Prairie Vole

Microtus ochrogaster (Wagner, 1852)

Joshua Laerm and W. Mark Ford

CONTENT AND TAXONOMIC COMMENTS

There are seven subspecies of prairie voles (*Microtus ochrogaster*) currently recognized, three of which are regionally extant: *M. o. haydenii*, *M. o. ochrogaster*, and *M. o. ohionensis* (Stalling 1990). Disjunct populations referred to *M. o. ludovicianus* are believed extinct. The literature was reviewed by Johnson and Johnson (1982), Tamarin (1985) and Stalling (1990).

DISTINGUISHING CHARACTERISTICS

The prairie vole is a robust, medium-sized vole with short tail. Its measurements are: total length, 125–172 mm; tail, 24–45 mm; hind foot, 17–22 mm; ear, 11–15 mm; weight, 37–73 g. The dental formula is: I 1/1, C 0/0, P 0/0, M 3/3 =16 (Figure 1). The molar dentition of the skull is unique, as the third upper molar has two closed triangles, whereas the first lower molar has three closed and two open triangles. The pelage is long and course, with grizzled brown or grayish brown dorsal coloration, paler sides, and gray or gray washed with pale cinnamon coloration ventrally. The tail is slightly bicolor. See keys for details.

CONSERVATION STATUS

The prairie vole has a global rank of Secure (NatureServe 2007). The species is also considered Secure in Oklahoma and Kentucky. It is listed as Apparently Secure in Arkansas, but is Vulnerable in Tennessee, Imperiled in Alabama, and Critically Imperiled in Texas. It is Presumed Extirpated in Louisiana.

DISTRIBUTION

The prairie vole ranges from Alberta, Canada south throughout the Great Plains and upper Midwest south to New Mexico and east to extreme western West Virginia (Figure 2). In the South, the species is at the southern and eastern limits of its range. Prairie voles occur throughout all but the mountainous portions of southeastern Kentucky (Barbour and Davis 1974, McPeek et al. 1983, Davis and Kalisz 1992, Kalisz and Davis 1992, Kiser and Meade 1993), most of central and northwestern Tennessee (Goodpaster and Hoffmeister 1952, Dimmick 1969, Severinghaus and Beasley 1973, Kennedy 1991), and south into

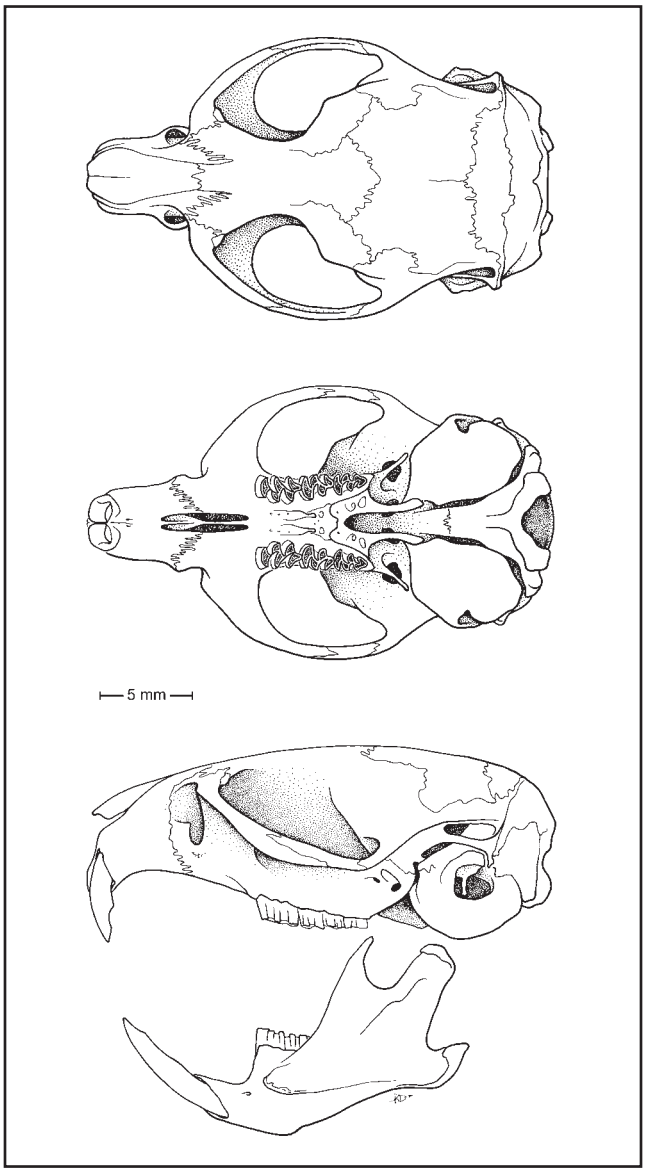

Figure 1. Dorsal, ventral, and lateral view of cranium and lateral view of mandible of *Microtus ochrogaster* from Alexander County, Illinois (USNM 159613, female).

north-central Alabama (Whitaker and Zimmermann 1968, Allen and Dusi 1980). It ranges west through northern Arkansas (Sealander and Heidt 1990) into northeastern Oklahoma (Choate and Williams 1978, Caire et al. 1989). A disjunct race, *M. o. ludovicianus*, from Calcasieu Parrish, Louisiana and Hardin County,

Texas (Bailey 1900, Bailey 1905) is considered extinct (Lowery 1974, Schmidly 1983).

ABUNDANCE STATUS

The prairie vole is a common to abundant species in grassland habitats within its distribution. Populations fluctuate dramatically on an annual basis with highest densities reported from April to June and October and November (Gaines and Rose 1976, Taitt and Krebs 1985, Getz et al. 1987). Additionally, it exhibits large population fluctuations, which peak between 2–4 years (Hamilton 1937, French et al. 1976, Getz et al. 2001, Stalling 1990). These multi-annual population fluctuations may be related to food availability with high cycle densities as great as 1000/ha (Crawford 1971, Taitt and Krebs 1985).

PRIMARY HABITATS

The prairie vole inhabits a diversity of grassland habitats including tall grass prairie communities, abandoned fields and pastures, cultivated fields, fencerows, railroad rights-of-way, roadside corridors, and lawns—wherever grass is sufficiently thick for nesting cover and runway construction (Getz 1985, Stalling 1990). Where sympatric with meadow voles, (*M. pennsylvanicus*), prairie voles often are restricted to the more sparsely vegetated sites (Getz 1985). However, in areas where they coexist with cotton rats, (*Sigmodon hispidus*), the opposite pattern of selection is observed, as prairie voles choose dense grass cover and micro-topographic relief (Stokes 1995). Powerline and transportation corridors are believed to be an important means of dispersal that have provided an opportunity for range expansion of the species range, especially at the periphery (Getz et al. 1978, Sealander and Heidt 1990). It rarely, if ever, is found in woodland habitats.

REPRODUCTION

Breeding occurs year-round, though activity is highest in summer and lowest in winter (Keller 1985). Gestation is 20–23 days and mean litter size is approximately 3.5 (Nadeau 1985). Young are weaned within 3 weeks and individuals are reproductively active at 6–7 weeks (Richmond and Conaway 1969). Longevity in the wild is approximately 2–3 years (Fisher 1945, Martin 1956).

FOOD HABITS

The diet is composed of seeds, stems, and roots of a wide variety of plants (Zimmerman 1965, Fish 1974, Fleharty and Olsen 1969*a*,*b*; Batzli and Cole 1979, Batzli 1985). Arthropods make up a significant part of the diet when available (Fish 1974, Stalling 1990). In areas where prairie voles and meadow voles coexist, prairie voles consume significantly more monocots in early autumn than where meadow voles are absent, perhaps due to interspecific competition (Haken and Batzli 1996).

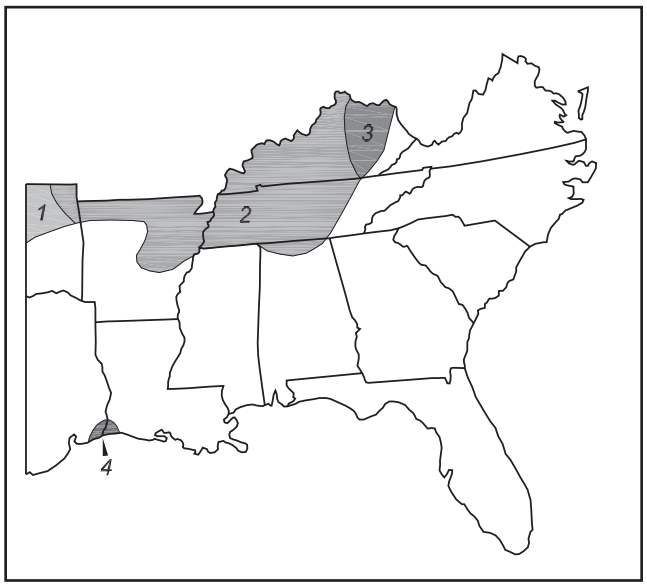

Figure 2. Distribution of *Microtus ochrogaster* in the South: (1) *M. o. haydenii*; (2) *M. o. ochrogaster*; (3) *M. o. ohionensis*; (4) *M. o. ludovicianus*.

ASSOCIATED SPECIES

In the South, the prairie vole is associated with Elliot's short-tailed shrew (*Blarina hylophaga)*, least shrew (*Cryptotis parva*), eastern harvest mouse (*Reithrodontomys humulis*), western harvest mouse (*R. megalotis*), white-footed mouse (*Peromyscus leucopus*), deer mouse (*P. maniculatus*), hispid cotton rat, and meadow vole. The prairie vole exhibits strong competitive interactions with hispid cotton rats, meadow voles, and possibly deer mice (Stalling 1990, Stokes 1995, Haken and Batzli 1996).

VULNERABILITY AND THREATS

On a regional basis, there appears to be no threats to prairie vole survival.

MANAGEMENT SUGGESTIONS

Maintenance of relict tall grass prairie and oldfield grassland habitats in the region would benefit this species.

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