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OBSERVATIONS OF WOODCOCK (*Philohela minor*) ON TWO AREAS IN SOUTHERN ILLINOIS

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ABSTRACT

Woodcock were counted and observed on Stephen A. Forbes State Park and Sam Dale Lake Conservation Area, south-central Illinois, from 1966 to 1973. Modest numbers of woodcock were recorded on the areas during censuses conducted in March ($\bar{x}$ = 17.6 birds) and in October and November ($\bar{x}$ = 3.3 birds). Three woodcock nests were found on Dale in March and a brood of three young was observed on Forbes in May. However, no woodcock were observed on either area during the summer and early fall. Mean weights of woodcock collected in March 1971 were 214 grams for four females and 157 grams for two males. Mean concentration of total mercury in liver was 0.44 ppm, and that of p,p'-DDE in fat was 7.22 ppm.

INTRODUCTION

Little is known of the American woodcock in Illinois. Ford (1956: 36-37) referred to the woodcock as a common summer resident in the Chicago region and reported finding approximately 50 nests from 1910 to 1933. However, the need for quantitative studies of the avifauna in every Illinois county has been emphasized by Graber et al. (1970:3). The present paper provides some observations of population numbers and nesting habits, of body weight and status of reproductive organs, and of mercury levels and pesticide residues, for woodcock on two multiple-use recreational areas in south-central Illinois.

METHODS

Observations of woodcock were made on Stephen A. Forbes State Park (3,100 acres) in Marion County and Sam Dale Lake Conservation Area (1,300 acres) in Wayne County. Topography on both areas varies from flat to steeply gullied slopes along streams. Hardwoods occupy approximately 50 percent of the Forbes area and 15 percent of the Dale area. A lake of 585 acres is centrally located on Forbes and one of 200 acres is present on Dale. More detailed descriptions of these areas may be found in Ellis et al. (1969:75).

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Woodcock were counted during censuses for bobwhites (Colinus virginianus) in early March and again in late October and early November, 1966-73. Both censuses were conducted during periods when woodcock migrations were at or near their peaks in central Illinois (Sheldon 1967:102, 105). One or two observers accompanied by one to three bird dogs searched all vegetative cover, except large blocks (>10 acres) of timber, that was thought capable of concealing bobwhites. Nests were found by searching the immediate vicinity of flush sites of woodcock during the March censuses.

Six woodcock were collected (shotgun) on the areas during March 1971. After the body weights of these birds were determined, the ovary or both testes were excised and weighed. Samples of liver, breast muscle (pectoralis thoracica), and fat were removed from the birds and analyzed for total mercury or for residues of chlorinated hydrocarbon insecticides. The mercury analyses were performed by cold vapor atomic absorption using a Perkin-Elmer/Coleman Model 50 Mercury Analyzer. Analyses for pesticide residues (p,p'-DDE, dieldrin, and heptachlor epoxide) were performed on a Beckman model GC-4 gas chromatograph equipped with an electron capture detector (Anderson et al. 1970:374).

RESULTS

Most woodcock counted on the Forbes and Dale areas were flushed from low areas, along ditches, and in wide gulleys. The predominant vegetation in these locations consisted of young stands of hardwoods, primarily maple (Acer spp.) and river birch (Betula nigra). When all years were considered, more than five times as many woodcock were counted during the March censuses as during the October-November censuses (Table 1). The use of the Forbes and Dale areas for nesting probably accounted for this seasonal difference in numbers of woodcock.

Although many hours of fieldwork were conducted on the areas during summer and early fall, woodcock were never observed at this time of the year. What happens to adult woodcock and their young in south-central Illinois during late summer remains an enigma. However, we speculate that dry conditions force resident woodcock to move to more northern latitudes after completing nesting and brood-rearing activities.

Three woodcock nests were examined on the Dale area. The first, containing two eggs, was discovered 16 March 1967 situated in pine needles in a border planting of loblolly pine (Pinus taeda). The second nest, containing four eggs, was found 22 March 1968 amid a diffusion of blackberry (Rubus allegheniensis), dewberry (R. flagellaris), serecia lespedeza (Lespedeza cuneata), timothy (Phleum pratense), and three-awned grass (Aristida longespica). These nests were revisited within 2 weeks after they were discovered, and all traces of eggs and females were missing.

The third nest, with one egg, was found 17 March 1971 in an open field that was last cultivated in 1965. The female associated with this nest and the single egg were collected for mercury and pesticide studies. The nest was located in downed canes of white heath aster (Aster pilosus),

common ragweed (Ambrosia artemisiifolia), Pennsylvania smartweed (Polygonum pensylvanicum), panic grass (Panicum huachucae), and tickle grass (Agrostis hyemalis). Liscinsky (1972:14) reported that woodcock in Pennsylvania atypically nested in old fields with no overhead woody cover.

Table 1. Numbers of woodcock counted while conducting censuses on the Forbes and Dale areas, 1966-73.

Date	Forbes		Dale	
	March	Oct.-Nov.	March	Oct.-Nov.
1966	1	0	15	1
1967	0	0	28	1
1968	2	1	36	2
1969	0	2	0	3
1970	6	2	16	7
1971	6	1	7	0
1972	0	0	1	1
1973	4	2	19	3

A brood of three young woodcock, accompanied by an adult, was observed 5 May 1971 on the Forbes Area. These young were estimated to be less than 3 weeks old, judged by their flight behavior.

Mean weight of four female woodcock collected in March 1971 was 214 grams, with extremes of 181 and 252 grams (Table 2). The heaviest bird was actively laying. Two males weighted 151 and 162 grams, respectively.

Concentrations of total mercury in liver and in breast muscle were approximately three times higher in the two male woodcock than in the four females (Table 2). The levels in the males approached or exceeded 0.50 ppm, which is more or less recognized as the upper limits of tolerance for mercury in fish and game birds (Anderson and Stewart 1971: 240).

Moderately elevated levels of p,p'-DDE in fat were found in the male woodcock and in two of the females (Table 2). However, McLane et al. (1971:249) felt that the mean concentrations of DDE (1.26 ppm in carcasses and 17.90 ppm in lipids) they reported for woodcock wintering in Louisiana were relatively low. Our Illinois-collected birds contained negligible concentrations (<0.01 ppm) of dieldrin and of heptachlor epoxide.

Table 2. Body weight, weight of reproductive organs, and concentrations of mercury and of p,p'-DDE in selected tissues of woodcock collected on the Forbes and Dale areas, 8-17 March 1971.

Area	Body Weight (g)	Weight of Ovary or Testes (g)	Concentration of Mercury[a]		Concentration of p,p'-DDE in Fat[a]
			Liver	Muscle	
			FEMALES		
Dale	197	1.7	0.29	0.18	0.48
Dale	225	0.7	0.24	0.06	0.20
Dale	181	0.8	0.13	0.14	11.36
Dale	252	5.9[b]	0.33	0.24	4.03
			MALES		
Dale	162	0.15	0.75	0.48	22.72
Forbes	151	0.15	0.90	0.69	4.62

[a] µg per gram of wet weight.

[b] This bird was collected at a nest that contained one egg. Dissection of the bird revealed an unshelled egg in the shell gland of the reproductive tract.

DISCUSSION

Sheldon (1967:23) classified the entire length and breadth of Illinois and all adjacent states except Wisconsin, as scattered breeding range for the woodcock. The principal breeding range occurs farther north, in Minnesota, Wisconsin, Michigan, and in Canada. However, woodcock, in traveling between their breeding grounds to the north and their winter grounds in Louisiana and other southern states, migrate through Illinois in both spring and fall. Our findings for woodcock populations in south-central Illinois appear to conform to these generalized descriptions of the species. A sparse population of breeding woodcock regularly nests in south-central Illinois, and moderate numbers of the birds may be encountered during the migration periods.

Although samples are small, body weights of our Illinois-collected woodcock appear to be greater than weights reported by Sheldon (1967:41) for early-spring birds in the principal breeding range. Sheldon (1967: 40) believed that "both sexes reach their minimum weight after the long flight from the winter grounds to the breeding grounds." Because our study areas are located relatively far south (lat. 38° 40' N versus lat. 44° N for central Wisconsin), the woodcock we collected might be expected to be heavier than those Sheldon examined.

Our findings for concentrations of mercury and of DDE in woodcock tentatively suggest that these chemicals are not of sufficient magnitude to endanger the well-being of the species in Illinois. Because the birds we analyzed were collected in spring, we hesitate to speculate on levels of mercury, DDT residues, and other chemicals that might occur in woodcock taken by hunters during the fall. However, because earthworms constitute the staple food of the species (Sheldon 1967:79), woodcock might be expected to rapidly accumulate environmental contaminants.

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