

Saba River has a greater likelihood of being inhabited by populations of *Q. mitchelli*. However, this evidence is circumstantial, and, therefore, further surveys are needed to locate surviving populations of *Q. mitchelli* and to determine the distribution of the species in the San Saba River. Given the rarity of this species and declining habitat, the present time may be the only opportunity to study this species before it actually becomes extinct. Finally, this finding underscores the conclusions of Randklev et al. (2010) that populations of rare unionid species do exist and future studies must be undertaken with a focus on remote or difficult-to-access areas.

The Texas Department of Transportation provided funding for this work. The authors thank D. Britton, R. G. Howells, and one anonymous reviewer for helpful comments made on earlier versions of this paper.

## LITERATURE CITED

- HOWELLS, R. G. 2003. Declining status of freshwater mussels in the Rio Grande, with comments on other bivalves. Pages 59–73 in Aquatic fauna of the northern Chihuahuan Desert: contributed papers from a special session within the thirty-third annual symposium of the Desert Fishes Council (G. P. Garrett and N. L. Allan, editors). Texas Tech University Press, Lubbock.
- HOWELLS, R. G., R. W. NECK, AND H. D. MURRAY. 1996. Freshwater mussels of Texas. Texas Parks and Wildlife Press, Austin.
- METCALF, A. L. 1982. Fossil unionacean bivalves from three tributaries of the Rio Grande. Pages 43–58 in Proceedings of the symposium on recent benthological investigations in Texas and adjacent states (J. R. Davis, editor). Texas Academy of Sciences, Austin.
- RANDKLEV, C. R., B. J. LUNDEEN, R. G. HOWELLS, AND J. H. KENNEDY. 2010. First account of a living population of Texas fawnsfoot, *Truncilla macrodon* (Bivalvia: Unionidae) in the Brazos River, Texas. *Southwestern Naturalist* 55:297–298.
- UNITED STATES FISH AND WILDLIFE SERVICE. 2009. Endangered and threatened wildlife and plants: 90-day finding on petitions to list nine species of mussels from Texas as threatened or endangered with critical habitat. *Federal Register* 74:66,260–66,271.
- Submitted 1 July 2011. Accepted 30 April 2013.  
Associate Editor was Jerry L. Cook.

THE SOUTHWESTERN NATURALIST 58(2): 249–250

## HORSEHAIR WORM, *PARAGORDIUS VARIUS* (NEMATOMORPHA: GORDIIDA): NEW TO THE FAUNA OF OKLAHOMA

CHRIS T. McALLISTER,\* MATTHEW G. BOLEK, AND BEN HANELT

*Science and Mathematics Division, Eastern Oklahoma State College, Idabel, OK 74745 (CTM)*  
*Department of Zoology, Oklahoma State University, Stillwater, OK 74078 (MGB)*  
*Center for Evolutionary and Theoretical Immunology, Department of Biology, University of New Mexico, Albuquerque, NM 87131(BH)*  
 \*Correspondent: [cmcallister@se.edu](mailto:cmcallister@se.edu)

**ABSTRACT**—During July 2011, collections of several freshwater horsehair worms were made at two sites (Mud and Salt creeks) in McCurtain County, Oklahoma. The specimens were subsequently identified as *Paragordius varius* (Leidy, 1851), which represents a new nematomorph for the state. The only previously reported horsehair worm from Oklahoma is *Gordius robustus* Leidy, 1851, from Stillwater, Payne County. *Paragordius varius* is probably the most common and widespread gordiid species in the New World. It is now known from 25 (plus the District of Columbia) of the contiguous United States and three provinces of Canada and also has been reported from Hawaii and throughout South America. Collecting at several other sites in the eastern part of the state failed to recover additional *P. varius*.

**RESUMEN**—Durante julio del 2011, colecciones de varios gusanos crin de caballo se realizaron en dos sitios (Mud y Salt Creeks) en el condado de McCurtain, Oklahoma. Los especímenes fueron identificados después como *Paragordius varius* (Leidy, 1851), lo que representa un nuevo nematomorfo para el estado. El único gusano crin de caballo anteriormente registrado de Oklahoma es *Gordius robustus* Leidy, 1851, de Stillwater, condado de Payne. *Paragordius varius* es probablemente la especie gordiida más común y ampliamente distribuida en el Nuevo Mundo. Actualmente se conoce en 25 estados (más el Distrito de Columbia) de los Estados Unidos contiguos y tres provincias de Canadá y también se ha registrado de Hawaii y en toda América

del Sur. Buscar en varios otros sitios en la parte oriental de Oklahoma no logró encontrar especímenes adicionales de *P. varius*.

Juvenile horsehair or gordiid worms (Nematomorpha) are parasites of terrestrial arthropods (often crickets and beetles) and, as adults, are free-living in freshwater sites including lakes, streams, and rivers. Until recently (see Hanelt et al., 2005), compared to other phyla of animals, gordiids have received relatively little attention. One species, *Paragordius varius* (Leidy), was the first of the phylum to be laboratory-reared and is probably the most common and widespread gordiid species in the New World. It is distributed throughout 24 states (plus the District of Columbia) of the contiguous United States and three provinces of Canada and also has been reported from Hawaii and throughout South America (Schmidt-Rhaesa et al., 2003; Poinar and Chandler, 2004). However, in Oklahoma, the only species of horsehair worms previously reported from the state is *Gordius robustus* Leidy (Stillwater, Payne County; Montgomery, 1907). Herein, we document the first specimens of *P. varius* from Oklahoma.

During summer 2011, collection of freshwater horsehair worms was attempted at 10 sites, including Eagle Fork Creek, Glover River, Lukfata Creek, Mud Creek, Mountain Fork River, Salt Creek, Steven's Creek, Yanubbee Creek, Yashau Creek, and White Oak Creek in McCurtain County, Oklahoma. These sites ranged from intermittent lowland creeks to deeper upland rivers supporting a wide variety of aquatic fauna. When collected, horsehair worms were placed in vials containing 70% ethanol and sent to one author (BH) for identification. Voucher specimens were deposited in the Smithsonian National Museum of Natural History collection as USNM 1156922 and the University of New Mexico Museum of Southwestern Biology as MSB 200–204.

Nine specimens of free-living adult horsehair worms were collected and identified as *Paragordius varius* (Leidy, 1851). A single female worm (223-mm long) was collected on 13 July 2011 from US 70/US 259 bypass at Salt Creek (33.881023°N, 94.826974°W). Eight other females (217–238 mm) were collected 25–26 July 2011 from Mud Creek, 3.4 km W of the junction of US 70 and US 259 in Idabel (33.920240°N, 94.811581°W).

The *P. varius* reported herein represent a new state record for Oklahoma. A summary of previously known records of *P. varius* was provided by Schmidt-Rhaesa et al. (2003). The species has been reported from Arizona, California, the District of Columbia, Hawaii, Illinois, Indiana, Kansas, Kentucky, Maine, Massachusetts, Michigan, Missouri, Nebraska, New Jersey, New Mexico, New York, Ohio, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, and Wisconsin

and Alberta, Ontario, and Quebec, Canada (Schmidt-Rhaesa et al., 2003). There are gordiids reported from surveys on macroinvertebrates in Arkansas but identified only to genus as *Paragordius* (Huggins and Harp, 1983; Cochran and Harp, 1990; Chordas et al., 1996).

Although other species of horsehair worms have been reported from several of the states within the Mississippi River watershed (Schmidt-Rhaesa et al., 2003; Harp et al., 2008), *P. varius* has not been reported from Arkansas, Iowa, Louisiana, or Minnesota. We suggest that this apparent distributional void be further examined in an effort to attempt to document this species from those states.

CTM thanks the Oklahoma Department of Wildlife Conservation for scientific collecting permit No. 4958 and K. D. Harrison and B. King for providing research space to him. This work was supported by the National Science Foundation, DEB-0949951 to MGB and DEB-0950066 to BH.

#### LITERATURE CITED

- CHORDAS, S., III, G. L. HARP, AND G. W. WOLFE. 1996. The aquatic macroinvertebrates of the White River National Wildlife Refuge, Arkansas. *Proceedings of the Arkansas Academy of Science* 50:42–51.
- COCHRAN, B. G., AND G. L. HARP. 1990. The aquatic macroinvertebrates of the St. Francis sunken lands in northeast Arkansas. *Proceedings of the Arkansas Academy of Science* 44:23–27.
- HANELT, B., F. THOMAS, AND A. SCHMIDT-RHAESA. 2005. Biology of the phylum Nematomorpha. *Advances in Parasitology* 59:243–305.
- HARP, G., P. HARP, AND S. MCCORD. 2008. Aquatic macroinvertebrates collected from thirty-two Missouri Ozark streams. *Journal of the Arkansas Academy of Science* 62:61–74.
- HUGGINS, J. A., AND G. L. HARP. 1983. Aquatic macroinvertebrates of the Hiatt Prairie region, Franklin County, Arkansas. *Proceedings of the Arkansas Academy of Science* 37:92–94.
- MONTGOMERY, T. H. 1907. The description of the North American Gordiacea, with description of a new species. *Proceedings of the Academy of Natural Sciences of Philadelphia* 59:270–272.
- POINAR, G., JR., AND C. M. CHANDLER. 2004. Synopsis and identification of North American hairworms (Gordioidea: Nematomorpha). *Journal of the Tennessee Academy of Science* 79:1–7.
- SCHMIDT-RHAESA, A., B. HANELT, AND W. K. REEVES. 2003. Redescription and compilation of Nearctic freshwater Nematomorpha (Gordiida), with the description of two new species. *Proceedings of the Academy of Natural Sciences of Philadelphia* 153:77–117.

Submitted 25 January 2012. Accepted 30 April 2013.  
Associate Editor was Jerry L. Cook.