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New Distribution Records for Three Species of *Notropis* (Cypriniformes: Cyprinidae) from Large Rivers of Arkansas

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The genus *Notropis* Rafinesque currently includes 86 valid species of minnows and shiners distributed throughout North America and Mexico (Nelson et al. 2004). In Arkansas, 25 species of *Notropis* or about 29% of the state fish fauna is represented by this genus alone.

It has been more than two decades since Robison and Buchanan (1988) provided a summation on the geographic distribution of the fishes of Arkansas. Recently, we reported new geographic records for the Taillight Shiner, *Notropis maculatus* and Weed Shiner, *Notropis texanus* (McAllister et al. 2009a) and Pallid Shiner, *Notropis amnis* (McAllister et al. 2009b) from the state to help supplement previously published historical data on this genus. In addition, large rivers in Arkansas have been relatively under sampled and continual human-induced changes in these systems are a cause for concern for native fish fauna. The purpose of this study is to report significant new distribution records for three species of *Notropis* from several large rivers of the state.

As part of a more intensive three-year fish faunal survey of eight large rivers of Arkansas, various cyprinids were collected between 2006 and 2008 from regions of the lower Arkansas, Black, Little, Mississippi, Ouachita, Red, St. Francis and White rivers. A variety of gear types were used to survey sites. Mini-fyke nets (approximately 1.2 m wide x 0.8 m tall) were used along shorelines in a variety of habitats and conventional seining (1.8 m x 12.2 m, 6.4 mm mesh) was used to sample areas that were relatively free of debris. Small trawls similar to that described by Herzog et al. (2005) were used to sample open water habitats, whenever possible. Six trawl hauls/reach was set as a goal; however, in year three this was increased to a minimum of eight. In cases where seining was impossible, the number of trawl hauls was increased. A goal of obtaining 10 seine hauls in a river reach was set, usually by conducting seine hauls in pairs. Trawls were done in a manner to get

reasonably close to shorelines and also an attempt was made in the same area to trawl farther out into the stream. In a few instances, trawl hauls were virtually impossible due to debris (tree limbs).

At each locale, depth, substrate, water temperature, turbidity (using a Secchi disk), GPS coordinates, and habitat descriptions were recorded. Additional notes were taken if sampling was on an inside or outside river bend. Substrates were examined either directly or in combination by dragging a chain from a boat and observing vibration in deeper waters.

Fish total lengths (TL) were recorded and voucher specimens retained for identification in the laboratory. Specimens were fixed in 10% formalin and later transferred to 45% isopropanol. Vouchers were deposited in the fish collection at the University of Arkansas-Fort Smith (UA-FS).

Three species of *Notropis* taken from the lower Arkansas, Black, Mississippi, and White rivers warrant documentation as new distributional records. None of the numerous species of shiners or minnows we collected from the Little, Ouachita, Red or St. Francis rivers were noteworthy.

Material examined.—The following is a listing of collection localities for three species of *Notropis* collected in Arkansas rivers. Detailed data provided on the new sites include county, specific locality (latitude and longitude), date, number of specimens, measurements, water temperature, turbidity, and comments.

CYPRINIDAE

Notropis buchanani Meek (Ghost Shiner). **LAWRENCE CO.:** Black River, above and below Coffey Access Reach at Shirley Bay-Rainey Break Wildlife Management Area (35.96818°N, 91.19297°W and 35.97266°N, 91.17883°W). A single specimen each (37 and 45 mm TL) was collected on 13 June 2006 by mini-fyke net (0.9 m depth) and on 14 June

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2006 via trawl (3.0 m depth). Water temperature was 26.1°C and turbidity 0.370 m. **MONROE CO.:** White River, below Clarendon (34.66106°N, 91.31513°W). Three specimens (33-56 mm TL) were collected between 4-6 January 2006 by mini-fyke net (0.5 m depth) set on a sloping sandbar. Water temperature was 6.7°C and turbidity 0.320 m. This former site represents the northernmost locality for *N. buchanani* in the state and the first time this shiner has been reported from the Black River. In addition, the latter record is the first for the middle portion of the White River since an earlier pre-1960 record (Robison and Buchanan 1988). Additional records include those for the Arkansas River Valley and lower White River (Robison and Buchanan 1988). *Notropis buchanani* is ranked by the Nature Conservancy as imperiled (S2) or vulnerable (S3) in the state (NatureServe, 2009).

Notropis texanus (Girard) (Weed Shiner). **DESHA CO.:** Arkansas River, Pool 2, Lower Arkansas River reach below Lock 2 (Wilbur D. Mills Dam) and confluence of Mississippi River

(33.95988°N, 91.16808°W and 33.93856°N, 91.15805°W). Six *N. texanus* (47-62 mm TL) were collected between 13-16 June 2006 by mini-fyke net (1.2 m depth) and seines (0.9 m depth). Water temperature was 22.2°C and turbidity 0.661 m. In the lowlands, this shiner is sporadic in occurrence and seldom abundant. McAllister et al. (2009a) recently documented records for *N. texanus* from extreme south Arkansas. We report *N. texanus* from the lower Arkansas River for the first time. There is a single previous record upstream for this river as well as a disjunct population in Perry and Yell counties at Lake Nimrod, part of the Fourche LaFave watershed (Robison and Buchanan 1988). *Notropis texanus* is considered by the Nature Conservancy as S3 in the state (NatureServe 2009).

Notropis wickliffi Trautman (Channel Shiner). Several new records are documented (see Table 1). A total of 211 Channel shiners were collected over sloping sandbars, open water, and backwater by seine, mini-fyke nets, and trawls from the lower Arkansas

Table 1. New records of *Notropis wickliffi* from the Arkansas and Mississippi rivers.

County	River	Locality	Date(s)	Number	Water temp (°C)	Turbidity (m)	TL (mm)
Desha ¹	AR	lower reach, below Pool 2	13-15 April 2008	2	22.2	0.661	38, 40
Desha ²	MS	Arkansas City, lower MS River reach	8-10 August 2006	2	27.8	0.392, 0.550	28, 43
Desha ³	MS	Choctaw Island reach	21-23 July 2006	1	31.1	0.492	40
Mississippi ⁴	MS	Osceola reach	12-14 January 2006	23	5.6	0.270	29-47
			9 January 2007	1	29.4	0.220	56
Phillips ⁵	MS	between Helena/St. Francis confluence	29 July-1 August 2006	1	30.6	0.514	37
Phillips ⁶	MS	below Helena/downstream reach	27-29 July 2007	13	27.2-28.9	0.490	45-61
Phillips ⁷	MS	below Helena/upstream reach	29-31 July 2007	168	27.2-28.9	0.490	27-50

¹33.96304°N, 91.26331°W (seine); 33.97642°N, 91.28661°W (fyke net).

²33.58993°N, 91.16612°W (seine); 33.63810°N, 91.16412°W (fyke net).

³33.61039°N, 91.16742°W (fyke net).

⁴35.67652°N, 89.94658°W (fyke net); 35.67788°N, 89.94714°W (fyke net); 35.67846°N, 89.94746°W (fyke net); 35.67990°N, 89.94871°W (fyke net); 35.69621°N, 89.95736°W (fyke net); 35.69788°N, 89.95720°W (fyke net); 35.62109°N, 89.88655°W (seine).

⁵34.52980°N, 90.57428°W (trawl).

⁶34.40248°N, 90.60087°W (fyke net); 34.40510°N, 90.59567°W (trawl); 34.40498°N, 90.59534°W (trawl); 34.40496°N, 90.59505°W (trawl).

⁷34.41278°N, 90.58909°W (fyke net); 34.41301°N, 90.58908°W (fyke net); 34.41268°N, 90.58919°W (fyke net); 34.41240°N, 90.58927°W (fyke net); 34.41115°N, 90.59026°W (fyke net); 34.41706°N, 90.58787°W (trawl); 34.41669°N, 90.58871°W (trawl); 34.41719°N, 90.58631°W (trawl); 34.41215°N, 90.58872°W (trawl); 34.41227°N, 90.58845°W (trawl).

and Mississippi rivers (Table 1). The most remarkable single collection was 146 *N. wickliffi* taken with five mini-fyke nets off sloping sandbars composed of sand and/or gravel substrate in the Mississippi River below Helena whereas 22 Channel Shiners were taken by trawl at this location. Interestingly, no additional *N. wickliffi* were taken in any of the other six rivers sampled, although Mimic Shiners, *N. volucellus* (Cope) were taken at three sites in the Black River (Lawrence, Independence, and Randolph counties) where they appear to be common (Robison and Buchanan 1988,

1994). The Channel Shiner was long regarded as a subspecies of *N. volucellus*. However, it is now considered to be a distinct species (Nelson et al. 2004). Moreover, its overall distribution is poorly understood, due to confusion of this species with *N. volucellus* (Etnier and Starnes 1993). Previous records of *N. wickliffi* in Arkansas include three sites in the western mainstem side of the Mississippi River (Chicot and Mississippi counties), several sites in the Current River (Randolph County), and a site in the White River (Independence County) (Robison and Buchanan 1994).

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In addition, Etnier and Starnes (1993) report records for *N. wickliffi* at three sites on the Tennessee (eastern) side of the mainstem Mississippi River. However, additional study is suggested to help unravel the complete distribution of *N. wickliffi* and *N. volucellus* in the state.

In summary, we document five new county records for the three species of cyprinids collected. Most importantly, we include new distributional records and extensions of the known geographic ranges for these shiners to be included in the second edition of Fishes of Arkansas.

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Literature Cited

- Etnier DA and WC Starnes.** 1993. The fishes of Tennessee. Knoxville: University of Tennessee Press. 681 p.
- Herzog DP, VA Barko, JS Scheibe, RA Hrabik, and DE Ostendorf.** 2005. Efficacy of a benthic trawl for sampling small-bodied fishes in large river systems. North American Journal of Fisheries Management 25: 594-603.
- McAllister CT, R Tumilson, and HW Robison.** 2009a. Geographic distribution records for select fishes of central and southern Arkansas. Texas Journal of Science 61:31-44.
- McAllister CT, HW Robison, and TM Buchanan.** 2009b. Distribution of the pallid shiner, *Hybopsis amnis* (Cypriniformes: Cyprinidae), in Arkansas. Texas Journal of Science 61: (*in press*).
- NatureServe.** 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available <http://www.natureserve.org/explorer>. (Accessed: February 26, 2009).
- Nelson JS, EJ Crossman, H Espinosa-Perez, LT Findley, CR Gilbert, RN Lea, and JD Williams.** 2004. Common and scientific names of fishes from the United States, Canada, and Mexico. Sixth Ed. Bethesda: American Fisheries Society Special Publication 29. 386 p.
- Robison HW and TM Buchanan.** 1988. Fishes of Arkansas. Fayetteville: University of Arkansas Press. 536 p.
- Robison HW and TM Buchanan.** 1994. First record of the Channel Shiner, *Notropis wickliffi* Trautman, in Arkansas and comments on the Current River population of *Notropis volucellus* (Cope). Proceedings of the Arkansas Academy of Science 48:264-5.