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New Distributional Records and Natural History Notes on Selected Fishes from Arkansas

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Running Title: New Distributional Records and Natural History Notes on Selected Fishes from Arkansas

Abstract

This report documents new records on the distribution of selected fishes from Arkansas and provides notes on their natural history. We document new geographic records for 21 species within 8 families in 12 counties of the state. Most importantly, we have included new records for fishes ranked S1, S2 or S3 in the state by NatureServe and several Species of Special Concern by the Arkansas Game and Fish Commission (AGFC). Additional collections of fishes in the state will undoubtedly provide more records, especially with the use of electroshocking devices as has been shown herein.

Introduction

Much has been documented in the last 25 yr on the distribution of fishes of Arkansas since the seminal publication of Robison and Buchanan (1988). Many of these reports have been published in the *Journal*, including two recent papers by the authors (McAllister et al. 2009a, Robison et al. 2011). Here, we continue to disseminate that information prior to the publication of the 2nd edition of *Fishes of Arkansas* with additional geographic distribution records for some relatively common and some uncommon fishes of the state.

Materials and Methods

Field collections of fishes were made in 12 counties (Fig. 1) using a 6 m bag seine (3 mm mesh), and a backpack electrofisher and/or a boat electrofisher; observations on natural history were made by the authors. Voucher specimens were fixed in 10% formalin, preserved in 45% isopropanol or 70%

ethanol and either housed at Henderson State University (HSU) or the Auburn University Museum of Natural History Fish Collection (AUM), Auburn, AL. All specimens were collected in March/October 2012 and January 2013 and were also photo-vouchered by coauthors DAN and UT for use in the 2nd edition of *Fishes of Arkansas* currently in preparation by Robison and Buchanan. Common names of fishes are capitalized and scientific names follow Page et al. (2013). Herein, we use AGFC rankings (Anonymous 2004) and NatureServe Explorer state (S) conservation status ranks (NatureServe 2012) for each taxon (when available) and those are listed as follows: S1 (critically imperiled); S2 (imperiled); S3 (vulnerable).

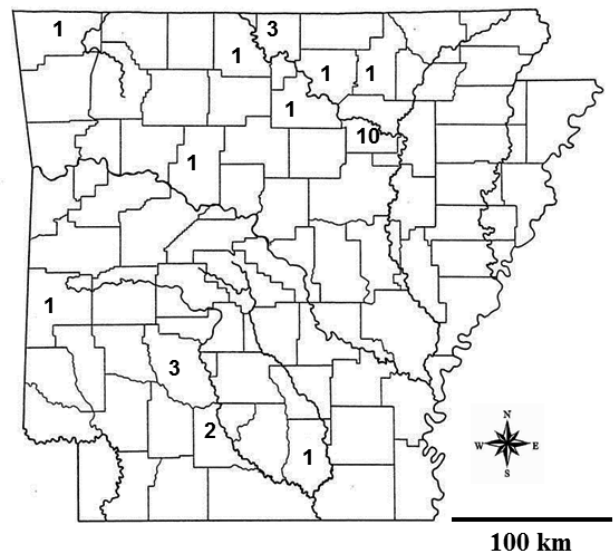


Figure 1. Twelve Arkansas counties with number of fish records collected in each during this study.

Cephalaspidomorpha, Petromyzontidae – Lampreys

Ichthyomyzon castaneus Girard – Chestnut Lamprey. Two *I. castaneus* (AUM 59806) were taken in the White River at Batesville, Independence County (Sec. 22, T13N, R6W) on 12 March 2012. One of these was attached to a Golden Redhorse, *Moxostoma erythrurum*. This represents the 3rd record of *I. castaneus* from this portion of the White River (Robison and Buchanan 1988). More recently, McAllister et al. (2010b) reported *I. castaneus* for the first time from the Strawberry River.

Lampetra aepyptera (Abbott) – Least Brook Lamprey. The Least Brook Lamprey is rarely observed in the state as only 33 specimens had been collected in Arkansas prior to 1988 (Robison and Buchanan 1988). Robison et al. (2006) documented an additional 6 specimens. Recent collecting in northern Arkansas has revealed 9 *L. aepyptera* taken from 3 new localities in the White River system. The following collections are documented herein: (1) Mill Creek at St. Hwy. 56 at Evening Shade, Sharp County (Sec. 3, T16N, R6W), 10 March 2012 (AUM 59801, *n* = 2; HSU 3487, *n* = 5); (2) Strawberry River at St. Hwy. 354, W of Wiseman, IZard County (Sec. 7, T18N, R8W), 11 March 2012 (*n* = 1); and (3) North Sylamore Creek, Stone County (Sec. 4, T15N, R11W), 14 March 2012 (AUM 59813, *n* = 1). NatureServe lists this lamprey as S2 in the state and the AGFC lists it as a Species of Special Concern (Anonymous 2004).

Lethenteron appendix (DeKay) – American Brook Lamprey. Robison and Buchanan (1988) reported only 7 records of *L. appendix* from the state, all from the White River system of northern Arkansas. Tumilson and Tumilson (1999) later discovered this species in the Ouachita River system of southern Arkansas. Robison et al. (2006) reported 15 additional specimens (12 from southern Arkansas and 3 from Piney Creek, Independence County). A single (dead) specimen of *L. appendix* was found in the mainstem White River at Batesville, Independence County (Sec. 21, T13N, R6W) on 12 March 2012, making it the 16th specimen collected from Arkansas since 1988. This recently spawned-out male was discovered floating in the main river ca. 18 m from shore. Apparently spawning had occurred recently as the specimen was still fresh. In Arkansas, we know little about the spawning dates and habitats of *L. appendix* and this additional information on spawning time is important to document. NatureServe lists this lamprey as S2 in the state and the AGFC lists it as a Species of Special Concern (Anonymous 2004).

Actinopterygii, Lepisosteidae – Gars

Lepisosteus platostomus Rafinesque – Shortnose Gar. Two juvenile *L. platostomus* were taken on 12 March 2012 from the White River at Batesville, Independence County (Secs. 22 & 27, T13N, R6W). This represents the farthest upstream record of this gar species in the White River system (Robison and Buchanan 1988).

Clupeidae – Herrings

Alosa alabamae Jordan & Evermann – Alabama Shad. The Alabama Shad is a rare anadromous species in Arkansas (Robison and Buchanan 1988). It was listed as a Species of Greatest Conservation need in the state by Buchanan et al. (1999). In addition, NatureServe ranks *A. alabamae* as S1-S2 in the state and the AGFC lists it as a Species of Special Concern and a Candidate Species (Anonymous 2004). This shad has declined drastically throughout the freshwater portion of its range during the past decade due to a combination of alterations of habitat, including locks and dams blocking or impeding access to spawning sites, dredging, thermal alterations, siltation, and other adverse impacts on water quality (Robison and Buchanan 1988). In order to spawn in late winter and spring, Alabama Shad ascend the Mississippi River and its major tributaries far inland. Buchanan et al. (1999) re-discovered this species in the Ouachita River drainage of Arkansas over 100 yr after it had been collected in the Ouachita River (1879, 1884, and 1892). More recently, Buchanan et al. (2012) reported the first records from the White River drainage. On 22 October 2012 we collected 34 adult *A. alabamae* from the mainstem Ouachita River, ca. 90 m downstream of the county road bridge at what is locally known as Tate's Bluff, Ouachita County (Sec. 1, T11S, R17N). Four specimens were vouchered (AUM 59817) and photographed while the remaining 30 specimens were released unharmed at the site. The discovery of any specimen of *A. alabamae* in Arkansas is noteworthy, thus its inclusion in this paper.

Cyprinidae – Minnows and Carps

Chrosomus erythrogaster (Rafinesque) – Southern Redbelly Dace. On 16 January 2013, one of us (JKW) and U.S. Forest Service personnel collected 15 *C. erythrogaster* (HSU 3488) from Myers Branch, a tributary of the Middle Fork of Illinois Bayou (Arkansas River Drainage) in Pope County (Sec. 8, T11N, R18W). Specimens ranged from 32 to 66 mm standard length and were made up of 12 adults and 3 juveniles. The discovery of this dace in Illinois Bayou

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is significant for several reasons. Foremost, it is the first time this species has ever been reported from the Illinois Bayou drainage. More importantly, its documentation marks the first time this species has been collected from the Arkansas River drainage direct tributaries within the state (Robison and Buchanan 1988). The nearest previous record of this species is a single collection from Flint Creek near Gentry, Benton County (Robison and Buchanan 1988). Flint Creek is a tributary of the Illinois River which flows west into Oklahoma. The Illinois River flows into the Arkansas River near the small town of Gore, Oklahoma (ca. 60 km from the OK/AR border). The Flint Creek locality is ca. 10 km from the Oklahoma border. The new Illinois Bayou location is ca. 145 km from the Flint Creek site and ca. 124 km from the Oklahoma border. Natural reproduction of this species in the Illinois Bayou has also been documented by one of us (JKW, *unpublished*), thus we believe this is a natural native population occurring in Illinois Bayou and does not constitute a bait introduction. *Chrosomus erythrogaster* typically inhabits clear, cold, spring-fed brooks in Arkansas (Robison and Buchanan 1988). Furthermore, the Southern Redbelly Dace is not a hardy species as it does poorly in bait containers and is not generally used for bait in the state.

Ctenopharyngodon idella (Valenciennes) – Grass Carp. An adult *C. idella* was collected using the boat electrofisher on 12 March 2012 from the White River at Batesville, Independence County (Secs. 22 & 27, T13N, R6W). This record represents the first collection of this cyprinid from the mainstem White River system in the region below Bull Shoals Lake southeastward to Newport (Robison and Buchanan 1988). Grass Carp were first introduced into an Arkansas lake (Lake Greenlee, Brinkley Co.) in 1968 and, a decade later, had been stocked in more than 100 lakes in the state (Robison and Buchanan 1988).

Hybognathus nuchalis Agassiz – Mississippi Silvery Minnow. A single *H. nuchalis* (AUM 59803) was taken on 12 March 2012 from the White River at Batesville, Independence County (Secs. 22 & 27, T13N, R6W). This specimen represents the farthest upstream record of this minnow in the White River system (Robison and Buchanan 1988).

Notropis ozarcanus Meek – Ozark Shiner. Six *N. ozarcanus* (AUM 59804, $n = 2$; HSU 3485, $n = 1$) were collected on 11 March 2012 from the Spring River at Many Islands Campground area N of Hardy, Fulton County (Sec. 17, T20N, R5W). In an unpublished thesis, Winters (1985) reported *N. ozarcanus* to be uncommon in the Spring River system.

Indeed, this shiner had not been taken in the Spring River since 1995 (Robison 1997). NatureServe lists *N. ozarcanus* as S2 in the state.

Catostomidae – Suckers

Catostomus commersonii (Lacépède) – White Sucker. Meek (1894) originally reported the White Sucker from the Middle Fork of the White River at Fayetteville. Almost a century later, Robison and Buchanan (1988) reported small, scattered populations in the Illinois River drainage that are threatened by the progressive deterioration of that system's aquatic environment. Petersen et al. (1996) remarked that the White Sucker was quite rare in Arkansas. He noted the collection of 25 specimens taken by the Arkansas Department of Pollution Control and Ecology from the Illinois River drainage in 1995 as well as a single specimen from the White River system. More recently, McAllister et al. (2010a) reported 2 records of *C. commersonii* from the White River. We herein report the collection on 15 March 2012 of a single adult *C. commersonii* (AUM 59814) from Little Osage Creek at St. Hwy. 264, ca. 3.2 km W of Cave Springs, Benton County (Sec. 10, T18N, R31W). NatureServe lists this sucker as S3 in the state.

Ictiobus niger (Rafinesque) – Black Buffalo. A single adult *I. niger* was collected on 12 March 2012 from the White River at Batesville, Independence County (Secs. 22 & 27, T13N, R6W). This photo-vouchered specimen represents the farthest upstream record of *I. niger* in the White River system (Robison and Buchanan 1988).

Minytrema melanops (Rafinesque) – Spotted Sucker. A single adult *M. melanops* (AUM 59805) was taken on 12 March 2012 from the White River at Batesville, Independence County (Secs. 22 & 27, T13N, R6W). This specimen represents the farthest upstream record of *M. melanops* in the White River system (Robison and Buchanan 1988).

Moxostoma anisurum (Rafinesque) – Silver Redhorse. Recently, McAllister et al. (2009b) reviewed the status of the Silver Redhorse in Arkansas. They reported 23 specimens, only 6 (26%) of which were adults in 12 collections of this species from the state. The Silver Redhorse is a Species of Special Concern in the state (Anonymous 2004) and has previously been rarely collected; thus, any collection of *M. anisurum* is noteworthy. On 12 March 2012, 2 adult tuberculate males (AUM 59807) were taken using a boat electrofisher in the mainstem White River at Batesville, Independence County (Secs. 22 & 27, T13N, R6W). These represent the 24th and 25th

specimens documented from Arkansas. NatureServe lists this sucker as S1 in the state and the AGFC lists it as a Species of Special Concern (Anonymous 2004).

Moxostoma pisolabrum (Trautman & Martin) – Pealip Redhorse. Robison et al (2011) reported *M. pisolabrum* in a list of the fishes of Crooked Creek (White River system), northern Arkansas. Because of the rarity of this sucker in the state, collection of this species is noteworthy. Six adults were collected from Crooked Creek at Kelly's Slab, ca. 8.0 km W of Yellville, Marion County (Sec. 6, T18N, R16W) on 13 March 2012 using a boat electrofisher. Only 2 specimens were vouchered (AUM 59812); the remaining 4 were released alive. NatureServe lists this sucker as S2 in the state.

Moxostoma poecilurum Jordan – Blacktail Redhorse. This lowland sucker is rarely collected in Arkansas (Robison and Buchanan 1988). A single juvenile (AUM 59816) was collected on 21 October 2012 from a boat ditch of Terre Noir Creek, 3.2 km SW of Oak Grove, Clark County (Sec. 3, T9S, R20W). Although taken earlier and reported in an unpublished thesis by Ponder (1983), this marks the first published record of *M. poecilurum* from the Terre Noir watershed (Little Missouri River system). NatureServe lists this sucker as S2-S3 in the state.

Ictaluridae – North American Catfishes

Noturus exilis Nelson – Slender Madtom. Robison and Winters (1979) reported finding 2 *N. exilis* on 3 April 1976 in the Mountain Fork River (Little River System-Red River Drainage), 1.6 km W of St. Hwy. 246 at a county road bridge in western Polk County. At the time, they suggested these specimens represented a bait introduction after discussion with Dr. G. Moore, late dean of Oklahoma ichthyologists, who related that state anglers occasionally use madtoms as fish bait. Later, 5 additional *N. exilis* (University of Florida-Gainesville Collection 22742) were collected from Mill Creek (a tributary of the Mountain Fork River) and reported by G. Burgess (*pers. comm.*). Whether these specimens represent bait transfers or important zoogeographic clues is not known. One of us (HWR) sampled this river system repeatedly from 1973-1995 and did not again collect additional specimens of *N. exilis* in the Mountain Fork system. Recently, on 24 October 2012, we collected 53 additional *N. exilis* (AUM 59820) using a backpack electrofisher from the Mountain Fork River at the St. Hwy. 246 bridge, W of Hatfield, Polk County (Sec. 8, T3S, R32W). The discovery of these additional *N. exilis* provides strong evidence that the Slender

Madtom has colonized the Mountain Fork River system in the 36 yr since its original discovery. These specimens will be analyzed using DNA techniques to determine additional information about where they may have originated. This provides yet another example of a species being introduced into a region where it did not originate, and then, increasing in abundance.

Noturus maydeni Egge – Black River Madtom. This relatively newly described genetically and karyotypically distinct madtom (from Ozark Madtom, *Noturus albater*) by Egge and Simons (2006) proved quite common in the Spring River at Many Islands Campground, Fulton County (Sec. 17, T20N, R5W). Twenty-five specimens were taken on 11 March 2012 from that site (AUM 59802, $n = 2$; HSU 3482, $n = 3$). This madtom had not been reported from this location on the Spring River previously. This species has not yet been ranked by NatureServe.

Percidae – Perches

Crystallaria asprella Jordan – Crystal Darter. This species has experienced a tremendous decrease in abundance and distribution across its geographic range over the past 30 yr. It was therefore surprising that we were able to collect over 25 *C. asprella* from our recent collecting effort in southern Arkansas. The following collection localities with number of specimens are provided: (1) Ouachita River at Arkadelphia, Clark County (Sec. 17, T7S, R19W) on 21 October 2012 (AUM 59815, $n = 3$); (2) Ouachita River ca. 90 m downstream of the county road 25 bridge at Tate's Bluff, Ouachita County (Sec. 1, T11S, R17W) on 22 October 2012 (26 specimens caught - 25 released); AUM 59818, $n = 1$; and (3) Saline River at Ozment's Bluff, SE of Warren, Bradley County (Sec. 14, T14S, R9W) ($n = 1$, uncatalogued). It appears that populations of *C. asprella* are holding their own in southern Arkansas, particularly in the lower Ouachita and Saline rivers. NatureServe lists this darter as S2 in the state and the AGFC lists it as a Species of Special Concern (Anonymous 2004).

Percina shumardi (Girard) – River Darter. One record of *P. shumardi* is reported herein. A single male (AUM 59809) was taken on 12 March 2012 in the White River at Batesville, Independence County (Secs. 22 & 27, T13N, R6W) below the dam site over a sand-gravel mixed substrate at 0.9-1.2 m depth with moderate current. This is only the 3rd report of the River Darter in the White River above Newport.

Percina uranidea (Jordan & Gilbert) – Stargazing Darter. Robison and Buchanan (1988) showed only 5

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records of *P. uranidea* for the entire mainstem White River in Arkansas. Six *P. uranidea* (AUM 59808, $n = 3$) were collected by seine on 12 March 2012 from the White River at Batesville, Independence County (Sec. 21, T13N, R6W) below the dam site over moderate flow over gravel substrate at a depth of ca. 1.0 m. Collection of this species is noteworthy as most of the extant range of this darter now lies within Arkansas (Robison and Buchanan 1988) as it has been extirpated from Illinois and Indiana. In addition, a single specimen (AUM 59819) was taken at night on 21 October 2012 from the mainstem Ouachita River at Arkadelphia, Clark County (Sec. 17, T7S, R19W) in 1.0 m of water over a gravel bar with moderate current. Prior to these new records, few published records of this darter were known from the mainstem Ouachita River (Robison and Buchanan 1988). NatureServe lists this darter as S3 in the state.

Cottidae – Sculpins

Cottus immaculatus Kinziger & Woods – Knobfin Sculpin. Several hundred *Cottus immaculatus* were collected on 11 March 2012 from the Spring River at Many Islands Campground in Fulton County (Sec. 17, T20N, R5W). Only one individual was vouchered (AUM 59803), but in the course of collecting in the swift riffle habitats at this site, 2 different egg clusters of *C. immaculatus* were retrieved. The egg clusters were orange in color and consisted of approximately 50 to 80 eggs in each mass. To our knowledge, this represents the first report of eggs in *C. immaculatus*, thus we know spawning must have occurred in early March. This species has not yet been ranked by NatureServe.

In summary, we document new distributional records for 21 species of fishes within 8 families in 12 counties of the state. Most importantly, we have included new records for fishes ranked S1, S2 or S3 in the state by NatureServe and several Species of Special Concern by the AGFC. Additional collection of fishes in the state will undoubtedly provide additional records, especially with the use of electrofishing devices as has been shown herein.

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