

# EVALUATION OF FOUR CONSERVATION PRACTICES FOR NORTHERN BOBWHITES AND GRASSLAND SONGBIRDS

## INVESTIGATOR INFORMATION

Ernie P. Wiggers  
Principal Investigator  
Nemours Wildlife Foundation  
239 Stroban Rd.  
Seabrook, SC 29940  
843-846-2539  
[ewiggers@islc.net](mailto:ewiggers@islc.net)

Greg Yarrow  
Forestry and Natural Resources  
Clemson University  
272F Lehotsky Hall  
Clemson University, SC 29631  
864-656-7370  
[gyarrow@clemson.edu](mailto:gyarrow@clemson.edu)

Eddie Mills  
Nemours Wildlife Foundation  
239 Stroban Rd.  
Seabrook, SC 29940  
843-846-2539  
[emills@islc.net](mailto:emills@islc.net)

Cory Heaton  
Graduate Research Assistant  
265 Lehotsky Hall  
Clemson University, SC 29631  
864-656-3054  
[heatonw@clemson.edu](mailto:heatonw@clemson.edu)

Billy Dukes  
SC DNR  
P.O. Box 167  
Columbia, SC 29202  
803-734-3939  
[dukesb@dnr.sc.gov](mailto:dukesb@dnr.sc.gov)

Richard Yetter  
NRCS  
1835 Assembly St., Rm 950  
Columbia, SC 29201  
803-253-3948  
[Richard.yetter@sc.usda.gov](mailto:Richard.yetter@sc.usda.gov)

## INTRODUCTION

Northern bobwhite (*Colinus virginianus*) and grassland songbird populations have experienced drastic declines over the past 50 years. Habitat loss due to changes in land use is believed to be the primary cause. To restore these avian populations, research is needed to determine exactly what habitat components are required by these species, so that management can be planned accordingly.

In this project, we are investigating the management of field borders, perennial hedgerows, early succession habitat, and native warm-season grasses. These conservation practices are available through the USDA Farm Bill via the Wildlife Habitat Incentives Program (WHIP).

## OBJECTIVES

- 1.) Determine temporal changes in vegetative composition and structure in experimental plots receiving a disking or burning treatment to encourage early successional habitat development over 6 growing seasons.

- 2.) Determine nest site selection, nest success, and brood habitat use by Northern bobwhites across a complex of woodlands and fields.
- 3.) Determine nest site selection and nest success of grassland songbirds across a complex of woodlands and fields.

## **PROGRESS TO DATE**

**Objective 1**—Conservation practices being evaluated have all been applied throughout the study area. Field borders have been in place for 6 years and are being maintained with fire and disking to prevent woody encroachment. Perennial hedgerows have been established using Thunberg lespedeza (*Lespedeza thunburgii*). The hedgerows are fertilized annually in the spring with low/no nitrogen fertilizer. Native warm-season grass plots have been established in the fields. Early successional habitats have been created and maintained over the past 6 years.

The response of vegetation to disturbance has been monitored across 10 fields that have been divided into 60 plots. Each plot was assigned a disturbance treatment of either disking or burning. Disking treatments were divided into 6 time periods throughout the year (January – February, March – April, etc.). Due to the lack of good burn days, treatment times for burn plots are divided into the typical four seasons. Frequency of treatments varies. Frequencies are every year, every other year, and every third year.

Starting at a random point, transects are walked through each plot and vegetation measurements are made at 4 sample points along the transect. Daubenmire frames are randomly tossed twice at each sampling point to measure species composition and percent ground cover. Woody stem density is also measured within an 8 m radius of each sample point.

Vegetation within plots has been sampled at the end of each growing season for the past 6 years, and is currently being analyzed.

**Objective 2**—Nest site selection, nesting success, and brood habitat use of bobwhites were to be measured using radio-telemetry techniques. We began trapping quail in early January using standard funnel traps baited with sorghum. Trapping continued into mid-March for a total of 90 days of effort. Eleven quail were captured and 4 were recaptured. Six non-target species were captured for a total of 58 birds.

Whistling cock counts were conducted to supplement the low number of quail captured over the past two years. Counts began in mid May both years and went through the end of June. Two routes were established and conducted simultaneously. One route covered the study plots and the other route covered the nearby forested area outside the study area. 2005 counts indicated 0.325 males/stop within the study fields, and 0.183 males/stop outside the study area. 2006 counts indicated 0.300 males/stop within the study fields, and 0.333 males/stop outside the study area.

Nest searches were conducted from May-August using telemetry and sticking techniques. No nests were found, but telemetry did provide locations within the study fields. These locations

have been mapped using GIS, and are currently being analyzed using SAS to determine if there was a preference for field treatment.

**Objective 3**—Nest searches using sticking, stalking, and rope dragging techniques produced 46 nests (see Table 1). Shrub-scrub birds such as the Painted Bunting (*Passerina ciris*) and the Blue Grosbeak (*Passerina caerulea*) made up the majority of identifiable nests found (67.5%, n=27). Both nest success (nest in which at least 1 egg hatches) and productivity (number of chicks fledged) were much higher than in 2005.

Nest sites were monitored at 2-4 day intervals. We tried to monitor on a 3 day interval, but due to weather and flooded conditions this had to be altered slightly. Once a nest was abandoned or destroyed we conducted vegetation assessment around the nest. At each nest we dropped Daubenmire frames four times to measure species composition and percent ground cover. Vertical structure was measured in four directions at each site using a Robel pole. Woody stem density was measured by counting all woody stems within 8 m of the nests. Woody stems were classified by species, height, and DBH.

The songbird portion of the study was supplemented with winter drive counts in 2006. Winter drive counts allowed us to get a better understanding of grassland songbird use of the study fields. This was necessary after the 2005 nesting season which indicated that most grassland birds had left the site in the spring and nested elsewhere. The counts were performed on all study plots in the study area. We conducted at least 3 replicates for each treatment. Counts were conducted using 2 drivers and 1 recorder/observer. Data collected from the counts includes the number and size class of birds observed, and is currently being assessed

## **PRESENTATIONS**

Wiggers, E.P. Management techniques for old fields. University of Georgia Wildlife Management Class. Nemours Plantation, SC, February 2006.

Heaton, W.C. Management techniques for old fields. Clemson University Wildlife Management Techniques Class. Nemours Plantation, SC, March 2006.

Heaton, W.C. Evaluation of Four Conservation Management Practices for Northern Bobwhites and Grassland Songbirds. Clemson University Foerstry and Natural Resources Seminar. Clemson, SC, December 4, 2006.

## **PUBLICATIONS**

None to date

## **PARTICIPATING AGENCIES AND LANDOWNERS**

Ernie Wiggers Ph.D., Project Coordinator and Principal Investigator, Nemours Wildlife Foundation. Dr. Wiggers designed the research project and provided executive decisions throughout the project.

Eddie Mills, Wildlife Biologist, Nemours Wildlife Foundation. Eddie provided information for all aspects of research, and was extensively involved in vegetation sampling.

Greg Yarrow Ph.D., Principal Investigator, Clemson University. Dr. Yarrow provided assistance with project design and evaluation.

Billy Dukes, Small Game Biologist, South Carolina Department of Natural Resources. Billy provided insight into the quail portion of the project to overcome unsuccessful trapping efforts.

## **NRCS INVOLVEMENT**

The state biologist position was in a state of flux during the start of this project due to one individual leaving the state and the hiring for his replacement. Therefore involvement by the NRCS has not been as active as it might have been. We are planning a landowner workshop this summer/fall where the results of this study will be presented and field borders, warm-season grass plantings, etc. demonstrated. We will seek full participation by the NRCS in the planning and implementation of this workshop.