

## FOOD OF A WINTERING SAW-WHET OWL IN MIDDLE TENNESSEE

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### ABSTRACT

Approximately 66 pellets of the saw-whet owl, *Aegolius acadicus*, recovered at a winter roost in Williamson County, Tennessee were analyzed. Forty seven prey animals representing four taxa of small mammals were identified; deer/white-footed mice (*Peromyscus* sp.) comprised 94% of the prey taken by this owl. This is the first record of the food habits of this owl in Tennessee and provides comparative data on prey selection of this primarily northern raptor in a southern wintering locale.

### INTRODUCTION

Distribution of the saw-whet owl, *Aegolius acadicus*, in Tennessee includes primarily isolated localities in the central and eastern regions of the state occupied by wintering birds. In eastern North America it has been reported as an occasional winter resident through the Atlantic states to central Florida (6th A.O.U. Check-list, 1983). However, Simpson and Range (1974) document published records and additional field data, including sightings and birds trapped for banding, that confirm the saw-whet owl as "... regular in spring and summer in regions of suitable habitat in the mountains of western North Carolina and eastern Tennessee." Potter, et al. (1980) state that this owl winters in dense pines and cedars to a limited extent throughout the Carolinas and that "Evidence of breeding in the southern Appalachians rests primarily on the sighting of immature birds. . . . No nests or preflight young have been found in North Carolina." This appears to be the case in Tennessee as well.

In Middle Tennessee occurrences of this owl are extremely rare and only four sight records, including a winter 1952-1953 bird from which pellets were obtained, have been reported in the literature (Goodpasture, 1954). Remains of saw-whet owls (at least two individuals) have been reported from a Late Pleistocene cave deposit in Maury County, Tennessee,

ca. 70 km south of Nashville (Parmalee and Klippel, 1982). Data on the food habits of the saw-whet owl are well known in regions of the birds' northern breeding and wintering range, for example Oregon (Boula, 1982), Ontario (Catling, 1972), Minnesota (McCabe, 1973) and Connecticut (Smith and Devine, 1982), but no accounts of prey selection by this species have been reported for areas where it occurs as a casual winter resident. An ecological study of the long-eared owl, *Asio otus*, and the saw-whet owl from southwestern Ohio (near Cincinnati) by Randle and Austing (1952) includes food habits of these raptors; in the case of the saw-whet owl, this study of late winter-early spring prey selection represents the most southern food habits record published for this bird. Animal remains identified from the Williamson County pellets represent the first record of prey species taken by this owl in Tennessee and provides a means of comparing the food habits of saw-whet owls in more northern areas of its range with this bird in the Midsouth.

### METHODS

Between December 6, 1952 and March 8, 1953 a saw-whet owl took up residence in a wooded area approximately 32 km SW of Nashville, Williamson County, Tennessee (Goodpasture, 1954). Mrs. Goodpasture made a collection of castings from under its roost trees of American beech, *Fagus grandifolia*, and redcedar, *Juniperus virginiana*. At the 1985 annual meeting of the Tennessee Ornithological Society at Fall Creek Falls State Park, Tennessee, Mrs. Goodpasture said that she still had this collection of pellets in her possession and was quite willing to give it to us for analysis. Although not extensive, the series consisted of 36 complete pellets and pieces of approximately 30 others. Pellets were extremely dry and fragile, although 35 were still complete and could be measured; all pellet material was broken apart with forceps and species

were identified (except for *Blarina*) on the basis of skulls and mandibles.

## RESULTS AND DISCUSSION

Only four prey taxa, all small mammals, were represented in this pellet sample (Table 1). Uniformity of prey selection is especially apparent, since 44 (94%) of the 47 individuals identified were white-footed and/or deer mice, *Peromyscus* sp. Only one each of the short-tailed shrew, southeastern shrew and prairie vole occurred in the sample.

**Table 1.** Prey of a Wintering Saw-whet Owl in Williamson County, Tennessee Based on Analysis of ca. 66 Pellets Recovered in 1952–1953.

Species	Right		Number of Individuals
	Skull	Left Jaw	
<b>Short-tailed Shrew,</b> <i>Blarina</i> , B. cf. <i>brevicauda</i>	—	—	1
<b>Southeastern Shrew,</b> <i>Sorex longirostris</i>	1	1	1
<b>Deer/White-footed Mouse,</b> <i>Peromyscus</i> sp.	38	44	44
<b>Prairie Vole,</b> <i>Microtus ochrogaster</i>	1	1	1

Of the 36 complete pellets, 16 contained postcranial elements only; except for one of these that contained parts of a mouse (*Peromyscus*) and a short-tailed shrew, the other 15 contained elements of one prey animal (mouse) in each. A single prey item occurred in 17 of the 20 pellets containing skulls and/or jaws; remains of two *Peromyscus* occurred in two pellets and, as just noted, one *Peromyscus* and the postcranial elements of *Blarina* in another.

Thirty five of the 36 pellets were complete enough to be measured: length, range 12–34 mm,  $\bar{x}$  26.5 mm; width, range 10–16 mm,  $\bar{x}$  14.2 mm. The largest pellet (34 × 16 mm) contained the remains of the prairie vole, the smallest (12 × 13 mm), remains of the southeastern shrew. The saw-whet owl pellets reported by Catling (1972) had a mean length of  $33.5 \pm 7.6$  mm and a mean width of  $15.7 \pm 1.5$  mm. The mean length and width of our pellets, while slightly smaller than those reported by Catling (1972), fall within the first standard deviation of his 170 pellet sample. The largest pellet from the Williamson County, Middle Tennessee series con-

tained *Microtus* remains, the dominant taxa in Catling's (1972) sample. It was within one mm of the mean length and width of pellets he reported from an Ontario, Canada sample (Catling, 1972). Skulls of all prey animals in our sample were badly fractured, a condition noted by Randle and Austing (1952), Catling (1972), and Grove (1985).

The number of reported mammalian prey species taken by wintering saw-whet owls has varied: 4 taxa (270 pellets: Catling, 1972), 6 (946 pellets: Grove, 1985), 8 (269 pellets: Smith and Devine, 1982), and 11 taxa (173 pellets: Randle and Austing, 1952). In the majority of studies dealing with the food habits of wintering saw-whet owls, remains of small mammals dominate the assemblages with *Peromyscus* and *Microtus* occurring in the largest numbers and providing the greatest biomass in the diet of this owl.

Smith and Devine (1982), in their analysis of saw-whet owl pellets collected monthly from a roost in Connecticut, found that *Peromyscus leucopus* comprised 45% of the total prey individuals—a similar observation to that of Rusling (1951) for New Jersey owls. However, in north-central Washington, Grove (1985) found that meadow voles (*Microtus* spp.) were taken in greater frequency (53.9%) than other prey animals: *Peromyscus maniculatus* was second with 23.6%. Pellets recovered by Grove (1985) came from four roost sites that varied from stands of Douglas fir (a tree which was used exclusively when present), a bigleaf maple, and an orchard with a bluegrass ground cover, to a tree stand dominated by thickets of young willow. Such heterogeneous habitat should provide a greater diversity of potential prey species. This was supported by the identification of at least six species of mammals and five species of birds that comprised the food of these owls. Similarly, Catling's (1972) identification of wintering saw-whet owl prey species recovered from varied habitats, including "... coniferous wind-breaks only a few trees thick and far from extensive woods" in Ontario, indicates the dominance (70.2%) of meadow voles (*Microtus pennsylvanicus*) followed by *Peromyscus* sp. (26.1%). Catling (1972) suggests that, while saw-whet owls generally locate their prey from a perch, they "... are not restricted to woodlands but hunt also in 'edge' and open habitats, provided that numerous perches are available." He contrasted this feeding behavior with that of the long-eared owls in the same area and suggested that long-eared owls located prey while quartering over open areas which resulted in their capture of proportionally far fewer *Peromyscus* than were taken by the saw-whet owls. Klippel and Parmalee's (1982) observations on the numbers of *Peromyscus* (<3% of

prey animals) taken by a wintering long-eared owl in Maury County in Middle Tennessee and the saw-whet owl prey reported here (>90% *Peromyscus*) agree with Catling's (1972) suggestion.

In Michigan, Mumford and Zusi (1958) noted that "A wintering saw-whet owl may roost primarily in a single area for several months, or it may range over a considerable area (about 100 acres in our study), utilizing a number of roosting sites during a winter." Goodpasture (1954) first observed the saw-whet owl, which produced the pellets we analyzed, in Basin Spring woods. This was a stand of over 500 acres of mixed hardwoods interspersed with grassy fields overgrown with brush and redcedar and, in some years, fields under cultivation. Beech, oaks (*Quercus* spp.), shagbark hickory (*Carya ovata*), and maple (*Acer* spp.) were the dominant hardwoods, with stands of pine (*Pinus* spp.) on some hillsides. The owl appeared to have remained in the same general area after it was first located in the beech tree roost. The redcedar that served as a second roost tree was located ca. 800 m across a small draw from the beech tree roost. This initial roost tree was situated at the edge of Basin Spring woods that was bordered with one of the numerous grassy fields overgrown with brush and saplings. This wintering saw-whet owl appeared to have had ample prey available and, either through preference for or abundance of deer/white-footed mice in close vicinity of its roosts, fed almost exclusively on *Peromyscus*.

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