The bobwhite quail was once the most popular game bird in the South. When most agricultural crops were grown in small patches, quail thrived throughout the state. High densities of bobwhites, largely a by-product of land-use patterns, existed statewide. Since that time, quail numbers have declined steadily. Habitat losses have reduced the status of this prince of game birds. Clean farming practices that destroy brushy fencerows and enlarge field sizes and conversion of native bunch grasses to non-native invasive forage grasses are a few of the problems quail face in agricultural landscapes. In many forest environments, high tree densities and lack of periodic prescribed fires have also continued to reduce habitat that is available to quail. However, management techniques can increase quail populations in areas where they once existed.

**Life History**

By autumn of each year, bobwhites form loose groupings called **coveys**. Coveys are generally made up of 9 to 14 birds, which lessens the likelihood of predation on individual birds. Quail remain in coveys, feeding and roosting as a unit, throughout winter. Early daylight hours are typically spent feeding. Mid-day is reserved for resting, preening, and dust bathing. In late afternoon, coveys feed again before forming the covey circle on the ground to roost at dusk.

In good winter habitat, coveys may restrict their seasonal activities to as little as 10 to 40 acres. In poorer habitat where ample cover is scare, coveys are forced to range over much larger areas.

As days become longer and temperatures become warmer during early spring, coveys begin to disband or break up. During most years in Alabama, coveys begin breaking up by mid-April. The early stages of covey breakup coincide with the time males, or cocks, start whistling their characteristic bobwhite notes.

Initially, coveys may splinter into pairs or other small subunits during the day and regroup to roost as a covey at night. Pair bonds are usually formed between covey members. Although pairs may begin building a nest and laying during April, covey breakup is often not complete until mid-May.

Nesting activity usually lasts from early May through September. Clutches of about 13 eggs are laid in nests located on the ground. Hens incubate most nests, but cocks will readily assume incubation duties when hens are not available.

The success rate for bobwhite nesting is low. Typically, only one out of every four nests will hatch. Nests fall prey to many egg-eating predators as well as forest and farm management activities. Quail overcome poor nest success by
Early spring diets shift from seeds to insects and leafy green vegetation. Insects remain an important food item to adults and young throughout summer and into early fall.

Chicks require a high-protein diet for rapid growth and for the development of flight feathers. This need is met by feeding almost exclusively on insects during the first two to three weeks after hatching. Fruits and berries, also called soft mast items, are eaten by adults during summer.

Quail food items must be exposed on relatively bare soil and in open-structured vegetation. Quail scratch poorly and are impeded by extremely dense vegetation. Seeds buried beneath deep piles of leaf litter, regardless of their abundance, are unavailable to quail. Burn off this litter every two years.

Food availability is also influenced by its distance from protective cover. Quail seldom move far from cover to feed. Small, relatively dense thickets provide refuge from predators. Brushy drains and fencerows can serve as resting areas and travel lanes between fields.

Quail usually build nests in low, clumped vegetation that gives good cover close to the ground. Vegetation around nests must be open to allow quail easy access to and from nests. Often, quail select nest sites close to fields, fire lanes, roads, or other such openings. Incubating hens also need nearby sources of energy-rich food, such as clumps of blackberries and other fruits.

Dead leaves and stems are used to build nests and must be available near nest sites. Nests built during spring are often found in old fields and woodlands left unburned for one to three years.

Management

The number of quail on a given area is determined largely by habitat conditions. The amount, quality, and distribution of food and cover affect population levels. High densities, sometimes exceeding one bird per acre, occur where food and cover are plentiful and well

Figure 1. Native bunch grasses, such as Big Bluestem and Indiangrass, provide the best cover for bobwhite quail. The grasses provide excellent overhead cover throughout the year, which lets both adults and chicks move between bunches of grass to scratch for seed or to capture insects to eat.
distributed so quail don’t have to move much.

Successful habitat management means meeting all of the birds’ yearly needs in relatively small areas. It is best to provide habitat for each covey within areas of 10 to 40 acres. This includes habitat in every season for both young and adult quail.

In most cases where quail are absent or scarce, cover is not adequate. If protective cover is available, populations usually respond favorably to management practices that provide plenty of fall and winter food. On the other hand, when further increases in food supply fail to increase population levels, landowners must manipulate habitat components to improve quail populations.

**Management Techniques**

Several habitat management methods are available to landowners who are interested in improving quail numbers and hunting opportunities on their land. These methods are directed toward manipulating native vegetation and supplementing native food.

Bobwhite quail are habitat specialists, relying on natural early succession plant communities to meet most of their daily, seasonal, and yearly needs. Most properties have very few acres of properly maintained early succession habitat. Therefore, it is imperative that habitat management activities focus on meeting this habitat need.

Early succession plant communities are characterized as annual grasses and forbs, such as ragweed, foxtail, goldenrod, and partridge pea, that first appear or sprout up after the soil has been disturbed or the surface substrate (old dead plant material) has been removed, exposing the soil to sunlight. These diverse early succession plant communities provide multiple benefits for quail including proper cover and food throughout the entire year.

**Burning.** Controlled burning is often the most economical and effective method of creating and maintaining quail habitat in old fields, woodlands, and over large acreages. Regular fire use during late winter (February) increases the amount and availability of quail foods.

Coverage and seed production of most grasses and legumes are stimulated by burning. Lush, rapid growing vegetation that follows fire attracts and holds large numbers of insects that are eaten by quail. Burning reduces litter and discourages plant growth from becoming too dense. Quail find it easier to feed in burned areas and food items are more plentiful.

Some areas must be protected from fire in the quails’ 10- to 40-acre range. Provide nesting habitat, fruit production, and refuge cover by keeping fire away from small, selected areas. Leaving portions of well-drained, upland areas unburned for one to two years creates ideal sites for late-spring nests. Keeping fire away from small coverts for several years allows fruit-producing shrubs to volunteer and mature.

The intensity and timing of prescribed fire use is determined by many factors, including weather and soil fertility. If you are inexperienced in controlled burning, get help from the Alabama Forestry Commission or a forestry/wildlife consultant.

**PLANTING.** Many food plants that are adapted to most of Alabama may be planted to supplement native foods for quail or for cover. The primary value of many food plants lies in their ability to concentrate or localize coveys for hunting. Another benefit of the soil disturbance and fertilization associated with planting is that good bugging and cover areas for young broods are provided. Other plants, such as Chickasaw plum, Egyptian wheat, and plums, yield cover as well.

Generally, well-managed plots of 1/10 to 1/3 acre are large enough to supplement the native foods of quail. One plot per 10 to 15 acres often supports high densities of quail. Relatively long, narrow plots are preferable to other shapes for efficient bird dog work and shooting. Adequately drained field edges, forest openings, and utility right-of-ways are ideally suited to food plot establishment.

Where possible, relocate plots planted in annual crops to recently uncultivated sites each year. Rotating plots to nearby undisturbed sites allows volunteer vegetation to grow in idle plots, thereby increasing the amount and diversity of the food. Several good quail foods are listed...
in Extension publication ANR-0485, “Plantings for Wildlife,” or ask your Extension agent for more information about suitable varieties, planting methods, and planting dates.

**Disking.** Periodic diskng of old fields, field edges, and open woodlands can be beneficial to quail. Disking discourages accumulations of dense, mat-forming vegetation, which quail don’t like. It promotes the growth of many seed-producing grasses and legumes. Disking is often the only effective method of breaking up dense stands of broomsedge that have become too rank for quail to use. Quail also use disked areas to take dust baths and to pick up grit.

The series of plants that volunteer following diskng depends largely on site conditions and residual seed stores. Generally, light diskng during fall and early winter favors the growth of most legumes. Spring disking stimulates grasses during the first growing season following soil disturbance.

**Managing Fields and Farmlands**

Quail management can be combined with farm management if landowners are willing to give up small portions of agricultural fields to quail. Large-scale, clean farming leaves few prospects for quail.

Leaving field edges uncultivated and allowing them to revert to native vegetation will benefit quail. Provide a transition zone from agricultural fields to woodlands. Usually, an uncultivated band about 50 feet wide is sufficient. Maintain this transition zone in predominantly weedy vegetation by periodically diskng, burning, or mowing.

Leaving several perimeter rows of grain crops unharvested will help supplement native foods. Retain crop residue throughout winter. Portions of field edges or corners are good sites for establishing food plots.

Large fields may be made more productive for quail by extending fencerows or hedgerows into their centers. Allow fencerows to revert to brushy and fruit-producing vegetation. Zones separating large fields should be at least 100 feet wide to ensure an adequate security cover and to encourage quail to use them.

**Managing Woodlands**

Although quail are commonly associated with interspersed mixtures of idle and cultivated fields, brushy drains, and woodlands, extensive forested areas may provide good habitat if managed properly. Most quail food plants require sunlight penetrating the forest canopy and reaching the forest floor. Consequently, woodlands must be thinned heavily. Maximizing both timber production and quail abundance is impossible.

A good rule of thumb, varying somewhat with site fertility, is that about 60 percent of the forest floor should receive sunlight during mid-day hours. Depending on tree composition, this is usually obtained by thinning woodlands to a basal area (measure of the cross-sectional area of a tree) of about 40 to 60 square feet per acre.

Slightly higher stocking rates are possible in stands dominated by longleaf and slash pine. Stands of shortleaf and loblolly pine may need additional thinning. During thinning operations, retain small patches and isolated mature oaks on upland sites. Avoid logging during spring and summer. It will harm quail reproductive efforts.

Burn woodlands regularly but retain patches of unburned cover for nesting and fruit production. Generally, annual fire stimulates food plant production for quail. Infertile or excessively drained sites may require less frequent burning.

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