Bobwhite Quail Management

► The bobwhite quail was once the most popular game bird in the south. Learn about its decline and the management practices that can increase quail populations.

Once known as the prince of game birds, the bobwhite quail was the most popular game bird in the south when most agricultural crops were grown in small patches. Quail thrived throughout Alabama, primarily because of land-use patterns. Over time, quail numbers have steadily declined due to changes in agricultural practices that have diminished their habitat. Clean farming practices destroy brushy fencerows and enlarge field sizes, and non-native invasive forage grasses have replaced native bunch grasses. In many forests, dense trees and a lack of periodic prescribed burns have also reduced the habitat available to quail. Management techniques can, however, be used to increase quail populations in areas where they once existed.

Feeding and Nesting Patterns

In autumn, quail form loose groupings of 9 to 14 birds. These groupings, called coveys, protect the group by lessening the likelihood of predation on individual birds. Quail typically spend early daylight hours feeding and mid-day resting, preening, and dust bathing. In the late afternoon, coveys feed again before forming a covey circle on the ground to roost at dusk.

Quail remain in coveys, feeding and roosting as a unit throughout winter. Coveys may restrict their activities to as little as 10 to 40 acres in good winter habitat. In poorer habitats where ample cover is scarce, coveys are forced to range over larger areas.

As days become longer and temperatures warm during early spring, coveys begin to disband. In Alabama, coveys start breaking up by mid-April. The early stages of covey breakup coincide with when males, or cocks, start whistling their characteristic bobwhite notes. Initially, coveys may split 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 usually lasts from early May through September. Clutches of about 13 eggs are laid in nests on the ground. Hens incubate most nests, but cocks will readily assume incubation duties when hens are unavailable. 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 and forest and farm management activities. Quail overcome poor nest success by renesting after a nest is destroyed. Occasionally, quail may raise two broods during periods of favorable nesting conditions,.

Eggs hatch after 23 days of incubation. The chicks weigh only ½ ounce at hatching. They can immediately move around on their own and feed themselves; however, they require close brooding by adults to keep warm. Chick growth is rapid. By 15 weeks of age, the young are nearly full grown and are identical in appearance to the adults.

Habitat

Like all other wildlife, quail require food, shelter, and water to survive and reproduce. Quail live in forest openings, open woods, fallow fields, and along the edges of cultivated fields that produce abundant food and provide adequate cover. Quail do not require a significant amount of water. Their water needs are satisfied by drinking dew and eating berries and insects, although they occasionally use water holes or other water sources. Quail feed seasonally on fruits, leafy vegetation, and insects, but seeds make up the bulk of their diet throughout most of the year. During fall and winter, quail eat energy-rich seeds produced by grasses, legumes, other herbaceous plants, trees, and shrubs. Quail prefer grass seeds during fall, but grass seeds spoil rapidly and are depleted quickly. Persistent, hard-coated legume seeds are a staple food in winter. Acorns are preferred over all other foods from fall through early spring when available.

In early spring, diets shift from seeds to insects and leafy green vegetation. Insects remain an essential food to adults and young throughout summer and early fall. Chicks feed almost exclusively on insects during the first 2 to 3 weeks after hatching because they require a high-protein diet for rapid growth and the development of flight feathers. During summer, adults eat fruits and berries, also called soft mast items.

Because quail scratch poorly and are hindered by highly dense vegetation, quail food must be exposed on relatively bare soil and in open-structured vegetation. Regardless of their abundance, seeds buried under deep piles of leaf litter are unavailable to quail. 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. 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 1 to 3 years. Vegetation around nests must be open to allow quail easy access to and from nests. Quail often select nest sites close to fields, fire lanes, roads, or other openings. Incubating hens also need nearby sources of energy-rich food, such as clumps of blackberries and other fruits.

Managing a Quail Habitat

Habitat conditions largely determine the number of quail on a given area. 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 distributed, so quail do not have to move much.

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

In most cases, areas where quail are absent or scarce have inadequate cover. If protective cover is available, populations usually respond favorably to management practices that provide plenty of fall and winter food. If increases in food supply fail to increase population levels, however, habitat must be modified.

Management Techniques

Landowners interested in improving quail numbers and hunting opportunities on their land can use habitat management methods to utilize native vegetation and supplement native food.

Bobwhite quail are habitat specialists, relying on natural early succession plant communities to meet most of their daily, seasonal, and yearly needs. Early succession plant communities are characterized as annual grasses and forbs, such as ragweed, foxtail, goldenrod, and partridge pea. These 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.

Most properties have very few acres of properly maintained early succession habitat, so it is imperative that habitat management activities focus on this need. Some ways to accomplish this include prescribed burning, disking, and planting.

Burning

Prescribed burning is often the most economical and effective method of creating and maintaining quail habitat in old fields and 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 quail eat. Burning also 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.

However, some areas in the quails' 10- to 40-acre range must be protected from fire. Burn only a portion of the range each year, leaving other areas within the range for nesting, fruit production, and cover. In subsequent years, rotate the prescribed burning to other portions of the quail's range so that a diversity of areas exists. Leaving portions of well-drained, upland areas unburned for 1 to 2 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 burning is determined by many factors, including weather and soil fertility. If inexperienced at prescribed burning, seek help from the Alabama Forestry Commission or a forestry or wildlife consultant.

Disking

Periodic light disking of old fields, field edges, and open woodlands can benefit quail habitat. Disking minimizes dense, mat-forming vegetation, which quail do not like, and 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 rotten for quail to use. Quail also use disked areas for taking dust baths and picking up grit.

The plants that volunteer after disking depend largely on site conditions and residual seed stores. Generally, light disking during fall and early winter favors the growth of most legumes. Spring disking stimulates grasses during the first growing season following soil disturbance. Sometimes, however, disking stimulates undesirable plants, so always monitor the response to disking, and use herbicides to remove unwanted plants when necessary.

Planting

Quail depend on the early succession habitat created by prescribed fire or disking, but in some cases, plantings may further enhance or supplement bobwhite quail cover needs. Many food plants adapted to most of Alabama can supplement native quail foods or cover. The primary value of many food plants lies in their ability to concentrate or localize coveys for hunting. Another benefit of planting is that the soil disturbance and fertilization create good bugging and cover areas for young broods. Other plants, such as Chickasaw plum, Egyptian wheat, and plums, provide cover as well.

Generally, well-managed plots of ⅓ to ⅓ acre are large enough to supplement native quail foods. One plot per 10 to 15 acres often supports high densities of quail. Adequately drained field edges, forest openings, and utility rights-of-way are ideal for food plot establishment.

Where possible, relocate plots planted in annual crops to recently uncultivated sites each year. Rotating plots to nearby undisturbed areas allows volunteer vegetation to grow in idle plots, thereby increasing the amount and diversity of the food. For information about what to plant for quail food, see Extension publication ANR-0485, "Plantings for Wildlife," or ask your Extension agent for more details about suitable varieties, planting methods, and planting dates.

Managing Fields and Farmlands

Quail management can be combined with farm management if landowners are willing to give up small portions of agricultural fields for quail habitat and plantings. Leave field edges uncultivated and allow them to revert to native vegetation, and provide a transition zone from agricultural fields to woodlands. Usually, an uncultivated swath about 50 feet wide is sufficient. Periodically disk, burn, or mow this transition zone to maintain the weedy vegetation.

To help supplement native foods, leave several perimeter rows of grain crops unharvested, and retain crop residue throughout winter. Portions of field edges or corners are good sites for establishing food plots.

To make large fields more productive for quail, extend fencerows or hedgerows into their centers, and 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 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 can provide good habitat if managed properly. Most quail food plants require sunlight to penetrate the forest canopy and reach the forest floor; therefore, woodlands must be thinned heavily, so maximizing 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, retain small patches and isolated mature oaks on upland sites. Avoid logging during spring and summer as it will harm quail reproduction.

Burn woodlands regularly, but retain patches of unburned cover each year for nesting, cover, and fruit production. Burn these unburned areas in subsequent years, leaving the previously burned areas as cover. Infertile or excessively drained sites may require less frequent burning.

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For more information, contact your county Extension office. Visit www.aces.edu/directory.

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