

Cattle and Quail: *Hand-in-Hand on Rangeland*

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Sir Isaac Newton acquired a reputation as a highly renowned physicist, but would he have achieved that same legacy as a wildlife manager? Probably not. His Third Law of Motion—"to every action there is an equal and opposite reaction"—may be all well and good for physics, but it is just too simplistic for rangeland resource management. In wildlife management (which is based on ecology and not physics), to every action there are many reactions, some are very *apparent* while others are more *transparent* (Rollins 1996a).

In the past, native animals supported humans, by providing a staple food source. Through time people discovered that ranching and farming were more dependable resources for survival than hunting and gathering. But today, ranching is not as economically secure and is in need of a "boost". The effective utilization of native wildlife (via leasing trespass rights) can yield more profit per acre to some landowners than livestock operations alone. An average price per acre for a cattle lease in Texas fluctuates around three dollars, but a quail hunter can expect to pay up to four dollars an acre (Rakowitz 1996). Four dollars minus three dollars equals one dollar. That is simple mathematics proving you could earn a profit by incorporating a wildlife enterprise. Thus bringing the concept of combining wildlife and livestock into focus. A good example of this relationship includes quail and cattle going hand-in-hand on rangeland to produce a two-way income. Nevertheless, the catch to the whole idea consists of proper management.

Aldo Leopold, recognized as the "Father of Wildlife Management," clearly had an understanding of trade-offs when he reminded wildlife managers that, "The urge to comprehend must precede the urge to reform." In other words we need to understand how quail and cattle affect one another. Habitat containing approximately 30–50% tallgrass, 40–60% midgrass, and 10–15% shortgrass, with the three types well interspersed, is ideal for quail and works well for cattle also (Bidwell et al. 1985, Drawe 1994). With further investigation into the quail's lifestyle, the four main ingredients to a quail's habitat become evident. These items, no different than other wildlife species' needs, include water, shelter, food, and space.

Water is the habitat component least likely to be limiting the quail (Guthery 1986). Quail need about a half teaspoon of water each day and this need is usually met by succulent herbs, insects, or dew (Rosene 1969). Also, metabolic

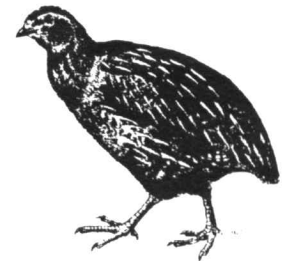
water is produced during digestion and provides an additional source of water. Surface water is not essential for quail, although it may be used if provided. Such "free" water can be managed (e.g., perhaps by adjusting floats on water troughs to allow a seep) to facilitate green vegetation and insect numbers during dry weather.

Shelter is necessary for escaping predators and can also be used for loafing. Low-growing woody plants like agarito, littleleaf sumac, lotebush, mesquite, and whitebrush are used for protective covers from aerial and ground predators. These canopies need to be arranged in a patchwork quilt-like fashion, known as interspersion, to promote population growth. This cover must also persist during cold weather when thermal protection is needed. Nesting cover (a requirement) contributes to population growth. Practically any tall warm-season grass (more specifically unburned bunchgrasses, such as native bluestems, Indiangrass, switchgrass, and sideoats grama) may be used for this purpose. Little bluestem clumps about the size of a basketball are ideal for quail (Guthery 1986). A recent evaluation of nest site selection by quail in West Texas revealed a surprising fidelity for nesting in, or adjacent to, prickly pear, because of its protection against predators (Slater 1996).

Food is always a management concern. The diet of an adult quail may consist of insects, seeds, and fruits of native forbs, grasses, shrubs, trees, and cultivated crops. Many of the good seed-producing forbs ("weeds") desirable for quail are also high on the shopping list for sheep, goats, and deer (Rollins 1996b). A prerequisite for obtaining adequate food supplies involves plant succession occurring at different stages throughout an area (Bidwell et al. 1985). This will enable a variety of seed types to be available for quail.

A bobwhite stands tall in the saddle at about six inches (Rollins 1996b). As such, a dense pasture becomes a jungle. Bare ground is an important quail habitat component accustomed for food gathering, dust-bathing, and gives quail chicks accessibility to move about. Quail (peculiar creatures) would prefer to scratch for seeds on bare ground rather than pick them from a plant. Dust-bathing would sound absurd to humans, but for quail it is a rewarding method of parasite control.

Managing for livestock and wildlife involves two different ways of thinking. John Richard (Rich) Anderson, a noted Texas rancher in his *cowboy hat* stated, "Our business is really growing grass. Cattle gather the grass for us, and we market it as beef." So, brush is a nuisance from strictly a cattleman's standpoint. However, a hunter, dressed in a camouflaged hat (i.e., a wildlife perspective), eyes the same brush for his prey to come out. Hence, with two conflicting thoughts vying for control, a new paradigm called, 'The Camouflaged Cowboy Hat' appears. This headgear implies the need to seek compromises between both rancher and hunter in order to maximize returns from rangelands (Rollins 1996a).



Now, how do you create quail habitat in cattle country? Aldo Leopold (1933) summed it up nicely when he stated, "The creative use of the same tools that were heretofore used to destroy wildlife and their habitats, namely the axe, plow, cow, fire and gun, can also be used to restore wildlife populations." Four of these, the axe, plow, cow and fire, are tools employed by the range manager.



The axe symbolizes brush management. This approach to habitat enhancement might include mowing, axing, root plowing, chaining, or bulldozing (Welch et al. 1995). Interspersion can be enhanced by mechanical means to produce brush strips or mottes. Cleared strips should be no more than one hundred yards wide and at least two hundred yards apart for quail populations to flourish (Drawe 1994). The clearings would not only supply quail with a food source and an edge (a joining of plant communities) for diversity but also would give both cattle and quail easier maneuverability. On some ranges, brush cover is insufficient to harbor quail. In such areas, a technique to develop loafing and escape cover is half-cutting mesquite. Half-cutting consists of sawing mesquite branches half way through and breaking them over to make an umbrella canopy (Rollins 1997). Overall, the best thing about mechanical methods is that you can be selective in how you tailor your 'Camouflaged Cowboy Hat'.



The plow involves using farming techniques to create habitats suitable for both livestock and quail. Reserving a portion of cropland acres for annual food plots or leaving portions of grain fields unharvested will benefit quail without unduly sacrificing livestock forage (Lutz et al. 1994).



The cow represents responsible grazing management. With proper stocking rates, livestock grazing can be used as a tool to benefit quail. Cattle can help promote plant species diversity by their influence on secondary succession in the area. Controlling where and how the livestock graze can also improve quail habitat. Without cattle or fire, grass may become too dense, and plant litter may crowd out desirable quail food plants making travel and foraging difficult, especially for quail chicks (Umber et al. 1979).

Fire, or prescribed burning, can be another effective management tool if used correctly. Burning can produce a number of desirable responses for both livestock and quail. In conjunction with grazing, late-winter or early-spring burns in a checkerboard or strip pattern every two to three years is recommended. Such patchwork burns ensure that enough adequate escape cover and nesting cover is available on the unburned patches. Prescribed burning is a complex tool and should be used carefully (Carter 1995, Umber et al. 1979). There are always going to be trade offs. However, livestock and quail can complement each other under good management. The axe, plow, cow, and fire, are management tools, that if used correctly, can maximize revenues to the rancher. Revenue from quail hunting can improve profitability of livestock operations by producing additional prof-



its, and cattle can be used to improve quail habitat. A range manager who understands the value of wildlife-based recreation should tip his "Camouflaged Cowboy Hat" to mother nature knowing that it may soon become his major source of income.

The renowned prairie ecologist J.E. Weaver once stated that, "Nature is an open book for those willing to read. Upon each grass-covered hillside is revealed the history of the past, the conditions of the present, and the hopes for the future." Yes, rangelands are an open book and class is in session every day on the back forty. Shall we get on with our homework?

Literature Cited

- Bidwell, T.G., S.R. Tully, A.D. Peoples, and R.E. Masters. 1985.** Habitat Appraisal Guide for Bobwhite Quail. Okla. Dept. Wildl. Cons., Oklahoma State University. Circular E-904. (3rd ed.) 11 pp.
- Carter, P.S. 1995.** Post-Burn Ecology of Northern bobwhites in West Texas. Angelo State University. (Dec.) 38 pp.
- Drawe, D.L. 1994.** Importance of Plant Succession, Interspersion, and Cover Types to Quail Survival. Rob and Bessie Welder Wildlife foundation Contribution #421. Proceedings of the Texas Quail Short Course. Texas A&M University. pp. 19-23.
- Guthery, F.S. 1986.** Beef, Brush and Bobwhites. Ceasar Kleberg Wildlife Research Institute. Kingsville, Texas. 182 pp.
- Leupold, A. 1933.** Game Management. Univ. of Wisconsin Press, Madison. 533 pp.
- Lutz, S., G.L. Valentine, S. Nellie, D. Rollins, C. Coffman, and G. Miller. 1994.** Wildlife Habitat Management on Former CRP Lands. Management Note 15. Texas Tech Univ. 4 pp.
- Rakowitz, L. 1997.** The Significance of Prickly Pear on South Texas Rangelands. Rangelands. Vol. 19 (6). pp. 15-17.
- Rollins, D. 1996a.** Wildlife by Design. Livestock Weekly. (May 9) p. 20.
- Rollins, D. 1996b.** Wildlife by Design. Livestock Weekly. (April 11) p. 20.
- Rollins, D. 1997.** Wildlife by Design. Livestock Weekly. (Feb. 27) p. 16.
- Rosene, W. 1969.** The Bobwhite Quail, Its Life and Management. Rutgers University Press. Rutgers, N.J. 418 p.
- Slater, S.C. 1996.** An Evaluation of Prickly Pear as a Predator Deterrent in Nest Site Selection by Northern Bobwhites. Angelo State University. (Dec.) 52 pp.
- Umber, R.W., C.P. Pregler, and J.H. Eve. 1979.** The Bobwhite Quail in Oklahoma. Okla. Dept. Wildl. Cons., Oklahoma City, Oklahoma. 40 pp.
- Welch, T.G., R.P. Smith, and G.A. Rasmussen. 1995.** Brush Management Methods. Tex. Agr. Ext. Service. B-5004. 17 pp.

Other Resources

- 5th Battalion Bobwhite Brigade Camp. Top Cadet. 1997. Abilene. Dr. Rollins.
- Personal interviews with Dr. Rollins 1997.
- Texas Youth Range Workshop Camp. 1997. Junction. Dr. Rector.

Editor's Note:

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