Journal of the Arkansas Academy of Science

Volume 43 Article 11

1989

Distribution and Status of Shrews in Arkansas

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ABSTRACT

Between January, 1988 and February, 1989 a total of 1300 pitfall traps were placed in 150 sites covering 43 counties in Arkansas. Over 290 small mammals and numerous amphibians, lizards, tortoises, and invertebrates were captured. Shrews accounted for 167 of the small mammals, and included *Blarina carolinensis* (116), *Cryptotis parva* (48), and *Sorex longirostris* (3). *B. carolinensis* is abundant in all habitats in the southeastern two-thirds of the state, *C. parva* is common statewide in grassy or brushy areas, and *S. longirostris* is considered to be uncommon, but is found in a variety of habitats. *B. hylophaga*, although not targeted, is found in the northwestern one-third of the state where it is considered to be common. *Notiosorex crawfordi* is only found in the extreme western part of the state and is considered to be rare.

INTRODUCTION

Sealander (1979) reported four species of shrews (Insectivora: Soricidae) to inhabit Arkansas - southern short-tailed shrew *(Blarina carolinensis)*, least shrew *(Cryptotis parva)*, southeastern shrew *(Sorex longirostris)*, and desert shrew *(Notiosorex crawfordi)*. George *et al.*, (1981, 1982) concluded that the southern short-tailed shrew from the northwestern portion of the state was actually Elliot's short-tailed shrew *(B. hylophaga)*. Thus, the state's soricid fauna currently consists of five species; of which, four have distributional ranges which terminate within the boundaries of the state.

The distributional ranges, population status, and biology of the soricids in Arkansas are not well delineated. This study was undertaken to determine the curent geographical ranges and status of the soricids within Arkansas.

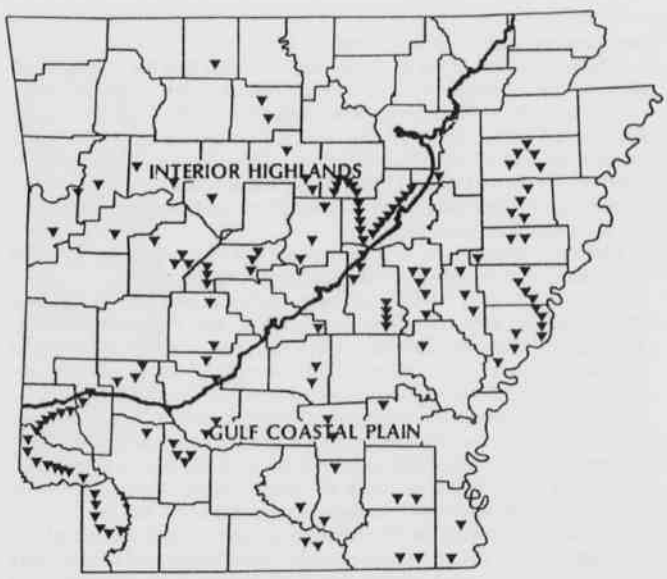

Figure 1. Trapping sites (triangles) where pitfalls were placed between January, 1988 and February, 1989.

METHODS AND MATERIALS

It has been well established that pitfall traps are superior to live and snap traps for sampling shrews (Brown, 1967; Pucek, 1969; Wolfe and Esher, 1981). Because they can be checked at irregular intervals, pitfall traps may allow coverage over a wider geographical area. Therefore, pitfall traps were used exclusively in this study. Pitfalls consisted of a plastic container measuring 19.0 cm in depth and 14.5 cm in diameter; three holes were positioned approximately 10 cm from the bottom of each trap to allow partial drainage. Approximately 200 cc of 4% formalin were placed in each pitfall to prevent escape and partially preserve specimens.

Pitfalls were placed in 150 trap sites, located in 43 counties of Arkansas (Fig. 1), between January, 1988 and February, 1989. These sites represented various habitat types including fence rows, old fields, clearcuts, pine forests, and mixed hardwood and pine forests. Five to 15 pitfalls were placed at each site. Pitfalls were examined every 10-20 days and left in place from 3 weeks to 2-3 months.

RESULTS AND DISCUSSION

Throughout this study, 1300 pitfalls were set, resulting in over 40,000 trap-nights. In excess of 290 small mammals (Table 1), together with numerous amphibians, lizards, tortoises, and invertebrates were captured. A total of 167 shrews were identified, including the southern short-tailed shrew *(Blarina carolinensis)* - 116, least shrew *(Cryptotis parva)* - 48, and southeastern shrew *(Sorex longirostris)* - 3. No known specimens of Elliot's short-tailed shrew *(B. hylophaga)* or the desert shrew *(Notiosorex crawfordi)* were captured. Accounts for all Arkansas species follow:

Table 1. Small mammals captured in pitfalls between January, 1988 and February, 1989 in Arkansas.

Species Captured	Number Captured
Order Insectivora	
Blarina carolinensis	116
Cryptotis parva	48
Sorex longirostris	3
Order Lagomorpha	
Sylvilagus floridanus	2[a]
Order Rodentia	
Microtus ochrogaster	43
M. pinetorum	31
Peromyscus leucopus	26
P. maniculatus	17
Reithrodontomys fulvescens	6

a - Two baby cottontails were caught in adjoining pitfalls

Elliot's short-tailed shrew - *Blarina hylophaga:*

Previous to 1981, all short-tailed shrews in Arkansas were considered to be *B. carolinensis*. George *et al.* (1981, 1982) examined the taxonomic relationships within the genus *Blarina* and the status of *B. hylophaga* and determined that the short-tailed shrews in the northwestern portion of Arkansas should be included with *B. hylophaga*. Figure 2 illustrates the proposed ranges of *B. hylophaga* and *B. carolinensis* in Arkansas. However, the exact distributions and taxonomic relationship of shrews in the northwestern portion of the state are largely unknown. To allow for this, we included a rather broad contact zone between the two species. Studies on the systematics of short-tailed shrews in Arkansas are needed. The subspecies in Arkansas is *B. h. hylophaga*.

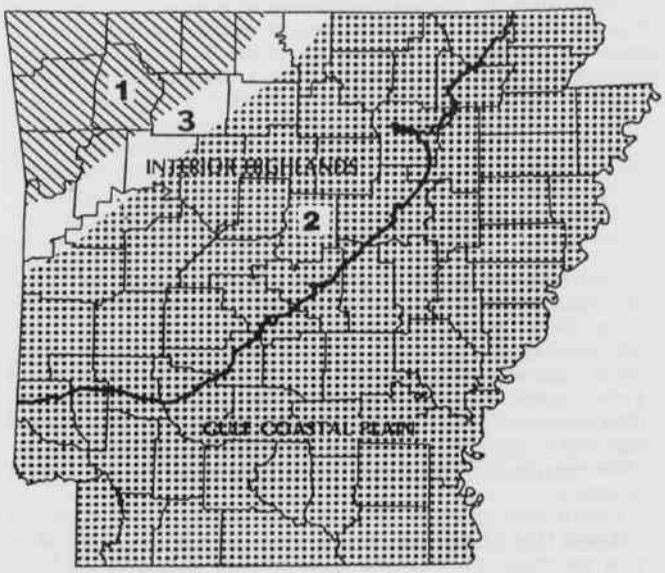

Figure 2. Proposed geographical distribution for *Blarina hylophaga* (1), *B. carolinensis* (2), and zone of contact (3).

Few pitfalls were placed in this species' supposed range and no known specimens of Elliot's short-tailed shrew were recorded in this study. Sealander (1979), however, reported that short-tailed shrews have been taken from most of the counties in northwestern Arkansas and he considered them to be abundant.

Southern short-tailed shrew - *B. carolinensis*

A total of 116 southern short-tailed shrews were identified. This species was captured in every county and habitat trapped; they were most common in moist hardwoods or brushy areas. It was by far the most common species of shrew encountered, accounting for 70% of shrew specimens taken. As many as five *B. carolinensis* were found in a single pitfall and two or three were common. In several old fields, this species was captured together with the least shrew *(Cryptotis parva)*, and in a honeysuckle *(Lonicera japonica)* thicket it was captured together with a southeastern shrew *(Sorex longirostris)*.

Hall (1981) indicated there were two subspecies, *B. c. carolinensis* and *B. c. minima* in Arkansas. *B. c. carolinensis* primarily occurs in the interior highlands and extreme southwestern portion of the state, and *B. c. minima* occurs in the remainder of the Gulf Coastal Plain. Sealander (1979) proposed a broad zone of intergradation between the two subspecies. Preliminary studies (M. Kennedy, Memphis State University and D. Moore, Emporia State University, *per. comm.*) indicate that systematic relationships of subspecies in Arkansas is unclear and further study is needed.

Sealander (1979) reported the southern short-tailed shrew to be common and the most abundant shrew species in Arkansas. Results from this study confirm his observations.

Least shrew - *Cryptotis parva*

The least shrew was the second most commonly encountered shrew, accounting for 29% of the shrew specimens examined. Whitaker (1974) reported that the least shrew may be communal, locally abundant, and inhabits grassy, weedy, and brushy fields. In this study, least shrews were found in old fields, along fence rows, and in early growth clearcuts; none were taken from woodland areas. In addition, multiple catches were common, lending further evidence to the communal nature of this species.

This species is common statewide and has been recorded from most Arkansas counties (Fig. 3). New county records were added for Van Buren, Poinsett, St. Francis, Lee, Phillips, Monroe, Chicot, Faulkner, and Perry. The subspecies in Arkansas is *C. p. parva*.

Figure 3. Counties from which *Cryptotis parva* has been recorded. Triangles represent previously published records, and circles represent records from this study.

Southeastern shrew - *Sorex longirostris*

Where sympatric, it has generally been reported that the southeastern shrew is less common than the southern short-tailed shrew and least shrew (Lowery, 1974; Brown, 1978; Sealander, 1979). However, many authors feel that secretive habits and inadequate trapping may result in apparent scarcity (French, 1975; Rose, 1980; Wolfe and Esher, 1981). Further, Wolfe and Esher (1981) found the southeastern shrew to be as common as the southern short-tailed shrew and more common than the least shrew in Mississippi.

Previous to this study, southeastern shrews had only been recorded from Benton, Washington, Polk, and Stone counties (Sealander, 1960, 1977, 1981; Graham, 1976). This study resulted in only three additional specimens; one each from Van Buren, Perry, and Pike counties (Fig. 4). Graham (1976) felt that the range of this species in Arkansas should only include the interior highlands. Sealander (1979) felt that this species occurred in all but the southwestern portion of the state, and Hall (1981) also included all but the extreme southwestern portion in his distributional map. Since the only specimens reported from Arkansas have been captured in the interior highlands, together with our lack of specimens, in spite of heavy trapping, from the delta region, Graham's conclusion would seem warranted. However, since this shrew has been shown to be locally common on the Mississippi and Tennessee side of the Mississippi River (Wolfe and Esher, 1981; M. Kennedy, Memphis State University, *per. comm.*), we feel that it will eventually be captured from the Arkansas delta region. The subspecies in Arkansas is *S. l. longirostris*.

Figure 4. Counties from which *Sorex longirostris* has been recorded. Triangles represent previously published records, and circles represent records from this study.

A number of studies have shown that the southeastern shrew is not particularly habitat specific (Caldwell and Bryan, 1982; Hamilton and Whitaker, 1979; Rose, 1980; Wolfe and Esher, 1981). In Arkansas, this species has been taken from a brushy dam site (Graham, 1976), mesic hardwoods along creeks (Sealander, 1977; present study), and in a honeysuckle thicket at the edge of a pine woods (this study). We conclude that this shrew can be found in a variety of habitat types over a large portion of Arkansas. Further, we consider the southeastern shrew to be relatively uncommon in Arkansas.

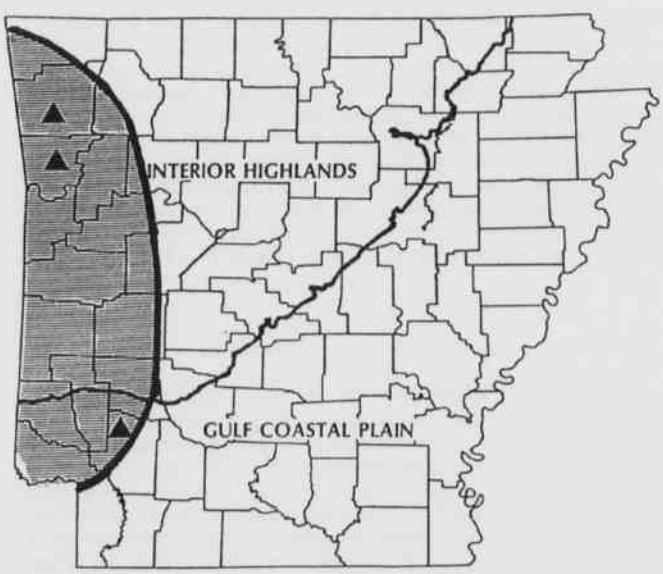

Figure 5. Distribution of *Notiosorex crawfordi*. Triangles represent previously published records.

Desert shrew - *Notiosorex crawfordi*

No desert shrews were captured in this study; however, because of their rocky habitats they were not specifically targeted. There have only been three recorded specimens of the desert shrew in Arkansas (Fig. 5). Preston and Sealander (1969) and Sealander (1952) reported one specimen each from Crawford and Washington counties. Recently, Steward *et al.* (1988) recovered two *Notiosorex* skulls from barn owl *(Tyto alba)* pellets in Hempstead County. The most northwesterly limits of this species' range include extreme western Arkansas. The desert shrew must be considered rare in Arkansas, and a need for further study of this species is indicated. The subspecies found in Arkansas is *N. c. crawfordi*.

ACKNOWLEDGMENTS

The authors would like to thank the many students at UALR who helped set out and check pitfalls and helped clean skulls. Particular thanks is due D. Elrod, D. Goad, S. Neal, and P. Caster. This study was funded by a grant from the Arkansas Nongame Preservation Committee.

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