Products and Values of Ranges in South Dakota

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The earth's surface is divided into two broad categories: 71% water and 29% land. The total land area of the world is about 34 billion acres with approximately 43% of that, or 14.6 billion acres, in rangeland. Not only is range the largest single kind of land on a world basis, it also comprises over 45% of the United States.

Range is characterized by native vegetation (predominantly grasses, grass-like plants, forbs or shrubs) suitable for grazing or browsing. It includes lands revegetated naturally or artificially to provide a forage cover that is managed like native vegetation. Range includes natural grasslands, savannahs, shrublands, most deserts, tundra, alpine communities, coastal marshes, and wet meadows (Range Term Glossary Committee 1974). These areas usually possess physical limitations such as low, erratic precipitation, rocks, shallow soils, rough topography, poor drainage, and/or cold or extremely warm temperatures making them unsuitable for cultivation (Stoddart et al. 1975). Nevertheless, range provides a variety of tangible products and intangible values of importance to our nation.

In South Dakota today, about half the total land area is range compared with over 95% a century ago. Of this only about 5% of the range in South Dakota is federally owned; the rest is privately owned. Originally, native grasslands dominated the region, with the True Prairie occurring in the eastern third and Mixed Prairie covering the western two-thirds of what is now South Dakota. The boundary between these grasslands was a broad ecotone except where sharpened by abrupt changes in physiography or soil texture.

Most of the original True Prairie in South Dakota is now cropland. Because of nearly level topography resulting from glaciation, medium-textured soils, relatively high soil fertility, and favorable annual precipitation (20–26 inches), conversion to cropland was inevitable. True Prairie vegetation is now largely restricted to wetlands and glacial moraines. To the west, the vegetation gradually changes to Mixed Prairie. West of the Missouri River, which is about half the state, the topography is older and more dissected, with lower annual precipitation (12–18 inches). Much of this area has remained native grassland. In high range condition on the clayey-textured, gently sloping uplands, the vegetation is dominated by western wheatgrass and green needlegrass with an understory of buffalograss and blue grama.

Livestock Grazing

The largest single economic output derived from range is forage for domestic livestock grazing. According to recent estimates of the Forest Service, range grazing for livestock in the continental United States is expected to increase from the 1970 figure of 213 million AUM's (the amount of feed or forage required by an animal unit for one month) to about 256 million in 1980. By 2020, 394 million AUM's of grazing will be needed from range. This increased demand will result from changing price relationships between grain and livestock in which more of the plant products suitable for human consumption will be marketed directly while livestock will be used to convert inedible plant products to needed food and fiber. This expected trend has been verified in the past by short cycles in which grain costs increased as cattle prices decreased, causing a shift from heavy marketings of grain-fed to more grass-fed slaughter cattle. Ranges of the United States will not be able to absorb the projected demand, even under proper management, so, increased use of crop residues as livestock feed will be required.

Grazing is a major use of South Dakota's resources. The grazing resource comprises approximately 59% of the entire state. Excluding introduced pasture and that part of grazed federal land which is National Forest, approximately 54% of South Dakota is native grassland. Assuming a conservative stocking rate of 0.35 AUM/acre, the grazed ranges should supply about 9 million AUM's of grazing. Assuming a native hay yield of 0.8T/acre, the ranges cut for hay would provide more than 3 million AUM's. Thus, the total feed and forage provided by South Dakota's range is more than 12 million AUM's.

Agriculture is the most important industry in South Dakota; and range, the largest land resource, supplies most of the forage for the livestock industry. Livestock and livestock products contributed 74% of the 1975 farm income for a total of over $2 billion, or over 42% of the state's income. During 1975, 37% of all cattle, 45% of cows and heifers that calved, 69% of all sheep and lambs, and 42% of all calves born in the state were in the range area. These figures stress the importance and value of ranges in South Dakota for livestock grazing. While livestock grazing has been and probably will always be the most valuable use of the range in this region, other uses and values are also very important. These include wildlife, recreation, watershed, minerals, and scientific studies.

Wildlife

Wildlife is a major product of South Dakota range and brings more than $30 million into the state's business sector annually. South Dakota range provides habitat for upland game birds (sharp-tailed grouse, sage grouse, prairie chicken, and ring-necked pheasant), fur-bearing animals (fox, coyote, bobcat, raccoon, and white-tailed jackrabbit), and big game animals. In 1975, the antelope population was estimated to exceed 43,000. Almost 45% of the total deer kill (white-tailed and mule) occurred on the range in western South Dakota excluding the Black Hills, which are predominantly in forest.

Since South Dakota is one of the last frontiers of abundant wildlife populations, a higher demand and increased income from wildlife can be expected in the future. This range product, much like the aesthetic value of a prairie sunset, is difficult to

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evaluate or assess. The state's wildlife population provides its residents and tourists with a resource that can have no price tag. The true value can be realized only when the wildlife is gone—and then the price will be too high to pay.

The sportsman must realize that good wildlife management will be practiced on private lands only if the landowner has an incentive to do so, usually an economic one. The practice of charging hunters a fee to use private range, although relatively new, is becoming increasingly popular with western South Dakota land owners. Game that was formerly thought to be a liability is now considered a potential asset and source of income. Antelope, for example, were once a nuisance; they are now viewed as another source of income for the ranch operation.

Recreation and Aesthetic Value

Recreation is another important use of the range because tourism is the second largest industry in the state. In 1970, 5 million tourists spent an estimated $250 million in the state, mostly in the western part where the range is. During the summer of 1972, nonresidents spent $93 million. About 78% of the nonresident tourists cited the western third of the state as their destination, and 75% spent all of their nights there. The initial attraction is the scenic beauty of the Black Hills; however, the more subtle natural beauty of well-managed ranges and the stark grandeur of the badlands attract many repeat visitors. Hunting is a very popular recreational activity on range, while stockdams provide abundant fishing, yielding bass, bullheads, northern pike, walleyed pike, pan fish, and trout. Streams throughout the range area contain trout, catfish, and sauger. The projected increase in nonresident use of this area will be 60% by 1990.

Surveys by the state's Tourism Division indicate that from May through September in 1976 a record 7.2 million tourists spent $170 million in South Dakota. Out-of-state travelers increased 15% over 1975, and income from those travelers rose 20%. The biggest increase was reported from campgrounds; over 45% of all state camping and 53% of all hiking occurred in the western or range section of the state. The scenic value of South Dakota's range is a conributing factor in attracting out-of-state dollars. Furthermore, a well-managed range means a good place to live for the rancher and a source of pride for the people of the region. Indeed, beauty is its own reward for being.

Watershed Value

Virtually all range has some watershed significance. Although semiarid ranges do not contribute large amounts of water to streamflow, floodwater and sediment following heavy storms affect the quantity and quality of the water in the receiving streams and lakes. The ranges of the sub-humid region of the state, the Black Hills and the True Prairie region, are part of the headwaters of rivers. Water production is of paramount importance on such ranges. South Dakota range provides an estimated 2 million acre feet of water per year, contributing water for the six rivers that drain the western part of the state as well as recharge for its aquifers.

Western South Dakota range in high condition can simultaneously provide a variety of products including higher livestock production, improved wildlife habitat, and watershed protection, scenic beauty and recreational activities (Photo by Tom Porzarnsky, R.C. SCS).

Mineral Production

Mineral production in the state includes sand, gravel, lime, stone products, and bentonite as well as gold, silver, mica, and feldspar. In 1975 mineral production provided over $40 million of the state's gross income. This represents income from the entire state; however, a substantial amount is derived from range. This use will receive much more attention as a result of new energy demands, particularly in northwestern South Dakota where lignite and oil deposits occur.

Scientific Importance

Range provides the germ plasm of native plants required for revegetation of disturbed rangeland. Range plants provide necessary attributes such as drought resistance, which can be used in development of new species and varieties of crop and forage plants by plant breeders. Range affords scientists a laboratory for research leading to an understanding of the complexities of ecosystems. This knowledge can be used not only to improve the management of ranges, but also to develop the ecological wisdom needed for wise management of man-dominated systems such as our croplands and cities.

Summary

South Dakota ranges are diverse and complex as are the products and benefits they provide. Too often management is determined by the product or value which provides the greatest economic benefit at a given time. However, the majority of products and values, excepting mineral production, are not mutually exclusive and generally production of all or most all products and values will respond favorably to proper range management. Seldom does management for any one use exclude another. On public lands management for a diversity of tangible products and intangible values is required to meet the demands of a diverse society. There is an optimum combination of products and values derived from range ecosystems that is determined by the nature of the ecosystem and the needs of society. Likewise, under private ownership, wise management for a diversity of products from the range ecosystem will generally result in optimum output of forage for livestock grazing, hay, wildlife, water purposes, and recreational and aesthetic values in order to maximize net ranch income on a long-term basis. If South Dakota is to realize the full potential of the rich heritage of its ranges, there must be an increased understanding of the complexity, the vast potential, and the extreme importance of range to the state's economy today and tomorrow.

Literature Cited

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