports numerous wildlife species such as mule deer, pronghorn antelope, mountain lions, and an occasional bear.



Water storage facilities are essential for grazing and managing rangeland in the arid southwest.

In this 4-8-inch rainfall area, water is a critical factor. All needed water is furnished by wells. These wells range in depth from 500 to 2,000 feet. Even at this depth they pump only 1 to 2 gallons per minute. Large water storage facilities are necessary and are generally built in strategic locations so that one well can provide water for several thousand acres.

Installation of these permanent waterings has helped to achieve better grazing distribution on the land. This has enabled ranchers to utilize the native forage to provide meat and other essentials for people. These waterings have also helped the wildlife. Wildlife are now able to utilize areas that they were restricted from before because of the lack of water.

From a range standpoint water is a limiting factor in ranching in the Southwest. The development of water has opened up a large area of rangeland for production of livestock and wildlife as well as a place of scenic beauty.

funds, resources, and manpower.

In the meantime, the rangelands of east and west Africa continue to deteriorate and the southern boundary of the Sahelian zone continues to march southward. This downward trend can in time be stopped and reversed with the inexpensive application of range management practices and principles. If for no other reason, this course was a success because 26 men have returned with concepts and ideas that they never had before, and perhaps some of them might be able to start something worthwhile. Now that range management has gone to Africa, we must work to keep it there.

Cattle, Meat, and Man

Stewart H. Fowler

In a world faced with a severe energy crisis, we must consider the efficiency of energy cost to produce food. Livestock grazing of rangelands can reduce the drain on future fossil energy requirements for red meat production by providing an opportunity to tap the energy of the sun without major alterations of natural ecosystems. Rangelands furnish an annual renewable source of energy for producing red meat, so we may have a realignment of our beef industry toward greater utilization of range, pasture, and roughage with less long-term heavy-grain finishing in feedlots. We must start with the efficiency of solar energy conversion into plant material and the transfer of this energy to animal products. Plans should be made now to produce acceptable beef at less cost in fossil fuel through the use of more forages from rangelands combined with less concentrates or cereal feeds. We will need to capitalize on the ruminant's unique advantage-its ability to convert organic substances not useable by man and other monogratric animals into human food of high quality and desirability. There are far greater tonnages of biological material in the world that the ruminant must convert for man's use than of the materials that humans can consume directly. Inedible by humans, most of this material, which produces millions of pounds of meat, would be wasted if not utilized by cattle, sheep, and wildlife.

Thus, forage-consuming animals do not compete directly for human food. Instead, they supply red meat, which provides high quality protein, essential minerals and vitamins, and considerable food energy for human nourishment. The trend toward increased pressures on world food supplies appears inevitable; and with the increasing cost of energy, our rangelands must be used more intensively for meat production in the future. Currently, we are realizing only about 20% of the efficiency of our forage and grassland potential. In contrast we, must increase as rapidly as possible the role that our millions of acres of rangeland can fulfill in ruminant animal production.

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Author's Note: This fact sheet was developed for use in the public educational effort of the Society for Range Management to show the growing need for beef and other ruminant production from rangeland.

Legislative Log

The first session of the 96th U.S. Congress has been extended in time to allow for several pressing issues. There is doubt that even then they can resolve the many critical items before them.

Following are a few of the more important bills as of November 13 and brief summaries of events important to our readers.

Proposed Bill	Description of Bill		Status as of Nov. 13, 1979
S-1903. Senator John Mel- cher (D) Montana. (Revised H.R. 14327 introduced by Cong. Poage in the 2nd session of 95th Congress).	Cited as the "Cooperative Rangeland Rese of 1979." Bill directs Secretary of Agriculture with State universities on a cooperativ research program—on a matching basis.	earch Act e to work e range	This is the bill SRM has developed. Introduced by Senator Melcher on October 17, 1979. No bill has been introduced in the House. Senate hearings are likely early in the next session. At hearings SRM and other friends and supporters could help assess the opportunities that could be opened by implementa- tion of the bill.
Udall-Anderson substitute for HR-39 S-9 Sena- tors Jackson, Washington and Senator Durkin, New Hampshire.	Described as Alaska Land Bill. As amended deals with up to 120 million acres of valuable habitat and spectacular scenic areas in while allowing for considerable commodity ment—but not as much multiple use as loca believe desirable. There is still much opport the bill.	d this bill e wildlife Alaska, develop- al people ssition to	The House passed this complicated bill on May 16 by a vote of $360-65$. After much work the Senate Energy and Natural Resources Committee completed its mark-up on October 30, voting to report S-9 by $17-1$. Because of a heavy Senate schedule there is still some question as to action this year. It is possible that the bill will not reach the Senate floor until next year.
S-1680 Senator Hatch and 6 other Senators HR5662 Congressman Don Young, Alaska.	Cited as the "Western Lands Distributio 1979," a bill to provide for the cess conveyance of federally owned unreser appropriated lands, and to establish polic ods, procedures, schedules and criteria transfers. It is now being labeled by some v the "Sagebrush Rebellion." H.R. 5662 als the conveyance of federal lands in Al selected by native groups and the State u Alaska Native Claims and Statehood Acts. these lands are proposed for retention under management in Alaska lands bills current consideration	n Act of ion and ved, un- y, meth- for such vriters as o directs aska as nder the Some of er federal ily under	S-1680 was introduced on August 3 and referred to the Senate Committee on Energy and natural Resources. H.R. 5662 was introduced on October 19 and referred to the House Committee on Interior and Insular Affairs.
		S 1903	Senator John Melcher, Montana
Bergland Urges Inter	nsified Soil Conservation	Sena	ate hearings, although not scheduled, are antici-
American farmers must decide soon whether to keep their soil tied down on the land or to allow an additional 60 million tons of it to wash or blow away this season, Secretary of Agriculture Bob Bergland said on November 1.		pated and de similar unexpe attentic	in early 1980. Congressmen Foley (Washington) e la Garza (Texas) are expected to introduce a bill in the House. To date there has been both ected support and opposition to the bill. The on that has been attracted to the status of range

Because of an excellent demand for American grain in the year ahead, there is no set-aside or diversion for wheat and feed grains, and each farmer will decide for himself how much cropland to plant, Bergland said.

"In the 1973-74 crop year," he said, "farmers plowed up an additional 9 million acres of marginal land-land nearly impossible to protect from soil erosion.

"The result was 60 million tons more soil lost on those 9 million acres alone," Bergland said. "That was the bitter result of research by virture of this bill is encouraging.

For more information on the Poage Bill please refer to page 36, Rangelands, for February 1979. For more information on S. 1903 contact J.O. Klemmedson, Chairman, SRM Research Affairs Committee, School of Renewable Natural Resources, University of Arizona, Tucson, Arizona 85721. His residence phone is 602-297-2849 and office 602-626-1268.

plowing from fence to fence."

He pointed out that the most serious soil erosion occurs on a fraction of the cropland, usually sloping land with highly erodible soils. Soybeans planted on marginal lands in one part of Iowa, he said, resulted in "the sickening loss of 26 tons of soil for each ton of soybeans harvested."

Bergland warned that switching to crop production on hard-to-protect acres can undo years of work and hundreds of million of dollars invested in soil conservation practices.

Private Non-industrial Forestry Conference Scheduled

A national conference on forest lands owned by private individuals will be held in Washington Nov. 26–27. Topics will include methods to improve the management of private forests, including possible incentives and assistance such as tax reforms, better dissemination of forestry information and more effective logging techniques.

Conferees also will seek a consensus on priorities for future private, non-industrial forestry policies and programs and provide a forum for communicating new ideas on private forestry to Congress, the White House and federal agencies.

Private, non-industrial forest lands comprise more than half the nation's productive forests. Hence, the effective management of this resource is the key to meeting America's future demands for forest products.

The conference is co-sponsored by the National Association of State Foresters and the Forest Service.

Less-developed Countries to Get Technical Soil Assistance

The U.S. Department of Agriculture will provide permanent personnel to help less developed nations conduct soil surveys in their countries, Norman A. Berg, administrator of the department's Soil Conservation Service announced on September 27.

Under an agreement with State Department's Agency for International Development, Berg said his agency will assign agricultural experts for short terms to help identify and categorize soils in tropical and subtropical countries according to an international system of classification. The technical assistance will help the countries conserve and better manage their soil, water and related resources.

The agreement represents the first time that agriculture has assigned permanent staff to assist with soil studies in foreign countries. Previously, the department provided assistance on a country-by-country basis as needed. The new approach will not only improve soil management in countries outside the U.S., but will help with the transfer of technology from one country to another, Berg said.

Pasture & Range Improvement Report Cites Concerns, Recommends Action

National Association Conservation Districts (NACD) with the assistance of a number of agencies and organizations, has compiled a 38-page report calling for a renewed national commitment to improve the nation's pasturelands and rangelands. The report describes the current condition of the resources, concerns and ideas expressed by the various participants, legislative and other activities currently going on at the federal, state, and local level; and recommendations for action.

The nation's pasture and rangeland are well below their ecological and production potential to meet national needs for food, fiber, wildlife, outdoor recreation, water and environmental quality. In 1977 there were 414 million acres of nonfederal rangeland and 134 million acres of pastureland and native pasture, representing a 66-million acre increase since 1967. While improvement has taken place, 60 percent of this nonfederal rangeland remains in fair and poor condition, with 77 percent needing some kind of conservation treatment.

Department of Agriculture Announces New Range Management Policy.

The nation will get more productivity from its 1,550 million acres of forage-producing forest lands and range, an invaluable-but often low profile-resource in the nation's goals, said Secretary of Agriculture Bob Bergland on October 29, in announcing a new policy on range management.

Bergland said "the policy is designed to improve and protect the range and its resources and the social and economic well-being of people and communities that depend on range for their livelihood."

All agencies of the U.S. Department of Agriculture must work the policy into their existing policies and programs within one year, he said.

Rangeland has always been an important source of forage for livestock and wildlife. It also is becoming increasingly important as a source of recreation and minerals, he said.

The new policy establishes steps to increase range productivity. The actions called for will provide more forage for livestock and wildlife, greater recreational opportunities and other resources from the nation's rangelands.

Bergland said the policy will bring ranges fully into the structure and planning of American agriculture. It will increase cooperation among federal, state and private organization, improve range research and rapid transfer of its research results to users. Bergland said the policy will place additional emphasis on technical and financial assistance.

The help implement the policy, Secretary Bergland said he is establishing a departmental committee to be co-chaired by M. Rupert Cutler, assistant secretary for natural resources and environment and Anson R. Bertrand, director of science and education.

Among items to be considered by the committee are ways to speed up application of cost-effective range management methods, ways to prevent arid and semiarid lands in the U.S. and Mexico from turning into desert, how to manage pests and better definition of the federal role in managing predators on public lands.

Conversion of Farmland Studied

The USDA and the Council on Environmental Quality are cooperating in an 18-month study of the extent and causes of conversion of farmland to non-agricultural uses. The study will also explore ways to keep land in agriculture.

Energy Program

Several bills are still laboring through Congress. Observers believe the President will get less than he asked but enough to claim it is his program. Congress will focus more on conservation than recommended by the President. Everyone will be under pressure to save fuel. Fuel savings plans are likely to be required by the states.

The bill for synthetic fuels as passed on November 9 calls for 19 billion rather than the 88 billion the program suggested. A corporation to run the synfuels program was approved but with limited powers. The legislation also includes 1.35 billion in emergency aid to help the poor in heating their homes. A solar bank is likely for loans and research backing.

An Energy Mobilization Board appears probable but with limited powers for overriding environmental and local laws.

The standby authority to ration gasoline has passed with requirement that the President must have congressional agreement on ration plans. It appears likley that taxes on windfall oil profits will be compromised. Observers believe Congress will add incentives to encourage more U.S. oil production plus credits for alternative fuels such as shale, gasahol etc.

The Potential, Massive Impact of the MX Missile System

Having committed himself to development of the MX missile, President Carter is expected to sign an order soon directing the Air Force to proceed with development and testing of prototypes, preliminary to eventual deployment of the MX system on public lands in southern Nevada and Utah. Testing will include trying the mechanics of underground shelters, ramps, and the 180-foot long, 335-ton transport vehicles that are supposed to move missiles from shelter to shelter in a gigantic shell game. Testing also will include observations from space to see if the shell game will really fool the Russians.

Total development-by 1990 according to Defense Department projections-will cost \$30 billion and involve the most massive technological assult on public lands in history. The plans call for a network of some 200 oval tracks, each serving 23 underground shelters connected by ramps, each shelter built in $2\frac{1}{2}$ acre plots and none closer than $1\frac{1}{4}$ miles apart.

The total length of new roadway – built to sustain heavier loads than any inflicted on Interstate highways – seems to be a moving figure. An account distributed by the *New York Times* news service in August said there would be 4,600 shelters and 15,000 miles of new road. Dr. Carlos Stern, Air Force deputy for environment and safety, told PLI that from 6,000 to 8,000 miles of new road would be required. He said the system would actually occupy about 7,000 square miles, but that as much as 22,000 square miles could be impacted.

If Dr. Stern's estimate is correct, the new roadway will be the linear equivalent of three coast-to-coast highways. If the *N.Y. Times* figure is accurate, it could be six such highways.

Connecticut is 5,000 square miles. Maryland is 10,577 square miles.

Dr. Stern said from 10,000 to 15,000 people would be required to operate the MX system. At least one new major military base would be established, and together with families and back-up services in the private sector, the equivalent of a new city of 50,000 would be imposed on the arid expanse of eastern Nevada and western Utah. The *N*.Y. *Times* said 25,000 workers would be required to build the system.

Ranchers will find grazing lands segmented, water rights likely to be taken away. Other uses of the public lands such as mining and recreation will have to yield. Dr. Stern and *TIME* magazine (Aug. 20) said the system would be built in the "valleys".

Dr. Stern expressed surprise that environmentalists to date had not demonstrated greater concern about the project. The President of PLI told him that one of the reasons had been the constantly shifting pronouncements and projections emanating from the Pentagon. Citizens have been as confused as the Russians are supposed to be when the missiles are shuttled from shelter to shelter. But the Pentagon's own site target now seems to have quit moving. A 6-volume, preliminary environmental statement was released a year ago, but a new one must now be prepared with specific reference to the Nevada-Utah area. Environmentalists should now get busy. So should local government officials, ranchers, and other interests. Dr. Stern said the Air Force needs, and will welcome, their advice and data.

In addition to the analysis required by the National Environmental Policy Act, there is another safeguard against the extravagant taking of public land resources. Any withdrawal of public lands for military purposes in excess of 5,000 acres has to be approved by act of Congress. –PLI *Newsletter*

Ranchers Sue Feds

A small group of ranchers from southwestern South Dakota are supporting a suit against the federal government to force elimination of prairie dogs. The group is known as the Pied Pipers of South Dakota and they allege that prairie dogs have devastated 200,000 acres of grazing lands on Pine Ridge Indian Reservation ... S.D. Natural Resources Newsletter, March, 1979. [This is an example of how a news item can stir-up the ire of conservationists and/or preservationists. We seriously doubt that the intent of the suit is to "eliminate" prairie dogs. Certainly the goal of the plaintiff would be prairie dog reduction or control. This kind of statement raises a further biological question: Would it be physically (biologically) possible with known techniques to completely eliminate a species like the prairie dog or the covote? How would one put "boundaries" around an area to determine if a species was "eliminated" from that area? Theoretically, all prairie dogs for "x" number of miles or acres around the Badlands National Park could, perhaps, be eliminated at great expense, but would not the acreage adjacent to the Park be repopulated by prairie dogs from within the Park each time the population reached the existing carrying capacity? This suit will be interesting to follow because of other existing S.D. law that could apply.]-Bob Gartner, Newsletter editor, South Dakota Section.

Forest and Range Experts Plan for the Future

Planning for the future use and development of the country's national forests and grasslands is the topic of a 9-month series of workshops sponsored by the Rocky Mountain Forest and Range Experiment Station headquartered at Colorado State University and the Eisenhower Consortium for Western Environmental Forestry Research.

The workshop series, which began September 10, 1979, in Fort Collins, Colorado, will involve more than 800 planning specialists from 155 national forests across the country. Dr. Donald A. Jameson, professor of range science at CSU is program director for the workshops.

Said Jameson, "Our objective is to help national forests develop resource plans that are consistent with new legislation and national guidelines."

Future workshops are scheduled at Duluth, Atlanta, Reno, Portland, and Tucson. Many university instructors and personnel from private organizations across the country will be involved in these workshops.

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Youth Learn to Be at Home on the Range

Counselors at the 19th annual Kansas Range Youth Camp at Rock Springs 4-H Camp said the session held in July 1979 had an outstanding group of young men and women. "The interest and enthusiasm of the young people made this year's camp an enjoyable rangeland learning experience for everyone," stated Lynn Gibson, camp chairman and range conservationist for the Soil Conservation Service at Salina, Kansas. The annual camp is sponsored by the Kansas-Oklahoma Section, SRM.



Kansas Range Youth campers compete in the plant identification contest on the last day of the camp.

The top individuals in the plant identification contest were: David Salva of Burlington and Dwain Worley of Atwood, first place tie; Juania Jarvis of Phillipsburg, third; and Leslie Jones of Goodland and Joe Harvey of Liberal, fourth place tie. Each received a complimentary copy of the Phillips Petroleum Company book "Pasture and Range Plants."



David Salva of Burlington, second from left, and Dwain Worley of Atwood, second from right, tied as winners of the plant identification contest at the annual Kansas Range Youth Camp. At left is Lynn Gibson, camp chairman; and at right is Charles Gray of the State Conservation Commission.

The Kansas Range Youth Camp is an annual event for high school upperclassmen who have an interest in rangeland management. Subjects covered all aspects of range management. Instructors and counselors were from the Soil Conservation Service, Kansas State University, Kansas Fish and Game Commission, Fort Hays State University, State Conservation Commission, and the ranching industry. A field trip to the SCS Plant Materials Center and the KSU Range Management Research Unit was included. Recreation and career opportunities were also part of the camp. Youth attending are chosen by their local conservation districts. – **Fred L. Trump**

President's Notes



This is my last opportunity as your President to discuss Society activities in this column. My term has passed much too fast to accomplish many of the objectives that I discussed with Committee Chairpersons, Advisory Council, and Board of Directors in Casper last February. As a result there are several important **items that remain for completion** by 1980 President Harold Heady and his Board. Some of these are:

1) Finalization of the Society's long-range plan based on Society objectives that were identified at Mormon Lake, Arizona, in 1978.

2) The evaluation, reorganization, and formalization of the Headquarters' Office operation.

3) The development and adoption of methods to improve SRM's information and education program.

4) The identification of opportunities to strengthen the Society's financial position.

5) Expansion of membership so there is better geographical and user interest representation.

 Continued improvement of internal and external communications.

Although this year's accomplishments will fall short of my expectations, we have made valuable progress in establishing a stronger leadership role in the future use and management of the world's rangelands. The three Executive Secretaries who have served you during the past year and I have reported several of these in our *Rangelands* column.

There are rewards mixed with the work and responsibilities of serving the Society. Recently Floyd Kinsinger, Executive Secretary; Jim Klemmedson, Research Committee Chairman; and I experienced some of these rewards during a recent visit to Washington, D.C. I wish each SRM member could have shared in the warm reception, high praise for the Society, fruitful discussions, and productive plans that we were able to enjoy during this visit.

Our Washington schedule included a one-day meeting with Senate and House staff members discussing the **Cooperative Rangeland Research Bill.** We found strong support for increased attention to range issues, including research. Senator Melcher, Montana, has since introduced the research legislation as Senate Bill 1910. The SRM Research Committee has provided extensive assistance to several Senate and House members in the development of this bill. You will be able to follow its progress in this and future issues of *Rangelands*.

During our second day, we met with representatives of **other natural resource societies** and associations. These groups have a strong and growing interest in range management. They exhibit a strong desire to combine the efforts of the various memberships to better inform the public about the value and importance of all renewable natural resources. The Society can benefit greatly by being a member of this movement and strengthening our relations with similar groups, their members, and outstanding leaders.

As a result of these discussions, we agreed to **co-sponsor with other cooperating groups a major natural resource meeting** in Washington in the fall of 1980; participate in the formation of a rangeland coalition on November 28; support natural resource information and education efforts of other organizations; and continue to participate in and seek expansion of the Renewal Natural Resource Center.

The final day of this trip was devoted to discussing several current rangeland issues with representatives of the Departments of Agriculture and Interior and their agencies and from the Office of Personnel Management. These discussions encompassed such topics as Civil Service Standards; agency training and staffing; research emphasis; long-term agency objectives, land classification, Department progress in filling comments made at the Tucson Rangeland Symposium, approval for attendance at SRM meetings, etc. The following are a few of the plans originating from these discussions:

1) The recommended **standards for Civil Service employment** were presented to the Office of Personnel Management in November. OPM plans to publish their recommendations for comment early next year.

2) The Society agreed to be the United States sponsor for a **Mexico-US Range Management Symposium in 1981.** This meeting will be one phase of the international desertification program.

3) The Departments of Agriculture and Interior will **co-sponsor** the opening session of our 1980 Annual Meeting in San Diego as a formal follow-up to the 1979 Tucson Rangelands Policy Symposium. Assistant Secretaries Guy Martin and Rupert Cutler will be our keynote speakers. The program will include an opportunity to question them and the agency heads for the Bureau of Land Management, Forest Service, Science and Education Administration, and Soil Conservation Service.

4) The Society will be provided **an early opportunity to review** and comment on new or revised regulations and procedures by some agencies.

Most of the individuals with whom we worked in Washington were aware of the Society and its objectives. They feel the Society is an honest professional organization with an important resource role. Many people asked the Society for our assistance in current activities and future programs. It was apparent to Floyd, Jim, and me that SRM's **opportunity to make important contributions** to US rangeland legislation and policy is limited only by the Society's resources and membership support.

I want to thank Jack Artz and Don Pendleton for organizing the agenda for this trip. Floyd and Jim join me in publicly expressing sincere appreciation to all the individuals with whom we met for their time, interest, support, and encouragement.

I close this column and year with regrets that not every desire for the Society has been fulfilled but with the knowledge that you are blessed with a strong President Elect, Executive Secretary, Board, and membership. With this support the Society for and Profession of Range Management will continue to grow and develop. – **Daniel L. Merkel**, President, SRM

Notes from Denver



San Diego-Here we come!

I attended the California Section meeting in Fresno, November 1–3. The meeting was small but of excellent quality. While in California I had the opportunity to participate in a planning meeting of the Annual Meeting Committee for an in-depth briefing on activities associated with preparation for the Annual Meeting in San Diego, I was immensely impressed with the minute detail of planning for the San Diego Convention and the seemingly endless preparations necessary to host a convention for a Society of our size. The Annual Meeting Committee and California Section members are making every possible effort to make sure that the meeting at San Diego is a rewarding and memorable occasion, not only from the standpoint of professional, educational, and informational benefits, but recreational and social benefits as well.

I also had the opportunity to journey to San Diego and review convention facilities firsthand and meet with hotel personnel to discuss plans and arrangements. The convention hotel facilities are "first class" and hotel personnel were very accommodating and courteous. I believe you will enjoy San Diego in February and I know you will like the program and special events arranged for you and your guests.

Some key personnel who have devoted many hours to plan for and arrange the Annual Meeting in San Diego are: Jay Bentley, Les Berry, Vic Brown, Karl Baker, Don Hedrick, John Menke, and a host of California Section members and their wives.

This is a meeting you won't want to miss and I hope to have the opportunity to meet many of you personally at San Diego.

Membership

Membership dues payments and ballots continue to pour into the office in what I hope is unprecedented volumes. By the time you read this, polls will be closed; ballots are scheduled for counting by an Elections Committee in my office on December 6. Although I hope our returns are "unprecedented", if past experience is any indication, less than half of our total membership return their ballots by November 30 and therefore, new officers are elected with only one-third of the members exercising their voting rights.

Fortunately, the mail each day contains several applications for new members. Someone out there is recruiting! If the Society is to keep ahead of increasing inflationary costs, we *must* continue to add new members and retain our "old" members. We cannot maintain a level membership (and level income) with increasing costs. With a little *extra effort* we could achieve 6,000 members in a short period. How about it?

Publications

We are also receiving unprecedented orders from members, colleges, and subscribers for our various publications. This also provides substantial income for the Society. The new publication *Management of Alpine Ecosystems* is due from the printer momentarily. The revised manuscript for *Rangeland Hydrology* has been received and edited and will soon start through the publication process. A new brochure on "Certified Range Management Consultants" is now off the press.

Meetings

President Dan Merkel, Jim Klemmedson (chairperson, Research Affairs Committee), and I spent a very fruitful 3 days in Washington, D.C., October 9-12, with Congressmen and staff, conservation and resource user groups, and executive branch administrators and staff. Although our primary topic was the Coordinated Rangeland Research Act, which, incidentally, was introduced on October 17 into the Senate by Senator Melcher (S. 1903), we also discussed such topics as civil service standards for range conservationists, accreditation of schools which teach range management, certification of range management consultants, coalition of conservation and user groups for more unified action, range extension education, stewardship of land and resources, range inventory standardization, desertification, and many others. The Society for Range Management was well received at all levels and branches of government and in the conservation community as a respected professional organization. They were interested in our viewpoint and expressed a willingness to work with us.

I will attend a meeting in Washington, D.C. on November 28 with Legislative and Executive branch personnel and conservation groups at the first rangelands roundtable to discuss program needs and potential for public and private rangelands. Then I will journey on to *sunny* Florida to attend and participate in the Southern Section meeting. The new Florida Section has been approved by the Board of Directors, and I will share this good news with them.

I was luncheon speaker for the 35th meeting of the Colorado Association of Soil Conservation Districts and have been invited to be the banquet speaker for the Colorado Section SRM in December.

Miscellaneous

A contract was signed to repair our leaky roof for \$2,379.00 but the contractor failed to report by November 1 due to backlog of work and, with 18 inches of snow on our roof, we are faced with catching a lot of water in pots, pans, wastebaskets, etc., until he can repair it. A new building insurance policy was negotiated which gives us better coverage at about one-half the previous premium.

Colorado State University was the first institution to apply for accreditation of the range management curriculum. CSU prepared all the required preliminary reports to meet the exacting requirements for accreditation. The SRM Committee on Accreditation reviewed these submissions and requested additional information as necessary. Then a campus visitation team reviewed campus facilities, interviewed students, alumni employers, administration, and faculty. The draft report and recommendation on accreditation has been prepared and is being reviewed by the team for submission to the Board of Directors.

Three other universities have prepared or are preparing the necessary preliminary documents for accreditation and five other universities have initiated action for accreditation.

The Committee on Office Operations met in this office October

16 to discuss office equipment requirements, primarily for typesetting and automation of our records (membership, budget, accounting, inventory, etc.). They will meet again December 3–5 to discuss personnel and administrative policy and management. Members of this subcommittee are *Floyd Kinsinger, Pat Smith, John Hunter, Bill Laycock,* and *Lorenz Bredemeier.*

The 1980 Budget Committee composed of *Harold Heady*, *Jack Bohning*, *Bill Laycock*, *Jack Miller* and *Floyd Kinsinger* met in this office November 15 and 16 to develop a proposed budget for approval by the Board of Directors. I found out (for my very first budget for SRM) it is very difficult to balance income with outgo!

For those of you (if any) who read these brief notes, please let me know what you would like to have discussed from the Denver office and I will do my best to accommodate you.

Happy Holiday Season and may the Good Lord bless you richly in the year of 1980.—Floyd E. Kinsinger, Executive Secretary, SRM

Employment Service

Department Head. The Department of Range Science at Colorado State University invites applications and nominations for the position of Department Head. The Department has extensive teaching and research programs in range science and related disciplines. Eleven fulltime faculty members are involved in undergraduate and graduate teaching, research, and extension. The candidate should have strong interest and/or experience in administration, undergraduate and graduate teaching, basic and applied research and public service. A doctoral degree in range science or related field is required. Send letter of application, resume' and three letters of reference to: Dr. E.T. Bartlett, Search Committee, Range Science Department, Colorado State University, Fort Collins, Colorado 80523. Applications must be received by March 15, 1980. Colorado State University is an equal opportunity employer.

Things to Read

Rangeland Management and Fire, the proceedings of the symposium held in Casper, Wyo., in 1977, are available for \$4.00 postpaid from: Intermountain Fire Council, 2705 Spurgin Road, Missoula, Montana 59801.

The 700-page **Proceedings of the Mitigation Symposium** are available. The publication, containing 130 papers relating to fish and wildlife habitat, can be obtained free of charge for single copies from Publications Distribution, Rocky Mountain Forest and Range Experiment Station, USFS, 240 West Prospect St., Fort Collins, CO 80526. The report is designated The Mitigation

* * *

Symposium General Tech. Rep. RM-65.

For sale from Ira Judd, 1701 E. Halifax, Mesa, Arizona 85205, are the following: a limited number of copies of station paper No. 69, "**Principal Forage Plants of Southwestern Ranges**," at \$4.00 each; one **range plant handbook**, loose-leaf edition, leatherette binding, \$40.00; one range plant handbook, \$40.00.

Where Have We Been in 33 Years? K.O. Fulgham Arcata, California

In a recent staff meeting our discussion centered around the Thirty-Third Annual Meeting of the Society for Range Management to be held in San Diego. The question put forth was, when was an annual SRM meeting held in California? Being of recent vintage, the staff was lacking that knowledge. Therefore I undertook a quick systematic sampling of past JRM's and produced this interesting tidbit of information about our Society.

Numbe	rYear	Location	Presiding President
1st	1948	Salt Lake City, Utah	Joseph F. Pechanec*
2nd	1949	Denver, Colorado	Joseph F. Pechanec
3rd	1950	San Antonio, Texas	Frederic G. Renner
4th	1951	Billings, Montana	David A. Savage
5th	1952	Boise, Idaho	Daniel A. Fulton
6th	1953	Albuquerque, New Mexico	Laurence A. Stoddart
7th	1954	Omaha, Nebraska	B.W. Allred
8th	1955	San Jose, California	Floyd D. Larson**
9th	1956	Denver, Colorado	A.P. Atkins
10th	1957	Great Falls, Montana	John D. Freeman
11th	1958	Phoenix, Arizona	E.W. Tisdale
12th	1959	Tulsa, Oklahoma	Robt. S. Campbell
13th	1960	Portland, Oregon	Donald F. Hervey
14th	1961	Salt Lake City, Utah	Fred H. Kennedy
15th	1962	Corpus Christi, Texas	Vernon A. Young
16th	1963	Rapid City, South Dakota	E. Wm Anderson
17th	1964	Wichita, Kansas	M.W. Talbot
18th	1965	Las Vegas, Nevada	Wayne Kessler
19th	1966	New Orleans, Louisiana	C.H. Wasser
20th	1967	Seattle, Washington	Melvin S. Morris
21st	1968	Albuquerque, New Mexico	C. Wayne Cook
22nd	1969	Calgary, Canada	E.J. Dyksterhuis
23rd	1970	Denver, Colorado	Donald A. Cox
24th	1971	Reno, Nevada	Wm D. Hurst***
25th	1972	Washington, DC	Lorenz F. Bredemeier
26th	1973	Boise, Idaho	Floyd E. Kinsinger
27th	1974	Tucson, Arizona	Martin H. Gonzalez
28th	1975	Mexico City, Mexico	Peter V. Jackson III
29th	1976	Omaha, Nebraska	Dillard H. Gates
30th	1977	Portland, Oregon	Bob J. Ragsdale
31st	1978	San Antonio, Texas	Thadis W. Box
32nd	1979	Casper, Wyoming	Robert M. Williamson
33rd	1980	San Diego, California	Daniel L. Merkel

- * The American Society of Range Management was organized early in 1948 at the Salt Lake City meeting.
- ** President Larson was on an overseas assignment, so, Vicepresident A.P. Atkins presided at the San Jose meeting.
- *** In 1970 the name of the Society was changed to Society for Range Management. Wm D. Hurst presided at the first annual meeting of the Society under its new name.

Annual meetings of the Society have all been held in January or February. The last duty of the president, as president, is to preside at the annual meeting at the end of his one-year term.

Counting the San Diego meeting in 1980 the Society will have had 33 annual meetings, but only 32 presidents because Joe Pechanec presided over the first two meetings.

Editor's Note: The Society has held its annual winter meeting at least once in Canada, Mexico, and each of the 17 western states except North Dakota. In addition, it has gone to New Orleans and Washington, D.C.

SRM Liaison Representative in Washington for NRCA and RNRF

For some time many SRM members have desired to increase their professional input into international legislative policy decisions.

At the 1979 SRM summer meeting in Pocatello, Ida., the SRM Advisory Council recommended the Board of Directors approve, subject to budget analyses, a modest step towards the above objective for the United States. Contacts are being made for Canada and Mexico as to their desires in this field. There may also be other international aspects.

As a volunteer, with SRM to pay my out-of-pocket expenses, I agreed to represent, monitor, and report on the high priority United States legislative and policy issues. This program will be under the direction of the SRM Executive Secretary at Denver. I estimate I will have 50 to 60 days time available annually for this effort. It will not be enough to do all the work needed but it will be a good start.

Specifically, for SRM I will have a desk, file drawer, and telephone at the American Fisheries Society office, 5406 Grosvenor Lane, Washington, D.C. 20014, on the Renewable Natural Resources Center site. A secretary will be available for typing letters, reports, or summaries and will be paid on an hourly basis when used.

The proposed approach will involve getting on the mailing lists and making personal contacts with one or more staff members of five or six Congressional Committees most likely to be involved in rangeland issues. The same approach will be used for agencies such as the Council of Environmental Quality (CEQ), Environmental Protection Agency (EPA), Bureau of Land Management (BLM), Fish and Wildlife Service (F&Ws) and Bureau of Indian Affairs (BIA), in the Department of Interior; Soil Conservation Service (SCS), Forest Service (FS), Science and Education Administration, and Office of Environmental Quality, in the Department of Agriculture.

Where possible I will involve other SRM members.

It should be possible to represent the Executive Secretary or Society officers on some occasions to save trips from Denver or elsewhere. Also, some proposals such as rule making, environmental impact statements, proposed policy changes by agencies, or legislation might be determined early enough to give Denver more time and also more information for Society actions.

There would be other ways that the Society could benefit from a representative at the United States national capitol. In the legislative process, if the Society for Range Management is known, it will be requested for its views on legislation. It will also be requested to testify on rangeland or related legislation. Agencies will more likely ask for input on rangeland issues.

Contact with other societies in the Renewable Natural Resources Foundation will be beneficial to SRM as well as to other members of the Foundation. The American Fisheries Society, Society of American Foresters, Wildlife Society, and others have problems similar to ours. Much can be gained by joint studies and sharing policy positions regarding use of herbicides, wilderness policies, professional standards, etc.

Our Society may wish to explore ways and means of promoting the idea of more Legislative Interns who have range manage-

ment backgrounds. These Interns from federal and other agencies on 1-year training and working assignments to Washington can leave their mark resulting in a better understanding of range by Congressional staffs, Congressmen, and others. SRM can and should expand its sphere and influence through this and other means.

In the long run, starting as soon as budgets will allow and not over 3 years from now, SRM should be planning for at least a half-time paid range professional located at the Renewable Natural Resources Center. This representative could be an early-age retiree with a 5-10 year second career in mind. This continuity would be very desirable. In addition, there would be need for volunteers like myself for special assignments. These special assignments could and should be made by the Executive Secretary to assist in the SRM mission.

Hopefully, this article will stimulate dialogue among members. It should encourage more input by members in the shaping of SRM policy. Perhaps we'll get more Letters to the Editor which could add additional dimensions to this dynamic subject.— **Clare Hendee.**

Activities of Student Chapters

University of Arizona

The U of A Chapter of SRM finally has become active. After several years of disarry to get organized and drum up enthusiasm for our club, we feel we are on our way now. We have gotten off to a great start this year.

We hold bi-monthly meetings listening to guest speakers or viewing slides. Present activities include preparing a plant team for competition at the SRM convention in San Diego and serving on the Agriculture Council, which represents all the clubs here at the U of A.

To raise money for the San Diego trip, we have begun an intensive long-term woodcutting project. We are all looking forward to attending the convention.

We want to give special thanks to those University Chapters that sent their resumes of activities on such short notice, we really appreciate it. We shall try to do better for our space in next June's *Rangelands*.—Submitted by *Clay Templin*

Humboldt State University

The Humboldt University Chapter of SRM held its first executive committee meeting on the third day of classes. Topics of discussion were the date of the first Range Club meeting and fund raising projects. These included a Halloween dance and a long-term woodcutting project. The main thing right now is making arrangements for students to attend the Society's annual meeting in San Diego next February.

The major points of concern to the committee were student accommodations, transportation needs while in San Diego, the Student Conclave banquet and dance, and outside activities for students attending the convention.—Submitted by *Brenda Reeves*

New Mexico State University

The New Mexico State University Range Club began with an information booth during registration to recruit new members; this also helped to introduce new students to the club. Our

meetings are held every 3 weeks with a film or speaker for each meeting. The club's plant identification team is working hard in anticipation of the contest in February.

Our first field trip was to the Southwestern Research Station, located in Cave Creek Canyon in Arizona. Plants were collected on the trip to be mounted and sold to 4-H Clubs throughout the state. The fund raisers this year began with water balloon throw, targets being some of our favorite profs. Soon we will be selling SRM license plants and sponsoring a dance.

A monthly newsletter was started this year. It contains announcements, interviews with various faculty members, and articles on different range related topics. The New Mexico Section, SRM, is holding its annual meeting at NMSU on December 7 and 8. We of the Chapter are looking forward to participating in that meeting.—Submitted by *Elaine Jeffcoat*

Oregon State University

The OSU Chapter of SRM is promoting interest in rangeland resources this year. Guest speakers, both agency and private individuals, are scheduled to speak at our monthly meetings. We have a plant identification team again this year and it plans to compete at the Pacific Northwest Section contest at Bend, Oregon, in November as well as at the annual SRM contest next February in San Diego. We are busy cutting wood and selling T-shirts to finance the plant team.

To give rural skills to students with urban backgrounds, we are holding several weekend practicums featuring tractor and 4-wheel drive operation, horsemanship, and elements of fence construction.—Submitted by *Willie Sheet*

The University of Nebraska-Lincoln

Range management students in Agronomy, Animal Science, and Natural Resources at the University of Nebraska-Lincoln are proud to announce the formation of the Range Management Club. The formal organization was initiated in August by six interested students with the guidance of Dr. Steve Waller and Dr. Jim Stubbendieck, who filed a formal letter of intent, prompting university recognition. Prior to the first meeting on September 10, a group of students drafted a constitution. At the first meeting, officers were elected and the drafted constitution was read. A formal constitution committee was formed to incorporate suggestions and finalize a constitution. The final constitution was approved at the club's second meeting on October 1, 1979. The Range Management Club looks forward to the opportunity to advance the understanding and appreciation of range management in Nebraska and to provide support to the student involvement by other clubs in the Society for Range Management.-Submitted by Rocky Plettner

Editor's Note: Schools wishing to have news of their Student Chapter's activities published in *Rangelands* should contact *Clay Templin, School of Natural Renewable Resources, University of Arizona, Tucson 85721.* The information should reach Clay for review and consolidation in time to be forwarded to *Rangelands* editor by May 1 for the June issue and by November 1 for the December issue. We at *Rangelands* welcome these resumes.

Members round about

James Kimball has been named Supervisor of the Tonto National Forest, replacing Bruce Hronek, who has gone to Washington, D.C. Kimball comes to the Tonto, Phoenix, Ariz., from Springerville, Ariz., where he had been Forest Supervisor of the Apache-Sitgreaves National Forest since 1974. Prior to that he served in various Forest Service positions in Arizona, Michigan, and Minnesota. He is a 1957 graduate of Michigan State University.

Garlyn O. Hoffman, Extension Range Brush and Weed Control Specialist, retired August 31, 1979, from the Texas Agricultural Extension Service. Mr. Hoffman joined the Texas Agricultural Extension Service in 1948 as Assistant County Extension Agent in Tom Green County and was County Extension Agent in Sterling County from 1949 until 1951. In 1954 he accepted the Extension Range Specialist position with headquarters at College Station, where he continued until the present. Mr. Hoffman will assume a consultant role in brush and weed control and marketing after retirement. He received the Society for Range Management Fellow Award in February 1979 at Casper, Wyo.

Frank W. Gould, Distinguished Professor of Range Science, retired from the Department of Range Science, Texas A&M University, August 31, 1979. He had served as Curator of the Tracy Herbarium, taught agrostology, and conducted research in biosystematics since 1949. Dr. Gould has published scientific papers and books including *The Grasses of Texas*. He earned the B.S. from Northern Illinois State University, M.S. from the University of Wisconsin, and Ph.D. from the University of California.

Tommy G. Welch assumed the position of Range Brush and Weed Control Specialist with the Texas Agricultural Extension Service at College Station, Texas, effective September 1, 1979. He will give statewide leadership to educational programs in brush and weed control and management on rangeland. Dr. Welch has been serving as Area Range and Brush Control Specialist at Vernon, Texas, for the past 4 years.

Gary R. Evans has recently accepted a position as program review analyst for environment and natural resources programs in USDA-Science and Education Administration, Washington, D.C. Formerly he was environmental systems analyst, Environmental Services Division, Soil Conservation Service.

Dennis Phillippi has been named state range conservationist for the U.S. Soil Conservation Service for Montana. He is a range management graduate of the University of Wyoming and has served as an SCS range conservationist in Wyoming and Washington before coming to Montana. He replaces Joe Zacek, who retired in June. Phillippi has also worked for the State of Wyoming, Bureau of Land Management, and Forest Service.

Dwane J. Sykes has been elected as a "Fellow" of the Explorers Club. This honor was made in recognition of Dr. Sykes' role in opening new frontiers and his contribution to human welfare and world understanding as a wildland conservationist, explorer, scientist, businessman and educator. Sykes is vice president for recreational and natural resources of Wilderness Associates Inc., developing the \$150 million Heritage Mountain Resort in Provo, Utah.

The Explorers Club recognized Dr. Sykes for penetrating both geographic and conceptual frontiers in his diverse scientific and business efforts.



Requiescat in Pace

Joseph Alessi Jr, 58, founder of the first resource, conservation and development area in Colorado, died of cancer in Canon City, Colo.

Alessi coordinated the Sangre de Cristo RC&D project area, which initially was comprised of five counties. The area now includes Pueblo, Huerfano, Las Animas, Custer, Fremont, Chaffee and Lake Counties

For his efforts in the development, Alessi was given the community service award of the Agri-Business Institute in Walsenburg. He developed and coordinated flood control measures in Walsenburg in 1971 and was honored at the site during a dedication by Gov. John Love and U.S. Rep. Frank Evans. A plaque remains at the site of the Alessi Flood Control Project.

He was recognized in the community, as well. He was on the bishop's advisory board of the Pueblo Diocese, a member of Knights of Columbus, Eagles and Lions. He also was past chairman of the American Cancer Society and March of Dimes in Walsenburg.

Alessi was the author of numerous conservation articles and active in Toastmasters International. He was a judge in high demand at 4-H fairs.

Born Oct. 21, 1920, on a dairy farm near Trinidad and graduated from Trinidad State Junior College and Oklahoma A&M, Alessi served in the U.S. Army Air Corps in World War II. He married Velma Morlan of Florence in 1947 in Trinidad. He operated the family dairy until 1953, when he went to work in the Trinidad office of the Soil Conservation Service.

Alessi was district conservationist in Walsenburg 1969-72 and in Canon City 1972-75, when he formed the RC&D. He also was responsible for a number of flood control projects in Fremont County, including those for North and South Canon, Mud Gulch, and Forked Gulch.

He is survived by his wife, two sons, and three daughters.

33rd Annual Meeting Society for Range Management San Diego, California February 11–14, 1980

California Rangelands in Historical Perspective....

It Started in San Diego

For the rangeman, San Diego is where it's at! The range livestock industry of California was born right here in downtown San Diego. This is the cradle in which the infant industry was nurtured and from which it grew into a giant that still is one of the economic mainstays of our State.

What an appropriate setting for the 1980 annual Meeting! An illustrated program, "California Rangelands in Historical Perspective" by Lee Burcham, is scheduled Monday evening, February 11, 1980, and will underscore the Annual Meeting Program Theme, "People Impacts on Rangelands."

Right here in downtown San Diego, the first Spanish cattle grazed on pristine grasslands. In Old Town, you can visit the cemetery, "El Campo de Los Santos" (The Field of the Saints), where some of those early vaqueros were laid to rest.

Certainly, the Mission Fathers who started all of this would be bewildered by what they could see today. Here, at the place where it all started, we can contemplate the humble beginning, try to visualize the expanses of pristine rangeland as those Mission Fathers saw it, and briefly retrace the steps that brought about the changes in lands and landscape that we see today.



Photo released by: San Diego Convention and Visitors Bureau

Nestled between mountains on the east and the Pacific on the west, San Diego's burgeoning skyline is rapidly becoming a symbol of the city. In the foreground is the southern tip of Shelter Island, a man-made peninsula in San Diego Bay.

Post-Convention Field Tour

On Friday, February 15, come along on a tour of a 200-square mile project in southeastern San Diego County known as the Laguna-Morena Demonstration Area. This is a proving ground for state-of-the-art and new techniques in chaparral management. Nine governmental agencies and many landowners have united in the effect and have already established several milestones in the management of the historicaly unmanageable chaparral type, including:

- ☆ large scale prescribed burns of 1,000 acres and more;
- \Rightarrow cooperative large scale burns on multiple ownerships; \Rightarrow demonstration of integrated management and cooperative
- resource planning; and
- \Rightarrow use of aerial ignition techniques in standing chaparral.

We will see many of the projects on the ground and enjoy an excellent catered hot lunch in the field, all for \$12.00. Busses will leave the hotel area at 8:30 a.m. on Friday, February 15, and return no later than 4:00 p.m.

Banquet, FUN and Entertainment

There is a triple treat in store for you Wednesday evening, February 13. The evening's festivities will begin with a no-host cocktail party with one of San Diego's finest mariachi bands. These highly decorated Mexican musicians will help sooth away the care of having to go back home to cold weather and hard work once the convention is over. Then comes a delicious prime rib dinner. Last, but not least, an Eastman Kodak team from Rochester, New York, will personally narrate their latest multimedia show, *Britain/-Ireland . . . an Adventure in Pictures.* What a show this will be! The very best in photography will be expertly staged for your entertainment.

Banquet tickets will be limited—so it is advisable to buy them early! NO tickets can be sold after 6:00 p.m., Monday, February 11, because of hotel guarantee procedures.

Ladies! Spouses! and Others!

A wondrous program awaits you in San Diego. The three events planned especially for the LADIES are so arranged so that you can also attend the Plenary Session and the Awards Ceremony.

Did you ever think you would see the famous "Ramona's Marriage Place," or where California began? You see this and more on the ladies' tour to the romantic setting of San Diego's Old Town. A tour of sightseeing and shopping will delight the ladies on Tuesday, February 12. Mexican shops and restaurants will make you think you are in Old Mexico itself.

You haven't seen California unless you have visited La Jolla Cove, California's Mediterranean Spa and its scenic coastline. The changing tides, white breakers and soaring pelicans make this a new scene every minute. You will see it on the ladies' tour and you might even see a migrating California gray whale right from the shore.

In addition, there will be plenty of time to visit places of your choice and to shop. San Diego abounds in sites of great historical significance, has a beautiful climate and excellent shopping. Sign up now to assure your place in this program! AND best of

all, the opportunity to meet old friends and to find new ones!

We are looking forward to seeing you in February 1980!



Students will have their dinner and dance on the famed old ferry boat, the "Berkeley." It is docked a short distance from the headquarters hotel, surrounded by a seafood restaurants, the Star of India, Tuna Fleet vessels, and Navy ships that make up the marine atmosphere of San Diego Bay.

What to Wear in San Diego

Sunny Southern California can be a delightful place in February. It can also play tricks on visitors. A cold storm of rain can sneak in and make you uncomfortable unless you are prepared for it. So don't leave all of your warm clothing at home. You will be staying at a very nice hotel but you will not feel out of place whether you are dressed up or in casual wear. Californians are very diversified in their dress.

A Vacation in the Winter?

Yes, plan to stay a few days after the SRM Annual Meeting. Within the radius of 150 miles there are countless attractions for the visitor. Besides the San Diego Zoo and the nearby Wild Animal Park, Sea World, Tijuana, Mexico, and San Diego Old Town in the immediate San Diego area, there are Disneyland, Knott's Berry Farm, Hollywood Wax Museum, Universal Studios in the Los Angeles area. The list goes on and on—there is so much to see and do on your own.



The ladies will travel over one of the most beautiful bridges in the world, which spans San Diego Bay, to reach the charming village of Coronado and the world-renowned Victorian wooden hotel built in 1888, the Hotel de Coronado. Here, between picturesque Glorietta Bay yacht harbor and the Pacific Ocean with views to Mexico and historic Point Loma, the ladies will enjoy a continental breakfast and tour this historic landmark made famous as the place where the Prince of Wales and Wally Simpson met.

Program of Events

Sunday, February 10 Evening Registration/Hospitality Area (afternoon and evening) Morning and Afternoon Workshop-Vegetative Rehabilitation and Equipment (VREW) SRM Business-Board, Council, and Committee Meetings Evening Workshop-RISC Morning SRM Business-Committee Meeting Monday, February 11 Registration/Hospitality Area (morning, afternoon, evening) Morning Workshop-VREW SRM Business-Board, Council, and Committee Meetings Afternoon Special Session-Lorenz Bredemeier, Chairperson 'Rangelands of Central and South America'', tentative papers: Afternoon Central America Rangeland-Martin Gonzalez South America Rangeland-George Brun History of Rangeland in Honduras-Lewis Yarlett BIFAD Programs in Range Management-Tony Cunha Foreign Assistance in Range Management in Central and Evening South America-Fernando Rivors Evening Entertainment-By Lee Burcham "California Rangelands in Historical Perspective" SRM Business-Board and Council Meetings (tentative) Tuesday, February 12 Registration/Hospitality Area (morning and afternoon) Morning Students-Plant Identification Contest Plenary Addresses-Dan Merkel, Chairperson Welcome and Opening Remarks "Rangeland Policies for the Future-Progress" Morning Guy Martin, Assistant Secretary, USDI; "Department of Interior Progress on New Rangeland Initiatives" M. Rupert Cutler, Assistant Secretary, USDA, "Department of Agriculture Progress on New Rangeland Initiatives" Maitland Sharpe, Isaac Walton League, "Response from an Environmental Use Group" Rose Ann Vuich, California State Senator, "Vegetation Management from a Legislator's Point of View' Huey Johnson, California Resources Agency "Expectations for the Future" Afternoon Afternoon Ladies-Luncheon and Old Town Trip **Concurrent Sessions** Town Hall Meeting-Chuck Poulton "People in Rangeland Management" Volunteer Paper Sessions History of Range Management-Joe Pechanec Fertilization/Reclamation-Russ Lorenz Joint Meeting on Ecology (ESA & SRM)-Chuck Cooper and Jim Young Practical Application in Range Management-Bob Ross Workshops-Section Officers, Newsletter Editors, RISC SRM Business-Committee Meeting and Afternoon)

Social Event-Presidential Reception (No Host) Students-Dinner Dance on the "Berkeley" ferryboat SRM Business-Committee Meeting Wednesday, February 13 Registration/Hospitality Area (morning and afternoon) Ladies-Continental Breakfast, Hotel Del Coronado Tour **Concurrent Sessions** Town Hall Meeting-Bob Nelson "Livestock, Fisheries, and Wildlife Interrelationships" Volunteer Paper Sessions Range Education and Extension-Dillard Gates Rangeland Economics-John Workman Range Nutrition-John Malechek Youth Range Forum-SRM Business-Board, Council, and Committee Meeting Special Sessions Town Hall Meeting-Thad Box and Section Representatives 'Communications Within SRM'' SRM Business Meeting and Awards Ceremonies Social-Entertainment Events Social Hour (No Host) Banquet Kodak Multimedia Show "Britain/Ireland-An Adventure in Pictures'' Thursday, February 14 Registration/Hospitality Area (morning and afternoon) Ladies-Sight-seeing Tour, Luncheon, Balboa park-Morning and Afternoon SRM Business-Board and Council Meetings-Morning and Afternoon Current Sessions Town Hall Meeting-Harold Biswell "Fire in Southern California Rangelands" Volunteer Paper Sessions Range Plant Physiology and Morphology-Jimmy Dodd Range Ecology–Jim Young Range Resources and Products-Bob Bement Role of Animals in Rangeland Management-Al McLean Grazing Management Systems-Leo Merrill Range Improvements-John Vallentine **Concurrent Volunteer Paper Sessions** Modeling in Range Management-John Menke Range Improvements-John Vallentine Grazing Management Systems-Leo Merrill Role of Animals in Rangeland Management-Al McLean Range Resources and Products-Bob Bement Range Plant Physiology and Morphology-Jimmy Dodd Range Ecology–Jim Young Workshop-RISC Friday, February 15 Field Trip-Laguna Morena Demonstration Area (Morning

Workshop-RISC (Morning and Afternoon)

Hotel Reservations

Our convention hotels are on a man-made island in San Diego Bay connected to Harbor Drive near the San Diego International Airport. The attractive headquarters site is conveniently located for travel on all major airlines or by auto on all freeways entering the city.

Harbor Island Hotels

SRM has 600 rooms reserved for our convention in the three excellent hotels on Harbor Island. The largest block of rooms is in the Sheraton Harbor Island Hotel-our convention headguarters-which will house nearly all of the events at the 1980 Annual Meeting. Special student housing is in the nearby Sheraton Inn Airport, which has larger rooms, each with an excellent view of the Bay. The backup hotel-Travelodge Tower-is situated about three-guarters of a mile down the island from the headquarters hotel. Plans are underway for some kind of shuttle service between the hotels.

You are strongly urged to make hotel reservations well before the holds on SRM reserved rooms expire on January 10, 1980. The demand for rooms always is heavy over all of the San Diego area. Why not include your room reservation form when you send your preregistration forms early to Karl Baker? Act guickly, try for a prize, and tie down a place to live in San Diego.

Reservation Procedure

Convention Registration

Complete the reservation form and send it to Mr. Baker; don't forget to include advance payment for the first night's lodging, plus tax. Karl will make the reservation at your selected hotel if it has an available room-otherwise you will be booked into another Harbor Island hotel. If no rooms are available at the three hotels, you will be notified immediately. The hotels will send notifications of confirmed reservations.

All double rooms have two full-sized beds and will serve as twin-bedded rooms.

Student Option

The large double rooms reserved for the special student rate have two beds for four persons. The rate is \$50.00 per room/night or \$12.50 per student/night (plus tax) with four students per room. These rooms also are available for Youth Forum attendees.

Persons asking for the student rate should follow this special procedure: (1) Check the "Student Option" on the room reservation form; (2) One person will sign the reservation form for any one room; (3) Enclose a first night deposit (\$50.00 plus tax) with the check made payable to the Sheraton Harbor Island Hotel; and (4) Enclose a list for Mr. Baker giving the names of the persons who will occupy the room. For Youth Forum attendees the signature of a chaperon is preferred as the person who is making the reservation.

Student clubs at the various schools are expected to designate the four occupants of each room that is being reserved. Some cooperation between schools will be needed to make the numbers come out even-four per room. After actual occupants of the rooms have been determined, the deposits will be properly credited to the hotel bills of persons who submitted the deposits.

B

Vegetative Rehabilitation and Equipment Workshop (VREW)

This longtime adjunct to Annual Meetings has changed its name a few times and now is known as VREW. It will meet as usual all day Sunday and on Monday morning, February 10-11, 1980. The presentations on range improvement techniques and equipment technology can help solve your own management problems or aid in your research projects. Come early to San Diego and keep abreast of new developments.

> Karl Baker 6143 Pembroke Drive San Diego CA 92115 U.S.A.

,	33rd ANNUAL MEETING
\wedge	San Diego, California, U.S.A.
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PLEASE NOTE: The hotels will not accept reservations on our 600 reserved rooms except on the official reservation form.

Room Reservation Form

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*Travellodge Tower	□ \$ 44.00	□ \$ 50.00				
Sheraton Inn Airport (see text for spe	cial registration instru	ctions)			\$ 50.00	
* Approximately 34 mile from	headquarters hotel.					
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Pick up at	registratio	n desk.		

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Student Member	\$15.00	\$21.00	\$	
Spouse	\$10.00	\$14.00	\$	
Guest	\$ 7.50	\$10.00	\$	
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Tues. Ladies Luncheon/Old T	own@\$9.00		\$	
Student Night-time Party @ 🖇	¥			
Wedn. Ladies Breakfast/Coronado @ \$ 7.50				
Evening Banquet @	\$			
Thurs. Scenic Tour/Luncheon @ \$12.00				
Check if interest in 🗌 Zoo	or 🗌 Museums.		· •	
Fri. Post-Conference Tour @ \$12.00			\$	
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Zachry Randado Ranch, 20 Zwerman, Paul J., 191 Newest in the Symposium Series published by the Society for Range Management:

Special Management Needs of Alpine Ecosystems

edited by Douglas A. Johnson

This publication presents six papers given at a special symposium presented at the annual meeting of the Society for Range Management in Casper, Wyoming, in February, 1979. Titles include:

Alpine Ecosystems of Western North America Physiological Responses of Plants in Tundra Grazing Systems Range Management in the Alpine Zone Hydrologic Aspects Related to the Management of Alpine Areas Revegetation of Disturbed Alpine Rangelands Future Management and Research Needs in Alpine Ecosystems

Extensive bibliographical material extends the value of the papers, which present current information about the mysterious world of the alpine tundra. Increased demands for food and fuel have created greater pressure on these fragile lands, and so current information about them would be of value to those responsible for their use and reclamation, environmentalists, research students, and individuals interested in an unusual and fascinating ecosystem. This publication will be available early in November, 1979, (soft-bound, approximately 120 pages).

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