



Chapter 4

HABITAT REQUIREMENTS

SPRING AND SUMMER RANGE

The breeding season is the most critical period of the year for quail populations. Yet, it often receives the least attention from quail hunters or even from quail managers. Most of the thoughts and preparations are focused toward the hunting season. Breeding birds are assumed to be capable of nesting and raising young in whatever environment exists. The fact is, quail need very specialized environments for successful reproduction. With quail mortality in excess of 80 percent annually, a failed reproductive season or a series of poor reproductive years can result in dramatic declines in quail numbers. Because bobwhite nest, chick, and adult mortality is high, primary management emphasis should be directed toward the reproductive season and the development of reproductive habitat. Due to the natural behavior of bobwhites, space (land area) requirements during breeding season are greater than during winter, so bobwhites need an abundance of breeding range, something very deficient in most current landscapes.

Reproductive habitat for quail includes nesting covers and brood rearing habitat, each distinctly different in composition. These are the keys to quail population maintenance and restoration. Quail nesting and brood rearing habitats are composed of specific grasses and weeds that are transitional in nature. Productive quail habitat does not remain productive for many years without periodic disturbance and management that keeps required plant structures in the environment.

Quail must have plant types that afford an overhead canopy for concealment and bare ground for unhampered movement. For this reason, sod-forming grasses and solid ground covers are little used by quail. Landscapes dominated by bermuda grass, bahia grass or fescue will produce few quail until these grasses are eliminated. Old fields of dense broomsedge, heavy goldenrod or dog fennel are also poor habitat for quail production and require periodic disturbance.

Nesting Habitat

Ideal nesting cover is composed of moderately dense broomsedge, such that the grass clumps are scattered, bare ground is present and plants other than broomsedge can also grow. Other herbaceous plants may include a variety of legumes, panic and paspalum grasses, goldenrod, dog fennel and other forbs. Good nesting habitat is also characterized by the presence of a scattered woody component of dewberry, blackberry and shrubs. The cover is a mixture of these things, not a solid stand of any one. The structure forms a canopy above the quail, but has lots of bare ground underneath so that birds can scurry through easily. The plant mixture provides nest construction materials as well as nest concealment.

Most bobwhite nests are located in grassy-weedy plant covers from the previous growing season. The cover must be intact at the

onset of nesting in April and May, which means it must escape disturbance such as burning, plowing or mowing for at least one year. Too frequent nesting habitat disturbance is detrimental to quail nesting success. Ideal nesting cover for quail contains broomsedge clumps from the previous summer. Birds locate nests in or against the standing clumps and use dead broomsedge leaves in nest construction. Introduction and maintenance of suitable amounts of nesting habitat in the landscape are critical to quail populations.

Left alone, plant covers quickly become too thick for quail use. Ground cover becomes dense, plant litter builds and food-bearing plants are crowded out. Birds can no longer negotiate the cover or find the things they need. After only three or four years of plant growth, bare ground disappears and the cover loses value for quail production. Eventually heavy brush and young trees take over. By this point the chances for quail reproduction are severely reduced, and the population becomes chronically low. Infrequent as well as too frequent cover disturbances rob quail of nesting areas.

The herbaceous plant associations suitable for bobwhite reproduction naturally persist for only a few years in southeastern landscapes, so appropriate periodic cover disturbances are indispensable. Maintenance frequency of the cover areas set aside for nesting is critical. If all cover is burned, plowed, or mowed every year, adequate cover is not available at the beginning of spring nesting season. If not disturbed often enough, the cover becomes too thick for quail use. Prescribed burning and disking are the preferred methods for managing quail nesting habitat, but they must be applied at the right times, amounts and frequency. Nesting habitat should be burned in late winter/early spring every other year or disked about once every three years depending on cover growth. Control of hardwood sprouts, especially sweetgum, might be accomplished with herbicide applications.

Brood Habitat

Brood habitat is critical for developing chicks. Flightless chicks and attentive parents are highly vulnerable to predators. Adults with broods select weed rich covers that form a protective screen above them, with open ground under the weed canopy for easy travel and secure feeding. Chicks and adults find an abundance of insect foods in weedy covers. Extensive brood habitats are needed to enhance chick survival as broods feed and range over the landscape.

Lush weedy groundcovers that grow in open pine woodlands after late winter and early spring burns supply excellent brood range.¹² These areas will include plants such as partridge peas, butterfly pea, beggarweed, lespedezas and other legumes, common ragweed, goldenrods, sunflowers and other asters, blackberries, dewberries, panic grasses and re-growing bluestems.⁴¹ Insects are abundant in the growing plants, many of which also produce fruits

NESTING COVER AND BROOD HABITAT ARE THE KEYS TO QUAIL RESTORATION



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(Left: JERRY DEBIN, Right: STAN STEWART)



Lush weedy groundcovers that grow in open pine woodlands after late winter and early spring burns supply excellent quail brood range in summer. Fallow fields of annual weeds, especially common ragweed and partridge pea, provide excellent brood habitat if the fields are large enough for secure brood movements.

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and seeds. The plant canopy provides protective cover above the birds and bare ground beneath for easy travel.

Fallow fields of annual weeds, especially common ragweed and partridge pea, provide excellent brood habitat if the fields are large enough for secure brood movements.⁵⁷ This plant community grows in thick stands following annual fall/winter disking. The plants form an overhead canopy that conceals quail chicks from predators, shields them from rain, shades them from summer sun, and produces an abundance of insects that young quail must have for growth. The canopy shades out other plant growth beneath so chicks have plenty of bare ground to move easily and find food.

Ragweed patches are well developed by mid-summer when broods are hatching. The patches may continue to hold quail into the fall as birds begin feeding on ragweed and other seed.

Annually planted food patches that are allowed to lie fallow the following summer will also grow annual weeds and grasses used by quail broods. The plant composition is different than that which occurs with dormant season (fall/winter) disking and includes more crabgrass, florida pussley, and other spring and summer annuals in addition to ragweed. These plants do not have the cover characteristics of ragweed, but they still produce insects and small seeds that quail chicks require.

Actively growing annual food patches also have value as brood habitat. Some of the most valuable annually planted food patches for broods include kobe lespedeza and browntop millet.^{22,37}

FALL AND WINTER RANGE

Feeding Areas

The winter diet of bobwhites is composed primarily of seeds picked up from the ground. Consequently the birds need seed-bearing plants that drop their seed on relatively bare ground where it can be easily seen or scratched. Because the birds are highly conditioned to avoid detection by predators, the seeds must be available in and near concealing cover.

Quail utilize a variety of seeds. Seeds of legumes, the pea family, are frequently used. This is not only because the seeds are preferred, but also because many of the plants have a growth habit that affords overhead concealment for the feeding birds and bare ground underneath for moving and finding the seeds. Legume seeds taken by quail include annual and perennial lespedezas, beggarweeds, butterfly peas, wild beans, milk peas, partridge peas, clovers, and vetches. Ragweed and croton seeds are often used in fall and early winter. Ragweed, as previously mentioned, offers excellent cover. Various grass seeds are eaten throughout the summer and fall, particularly those of the genera *Panicum* and *Paspalum*. Important tree seeds include those of pine, oak, sweetgum, dogwood, sumac and sassafras. Agricultural food crops highly used in fall and winter include corn, sorghum, peanuts and soybeans. In late winter and spring many sprouting weeds are eaten. The birds also eat granules of sand and small stones (grit) to aid in seed digestion. Some is ingested incidental to feeding, and considerable sand is picked up directly when dust bathing. Since bobwhites use such a wide variety of seeds, it is evident that the winter range of bobwhites should be managed for a diversity of herbaceous and woody plants.



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TABLE 1
IMPORTANT WILD AND CULTIVATED
PLANTS FOR BOBWHITES IN ALABAMA

	Native (N)	Annual (A)
	Introduced (I)	Perennial (P)
	Cultivar (C)	
<u>LEGUMES</u>		
Beggarweeds (<i>Desmodium</i> spp.)	N	P
Beggarweed, Florida (<i>Desmodium tortuosum</i>)	I	A
Butterfly Pea (<i>Centrosema virginianum</i>)	N	P
Cow Pea (<i>Vigna unguiculata</i>)	C	A
Lespedeza, Bicolor (<i>Lespedeza bicolor</i>)	I	P
Lespedeza, Common (<i>Lespedeza striata</i>)	I	A
Lespedeza, Kobe (<i>Lespedeza striata</i>)	C	A
Lespedezas, Perennial (<i>Lespedeza</i> spp.)	N	P
Lespedeza, Thunburg (<i>Lespedeza thunburgii</i>)	I	P
Milk Peas (<i>Galactia</i> spp.)	N	P
Partridge Peas (<i>Cassia</i> spp.)	N	A
Soybean (<i>Glycine max</i>)	C	A
Wild Beans (<i>Strophostyles</i> spp.)	N	P
<u>GRASSES</u>		
Browntop Millet (<i>Panicum fasciculatum</i>)	C	A
Broomsedges (<i>Andropogon</i> spp.)	N	P
Bull Grass (<i>Paspalum boscianum</i>)	N	A
Corn (<i>Zea mays</i>)	C	A
Crab Grass (<i>Digitaria sanguinalis</i>)	N	A
Crowfoot Grass (<i>Dactyloctenium aegyptium</i>)	N	A
Foxtail (<i>Setaria</i> spp.)	N	A,P
Panic Grass (<i>Panicum</i> spp.)	N	A,P
Paspalum (<i>Paspalum</i> spp.)	N	A,P
Sorghum (<i>Sorghum vulgare</i>)	C	A
<u>OTHER HERBACEOUS</u>		
Common Ragweed (<i>Ambrosia artemisiifolia</i>)	N	A
Dove Weed (<i>Croton glandulosus</i>)	N	A
Sunflowers (<i>Helianthus</i> spp.)	N	A,P
Woolly Croton (<i>Croton capitatus</i>)	N	A
<u>TREES, SHRUBS AND VINES</u>		
Blackberry (<i>Rubus argutus</i>)	N	P
Black Cherry (<i>Prunus serotina</i>)	N	P
Black Gum (<i>Nyssa sylvatica</i>)	N	P
Blueberries (<i>Vaccinium</i> spp.)	N	P
Chickasaw Plum (<i>Prunus angustifolia</i>)	N	P
Dewberry (<i>Rubus trivialis</i>)	N	P
Flowering Dogwood (<i>Cornus florida</i>)	N	P
Hackberry (<i>Celtis occidentalis</i>)	N	P
Huckleberries (<i>Gaylussacia</i> spp.)	N	P
Japanese Honeysuckle (<i>Lonicera japonica</i>)	I	P
Oaks (<i>Quercus</i> spp.)	N	P
Pines (<i>Pinus</i> spp.)	N	P
Sassafras (<i>Sassafras albidum</i>)	N	P
Sweetgum (<i>Liquidambar styraciflua</i>)	N	P
Sumacs (<i>Rhus</i> spp.)	N	P



Chickasaw plum, *Prunus angustifolia*, is a much branched, thicket-forming shrub that grows to about six feet tall and exemplifies ideal protective cover for quail. STAN STEWART

Protective Cover

Bobwhite winter covey ranges are strongly associated with woody and brushy protective covers that provide secure loafing and escape areas. Each covey usually has one or more headquarters or small activity centers in and near some type of thicket cover.⁵⁸ Identified headquarters covers include plum patches, other dense shrub and sprout stands, and Japanese honeysuckle thickets. Shrub covers and thickets are particularly important as weed and grass covers thin during winter.

Chickasaw plum, *Prunus angustifolia*, is a much branched, thicket-forming shrub that grows to about six feet tall and exemplifies ideal protective cover for quail. It offers the characteristics attractive to bobwhites: a low overhead canopy with bare ground beneath. Coveys can avoid avian predators beneath the canopy or run into the thicket to escape ground predators. It grows best on sandy or low fertility soils and is often found in open woods, field borders and fencerows. Its presence should be encouraged on the quail range.

Winter coveys spend a large portion of the day loafing in brushy thicket cover and as little time as necessary feeding. This minimizes exposure to predators. Feeding is a risky activity. The more time coveys spend moving and feeding, the greater the chances of detection by predators. If food is abundant and close to loafing cover, bobwhite survival is enhanced. When food supplies become scarce, birds venture away from cover for longer periods to acquire food, exposure to predators is greater, and mortality increases.⁴⁵ In severe weather, coveys with adequate food near cover experience light mortality, whereas coveys without this arrangement may exhibit unusual movements and suffer heavier losses.³⁴

Bobwhites are animals of low mobility. Winter daily movements are typically short, often less than a few hundred yards. Therefore, protective cover and foods should be arranged in close proximity to enhance bobwhite survival and optimize numbers of bobwhite coveys.