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FIRST RECORDS OF THE
SUCKERMOUTH MINNOW *PHENACOBIUS MIRABILIS*
FROM THE CANADIAN RIVER, TEXAS

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The suckermouth minnow (*Phenacobius mirabilis*) inhabits riffles in small permanent or semipermanent streams with moderate gradients (Miller & Robison 1973; Cross & Moss 1987). It is native to the Mississippi, Tennessee and Ohio river drainages, and also occurs naturally in rivers (Colorado, Trinity, Sabine and Pecos) that drain portions of the Gulf slope in New Mexico, Texas and Louisiana (Rohde 1980). *Phenacobius mirabilis* has been reported from the headwaters of the Canadian River in New Mexico (Rohde 1980; Sublette et al. 1990) and downstream in Oklahoma, near the present day site of Lake Eufaula (Rohde 1980). There is no published record of *P. mirabilis* from the Canadian River, or its tributaries, in Texas. Voucher specimens are deposited in the Texas Natural History Collection, University of Texas, Austin (TNHC).

The first specimens of *P. mirabilis* from the Canadian River drainage in Texas were collected by Larson et al. (1991) on 8 July 1990: three specimens of *P. mirabilis* were collected at the State Highway 70 crossing, Roberts County; and 17 specimens were collected at the US Highway 83 crossing, Hemphill County. More recent collections by the authors from the Canadian River confirm the presence of *P. mirabilis*

at these sites. On 10 November 1995, one specimen of *P. mirabilis* (TNHC 26102) was collected at the State Highway 70 crossing and two specimens (TNHC 26101) were collected at the US Highway 83 crossing. On 26 February 1998, four additional specimens of *P. mirabilis* (TNHC 26103) were collected at the US Highway 83 crossing.

On 11 May 1999, three specimens of *P. mirabilis* were collected from two additional sites in the Canadian River in Texas. One specimen, not preserved, was collected at the mouth of Dixon Creek, a small intermittent tributary of the Canadian River located about 22 km downstream from the State Highway 207 crossing, Hutchinson County. Two specimens (TNHC 26104) were collected at the State Highway 207 crossing, Hutchinson County. This location is near the head of permanent waters in the Canadian River downstream from Lake Meredith. Collectively, the records reported herein document the presence and persistence of *P. mirabilis* across most of the approximately 150 km reach of the Canadian River in Texas, downstream from Lake Meredith.

Two additional specimens of *P. mirabilis* (TNHC 26105) were collected on 11 May 1999 from White Deer Creek, a perennial tributary of the Canadian River in Hutchinson County. White Deer Creek was briefly sampled in July 1954 by Lewis & Dalquest (1955). Although Lewis and Dalquest failed to detect the presence of *P. mirabilis*, their limited collections, presumably made at or near the lower end of the creek, might easily have missed the species. *Phenacobius mirabilis* should be considered a natural member of the White Deer Creek fish assemblage.

The Canadian River was impounded in 1965 to form Lake Meredith. All records of *P. mirabilis* reported herein are from sites located downstream from the lake, an area from which it historically was absent based on the extensive sampling by Lewis & Dalquest (1955). Presence of *P. mirabilis* in this reach of the Canadian River is consistent with changes in the fish assemblage that have occurred since the river was impounded. Historically, the Canadian River was a large, braided stream, with dramatic fluctuations in flow, salinity and turbidity. The historic fish assemblage was dominated by species that commonly inhabit the main channels of larger prairie streams, including the Arkansas River shiner (*Notropis girardi*), plains minnow (*Hybognathus placitus*), flathead chub (*Platygobio gracilis*) and speckled chub (*Macrhybopsis aestivalis*) (Cross et al. 1955; Lewis & Dalquest 1955). Downstream

from Lake Meredith, the Canadian River now has a well-defined channel, lined by woody vegetation (salt cedar and cottonwood), with greatly reduced flows (flows at the US Geological Survey gauge at US Highway 83 average only 15% of historic, unregulated flows). The fish assemblage in this reach of the Canadian River is now dominated by species, including red shiner (*Cyprinella lutrensis*), sand shiner (*N. stramineus*), plains killifish (*Fundulus zebrinus*) and mosquitofish (*Gambusia affinis*), that historically occurred infrequently in the mainstem river, but which were common in tributary streams (Lewis & Dalquest 1955). Similar changes in the composition of prairie stream fish assemblages in response to decreased stream flows, resulting from impoundment, water diversion and groundwater withdrawal, were described by Cross & Moss (1987) and Pflieger & Grace (1987).

Two possible explanations are offered for the recent occurrence of *P. mirabilis* in the Canadian River, Texas. First, the species may be expanding its distribution upstream in the Canadian River, from Oklahoma, as a result of habitat changes associated with impoundment of the river to form Lake Meredith. Although *P. mirabilis* has been infrequently collected from the Canadian River in Oklahoma, it is widely distributed in tributaries to the river (Miller & Robison 1973), which may have served as sources for fish that colonized the river. The presence of *P. mirabilis* in White Deer Creek may represent a secondary range expansion, from the Canadian River into suitable tributary streams. Alternatively, *P. mirabilis* may be native to White Deer Creek, and other suitable tributaries in Texas, and it is from these populations that those in Texas portions of the Canadian River are derived. The latter explanation is more parsimonious and appears more probable.

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