

**PENNSYLVANIA GAME COMMISSION
BUREAU OF WILDLIFE MANAGEMENT
RESEARCH DIVISION
PROJECT ANNUAL JOB REPORT**

PROJECT CODE NO.: 05011

TITLE: Conservation Reserve Enhancement Program

JOB CODE NO.: 01004A

TITLE: Effects of Local and Landscape Features on Avian Use and Productivity in Conservation Reserve Enhancement Program (CREP) Fields

PERIOD COVERED: 1 July 2000 to 30 June 2001

COOPERATING AGENCIES: Pennsylvania Game Commission and Pennsylvania State University, School of Forest Resources

WORK LOCATIONS: Montour and Columbia County

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Abstract: Seventeen fields were monitored in Montour and Columbia counties in order to determine the abundance and productivity of grassland birds. Fields were chosen in different size classes: small (<10 acres), medium (20-30 acres), and large (>40 acres). The fields were also split between hayfields, and cool-season and warm-season grass fields enrolled in the Conservation Reserve Enhancement Program (CREP). Surveys for abundance of grassland birds were conducted twice over the summer (28 May - 6 June 2001 and 28 June - 5 July 2001). Nests were located in all the fields throughout the summer (28 May - 31 July 2001) except after mowing of hayfields. Data collection will continue for the next 3 summers.

INTRODUCTION

Farmland wildlife populations in Pennsylvania have been declining since the early 1970s. Grassland birds have shown the greatest declines of any guild in Pennsylvania. Since the early 1970s, ring-necked pheasants have declined by 80%, northern bobwhite quail (95%), and grasshopper sparrow (80%). In March 1998, the Bureau of Wildlife Management prepared the first draft of the Pennsylvania CREP. In April 2000, the Governor and U.S. Secretary of Agriculture approved a \$210M conservation initiative for 20 counties. The Pennsylvania CREP has a goal of establishing 100,000 acres of conservation cover for 10-15 years. The State must provide 20% of the costs. The State is also responsible for monitoring the effectiveness of the habitat improvements on water quality and wildlife populations. The purpose of this study is to evaluate the site-specific and landscape-level effects of CREP implementation on the productivity of grassland birds.

OBJECTIVES

To determine the effects of CREP on abundance, distribution, and productivity of grassland birds. To determine how avian use of and

productivity within warm-season and cool-season fields vary with field size, age, and adjacent landscape. To determine differences between the use and productivity of CREP fields and hayfields by grassland birds. To develop management guidelines for maximizing benefits of CREP to grassland birds.

PROCEDURES

We chose Montour and Columbia counties as study sites for a pilot study because of the availability of warm-season grass fields within the 3 different field size classifications. We located cool-season grass fields and hayfields as close as possible to the warm-season fields to minimize localized differences.

We surveyed birds within each study field using 100 m transects (25 m on each side of the transect, Best et al. 1997). Transects were located ≥ 50 m from an edge, when possible, and located no closer than 50 m from each other. We established as many transects as possible within each field that met the above criteria (Best et al. 1997). To detect early breeders and to detect Neotropical migrants, who tend to breed later, we conducted 2 surveys between 28 May - 5 June 2001 and 6 June - 5 July 2001. The surveys were conducted from sunrise to 3 hours after sunrise, and were not conducted when it was raining or winds were greater than 16 kph (Best et al. 1997).

We located active nests by walking through each field every 3-5 days, watching female and male actions and scanning vegetation. Nests were marked using colored flagging ~10 m to the north of the nest, and GPS coordinates were taken to help relocate the nests. Active nests were monitored every 3-5 days to determine success or cause of failure. Nest surveys were conducted from 28 May thru 31 July 2001.

We measured local habitat structure including density (Robel et al. 1970), height of grass, depth of litter, and amount of vegetative cover (i.e., percent cover of warm- or cool-season grass, ground litter, standing litter [dead stems that are still standing], woody vegetation, forbs), and bare ground (Daubemire 1959). These were conducted at each nest and 3 m away from the nest in the 4 cardinal directions after the termination of nesting activity. Each field was also sampled using 6 equally spaced samples along the already established transects for the bird surveys (McCoy et al. 2001). The amount of vegetative cover, litter depth, and vegetation density were collected at each sample point. Field vegetation sampling took place at the same time the bird surveys were conducted. The difference in the percentage of cover types within and between fields will allow us to assess the effects of 2 CREP practices (warm-season grasses and cool-season grasses). We also recorded local landscape features, such as adjacent habitat and the distance of each nest from edges, to help identify any relationships with productivity and use of the fields by different species.

FINDINGS

Abundance data is being analyzed and will be included in the next report.

We located 300 nests from 12 different species of birds in the 17 fields (Table 1). The overall nest success was 18.64%. The percent that fledged by species were: red-winged blackbirds (19.61%), field sparrows (23.40%), song sparrows (35.72%), eastern meadowlarks (11.29%), and grasshopper sparrows (30.64%). No cowbird eggs hatched. All nests with

cowbird eggs were field sparrow nests, and they were all abandoned. There is a relationship between the field type and size with respect to the success of nests ($X^2 = 22.81$, $df = 10$, $P \geq 0.05$). Most of this relationship occurs because of the overabundance of unsuccessful nests in <4-ha fields and the under abundance of successful nests in >16-ha fields. Productivity data is still being analyzed, and more will be included in the next report.

Habitat data has not been analyzed at this time. It will be included in a later report.

LITERATURE CITED

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Table 1. Number of nests per grassland bird species in 17 fields in Montour and Columbia counties, Pennsylvania, 28 May - 31 July 2001.

Species	Number of Nests	% of Total Nests
Red-winged blackbird	179	59.67
Field sparrow	82	27.33
Song sparrow	11	3.67
Eastern meadowlark	7	2.33
Grasshopper sparrow	6	2.00
Indigo bunting	3	1.00
Mallard	3	1.00
Wild turkey	3	1.00
Common yellowthroat	2	0.67
Savannah sparrow	2	0.67
American robin	1	0.33
Ring-necked pheasant	1	0.33