Eastern Mole

Scalopus aquaticus (Linnaeus, 1758)

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CONTENT AND TAXONOMIC COMMENTS

Sixteen subspecies of the eastern mole (*Scalopus aquaticus*) currently are recognized. Eleven subspecies occur in the region: *S. a. aereus, S. a. anastasae, S. a. aquaticus, S. a. australis, S. a. bassi, S. a. howelli, S. a. machrinoides, S. a. machrinus, S. a. nanus, S. a. parvus,* and *S. a. porteri* (Yates and Schmidly 1977, Yates and Schmidly 1978, Hall 1981). Yates (1978) examined the taxonomic relationships of populations of the eastern mole and questioned the validity of several regional subspecies. However, the conclusions of Yates (1978) were not followed by Yates and Schmidly (1978) or Hall (1981). The taxonomic relationships of populations west of the Mississippi River were revised by Yates and Schmidly (1977), but the eastern subspecies have not been revised since Jackson (1914, 1915) and subsequent descriptions of new subspecies have not been made (Howell 1939, Schwartz 1952*a*). Yates and Schmidly (1978) reviewed the literature on the eastern mole.

DISTINGUISHING CHARACTERISTICS

The eastern mole is a medium-sized mole with a robust body. Measurements are: total length, 129–208 mm; tail, 18–38 mm; hind foot, 15–22 mm; weight 65–115 g. Body size decreases from northern to southern latitudes, and males typically are larger than females. Like other moles, the eastern mole lacks ear pinnae and the eyes are concealed by a thin layer of skin. The dense, silky pelage varies in color; individuals are silver-gray, brown, or black dorsally and slightly paler below. Piebald specimens with white spots, particularly on the head, sometimes are seen. The tail is short (less than 1/6 of the body length) and either lacks hair or is sparsely haired. The forefeet of the eastern mole are greatly enlarged and webbed. *Scalopus aquaticus* is unlikely to be confused with the star-nosed mole (*Condylura cristata*) because of the latter's fleshy appendages around the nose, or the hairy-tailed mole (*Parascalops breweri*) which has a longer, hairy tail. The dental formula of the eastern mole is: I 3/2, C 1/0, P 3/3, M 3/3 = 36 (Figure 1). See keys for additional details.

CONSERVATION STATUS

The eastern mole has a global rank of Secure (NatureServe 2007). The species is also considered Secure in those states where it occurs within the region except for Arkansas and Louisiana, where it is Apparently Secure. It is unranked in Florida and South Carolina.

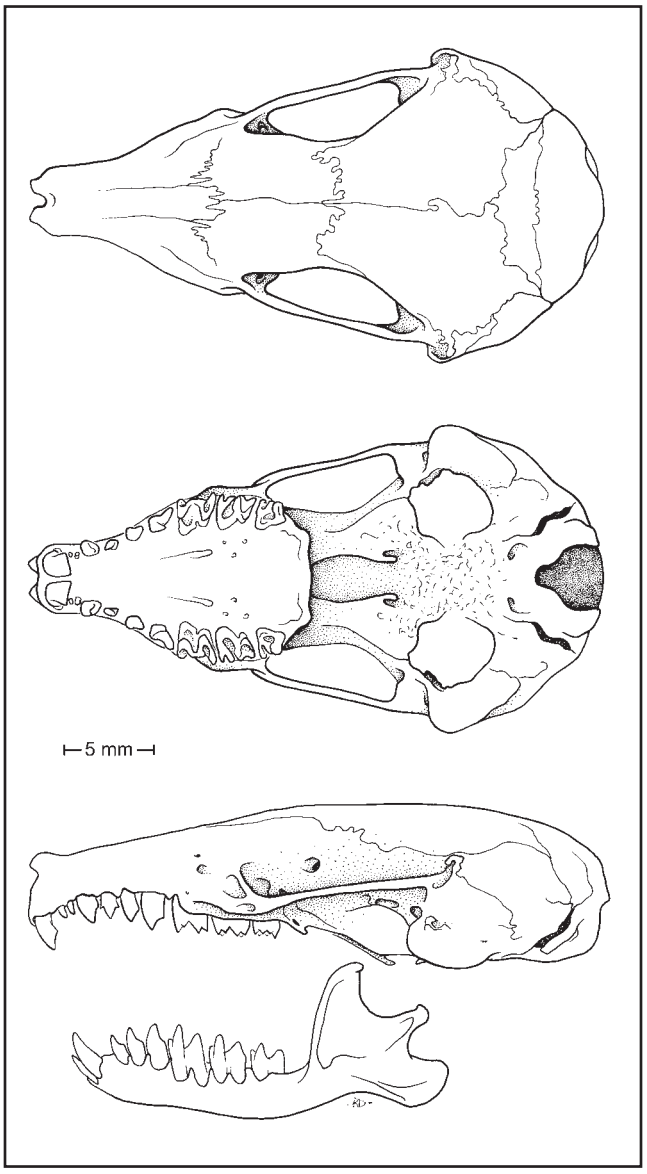

Figure 1. Dorsal, ventral, and lateral view of cranium and lateral view of mandible of *Scalopus aquaticus* from Allegheny County, Maryland (USNM 506896, male).

DISTRIBUTION

The eastern mole has the most widespread geographic distribution of any North American mole. It ranges from the Great Lakes region and southern New England south to Florida and west through the Great Plains into Texas and northern Mexico. It occurs region-wide in areas with suitable soil types, though it is locally absent in portions of the southern Appalachians (Figure 2). It occurs throughout Virginia (Bailey 1946, Handley and Patton 1947, Jackson et al. 1976, Handley 1979, 1992; Webster et al. 1985, Pagels et al. 1992, Linzey 1998), North Carolina (Odom 1949, Johnston 1967, Lee et al. 1982, Clark et al. 1985, Webster et al. 1985, Webster 1988, Linzey 1995), South Carolina (Coleman 1941, Golley 1966, Sanders 1978, Schlacher and Pelton 1979, Webster et al. 1985, Cothran et al. 1991, Hartman and Krenz 1993, Hartman 1995, 1996; Hartman et al. 2000, 2001), and Georgia (Howell 1909, Harper 1927, Golley 1962, Neuhauser and Baker 1974, Wharton et al. 1981, Laerm et al. 1982, 1999; Ford et al. 1994) including many of the barrier islands of these states. Its range includes most of Florida except the Everglades (Hamilton 1941, Rand and Host 1942, Moore 1946, 1949; Schwartz 1952*a*,*b*; Pournelle and Barrington 1953, Ivey 1959, Layne 1974), Alabama (Howell 1921, Holliman 1963, Linzey 1970), Mississippi (Wolfe 1971, Kennedy et al. 1974, Jones and Carter 1989), and all but the coastal regions of Louisiana (Lowery 1974) and eastern Texas (Yates and Schmidly 1977, Schmidly 1983, Davis and Schmidly 1994). It is distributed throughout Tennessee (Calhoun 1941, Goodpaster and Hoffmeister 1952, Linzey and Linzey 1971, Smith et al. 1974, Kennedy 1991, Linzey 1995), Kentucky (Barbour and Davis 1974, Davis and Barbour 1979), Arkansas (Sealander and Heidt 1990), and eastern Oklahoma (Caire et al. 1989).

ABUNDANCE STATUS

Few population density estimates are available. Hartman and Krentz (1993) reported 1.3–3.0/ha in South Carolina. Many researchers indicate that it is locally abundant within the region (Golley 1962, Barbour and Davis 1974, Lowery 1974, Schmidly 1983, Webster et al. 1985, Caire et al. 1989, Sealander and Heidt 1990). Handley and Patton (1947) and Webster et al. (1985) suggest that it is uncommon at higher elevations of the Appalachians; however, there are records of the eastern mole at elevations up to 1375 m in Georgia (Howell 1909) and 1250 m in North Carolina (Johnston 1967). The species is common at lower elevations in the Appalachians (Linzey and Linzey 1971, Webster et al. 1985). Although Lowery (1974) and Schmidly (1983) indicate that *S. aquaticus* is absent from coastal areas of Louisiana and eastern

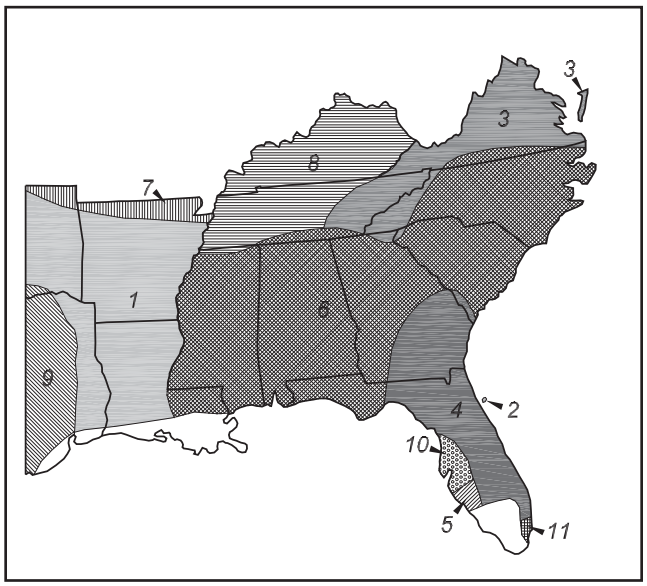

Figure 2. Distribution of *Scalopus aquaticus* in the South: (1) *S. a. aereus*; (2) *S. a. anastasae*; (3) *S. a. aquaticus*; (4) *S. a. australis*; (5) *S. a. bassi*; (6) *S. a. howelli*; (7) *S. a. machrinoides*; (8) *S. a. machrinus*; (9) *S. a. nanus*; (10) *S. a. parvus*; (11) *S. a. porteri*.

Texas, it is common in coastal regions and barrier islands in Florida, Georgia, and the Carolinas (Bangs 1898, Golley 1962, Neuhauser and Baker 1974, Sanders 1978, Schlacher and Pelton 1979, Webster et al. 1985, Laerm et al. 1999, Hartman et al. 2000, 2001). Though absent from the Everglades, it is known from other major wetlands such as the Okefenokee Swamp (Harper 1927) and Great Dismal Swamp (Handley 1979).

PRIMARY HABITATS

The mole is fossorial, occurring in habitats with moist, loose, loamy, or sandy soil, but it is rare or absent in soils composed of heavily compacted clay or large amounts of stone or gravel (Jackson 1915, Arlton 1936, Davis 1942). Exceedingly dry or wet soils are avoided (Davis 1942, Yates and Schmidly 1978). Rivers and streams are not barriers to dispersal because the eastern mole is capable of swimming (Yates and Schmidly 1977). It occurs in many vegetation communities including residential gardens, lawns, grasslands, oldfields, and essentially all forest types in the region.

REPRODUCTION

Reproductive activities begin as early as January and February in Louisiana and Texas (Lowery 1974, Yates and Schmidly 1977), but are concentrated from late March to early May farther north (Conaway 1959).

Females breed in their second year (Conaway 1959), and a single litter of 2–5 young is produced. Mean survival is 2 years (Hartman 1995).

FOOD HABITS

The eastern mole feeds on annelids, coleopteran larvae, hymenopterans, and other invertebrates (Hisaw 1923, Calhoun 1941, Whitaker and Schmeltz 1974, Hartman et al. 2000), in addition to vertebrates (Christian 1950) and vegetable matter (Hisaw 1923, Hartman et al. 2000). The diet varies according to habitat type and prey availability. Comparison of food habits between the Coastal Plain of South Carolina and Indiana showed that earthworms comprised 8.3% of the diet of eastern moles in South Carolina versus 87.8% in Indiana (Hartman et al. 2000).

ASSOCIATED SPECIES

The eastern mole is widely distributed and occurs in such a variety of habitats that it is a component of most small mammal communities. The association of this species with *Blarina* spp. is especially important, as shrews commonly utilize mole tunnels as travel corridors.

VULNERABILITY AND THREATS

There appear to be no threats to the survival of the mole. *Scalopus aquaticus anastasae* and *S. a. bassi* are known only from type localities in Florida; these limited ranges present unique conservation problems.

MANAGEMENT SUGGESTIONS

The taxonomic distinctiveness and conservation status of the subspecies populations of the eastern mole should be addressed.

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