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DIET OF THE SOUTHEASTERN SHREW (*SOREX LONGIROSTRIS*) IN TENNESSEE

LESLIE N. CARRAWAY, B. J. VERTS, JOHN O. WHITAKER JR., AND MICHAEL L. KENNEDY

Department of Fisheries and Wildlife, Nash 104, Oregon State University, Corvallis, OR 97331-3803 (LNC, BJV)
Department of Biology, Indiana State University, Terre Haute, IN 47809 (JOW)
Department of Biology, The University of Memphis, Memphis, TN 38152-0001 (MLK)

ABSTRACT—Because of the paucity of available information regarding the diet of *Sorex longirostris,* the purpose of our study was to identify and report the contents of digestive tracts of 24 specimens collected in Tennessee incidental to another study. Contents of the digestive tracts were examined with a binocular dissecting microscope, identified, and proportion of each taxon estimated visually. Insect larvae (including those of moths, Lepidoptera), centipedes (Chilopoda), spiders (Araneae), ants (Hymenoptera: Formicidae), and harvestmen (Phalangida) contributed most to the diet of the species. Of the five top-ranked foods reported for the species in previous studies, slugs and snails (Mollusca: Gastropoda) and vegetation were not identified in digestive tracts of 14 individuals containing food remains. Seven lower-ranking taxa also were missing from Tennessee shrews. Spores of *Endogone,* a fungus not previously reported eaten by the species, occurred in one individual.

The southeastern shrew, *Sorex longirostris,* once thought to be one of the least abundant soricids within its range (southeastern United States), is now considered to be locally abundant (Sealander, 1979; French, 1980*a*; Schwartz and Schwartz, 1981; Webster et al., 1985; Whitaker and Hamilton, 1998). Nevertheless, knowledge of the diet of the species is based entirely on two studies conducted in Vigo County, Indiana, near the northwestern limit of the species' range (Whitaker and Mumford, 1972; French, 1980*b*). Information concerning the diet of *S. longirostris* contained in regional publications on mammals is based solely on these studies. Because of the paucity of available information regarding the diet of *Sorex longirostris,* the purpose of our study was to identify and report the contents of digestive tracts of 24 specimens collected in Tennessee.

MATERIALS AND METHODS

Twenty-four specimens of *S. longirostris* were collected in pitfall traps set in upland forest adjacent to the Tennessee River floodplain in Decatur (2 miles S Perryville) and Perry (Cedar Creek, Kelly's Landing) counties, Tennessee, in February–April, 1993, incidental to another study. Collection sites were characterized by oaks (*Quercus*), hickories (*Carya*), and maples (*Acer*) interspersed with patches of red cedar (*Juniperus virginiana*). Loblolly pines (*Pinus taeda*) were present at the Decatur County site.

Shrews were kept frozen until examined. Contents of stomachs and intestines of the shrews were examined and identified following procedures of Whitaker and Mumford (1972) and French (1980*b*). Briefly, food remains were teased apart in sufficient water to cover the fragments and examined with a binocular dissecting microscope. Fragments were identified and the proportion of each estimated visually. Percent frequency and average percent volume were calculated for each food category.

RESULTS

Digestive tracts of 10 individuals were empty except for hair probably ingested during grooming. Stomachs of two other individuals were empty, but intestines of both contained undigested fragments of food materials.

Among the 14 specimens of *S. longirostris* with food remains in their digestive tracts, insect larvae, including those of moths (Lepidoptera) and those not identified to order, contributed most to their diet (Table 1). Larvae composed 54.6% of the material remaining in the digestive tracts of these shrews and were consumed by 78.6% of the shrews. One individual consumed larvae of both moths and other insects accounting for the percent frequencies in Table 1 not being additive. Ranking next in order of percent volume after insect larvae were centipedes (Chilopoda), spiders (Araneae), ants (Hymenoptera: Formicidae), and harvestmen (Phalangida). However, after insect larvae, the greatest proportion of shrews consumed spiders followed by proportions that consumed beetles (Coleoptera), then centipedes and ants (Table 1). Harvestmen, leafhoppers (Homoptera: Cicadellidae), crickets (Orthoptera: Gryllidae), and spores of the fungus *Endogone* were each present in the digestive tract of one individual.

DISCUSSION

Of the five top-ranked food categories (based on average percent volume) identified by Whitaker and Mumford (1972) and French (1980*b*), slugs and snails (Mollusca: Gastropoda) and vegetation were not identified from Tennessee specimens. Prey ranking lower in the diet of *S. longirostris* in Indiana (French, 1980*b*), but missing entirely from the Tennessee sample were earthworms (Annelida: Oligochaeta), cockroaches (Orthoptera: Blattidae), several families of true bugs (Hemiptera), flies (Diptera), springtails (Collembola), lacewings (Neuroptera), and sowbugs (Isopoda). Scarab beetles and the fungus *Endogone,* iden-

TABLE 1. Average percent volume and percent frequency of occurence of remains of food items identified in digestive tracts of 14 southeastern shrews (*Sorex longirostris*) from Decatur and Perry counties, Tennessee, February–April, 1993.

Item consumed	Volume (%)	Frequency (%)
Unidentified insect larvae	35.0	64.3
Moth larvae (Lepidoptera)	19.6	21.4
Centipedes (Chilopoda)	13.3	14.3
Spiders (Araneae)	9.6	42.9
Ants (Hymenoptera: Formicidae)	6.7	14.3
Harvestmen (Phalangida)	5.8	7.1
Beetles (Coleoptera)	5.4	21.4
Scarabaeidae	2.5	7.1
Unidentified	2.9	14.3
Fungi (*Endogone*)	2.9	7.1
Leafhoppers (Homoptera: Cicadellidae)	0.8	7.1
Crickets (Orthoptera: Gryllidae)	0.8	7.1

tified in Tennessee specimens, also were not identified from Indiana specimens.

The greater diversity of prey (37 categories) identified in stomachs of *S. longirostris* in Indiana by French (1980*b*) than we found in Tennessee (11 categories) possibly was related to his larger sample (n = 102) collected during all seasons. However, the smaller sample of shrews (n = 7) collected in Indiana by Whitaker and Mumford (1972), contained only one fewer prey category than ours; five of their shrews were collected in spring, the remaining two in autumn. Other factors contributing to observed differences in the diet of *S. longirostris* in Indiana and Tennessee, in addition to those related to taxonomic level to which prey items were identified, likely are those related to habitat and density of prey. Whatever the cause, these observed differences in categories of foods consumed by *S. longirostris* are sufficient to caution against extrapolating reported findings concerning its diet in a limited geographic region to the species elsewhere in its range.

LITERATURE CITED

FRENCH, T. W. 1980*a*. Sorex longirostris. Mamm. Spec., 143:1–3.

———. 1980*b*. Ecological relationships between the southeastern shrew (*Sorex longirostris* Bachman) and the masked shrew (*S. cinereus* Kerr) in Vigo County, Indiana. PhD dissert., Indiana State Univ., Terra Haute, Indiana.

SCHWARTZ, C. W., AND E. R. SCHWARTZ. 1981. The wild mammals of Missouri. Revised ed. Univ. Missouri Press and Missouri Dept. Conservation, Columbia, Missouri.

SEALANDER, J. A. 1979. A guide to Arkansas mammals. River Road Press, Conway, Arkansas.

WEBSTER, W. D., J. F. PARNELL, AND W. C. BIGGS JR. 1985. Mammals of the Carolinas, Virginia, and Maryland. Univ. North Carolina Press, Chapel Hill, North Carolina.

WHITAKER JR., J. O., AND W. J. HAMILTON JR. 1998. Mammals of the eastern United States. 3rd ed. Cornell Univ. Press, Ithaca, New York.

WHITAKER JR., J. O., AND R. E. MUMFORD. 1972. Food and ectoparasites of Indiana shrews. J. Mamm., 53:329–335.