

experience. I have spent 23 years in the service of two State Wildlife Agencies, with a combined tenure of 13 years as executive Director in Arizona and Colorado, and 20 years as National Wildlife Federation's Chief Executive Officer. I am a confessed and still practicing hunter, birdwatcher, wildlife photographer, habitat protectionist, and environmentalist. I have devoted all of my professional career to serving the wildlife resource and all those who appreciate and use it, particularly the hunter. With that preface, let me now turn to the problems the hunter-sportsman faces in the coming decade and what NWF has been doing to help solve those problems.

**Let's begin with the premise** that all 220 million Americans appreciate and enjoy wildlife in one way or another, and that they all support a real effort to maintain and enhance the variety and numbers where possible—a premise that has been verified by all recent public opinion polls. What has NWF done? What affirmative action has been taken to educate the 200 million non-hunters to the fact that the role played by the true sportsman does not adversely affect wildlife populations? Our first action has been the recognition that protection, as well as surplus harvest, is a proper and accepted tool of the professional manager. NWF has supported the enactment of a Threatened and Endangered Species Act. The Federation was the first to test that law in the courts, and it stood up.

NWF has gone to court to defend professional wildlife

management and the role hunting plays in the management regime. When deer in the Great Swamp Refuge of New Jersey became so numerous they were diseased, dying, and invading the adjoining urban areas, destroying ornamental shrubs around homes, state officials opened a hunting season. The removal of a designated number of deer by hunting was designed to bring the numbers of animals with their food supply back into balance. The anti-hunting groups sued the appropriate agencies and individuals to prevent the hunt. NWF attorneys joined with government officials in court and won the case. The hunt was held and the deer herd is back to a healthy, normal population in harmony with the ability of the land to sustain those numbers. Anti-hunters sued the Secretary of Interior to prevent waterfowl hunting and to eliminate the funds derived from taxes on arms and ammunition from being allocated to the states for wildlife restoration under the terms of the Pittman-Robertson Act. NWF joined those suits and won.

I am proud of National Wildlife Federation's accomplishments during the past year and the past 20 years too. But the victories we seek in the future will be harder to come by. The U.S. economy is faltering. Citizens have less disposable income. Efforts to solve the energy crisis will bring on repeated attempts to abandon environmental standards and circumvent environmental law, and impair or destroy wildlife habitat. We will need the help and cooperation of all to continue the Federation's history of progress. ●

# Bobwhites and Brush Control

Fred S. Guthery

Few ranchers want to lose their bobwhites to brush control, but neither do they want to lose their grasses to brush invasion. Fortunately, the woody cover needs of quail are modest. These birds can be a bountiful by-product of profitable rangeland management.

Woody cover plays a small but vital role in the lives of bobwhites. Nesting, for example, takes place in clumps of perennial grasses, tall and thick enough to hide incubating birds, but not so tall and thick as to impair their movement. Too much brush can degrade nesting habitat because woody plants decrease the vigor of important grasses. Newly hatched broods seek plant communities with many forbs such as sunflower, sumpweed, ragweed, and doveweed, where protein-rich insect foods about. At night, coveys may "circle up" on bare ground. Thus, bobs spend most of their lives out of brush. But without it, Whistlin' Robert is quieter than Whistler's Mother.

Trees and shrubs do supply nutritious foods. Bobwhites have been shot near Glen Rose, Texas, (40 miles southwest of Dallas) whose crops bulged with live oak acorns. Indeed, quail from the Rio Grande Plains to the Northern Great

Plains relish acorns. Mast from cedar elm, ironwood, hackberry, lotebush, algerita, and other woody plants is eaten. But bobwhite populations can and do prosper without a single food from trees and shrubs.



*Bobwhites need little brush cover, but without some they cannot survive on rangelands.*

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*This brush pile, which cost about \$30 to build, should last for 10 years. Materials that accumulate underneath the brush pile should be removed periodically to insure maximum use from bobwhites.*

*Broods use "teepee" style brush piles in west Texas. This type of brush pile is more attractive to bobwhites if the limbs are stacked over a solid, raised object, such as a large mesquite branch.*

The vital need that brush fulfills is a secure area to rest between morning and evening feeding periods. Such loafing sites usually are called covey headquarters. They are most essential during winter and drought, because herbaceous plants may serve as substitutes during warm seasons or wet years.

substrates. Lotebush, fragrant sumac, and chickasaw plum receive use in the Southern Great Plains. Perhaps the perfect example of quail loafing sites is small mottes of live, laurel, or hybrid (probably with post oak) shinnery oak.

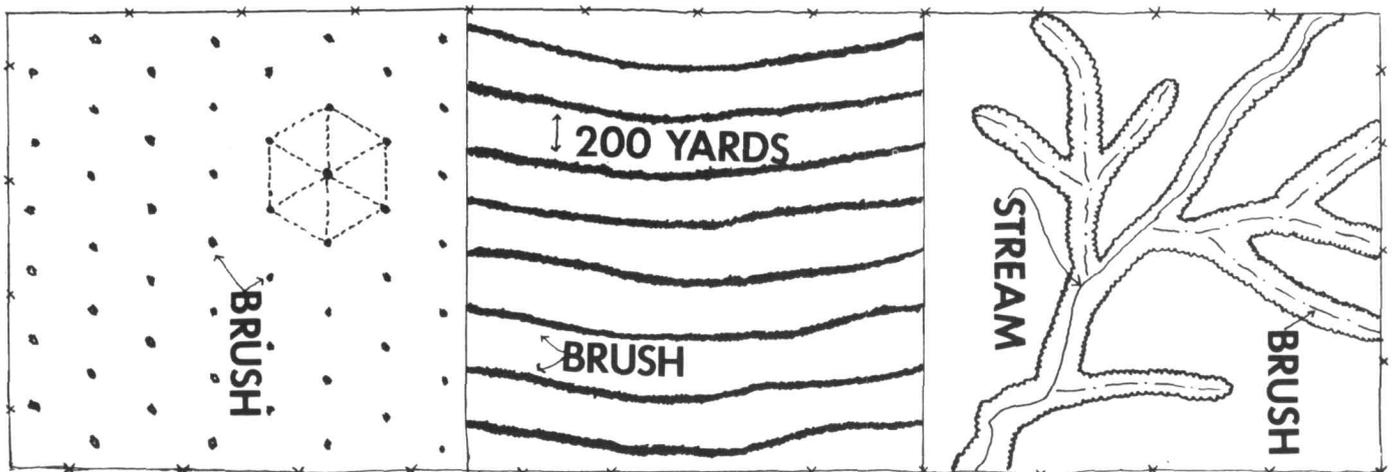
Useful loafing cover varies by size, shape, and woody species but has several common features. The canopy must be dense enough to conceal the birds from marsh hawks, Cooper's hawks, and other raptors. However, the area under the canopy should be relatively free of plants. This allows the birds to see approaching ground predators and to escape rapidly. The headquarters area must be large enough to hide coveys of 10 to 15 quail but no so large that it blocks cooling air currents during torrid summers. Loafing cover need be no larger than 5 to 15 feet in diameter, providing it has the above features.

Brush piles, if properly constructed, receive immediate and heavy use from bobwhites where natural cover is poor. On the Pitchfork Ranch in Dickens County, Texas, (70 miles east of Lubbock) two types of brush piles were built to improve loafing cover on a mesquite hardland site.

Many woody plants provide excellent loafing cover. In South Texas, says Val Lehmann, retired wildlife biologist for King Ranch, Inc., granjeno, tasajillo, and lotebush are among the plants selected by bobwhites. Elbowbush, cedar elm saplings, juniper, and mixtures of woody plants along drainages are important in prairies with limestone or caliche

The first design consisted of a metal grill (8 feet by 8 feet) supported by a building block under each corner. The grass was cleared underneath and mesquite limbs stacked 3 feet high on the grill. The cost was about \$30 (labor and equipment) per brush pile. However, they should last 10 years or more, thereby making economic sense. The accumulation of feathers and droppings under each of four such brush piles built on 300 acres showed that bobs were satisfied with the work.

The second design was styled after a teepee. Mesquite limbs were cut and stacked butt-end-up in brush piles 10 to 15 feet in diameter and 5 to 10 feet high. These piles cost only about \$10 each, but their useful life will likely be less than 5 years. Broods sought refuge in the teepee piles throughout



*Brush control patterns for maintaining bobwhite populations. Right: Brush left along drainages. Center: Brush left in strips. Left:*

*Patches of brush left in hexagonal pattern so that a covey will never be more than 200 yards from woody cover.*

summer.

Besides knowing what topnotch woody cover looks like, you must also know how much is needed. Generally, we will want to provide the minimum necessary to support bobwhites so that grass production and grazing capacity are maximized.

Several factors influence the woody cover requirements of bobwhites. Birds in areas with frequent disturbances, flat topography, low food supplies or sparse herbaceous vegetation require more woody cover than birds in areas where these habitat features are more favorable.

Studies indicate, however, that woody cover requirements are low in all cases. William H. Casey of the U.S. Soil Conservation Service speculated that a covey requires no more than 450 square feet of brush. Val Lehmann saw coveys ranging in South Texas where only 283 square feet of superior woody cover shaded the ground. He has seen densities of a bird per two acres—excellent for rangeland—where brush covered only 2½ to 5 percent of the pasture.

The brush cover must be present in proper patterns or bobwhites cannot exist. The distance quail will move from woody cover to fulfill life needs such as feeding dictates the proper patterns. Generally, bobwhites venture no farther than 200 yards from brush where herbaceous vegetation provides good screening cover. This distance will decrease as herbaceous vegetation becomes sparser.

A good way to control brush and maintain bobwhite populations is with strip patterns. A.S. Jackson, a former employee of the Texas Parks and Wildlife Department, recommended eradicating brush on strips 400 yards wide and leaving inbetween strips of brush 20 to 30 feet wide. Such a pattern would leave 97.7 percent of the land free of

brush. Halving the width of the treated strip to 200 yards would almost certainly provide better quail habitat and 95.3 percent of the land would still be free of brush.

Where strip patterns are infeasible due to topography or other considerations, covey headquarters can be distributed in a hexagonal pattern (see drawing). If each brush patch occupies 450 square feet and is located no further than 50 yards from the next brush patch, the total area covered by brush would be slightly less than 3.5 percent of the land. The hexagonal pattern would be nearly impossible to achieve with aerially applied herbicides but quite feasible with mechanical brush control.

A last consideration in any brush control program designed to lessen impact to bobwhite quail is avoidance, wherever possible, of key habitats. These include old, large trees of nearly any species but particularly mast producers. Also important are mottes of oak. Lastly, the woody plants along streams, draws or other moist areas should be preserved. Bobwhites "ride out" droughts in these habitats and repopulate less suitable areas when rains return.

Designing and executing brush control programs with bobwhites in mind may increase overall costs of the operation. However, the programs we have discussed stand a good chance of increasing profits over the long run. Cattle, for example, seek shade during hot weather; when shade is lacking, daily rates of gain decrease. Maintaining brush in the patterns described would do little or no damage to deer and turkey habitat. These animals are valuable products of rangelands wherever free-lease hunting is practice. Lastly, preservation of brush in small amounts increases the visual appeal of landscapes, when proper design is followed. ●

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