

Northern Short-tailed Shrew

Blarina brevicauda (Say, 1823)

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CONTENT AND TAXONOMIC COMMENTS

Until recently, the short-tailed shrew (*Blarina brevicauda*) was the only recognized species in the genus *Blarina*. Revision of the *Blarina brevicauda* complex resulted in recognition of three species: the northern short-tailed shrew (*B. brevicauda*), the southern short-tailed shrew (*B. carolinensis*), and Elliot's short-tailed shrew (*B. hylophaga*; Genoways and Choate 1972, Tate et al. 1980, French 1981, George et al. 1981, George et al. 1982, Moncrief et al. 1982, Braun and Kennedy 1983, Jones et al. 1984, George et al. 1986). Twelve northern short-tailed shrew subspecies currently are recognized. Six of the subspecies, *B. b. churchi*, *B. b. kirtlandi*, *B. b. knoxjonesi*, *B. b. talpoides*, and *B. b. telmalestes* occur in the South (George et al. 1986, Webster 1996). Populations of *Blarina* in Florida, referred by some as *B. b. shermani*, are now regarded as subspecies of *B. carolinensis*. The literature on the northern short-tailed shrew was reviewed by George et al. (1986).

DISTINGUISHING CHARACTERISTICS

The northern short-tailed shrew is a large, short-tailed soricid and is the largest of the three *Blarina* species. Specimens vary in size throughout the range with larger forms occurring in the Appalachians and smaller forms occurring in the Piedmont and Interior Low Plateau. Measurements are: total length, 95–135 mm; tail, 13–32 mm; hind foot, 8–18 mm; weight, 20–30 g. The northern short-tailed shrew has small ears that are concealed in the pelage, minute eyes, and a long and pointed snout. The pelage color is variable, ranging from grayish brown to slate black dorsally and only slightly paler below. Specimens of *B. brevicauda* may be confused with the southern short-tailed shrew or Elliott's short-tailed shrew. Whereas distinction often can be made on the basis of distribution, in areas of near parapatry morphometric or genetic comparisons must be made (Tate et al. 1980, French 1981, George et al. 1981, George et al. 1982, Braun and Kennedy 1983). The dental formula of the northern short-tailed 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 northern short-tailed shrew has a global rank of Secure (NatureServe 2007). The species is also

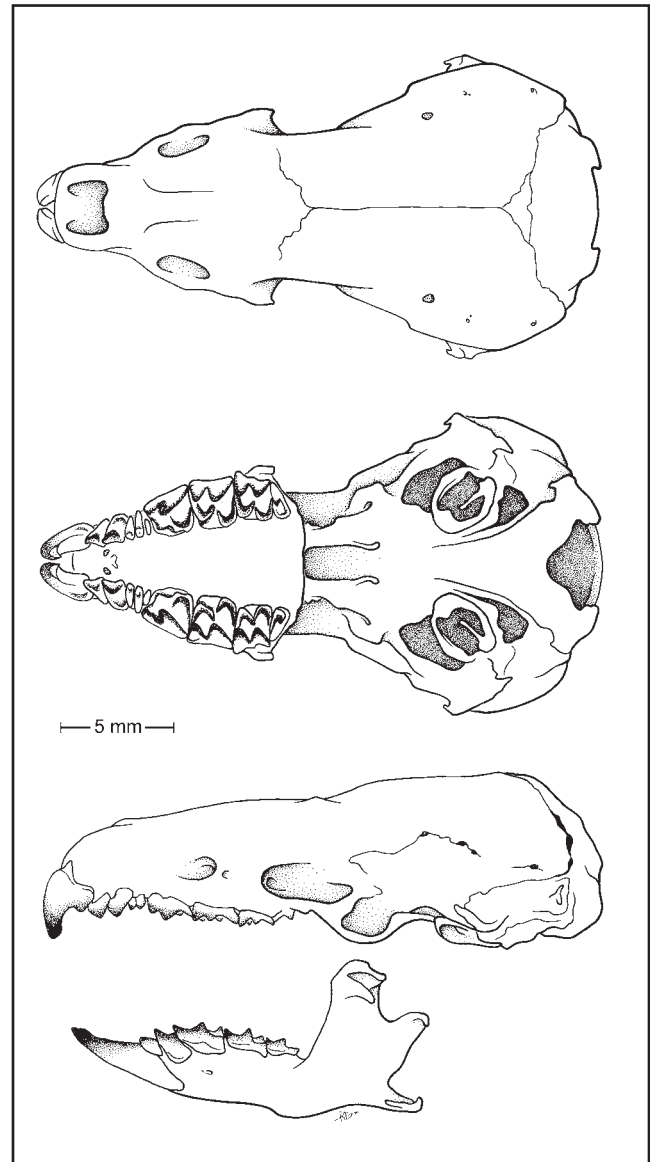


Figure 1. Dorsal, ventral, and lateral view of cranium and lateral view of mandible of *Blarina brevicauda* from Macon County, North Carolina (USNM 291774, female).

considered Secure in those states where it occurs within the South. It is unranked in South Carolina.

DISTRIBUTION

The northern short-tailed shrew is distributed throughout south-central and southeast Canada

through northeastern and north-central United States and south through the Appalachians and Interior Low Plateau (Figure 2). Regionally, it exhibits a parapatric to limited sympatric distribution in the southern periphery with that of the southern short-tailed shrew, but precise distributional limits are uncertain (Tate et al. 1980, French 1981, Braun and Kennedy 1983, Webster et al. 1984, George et al. 1986, Pagels and French 1987). Except for the south-central and eastern parts of the state, it occurs throughout Virginia (Pagels and Tate 1976, Jackson et al. 1976, Dueser et al. 1979, Tate et al. 1980, Pagels and French 1987, Rose et al. 1990, Handley 1992, Pagels et al. 1992, Kalko and Handley 1993, Mitchell et al. 1993, 1997; Pagels and Baker 1997, Linzey 1998, Bellows et al. 2001). In North Carolina, populations are restricted to the upper Piedmont and Blue Ridge (Odom 1949, Johnston 1967, Gentry et al. 1968, Whitaker et al. 1975, Lee et al. 1982, Linzey 1995, Ford et al. 2006) and the lower Coastal Plain including the Outer Banks (Handley 1979, Webster et al. 1984, Adams et al. 1987, Webster 1988, Clark et al. 1993, Webster 1996). It is restricted to the upper Piedmont and Blue Ridge of South Carolina (Mengak et al. 1987, Laerm et al. 1999, Ford et al. 2006) and Georgia (Langley and Shure 1980, Ford et al. 1994, 1997; Parmley et al. 1997, Laerm et al. 1999, 2006) and the Piedmont of east-central Alabama (French 1981). The species occurs east of the Upper Coastal Plain in Kentucky and Tennessee (Barbour 1951, Howell and Conaway 1952, Conaway and Howell 1953, Fassler 1974, Dueser and Shugart 1978, Braun and Kennedy 1983, Seagle 1985a,b; Bryan 1991, Harvey et al. 1991, Copeland and Caldwell 1991, Harvey et al. 1992, McGehee-Marsh et al. 1992, Feldhamer et al. 1993, Kiser and Meade 1993, Linzey 1995). *Blarina b. telmalestes*, once believed confined to the Dismal Swamp, is now known to have a broader distribution in Virginia and North Carolina (Clark et al. 1985, Webster 1996) although Handley (1979) noted that this subspecies is poorly defined and individuals often are indistinguishable from those of surrounding populations of *B. b. kirtlandi*. The range of *B. b. churchi* also is poorly defined; the subspecies probably occurs only in the Blue Ridge (Bole and Moulthrop 1942). *Blarina b. knoxjonesi* is restricted to lowland riparian zones and pocosin-bay forests in east-central and southeastern North Carolina between the Pamlico and Cape Fear rivers (Webster 1996).

ABUNDANCE STATUS

The northern short-tailed shrew is common throughout much of the southern Appalachians and Interior Low Plateau, but less so in the Piedmont and Coastal Plain portions of its range. Population densities fluctuate monthly and yearly (Yahner 1982, 1983; Getz

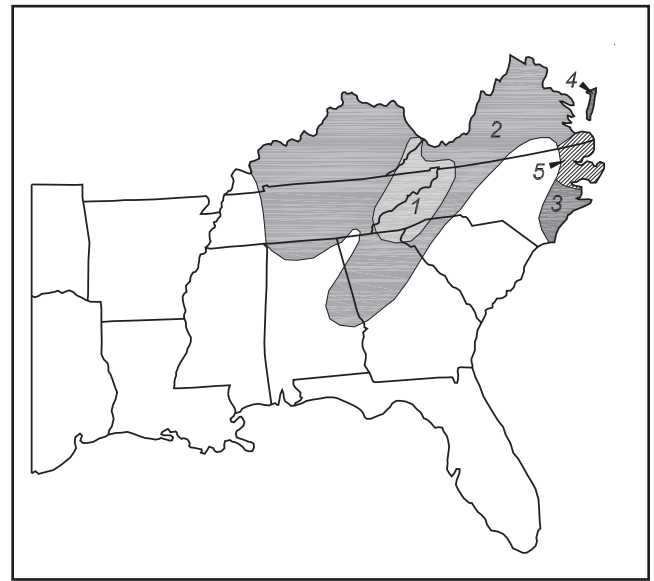


Figure 2. Distribution of *Blarina brevicauda* in the South: (1) *B. b. churchi*; (2) *B. b. kirtlandi*; (3) *B. b. knoxjonesi*; (4) *B. b. telmalestes*; (5) *B. b. talpoides*.

1989) and may be related to winter cold stress (Gottschang 1965, George et al. 1986) and precipitation (Getz 1989). Lima et al. (2002) suggest that population densities fluctuate due to intraspecific competition dynamics. Reported densities range from approximately 2–120/ha (George et al. 1986, Merritt 1986, Getz 1989) and may reach as high as 260/ha (Townsend 1935).

PRIMARY HABITATS

The northern short-tailed shrew is a habitat generalist, reported from virtually all cover types in the region (George et al. 1986, Bellows et al. 2001). In the Midwest and Northeast it is common in grasslands, various successional stages of oldfields, farmstead shelterbelts, all seral stages of coniferous and deciduous hardwood forests, and saturated wetlands (Getz 1961, Yahner 1982, 1983; George et al. 1986, Getz 1989). In the Ridge and Valley and Interior Low Plateaus, Dueser and Shugart (1978) and Seagle (1985b) indicated that the species exhibits narrow habitat specialization. In the Blue Ridge, Laerm et al. (1999) and Ford et al. (2006) suggest that the northern short-tailed shrew has broad habitat tolerances but tends to be associated with dense herbaceous cover and coarse woody debris in older, mixed mesophytic forests such as cove hardwoods. Similarly, Bellows et al. (2001) found this species closely associated with large diameter downed woody debris in the Coastal Plain. Because this species is semi-fossorial in habit, the northern short-tailed shrew often inhabits areas with a thick ground litter and a deep, well-developed soil profile (Pruitt 1953, 1959). Superficial and deep

burrow systems are constructed beneath litter, logs, and rocks. The burrows of other small mammals, such as the eastern mole (*Scalopus aquaticus*), probably are used as travel corridors and den sites as observed with southern short-tailed shrews (Hartman et al. 2001). Additionally, the northern short-tailed shrew, similar to many other soricids, can echolocate to aid in orientation and exploration (van Zyll de Jong 1983).

REPRODUCTION

The breeding season extends from February through November (Pearson 1944, Christian 1969) with peaks in spring and late summer-early fall. Gestation is 21–22 days. Litter size is 2–8 with an average of 4–5 young (Hamilton 1929, Blus 1971, Mumford and Whitaker 1982). Both sexes are capable of reproducing at approximately 60 days of age; young born in spring may reproduce in the first year (Dapson 1968, Blus 1971). Longevity in the wild is about 18 months; in captivity, 30–33 months (Pearson 1945).

FOOD HABITS

Annelids, gastropods, lepidopteran larvae, chilopods, arachnids, other invertebrates, and small quantities of plant material comprise most of the diet (Hamilton 1941, Whitaker and Ferraro 1963, Whitaker and Mumford 1972, Linzey and Linzey 1973, George et al. 1986). Northern short-tailed shrews also prey on small rodents, amphibians, and reptiles (Allen 1938, Hamilton 1941, Eadie 1944, 1952; Fulk 1972, George et al. 1986) in part facilitated by modified salivary glands that provide the northern short-tailed shrew with a venomous bite. The venom quickly immobilizes prey and enables the shrew to cache prey in a comatose state for a time, thereby ensuring an available fresh source of food (Merritt 1987).

ASSOCIATED SPECIES

Because it is a habitat generalist and has a ubiquitous distribution, the northern short-tailed shrew may be found in association with nearly all of the mammals in the region. The range of *Blarina brevicauda* exhibits zones of sympatry with the southern short-tailed shrew to the south and east (Jones et al. 1984, Choate et al. 1994), but they are seldom syntopic (Webster 1996, McCay et al. 2004).

VULNERABILITY AND THREATS

This species is considered numerous and stable within its range; there are no apparent population-level threats to its survival.

MANAGEMENT SUGGESTIONS

The northern short-tailed shrew appears tolerant of limited habitat disturbance from forest management activities such as timber harvest and prescribed burning (Ford et al. 1997, 1999, 2000; Ford and Rodrigue 2001). Activities that cause severe soil compaction should be avoided (Mitchell et al. 1997).

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