

ARIZONA GAME AND FISH DEPARTMENT
HERITAGE DATA MANAGEMENT SYSTEM

Animal Abstract

Element Code: ABNLC21022

Data Sensitivity: No

CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Colinus virginianus ridgwayi*

COMMON NAME: Masked Bobwhite

SYNONYMS: *Colinus ridgwayi*

FAMILY: Odontophoridae

AUTHOR, PLACE OF PUBLICATION: Brewster (*Colinus ridgwayi*), Auk, 2, no. 2, Apr. 1885, p. 199.

TYPE LOCALITY: About 18 miles southwest of Sasabe [50 miles west of Nogales], Sonora, Mexico.

TYPE SPECIMEN:

TAXONOMIC UNIQUENESS: *Colinus virginianus ridgwayi* was formally in the Family Phasianidae, and is one of 22 subspecies in the species *C. virginianus*. The high degree of variation both within the genus *Colinus* and among the 22 recognized subspecies of Northern Bobwhite has resulted in taxonomic confusion. The possibility that some subspecies are actually distinct species needs further investigation. (Brennan 1999).

DESCRIPTION: For the species: They are a small to medium-sized quail, near the size of a Meadowlark, measuring 21-26 cm (8.5-10.5 in). Mass 140-170 g; male slightly heavier than female. Tails are dark and rounded, with 12 retrices that range in length from 49-70 mm. Wing length is 90-120 mm. Adult male has brownish upperparts, finely barred with tan and black; white forehead, superciliary stripe, and triangular patch on chin and throat, contrasting with chestnut crown and nape; remaining areas blackish, becoming chestnut posteriorly. Lower portions of throat, neck, and nape have white streaks bordered with black. Breast, sides, and flanks white, narrowly barred in zigzag pattern with black; some chestnut streaking on sides and flanks. Wings chestnut to brownish gray; many inner feathers patterned with buff, black, and gray. Male has slight head-crest that becomes erect when head is raised in alert. Adult female similar, but white areas on head replaced with buff, and remaining plumage less boldly marked. Juvenile plumage similar to that of adult female, but much duller and less boldly marked. (Brennan 1999).

Male coloration varies geographically. The dark west Mexican form, "Masked Bobwhite (*C. v. ridgwayi*)," has a cinnamon head and underparts, and partly or entirely blackish face and breast. Males from northeast Mexico and Texas are the most grayish, while males from

eastern Mexico have a black collar that widens ventrally. Those from central Mexico have the typical brown and white head pattern, but the underparts below the throat are entirely cinnamon. (Brennan 1999). According to Guthery (1992), "Coloration of the male provides the most striking contrast between masked bobwhites and other races. The head is black, as if hooded by an executioner's mask."

AIDS TO IDENTIFICATION: *C. virginianus* is 1) distinguished from other quail by browner color; 2) from grouse by small size; and 3) from the meadowlark in flight by lack of white outer tail feathers (Peterson 1961).

ILLUSTRATIONS: Color drawing (Peterson 1990: p. 167)
Color drawing (National Geographic Society, 1999: p. 143)
Color drawing (Brennan 1999: p. 4)

TOTAL RANGE: Historically, the masked bobwhite (*C.v. ridgwayi*) formerly ranged from south central Arizona, south into central Sonora, Mexico. It is estimated that this quail disappeared from Arizona in the early twentieth century. Existing naturally-occurring populations are limited to Sonora, Mexico. The birds have been successfully reintroduced in southern Arizona.

For the species: *C. virginianus* ranges throughout eastern North America west to the Great Plains, north to southern New England and extreme southern Canada, and south to southern Mexico. They are also resident in parts of the Caribbean and very locally in portions of the Pacific Northwest. (Brennan 1999).

RANGE WITHIN ARIZONA: Extirpated before or soon after 1900 due to overgrazing and a series of droughts. Northern edge of range extended to bottomlands of Altar and Santa Cruz valleys. Habitat restoration efforts and reintroductions were halted in the late 1970s and early 1980s, but began again on Buenos Aires National Wildlife Refuge (in the Altar Valley) in 1985, where they still occur today.

SPECIES BIOLOGY AND POPULATION TRENDS

BIOLOGY: The Bobwhite is typically a diurnal bird that feeds and roosts in coveys except during nesting season, forming groups of usually less than 20 individuals. Within coveys, birds roost together, often in direct contact. When flushed, they fly on noisy wings then glides to cover. Locomotion consists of quick walks and runs on the ground. (Brennan 1999). Populations are typically sedentary, year-round residents, especially in areas of moderate to high quality habitat (Stoddard 1931: 500 in Brennan 1999). Their voice is a clearly whistled *Bob-white!* or *poor, Bob-whoit!* The covey call is a *ko-loi-kee!*, answered by *whoil-kee!* When separated from adults, young give Lost Call, described as anxious piping (*hu-hu-hu-whe-whe-whe-whee-whee*) with rising inflection (Brennan 1999).

For the species: causes of mortality includes exposure (deep winter snows and prolonged cold), predation, and pesticides and other contaminants/toxics (in agricultural environments). Nearly every opportunistic terrestrial predator within the range of the bobwhite will prey on eggs, young or adults. Primary avian predators of adult bobwhite are Cooper's Hawk (*Accipiter cooperi*) and most buteos and mid-sized to large owls that forage in open woodlands and old-field environments. Primary mammalian predators of adults and eggs include raccoon (*Procyon lotor*), opossum (*Didelphis virginianus*), skunk (*Mephitis* spp.), fox (*Vulpes* spp.), and nearly any other terrestrial carnivore. Other important predators include snakes, and domestic cats and dogs. (Brennan 1999). Longevity record in wild is 6 years 5 months (Marsden 1961); with very few individuals exceeding 5 years (Rosene 1969: 191) (Brennan 1999).

REPRODUCTION: The nesting season of the masked bobwhite corresponds to summer rains, since high humidity is important to successful egg hatch in quail. Per Ehrlich et al. (1988), "The courtship display of males include feathers erect, wingtips touching ground and elbows thrown forward to produce "feathered wall". It turns its head to side displaying white markings, and makes short rushes toward female. Development and breakdown of pair bonds is a dynamic process in the bobwhite breeding system. Pair bonds seem to be made and broken according to fate of nests and subsequent opportunities to breed with other individuals (Brennan 1999). The nest is a shallow depression lined with grass, etc., concealed by woven arch of vegetation with side entrance. Eggs are white to creamy, occasionally buff and unmarked." Clutch size is 5-15. Incubation lasts on average 23 days after last egg is laid (Brennan 1999). Hatching begins in late July (synchronous), and may continue through early November; they may not nest if rains are delayed or absent (NatureServe 2001). Hatchlings are covered with natal down, and need active brooding by parents for about 2 weeks after hatching. Hatchlings can walk almost immediately upon hatching. Young birds take their first flight about 14 days after hatching, and usually remain with adults through late winter. (Brennan 1999).

FOOD HABITS: Green vegetation and insects contribute substantially to their diet in the spring and summer. Forb and grass seeds are important components of their fall and winter diets. NatureServe (2001) reports that they "eat various legume and weed seeds in fall, winter and early spring; and plant material and insects in summer and early fall. Picks food items from substrate." Young birds are capable of procuring food and grit on first day of life. One or both parents lead chicks to food. (Brennan 1999).

HABITAT: The broad valley desert grassland type with some brush and tree cover is their preferred habitat. NatureServe (2001) states that they occupy habitats of "level plains and river valleys. Open grasslands, semi-arid desert scrub, desert grasslands; weedy bottomlands, grassy and herb-strewn valleys, forb-rich plains; grass and weed cover is seasonal, and tree/shrub cover varies geographically (mesquite usually present in north). Eastern and southern distribution coincides with beginning of denser vegetation of Sinaloan thorn-scrub." Per Dobrott (1990), "Masked bobwhites prefer dense weed-grass habitats that include large varieties of forbs, grasses and legumes. The correct structure and availability of shrub cover is also important."

From studies conducted on the Buenos Aires National Wildlife Refuge (BANWR) between June 1986 and March 1989, home ranges were estimated to average 10.9 ha and core areas 1.1 ha. Core areas had less bare ground, half-shrub cover, and less vegetation structure in the 5-20 dm height above ground than in non-core areas. Half shrub densities were significantly greater in the non-core areas. Home ranges had more aerial grass cover (all grass spp. combined: *Bouteloua*, *Eragrostis*, *Aristida*, and *Sporobolus*), less half-shrub cover and density, and less cactus density. (Smith, Simms and Eyler, Post 1989).

ELEVATION: 3,090 - 3,720 ft. (942 - 1135 m) on Buenos Aires National Wildlife Refuge (non-published data, Heritage Data Management System, Arizona Game and Fish Department 2001).

PLANT COMMUNITY:

POPULATION TRENDS: Northern limit of historic range is defined by the Altar and Santa Cruz valleys in Arizona. Extirpated from the U.S. by about 1900. Possible factors contributing to extirpation were: control of range fires, brush invasion, and overgrazing (AGFD in prep). They were reintroduced at the Buenos Aires National Wildlife Refuge in southern Arizona; three populations are known in Mexico. Elevations range from 10-1200 m where mean rainfall is 250 mm to 500+ mm. In the early 1990s, overwintering population at the Buenos Aires NWR was 333 birds in 31 coveys (End. Sp. Tech. Bull. 16[7-8]:6). Total wild population was believed to be less than 1500 in the early 1990s (Federal Register, 5 May 1994). The USFWS (1990) categorized the status as “improving on Buenos Aires National Wildlife Refuge; declining in Mexico.” (NatureServe 2001).

For the species: annual declines from 1966 to 1988 averaged 1.8% overall in the U.S. (Droege and Sauer 1990 in Brennan 1999). “Declines are attributed primarily to habitat loss from changing land uses in agriculture, forestry, and expanding suburbanization. However, other alternative hypotheses of factors (i.e., global warming, presence of exotic fire ants) related to the decline must also be considered” (Brennan 1999).

SPECIES PROTECTION AND CONSERVATION

ENDANGERED SPECIES ACT STATUS: LE (USDI, FWS 1967)
STATE STATUS: WC (WSCA, AGFD in prep)
 [Endangered, TNW AGFD 1988]
OTHER STATUS: P, Determined Endangered in Mexico
 (Secretaria de Medio Ambiente, Proyecto de Norma Oficial Mexicana 2000)

MANAGEMENT FACTORS: Drought and cattle grazing led to the near-complete crash of the Sonoran population by 1985 (Ehrlich et al. 1992 in NatureServe 2001). Effects of cattle grazing include removal of cover, nesting habitat, and food resources (Matthews and

Moseley 1990 in NatureServe 2001). Depletion of ground cover prevents fires that kill off invading woody plants, which in turn degrade habitat for bobwhite.

Threats: overgrazing of weedy bottom lands, grassy and herb-strewn valleys, and forb-rich plains; spread of non-native plants; raptor and mammal predation; possibly competition by other native quail (AGFD in prep).

Management needs: manage grazing of grasslands to maintain and enhance foraging and nesting habitat; reduce shrub invasion of native grasslands by maintaining natural fire regime; test effectiveness of habitat enhancement techniques such as disking and planting to promote growth of food and insect-bearing plants, and half-cutting and chaining to reduce shrub invasion; establish two viable populations within the United States; cooperate with Mexico to maintain and enhance existing populations in Mexico, and reintroduce two or more additional populations in Mexico (AGFD in prep).

PROTECTIVE MEASURES TAKEN:

SUGGESTED PROJECTS: Research needed on breeding biology, winter habits, and exact relationship to grazing.

LAND MANAGEMENT/OWNERSHIP: U.S. Fish and Wildlife Service, Buenos Aires National Wildlife Refuge.

SOURCES OF FURTHER INFORMATION

REFERENCES:

- American Ornithologists' Union (AOU). 1957. The A.O.U. Check-list of North American Birds, 5th ed. Port City Press, Inc., Baltimore, MD. p. 141.
- Arizona Game and Fish Department (AGFD). 1988. Threatened Native Wildlife in Arizona. AGFD, Phoenix. p. 15.
- Arizona Game and Fish Department (AGFD). In prep. Wildlife of special concern in Arizona. Arizona Game and Fish Department Publication. Phoenix, Arizona. 32 pp.
- Brennan, L.A. 1999. Northern Bobwhite (*Colinus virginianus*). In The Birds of North America, No. 397 (A. Poole and F. Gill, eds.). The Birds of North America, Inc., Philadelphia, PA.
- Dobrott, S.J. 1990. Continuing the "Maskerade". Wildlife Views, Arizona Game and Fish Department, Phoenix. pp. 4-5.
- Ehrlich, P.R., D.S. Dobkin, and D. Wheye. 1992. Birds in Jeopardy: the imperiled and Extinct Birds of the United States and Canada, Including Hawaii and Puerto Rico. Stanford University Press, Stanford, California. 259 pp. in NatureServe: An online encyclopedia of life [web application]. 2001. Version 1.4. Arlington, Virginia, USA: Association for Biodiversity Information. Available: <http://www.natureserve.org/>.
- Guthery, F.S. 1992. La Perdiz Mascarita, The Masked Bobwhite. Quail Unlimited. pp. 28-33.

- LeFebvre, R.A. 1995. Struggling with The Masked Bobwhite. Wildlife Views, Arizona Game and Fish Department, Phoenix. pp. 8-9.
- Matthews, J.R., and C.J. Moseley (editors). 1990. The Official World Wildlife Fund Guide to Endangered Species of North America. Volume 1. Plants, Mammals. xxiii + pp 1-560 + 33 pp. appendix + 6 pp. glossary + 16 pp. index. Volume 2. Birds, Reptiles, Amphibians, Fishes, Mussels, Crustaceans, Snails, Insects, and Srachnids. xiii + pp. 561-1180. Beacham Publications, Inc., Washington, D.C. *in* NatureServe: An online encyclopedia of life [web application]. 2001. Version 1.4. Arlington, Virginia, USA: Association for Biodiversity Information. Available: <http://www.natureserve.org/>.
- NatureServe: An online encyclopedia of life [web application]. 2001. Version 1.4. Arlington, Virginia, USA: Association for Biodiversity Information. Available: <http://www.natureserve.org/>.
- Secretaria de Medio Ambiente, Recursos Naturales y Pesca. 2000. Proyecto de Norma Oficial Mexicana, PROY-NOM-059-ECOL-2000.
- Smith, N.S., K.M. Simms, and M.L. Eyler. Post 1989. Unpublished data: Habitat selection and use, movement, home range and mortality of reintroduced masked bobwhite. Arizona Cooperative Fish and Wildlife Research Unit.
- U.S. Fish and Wildlife Service (USFWS). 1990. Endangered and threatened species recovery program: report to Congress. 406 pp. *in* NatureServe: An online encyclopedia of life [web application]. 2001. Version 1.4. Arlington, Virginia, USA: Association for Biodiversity Information. Available: <http://www.natureserve.org/>.
- USDI, Fish and Wildlife Service. 1967. Native Fish and Wildlife, Endangered Species. Federal Register, Vol. 32, No. 48. p. 4001.

MAJOR KNOWLEDGEABLE INDIVIDUALS:

Leonard A. Brennan, Director of Research at Tall Timbers Research Station, Route 1, Box 678, Tallahassee, FL, 32312. E-mail: brennan@ttrs.org.

ADDITIONAL INFORMATION:

Per LeFebvre (1995), "Reintroduction efforts in 1969 and 1970, failed. In 1985, the Buenos Aires National Wildlife Refuge was purchased to reestablish the bird in the most suitable habitat available. Management centered around removing livestock from the refuge, restoring habitat, and using wild adult Texas bobwhites to foster pen-reared masked bobwhite chicks. Winter surveys were used to monitor the refuge population. Since 1985, more than 13,000 masked bobwhites have been released on the refuge. In 1990, population survival estimates ranged from 300-500, which have biologists encouraged. Today, efforts at the refuge continue with the objective of establishing a self-sustaining population of 500 breeding pairs capable of withstanding imminent cycles of drought."

To the user of this abstract: you may use the entire abstract or any part of it. We do request, however, that if you make use of this abstract in plans, reports, publications, etc. that you credit the Arizona Game and Fish Department. Please use the following citation:

Arizona Game and Fish Department. 2001. *Colinus virginianus ridgwayi*. Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. 7 pp.