

don't answer questions from the public with personal opinions and half-truths. A personal opinion given as an answer may confuse the public and insult a user group, a group whose cooperation and input may be paramount to solving a resource problem.

Users, management, and researchers need to be more open about current research and the need of further studies. Oftentimes, graduate students could provide needed research if they were just put in contact with the particular user group with the problem. Not only would their data help management but it would meet academic requirements and foster a better understanding between science and the user groups.

We need to become partners in resource management. This includes BLM and permittee cooperation, and explaining to hunters and recreationists the subtleties of range management. Many outdoorsmen don't realize that allotment fences are also used for habitat management. Leaving a gate open or cutting a fence may cause uncontrolled grazing which can harm an area of critical wildlife needs. A gate left open in May could cause a hunter to fail in the fall.

All of us associated with our rangelands should remember that local cooperation provides many more benefits and is much more economical than law suits and lobbyists. ●

Grazing Lands: An Integrative Common Denominator

John F. Vallentine

The effective grazing planner/manager must inventory all sources of available grazing capacity and integrate them into the best animal production system. The use of rangeland is generally co-mingled with the use of other types of grazing lands; and most range livestock and many big game animals use multiple sources of grazing capacity to meet their annual grazing capacity requirements (Vallentine 1978). The management interrelationships of native range with other types of grazing lands have too frequently been overlooked, underestimated, or ignored as inconsequential.

The term **grazing lands** seems preferable to **pasture** as the best common denominator of all lands harvested directly by the grazing animal, thereby downgrading the issue of how to differentiate between **range land** and **pasture land** (Dyksterhuis 1986). The SRM Range Term Glossary Comm. (1974) has defined **pasture** both as (1) a fenced grazing area and (2) forage plants consumed by grazing animals, neither definition giving any restrictions as to kind or origin of the forage plants nor as to their cultural enhancement or methods of grazing management. These broad definitions along with the fact that the dictionary definition of the verb **pasture** literally means "to graze, to eat in grazing" led to the use of the noun **pasture** as the generic term for all grazing lands, within which the noun **range** was considered as one category therein (Vallentine 1978).

Wheeler (1981) opted for a narrowed usage of the term **pasture** to refer to "more or less permanent grass-legume associations utilized by grazing" and not "as in the American usage, simply any area that is grazed by animals." This nar-

rowed usage was also advanced by the SRM RISC Comm. (1980) when used in conjunction with "periodic renovation and/or cultural treatments" but, strangely enough, added "not in rotation with crops"!

Barnes (1982) considered **pasture** as primarily referring "to plant communities predominantly of introduced species, whether sown or volunteer" while suggesting that **grazing lands** would be a safe haven for both **range** and **pasture**. He further suggested the forage family ties (i.e., the super generic) could be achieved in the term **grassland agriculture**, when described as "the art and science of cultivating forage crops, pasture, and rangelands for food and fiber production." (Note: his definition of **forage crops** was forage "harvested before being fed to animals," i.e. hay, haylage, fodder, stover, silage green chop, beet pulp, citrus refuse, etc. This restricted meaning is rapidly becoming the standard usage of this two-word term.)

The principles of grazing management remain the same regardless of kind of grazing land, i.e., optimal stocking rate, optimal season(s) of use, optimal grazing system, optimal kind or mix of animal species, and optimal grazing distribution; but their application may vary considerably depending upon kind of grazing land, management objectives, and the economic implications. Common to the management of all grazing lands must be forage plant considerations such as plant growth requirements, providing for plant vigor and reproduction, defoliation and other animal impacts, and seasonality and fluctuations in forage production. But equally high in priority are animal considerations including animal performance, animal behavior, nutrient intake levels, forage

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quality relative to animal needs, and forage palatability/animal preference.

Table 1, "A Classification of Grazing Lands," has attempted to arrange all grazing lands into broad categories by blending ecological site factors with intended land use and management. These proposed categories are based largely on (1) grazing use longevity, (2) climax orientation of the vegetation (these increasing from bottom to top of classification guide), (3) arability, (4) land capability, and (5) relative emphasis on cultural treatments (these increasing from top to bottom). However, an array of kinds of grazing lands results from a continuum of soil/site factors, vegetation/forage stands, and management implications. Therefore, boundaries between the group categories are artificially abrupt rather than being naturally gradual and transitional.

Use of the terms *wild*, *tame*, *artificial*, and *synthetic*, as applied to pasture has been intentionally avoided in this classification system. Such artificial tags—looking more like misnomers—are unreliable in projecting site adaptation, longevity, and even usefulness of forage plant species; the development of improved cultivars of both native and introduced species seems to make such terms almost redundant. Also, the term *improved pasture*—implying the use of one or more cultural practices such as fertilizing or limiting, seeding, irrigating or draining, or control or eradication of undesirable plants—has not been used since such practices cross over many, if not all, categories of grazing lands, at least to some extent.

That rangelands must be managed exclusively by "ecological principles rather than agronomic (i.e., cultural) principles" (Society for Range Management, Board of Directors 1985) seems to impose unnecessary constraints on the management of such lands. Do range managers have an exclusive monopoly on the use of ecological principles, or can fellow agronomists utilize them also? The American Society of Agronomy—with direct interests in management of shorter-term grazing lands—has been duly credited as "dedicated to the conservation and wise use of natural resources to produce food, feed, and fiber crops while maintaining or improving the environment" (Society for Range Management, Affiliation Comm. 1986). Love and Eckert (1984) concluded: "There is no *intrinsic* difference between the rangeland crop and the more intensively cultivated crops; both types are managed ecosystems and involve overcoming difficulties inherent in the interrelationships of climate, soil, plants, and harvesting."

Are dire consequences inevitable if cultural treatments are applied to rangeland under the guise of "range improvements" or if "introduced or domesticated-native forage plants" be seeded thereon (Dyksterhuis 1986)? The effectiveness of some cultural treatments will be limited by site potential; and highly effective treatments are often further limited by cost-benefit considerations. Cultural treatments should at least be considered as alternatives in the overall planning process and then accepted and implemented or rejected after careful evaluation.

Almost hidden in the literature of range management are these astute observations: "The philosophy that native climax vegetation is optimal may have contributed to the plateauing of rangeland productivity and limited productivity to that level. This doctrine also has tended to discourage creative

research on rangelands because research has been focused on management towards climax, and suggestions that other concepts and research approaches may be required have been viewed as heresy" (Vogel, Gorz, and Haskins 1985).

Integrative rather than separate thought and action at professional, academic, and grazer levels hold the promise for enhancing the productivity of grazing lands and their coordinated management. "Integrated pest management" and "integrated brush management" should now be joined by "integrated grazing lands management" under the direction of "grazing lands managers." Range managers with adequate breadth in thinking, training, and experience should do well!

Table 1. A Classification of Grazing Lands

- I. **Long-term grazing lands**—mostly non-arable lands, often environmentally severe, on which the present forage stand is projected for unlimited continuation; ecological principles provide the management basis, but grazing manipulation or cultural inputs may be used to manipulate the forage stand; cultural treatments may be limited by low site potential and/or cost-benefit considerations but are not excluded; fencing and stock-water developments given high priority; grazing management levels generally vary from extensive to intermediate; primarily of land capability classes IV through VIII but not limited thereto; syn. *range* or *rangeland pasture*.
 - A. **Native range**—natural vegetation of predominantly grasses, grasslike plants, forbs, and shrubs; tree overstory may be present or absent; climax vegetation or a high seral stage often the objective; no substantial reseeding in past and useful, introduced species minimal; minimal maintenance treatment generally planned; syn. *native grazing land*.
 - B. **Seeded range (native species)**—full or partial re-establishment of local strains or new cultivars of native species; treated to enhance natural vegetation; minimal maintenance treatment projected; may include interseeding or marginal cropland or reclamation sites restored to long-term grazing.
 - C. **Seeded range (introduced species)**—full or partial conversion made to long-lived, adapted, introduced species; duration of present stand projected in excess of 40 years; minimum to moderate maintenance treatment projected; may include interseeding or marginal cropland or reclamation sites restored to long-term grazing.
- II. **Medium-term grazing lands**—includes both arable and non-arable lands; establishment of new forage stands not planned within 10 years but long-term grazing tenure uncertain; levels of cultural treatment highly variable, depending upon site potential and ownership objectives; land capability highly variable but commonly within intermediate classes.
 - A. **Transitory range/pasture**—provides grazing capacity during an interim period of uncertain duration; generally undeveloped, substantially modified from original vegetation, with minimal or no past restoration; plant species components in the forage stand highly variable; includes go-back farmlands, timber clearings, burn areas in timber lands, semi-waste sites, sites reclaimed/stabilized with grazing secondary, pine plantations, and pre-development lands; major cultural treatment not anticipated.
 - B. **Permanent pasture**—grazing given first priority and this to continue indefinitely; forage stand principally of perennial grasses and legumes and/or self-seeding annuals; forage

stands commonly resulting from a prior seeding of from the aggressive spreading of forage plants onto formerly cultivated sites or into indigenous stands; medium levels of treatment and grazing management generally projected, but major manipulation of forage stand in the future not excluded; also includes formerly cultivated lands returned from cultivation for conservation reasons through forage stand establishment; replaces *tame pasture*.

III. **Short-term grazing lands**—arable land on which grazing is presently being realized but under limited duration; high levels of development, maintenance, and management projected; utilizes mostly introduced forage species, but native species responsive to high management and cultural inputs may be considered; mostly land capability classes I through IV; syn. with *cropland pasture*.

A. **Crop-rotation pasture**—grazing maintained for 3 to 10 years in a predesigned crop rotation cycle; cost-benefit results must be competitive with cash crops; intensive cultural treatment provided, including forage stand establishment, fertilization, pest control (weed, insects, rodents, diseases), and irrigation, if necessary; grazing is given top priority but stand may yield harvested forage or seed as a secondary crop; perennial forage species mostly utilized; replaces *tame pasture*.

B. **Annual pasture**—plant stand establishment for grazing during a single year, or annual tillage and reestablishment is projected; often used in rotation with cash crops; short-season grazing often provided by emergency or catch-crop plantings or as a double crop when interseeded into or following harvest of the primary crop for fall grazing, winter cover/grazing, or spring grazing; annual forage plant species utilized; intensive cultural treatment provided; grazing is given top priority but may yield harvested forage; syn. *temporary or emergency pasture*.

C. **Crop aftermath pasture**—grazing is a secondary product and carried out after (or sometimes before) the primary crop is produced and harvested; income is supplemental to the main crop, i.e. hay, row crops, small grains, horticultural crops, etc; consists of stubble, crop residues, chaff, lost grain, weed and volunteer herbage, excess foliage yield on small grain crops, and windrowed or baled forages fed/grazed on site where produced.

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Doe Harvest Effects

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Over-population is a major factor limiting production of quality white-tailed deer in Texas. Deer population control is as imperative for production of quality deer as control of stocking rate is for production of quality domestic livestock products. Texas Parks and Wildlife Department biologists attribute the long-term decline in South Texas antler size to inadequate doe harvest.

The necessity for extensive doe harvest to control deer population growth is an accepted management tool among wildlife biologists. Maintaining deer populations within the carrying capacity of their range generally results in increased body weight, antler measurements, and fawn production.

However, the effect of doe harvest on subsequent development and survival of orphaned fawns has been debated until recently due to a lack of research evidence.

This paper addresses two questions of management concern to landowners planning a deer population reduction program. First, we discuss the effects of dam removal before her fawn has been weaned; specifically the impact on physical development.

Secondly, we discuss the over-all, long-term effects of doe harvest on a deer population several years in the future.

Orphaned Fawns

The sooner a deer is harvested from the range, the more forage will be left for other deer. However, if the positive effect of more forage is offset by negative effects on the orphaned fawn, then the net effect of doe harvest would not be beneficial.

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