

## Recent Distributional Records for Freshwater Mussels in Kansas

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Recent collections of freshwater mussels (*Bivalvia*, *Margaritiferidae*, and *Unionoidae*) in Kansas included two species previously not documented from the state: *Cumberlandia monodonta* (Say, 1829), spectaclecase, and *Cyclonaias tuberculata* (Rafinesque, 1820), purple wartyback. The collections also have provided distributional revisions for five other mussel species.

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### NEW SPECIES FOR THE STATE

*Cumberlandia monodonta* (Say, 1829), spectaclecase—A single weathered valve of the spectaclecase was collected by Marais des Cygnes National Wildlife Refuge (MDCNWR) personnel in August 1998 in gravel habitat in the Marais des Cygnes River, Linn County, approximately 4 km upstream from the Kansas–Missouri state line. An articulated, weathered valve (KU 001247) was collected at the same site on 25 August 2000 in boulder habitat in about 35 cm of water during low flow conditions, and two additional disarticulated weathered valves were collected from the same locality on 14 September 2000 (Obermeyer, 2000). These collections are the first documentation of the Family Margaritiferidae in Kansas, and extend the known historic distribution of the species in the upper Osage River system, as reported by Oesch (1995) by approximately 90 km. Based on the condition of shell material (intact periostracum, and the nacre, although faded, was not chalky), an extant population might have occurred in this reach of river within the past 50 years.

*Cyclonaias tuberculata* (Rafinesque, 1820), purple wartyback—A disarticulated, weathered valve of the purple wartyback (KU 001250) was collected on 2 August 1999 in the Marais des Cygnes River, Linn County, approximately 2.4 km upstream from the Kansas–Missouri state line (Ob-

ermeyer, 2000). On 25 August 2000, one live and two freshly dead specimens were collected from the same site (Obermeyer, 2000). The live specimen was returned to suitable habitat, and one of the freshly dead specimens was deposited at the Natural History Museum, University of Kansas (KU 001248). These collections extend the range of the species reported by Oesch (1995) approximately 55 km westward.

#### DISTRIBUTIONAL RECORDS

*Ellipsaria lineolata* (Rafinesque, 1820), butterfly—Although the butterfly is well documented in the Verdigris and Neosho rivers in eastern Kansas (Obermeyer and others, 1997), the species had not been reported previously from the Kansas portion of the Osage River system. A single relic valve of the butterfly was collected in 1997 from the Marais des Cygnes River in Franklin County near Rantoul by personnel of the Kansas Department of Health and Environment (KDHE). In 1999, two live individuals were collected in the Marais des Cygnes River approximately 2.4 km upstream from the Kansas–Missouri state line, and additional live specimens have been collected since at two other Marais des Cygnes River sites, all located within the MDCNWR (Obermeyer, 2000). The butterfly is listed by the State of Kansas as a threatened species.

*Quadrula metanevra* (Rafinesque, 1820), monkeyface—Similar to the butterfly, the monkeyface is well documented from the Arkansas River system, in the Spring, Neosho, Fall, and Verdigris rivers (Miller and Obermeyer, 1997), but distributional records in the upper Osage River system in Kansas are lacking. A single weathered valve of the monkeyface was collected in 1996 by KDHE personnel from the Marais des Cygnes River at Ottawa in Franklin County. Two relatively fresh valves of the monkeyface were collected in 1999 and 2000 at two sites on the Marais des Cygnes River within the MDCNWR (Obermeyer, 2000). The monkeyface is listed in Kansas as a commercially harvestable species; however, the Marais des Cygnes River is not legally open to mussel harvest (Kansas Statutes Annotated 1991 Supplemental 32-807, 32-941).

*Actinonaias ligamentina* (Lamarck, 1819), mucket—Nearly 100 years ago, Scammon (1906) reported the mucket as common in the Marais des Cygnes River and uncommon in the Wakarusa River and Mill Creek (Waubunsee County). KDHE personnel collected specimens of this mussel from the Marais des Cygnes River and Pottawatomie Creek in Franklin County throughout the period 1993–2000. In 1996, a live individual and a freshly dead specimen (KDHE MC96266) were collected from a gravel riffle in the Marais des Cygnes River near Ottawa. In 1997, another live individual and several recently dead individuals were collected from the Marais des Cygnes River in eastern Franklin County (Miller, 1997). An articulated specimen with unweathered nacre (KDHE MC99045) was collected in 1999 from the

Marmaton River in Bourbon County, approximately 5.6 km west of Fort Scott. Historically, *A. ligamentina* was reported from the Neosho and Spring river drainages of southeastern Kansas (Scammon, 1906; Coker, 1919; Murray and Leonard, 1962; Branson, 1967). However, these reports may have resulted from the confusion of this species with the conchologically similar *Lampsilis rafinesqueana* Frierson, 1927, Neosho mucket (Obermeyer, 2000). Recent investigations have yielded no firm evidence of *A. ligamentina* in the Arkansas River system (Cope, 1985; Obermeyer, Edds, and Prophet, 1995). The mucket is listed by the State of Kansas as an endangered species.

*Arcidens confragosus* (Say, 1829), rock pocketbook—Unweathered, disarticulated valves of the rock pocketbook were collected by KDHE personnel from Pottawatomie Creek in Franklin County each year during the periods 1993–1994 and 1997–2000. A weathered valve was collected from the Marmaton River approximately 8 km from the state line during summer 2000 (Obermeyer, 2001). In 1994 and 1997, unweathered valves also were collected by KDHE personnel from the Marais des Cygnes River in Linn and Franklin counties, respectively. A fresh valve of this mussel was collected from the Marais des Cygnes River west of Osawatomie in Miami County (Obermeyer, 1994). One live individual and two freshly dead individuals were collected from the Marais des Cygnes River at Ottawa in 1996 (Couch, 1997). The following year, three live individuals were collected from the Marais des Cygnes River in Miami County (Miller, 1997). These live individuals are the first reported for the rock pocketbook in Kansas since 1949 (Murray and Leonard, 1962). This species is listed by the State of Kansas as a threatened species.

*Quadrula cylindrica cylindrica* (Say, 1817), rabbitsfoot—On 23 August 1999, a live juvenile rabbitsfoot was collected from the Neosho River immediately downstream from the Humboldt city dam in Allen County by personnel of the U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, and Kansas Department of Wildlife and Parks. Prior to this collection, the species was thought to be restricted to a 3.2-km reach of Neosho River habitat (three riffle sites) located between Iola and Humboldt (Obermeyer, Edds, and Prophet, 1995; Obermeyer and others, 1997). The specimen measured 14 by 23 by 43 mm (width, height, and length) and was estimated to be in its fourth year of growth. This is the youngest rabbitsfoot collected recently in Kansas, and it extends the known distribution of the species in the Neosho River approximately 10 river km. Along with two other live individuals collected in 1994 (Obermeyer, Edds, and Prophet, 1995), this suggests the possibility of a small breeding population in the Neosho River in Allen County. Fish hosts presently are unknown for this species, although hosts reported for another subspecies, *Q. c. strigillata*, include *Notropis amblops*, bigeye chub, *Notropis galactura*, whitetail shiner, and *Cyprinella spiloptera*, spotfin shiner (Yeager and Neves, 1986). None

of these species occur presently in the Neosho River, although the spotfin shiner and bigeye chub may have occurred historically (Cross, 1967; Cross and Collins, 1995). The rabbitsfoot is listed by the State of Kansas as an endangered species.

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#### LITERATURE CITED

- Branson, B.A. 1967. A partial survey of the Spring River in Kansas, Oklahoma, and Missouri, part I: collecting sites, basic limnological data, and mollusks. *Kansas Acad. Sci. Trans.* 69(4):242–293.
- Coker, R.E. 1919. Fresh-water mussels and mussel industries of the United States. U.S. Bur. Fisheries Bull. 36:13–89, 46 pls.
- Cope, C.H. 1985. The Spring River drainage basin: Kansas resource in need of a management plan. Rept. Kansas Fish and Game Commission (Emporia), 96 pp.
- Couch, K. 1997. An update on the status of the rock pocketbook, *Arcidens confragosus* (Say, 1829), in the Marais des Cygnes and Osage river drainages in Kansas. U.S. Fish and Wildlife Service, Asheville, NC, Triannual Unionid Rept. No. 11, p. 36.
- Cross, F.B. 1967. Handbook of the fishes of Kansas. Univ. Kansas Mus. Nat. His., Misc. Publ. No. 45. 357 pp.
- Cross, F.B., and J.T. Collins. 1995. Fishes in Kansas. Univ. Kansas Mus. Nat. His., Publ. Educ. Ser. No. 14. 315 pp.
- Miller, E.J. 1997. The mucket reported from the Marais des Cygnes River. Kansas Department of Wildlife and Parks, Independence, Kansas Pearly Mussel Newsline 2(1):9.
- Miller, E.J. 1998. Pearly mussel workshop/field trip report. Kansas Department of Wildlife and Parks, Independence, Kansas Pearly Mussel Newsline 3(1):6.
- Miller, E.J., and B.K. Obermeyer. 1997. Population increase of *Quadrula metanevra* in southeast Kansas. Pages 30–36 in Cummings, K.S., A.C. Buchanan, C. A. Mayer, and T.J. Naimo, eds. Conservation and management of freshwater mussels II: Initiatives for the future. Proc. UMRCC Symposium, (St. Louis, Missouri). Upper Mississippi River Conservation Com. (Rock Island, Illinois)
- Murray, H.D., and A.B. Leonard. 1962. Handbook of the unionid mussels in Kansas. Univ. Kansas Mus. Nat. History, Misc. Publ. No. 28. 184 pp.
- Obermeyer, B.K. 1994. Evaluation of possible impacts to unionid mussels by a proposed pipeline crossing in the Marais des Cygnes River, Kansas. Rept. No. 94-345-4 to the Kansas Department of Wildlife and Parks (Pratt), 8 pp.
- Obermeyer, B.K. 2000. Assessment of freshwater mussels in the Marais des Cygnes River, Marais des Cygnes National Wildlife Refuge, KS. Rept. to the U.S. Fish and Wildlife Service (Pleasanton, Kansas), 13 pp.
- Obermeyer, B.K. 2001. Preliminary survey of mussels in the Marmaton River downstream from Fort Scott, KS. Kansas Dept. Wildlife and Parks (Independence), Kansas Pearly Mussel Newsline 6(1):6.

- Obermeyer, B.K., D.R. Edds, and C.W. Prophet. 1995. Distribution and abundance of federal "candidate" mussels (Unionidae) in southeast Kansas. unpubl. rept. Kansas Dept. of Wildlife and Parks (Pratt), 76 pp. + appendices.
- Obermeyer, B.K., D.R. Edds, C.W. Prophet, and E.J. Miller. 1997. Freshwater mussels (Bivalvia: Unionidae) in the Verdigris, Neosho, and Spring river basins of Kansas and Missouri, with emphasis on species of concern. *Am. Malacological Bull.* 14(1):41-55.
- Oesch, R.D. 1995. Missouri naiades: a guide to the mussels of Missouri. Missouri Department of Conservation (Jefferson City). vii + 270 pp.
- Scammon, R.E. 1906. The Unionidae of Kansas, part I: an illustrated catalogue of the Kansas Unionidae. *Univ. Kansas Sci. Bull.* 3(9):279-373, pls. 52-86.
- Yeager, B.L., and R.J. Neves. 1986. Reproductive cycle and fish hosts of the rabbit's foot mussel, *Quadrula cylindrica strigillata* (Mollusca: Unionidae) in the upper Tennessee River drainage. *Am. Midland Nat.* 116(2):329-340.