

Occurrence of *Ameiurus nebulosus* (Brown Bullhead) in Texas

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Abstract - Within its southwestern native range, *Ameiurus nebulosus* (Brown Bullhead) had been found in the Red River drainage within Oklahoma, Arkansas, and Louisiana but not Texas. We report for the first time the occurrence of Brown Bullhead within the Cypress River system of Texas, a tributary of the Red River. We tentatively conclude that the Cypress River system of Texas is within the natural range of Brown Bullhead, but we cannot exclude human introduction as a possible mechanism for its occurrence, given that Brown Bullhead are introduced worldwide.

Report and Discussion

Habitats and native range of *Ameiurus nebulosus* (Lesueur) (Brown Bullhead) are lakes, ponds, and low-gradient streams within the Hudson Bay, St. Lawrence-Great Lakes, Atlantic Slope, Mississippi River, and Gulf Slope drainages of North America (Page and Burr 1991). Northern extent of the Brown Bullhead is the Whitesand-Assiniboine system of Saskatchewan to the northwest, continuing east through southern Manitoba following the south shore of Lake Superior into southern Quebec and Ontario and northeastern to the mainland into New Brunswick and Nova Scotia (Scott and Crossman 1973). The eastern extent follows the Atlantic coast in Canada to Florida (Douglas 1974), and the western extent is tributaries of the Mississippi River Basin (Page and Burr 1991). Within its southwestern native range, the Brown Bullhead had been found in the Red River drainage of Oklahoma, Arkansas, and Louisiana (Douglas 1974, Hall 1956, Robison and Buchanan 1988) but not Texas (i.e., upper Red River and tributaries, Cypress River, and Sulphur River) (Hubbs et al. 2008). Introduced populations are reported in most western states of the USA (Everhart and Seaman 1971, Koster 1957, Linder 1963, Miller and Alcorn 1945, Minckley 1973, Smith 1896); Puerto Rico, New Zealand, and South America (Welcomme 1988); Europe (Gandolfi et al. 1991, Verreycken et al. 2007); and Asia (Coad 1998, Reshetnikov and Bogutskaya 1997, Walker and Yang 1999).

During an ichthyofaunal survey of the Cypress River drainage on 16 November 2013, we collected one Brown Bullhead (138 mm in TL) from Kitchen Creek, Marion County, TX (32°47'50.75"N, 94°10'29.03"W). Kitchen Creek is a low-gradient tributary of the Black Cypress Bayou of the Cypress River drainage. Black Cypress Bayou flows into Caddo Lake and eventually into the Red River near Shreveport, LA. We used a barge-mounted electroshocker to capture the one individual from slackwater habitat with a shallow depth (<0.5 m) and silt substrate. The specimen was anesthetized with tricaine methanesulfonate (MS-222) and fixed in 10% formalin. In the laboratory, we positively identified the specimen as a Brown Bullhead based on sharply serrated posterior edges of the pectoral and dorsal fin spines and ≤14 gill rakers (Bailey et al. 2004, Moyle 1976). The specimen was deposited in the University of Texas at Austin, Texas Natural History Collections, Ichthyology Collection, (Catalog Number: TNHC 56220) and independently verified by their staff A. Cohen and D. Martin.

Reports of new species occurrences in freshwater systems of Texas are primarily attributed to human introductions. Within the last 50 years, introductions and subsequent

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establishment of *Hypostomus* and *Pterygoplichthys* (South American catfishes; Barron 1964, Hubbs et al. 1978, Nico and Martin 2001) into several drainages within Texas are attributed to aquarium releases. Introductions of *Carassius auratus* (L.) (Goldfish; Hubbs 1982) statewide, *Notropis blennioides* (Girard) (River Shiner) in Lake Meredith Texas (Petri-keev et al. 2005), *Scardinius erythrophthalmus* (L.) (Rudd) in Guadalupe River drainage (Whiteside and Berkhouse 1992) and likely *Cyprinodon variegatus* (Lacepede) (Sheeps-head Minnow) in the Pecos River (Wilde and Echelle 1992) are attributed to bait-bucket releases. Introductions of *Oreochromis aureus* (Steindachner) (Blue Tilapia; Noble et al. 1975) in the Trinity River drainage and *Cyprinus carpio* (L.) (Common Carp; Whiteside and Berkhouse 1992) in the Guadalupe River drainage are attributed to escapes from aquaculture rearing facilities. However, not all new species occurrences are related to human introductions. Wilde and Bonner (2000) reported the occurrence of *Phenacobius mirabilis* (Girard) (Suckermouth Minnow) in the Canadian River of Texas, and related its appearance there to habitat changes and subsequent upstream movement from downstream reaches of the Canadian River in Oklahoma. Additionally, Garrett and Edwards (2003) and Echelle et al. (2013) reported a new species occurrence for *Gambusia krumholzi* (Minckley) (Spotfin Gambusia) in San Felipe Creek, a tributary of the Rio Grande. Likely, Spotfin Gambusia is native to San Felipe Creek but was absent or undetected during previous collections.

Among the established mechanisms for new species occurrences reported in Texas (i.e., human introductions, movement of fishes, and species undetected during past collections), we tentatively conclude that the Brown Bullhead is a native member of the Cypress River fish community and has been absent or undetected in past collections. Other eastern fishes, including *Luxilus chrysocephalus* (Striped Shiner), *Pteronotopis hubbsi* (Bluehead Shiner), and *Percina caprodes* (Logperch), have their southwestern distributional extent in the Cypress River drainage (Hubbs et al. 2008). Range extension through habitat modification is an unlikely explanation for the recent collection of Brown Bullhead due to there being no major habitat modifications to the drainage since Big Cypress Bayou was dammed in 1960 to form Lake O' the Pines (Winemiller et al. 2005) and because the dam on Caddo Lake would inhibit upstream movement. However, we cannot exclude human introduction as a possible mechanism for the presence of the Brown Bullhead in Kitchen Creek, as Brown Bullheads have been introduced worldwide.

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