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Relative Abundance of Eastern Screech-Owls in a South-Central Iowa Township

DAVID W. DE GEUS¹ and JOHN B. BOWLES²

Roadside playback surveys of Eastern Screech-Owls were conducted each spring and fall from September 1984 through April 1986 in Summit Township, Marion County, Iowa. An average of 18 screech-owls were located during each survey, often near riparian woodland. Screech-owl population densities (0.1-0.2 owls/km²) were comparable to those in other regions.

INDEX DESCRIPTORS: Eastern Screech-Owl, playback census, owl population density

The Eastern Screech-Owl (*Otus asio*) is widely distributed in mosaics of woodland and meadow which characterize much of the eastern United States (Bent 1938). Although considered a common, permanent resident in Iowa (Dinsmore et al. 1984), little is known about its present state-wide status. The only previously published account of a systematic survey from Iowa reported that 5 of 31 (15%) sites surveyed contained screech-owls, but provided no density estimate (Bakehouse 1986). To provide more information on the owl's present status in Iowa, we conducted four roadside surveys between September 1984 and April 1986 in a south-central Iowa township. These surveys were conducted concurrently with a nest box introduction study in the same township.

STUDY AREA AND METHODS

The study was conducted in Summit Township (T-77N, R19W), Marion County, Iowa. Woodland comprises 14.3% of this 103 km² township and consists of small woodlots found on both farmsteads and untilled land along streams and steep hillsides. The remainder of the area is largely in rowcrops, i.e., corn and soybeans. The township is increasingly wooded toward Lake Red Rock, the southern boundary.

Screech-owls were counted once during fall (September - October) and spring (February - April), beginning in 1984 and ending in 1986 (Table 1). Sixty screech-owl nest boxes were placed in the township between the fall 1984 and spring 1985 counts. At least one box was present in each 259 ha section.

The modified road-count technique (J. Mosher, pers. comm.) used in this study involved playing taped screech-owl calls between 2400 - 0600 H over an 8-ohm speaker at nearly 100 decibels. A midnight-to-dawn period was chosen over early evening to minimize interference from automobile traffic.

A Panasonic cassette player, Fanon public address loudspeaker, and screech-owl tape from John Stuart Wildlife Calls (Waco, Texas) were used to broadcast calls at locations spaced at 0.85-km intervals on all roads. Smith et al. (1987) determined that intervals of 0.7-1.2 km were appropriate for screech-owl counts. Screech-owl responses received within a 10-min period of alternate broadcast and silence were plotted on a topographic map. Observations were postponed or ended if wind speed was >16 kmph or in inclement weather. Variable weather conditions and other activities of the observer necessitated spreading the 4 nights required for coverage of the study area over a 3-4 wk period.

RESULTS AND DISCUSSION

Relative Population Size.

We recorded 73 screech-owl responses overall, and an average of 18 screech-owls were located per survey (Table 1). Owl density was similar to call-playback estimates from areas with comparable

amounts of woodland cover. Cink (1975) found 0.15 screech-owls/km² in a 16.8% wooded area in northeastern Kansas in spring 1974. However, Nowicki (1974) reported a fall population of 0.88 owls/km² in a Michigan township with 23% woodland. Similarly, Smith et al. (1987) found 0.63-1.41 owls/km² in suburban-rural southern Connecticut, with 80% woodland. These studies suggest that screech-owl numbers are determined by the amount of woodland present.

The call-playback technique has been proven to provide estimates within 15 to 30% of actual screech-owl and other Strigiform populations (Fuller and Mosher 1981, Smith et al. 1987). We, therefore, believe that our estimates approximated the actual screech-owl population within the township. However, the length of time between counts within a season in our study may have allowed movement between areas.

We did not account for all factors known to negatively affect screech-owl responses, although we attempted to minimize effects of wind and road noise since both adversely effect the ability to detect the screech-owl's low volume calls (Carpenter 1987, Smith et al. 1987). Screech-owl responsiveness also has been shown to decrease sharply during the spring (Smith 1987, Carpenter 1987), however, since our surveys were not repeated during each season we could not evaluate seasonal or yearly differences.

Habitat Use.

Of the 73 total screech-owls responses, 53 responded from woodlands adjacent to small streams or bodies of water. The other 20 were never more than 0.43 km from either a stream or lake. Screech-owls generally avoided cultivated fields, farmsteads, and dense mature timber stands, staying closer to non-isolated stands of immature American elms (*Ulmus americana*) and sandbar willows (*Salix interior*) and mature, but open, oak (*Quercus* spp.) and hickory (*Carya* spp.) woodlots near small streams. Radio-telemetry studies also have demonstrated that screech-owls prefer deciduous edge habitat near small streams (Ellison 1980; Smith and Gilbert 1984).

Table 1. Relative abundance of Eastern Screech-owls in Summit Township, Marion County, Iowa.

Survey date	Number of stations	Number of owls	Owls/station	Owls/km ²
Sept.-Oct. 1984	106	13	0.1	0.1
Feb.-Mar. 1985	116	19	0.2	0.2
Sept.-Oct. 1985	119	24	0.2	0.2
Mar.-Apr. 1986	115	17	0.2	0.2

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