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Barn Owl (*Tyto alba*) Food Habits in West-Central Arkansas

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Abstract

This study was conducted on Holla Bend National Wildlife Refuge in west-central Arkansas to investigate the food habits of the common barn owl (*Tyto alba*). Three hundred thirty-eight pellets were collected from four barn owl nest boxes yielding the remains of 1003 individual prey items. Hispid cotton rats (*Sigmodon hispidus*) were eaten most frequently, comprising 46.8% of the diet by frequency. Results of this study are compared with those from other Arkansas ecoregions to assess regional variation in the diet of this endangered species.

Introduction

The barn owl (*Tyto alba*) is a species of special concern in Arkansas due to its low numbers. It is usually associated with open fields and agricultural land. While this species has been studied extensively throughout most of its range (Bent, 1938; Wallace, 1948; Boyd and Shriener, 1954; Banks, 1965; Bunn et al., 1982), few studies have been conducted in Arkansas. We are aware of only two food habits studies one conducted in northeast Arkansas (Paige et al., 1979) that examined the contents of 45 pellets, and another conducted in southwest Arkansas (Steward et al., 1988). Our study was conducted on Holla Bend National Wildlife Refuge (Pope County), located in the Arkansas River Valley in west-central Arkansas.

Materials and Methods

Over two years (1990 and 1991), 338 pellets from four nest boxes were collected and analyzed. The nest boxes were located in barns surrounded by farmland, primarily soybean and sorghum fields. Pellets were collected from nest boxes every two weeks, placed in bags, and labeled with the date and location. To analyze food contents, skeletal, hair, and feather remains were separated and identified. Remains were observed under a dissecting microscope and compared to standard keys (Glass, 1951; Sealander, 1979; Schwartz and Schwartz, 1981) and specimens in the Arkansas Tech University Vertebrate Collection. The importance of each species or group in the diet of barn owls was estimated from the percent frequency of occurrence in pellets.

Results and Discussion

The evaluation of food habits based on pellet analysis can be biased because foods differ in digestibility (Errington, 1932). The primary foods of barn owls are rodents whose skulls and teeth are difficult to digest (Errington, 1932). Because our sample size was large, we were confident that these data allow a general assessment of the raptor's diet in this region of the state.

Small mammals comprised the vast majority of the species consumed by barn owls on Holla Bend. Hispid cotton rats (*Sigmodon hispidus*) were the most important food item and were found in 46.8% of the sample (Table 1). The cotton rat was common on the study area, which is comprised of crop fields, fallow land, and old fields. The cotton rat prefers this type of habitat (Schwartz and Schwartz, 1981; Sealander and Heidt, 1990). The southern bog lemming (*Synaptomys cooperi*) has been documented as the dominant prey of barn owls in northeast Arkansas (Paige et al., 1979). Although there is suitable habitat, southern bog lemmings are not found in the study area (Sealander and Heidt, 1990). The woodland vole (*Microtus pinetorum*) was the second most important food item in our study, comprising 14.2% of the prey consumed. Steward et al. (1988) reports the woodland vole and the cotton rat as the most numerous prey items in southwest Arkansas. The marsh rice rat (*Oryzomys palustris*) represented 13% of the food contents of the pellets. The combined percentage for all shrew species was 7.1%. The southeastern shrews (*Sorex longirostris*) are a county record and represent only the ninth Arkansas county from which the shrew has been taken (Sealander and Heidt, 1990). The remaining prey items were other rodent species and

birds.

Table 1. Food contents of barn owl pellets on Holla Bend National Wildlife Refuge (Fall 1990 and 1991).

Food Item	No. of specimens	% Frequency
Hispid Cotton Rat (<i>Sigmodon hispidus</i>)	470	46.8
Woodland Vole (<i>Microtus pinetorum</i>)	142	14.2
Marsh Rice Rat (<i>Oryzomys palustris</i>)	130	13.0
Unidentified bird species (<i>passerines</i>)	88	8.8
House Mouse (<i>Mus musculus</i>)	46	4.6
Unidentified shrews (<i>Soricidae</i>)	39	3.9
Least Shrew (<i>Cryptotis parva</i>)	21	2.1
Fulvous Harvest Mouse (<i>Reithrodontomys fulvescens</i>)	20	2.0
Deer Mouse (<i>Peromyscus maniculatus</i>)	13	1.3
Unidentified species	9	0.9
Short-tailed Shrew (<i>Blarina carolinensis</i>)	8	0.8
Unidentified Cricetidae	7	0.7
Southeastern Shrew (<i>Sorex longirostris</i>)	4	0.4
Eastern Cottontail (<i>Sylvilagus floridanus</i>)	4	0.4
Unidentified rodents (<i>Rodentia</i>)	2	0.2
TOTAL	10003	100.1

Unidentified bird species (passerines) occurred in 8.8% of our sample (Table 1). Red-winged blackbirds (*Agelaius phoeniceus*) were identified in two of the pellets. Red-winged blackbirds were also found in barn owl pellets from Ohio (Carpenter and Fall, 1967).

Our results show that rodent species are the primary prey consumed by barn owls. This is also supported by Paige et al. (1979) and Steward et al. (1988). As prey items, bird species were slightly more prevalent in our sample (8.8%) than those of Paige et al. (1979) (6.5%), and Steward et al. (1988), (2.2%). This could reflect differences in the availability of prey in differing habitats. Insectivore percentages in Steward et al. (1988), Paige et al. (1979), and our study were 3.4%, 5.4%, and 7.2%, respectively. Although prey availability probably varies among ecoregions in Arkansas, the relative importance of rodents, insectivores, and birds in the diets of barn owls appears to be consistent. These studies suggest that barn owls could be beneficial predators in agricultural communities by culling nuisance rodent species.

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