

## Appendix G

# Specific Management Recommendations for Bobwhite Quail



Before entering into a discussion on bobwhite quail, it should be noted that the Pineywoods Ecological region of east Texas is not known as a good quail producing area of the state. Although, prior to about the 1970's, quail populations were usually good enough for quail hunters to keep a bird dog and look forward to the quail season each year, however that is not the case now. In earlier years, there were more native pastures, rural family gardens, disking and soil disturbance that created early plant succession, and other situations that benefited quail. Additionally, wild and prescribed burns were much more prevalent in pine stands, which created desirable understory conditions for quail. As more acreage was planted to dense monoculture tame pasture, less quail habitat was available. In the 1970's, the imported red fire ant began its move into the region, steadily moving northward. Studies

indicate that they have made an impact on quail and other ground dwelling/nesting wildlife. Besides their direct impact on animals by stinging (one to two fire ant stings can kill a few days-old quail-D. Wilson study), their reduction of the insect food base probably is the most detrimental to quail populations.

In relative terms, the overall habitat types occurring in the region are not as suitable for quail as those found in south Texas or north-central Texas. Also, quail population densities tend to vary greatly from year to year, even in the best quail producing regions of the state. The timing and amount of fall and winter rainfall are thought to be the most critical factors that determine quail breeding success and survivability during the next year (adequate amounts of fall/winter rains improve soil moisture and promotes the early growth of herbaceous plants).

### Basic Habitat Requirements:

Bobwhite quail must have a year-round adequate supply of food and reasonable protection from hazards. This includes protection from predators while feeding, resting, loafing, roosting, traveling, and nesting, as well as protection from inclement weather conditions. Both food and cover supply must be stable or continuously renewed during the entire year. It is not enough that food and cover be adequate for 11 months, if either

is lacking during a single month.

Food and cover must occur in a well-arranged pattern if they are to comprise quail habitat. The distance between a source of ample food and adequate cover must not be greater than what a quail can negotiate with safety. As a rule of thumb, bobwhites venture no further than 200 yards from patches of cover. Ideally, escape cover should be linked to food supplies with more or less continuous screening cover. Overgrazed pastures do not provide adequate screening cover. However, the screening cover must not be dense enough to create an obstacle to the quail's short-legged gait. Dense stands of thick grass (tame pasture monocultures) cannot be easily negotiated. Without a suitable space relationship, a range will not be habitable for quail regardless of the quality or amount of food and cover present. In fact, ideal quail habitat consists of 30 - 60 percent bare ground interspersed with cover, forbs, and seed producing plants. This permits ease of movement and location of seeds and insects, especially for newly hatched quail.

#### Food:

Food supplies are usually most abundant during the spring and summer; seeds are ripening and insects and green plant material are available. The food supply begins to diminish at the time of the first killing frost in the fall, and continues to decline throughout the winter due to competition from other animals and from weathering. Seeds from forbs such as croton (doveweed), ragweed, sunflower, partridge pea, tick clover, and many others are staple winter foods. A number of woody plants provide winter quail food. Fruits and mast such as small acorns, sumac berries, hackberries, and gum elastic berries supplement quail diets. Most grasses, except for paspalums and panic grasses, do not produce seeds large enough to be worthwhile quail food. In general, forbs are the most important and most widely distributed sources of winter quail food. Green material from cool season forbs and grasses that germinate in the late winter if rainfall is adequate are essential to get quail in good body condition for the upcoming breeding season.

#### Cover:

Bobwhite quail need several types of cover: screening overhead cover for security while feeding and traveling, "tangled" woody cover to retreat into to escape enemies, a "living room" type of cover for dusting or resting, and nesting cover. Roosting cover is also needed, but if other types of cover are present, the roosting cover requirement is usually adequately met.

Cover can take many forms and a patch of cover can meet several of the cover requirements.

A stand of broomweed, or similar tall plants with bushy canopies and an open understory at ground level, can provide screening overhead cover.

Thickets of low brush, trees, and vines can provide escape and loafing cover. In general, a habitat with between 5% and 15% canopy coverage of good woody cover is adequate, if it occurs in small, well distributed patches (no more than 200 yards between patches as discussed above).

Patches of residual grasses left over from the previous growing season can provide nesting cover. Individual patches should be at least 8 inches tall and 12 inches in diameter (the size of a cake pan). Ideally, there should be more than 250 well distributed clumps of suitable nesting cover per acre, or 1 clump every 15 to 20 steps. Too little nesting cover makes it easier for predators to find and destroy nests.

#### Habitat Management Recommendations:

A primary quail management objective is to maintain or create the mosaic of small thickets of low growing woody brush throughout a ranch, as described above in woody cover requirements. Thickets of sumac, briars, plums, blackberries, etc. should be retained and encouraged to form. Although not as desirable, small clumps of low growing cedars could have some value as cover where other species do not grow or are in short supply. Where vines have grown up into a tree leaving ground too open to serve as quail cover, the tree can be cut half through a few feet above ground and pushed over, bringing the living vines closer to the ground. In the western portion of the area, the trunks of multi-stemmed mesquites can be half-cut and pushed over so that the limbs touch the ground but continue to grow, forming small areas protected from cattle grazing/deer browsing. Half-cutting mesquite should be done during the early and middle parts of the growing season, not during the dormant season. The individual "skeletons" of large cut cedars can also form small areas protected from grazing/browsing where patches of herbaceous and woody plants suitable for cover can become established. The number of browsing animals on the range (combination of wildlife and domestic livestock) needs to be maintained at a level where browsing pressure on low growing woody cover is not excessive.

Another objective is to improve the amount and quality of herbaceous cover. A well-planned deferred-rotation livestock grazing system (as described in the Livestock Recommendations section) can be used to create the patchy pattern of lightly grazed areas interspersed among more heavily grazed areas needed for nesting cover.

Most good seed producing forbs are early successional stage annuals that respond to soil disturbance that sets back plant succession. Disking the soil is a good practice that encourages the growth of forbs and other annual plants. Disked strips should be long and meandering and 1 or 2 disc widths wide. The same strips can be disked annually, or side-by-side strips can be disked on an alternating basis every other year to create adjacent strips in various stages of succession. The best plant response will occur in areas of deeper sandy, sandy-loam soils. It is important that disced strips be located near escape cover so they are useable by quail. Discing can be done anytime between the first killing frost in the fall and the last frost in the spring, but the optimum time is near the end of winter (January, February) shortly before spring growth gets underway.

Heavy spot grazing by cattle, such as occurs around salt blocks, feed areas, and water, causes soil disturbance that encourages forb growth. Salt blocks and feeding areas should be moved around the ranch to create small patches of disturbed ground.

Managing the habitat for the production of native food plants and cover should be the primary management goal. Supplemental feeding and/or the planting of food plots are not a substitute for good habitat management. These practices should only be considered as "supplements" to the native habitat, not as "cure-alls" for low quality and/or poorly managed habitats. Food plots and feeders alone will not increase the number of quail a range can support if the supplies of other required habitat elements such as cover are limited.

Small food plots of seed producing plants including but not limited to millets, sorghum alum, and sorghum planted on deeper soils near cover can provide supplemental food sources during periods of extreme weather conditions. A limiting factor of supplemental food plots is sometimes an insufficient amount of rainfall received in western east Texas during the summer. During dry years when the production of native foods is limited and supplemental foods are most needed, supplemental plantings will also be failures. During good years when the production of native foods is adequate, supplemental plantings may do well, but are not as necessary. Also, these seeds do not normally last long into the fall and winter, due to normal fall rainfall. Another limiting factor is that most types of supplemental plantings will have to be protected from livestock grazing by fencing the plot or deferring the pasture.

Feeding can provide supplemental food during extreme weather conditions and help hold quail in an area. Broadcasting corn or sorghum by hand is one method of distributing supplemental feed. It can also be distributed from fixed feeders. An intensive feeding program would be one that provides 1 feeder per every 40 to 60 acres of quail habitat (feeders placed 440 to 540 yards apart in a grid pattern) so that every quail covey has access to several feeders. One feeder per 75 acres may be sufficient. As with all other types of food sources, feeders need to be located near escape and screening cover to be useable by quail. Some limitations of supplemental feeding are: they can be expensive and labor intensive, diseases and parasites can be spread at heavily used sites, predators learn to key on sites regularly used by quail, and, depending on the type of feeder used, they may have to be fenced from livestock.

Prescribed burning is a very effective, low-cost habitat management tool that can be used to enhance plant diversity by stimulating production of a variety of woody plants, forbs, and grasses. Burning can be used to remove rank stands of herbaceous vegetation and plant litter that hinder quail movements. Also, studies have shown that up to seven times more protein rich insects are present in burned areas compared to unburned areas.

In summary, food and all the different types of cover must be available year around and suitably arranged to have a good quail habitat. The number of quail a range can

produce and support will be dependent on the habitat element that is most limited. In other words, if cover is the limiting factor, increasing the amount of food beyond that needed for the number of quail that can be supported by the cover will not increase the range's quail carrying capacity, and vice versa.

See TPWD brochure 7000-37, Bobwhite Quail in Texas, Habitat Needs & Management Suggestions by A.S. Jackson, C. Holt, and D. W. Lay.

Notes: The same types of cover and seed producing forbs and supplemental food plants utilized by quail are also utilized by many other species of birds and mammals.