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C. T. McAllister

Eastern Oklahoma State College, cmcallister@se.edu

M. A. Barger

Peru State College

T. J. Fayton

University of Southern Mississippi

M. B. Connior

Northwest Arkansas Community College

D. A. Neely

Tennessee Aquarium Conservation Institute

See next page for additional authors

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C.T. McAllister^{1*}, M.A. Barger², T.J. Fayton³, M.B. Connor⁴, D.A. Neely⁵ and H.W. Robison⁶

¹Science and Mathematics Division, Eastern Oklahoma State College, Idabel, OK 74745

²Department of Biology, Peru State College, Peru, NE 68421

³Gulf Coast Research Laboratory, University of Southern Mississippi, 703 E. Beach Drive, Ocean Springs, MS 39564

⁴Life Sciences, Northwest Arkansas Community College, Bentonville, AR 72712

⁵Tennessee Aquarium Conservation Institute, Chattanooga, TN 37402

⁶9717 Wild Mountain Drive, Sherwood, AR 72120

*Correspondence: cmcallister@se.edu

Running Title: Acanthocephala of Arkansas Fishes

Although there are reports of acanthocephalans from Arkansas game fishes (Becker et al. 1966, Becker and Houghton 1969, Bone 1974, Becker and Cloutman 1974, Cloutman 1975) little is known about the acanthocephalan (thorny-headed worm) parasites of non-game fishes of Arkansas. McAllister et al. (2008, 2014a) reported acanthocephalans from the Pirate Perch, *Aphredoderus sayanus* from the Caddo River, Clark County, and Rolling Fork River, Sevier County, respectively. In addition, McAllister et al. (2014a) reported unknown cystacanths in Blackspot Shiner, *Notropis atrocaudalis* and Yellow Bullhead, *Ameiurus natalis* from Nix Creek at Texarkana, Miller County. McAllister et al. (2014b) reported *Acanthocephalus tahlequahensis* in the Banded Sculpin, *Cottus carolinae* from Flint Creek, Benton County. More recently, McAllister et al. (2016) found unknown cystacanths in Northern Studfish (*Fundulus catenatus*) from Crooked Creek, Marion County. We are not aware of additional reports of acanthocephalans from non-game Arkansas fishes (see Hoffman 1999). Here, we report five new host records as well as two new distributional records for acanthocephalans from non-game fishes of the state.

Between March and June 2014, the following 20 fishes were collected from the Arkansas (Benton County) and White River (Independence County) drainages and examined for helminth parasites (sample sizes in parentheses): **CATOSTOMIDAE**: Highfin Carpsucker, *Carpoides velifer* (2), Black Redhorse, *Moxostoma duquesnei* (1); **CENTRARCHIDAE**: Shadow Bass, *Ambloplites ariommus* (1); **CYPRINIDAE**: Central Stoneroller, *Campostoma anomalum* (11); **ICTALURIDAE**: Slender Madtom, *Noturus exilis* (5). Fishes were collected with backpack electrofishers, dipnets or 6.1 m seine (3.2 cm mesh).

They were placed in habitat water and necropsied within 24 h. We followed accepted guidelines for the use of fish in research (AFS 2004) and specimens were overdosed with a concentrated Chloretone solution, measured for total length (TL) and a mid-ventral incision from anus to gill slit was made to expose the gastrointestinal tract and other internal viscera which was removed, placed in a Petri dish containing 0.6% w/v saline and examined with a stereomicroscope. Acanthocephalans were placed in dishes containing distilled water overnight, transferred to 70% v/v ethanol and sent to MAB for identification. They were stained with acetocarmine and mounted in Canada balsam. Voucher specimens were deposited in the Harold W. Manter Laboratory (HWML) of Parasitology, University of Nebraska-Lincoln. Host voucher specimens were preserved in 10% v/v formalin, transferred to 40% v/v ethanol, and deposited in the fish collection of Henderson State University Museum (HSU), Arkadelphia. Prevalence, mean intensity, and range of infection are provided and are in accordance with terminology given in Bush et al. (1997).

We collected four species of acanthocephalans from the intestinal tract of five species of fishes. The following is an annotated list of data as follows: host and TL (mean \pm 1SD range, when available), prevalence, intensity (mean \pm 1SD range, when available), collection site, collection date, HWML accession number.

Acanthocephala: **Palaeacanthocephala:**
Echinorhynchidae: *Acanthocephalus tahlequahensis*
Oetinger and Buckner, 1976

Ambloplites ariommus 35 mm TL, 1/1 (100%), 1 worm, collected on 20 Mar., 2014 from Flint Creek off

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Fairmont Road at Springtown, Benton County (36°15'9.9"N, 94°26'25.8"W), HWML 75382.

Noturus exilis 75 mm TL, 1/5 (20%), 1 worm, collected on 20 Mar., 2014 from Flint Creek S of Gentry off US 59, Benton County (36°14'33.8"N, 94°29'14.9"W), HWML 75383.

The type host of *A. tahlequahensis* is the Sunburst Darter, *Etheostoma mihileze* (formerly *E. punctulatum*) from Black Fox Creek, Cherokee County, Oklahoma (Oetinger and Buckner 1976). Other reported hosts include the Redspot Chub (*Nocomis asper*), Cardinal Shiner (*Luxilus cardinalis*, formerly *Notropis pilsbryi*), and Orangethroat Darter (*Etheostoma spectabile*) (Oetinger and Buckner 1976). As noted previously, McAllister (2014b) reported *A. tahlequahensis* from *C. carolinae* from Flint Creek. However, McAllister et al. (2015) did not report *A. tahlequahensis* from 43 *N. exilis* collected between 2012–2013 from Benton, Marion and Searcy counties. Obviously, there is little host specificity as this acanthocephalan has now been reported from fishes in the families Centrarchidae, Cottidae, Cyprinidae, Ictaluridae and Percidae. Thus, we document two new host records for *A. tahlequahensis*.

Eoacanthocephala: Neoechinorhynchida: Neoechinorhynchidae: *Neoechinorhynchus* sp.

Moxostoma duquesnei 382 mm TL, 1/1 (100%), 1 male worm, collected 5 Apr., 2014 from below Lock and Dam #1, White River at Batesville, Independence County (35°45'20.8"N, 91°38'17.3"W), HWML 75375.

Unfortunately, without females, we are unable to identify this worm beyond genus. However, this is the first time any acanthocephalan has been reported from *M. duquesnei*; therefore, we document a new host record.

***Neoechinorhynchus prolixus* Van Cleave and Timmons, 1952**

Carpiodes velifer 280 mm TL, 1/2 (50%), 4 female worms, collected 5 Apr., 2014 from below Lock and Dam #1, White River at Batesville, Independence County (35°45'20.8"N, 91°38'17.3"W), HWML 75374.

This acanthocephalan was described by Van Cleave and Timmons (1952) from River Carpsucker, *Carpiodes carpio* from Oklahoma. It has also been reported from Shorthead Redhorse, *Moxostoma macrolepidotum*, Fathead Minnow, *Pimephales promelas*, Quillback, *Carpiodes cyprinus* and *C. carpio* from Iowa, Nebraska, North Dakota and Oklahoma (Self and Timmons 1955, Kritsky et al. 1972, Barnhart et al. 1976, Samuel et al. 1976, Holloway and

Hagstrom 1981, Nickol and Samuel 1983, Forstie and Holloway 1984). We report a new host record as well as a new distributional record for *N. prolixus*.

***Paulisentis* sp.**

Campostoma anomalum 152.0 ± 6.3, 145–160 mm TL, 4/11 (36%), 5.8 ± 6.2, 4 males, 7 females, collected on 13 Jun., 2014 from Flint Creek off Fairmont Road at Springtown, Benton County (36°15'9.9"N, 94°26'25.8"W), HWML 75373.

Our specimens exhibit morphological characteristics shared by *Paulisentis fractus* Van Cleave and Bangham and *Paulisentis missouriensis* Keppner (Van Cleave and Bangham 1949, Keppner 1974). Unfortunately, without additional specimens, we cannot determine what species of *Paulisentis* is present at this time. However, we document a new host and distributional record for *Paulisentis* sp.

In conclusion, we document new information on acanthocephalan parasites of non-game Arkansas fishes while also adding to information on their helminths, which we know little about. With additional surveys, we expect to increase the acanthocephalan fauna of the state as well as possibly providing description of new species.

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Literature Cited

- American Fisheries Society (AFS).** 2004. Guidelines for the use of fishes in research [web application]. J. G. Nickum (Chair). American Fisheries Society, Bethesda, Maryland. http://fisheries.org/docs/policy_useoffishes.pdf. Accessed 2015 January 15.
- Barnhart MC, GW Calderwood and EC Powell.** 1976. Helminth parasites of some Iowa fishes. Proceedings of the Iowa Academy of Sciences 83:64-66
- Becker DA and DG Cloutman.** 1975. Parasites of selected game fishes of Lake Fort Smith, Arkansas. Proceedings of the Arkansas Academy of Science 29:12-18.

- Becker DA, RG Heard and PD Holmes.** 1966. A pre-impoundment survey of the helminth and copepod parasites of *Micropterus* spp. of Beaver Reservoir in northwest Arkansas. Transactions of the American Fisheries Society 95:23-34.
- Becker DA and WC Houghton.** 1969. A survey of the helminth parasites of selected game fishes of Lake Fort Smith, Arkansas. Proceedings of the Arkansas Academy of Science 23:110-117.
- Bone LW.** 1974. The chromosomes of *Leptorhynchoides thecatus* (Acanthocephala). Journal of Parasitology 60:818.
- Bush AO, KD Lafferty, JM Lotz and AW Shostak.** 1997. Parasitology meets ecology on its own terms: Margolis et al. revisited. Journal of Parasitology 83:575-583.
- Cloutman DG.** 1975. Parasite community structure of Largemouth Bass, Warmouth and Bluegill in Lake Fort Smith, Arkansas. Transactions of the American Fisheries Society 104:277-283.
- Forstie MD and HL Holloway Jr.** 1984. Parasites of fish from the James and Sheyenne rivers, Jamestown Reservoir complex, and Lake Ashtabula in North Dakota. Prairie Naturalist 16:11-20.
- Hoffman GL.** 1999. Parasites of North American freshwater fishes. Second Ed. Ithaca (NY): Comstock Publishing Associates. 539 p.
- Holloway HL Jr and NT Hagstrom.** 1981. Comparison of four North Dakota impoundments and factors affecting the development of impoundment parasitofauna. Prairie Naturalist 13:85-93.
- Keppner EJ.** 1974. The life history of *Paulisentis missouriensis* n. sp. (Acanthocephala: Neoechinorhynchidae) from the Creek Chub *Semotilus atromaculatus*. Transactions of the American Microscopical Society 93:89-100.
- Kritsky DC, J Kruidenier and ME Shelton.** 1972. Studies on helminths of North Dakota. IV. Parasites of the River Carpsucker, *Carpiodes carpio*, with descriptions of three new species (Monogenea). Journal of Parasitology 58:723-731.
- McAllister C and O Amin.** 2008. Acanthocephalan parasites (Echinorhynchida: Heteracanthocephalidae; Pomphorhynchidae) from the Pirate Perch (Percopsiformes: Aphredoderidae), from the Caddo River, Arkansas. Journal of the Arkansas Academy of Science 62:151-152.
- McAllister CT, CR Bursey, WF Font, HW Robison, SE Trauth, DG Cloutman and TJ Fayton.** 2016. Helminth parasites of the Northern Studfish, *Fundulus catenatus* (Cyprinodontiformes: Fundulidae) from the Ouachitas and Ozarks of Arkansas, U.S.A. Comparative Parasitology 83:(in press).
- McAllister CT, CR Bursey, HW Robison, DA Neely, MB Connior and MA Barger.** 2014a. Miscellaneous fish helminth parasite (Trematoda, Cestoidea, Nematoda, Acanthocephala) records for Arkansas. Journal of the Arkansas Academy of Science 68:78-86.
- McAllister CT, MB Connior, WF Font and HW Robison.** 2014b. Helminth parasites of the Banded Sculpin, *Cottus carolinae* (Scorpaeniformes: Cottidae), from northern Arkansas, U.S.A. Comparative Parasitology 81:203-209.
- McAllister CT, WF Font, MB Connior, HW Robison, TJ Fayton, NG Stokes and CD Criscione.** 2015. Trematode parasites (Digenea) of the Slender Madtom *Noturus exilis* and Black River Madtom *Noturus maydeni* (Siluriformes: Ictaluridae) from Arkansas, U.S.A. Comparative Parasitology 82:137-143.
- Nickol BB and N Samuel.** 1983. Geographical distribution of Acanthocephala in Nebraska fishes. Transactions of the Nebraska Academy of Sciences 11:31-52.
- Oetinger DF and RL Buckner.** 1976. *Acanthocephalus tahlequahensis* sp. n. (Acanthocephala, Echinorhynchidae) from the Stippled Darter, *Etheostoma punctulatum* (Agassiz) in northeastern Oklahoma. Journal of Parasitology 62:237-241.
- Samuel N, BB Nickol and MA Mayes.** 1976. Acanthocephala of Nebraska fishes. American Midland Naturalist 96:391-406.
- Self JT and HE Timmons.** 1955. The parasites of the River Carpsucker *Carpiodes carpio* (Raf.) in Lake Texoma. Transactions of the American Microscopical Society 74:350-352.
- Van Cleave HJ and RV Bangham.** 1949. Four new species of the acanthocephalan family Neoechinorhynchidae from freshwater fishes of North America, one representing a new genus. Journal of the Washington Academy of Science 39:398-409.
- Van Cleave HJ and HE Timmons.** 1952. An additional new species of the acanthocephalan genus *Neoechinorhynchus*. Journal of Parasitology 38:53-56