



# Bobwhite Quail

The bobwhite quail, *Colinus virginianus*, was a year-round resident of Pennsylvania. The species is found throughout the East, Midwest, Southwest and South, ranging as far west as Kansas and south into Texas and Mexico. Quail belong to the family Phasianidae, which contains 177 species, including pheasants, European partridges, chickens and peacocks.

## Biology

An adult bobwhite weighs about 7 ounces, has an 8-inch body length and a standing height of about 6 inches. A bobwhite is stout and chunky through the body, with a small head, short wings, and a short, rounded tail.

Plumage is mostly chestnut brown, white, and black, with the brown graying toward the tail. The sides are streaked with orange-brown, and the underparts are white or creamy, barred lightly with black. The plumage of a male (cock) differs from that of a female (hen). The male has a white throat and eye line separated by a dark brown band, while the female has a buffy throat/eye line and a light brown dividing band.

The species is easily identified by its call, a whistled *bob-bob-white*. Bobwhites also make subdued clucking tones, and birds from a scattered covey, or group, will sing *purr-leer*, *purr-leer*, an assembly call.

Bobwhites eat large amounts of weed seeds (ragweed, poke, beggarweed, foxtail, partridge pea, pigweed and others); insects (Japanese, June, potato and other beetles, mosquitoes, grasshoppers, crickets, aphids, etc.); and waste grains (corn, wheat, grain sorghum and other small grains). Seasonal foods include young greens in spring; insects in summer; nuts, berries, small wild fruits and green plants in fall; and weed seeds in winter. Quail also savor the pulp of acorns and hickory nuts discarded by



squirrels, woodpeckers and blue jays. Most food is found by scratching through litter covering the ground.

Bobwhites are social birds. Depending on the time of year, a covey will contain 10 to 30 quail. The birds range up to a quarter-mile daily and live on 10 to more than 100 acres. A covey functions as a unit: birds forage in the same area, loaf together in the same cover, and roost together at night. When roosting, bobwhites form a circle, their tails together and their heads pointing outward like spokes from a wheel hub. Group roosting helps each individual maintain body heat while keeping a wary eye out for predators during the night. If disturbed, the birds flush in all directions.

In spring, males begin courtship display. They sing, bow low, elevate their fanned-out tails, spread their wings, puff out their body plumage, strut and fight. Bobwhites have several reproductive strategies. Sometimes monogamous, males and females can also be polygamous with a single male breeding several females or a female breeding with several males. Quail will nest in high grass or weeds along a fence-

row, roadside, or stream bank although their preferred nesting habitat is in warm season grass stands. The female simply scratches a depression in the soil beneath the base of a grass clump and lines it with dead grass. Grass and weeds may grow over the nest and conceal it.

The breeding season stretches from May to August, and two broods may be raised. Nest mortality factors: cold, wet weather and early mowing are the most destructive; skunks, opossums, raccoons and snakes eat eggs and may kill brooding birds. If early nesting attempts fail, most birds renest (up to four times).

The female lays 10 to 20 eggs (typically 14 to 16) at a rate of about one per day. Eggs are pointed at one end—shaped like a top—smooth, glossy, creamy white and unmarked. Incubation is by both sexes but mostly by the female, beginning after the last egg is laid. (That way, all eggs will hatch on the same day.) If threatened, a brooding bird may flutter along the ground, feigning a broken wing and trying to lure the intruder away from the nest. Should one member of a pair die after eggs are laid, its mate will brood the clutch and rear the young.

After 23 days, chicks hatch. They're precocial, able to run about and feed themselves soon after they dry, and they usually leave the nest the day they hatch. Chicks are bumblebee-sized, fuzzy, buff beneath and mottled chestnut brown above, with a dark streak extending back from each eye. The parents brood their young, sitting on top of them at night and during heavy rain. Chicks instinctively squat and remain still at a danger signal given by an adult. Their brown natal down is good camouflage. Foxes, weasels, hawks and stray cats take their toll, but hard, driving rain and cold weather are probably more serious threats during the first few days.

Young birds develop rapidly. When they are two weeks old, they can fly short distances, and by 10 weeks of age they have most of the speed and agility of their parents. After feathers grow in, 4-month-old birds are nearly identical to adults in size and plumage. Young of the year have pale tips on their outer primary coverts, or wing feathers, while the same feather is uniformly gray on an adult.

Parents and young stay together all summer. They can sometimes be spotted taking "dust baths" or pecking grit for



their crops on dirt roads and along field edges. In autumn, the families usually break up. Later, bobwhites regroup into winter coveys, which contain up to 30 birds.

Winter is a harsh season for quail. Food is scarce, especially when snow crusts over ground and plants. Mortality can be high, and winter weather certainly takes more bobwhites in the Northeast than do predators or hunters. The quail population is at its lowest in March and April. The average life expectancy of an individual bobwhite is less than a year, with an estimated 75 percent of the population replaced annually by young of the year.

Bobwhite quail have tremendous sporting qualities: explosive flight and a strong inclination to hold for a bird dog. Along with grouse and woodcock, they are considered a classic quarry by dyed-in-the-wool bird hunters, who love to hunt behind pointers and setters. But hunters are not the only folks who appreciate the gentle beauty of this bird—farmers, naturalists and those who just like to get out and walk in the country all love to hear the pure, whistled *bob-bob-white* of this native quail.

## Population

Pennsylvania is on the northern fringe of the bobwhite's historical range. Two factors affect quail populations: habitat and climate. Without adequate food and cover (habitat), the population will not flourish; and when winters are hard and long, bobwhite numbers plummet. In fact, the northern limit of *Colinus virginianus*' breeding range fluctuates with the weather: hard winters cause widespread mortality, while several mild years allow the population to expand northward.

Bobwhite quail are not forest dwellers, so they do not prosper in Penn's Woods. Historically, Pennsylvania's most consistent quail-producing areas were some of the southern counties—Franklin, Chester, Adams and York. The rich farms of the Ridge and Valley region (southcentral to central Pennsylvania) used to produce quail hot spots. At one time quail were established within all 67 counties following the deforestation of the state in the early 1800s, but as settlers abandoned their land and succession occurred, quail soon shrank back to the southern tier and western edge by the early 1900s. The mid-1900s saw a quail revival with quail being one of the most popular game birds in the state. Unfortunately, with the advent of 'clean' farming practices, many of the small unkempt farms found in the first half of the century were replaced with large unbroken tracts of fields managed closely with herbicides and pesticides removing not only overhead cover, but all food availability for quail and any other species that relied on this habitat. Quail slowly disappeared throughout their historic range in Pennsylvania and with two years of surveys conducted in 2013 and 2014 they were deemed extirpated.

In the past, the Game Commission stocked quail in attempts to bolster local populations. But in most instances these pen-reared birds failed to adapt to the wild, and such releases are no longer performed. Providing good habitat is the best and only way to successfully support quail. Restoring this native

bird species to Pennsylvania should be a priority for future wildlife managers.

## Habitat

The bobwhite does well in brushy and abandoned fields, open pinelands and farms. In fact, it has been labeled a bird of farmland and early successional stages. Ideal quail habitat consists of three primary cover types. The first is forbs or annual weeds. These act as both a crucial year-round food source and low overhead cover. During the spring and summer, forbs attract insects down to ground level for both chicks and adults to eat. Throughout the fall and winter these same plants drop their seeds and provide an important food source during some difficult periods of weather. The second cover type is grasses and more specifically warm season grass. The structure of these grass species provides both nesting cover and low overhead cover. Little blue stem is a good species of grass when considering quail management. The third important cover type is shrubs. Quail need shrubby habitat with high stem density at ground level which provides protection from avian predators from above and mammalian predators from below. Shrub thickets, fencerows, and brush piles can all serve to protect quail from not only predators but also the harsh winter weather. In Pennsylvania, species such as blackberry/raspberry, greenbrier, plum, and dogwood often provide the necessary structure needed by quail. Probably the most important things to remember however alongside these needed habitat types is the importance of both bare ground and the mosaic effect. With young quail being so small, built up thatch or thick grasses impede their ability to move through cover and feed or escape predators. Using management techniques such as disking or controlled burns on a 3-year rotation is an effective way to provide needed bare ground. Managing all three cover types as a mosaic of small units is much more beneficial than having larger monocultures of any one specific habitat type.

Farmers can manage their land with an eye toward quail protection and propagation. Sorghum and grape thickets provide both food and cover during severe weather. Strips of millet, soybeans, lespedeza and buckwheat (all good food producers) can be planted near the cover of forb fields, brush piles or fencerows. Also, portions of grain crops can be left unharvested. Light disking and controlled burning disturb the soil, stimulate weed growth, and provide seed food. Disking and burning should be completed in late winter, before nesting begins.

Many of the above techniques are used on State Game Lands because they benefit a tremendous variety of wildlife—pheasants, cottontail rabbits, songbirds, predators and others. Persons interested in improving land for wildlife can contact the Game Commission for more detailed information. Under certain programs, the Game Commission provides landowners with plantings and/or labor to improve areas for wildlife. To prosper, birds and mammals that call the farmlands home need good habitat and plenty of it.