Is Good Range Management *for Livestock* Really Good Management *for Wildlife?*

A Review of An SRM Symposium

Chad S. Boyd, Dale Rollins, and David M. Engle

Range managers often use "rules of thumb." For example, the rationale behind proper forage utilization has long been espoused as "take half and leave half." Such rules of thumb are useful, as long as their limits are recognized. A particularly topical rule of thumb in recent years has been that "good range management for livestock is good wildlife management." Is it? Or not? What are the "specifics" of this generalization?

In his 1933, classic "Game Management" Aldo Leopold argued that "game can be restored by the creative use of the same tools which have heretofore destroyed it-axe, plow, cow, fire, and gun." Those same tools are still in use today by range managers, and they still impact wildlife habitat. At the 1997 SRM meeting in Rapid City, South Dakota, a symposium was held to discuss whether good range management for livestock *really* is good management for wildlife. This symposium, jointly sponsored by the SRM Wildlife Habitat and Professional Affairs committees, sought to define the use of Leopold's tools in modern day range management for livestock, and debate both the beneficial and negative ramifications to wildlife habitat. We selected speakers from the Great Plains (and specifically to the northern Great Plains when possible) because of our meeting location (Rapid City, S.D.). Some 350 range managers were present throughout the half-day symposium.

Central to this discussion is the premise that wildlife and livestock resources can be *managed simultaneously*, but populations of both cannot be *maximized* simultaneously. Trade-offs, commonalties and dissimilarities in management strategies must be identified. The following is a summary of the ideas presented and discussed at the Rapid City symposium. We hope that this dialogue will promote a better understanding of views between groups on both sides of this controversial issue.

The Axe

Point. On southwestern rangelands, the "axe" takes the form of brush manipulation. The invasion or increase of brush on rangelands has been a two-edged sword. While the increase in woody plants benefited many species of wildlife, the same brush species are often a liability to ranchers. Historically, control of woody plant species on rangeland centered around practical aspects such as improving accessibility of travel routes or increasing visibility for gathering of stock. In the Southwest, increased visibility was particularly important in locating newborn calves to check for screwworm infestation. By the mid-1950s attitudes toward brush control shifted from practical considerations to increased economic returns associated with improved forage production. This allowed ranchers the option of improving what land they had rather than buying more land. Control of woody species was viewed largely as a positive step toward resource conservation. Presently, management of woody species has shifted from the paradigms of *"eradication"* and *"control"* to a more comprehensive *"management"* philosophy. Inclusive in this new management philosophy is the emerging discipline of restoration ecology. Many areas currently dominated by woody species (e.g. Edwards Plateau, Tex.) were grassland savannas prior to European settlement. Restoring these landscapes to pre-European settlement condition would necessarily involve control of woody species.

Counterpoint. Although some wildlife species may see immediate benefits from brush management, these short-term gains must be balanced against the potential for long-term negative impacts on wildlife habitat. Repeated brush management treatments, particularly on semiarid rangelands, may alter plant succession, resulting in a loss of plant, animal, and habitat diversity. Similar relationships may hold for more humid rangelands. The size and shape of treated areas may alter predator/prey relationships in untreated areas. For example, nest predation has been shown to increase for some species of passerine birds nesting in brush strips as a result of the increase in edge habitat and edge-associated predators. Habitat needs of wildlife species often are not considered or given priority when formulating brush management plans. For example, honey mesquite, the target of intensive control efforts, provides food for coyotes and white-tailed deer and nesting habitat for scissor-tailed flycatchers. Additionally, mesquite provides cover for numerous other wildlife species and serves to facilitate nutrient cycling. Today, some landowners have found economic value in browse resources and associated wildlife species, through ecotourism and commercial hunting operations. These activities may aid in diversification of agricultural economies, to the betterment of wildlife resources. Obviously, a number of factors should be considered *a priori* the bulldozer is started or the sprayplane is in the air.

The Plow

Point. Perhaps the debate over plowing and planting of rangeland to alternate forages is best embodied in the controversy over the Conservation Reserve Program (CRP). More than 36 million acres have been planted in the CRP, which encouraged landowners to establish perennial vegetation on highly erodible cropland for a period of 10 years. A secondary goal of CRP was to improve wildlife habitat. To that end, a number of wildlife species have benefited. Ring-necked pheasant and waterfowl abundance have increased in many of the northern plains states because of improved nesting habitat. The grasshopper sparrow and lark bunting, which are declining regionally, have increased in numbers on CRP lands. Increases in the density and height of vegetative cover have improved nesting success of many ground-nesting bird species. White-tailed deer utilize CRP plantings as a food source in early spring, and hiding cover for white-tailed deer fawns has been improved.

Counterpoint. Although some species of wildlife have benefited from CRP, conservation of wildlife resources involves a holistic approach which addresses habitat concerns and ecological processes at the landscape level. In order to increase wildlife benefits from CRP, specific attention needs to be given to different scales of planning. At the landscape scale, the spatial mosaic of CRP plantings should complement existing habitat availability. On a smaller scale, species composition of plantings should enhance diversity of the site for optimal wildlife management. The 1996 farm bill has included criteria for wildlife habitat, but fails to consider habitat relationships at the landscape scale. The undisturbed (i.e. no grazing or fire) monoculture aspect of CRP has had a negative impact on species whose habitat requirements are dependent upon disturbance, and the habitat diversity associated with such events. For example, lesser prairie chickens have abandoned leks planted in CRP due to the loss of bare ground. Critical brood habitat, which includes bare ground and high forb and insect abundance, has been impaired in some instances. Furthermore, escape of invasive, introduced species such as Old World bluestem, which has been planted extensively on CRP contracts throughout the southern Great Plains, could have negative impacts on wildlife habitat diversity in adjacent areas.

The abundance of key species (e.g. lesser prairie chicken) may be an effective tool for guiding the CRP planning process and evaluating results of the program at the landscape level. Geographic Information systems could be used to optimize the spatial mosaic of disturbed and undisturbed CRP plantings relative to the needs of these species. The quality of CRP lands as wildlife habitat could be greatly improved by allowing periodic treatment (i.e. grazing, burning) in accordance with habitat requirements of affected species. Additionally, land owners should be made aware of the option of planting CRP lands to wildlife cover types. These problems are associated with both the local application of CRP, as well as legislative design and should be addressed at both levels.

The Cow

Point. Grazing of rangelands by domestic livestock has and will continue to be the subject of heated debate, particularly on lands where livestock concerns overlap with wildlife interests. The controversy over livestock grazing has been fueled indirectly by the fact that most grazing studies have been conducted within the context of maximizing livestock production with little or no concern for the implications to wildlife habitat. However, manipulating vegetation resources to affect animal populations is the cornerstone of wildlife habitat management, and grazing by domestic stock is a tool with which managers can alter plant succession to the benefit of wildlife resources. For example, livestock grazing may be used to create the mosaic of habitat types needed to sustain maximum diversity of breeding birds, while browsing wildlife such as mule deer may benefit from increases in browse production associated with heavy stocking of cattle. Cattle grazing has been used as an effective means of setting back the phenology of grasses to a stage more palatable to wildlife species such as elk and antelope. Decreases in vegetative cover associated with heavy stocking may serve as important habitat for some species of prairie birds such as mountain plover and killdeer.

Counterpoint. Although much of the grazing debate has centered around whether or not grazing by domestic stock should occur, wildlife are probably affected more by the management of grazing, than by grazing *per se*, or the type of grazing animal (i.e. domestic stock vs. native ungulates). Changes in grazing management, such as altering grazing regimes over the long term, may have profound effects on wildlife resources and biodiversity. Grazing animals alter wildlife habitat by affecting plant species composition and diversity, patchiness of vegetation, and physical habitat attributes (i.e. structure). Plant species diversity may increase in grazed patches relative to ungrazed areas, but wildlife populations are probably influenced more by grazing-induced alterations of habitat structure and heterogeneity across the landscape. If grazing management centers around uniformity of grazing, dominance of key forage species, or maximum animal production, attainment of these goals will likely come at the expense of wildlife diversity.

Fire

Point. Fire has been a frequent and important disturbance in the evolutionary history of most rangeland ecosystems. With European settlement and the development of the livestock industry, direct suppres-

sion and fuel reduction resulting from heavy stocking have decreased fire frequency and size. As a result, plant diversity and forage production are decreasing, and woody plants are increasing in many rangeland systems. These changes can have negative impacts on diversity of wildlife habitat as well as forage for livestock grazing. As an example, reduction of fire frequency has allowed juniper to invade millions of acres of rangeland in the United States. Changes resulting from this invasion include decreases in soil moisture, plant diversity, wildlife habitat diversity, and forage production. Mechanical treatment and herbicides have been used to decrease juniper encroachment, however, both these techniques are often cost prohibitive. Prescribed fire offers a less expensive and effective alternative to these treatments, while restoring wildlife habitat diversity and increasing livestock forage production. Despite potential benefits of fire to maintaining ecosystem integrity and wildlife habitat, currently only small portions of rangelands are being treated with prescribed fire. Education of landowners and the general public may increase acceptance of prescribed fire as a bona fide management practice.

Counterpoint. While fire can be used as a tool for enhancing wildlife habitat, land managers must be cognizant of the influence of fire regime on wildlife resources. Today, conservationists and livestock producers alike often promote the use of prescribed fire to create a specific fire regime needed for accomplishing narrowly-defined management goals. However, this approach often contrasts with the fire frequency, season and behavior that likely dominated the historical landscape on which constituent plant and animal communities evolved. In fact, the fragmented nature of today's landscape does not lend itself to management at the landscape level using approximations of pre-settlement fire regimes. The use of frequent fire (i.e. the use of annual fires to increase livestock forage in tallgrass prairie) may cause declines in habitat heterogeneity, and biodiversity, while infrequent fire in prairie systems may lead to woody plant encroachment and the decline of grassland bird populations. Large scale fire treatments may have negative impacts on wildlife species needing close juxtaposition of differing habitat types. For instance, the Karner blue butterfly requires habitats typical of both burned and unburned prairie. If burns are too large, the ability of the butterfly to complete its life cycle will be impaired, and the population may decline. Clearly the challenge to rangeland managers today is to identify fire regimes that move us closer to attaining livestock production goals while sustaining biodiversity and wildlife resources in fragmented landscapes.

Toward a Working Solution

Societal demands on rangeland resources have expanded beyond that of livestock production alone, and conflict between wildlife and livestock interests has increased sharply. In the preceding text, we have seen examples of how land management practices associated with livestock grazing can either enhance or degrade wildlife habitat resources. In the process, we have come full circle to the question of whether good range management for livestock really is good management for wildlife. The answer is *it depends*! If wildlife habitat needs are given active consideration during the planning stages of livestock management, then the answer is "*yes*". However, if benefits to wildlife are incidental to livestock management planning, then the answer is probably "*no*". Put another way, good management by default is not good management over time.

Managers and research personnel alike must strive to determine the proper application of Leopold's tools over space and time to improve both livestock forage and wildlife habitat. Most importantly, the Society for Range Management must shift from the traditional livestock-based paradigm of the past to the more inclusive paradigm of habitat management. This does not mean abandoning the roots of tradition upon which this Society was founded, but, rather, expanding the principles gained from our collective knowledge and experience to solve problems in today's holistic management environment.

Literature Cited

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Authors Chad S. Boyd is a member, Wildlife Habitat Committee, Department of Agronomy, Oklahoma State University, Stillwater, Oklahoma 74078, tel.: (405)744-9630, e-mail: boydcs@okstate.edu; Dale Rollins is Chair, Wildlife Habitat Committee, 7887 N. Hwy. 87, San Angelo, TX 76901, tel.: (915)653-4576, e-mail: d-rollins@tamu.edu; and David M. Engle is Chair, Professional Affairs Committee, Department of Agronomy, Oklahoma State University, Stillwater, Oklahoma 74078, tel.: (405)744-9623, e-mail: dme@soilwater.agr.okstate.edu

Presenters: Dale Rollins (Introductory Remarks); Pete W. Jacoby (The Axe-point); Timothy E. Fulbright (The Axe-counterpoint); John E. Mitchell (The Plow-point); Terrence G. Bidwell (The Plow-counterpoint); Terry A. Messmer (The Cow-point); David C. Hartnett (The Cow-counterpoint); Charles A. Taylor, Jr. (Fire-point); Allen A. Steuter (Fire-counterpoint) and Fred C. Bryant (Summary)