Books • Booklets • Videos

Go to www.bringbackbobwhites.org to find out more about various publications and videos regarding bobwhites.

Facts About Bobwhites

- The average number of eggs in a bobwhite nest is 12-15.
- The normal incubation for bobwhites is 23 days.
- A newly-hatched bobwhite chick is about the size of a bumblebee.
- Mid-June to mid-July is typically the peak hatching time for the ground-nesting bobwhite.
- Bobwhite chicks can fly when three weeks old.
- Over 80% of the annual quail population fails to carry over to the next year.
- Bobwhites require from 47-55 days to complete their nesting cycle.
- It takes a bobwhite chick at least 120-140 days to develop to adult size.
- Bare ground and shrubby, brushy cover is an essential part of quail habitat.
- Like rabbits, bobwhites are an "early successional" species. That means you'll find them in places that are not densely overgrown and that have had recent ground disturbance with annual plants (ragweed).
- You don't have to plant native warm season grasses to have quail on your property. Use an approved herbicide to remove unwanted grasses, such as fescue, and let natural plant succession occur.
- Overgrown fencerows have been replaced with mature trees that provide poor bobwhite escape cover. Manage your fencerows and woods edges to create brushy habitat.
- The daily water requirements of bobwhites are usually met through moisture from green plants, food, insects, dew and snow.

National Bobwhite Technical Committee

This pamphlet was developed by the National Bobwhite Technical Committee (NBTC), Outreach Committee. The NBTC was formed by the Southeastern Association of Fish and Wildlife Agencies in 1995 and is composed of wildlife biologists from state and federal agencies, universities, private conservation groups and private/corporate landowners. The NBTC is charged with addressing the long-term decline in bobwhite quail populations through management, research and education. 10/11

Photo credits: male bobwhite by Michael A. Kelly, longleaf pines by Louis Justice, prescribed burn by Elsa Gallager, cattle and forbs by David Howell

Bobwhite Basics

Habitat Basics

The bobwhite quail is the most widely distributed and intensively studied of all North American quail, but in recent decades its abundance has declined dramatically throughout much of its native range. Critical to helping improve quail numbers is an understanding of bobwhite ecology and management. This pamphlet offers a summary of key quail life history and habitat management needs.

Habitat Basics

Bobwhites utilize a variety of cover throughout their broad geographic range, including:

• Grass/forb communities – This cover varies from the native grass and forb (forbs are non-woody broad-leaved plants) rangelands at the western edge of bobwhite range to the old fields, fallow areas and savanna habitat in the East. Throughout its entire range, it is especially important that the bobwhite's habitat not be too thick at ground level. Bare ground interspersed with upright annual and perennial plants (forbs) provides food and foraging areas, brood-rearing, nesting habitat and roosting sites. Periodic habitat disturbance (plowing, disking, grazing, controlled burning, herbicide spraying) is critical in areas where higher rainfall occurs. Brood-raising and food-producing grass/forb communities --- so vital to the birds well-being --- can be lost to advancing plant succession in as little as two or three years in higher rainfall areas.

• Shrubby/woody communities – Shrubs and trees are important components of good bobwhite habitat. These areas provide protection from predators and extreme weather, offer travel lanes and resting areas, and provide food. The western edge of the bobwhite's range contains grasslands with scattered thorny bushes; the Plains and Midwest are dominated by brushy draws, fence rows and woodlots; and the East and Southeast contain pine woods and shrubby travel lanes. Pine woods require periodic thinning and a basal area of no more than 50 to 60 square feet per acre that permits a grass/forb understory. Following a thinning, a prescribed burn should be utilized to enhance habitat quality. Patches of shrubby/wooded areas interspersed with cropland and grass/forb vegetation are needed for bobwhites to attain good population levels.

Nesting

Bobwhites often construct nests by forming a slight depression in the soil, lined with grass and/or pine needles and the nest commonly includes a canopy of dead grasses. Nests are often within 75 feet of an opening or edge. Preferred nesting sites contain some scattered shrubs and have been undisturbed for two or more years. In a pasture/range situation, continuous grazing or improper stocking rates can result in removal of nesting cover and elimination of bunch grasses. A typical clutch contains 12-15 eggs that hatch 23 days after incubation begins. Nest success varies from site to site and from year to year, however, approximately 25% of all nests are successful. Bobwhites will re-nest following unsuccessful attempts and research has shown that in good habitat, second broods are more common than once believed.

Brood Habitat

Soon after hatching, broods leave the nest and are cared for by one or both adults. To ensure best brood survival, it is important that quality brood-raising cover be available. Young chicks must be able to move easily on semi-bare ground so they can catch insects. Overhead cover is also needed to protect chicks from predators and harsh weather. A mixture of annual grasses and forbs (such as ragweed, beggarweeds (sticktights) and annual lespedezas) provide cover and high protein foods (insects) needed by bobwhite chicks.

Fall/Winter Activities

Broods and unmated birds typically join together and break-up throughout the late summer/early fall. This mixing of bobwhites is referred to as the "fall shuffle". When the traditional covey unit has formed, it contains an average of 10 to 16 birds and may include young from several different broods. Bobwhite coveys typically settle into a "headquarters" area, containing some brushy/woody cover adjacent to a winter food supply of weed seeds, waste grains and soft/hard mast. On more northern winter ranges, a portion of the brushy/woody cover must contain a dense understory. Coveys typically move less than a 1/4 mile on winter ranges, but movement varies based on disturbance, weather and food availability. Bobwhites prefer to roost on the ground in low-growing weedy vegetation, but will move into thicker cover during periods of severe winter weather.

Foods

Bobwhites are primarily seed-eaters, with over 1000 different plants having been documented in their diet. As much as 75 percent of the annual adult diet may be composed of food from annual plants (ragweed, foxtail). Various legumes, including lespedezas (not sericea) and beggarweeds, make an especially attractive food. It is critical that seeds are available on exposed soil with upright overhead cover offering protection while the birds forage. In the case of waste grains (soybeans, corn, wheat), thick brushy or woody cover needs to be nearby. During the late winter/early spring period, green vegetation becomes a key food and may improve the overall physical condition of the birds, thereby resulting in improved nest success. Insects are eaten in small quantities by adult bobwhites, but are essential for chicks. Below is a summary of some regional foods used by bobwhite quail.

Major bobwhite plant foods reported from several geographic regions in the United States (Dimmick 1992)*

Southeastern Coastal Plains & Piedmont	Midwest & Midsouth Agricultural Lands	South Texas Plains
Beggarweeds (sticktights)	Korean/Kobe Lespedeza	Doveweeds
Corn	Common Ragweed	Hoary Milkpea
Crab Grass	Dogwood	Yellow Woodsorrel
Sassafras	Wild Beans	Ragweeds
Ragweed	Beggarweeds (sticktights)	Verbena
Korean/Kobe Lespedeza	Partridge Pea	Texas Millet
Oaks (acorns)	Blackberries	Wild Rice
Pines	Oaks (acorns)	Switchgrass
Wild Beans	Wild Grape	Bristlegrass
Panic Grasses	Ash	Browntop Millet
Wheat	Sorghum	Groundcherry
Paspalums	Sassafras	Spiny Hackberry
Bicolor Lespedeza	Foxtails	Live Oak (acorns)
Partridge Pea	Wheat	Paspalums
Soybean	Corn	
Dogwoods	Soybeans	
Sorghum		
Ash		
Foxtail Grasses		
Blackberries		

* Dimmick, Ralph, 1992. Northern Bobwhite. U.S. Army Corps of Engineers. National Technical Information Service. 5285 Port Royal Rd., Springfield, VA 22161. 78 pp.

In the Southeast, longleaf pine plantings provide for both timber production and wildlife benefits.

Bobwhite Management Overview

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. Below are some common misconceptions that landowners should be aware of as they strive to implement a quail management plan.

• **Disturbance - Diversity - Dedication...** Those words describe the backbone of any quail management plan. The bobwhite simply cannot exist in good numbers if a well-developed plan that stresses those three words is not implemented. So often individuals think that they can just protect an area for quail and expect the birds to thrive. It won't happen. The best managed wild bobwhite areas today, whether on pine plantations, grazing lands or grain farms have a large portion (typically 1/3 to 2/3 depending on weather & habitat conditions) of the landscape disturbed annually by controlled burning, disking, grazing or cropping.

• **Cover is Critical ...** Any tract of land being developed to benefit quail, from 40 to 4,000 acres, must have sufficient favorable cover that enables bobwhites to survive and thrive. That cover, which varies by region, must fulfill the seasonal needs of quail. Simply planting a couple food plots is no guarantee the right amount of bobwhite nesting, brood-raising, foraging and roosting cover occurs to support a quail population. The farm landscape of yesteryear, with multiple, small diversified farming operations, created a favorable environment for bobwhites. Unfortunately, it takes a more conscious effort to achieve that goal today.

• **Looks Good To Me ...**Many individuals interested in having more bobwhites on their farm or ranch fail to see differences in the cover they have today and that of years past, when quail populations thrived. Changes in plant species occurrence and composition can be both subtle and dramatic. Those changes result in both the quality and quantity of available quail habitat and are a major reason for our current quail decline.

DISTURBANCE PRESCRIPTION	WHERE SUITED	BENEFIT	TIME	FREQUENCY OF PRACTICE
Controlled Burning	Idle fields, thinned pine plantations	Thin litter accumulation , kill hardwood trees & shrubs, stimulate native legumes	Primarily fall/winter, but growing season burns may be useful.	Usually every 2-3 years, depending on vegetation growth.
Strip Disking	Openings, idle fields, thinned pine stands, older CRP plantings.	Sets back plant succession, thins overgrown areas to improve brood cover.	Fall / Winter best	Every 2-3 years, disk small percent annually on rotational basis.
Pine Thinning	Pine plantations	Opens stands, permits more sunlight on ground to encourage forb growth.	Year Round	Varies by species and site index. From quail standpoint thin as often as possible.
Grazing	Native grass paddocks established for short duration grazing systems	Establishes ideal roosting and nesting cover. Properly manage grazing intensity (no overgrazing).	High intensity - low frequency grazing works well with native bunch grass.	Annually
Grazing	Range	No overgrazing. Proper grazing management compatible with good quail management.	Implement at least a 3 pasture rotation system.	Annually
Herbicides	Kill unwanted exotic plants. Thin or eliminate competing vegetation.	Alters advancing plant succession and enhances success of tree, shrub, grass/legume/forb establishment.	Mostly during spring, summer, fall.	Annually to several years.
Roller Chopping / Aeration	Open fields and brushland	Sets back plant succession.	Open fields - Fall/Winter Brush control - late summer	Every 2 - 3 years.
Fescue Conversion	Idle fields, established fescue plantings.	Eliminate poor quality wildlife cover.	Fall through early Spring	Permanently eliminate fescue.
Mowing	Open fields. May be needed to mow heavy vegetation before disking.	Can help improve access, but best quail benefits accomplished from other practices.	September through March	Generally done on annual rotational basis

*Programs change, so check with your wildlife biologist or natural resource personnel for current availability.

FOOD AND COVER ESTABLISHMENT PRACTICES THAT CAN HELP IMPROVE QUAIL ABUNDANCE.

FOOD/COVER ESTABLISHMENT	WHERE SUITED	BENEFIT	TIME	FREQUENCY OF PRACTICE	COST-SHARE AVAILAB		
					CRP	WHIP EQIP	
Buffers/ Field Borders	Crop areas adjacent to drainage areas & forest edges	Nesting, brood-rearing, & travel lanes	Spring / Fall	Several to many years, if maintained properly	X	X	
ool Season Grasses (Not Fescue)	Open lands needing wildlife friendly cover	Nesting, foraging and roosting cover. Best done in mixtures with forbs & legumes.	Fall / Spring	Should persist for several years. Prevent heavy litter buildup.	X	X	
Forbs & Legumes	Open fields, idle areas, pine/savanna understory, buffers & field borders	Food (insects & seeds), brood habitat & cover	Fall / Spring	Several years, but management disturbance needed.	X	X	
Grain Plantings	Open acres needing winter foods	Food / bare ground	Spring / Summer	Annually, but also creates natural early successional plant cover if left undisturbed up to two years after planting.			
Longleaf Pine	Native range along SE coastal areas	Restores valuable fire-friendly ecosystem for quail/wildlife	Planting Late Winter / Early Spring	75+ years over sawlog rotation.	X	X	
ative Warm Season Grasses	Open fields, pine savanna understory, buffers and field borders, rotational pastures	Nesting & roosting cover. Best done in mixtures with forbs & legumes. Use lowest seeding rates for wildlife plantings.	Spring / Early Summer	Indefinitely, but periodic disturbance a must.	X	X	
ural Plant Succession	Any area subject to disturbance	Creates early successional plant cover vital to bobwhite survival.	Year-round	Every two to four years. More frequent in areas with high rainfall.		X	
/Savanna Restoration	Degraded oak/savanna areas	Restores beneficial ecosystem	Maintenance activities completed year-round.	Indefinitely, if properly maintained.	X	X	
Shrubs	Large open fields & travel lanes	Escape areas & travel lanes	Late Winter	Indefinitely, but periodic thinning needed.	X	X	

- **Let's Turn 'em Loose ...** Releasing pen-raised birds will never be the answer to having more wild quail. While those pen-raised birds may help maintain shooting preserves and assist with dog training and field trials, they can never help bring back our native wild bobwhites.

- **Education A Key ...**Understanding what can be done on your farm or ranch to maintain or increase bobwhite numbers is essential. No game bird has received more attention and study than the bobwhite quail. Please check out www.bringbackbobwhites.org for more information on successful quail management. Additionally, participation in a local or regional workshop or field day on quail management can help you see what other landowners have done to benefit quail numbers. Today, more opportunity exists to receive technical and financial support for bobwhite management through state, federal and non-governmental organization programs than has ever occurred. Please take advantage of it.

MAJOR BOBWHITE SEASONAL ACTIVITIES AND NEEDS

January

Escape and Protection (October-April) Dense cover. Vine-filled thicket, wood lot, hedgerows or fencerows.

Pair-bonds

April

Nesting (April 15-September) Mixture of scattered bunch grasses, forbs and seedling trees. Moderate litter from previous year. No-till row crops.

July

Brooding (June-October) Recently fallowed ground: erect annual forbs, well-spaced stems, exposed soil beneath. Legume component for insect production.

Illustration reprinted with permission of the Virginia Department of Game

Fall Shuffle

October

and Inland Fisheries

Forbs are non-woody broad-leaved plants that provide needed cover and food for bobwhites. The forbs pictured are black-eyed Susan, daisy fleabane, ragweed and annual lespedeza.