

Northern Bobwhite

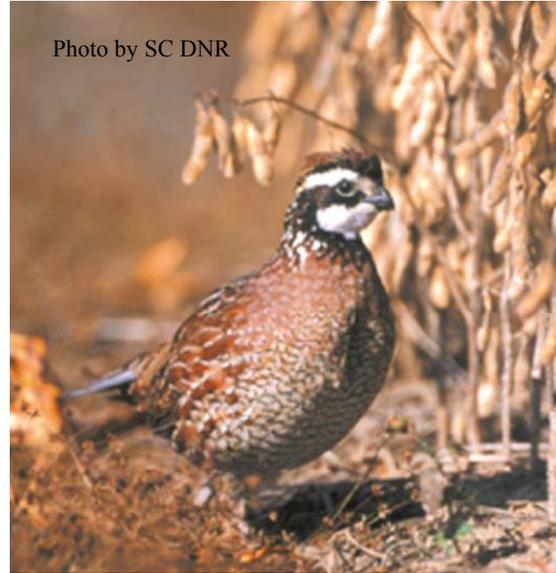
Colinus virginianus

Contributor: Billy Dukes

DESCRIPTION

Taxonomy and Basic Description

In 1748, Catesby gave the bobwhite quail the name *Perdix sylvestris virginiana*. In 1758, Linnaeus dropped the generic name *Perdix* and substituted *Tetrao*. The generic name *Colinus* was first used by Goldfuss in 1820 and, despite several ensuing name changes, became the accepted nomenclature (Rosene 1984). Bobwhite quail are members of the family Odontophoridae, the New World quail.

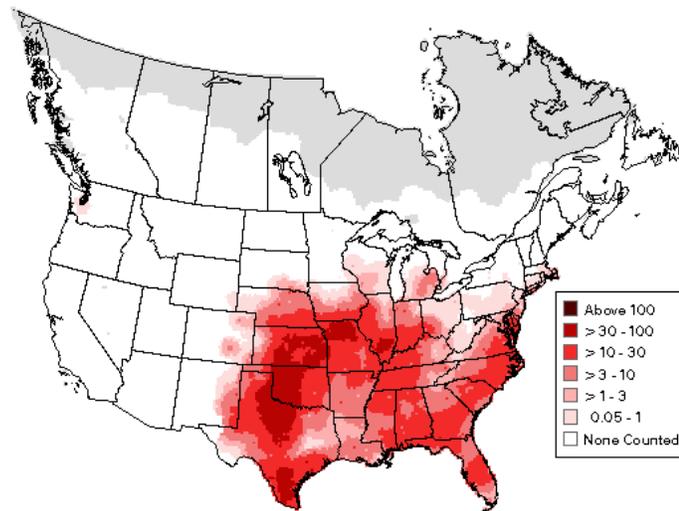


Bobwhite quail are predominantly reddish-brown, with lesser amounts of white, brown, gray and black throughout. Both sexes have a dark stripe that originates at the beak and runs through the eye to the base of the skull. In males, the stripe above and below the eye is white, as is the throat patch. In females, this stripe and throat patch are light brown or tan. Typical weights for bobwhites in South Carolina range from 160 to 180 grams (5.6 to 6.3 ounces). Overall length throughout the range of the species is between 240 and 275 millimeters (9.5 and 10.8 inches) (Rosene 1984).

Status

Bobwhite quail are still widely distributed throughout their historic range. However, North American Breeding Bird Survey data indicate a significant rangewide decline of 3.0 percent annually between the years of 1966 and 2003 (Sauer et al. 2004). In South Carolina, quail populations have declined at a rate of 4.7 percent annually since 1966 (Sauer et al. 2004).

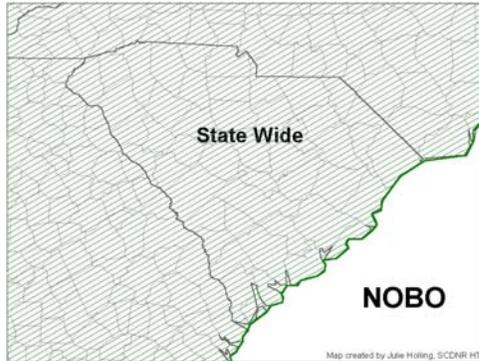
While not on the Partners in Flight Watch List, the concern for northern bobwhite is specifically mentioned due to significant population declines over the past 30 years (Rich et al. 2004). Despite rangewide declines, high densities of quail (6.6 to 7.6 birds/ha) are often



Average summer distribution of northern bobwhite quail 1994-2003.
From Sauer et al. (2004).

maintained on lands where intensive habitat management occurs or conditions are otherwise suitable (Brennan 1999).

POPULATION DISTRIBUTION AND SIZE



Bobwhite quail occur throughout South Carolina, with higher densities found in the coastal plain than the piedmont (SCDNR unpublished data). Within the coastal plain of South Carolina, quail population densities are higher in the inner coastal plain than in the outer coastal plain and coastal zone. Greater concentrations and more wide-spread distribution of row-crop agriculture in the inner coastal plain creates habitat conditions more favorable for quail than are found in heavily forested landscapes typical of the outer coastal plain.

Quail populations exhibit dramatic seasonal and annual fluctuations, making accurate population estimates difficult. Estimated autumn and breeding populations of bobwhites in 1999 were 20.1 million and 6.7 million respectively (Dimmick et al. 2002). Partners in Flight put the estimated global breeding population at 9.2 million, with 82 percent (7.5 million) occurring in the continental U.S. (Rich et al. 2004).

Quail habitat quality and population levels vary widely across the landscape, resulting in tremendous uncertainty related to extrapolation of population densities to the statewide level. Using assumptions contained in the Northern Bobwhite Conservation Initiative (NBCI) (Dimmick et al. 2002) and data gathered as part of a 2002/2003 hunter harvest survey (Responsive Management 2003), the estimated quail population for South Carolina in autumn of 2002 was 291,078 individuals and the estimated breeding population in the spring of 2003 was 97,026 individuals. However, assumptions contained in the NBCI may not be applicable to South Carolina, and estimates derived using those assumptions may underestimate the South Carolina population by as much as 100 percent.

An assumed autumn population of 291,078 individuals translates into a statewide density estimate of 3.7 individuals/km² (9.6 individuals per square mile). Autumn population estimates conducted at select areas under intensive quail management in South Carolina have documented populations estimated at 98.9 individuals/km² (256 individuals per square mile) (SCDNR unpublished data). Some forested landscapes on which minimal management for quail has occurred have been documented to support autumn densities of 27.2 individuals/km² (70.4 individuals per square mile) (SCDNR unpublished data).

HABITAT AND NATURAL COMMUNITY REQUIREMENTS

Bobwhite quails use a variety of cover types throughout their broad geographic range. Early successional habitats such as croplands, grasslands, fallow fields, open pinelands and open mixed pine-hardwood forests that have diverse groundcover vegetation are particularly important in the south (Brennan 1999). Perennial warm-season bunchgrasses are the preferred nesting

substrate throughout much of the range of the species. Preferred brood-rearing cover consists of diverse communities of erect annual forbs with abundant insects, bare ground between stems and a foliage canopy.

Eastern towhee, blue grosbeak, yellow-breasted chat, indigo bunting, northern cardinal, gray catbird, brown thrasher and Carolina wren are among the many species that have habitat requirements similar to northern bobwhite such as shrub/scrubland. Those species found in more of an open grassland habitat, which is also frequented by the northern bobwhite, include barn owl, loggerhead shrike, eastern meadowlark, grasshopper sparrow, field sparrow and common ground-dove. All of these species are subject to the same threats as northern bobwhite, and will likewise benefit from habitat enhancement practices aimed at restoring populations of northern bobwhites.

CHALLENGES

Habitat loss due to the effects of urbanization, modern agricultural and silvicultural practices, fire suppression, and introduction of exotic pasture grasses is widely recognized as the primary problem for bobwhite quail populations (Stoddard 1931; Rosene 1984; Barnes 1995; Brennan 1991; Brennan 1999; Thackston and Whitney 2001).

A lack of nesting and brood-rearing cover is believed to be the major limiting factor over much of the range of the species (Rosene 1984; Dimmick et al. 2002). For a more complete discussion of the effects of habitat changes on bobwhite populations and habitat suitability, see the Northern Bobwhite Conservation Initiative (Dimmick et al. 2002).

CONSERVATION ACCOMPLISHMENTS

Since 1978, biologists in the Small Game Project have completed over 500 management plans, potentially improving habitat on over 500,000 acres of private land in South Carolina. Additionally, since 1979, an annual bobwhite quail spring call count survey has been conducted as an assessment of the statewide population trend. Since 1987, a statewide quail hunter survey has been conducted to examine regional population trends, hunter effort, hunter success, and age ratio of harvested birds. In 1995, the Southeast Quail Study Group was formed to identify causes of regional bobwhite population declines and to devise solutions to reverse declining trends. In 2001, a Bobwhite Quail/Grassland Birds Working Group was established within the South Carolina Department of Natural Resources (SCDNR) Wildlife Section to address problems of declining habitat for quail and other early-successional species. Since 2001, fall covey count surveys have been conducted on select Wildlife Management Area lands as an index of fall populations. Specific habitat enhancement goals and population recovery goals for bobwhites were identified in the Northern Bobwhite Conservation Initiative (NBCI), a rangewide recovery plan, in 2002. Finally, practice CP-33, Habitat Buffers for Upland Birds, was added to the list of eligible practices under the Conservation Reserve Program (CRP), with 5,000 acres of habitat buffers allotted to South Carolina in 2004.

CONSERVATION RECOMMENDATIONS

- Increase acreage of volunteer early succession vegetation or native warm season grasses to agricultural landscapes in South Carolina
- Apply appropriate site preparation techniques, selective thinning regimes, and prescribed fire rotations to forest lands in South Carolina
- Consider including protection of farmland and other potential early successional habitat in land acquisition and habitat protection programs.
- Maximize wildlife benefits in USDA Farm Bill programs through regional and national involvement in planning processes and through direct involvement with local and farm-level conservation planning.
- Identify funding sources for state-level cost-share programs to assist landowners with implementation of beneficial management practices for quail and other early-successional species.
- Identify focal areas for quail habitat enhancement within the state based upon existing land cover and quail populations, and strive to focus private lands technical assistance and encourage USDA conservation programs in those areas where habitat enhancement would be most beneficial and the potential for positive population response would be greatest.
- Identify public lands with high potential for quail habitat enhancement and assist responsible agencies with planning efforts for habitat enhancement.
- Identify SCDNR lands with high potential for quail habitat enhancement, establish target population goals and implement management practices necessary to achieve the target population goal.
- Develop predictive models of bobwhite quail occurrence and density based on land cover types from remote imagery.
- Evaluate bobwhite quail colonization rate and population response to habitat enhancement, particularly in forested landscapes.
- Evaluate effect of geographic isolation on bobwhite quail population viability and persistence.
- Evaluate effects of patch size and configuration on bobwhite quail nest success and brood survival.
- Develop improved census techniques for low to moderate densities of quail.
- Identify limiting factors for quail populations in agricultural and forested landscapes in South Carolina.
- Increase number of survey routes in spring call count survey for better statewide coverage and to allow regional trend comparisons.
- Increase number of cooperators in statewide quail hunter survey.
- Document habitat enhancement accomplishments that occur as a result of USDA Farm Bill programs, private lands technical assistance, or quail focus area initiatives.
- Document harvest levels on discrete properties and at the statewide level in order to validate harvest rate assumptions of the NBCI.
- Train additional observers in the fall covey count technique and expand the technique to additional sites in the state.

- Continue annual quail management seminars for private landowners and agency personnel.
- Develop additional technical literature on beneficial quail management practices.
- Utilize agency outlets and cooperative efforts to promote benefits of prescribed burning.
- Establish demonstration areas that illustrate successful quail management practices on public or cooperative private lands within each DNR Wildlife Region.
- Publicize successful quail management efforts on public or private lands through agency outlets and the popular press.
- Evaluate the assumptions contained in the NBCI relative to productivity, harvest rate, and annual survival through directed research

MEASURES OF SUCCESS

Population response to habitat management will be monitored on discrete tracts using the fall covey count technique and other techniques as appropriate. Effects of landscape-level changes will be monitored using Breeding Bird Survey data and spring call count survey data. Management-oriented research projects will address emerging questions related to bobwhite population dynamics and habitat enhancement techniques. SCDNR will strive to continue to respond to new data and adapt management actions once assumptions have been further tested.

LITERATURE CITED

- Barnes, T.G., L.A. Madison, J.D. Sole and M.J. Lacki. 1995. An assessment of habitat quality for northern bobwhite in tall fescue dominated fields. *Wildlife Society Bulletin*. 23:231-237.
- Brennan, L.A. 1991. How can we reverse the northern bobwhite population decline? *Wildlife Society Bulletin*. 19: 544-555.
- Brennan, L.A. 1999. Northern Bobwhite (*Colinus virginianus*). *In: A The Birds of North America*, No. 397, . Poole and F. Gill, Editors. The Birds of North America, Inc. Philadelphia, Pennsylvania. 28 pp.
- Dimmick, R.W., M.J. Gudlin and D.F. McKenzie. 2002. The northern bobwhite conservation initiative. Miscellaneous publication of the Southeastern Association of Fish and Wildlife Agencies. South Carolina. 96 pp.
- Responsive Management. 2003. South Carolina Department of Natural Resources Hunter Harvest Survey 2002-2003. Harrisonburg, Virginia.
- Rich, T.D., C.J. Beardmore, H. Berlanga, P.J. Blancher, M.S.W. Bradstreet, G.S. Butcher, D.W. Demarest, E.H. Dunn, W.C. Hunter, E.E. Inigo-Elias, J.A. Kennedy, A.M. Martell, A.O. Panjabi, D.N. Pashley, K.V. Rosenberg, C.M. Rustay, J.S. Wendt and T.C. Will. 2004. Partners in Flight North American Landbird Plan. Cornell Lab of Ornithology. Ithaca, New York.

- Rosene, W. 1984. The bobwhite quail – its life and management. Morris Communications Corp. Augusta, Georgia. 418 pp.
- Sauer, J.R., J.E. Hines and J. Fallon. 2004. The North American Breeding Bird Survey, Results and Analysis 1966-2003. Version 2004.1. USGS Patuxent Wildlife Research Center. Laurel, Maryland.
- Stoddard, H.L. 1931. The bobwhite quail: its habits, preservation, and increase. Charles Scribner's Sons. USA. 564 pp.
- Thackston, R. and M. Whitney. 2001. The bobwhite quail in Georgia: History, biology, and management. Georgia Department of Natural Resources.