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Vertebrate Natural History Notes from Arkansas, 2018

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Cover Page Footnote

The Arkansas Game and Fish Commission (AGFC) issued Scientific Collecting Permits to RT, HWR, MBC, and CTM, and the USDA Forest Service (Ouachita and Ozark/St. Francis National Forests) issued a Scientific Collecting Permit to CTM. Information and observations about the hoary bat were provided by T. Inebnit. Nikolas H. McAllister assisted with collecting in Polk County. Eric Brinkman and Noah Moses, AGFC-Hope Regional Office, and Jim Cunningham, commercial fisherman, Fulton, AR, provided fishes from the Red River in February 2018. Dr. Dave Neely (Chattanooga, TN) and Uland Thomas (Chicago, IL) assisted in collecting fishes on Crowley's Ridge and vicinity. Susan Weinstein and David Saugey provided new records of bats and rabies.

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Vertebrate Natural History Notes from Arkansas, 2018

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Abstract

Because meaningful observations of natural history are not always part of larger studies, important pieces of information often are unreported. Small details, however, can fill gaps in understanding and lead to interesting questions about ecological relationships or environmental change. We have compiled recent important observations of distribution, deformities, and foods of various vertebrates, observations of winter activity of a Groundhog (*Marmota monax*) and winter torpor of a Hoary Bat (*Lasiurus cinereus*), and also report a very unusual case of bilateral gynandromorphism in a Northern Cardinal (*Cardinalis cardinalis*). These unique observations continue to add to the growth of knowledge of the biology of vertebrates in Arkansas.

Introduction

Human alteration of environments and introduction of non-native species constantly alters relationships and life history parameters of species studied by vertebrate field biologists. Distribution and natural history of many species within Arkansas is becoming better documented, but much remains to be discovered and reported. We continue a series of papers to update the state of knowledge of the natural history of Arkansas's vertebrates (see Tumlison *et al*. 2016 and references therein, Tumlison *et al*. 2017). Herein, we include previously unreported records of distribution, food habits, disease, and observations of behavior in vertebrates from Arkansas. Of particular interest, a genetically peculiar bird is documented and described.

Methods

Fishes were collected during June 2001 and March 2003, and again between April 2017 and February 2018 with 3.1 × 1.4 m, 3.1 × 1.8 m, and 6.1 × 1.8 m seines (all 3.175 mm mesh) or with gill and hoop nets. All fish specimens documented herein are housed either in the Southern Arkansas University Vertebrate Collection (SAU) in Magnolia, Arkansas or in the Henderson State University Collection (HSU) in Arkadelphia, Arkansas. Unvouchered fishes were identified by HWR. New records of bats sent to the Arkansas Department of Health to be tested for rabies were identified by D. Saugey (no physical vouchers remain). Other voucher specimens or photo-vouchers are deposited in the vertebrate collections at Henderson State University (HSU) unless otherwise noted.

Results and Discussion

CLASS ACTINOPTERYGII

Lepisosteidae - Gars

***Atractosteus spathula* (Lacépède) – Alligator Gar**. Robison and Buchanan (1988) listed only one record of *A. spathula* from the Red River (Lafayette Co.) in southwestern Arkansas. On 1 July 2017, HWR found a decomposing specimen (ca. 1.2 m [4 ft.] long) at the boat launch on the Little River just downstream of Millwood Dam on Millwood Lake, Little River Co. (Sec. 26, T12S, R28W). This specimen represents the first published record of the Alligator Gar from the Little River, and second record of this gar from the Red River drainage of southwestern Arkansas.

***Lepisosteus osseus* Winchell – Longnose Gar**. Robison and Buchanan (1988) reported only 2 records of *L. osseus* from the mainstream Red River in

Arkansas. On 9 February 2018, Jim Cunningham, a professional fisherman, caught a large (1,129 mm TL) specimen of this gar in a 91.4 m (300 ft.) gill net placed 0.4 km (0.25 mi.) downstream of the confluence of the Little and Red rivers (33.6129767°N, 93.8217663°W) in Little River Co. This is the third record of this gar from the mainstream Red River in Arkansas.

Hiodontidae – Mooneyes and Goldeyes

***Hiodon alosoides* (Rafinesque) – Goldeye.** On 18 March 2017, R. Morphew collected a Goldeye from the White River in Prairie Co., 6.5 km (4 mi.) downstream of DeVall's Bluff Bridge, 34.77415°N, 91.40902°W (HSU 3621). This is a new county record (Fig. 1) and extends the documented range about 50 km (32 mi.) south in the White River (Robison and Buchanan 1988).

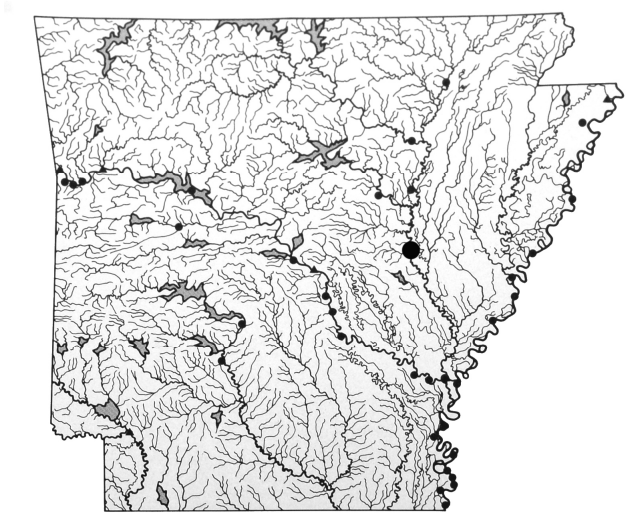

Figure 1**.** Arkansas distribution of *Hiodon alosoides*. Large dot in the White River represents new record for Prairie Co. (modified from Robison and Buchanan 1988).

Cyprinidae – Minnows and Carps

***Luxilus chrysocephalus* Rafinesque – Striped Shiner.** We found an anomalous 89 mm TL female *L. c. isolepis* in a sample of 18 specimens that was collected by CTM on 21 December 2017 from Big Fork Creek, Polk County (34.468144°N, 93.947978°W). The specimen had a deviation of the spine on the coronal or frontal plane (scoliosis; Fig. 2). Fish affected by this deformity usually do not swim efficiently, are less capable of acquiring food, are at a greater risk of predation, as well as being more susceptible to physiological imbalances (Silverstone and Hammel 2002). This is the first time, to our knowledge, that this deformity has been documented in a Striped Shiner.

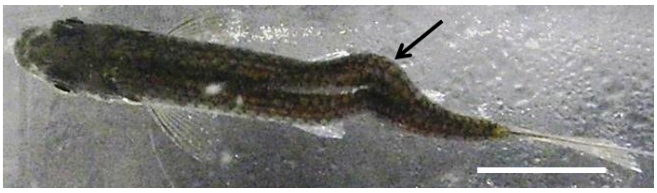

Figure 2**.** Striped Shiner (*Luxilus chrysocephalus isolepis*) with skeletal deformity showing deviation of caudal spine (scoliosis, arrow). Scale bar = 20 mm.

Catostomidae – Suckers

***Cycleptus elongatus* (Lesueur) – Blue Sucker**. Blue Suckers are difficult to capture, resulting in few voucher specimens from Arkansas. Robison and Buchanan (1988) reported a single Blue Sucker record from the Red River in southwestern Arkansas. We report the collection of 6 specimens of *C. elongatus* captured between 8 and 10 February 2018, representing the second record from the Red River in southwestern Arkansas. All 6 individuals of *C. elongatus* (2 adult females [590 and 660 mm TL] and 4 adult males [480-510 mm TL]) were taken in 6 hoop nets set along the bank of the Red River in Little River Co., about 2.4 km (1.5 mi.) upstream of the confluence of Little and Red rivers, between coordinates of 33.6047260°N 93.8418315°W and 33.6069381°N 93.8446241°W.

Blue Suckers feed primarily on trichopteran larvae and pupae, hellgrammites, fingernail clams and filamentous algae (Rupprecht and Jahn 1980, Moss *et al*. 1983). Guts of our 6 specimens contained primarily chironomid larvae, but also one water mite was recovered.

***Ictiobus bubalus* Rafinesque – Smallmouth Buffalo**. Although *I. bubalus* has been collected previously in the Red River in southwestern Arkansas (Robison and Buchanan 1988), little is known about its abundance in the Red River system. Jim Cunningham collected 27 individuals of this catostomid in just 30 min. using hoop nets in Little River Co. on 9 February 2018. Two Bigmouth Buffalo (*I. cyprinellus*) were taken in the same net. The locality was the same as for the *C. elongatus* already mentioned.

Aphredoderidae – Pirate Perches

***Aphredoderus sayanus* Gilliams – Pirate Perch**. Pirate Perch are rarely encountered in the Arkansas

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River Valley upstream of Morrilton (Robison and Buchanan 1988). We report a single specimen of *A. sayanus* collected from a tributary to Baker's Creek, approximately 3.2 km (2 mi.) East of AR St. Hwy. 7 (Sec. 22, T8N, R20W) by C. Gagen and Limnology class on 26 March 2003. This collection marks the first county record of *A. sayanus* from Pope Co., and its first published occurrence upstream of Morrilton.

Fundulidae – Topminnows

***Fundulus chrysotus* (Gunther) – Golden Topminnow**. Robison and Buchanan (1988) did not report *F. chrysotus* from the L'Anguille River drainage in Arkansas. On 21 April 2017, we (HWR, Dave Neely, CTM, and Uland Thomas) collected 20 specimens of *F. chrysotus* from 3 localities in the L'Anguille River Drainage of St. Francis Co., as follows: (1) roadside ditch in Horton, northwest of Forrest City at jct. of AR St. Hwy 261 and Saint Francis Co. (SFC) road 255 (Sec. 10, T5N, R2E), 21 April 2017 (8 specimens). The tannin stained water was heavily vegetated with Floating Primrose-Willow (*Ludwigia peploides*), duckweed (mixed species), and Lizardtail (*Saururus cernuus*); (2) unnamed tributary of L'Anguille River at SFC road 255 (Sec. 20, T5N, R2E), 21 April 2017 (3 specimens); (3) backwater swamp of Cypress Creek at the edge of SFC road 255, ca. 4 km (2.5 mi.) North of the jct. of SFC road 255 and I-40 at Palestine, (Sec. 29, T5N, R2E), 22 April 2017 (9 specimens). These specimens are the first record of *F. chrysotus* in the L'Anguille River drainage (Fig. 3).

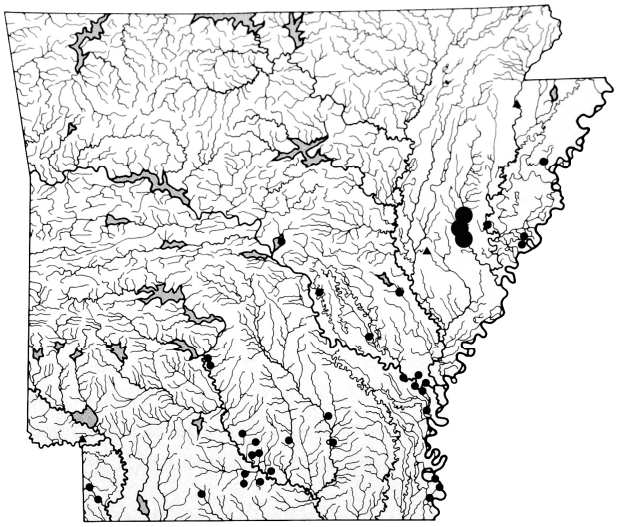

Figure 3. Arkansas distribution of *Fundulus chrysotus*. Large dots represent new records for the L'Anguille River drainage (modified from Robison and Buchanan 1988).

Centrarchidae - Sunfishes

***Morone mississippiensis* Jordan and Eigenmann – Yellow Bass**. This bass is a small moronid species with scattered populations in Arkansas (Robison and Buchanan 1988). On 13 June 2001, 2 juvenile specimens collected by Arkansas Tech University biologists (no county recorded), mark the first published record of this bass from Lake Dardanelle and from this far west in the Arkansas River Valley. Records extending the known range up the Ouachita River include specimens from Lake DeGray, Hot Spring Co. (HSU 1980); Caddo River, Clark Co. (HSU 3360); and Lake Ouachita, Garland Co. (HSU 3427; Fig. 4).

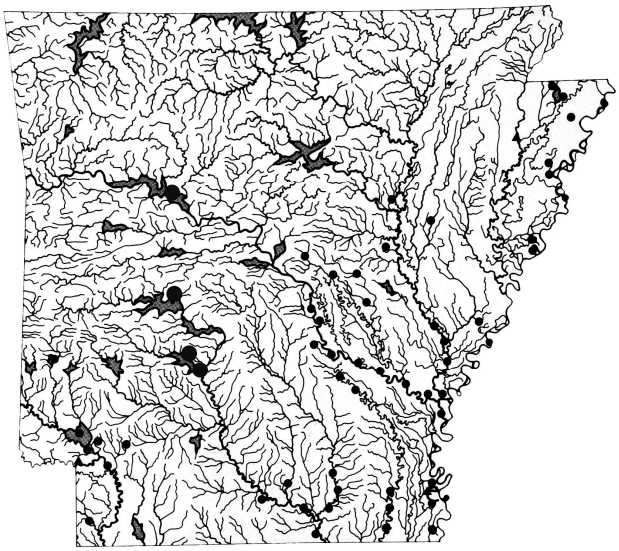

Figure 4. Arkansas distribution of *Morone mississippiensis*. Large dots represents new records (modified from Robison and Buchanan 1988). Placement of dot in Lake Dardanelle is arbitrary due to lack of specific locality data.

***Lepomis symmetricus* Forbes – Bantam Sunfish**. This small sunfish is uncommon in eastern Arkansas (Robison and Buchanan 1988). Five specimens were collected in St. Francis Co. from a backwater swamp of Cypress Creek at the edge of SFC road 255, ca. 4 km (2.5 mi.) North of the jct. of SFC road 255 and I-40 at Palestine, (Sec. 29, T5N, R2E), 22 April 2017 (collectors were HWR, Dave Neely, CTM, and Uland Thomas). This is only the third record of *L. symmetricus* from the L'Anguille River drainage.

Percidae – Perches

***Etheostoma fusiforme* (Girard) – Swamp Darter**. The Swamp Darter is uncommon and never abundant in Arkansas (Robison and Buchanan 1988). We

collected a single specimen from Cypress Creek, St. Francis Co., at the edge of SFC road 255, ca. 4 km (2.5 mi.) North of the jct. of SFC road 255 and I-40 at Palestine, (Sec. 29, T5N, R2E), 22 April 2017 (collectors were HWR, Dave Neely, CTM, and Uland Thomas). This specimen represents the first record of this species from the L'Anguille River drainage (Fig. 5).

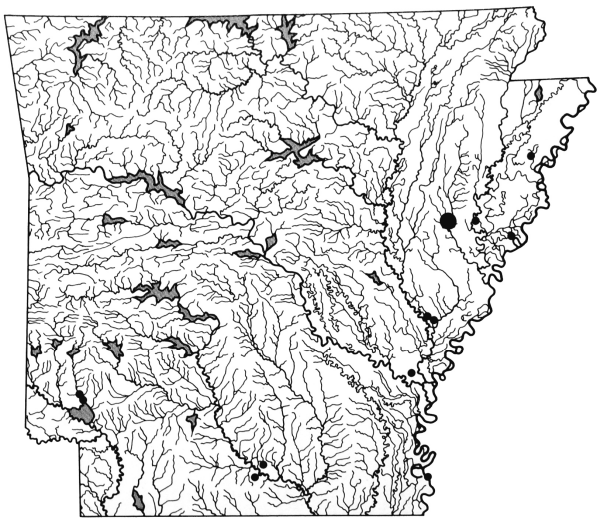

Figure 5. Arkansas distribution of *Etheostoma fusiforme*. Large dot represents the first record for the L'Anguille River drainage (modified from Robison and Buchanan 1988).

CLASS REPTILIA

Gekkonidae – Geckos

***Hemidactylus turcicus* (L.) – Mediterranean Gecko**. A juvenile specimen was collected on 2 September 2017 on the outside of an industrial building in downtown Conway (Faulkner Co., 35.092755°N, 92.441469°W). This specimen represents a new county record of an exotic species with a patchy distribution throughout Arkansas in metropolitan areas. The nearest published record for this species in Arkansas is from adjacent Pulaski Co. (Trauth *et al*. 2004).

CLASS AVES

Cardinalidae – Cardinals

***Cardinalis cardinalis* (L.) – Northern Cardinal**. Northern cardinals are sexually dimorphic birds in which the male usually has uniform bright red coloration whereas the female is more drab with tinges of red. Images of yellow specimens (usually males) have appeared on the web and in some literature recently (Winstead 2017), which is caused by a mutation that prevents affected birds from metabolizing the usual red pigments from dietary carotenoids (McGraw *et al*. 2003).

Genetic aberrations cause other unusual color patterns that rarely appear on Northern Cardinals. On 11 February 2018, KJ observed several cardinals eating sunflower seeds at bird feeders about 5 km NW of Roland, Pulaski Co. (GPS 34.939°N, 92.526°W). The left side of one individual presented the coloration of a female whereas the right side of the same bird was bright red like a male (Fig. 6).

This bird exhibited a very rare condition known as bilateral gynandromorphism. Such birds are bilateral sex chimeras, presenting male characters on one side of the body and female characters on the other (Major and Smith 2016). Analyses of physical specimens show mostly male chromosomes in cells on the male side and mostly female chromosomes on the female side. Typically, only the left ovary is functional in birds, although both testes are functional in males. Dissection of a gynandromorph specimen from Ohio revealed an ovary on the left side but small testis on the right side of the bird, and some feathers common to specimens of each sex were present on the opposite sides (Jones and Bartlett 2017).

Figure 6. Image of bilateral gynandromorph Northern Cardinal (*Cardinalis cardinalis*) taken in Pulaski County, 11 February 2018. Note the lighter female coloration on the left side and the dark red male coloration on the right side of the bird. Photo by KJ.

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It is generally thought that sexual differentiation is determined by genes in the gonads, but Major and Smith (2016) argued that sexual differentiation may depend partly on genes active in various parts of an embryo. Thus, hormonal as well as genetic factors may be involved in determining sex (Clinton *et al*. 2012).

This appears to be only the fourth report of bilateral gynandromorphism in the Northern Cardinal presented in peer-reviewed literature, and the first for Arkansas. Previous records were from Tennessee (Laskey 1969; Peer and Motz 2014), and Ohio (Jones and Bartlett 2017). Photographs of gynandromorphic Northern Cardinals reported to have been taken in Illinois, New Jersey, Texas, and Virginia were located on internet websites.

CLASS MAMMALIA
ORDER RODENTIA
Sciuridae – Squirrels

***Marmot monax* (L.) – Groundhog**. Groundhogs hibernate during the fall and winter months in some regions, but the likelihood of hibernation is not known in Arkansas. Absence of specimens collected during winter months was argued to reveal that they hibernate in Oklahoma (Caire *et al*. 1989). Sealander and Heidt (1990) suggested that groundhogs in northern Arkansas likely have a short hibernation period with entry in November and emergence in January or February. A groundhog photo-captured on a game camera by MBC in Marion Co. (36.08404°N, 92.59949°W) on 3 January 2018 supports the view that hibernation can be short or intermittent in Arkansas.

Cricetidae – New World Mice

***Reithrodontomys humulis* – (Audubon and Bachman) Eastern Harvest Mouse**. On 14 and 17 April 1979, 2 male specimens of *R. humulis* were collected from Franklin Co., near exit 35 along I-40 (35.52048°N, 93.86439°W). Specimens are housed in the Museum of Texas Tech University (TTU 38689, 38691). Previously, only a record from Sebastian Co. was known near this new county record in west-central Arkansas. This small mouse had been reported from only 9 counties in Arkansas, mostly located in the northeastern and southwestern portions of the state (Connior *et al*. 2012).

Although this mouse is found only sporadically, it appears to be common at local sites and times. Tumlison *et al*. (1988) reported the capture of 32 specimens from the campus of Southern Arkansas University (Columbia Co.) and Connior *et al*. (2017) reported 9 taken at Grandview Prairie (Hempstead Co.). A search of museum records on VertNet produced accounts of 9 specimens from the area of Fort Chaffee (Sebastian Co.), housed in the collections of the Sam Noble Oklahoma Museum of Natural History (SNOMNH).

Another specimen of considerable interest located via VertNet is a male housed in SNOMNH (59947), with collection data of Stone Co., 3 mi. N of Fifty-Six, Ozark National Forest, (35.994901°N, 92.213266°W), 20 January 1972. Standard measurements provided via VertNet are 138 mm total length, 69 mm tail length, 19 mm hind foot length, and 16 mm ear length. Skin measurements mostly are in the upper range for this species, but only a skull is available in the collection. Evaluation of the skull by RT resulted in re-identification as *R. fulvescens*.

ORDER CHIROPTERA
Vespertilionidae – Vesper Bats

***Lasiurus cinereus* (Palisot de Beauvois) – Hoary Bat**. A roosting Hoary Bat, found alive but believed to be in torpor, was photo-vouchered at 1520 h on 2 January 2018, hanging approximately 6 m (20 ft.) off the ground on a rock bluff in the vicinity of Gustafson Cave, Stone Co. The site is on a southeasterly-facing bluff north of Sugarloaf Creek, 36.05404°N, 92.19694°W. Some sunlight was on the bat, but the maximum temperature that day reached only -7.2°C (19°F). There were numerous small karst openings in the bluff and elsewhere in the vicinity. The site was in a mature forest dominated by hardwoods, adjacent to a mature pine stand that evidenced a recent burn. This observation is very unusual because this migratory bat is usually not found in the middle of winter in Arkansas, and it is associated with trees and not with bluffs and caves. It has been reported once previously in an Arkansas cave (Saugey *et al*. 1978) and an individual was caught by G. O'Hagan in a mist net in front of that cave (Rowland Cave) on 4 September 1979.

An adult female Hoary Bat collected 4 October 2017 from Russellville, Pope Co., and submitted to the Arkansas Department of Health for rabies testing (positive) is a new county record for this bat.

Molossidae – Free-tailed Bats

***Tadarida brasiliensis* (I. Geoffroy) – Brazilian Free-tailed Bat**. A male specimen collected 28 March 2017 from Solgohachia, Conway Co., and submitted to the Arkansas Department of Health for rabies testing (negative) is a new county record for this bat.

Acknowledgments

The Arkansas Game and Fish Commission (AGFC) issued Scientific Collecting Permits to RT, HWR, MBC, and CTM, and the USDA Forest Service (Ouachita and Ozark/St. Francis National Forests) issued a Scientific Collecting Permit to CTM. Information and observations about the Hoary Bat were provided by T. Inebnit. Nikolas H. McAllister assisted with collecting in Polk County. Eric Brinkman and Noah Moses, AGFC-Hope Regional Office, and Jim Cunningham, commercial fisherman, Fulton, AR, provided fishes from the Red River in February 2018. Dr. Dave Neely (Chattanooga, TN) and Uland Thomas (Chicago, IL) assisted in collecting fishes on Crowley's Ridge and vicinity. Susan Weinstein and David Saugey provided new records of bats and rabies. Loan of the specimen of *Reithrodontomys* from the SNOMN was provided by Janet Braun and Brandi Coyner.

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