Southeastern Shrew

Sorex longirostris (Bachman, 1837)

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CONTENT AND TAXONOMIC COMMENTS

Three subspecies of the southeastern shrew (*Sorex longirostris*) are recognized: *S. l. longirostris, S. l. fisheri, and S. l. eionis*. All occur within the region. Literature on S. *longirostris* is reviewed by French (1980*a*,*b*).

DISTINGUISHING CHARACTERISTICS

The southeastern shrew is a small, long-tailed soricid with the following measurements: total length, 72–110 mm; tail, 24–37 mm; hind foot, 10–14 mm; weight, 3–6 g. The dental formula of the shrew is: I 3/1, C 1/1, P 3/1, M 3/3 = 32 (Figure 1). This species has small ears concealed in the pelage, minute eyes, and a long, pointed snout. The dorsal and ventral pelage is brown to reddish-brown, and the tail is indistinctly bicolored. The southeastern shrew may be confused with the masked shrew (*S. cinereus*) and pygmy shrew (*S. hoyi*). The pygmy shrew is smaller than the southeastern shrew and has minute third and fifth upper unicuspids (Junge and Hoffman 1981). The range of the masked shrew overlaps only in the southern Appalachians and north central Kentucky. Segregated along a habitat gradient, masked shrews are found in high elevation, mesic forest communities and southeastern shrews are restricted to low elevation, xeric forest communities and early successional stages (Ford et al. 2001, 2006). The two are distinguishable on the basis of bivariate comparisons of body and skull features (Junge and Hoffman 1981, Laerm et al. 1997).

CONSERVATION STATUS

The southeastern shrew has a global rank of Secure (NatureServe 2007). It is also considered Secure in Florida and Virginia. It is Apparently Secure in Alabama, Georgia, Kentucky, Mississippi, North Carolina, and Tennessee. Both Arkansas and Louisiana classify it as Imperiled. It is unranked in South Carolina. *Sorex l. fisheri* is listed as Threatened by the Virginia Department of Conservation and Recreation. The Florida Natural Areas Inventory considers *Sorex l. eionis* a Species of Special Concern. *Sorex l. longirostris* is monitored by the Arkansas and Mississippi Natural Heritage Programs, and is deemed In Need of Management by the Tennessee Department of Environment and Conservation.

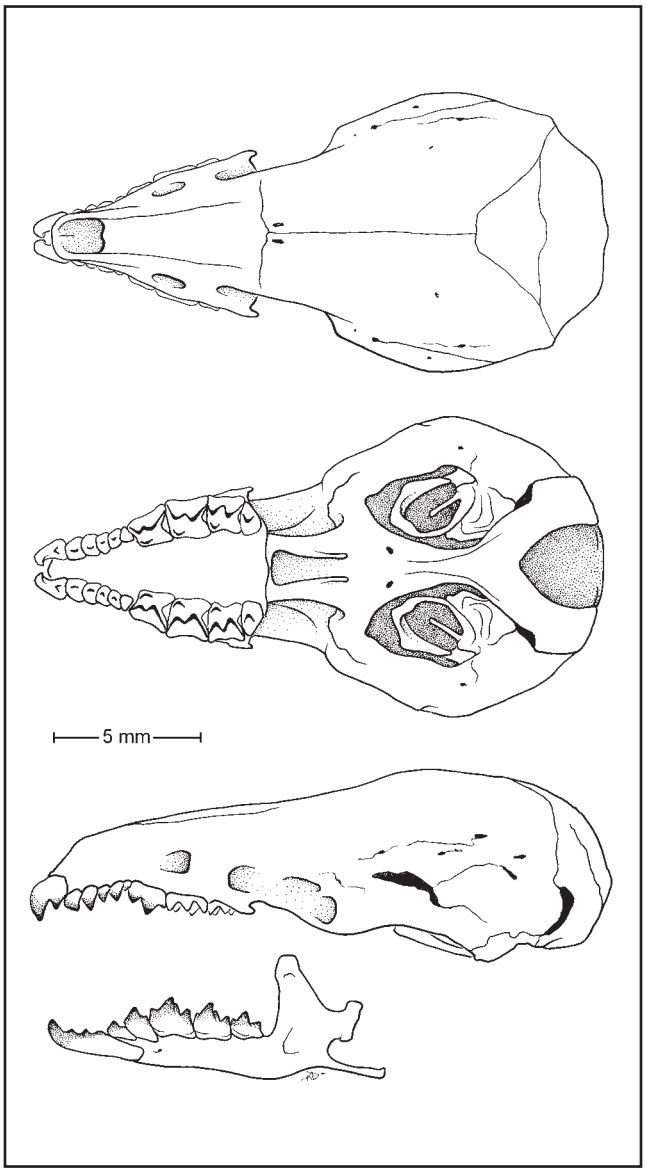

Figure 1. Dorsal, ventral, and lateral view of cranium and lateral view of mandible of *Sorex longirostris* from Fairfax County, Virginia (USNM 565900, gender unknown).

DISTRIBUTION

Sorex l. eionis is limited to the northern two-thirds of peninsular Florida (Moore 1944, Jones et al. 1991), but its overlap with *S. l. longirostris* is unknown (Figure 2). *Sorex l. fisheri* is restricted to the vicinity of the Great Dismal Swamp of Virginia and North Carolina

(Handley 1979, Pagels et al. 1982, Padgett et al. 1987, Rose et al. 1987, 1990; Webster 1987, Mitchell et al. 1993, Erdle and Pagels 1995). However, southeastern shrews 30 km beyond the Great Dismal Swamp are referable to as *S. l. longirostris*. Research is needed to define the range and degree of intergradation of *S. l. fisheri* with *S. l. longirostris* (Jones et al. 1991). The similarity of *S. l. longirostris* specimens from coastal South Carolina to specimens of *S. l. fisheri* also has been noted (Jones et al. 1991). *Sorex l. longirostris* is widely distributed, and its range includes most of Virginia (Pagels et al. 1982, Pagels and French 1987, Pagels and Handley 1989, Pagels et al. 1992, Linzey 1998, Bellows et al. 2001) and North Carolina (Engles 1941, Lee at al. 1982, Webster et al. 1984, Clark et al. 1985, Mitchell et al. 1995, Laerm et al. 1999, Ford et al. 2001). The southeastern shrew also occurs throughout South Carolina (Sanders 1978, Webster et al. 1985, Mengak et al. 1987, Cothran et al. 1991), all but the southeastern corner of Georgia (Golley 1962, Laerm et al. 1982, Ford et al. 1994, Laerm et al. 1999, Ford et al. 2001), the panhandle of Florida (Jones et al. 1991), all but coastal Mississippi (Cook 1942, Jones and Long 1961, Wolfe 1971, Kennedy et al. 1974, Wolfe and Esher 1981, Wolfe and Lohoefener 1983, Jones and Carter 1989), throughout Tennessee (Goodpaster and Hoffmeister 1952, Tuttle 1964, Smith et al. 1974, Kennedy 1991, Harvey et al. 1991, 1992; Linzey 1995) and throughout Kentucky (Bryan 1991, Rose and Seegert 1982, Chadwick and Davis 1984, Meade 1992, Kiser and Meade 1993). It is found in most of Arkansas (Garland and Heidt 1989, Sealander and Heidt 1990), the Florida parishes of Louisiana (Lowery 1981, Constantine and Mitchell 1982, Jones et al. 1991), and extreme eastern Oklahoma (Taylor and Wilkinson 1988). Its possible occurrence in southeastern Arkansas and northeastern Louisiana is uncertain. The southeastern shrew does not occur above approximately 400 m elevation in northern Virginia grading higher to approximately 600 m in the extreme southern Appalachians (Pagels and Handley 1989, Ford et al. 2001, 2006).

ABUNDANCE STATUS

Historically, both *S. l. eionis* and *S. l. longirostris* were regarded as rare due to the inadequacy of conventional snap trap sampling. However, both subspecies now are considered common (George 1977, French 1980*a*,*b*; Wolfe and Esher 1981, Rose et al. 1987, Pagels and Handley 1989, Jones et al. 1991, Humphrey 1992, Feldhamer et al. 1993). French (1980*a*,*b*) reports densities at two Alabama study plots at 30–44 individuals/ha. *Sorex l. fisheri* may be locally abundant in portions of its restricted range (Rose et al. 1990).

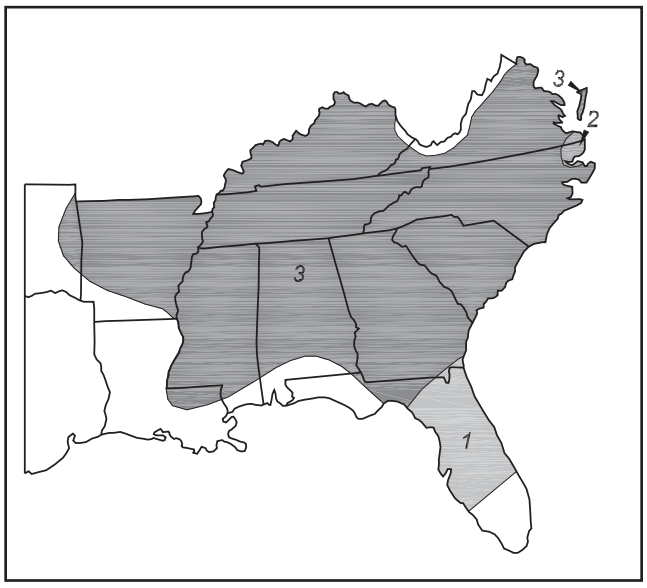

Figure 2. Distribution of *Sorex longirostris* in the South: (1) *S. l. eionis*; (2) *S. l. fisheri*; (3) *S. l. longirostris*.

PRIMARY HABITATS

Jones et al. (1991) report that *S. l. eionis* occurs in bald cypress (*Taxodium distichum*) and bay swamps, hydric and xeric hammocks, slash pine (*Pinus elliottii*) flatwoods, longleaf pine (*P. palustris*) sandhills, sand pine (*P. clausa*) scrub, saw palmetto (*Serenoa repens*) thickets, and clearcuts. *Sorex l. fisheri* may be found in many habitat types, but it is most abundant in early to mid-successional disturbed woodlands with a dense understory, moderate leaf litter, and moist organic soils (Rose et al. 1990, Rose and Padgett 1991, Erdle and Pagels 1995). *Sorex l. longirostris* is known from a diversity of forested and non-forested habitats including oldfields, agricultural lands, dry upland hardwoods, pine forests, mixed pine-hardwoods, flatwoods, and the borders of moist or wet swamps, marshes, and rivers. In the Coastal Plain of Virginia, this subspecies prefers areas with heavy shrub cover (Bellows et al. 2001). It is associated primarily with heavy ground covers of grasses and sedges or moderate to heavy leaf litter where it nests under rotting logs or debris (Engles 1941, Cook 1942, Dusi 1959, Tuttle 1964, Negus and Dundee 1965, French 1980*a*, Rose 1980, Wolfe and Esher 1981, French 1984, Taylor and Wilkinson 1988, Jones et al. 1991, Laerm et al. 1997).

REPRODUCTION

French (1985) reported spring and fall peaks in reproduction with a reduction of breeding in summer. Pregnant females have been observed between March and October (Feldhamer et al. 1993). Litter size varies from 1–6, and 2 litters may be produced in a year

(French 1980*a*,*b*). Gestation length and lactation periods are unknown. Some individuals may reproduce in their first year, but most apparently overwinter before breeding (French 1980*a*, 1985). Maximum longevity is 70–90 weeks.

FOOD HABITS

The southeastern shrew eats arachnids, adult coleopterans, lepidopteran larvae, amphipods, isopods, chilopods, gastropods, and some vegetation (Whitaker and Mumford 1972, French 1980*a*,*c;* French 1984, Rose and Padgett 1991).

ASSOCIATED SPECIES

Depending on habitat, southeastern shrews associate with other insectivores such as the least shrew (*Cryptotis parva*), southern short-tailed shrew (*Blarina carolinensis*), and pygmy shrew. Ford et al. (2001) found that the southeastern shrew and the pygmy shrew were syntopic at 53% of sites surveyed in the foothills of the southern Appalachians and upper Piedmont. Rodent species that occupy the same habitats as the southeastern shrew include the white-footed mouse (*Peromyscus leucopus*), cotton mouse (*P. gossypinus*), oldfield mouse (*P. polionotus*), golden mouse (*Ochrotomys nuttalli*), eastern harvest mouse (*Reithrodontomys humulis*), hispid cotton rat (*Sigmodon hispidus*), marsh rice rat (*Oryzomys palustris*), and woodland vole (*Microtus pinetorum*).

VULNERABILITY AND THREATS

Sorex l. fisheri is restricted to areas in or around the Great Dismal Swamp, often at relatively low densities (Rose et al. 1990, Jones et al. 1991, Rose and Padgett 1991). Drainage of the Great Dismal Swamp and possible interbreeding by *S. l. longirostris* from surrounding areas are the primary threats to the subspecies (Rose et al. 1987, Rose and Padgett 1991). *Sorex l. eionis* is more abundant, less habitat specific, and more widespread than previously believed; it is not considered to be in danger (Jones et al. 1991, Humphrey 1992). *Sorex l. longirostris* is widely distributed, inhabits a variety of habitats, and is common to abundant. It is monitored by several states at the periphery of its range.

MANAGEMENT SUGGESTIONS

Maintenance of native vegetation and natural hydrologic regimes should be encouraged where *S. l. fisheri* occurs. The other subspecies are tolerant of most forest management activities, though *S. l. longirostris* can be displaced temporarily by least shrews in early successional habitat (Menzel et al. 2005).

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