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George A. Feldhamer
Southern Illinois University Carbondale

Angela Machniak
Southern Illinois University Carbondale

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Feeding Habits of Short-Eared Owls Overwintering in Southern Illinois

Angela Machniak and George Feldhamer
Department of Zoology
Southern Illinois University
Carbondale, IL 62901

ABSTRACT

Pellets from short-eared owls (*Asio flammeus*) were collected during March 1990 and January-March 1992 from a former strip-mine area in southern Illinois and analyzed for prey remains. Microtines comprised 85.8% of 141 skull remains in 1990, and 85.0% of 147 skull remains in 1992. Results were similar to previous studies in Illinois and elsewhere.

INTRODUCTION

Peabody Mine is a strip-mine site located about 20 km southeast of Harrisburg, Saline County, Illinois, that has not been in operation since 1987. Short-eared owls have been found on the site since 1988, where they roost on the ground in fields of foxtail (*Alopecurus carolinianus*), broomsedge (*Andropogon virginicus*), little blue stem (*Schizachyrium scoparium*), switch grass (*Panicum virgatum*), and fescue (*Festuca pratensis*). Little blue stem and switch grass were planted at the site. Adjacent to the roost site is a 0.5 ha plot of tilled corn and four deep pools of water. Five short-eared owls occupied the site in 1990, and at least 11 in 1992. They used the site from late November through mid-March each year. It was not determined whether the same individuals used the area during the two sampling periods. Pellets were collected from a communal diurnal roost site each year. Our objective was to identify prey consumed by short-eared owls in this area, and contrast any change in frequency of prey species occurrence in 1990 vs. 1992.

MATERIALS AND METHODS

Pellets were collected in March 1990 and represented a 3-month accumulation from five short-eared owls. Pellets were collected in 1992 at monthly intervals from January through March when at least 11 short-eared owls were using the site. Prey remains were separated from pellets by hand. The mandible and cranium was used to identify each taxon. Skulls of prairie voles (*Microtus ochrogaster*) were differentiated from those of pine voles (*M. pinetorum*) on the basis of the anterior border on the fourth triangle of the first lower molar (Martin 1974, Martin and Webb 1974). Because of the low occurrence of *Peromyscus* in the samples, no attempt was made to determine species for this taxon.

RESULTS AND DISCUSSION

Remains of 141 prey items were recovered from 104 pellets collected in 1990 (mean number of prey items per pellet = 1.36), of which 85.8% were microtines. In 1992, 147 prey items were found in 113 pellets (mean number of prey items per pellet = 1.30), of which 85.0% were microtines. The same six mammalian taxa were found in 1992 as in 1990, and were remarkably similar in frequency (Table 1). There was no significant difference for the 1990 vs 1992 sample in the frequency of prey consumed (G-test = 2.53, $df = 7$, $P > 0.50$), and the Shannon-Weiner Diversity Index was the same for each year (Table 1).

Our results are similar to Colvin and Spaulding (1983) who found short-eared owls in Ohio consumed 95.4% meadow voles (*M. pennsylvanicus*). Clark (1975) reported the proportion of *Microtus* in the diet of wintering short-eared owls in New York was never below 90%, and this is consistent with other studies on short-eared owls (Snyder and Hope 1938, Terres and Jameson 1943, Kirkpatrick and Conway 1947, Weller et al. 1952, Graber 1962, Clark 1972). In contrast, however, Cahn and Kemp (1930) found short-eared owls in central Illinois took only 29.2% voles. As in other species of owls (Bunn et al. 1982), short-eared owls do not forage selectively, but take prey opportunistically, in proportion to availability (Clark 1975). We examined only pellets cast at the roost, and not pellets cast while the owls were foraging, although there may be "... a difference in percentage composition [of prey] between field cast pellets and roost cast pellets ..." in short-eared owls (Clark 1975:11). Nevertheless, considering roost pellets cast during the winters of 1990 and 1992, there was temporal consistency in the diet of short-eared owls on the study area, and likely an associated consistency in relative abundance of the small mammal fauna during this period.

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Table 1. Prey remains in short-eared owl pellets collected in 1990 and 1992, from the Peabody Mine area, Saline County, Illinois.

<u>Prey Item</u>	<u>Winter 1990</u> <u>Frequency</u>	<u>(n = 104)</u> <u>%</u>	<u>Winter 1992</u> <u>Frequency</u>	<u>(n = 113)</u> <u>%</u>
MAMMALS				
Rodents				
Prairie vole (<i>Microtus ochrogaster</i>)	77	54.6	75	51.0
Pine vole (<i>Microtus pinetorum</i>)	40	28.4	48	32.6
House mouse (<i>Mus musculus</i>)	8	5.7	12	8.2
Bog lemming (<i>Synaptomys cooperi</i>)	4	2.8	2	1.4
Deer mouse (<i>Peromyscus</i>)	2	1.4	2	1.4
Insectivores				
Least shrew (<i>Cryptotis parva</i>)	2	1.4	1	0.7
SUBTOTAL	<hr/>	<hr/>	<hr/>	<hr/>
Mammals	133	94.3	140	95.3
BIRDS				
(Unknown passerines)	8	5.7	7	4.8
TOTAL	<hr/>	<hr/>	<hr/>	<hr/>
	141	100.0	147	100.1
Diversity Index (H) ^a		1.3		1.3

a - $H = - \sum p_i^2 \ln p_i^2$, where p_i = proportion of each prey item in the total sample (Pielou 1966). ___