

Smoky Shrew

Sorex fumeus (Kerr, 1792)

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CONTENT AND TAXONOMIC COMMENTS

Two subspecies of smoky shrew (*Sorex fumeus*) are recognized (Hall 1981). Only one, *S. f. fumeus*, occurs in the South. Huggins and Kennedy (1989) examine patterns of morphological variation in the species. Owen (1984) reviews the literature on the smoky shrew.

DISTINGUISHING CHARACTERISTICS

The smoky shrew is a medium-sized, long-tailed soricid with the following measurements: total length, 104–130 mm; tail, 37–52 mm; hind foot, 12–15 mm; weight, 6–10 g. This species has small ears that are concealed in the pelage, minute eyes, and a long, pointed snout. The dorsal pelage is dark gray in summer and gray with brown overtones in winter, whereas the ventral pelage is slightly paler than the dorsum. The tail is distinctly bicolored, dark above and pale below. Specimens of the smoky shrew are most often confused with the long-tailed shrew (*S. dispar*) which has a longer, unicolor tail (Junge and Hoffman 1981). The dental formula of the smoky shrew is: I 3/1, C 1/1, P 3/1, M 3/3 = 32 (Figure 1). See keys for additional details.

CONSERVATION STATUS

The smoky shrew has a global rank of Secure (NatureServe 2007). It is Secure in Kentucky and Virginia, and Apparently Secure in North Carolina, South Carolina, and Tennessee. Georgia lists it as Vulnerable.

DISTRIBUTION

The range of the smoky shrew extends from south-central Ontario and the Maritime Provinces south throughout the Appalachian Highlands to Georgia. Figure 2 depicts the distribution of the shrew in the South. The species ranges from the foothills of the Blue Ridge across western Virginia (Pagels and Tate 1976, Handley 1992, Kalko and Handley 1993, Mitchell et al. 1997, Linzey 1998), eastern and middle Kentucky except portions of the Bluegrass (Barbour 1951, Fassler 1974, Bryan 1991, Kiser and Meade 1993), eastern Tennessee west to the eastern Highland Rim of the Interior Low Plateau (Howell and Conaway 1952, Smith et al. 1974, Kennedy and Harvey 1980,

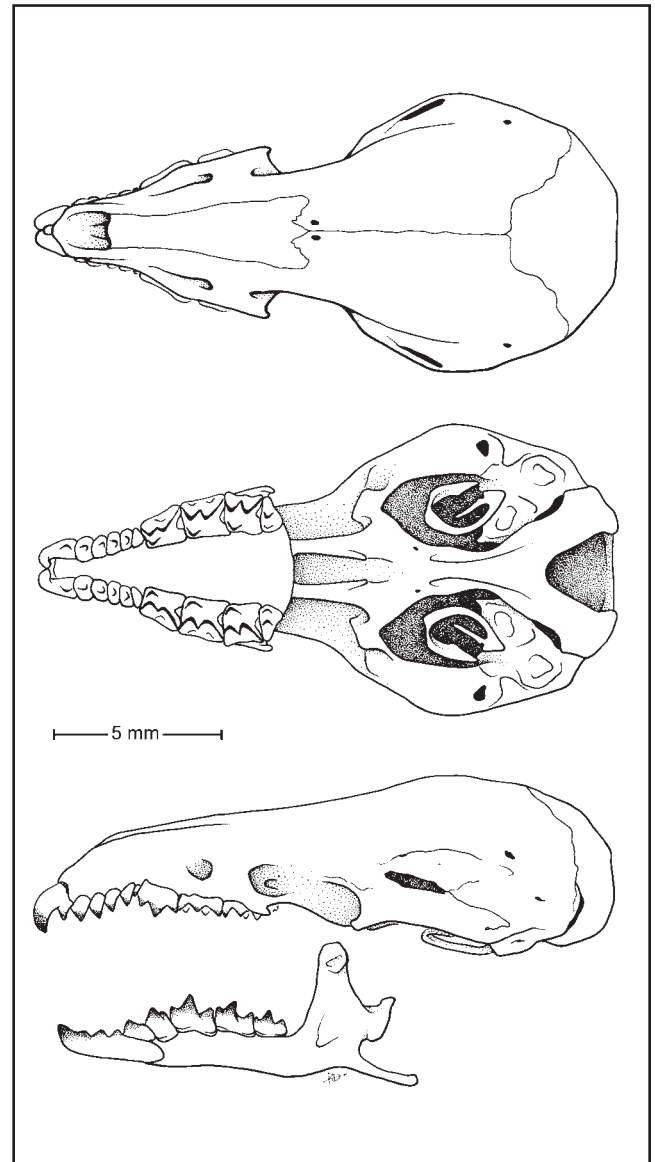


Figure 1. Dorsal, ventral, and lateral view of cranium and lateral view of mandible of *Sorex fumeus* from Hampshire County, West Virginia (USNM 489760, male).

Harvey et al. 1991, 1992; Linzey 1995) and in the Upper Piedmont and Blue Ridge of western North Carolina, northwestern South Carolina, and northern Georgia (Coleman 1948, Odom 1949, Schwartz 1955, Paul and Quay 1963, Johnston 1967, Whitaker et al. 1975, Lee et al. 1982, Mengak et al. 1987, Ford et al. 1994, Laerm et al. 1995a, 1999; Brannon 2000, Ford et al.

2000, 2006). A lone record from the Cumberland Plateau in northwestern Georgia (Laerm et al. 1995b) may indicate its possible presence nearby in Alabama.

ABUNDANCE STATUS

The smoky shrew is a common component of small mammal communities throughout the Appalachian Mountains and portions of the Interior Low Plateau, but it is absent in the Coastal Plain and most of the Piedmont in the southern United States. The smoky shrew is very abundant in suitable habitat (Pagels and Tate 1976, Caldwell and Bryan 1982, McComb and Rumsey 1982, Mengak et al. 1987, Harvey et al. 1991, 1992; Kalko and Handley 1993, Ford et al. 1994, 1997; Laerm et al. 1999, Ford et al. 2006). Data extrapolated from Ford et al. (1997) indicate that densities can reach over 75/ha in mesic forest habitat at mid-elevations in the Blue Ridge of Georgia. Although higher densities have been reported north of the region (Bole 1939), the smoky shrew often is the most abundant in southern Appalachian surveys (Laerm et al. 1999, Ford et al. 2006).

PRIMARY HABITATS

Owen (1984) reviews the literature on the habitat and ecological preferences of the smoky shrew. It is reported from red spruce-Fraser fir (*Picea rubens-Abies fraseri*), northern hardwood, cove hardwood, white pine-eastern hemlock (*Pinus strobus-Tsuga canadensis*), oak hickory (*Quercus-Carya* spp.), mixed pine-hardwood, and xeric cover types. Optimal habitats are high-elevation (>700 m), mesic forest communities with abundant debris such as colluvial talus, emergent rock and large coarse woody debris (Ford et al. 1997, 2006) along with moist, friable soils, herbaceous ground vegetation, and considerable leaf litter (Barbour 1951, Howell and Conaway 1952, Mengak et al. 1987, Ford et al. 1994, Laerm et al. 1995a, 1999). In North Carolina, Brannon (2000) found that the smoky shrew was linked to coarse woody debris in advanced decay states that enabled it to burrow after prey, reducing competition with the smaller masked shrew (*S. cinereus*). The smoky shrew also can occur in bogs and swamps at one end of the moisture gradient, and xeric forest communities on dry, south-facing slopes, exposed ridgelines, and grassy ecotones (McComb and Rumsey 1982, Laerm et al. 1999, Ford et al. 1999, 2006). It is reported from all seral stages, but may be particularly abundant in forest regeneration and mature stands where there is considerable forest floor structure (Kirkland 1977, McComb and Rumsey 1982, Ford et al. 1997, Ford and Rodrigue 2001).

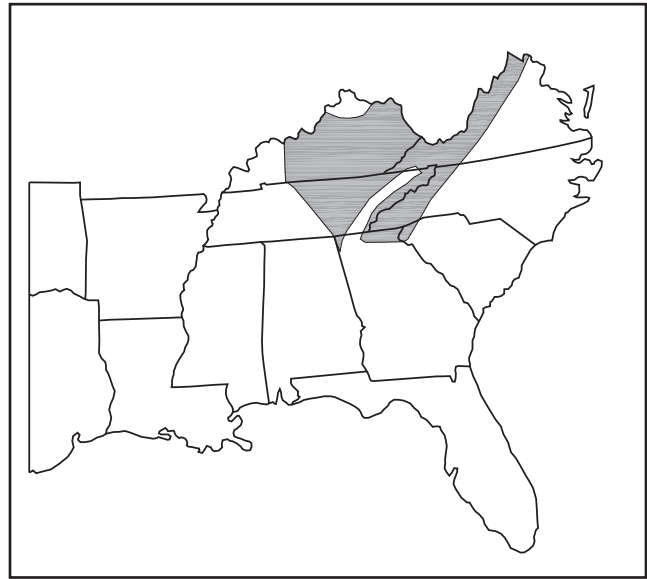


Figure 2. Distribution of *Sorex fumeus* in the South.

REPRODUCTION

Breeding probably occurs all year (McCay et al. 1998), but most reproductive activities are concentrated from March to October (Owen 1984). The gestation period is 19–22 days; 2–3 litters may be produced each year, with 2–8 young/litter. Sexual maturity usually is reached after overwintering. The maximum longevity is about 98 weeks.

FOOD HABITS

Whitaker et al. (1975), Linzey and Linzey 1973, and Owen (1984) report that smoky shrew diets include the larvae and adults of numerous insects and arachnids, chilopods, annelids, and gastropods. The smoky shrew may also feed on vertebrate carrion and small quantities of vegetation and fungi (Linzey 1995).

ASSOCIATED SPECIES

The relatively high elevation habitats in the South occupied by the smoky shrew frequently contain other insectivores such as the northern short-tailed shrew (*Blarina brevicauda*), masked shrew, pygmy shrew (*S. hoyi*), long-tailed shrew, and American water shrew (*S. palustris*). The smoky shrew also shares habitat with various rodents including the white-footed mouse (*Peromyscus leucopus*), deer mouse (*P. maniculatus*), golden mouse (*Ochrotomys nuttalli*), southern red-backed vole (*Clethrionomys gapperi*), and the woodland jumping mouse (*Napaeozapus insignis*).

VULNERABILITY AND THREATS

Nowhere do there appear to be significant threats to its survival where it occurs in the southern Appalachians and Interior Low Plateau.

MANAGEMENT SUGGESTIONS

The smoky shrew is tolerant of most management activities including even-aged and uneven aged silviculture (McComb and Rumsey 1982, Ford et al. 1997, 2000) and prescribed burning (Ford et al. 1999), as long as moist conditions with abundant ground structure remain (Ford and Rodrigue 2001, Ford et al. 2002).

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