

WHAT TO LOOK FOR IN NORTHERN BOBWHITE HABITAT

Roger Wells

National Habitat Coordinator
Quail Unlimited

The Northern Bobwhite Conservation Initiative (NBCI) has identified nesting and brood rearing habitat as the critical limiting factor over much of the bobwhite range. In most areas, quail restoration efforts must address one or both of these important habitat components. This paper will offer insights into what to look for in nesting and brood rearing cover plus other important components of bobwhite habitat.

Bobwhites construct their nests on the ground, typically in the protection of a clump of grass that they can walk through and yet provides some overhead protection. The nest bowl is made of dry vegetation from the previous year's growth, pine needles, or similar residual vegetation. Both of these characteristics suggest management strategies.

Grass or vegetation height must be sufficient to provide quail concealment. Normally, we think of this as being between 6 and 18 inches. Native warm season grasses or other grasses with similar structure having a clump-type growth form are ideal nest cover. Nesting sites with a grass bunch or clump density of no more than 1, 12-inch diameter bunch per 4 square feet (2 feet X 2 feet area) are considered suitable. This allows for sufficient nesting clumps (about 10,000 per acre) and is thin enough to allow the birds to walk through the cover. However, even much thinner nesting cover allows for plenty of nesting site and easier travel. Nesting sites with as little as 250 suitable nest sites per acre (one site per 13 feet) are acceptable.

Sufficient residual vegetation must be present for successful reproduction. Prescribed burning of 100% of the vegetation over wide areas may be detrimental to successful nesting. A preferred strategy is to use fire, or other manipulation techniques, in a smaller, patchwork pattern.

The greatest mortality of quail occurs in the first few weeks after hatch. This is a critical period which often determines whether the fall population will be a bumper crop or less than desired. Adequate brood rearing cover is critical.

Soon after hatching, broods leave the nest and are cared for by one or both adults. Quail chicks have only a few requirements but these are a must! Chicks must have freedom of movement at ground level, overhead concealment and a diverse assortment of green plants or plant parts within feeding height – which for a quail chick is only about 2-3 inches. The ground cover must be very open with only 30% to 50% vegetative coverage on the ground. This means that, as much as 70% can be bare ground but still must possess overhead protection.

The low-growing canopy of forbs and grasses attracts insects such as beetles, grasshoppers, leafhoppers, ants and other invertebrates, which compose almost the entire diet of quail for the first few weeks of life. A mixture of annual grasses and forbs (such as ragweed, partridge pea and lespedezas) provide cover and high protein foods (insects) needed by bobwhite chicks. Also, recently burned grassland sites may provide ideal brood habitat as do old-field or previously tilled sites, weedy strips, legume plantings and small grain and legume mixes.

Bobwhites require some type of shrubby/woody cover for loafing, headquarters sites, and protection from summer heat. These areas provide a safe, comfortable resting site between morning and evening feeding periods. They will utilize tall grasses and weed patches but prefer woody plants. Many of these sites become what are known as “covey headquarters”, which are those select sites around which a covey will center its daily activities. A covey may have several headquarters within its home range that it uses from time to time depending upon the weather and available food. Loafing and headquarters sites may be as small as 100 ft² but ideally are at least 400 ft² or more. No less than 5% or more than 15% of a covey home range should be in woody cover that is 3 feet to 6 feet tall.

Covey headquarters and loafing sites may be existing thickets protected from fire and grazing, felled trees along field borders, or thickets reestablished through plantings utilizing low growing shrubby species.

Providing adequate food supplies for bobwhites is important and can range from managing for native foods in the form of annual forb (weed) seeds to manual feeding operations and many combinations or variations in between.

Bobwhites are primarily seedeaters, with over 1,000 different plants having been documented in their diet. As much as 75% of the annual adult diet may be composed of food from annual plants. For the manager wanting to maximize quail populations, knowing which seeds provide the most energy to quail is of the utmost importance. Raising or encouraging those plants, which provide a low calorie food source, is not only wasteful but can actually be detrimental to quail during stress periods. On low calorie food sources, quail will not be as fat and not able to withstand winter weather or other stress periods; hens will enter the breeding season in poorer condition, lay fewer eggs and experience more physiological stress.

A few of the seeds that contain 80% or more of the energy required to maintain a quail in winter are (in decreasing order of importance):

<u>Food Item</u>	<u>% of Requirement</u>
Giant ragweed	99.2
Western ragweed	89.1
Corn	88.7
Soybean	86.7
Sorghum	85.1
Sunflower	83.8
Osage orange	81.6
Dogwood	81.2

Having several of the above seeds available to quail within their home range would offer some degree of insurance against crop failure.

I have outlined above a few of the basic components that make up quail habitat, however the positioning or spatial relationship of each of these components on the property is as much or more important than just their presence or absence. Dr. Fred Guthery, prominent quail researcher at Oklahoma State University, promotes the concept of maximizing “useable space” for bobwhites. By that, he is referring to the need to make every acre (or as nearly so as is practical) on the farm or ranch a “useable” acre for bobwhites. It is not enough to have nesting cover in one section of the property, quality brood habitat in another and woody cover in another. If all of the bobwhite’s requisite habitat components are not found within the normal daily or seasonal home range of the bobwhite nesting pair, brood, or covey, then the population cannot reach its maximum density.

The “useable space” concept also dictates that very large blocks of a single cover type, for example a 160 acre field of ideal nesting cover, are not conducive to maximum population densities because quail seldom utilize anything more than just the outside margins of these large blocks. The center acres are not “useable acres.”

In the big picture, when looking across the farm or ranch, the bobwhite manager must attempt to visualize his property as a quail covey might. In his book “Beef, Brush and Bobwhites – Quail Management in Cattle Country, Dr. Guthery has an opening 2 paragraphs which rather sums up how the quail manager must look at habitat. He says:

“Imagine you’re 6 inches tall, weigh 6 ounces and would rather walk than fly. Your view of the world would change. A knee-high shrub would become a small tree, a dense stand of bluestem would become an impassible jungle, and a 1-mile jog would telescope into a half marathon.”

“You’re beginning to see through the eyes of a bobwhite. These are delicate, immobile birds that require a variety of habitats. They’re largely concerned with living space from ground level to a height of about 3 feet on areas no larger than 20 city blocks. Therefore, managers must create crazy-quilt patterns of cover on small areas; “patches” in the quilt must fulfill seasonal and annual cover needs.”

As an example, most quail managers would consider a population density of 1 quail per acre across the entirety of a managed property to be a high population level. The average covey size is 11 birds, meaning that this covey would require 11 acres of ideal habitat to exist. Understand, of course, that a quail covey will utilize far more acres than this but also that the home ranges of several coveys typically overlap.

Now, very few people manage their lands on 11-acre units, but many do attempt to manage on 30 to 40 acre units, which, at the densities quoted above might hold 3-4 coveys of birds. At these densities coveys would theoretically, if evenly spaced, be disbursed every 230 yards. Meaning that when hunting you would encounter a second covey before you even had the chance to work the singles of the first covey.

In order to achieve quail densities at these levels every 40-acre unit on the farm or ranch must contain all of the necessary annual habitat components for that population of birds. There must be adequate nesting cover, brood habitat, summer and winter woody shelter, protected travel lanes, foods (animal and vegetable), roost sites, water availability, etc. in every 40-acre tract. It is not enough just to have these components present in widely separated locations of the property; they must be within the normal home range of the nesting pair or the fall and winter covey.

Everyone would like to see more bobwhites on their property. Accomplishing that objective often takes a lot more work and effort than many folks imagine. Bobwhite management involves “active” management as opposed to “passive” management for some other species. In most areas, successful bobwhite management requires continued use of management strategies that disturb the soil, induce vegetative diversity, set back plant succession, and provide for all of the life needs of a species that may spend most of its life in an area of just a few dozen acres. To be successful and maximize the population potential, you must employ disturbance, diversity and dedication and do it all in a small patchwork design across the property.

