

Pygmy Shrew (*Sorex hoyi*) in Montana East of the Rocky Mountains with Comments on its Distribution across the Northern Great Plains

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Range maps for Pygmy Shrew (*Sorex hoyi*) show a large hiatus over much of the northern Great Plains between the Rocky Mountains and eastern North Dakota. We report a new record of the Pygmy Shrew in northeastern Montana, review previous records for the state and adjacent regions bordering Montana to the north and east, and suggest that the range boundary in the northern Great Plains be redrawn farther south to include all of Montana north of the Missouri River. This is consistent with the known range of the Pygmy Shrew in eastern North Dakota and South Dakota, where the species has been documented only north and east of the Missouri River, although records are still lacking from north of the Missouri River in northwestern North Dakota and adjacent regions of Canada. Pygmy Shrews will probably be found at additional localities in prairie regions of Canada adjacent to Montana, most likely in association with prairie pothole wetlands, river bottom riparian vegetation, and hardwood draws.

Key Words: distribution; Montana; northern Great Plains; prairie potholes; Pygmy Shrew; *Sorex hoyi*; shrews; habitat

The Pygmy Shrew (*Sorex hoyi*) occurs across boreal and subarctic North America, with populations in the United States also extending south along the Rocky Mountains in the west and the Appalachian Mountains in the east (Long 1974; Diersing 1980; Hall 1981). Pygmy Shrews occur in a variety of microhabitats, such as bogs, marshes, dry grassy clearings, mesic forested habitats, and associated riparian corridors (Long 1974; van Zyll de Jong 1983).

In Montana, Pygmy Shrews were first reported in 1937 from the Rocky Mountain region in the western third of the state (Koford 1938), and most additional specimens have been reported west of or near the continental divide (Setzer 1952; Hoffmann *et al.* 1969; Key 1979; Foresman 1999). More than 150 individuals have been captured at about 29 locations in Montana over at least 160 000 pitfall trap–nights (Hoffmann *et al.* 1969; Allen *et al.* 1997; Foresman 1999; Carson *et al.* 2006*; Dorak *et al.* 2012*), indicating that Pygmy Shrews may be relatively common at some locations, but uncommon to rare over much of their range within the state. In montane western Montana, Pygmy Shrews tend to occupy mesic sites in a variety of habitats typical of other portions of their North American range; these include sagebrush, riparian areas, marshy or boggy sites, and most coniferous forest types except those at the highest elevations (Foresman 1999, 2012).

Most distribution maps for the Pygmy Shrew show a large hiatus in the southern part of its range that projects northward between the Rocky Mountains of western Montana and southern Alberta in the west to eastern North Dakota and South Dakota in the east (Long 1974; Diersing 1980; Hall 1981; van Zyll de Jong 1983; Naughton 2012). This is consistent with the characterization of the Pygmy Shrew as a species

with boreal and montane affinities (Hoffmann and Jones 1970; Jones *et al.* 1983). Thus, the Pygmy Shrew is inferred to be absent from most prairie regions of the northern Great Plains east of the Rocky Mountains. In this note, we describe a new specimen of Pygmy Shrew captured in the prairie region of eastern Montana and discuss this finding in the context of previous records of the species from the northern Great Plains.

On 11 September 2012, we captured a female Pygmy Shrew in a Museum Special snap trap (Woodstream Corp., Lititz, Pennsylvania, USA) from a trap line set in a stringer of riparian Eastern Cottonwood (*Populus deltoides*) adjacent to an irrigation canal 2.9 km north of the Missouri River (48°3'36"N, 106°14'16.79"W, 622 m elevation), 10.5 km southeast of Nashua, Valley County, Montana (Figure 1, site 4). The line consisted of single snap traps baited with peanut butter and Sherman live traps (H. B. Sherman Inc., Tallahassee, Florida, USA) baited with rolled oats and bird seed at 10 stations. The specimen was prepared as a study skin (UMZM 20382; museum acronyms follow the Global Registry of Biodiversity Repositories [<http://grbio.org>]) and deposited in the University of Montana, Philip L. Wright Zoological Museum. This was the only Pygmy Shrew captured during 940 trap-nights of effort at 46 sites. It was the first record of the species from Valley County and the fifth specimen reported in Montana from prairie regions east of the Rocky Mountains. Also captured in this trap line were Deer Mice (*Peromyscus maniculatus*) and White-footed Mice (*P. leucopus*).

Pygmy Shrew specimens previously found in eastern Montana (Figure 1, sites 1–3) have been associated with mostly treeless prairie pothole regions north of the Missouri River. The first record (site 1) was a female

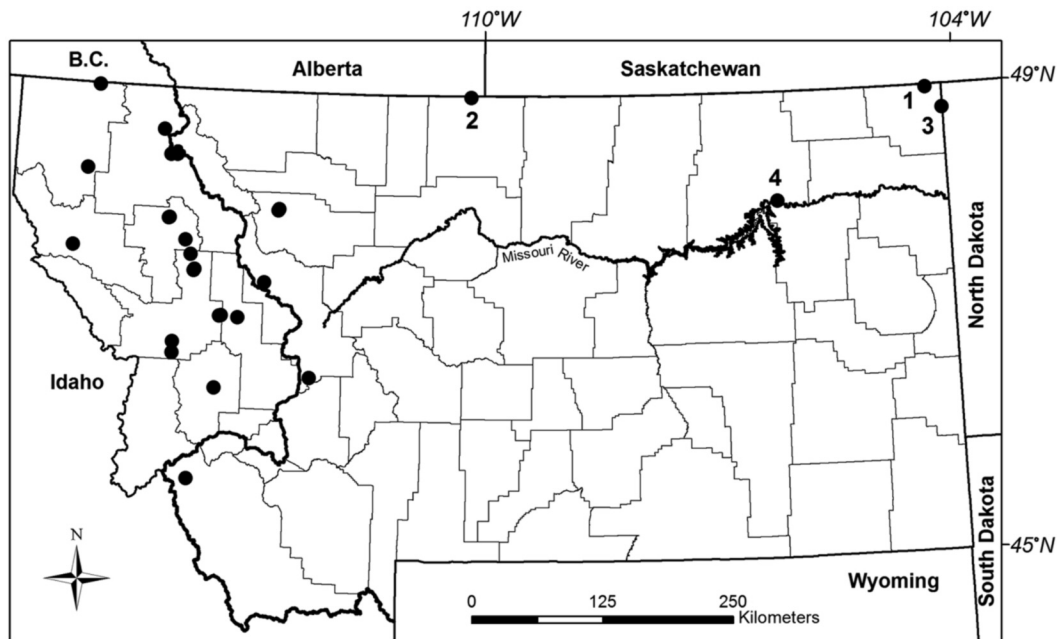


FIGURE 1. Distribution of Pygmy Shrew (*Sorex hoyi*) in Montana. Numbered sites are locations where Pygmy Shrews have been found in prairie regions of the northern Great Plains: (1) Widgeon Slough, Sheridan County; (2) Wild Horse Lake, Hill County; (3) Goose Lake, Sheridan County; (4) 10.5 km southeast of Nashua, Valley County. Sources for unnumbered locations are Koford (1938), Setzer (1952), Hoffmann *et al.* (1969), Key (1979), Foresman (1999), and specimens in the University of Montana, Philip L. Wright Zoological Museum (UMZM). The continental divide is shown in bold.

(UMZM 19026) captured by Dennis Flath and John Ciralli in a snap trap on 23 July 1977 near Widgeon Slough (48°58'22.79"N, 104°15'7.19"W, 663 m elevation) in Sheridan County, about 170 km east of the Valley County site. The second record (site 2) was a partial skull (UMZM 18672) recovered from a raptor pellet on 20 July 2000 near Sage Creek at Wild Horse Lake (48°59'5.99"N, 110°10'26.4"W, 853 m elevation) in Hill County, about 315 km west of the Valley County site (Hendricks 2001). The third record (site 3) included two unsexed individuals (UMZM 20394, the other specimen misplaced) captured by Jenny Flesch in a pitfall trap and a snap trap at one trap station on 22 August 2005 in a marshy area near Goose Lake (48°47'31.2"N, 104°2'56.4"W, 625 m elevation) in Sheridan County, also about 170 km east of the Valley County site.

Although few in number, the distribution of Pygmy Shrew records from eastern Montana suggests that this species is widely distributed across the northern Great Plains in Montana north of the Missouri River, but in localized wetland and riparian habitats. Extensive small-mammal trapping throughout eastern Montana south of the Missouri River (Lampe *et al.* 1974; Matthews and Swenson 1982; Carson *et al.* 2006*; Dorak *et al.* 2012*) has resulted in no additional records

for this shrew species. We suggest that future range maps for the Pygmy Shrew in Montana include the entire region north of the Missouri River.

The southern border that we propose for the range of the Pygmy Shrew across the northern Great Plains appears to match, more or less, the maximum extent of the Laurentide ice sheet during the late Pleistocene (Clayton and Moran 1982). This distribution of the Pygmy Shrew in eastern Montana is also consistent with documented locations in the eastern half of North Dakota and eastern South Dakota, where the species has been found only north and east of the Missouri River (Long 1974; Hall 1981; Jones *et al.* 1983; Higgins *et al.* 2002), often in association with marshy prairie potholes and lakeshores and Green Ash (*Fraxinus pennsylvanica*) hardwood draws (Gruebele and Steuter 1988; Backlund 1995) in formerly glaciated regions of the Drift Plains and Missouri Coteau. We expect that Pygmy Shrews will be found at additional locations in eastern Montana and adjacent prairie regions north of the Missouri River in Canada and northwestern North Dakota as more surveys are undertaken for shrews in appropriate wetland, hardwood draw, and riparian habitats in this area of the northern Great Plains.

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