

## NOTES

**RECENT OBSERVATIONS OF WATER SHREWS IN NORTHEASTERN SOUTH DAKOTA**—North American water shrews in the genus *Sorex* are a complex of at least five species, three of which were recognized historically, *Sorex alaskans*, *S. bendirii*, and *S. palustris* (Hall 1981). Within what was previously considered the single, widespread northern species, *S. palustris*, two additional species are now recognized, *S. albibarbis* in the eastern US and Canada and *S. navigator* in the western United States and Canada (Hope et al. 2014; Nagorsen et al. 2017; Woodman 2018). The American water shrew (*Sorex palustris*) originally was documented in South Dakota by three females, two were collected 1876 and one in 1878 by Charles E. McChesney on the Fort Sisseton Reservation, which is in present-day Marshall County. Those specimens represented the southwestern most records for the species and have remained the only specimens known from South Dakota. All three specimens are in collections at the Smithsonian Institution, Washington, D.C. (USNM 18428, 59600, and 59608).

Over and Churchill (1941) described water shrews as being common along rivers and around lakes in northeastern South Dakota; however, those researchers provided no information on observations or collections of the species. Higgins et al. (2000) noted the historical records from Fort Sisseton as the only known occurrences in South Dakota. Jones et al. (1983) reported that in the Northern Great Plains, the water shrew only is known from Fort Sisseton. In Minnesota, Hazard (1982) plotted the species as occurring only in the northern third of the state, and Timm (1975) discovered the species to be locally abundant in northeastern Minnesota. Wilson and Ruff (1999) erroneously reported the USNM specimens from Fort Sisseton Reservation as having been collected in Nebraska.

We recently collected two specimens of the American water shrew near Pickerel Lake in northeastern Day County, South Dakota. On 24 June 2014, a female was collected adjacent to a perennial tributary of Pickerel Lake along 128th Street (45.529°N, 97.277°W; WGS 84). On 15 June 2016, a male was obtained adjacent to the lake's outlet along 446th Avenue (45.503°N, 97.288°W; WGS 84). Pickerel Lake is a natural spring-fed lake. Common reed grass (*Phragmites*) and cattails (*Typha*) are the dominant plants occurring along the lake's perennial tributaries where the two specimens were recovered. Both individuals were deceased at the time they were discovered, and we assume that the shrews were killed by a predator and discarded. The Day County site is about 25 km south of the Fort Sisseton Reservation, and now represents the southwestern most records for the species in the region. Both specimens were deposited in the mammal collection at

the University of Kansas (KU 171678, F; 171679, M).

Selected measurements for the female (KU 171678) are: total length, 140 mm; length of tail, 59 mm; length of hind foot, 18 mm; length of ear, 6 mm; condylobasal length, 21.8 mm; cranial breadth, 10.5 mm; maxillary breadth, 6.2 mm. The male (KU 171679) had testes that measured 5×3 mm. Further measurements of the male were not made due to the condition of the specimen. These measurements are comparable to those recorded by Timm (1975) for *S. palustris* from northern Minnesota, albeit the condylobasal length is somewhat larger than specimens from Minnesota.

*Sorex palustris* in South Dakota might represent an isolated population. Seabloom (2011) lists *S. palustris* as potentially occurring in North Dakota. Sweitzer (2001) did not detect *S. palustris* in a vertebrate survey of the Sheyenne Grasslands of North Dakota located 70 miles north of Pickerel Lake. In Minnesota, Rubbelke and Saupe (1984) considered northcentral and northeast regions as the only known range for water shrews in the state. *Sorex palustris*, however, may be more widespread than current data and these publications suggest because the species is difficult to detect. One of the authors (DS) and several colleagues failed to capture water shrews in northeastern South Dakota in past surveys (Skadsen, unpublished data).

These two recent observations of *S. palustris* from South Dakota were collected during a tributary water quality study of Pickerel Lake funded by a United States Environmental Protection Agency 319 Clean Water Grant administered by the South Dakota Department of Environment and Natural Resources. The South Dakota Natural Heritage Database, Department of Game, Fish and Parks provided additional information on the specimens obtained at the Fort Sisseton Reservation. Maria Eifler's efforts at the University of Kansas Natural History Museum are most appreciated.—Dennis Skadsen, *Northeast Glacial Lakes Day Conservation District, Webster, SD, USA 57274 (DS)*; Robert M. Timm, *Department of Ecology and Evolutionary Biology and Natural History Museum, University of Kansas, Lawrence, KS, USA 66045 (RMT)*.

### LITERATURE CITED

- Hall, E. R. 1981. The mammals of North America. Second edition. Volume 1. John Wiley and Sons, New York, USA.  
 Hazard, E. B. 1982. The mammals of Minnesota. University of Minnesota Press, Minneapolis, Minnesota, USA.  
 Higgins, K. F., E. D. Stukel, J. M. Goulet, and D. C. Backlund. 2000. Wild mammals of South Dakota. South Dakota Department of Game, Fish and Parks, Pierre, South Dakota, USA.

- Jones, J. K., Jr., D. M. Armstrong, R. S. Hoffmann, and C. Jones. 1983. Mammals of the Northern Great Plains. University of Nebraska Press, Lincoln, Nebraska, USA.
- Hope, A. G., N. Panter, J. A. Cook, S. L. Talbot, and D. W. Nagorsen. 2014. Multi-locus phylogeography and systematic revision of North American water shrews (genus: *Sorex*). *Journal of Mammalogy* 95:722–738.
- Nagorsen, D. W., N. Panter, and A. G. Hope. 2017. Are the western water shrew (*Sorex navigator*) and American water shrew (*Sorex palustris*) morphologically distinct? *Canadian Journal of Zoology* 95:727–736.
- Over, W. H., and E. P. Churchill. 1941. Mammals of South Dakota. University of South Dakota, Vermillion, South Dakota, USA.
- Rubbelke, D., and S. G. Saupe. 1984. Water shrews in Minnesota. Minnesota Department of Natural Resources, Conservation Biology Research Grants Program.
- Seabloom, R. 2011. Mammals of North Dakota. North Dakota State University, Fargo, North Dakota, USA.
- Sweitzer, R.A. 2002. Report on challenge cost share agreement to investigate terrestrial vertebrate communities of the Sheyenne National Grasslands, North Dakota. University of North Dakota, Grand Forks, North Dakota, USA.
- Timm, R. M. 1975. Distribution, natural history, and parasites of mammals of Cook County, Minnesota. Occasional Papers, Bell Museum of Natural History, University of Minnesota 14:1–56.
- Wilson, D. E., and S. Ruff. 1999. The Smithsonian book of North American mammals. Smithsonian Institution Press, Washington, D.C., USA
- Woodman, N. 2018. American Recent Eulipotyphla: nesophontids, solenodons, moles, and shrews in the New World. *Smithsonian Contribution to Zoology* 650:vi + 1–107.

Submitted: 8 Feb 2019. Accepted: 5 Mar 2019

Associate Editor: Keith Geluso