

RESPONSE OF NORTHERN BOBWHITE POPULATIONS AND THE ASSOCIATED AVIAN COMMUNITY TO LANDSCAPE-LEVEL MANAGEMENT IN THE CENTRAL HARDWOODS BCR

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INTRODUCTION

Population declines of Northern Bobwhite (*Colinus virginianus*) throughout the species' range have fostered the development of the Northern Bobwhite Conservation Initiative (NBCI) and the Arkansas Game and Fish Commission's (AGFC) development of a Strategic Quail Management Plan (SQMP). Both plans focus on habitat recovery to restore Northern Bobwhite populations. In fact, the AGFC is using the NBCI as a guide for its management efforts. The Arkansas Quail Committee (AQC) was formed to lead Northern Bobwhite recovery efforts in Arkansas. The AQC includes representatives from the AGFC, Natural Resources Conservation Service (NRCS), U.S. Fish and Wildlife Service, U.S. Forest Service, University of Arkansas Cooperative Extension Service, Quail Unlimited, Farm Services Agency, timber companies, private consultants and academia.

The AQC's management approach was to develop privately-owned focal areas throughout Arkansas to serve as demonstration areas to recruit future participants in the Northern Bobwhite recovery program and to determine which management practices are

most effective. Privately owned land is the target for habitat restoration efforts because private landowners control 90% of the land base in Arkansas.

To date, the AQC has established two focal areas: one in Fulton County and one in Searcy County. The primary funding mechanism for habitat management efforts in these focal areas has been provided through the Wildlife Habitat Incentives Program (WHIP) with the NRCS. As stated in the NBCI, the AQC has placed a focus on implementing conservation practices designed to establish/enhance Northern Bobwhite nesting and brood-rearing habitat. Those practices include: fencing (for cattle exclusion), strip disking, prescribed burning, timber thinning, combination of thinning and burning, edge/hedgerow development (example, *Lespedeza spp.* planting), and establishment of native warm-season grasses in conjunction with removal of fescue (*Festuca arundinacea*). Although the areas have been established and are under WHIP contracts, individual farmers have 10 years to complete their management efforts.

In order to evaluate the response of Northern Bobwhite to restoration efforts, we initiated two studies, one centered in Fulton Co. to evaluate habitat use by Northern Bobwhite related to specific management practices, and one centered in Searcy Co. to evaluate habitat use by brood-rearing hens along with survival of the broods. In addition, we evaluated effects of management on the entire avian community. We present our progress report in two separate sections because the research and objectives were substantially different and were conducted separately by different universities.

OBJECTIVES (Fulton County)

1. Compare hatch-year to after hatch-year ratios of Northern Bobwhite to measure recruitment within the population.
2. Assess affects of management on all birds within managed and reference areas.
3. Determine response of Northern Bobwhite to specific management practices by utilizing radiotelemetry.
4. Monitor plant community response related to management practices.

OBJECTIVES (Searcy County)

1. Assess bobwhite nesting success, survival of broods, and habitat use by broods in response to habitat manipulations in Searcy County.
2. Determine response of avian community structure to management.
3. Compare hatch-year to after hatch-year ratios of Northern Bobwhite to measure recruitment within the population.
4. Monitor plant community response related to management practices.

PROGRESS TO DATE (Searcy and Fulton counties)

Patterns of northern bobwhite habitat use differed between winter and spring/summer. During the winter they used mostly fencerows, thickets and fields with woody cover. In the spring/summer they used grassland habitats more commonly. The shift in habitat use

coincided with warm weather and the onset of breeding. We suspect that availability of arthropods and development of sufficient grassy cover for protection from predators may also play a role in this habitat shift.

Transmitter-equipped bobwhites successfully nested in fescue fields. However, post-hatching survival was low as chicks from only 1 of 3 nests survived to independence. Chicks from the remaining nests survived an average of 2 days. We suspect that mowing reduced survival of chicks and could reduce nesting success as well. One of our transmitter-equipped females was separated from her chicks the day after her area was partially mowed (she had been observed in the area that was mowed). We also suspect that mowing reduces survival of adult bobwhites as well. Three transmitter-equipped bobwhite adults were found dead within 2-3 days after mowing had occurred on parts of their home ranges. Conversations with farmers revealed that they often encounter bobwhite nests, or flush bobwhites when mowing fescue fields.

We did not document a direct response by quail to habitat improvements in Searcy County. However, the area is in a preliminary state of habitat restoration. Most of the cooperators have not established buffers around pastures and newly established areas of warm-season grasses have not developed sufficiently to provide suitable cover for nesting and brood-rearing quail. Further, although many of the wooded areas have been burned, the forest canopies remain extensive and the forest understory has not developed sufficient cover in grasses and forbs to support Northern Bobwhite.

PRESENTATIONS

Baxter, R.J, J.C. Bednarz, B. Carner, C. Kellner, K. C. Labrum. 2005. Response of Northern Bobwhite Populations and the Associated Avian Community to Landscape-level Management. 11th annual Southeast Quail Study Group Meeting. Gilbertsville, KY August 15, 2005.

PUBLICATIONS

None to date.

PARTICIPATING AGENCIES AND LANDOWNERS (Fulton County)

Brad Carner. Assistant Chief of Wildlife Management and co-Principal Investigator.

Robert Clay, Bruce Dietsche, Colbert Gill, Ralph Griffin, Derrick Hall, Stanley Hall, JD Harnden, Al Herring, Terry Langston, Lowell Parten, Mary Ragsdale, Victor Vaughn. Landowner who provided some of our managed bird and vegetation sampling points

Carrey Wilcoxson. AGFC employee who has provided GPS and GIS support.

Ted Zawislak. AGFC Private Lands Biologist who has helped in all aspects of the project.

PARTICIPATING AGENCIES AND LANDOWNERS (Searcy County)

Hugh Ashley, Leyon Bratton, Kenneth Harris, Stan Hayes, Benny Holsted, Willis Dale Horton, Jeff Jennings, Thomas Knapp, Whitney Milliken, Carol Mitchell, Jeff Ragland, Jim Ragland, Roger Ratchford, Steve Shannon, David Treat, Hubert Treat, Harlie Treat, S. W. Treat. Landowners who provided some of our managed bird and vegetation sampling points.

Rick Horton. AGFC Habitat Biologist who provided technical support and useful information for trapping bobwhites.

Ted Zawislak. AGFC Private Lands Biologist. Ted provided useful information on trapping and tracking bobwhites and who has helped in all aspects of the project.

Brad Carner. AGFC Assistant Chief of Wildlife Management and co-Principal Investigator.

Mike Mowry. State Forester, Arkansas Forestry Commission. Mike provided information about forestry practices to implement habitat manipulations.

McRee Anderson. Interior Highlands Project Manager, The Nature Conservancy. McRee assisted in implementing habitat manipulations.

Jason Milks. Private Lands Fire Restoration Project Manager, The Nature Conservancy. Jason assisted in implementing habitat manipulations.

NRCS INVOLVEMENT

Derrick Hall - Water Quality Technician, Fulton County Conservation District, NRCS. Derrick helped immensely with all aspects of the study.

Wendy Hendrix- Soil Conservation Technician, NRCS. Wendy provided GIS and GPS assistance and provided information on habitat manipulations that have been implemented.

J. Sidney Lowrance - District Conservationist, NRCS. Sidney was the primary contact at the NRCS in Searcy County and is involved in all aspects of the project.

Joe Massey - Grassland Specialist, NRCS. Joe has provided GIS assistance and other expertise at the Fulton County site.

Ricky Reed - Soil Conservation Technician, NRCS. Rick provided help with storage of equipment.

Kelly Shrable - District Conservationist, NRCS. Kelly has helped with all aspects of work in Fulton County.

James Baker – State Biologist, NRCS. James has provided tremendous input and guidance in establishing both the Fulton Co. and Searcy Co. sites as WHIP Special Project Areas and has worked extensively with the Arkansas Quail Committee in tailoring the statewide WHIP ranking criteria to favor Northern Bobwhite restoration.