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# The Arkansas Endemic Flora and Fauna: An Update with 13 Additional Species

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Running Title: Arkansas Endemic Biota

## Abstract

Arkansas supports a diverse variety of endemic biota with most found in the Interior Highlands (Ozarks and Ouachitas) of the state. Since 1988, several compilations have updated the number of endemics known while some former endemic species have been found in other states and subsequently removed from the state list. Here, update to the list by adding 13 taxa, several of which are fish parasites, making a grand total of 139 current endemic species in Arkansas.

## Introduction

The first compilation of a list of endemic flora and fauna of Arkansas was provided by the Arkansas Department of Planning (1974) in which only 9 species were documented. Next, Robison and Smith (1982) listed 47 endemic taxa, Allen (1988) increased it to 85 species and Robison and Allen (1995) reported 117 endemic species. Due to recovery of some species in other states, Robison et al. (2008) reduced the list to 113 and McAllister et al. (2009) provided the most recent compilation of the endemic biota of Arkansas. That update brought the number of endemic species in the state to 126. Here, we update that list by adding 13 species, totaling 139 taxa, including 6 fish monogenean parasites the authors were not aware of during previous versions of this series.

**List of Species-Material included.** The following is a summary listing of the species added (Table 1).

**Fungi: Basidiomycota: Agaricales: Physalacriaceae**  
*Hymenopellis sinapicolor* Peterson & Justice, 2010 in Peterson & Hughes, 2010 (a xeruloid mushroom).

This mushroom species was collected at Lake Sylvia Recreational Area, Saline County (Peterson and Hughes 2010). According to Drs. Petersen and Hughes, "ITS sequences from this taxon appear

identical to another species of *Hymenopellis*, *H. rugosoceps* (G.F. Atk.) R.H. Petersen. However, morphological characters are too disparate to allow synonymy. It is possible that basidiomata of *H. rugosoceps* are hypertrophied, and small spores are shared with *H. sinapicolor*. The two may represent different states of a single taxon." A more recent report of the species from Illinois has been posted on the world-wide web but this is not considered a refereed publication.

## Plantae: Marchantiophyta: Jungermanniopsida: Fossombroniaceae

*Fossombronia marshii* Bray & Stotler (a liverwort).

Stotler et al. (2010) described this liverwort species from sandy soil in an openly mowed grassy area of Columbia County at Ebenezer Church. It is similar to *F. foveolata* Lindb., but is distinct in a suite of vegetative and reproductive characters. This relatively small liverwort occurs on the loose sandy to sandy loam soils that typically drain water fairly quickly and have little moisture holding capacity. This liverwort is the first dioecious species of this genus to be documented from North America. At present, *F. marshii* appears to be restricted to the Western Gulf Coastal Plain physiographic region of the state. However, future fieldwork in LA, MS and TX with a review of herbarium specimens, particularly those labeled *F. foveolata*, may result in expanding the known distribution; thus, a possible future removal from the list of Arkansas endemics.

## Platyhelminthes: Monogenoidea: Dactylogyridae

*Dactylogyrus asper* Chien, 1974 (a fish gill parasite).

Chien (1974) described this monogenean from Redspot Chub, *Nocomis asper* from Spavinaw Creek in Benton County, Arkansas River drainage. It may eventually be found in adjacent OK in the same drainage where *N. asper* also occurs.

## Arkansas Endemic Biota

Table 1. Biota added to the state list of endemic species of Arkansas and counties of occurrence.

Taxon	County/counties	Reference
<b>Fungi</b>		
<i>Hymenopellis sinapicolor</i>	Saline	Peterson and Hughes (2010)
<b>Plantae</b>		
<i>Fossombronina marshii</i>	Columbia	Stotler et al. (2010)
<b>Animalia</b>		
<i>Dactylogyrus asper</i>	Benton	Chien (1974)
<i>Dactylogyrus boopsi</i>	Franklin, Fulton, Newton, Polk, Washington	Cloutman (1994)
<i>Dactylogyrus greenei</i>	Franklin, Johnson, Perry	Cloutman (1995)
<i>Dactylogyrus latrictus</i>	Izard	Chien (1974)
<i>Dactylogyrus robisoni</i>	Calhoun	Cloutman (2011)
<i>Gyrodactylus bretinae</i>	Clay	Wellborn (1967)
<i>Chaetaspis attenuatus</i>	Independence, Izard	Lewis and Slay (2013)
<i>Speleochus blanchardensis</i>	Stone	Carlton (2012)
<i>Speleochus macosar</i>	Madison	Carlton (2012)
<i>Etheostoma clinton</i>	Clark, Montgomery, Polk	Layman and Mayden (2012)
<i>Eurycea subfluvicola</i>	Hot Spring	Steffen et al. (2014)
<i>Percina brucehompsoni</i>	Clark, Montgomery, Pike, Polk	Robison et al. (2014)

*Dactylogyrus boopsi* Cloutman, 1994 (a fish gill parasite).

This monogenean was described by Cloutman (1994) from Bigeye Shiner, *Notropis boops*. To date, it is restricted to Franklin, Fulton, Newton, Polk and Washington counties in the Ouachita and Ozark plateaus.

*Dactylogyrus greenei* Cloutman, 1995 (a fish gill parasite).

Cloutman (1995) described this monogenean from Wedgespot Shiner, *Notropis greenei*. It is known only from 3 counties, Franklin, Johnson and Perry.

*Dactylogyrus latrictus* Chien, 1974 (a fish gill parasite).

This monogenean was described by Chien (1974) from Hornyhead Chub, *Nocomis biguttatus*. It is known only from the White River at Sylamore, Izard County.

*Dactylogyrus robisoni* Cloutman, 2011 (a fish gill parasite).

This monogenean was described from the gills of Bluehead Shiner (*Pteronotropis hubbsi*) collected from Locust Bayou at AR St. Hwy. 4, 1.0 km W of Locust Bayou, Calhoun County (Cloutman 2011).

*Gyrodactylus bretinae* Wellborn, 1967 (a fish gill parasite).

This ectoparasite was described from the gills of Speckled Darter, *Etheostoma stigmaeum* from the W.H. Donham State Fish Hatchery at Corning, Clay County (Wellborn 1967). However, it may eventually be found elsewhere in the range of *E. stigmaeum* (Layman and Mayden 2012) in other states (AL, FL, GA, KY, LA, MO, MS, TN) since it was collected from a fish hatchery.

**Arthropoda: Diplopoda: Polydesmida: Macrosternodesmidae**

*Chaetaspis attenuatus* Lewis & Slay, 2013 (a milliped).

This cavernicolous milliped was described by Lewis and Slay (2013) from Cushman Cave in Independence County. Other specimens were taken from Clay Cave, Izard County, about 30 km NW of the type locale. These two caves occur along the northeastern side of the White River and are separated by about 100 km from a cave locality of its sister species, *C. aleyorum* Lewis in Taney County, Missouri.

**Arthropoda: Hexapoda: Coleoptera: Staphylinidae**

*Speleochochus blanchardensis* Carlton, 2012 (cave pselaphine).

A staphylinid cave beetle described from “The Maze” section of Blanchard Springs Caverns, Stone County (Carlton 2012).

*Speleochochus macosar* Carlton, 2012 (cave pselaphine).

Another cave beetle described by Carlton (2012) from Whippoorwill Cave, Madison County. Specimens were taken within 98-250 m of the entrance of the cave that measures approximately 2 km in length.

**Osteichthyes: Perciformes: Percidae**

*Etheostoma clinton* Mayden & Layman, 2012 in Layman & Mayden, 2012 (Beaded Darter).

This darter, a member of the subgenus *Doration*, was described from specimens collected in the upper Ouachita and Caddo rivers (Layman and Mayden 2012). The type locality is the Caddo River at AR St. Hwy. 182, 3.2 km N of Amity, Clark County. It also occurs in Ouachita streams in Montgomery and Polk counties. Interestingly, populations of *E. clinton* from the upper Caddo and upper Ouachita rivers are isolated from each other by several man-made impoundments.

*Percina brucehompsoni* Robison, Cashner & Near, 2014 (Ouachita Darter).

Robison et al. (2014) described the Ouachita Darter, which is endemic to the upper Ouachita River system. The type locality is the Ouachita River at AR St. Hwy. 298, approximately 1.6 km S of Sims, Montgomery County. This species is a sister species to the Longnose Darter (*Percina nasuta*) and also occurs in streams in Clark, Pike and Polk counties.

**Amphibia: Caudata: Plethodontidae**

*Eurycea subfluvicola* Steffen, Irwin, Blair & Bonett, 2014 (Ouachita streambed salamander).

A new species of paedomorphic salamander was recently described from a tributary of Slunger Creek, a first order stream in Lake Catherine State Park, Hot Spring County by Steffen et al. (2014). This salamander has the most restricted range of any North American amphibian and has been afforded protection from collection by various AR state agencies.

**Discussion**

Each of the endemic species reported herein come from at least one of 20 of 75 (27%) different counties of the state (Fig. 1). However, multiple records of endemics are from Clark (2 spp.), Franklin (2 spp.), Izard (2 spp.) and Polk (3 spp.) counties. Interestingly, the vast majority (16 total or 80%) of these counties are geographically situated in the Interior Highlands (Ozarks and Ouachitas) of Arkansas, an area known previously for high biodiversity and endemism. This is the result of climatic and geologic history of the region, having been continually habitable for all biota for about 320 million yr (Allen 1990).

In conclusion, we have added 13 endemic species to the Arkansas list bringing the total number of endemics in the state to 139. The number of endemic species has increased dramatically since 1974, when the first list was compiled (Table 2). In addition, we are aware of a new trichopteran from the Saline River, Saline County (Etnier 2010), a new anilline ground beetle from Blanchard Springs, Stone County (C. Carlton, *pers. comm.*), and various cavernicolous species, including a new cavefish (Graening et al. 2011), that await formal description. Given the taxonomic breadth gained on flora and fauna from molecular techniques, as well as continued exploration

Table 2. Comparative data on number of endemic biota (taxa) of Arkansas 1974-present.\*

Total Endemic Taxa	Fungi	Plantae	Animalia	Reference
9	0	4	5	Arkansas Department of Planning (1974)
47	0	7	40	Robison and Smith (1982)
85	0	9	76	Allen (1988)
117	0	11	106	Robison and Allen (1995)
113	0	10	103	Robison et al. (2008)
126	2	10	114	McAllister et al. (2009)
139	3	11	125	Robison and McAllister (this report)

\*List does not include bacteria, Cyanobacteria, Archaea, and Protista; we are aware of several endemic taxa in these groups, particularly coccidian parasites (Protista: Apicomplexa).

## Arkansas Endemic Biota

of caves that yield obligate subterranean biodiversity (Graening et al. 2011), additional species will undoubtedly be added to future lists.

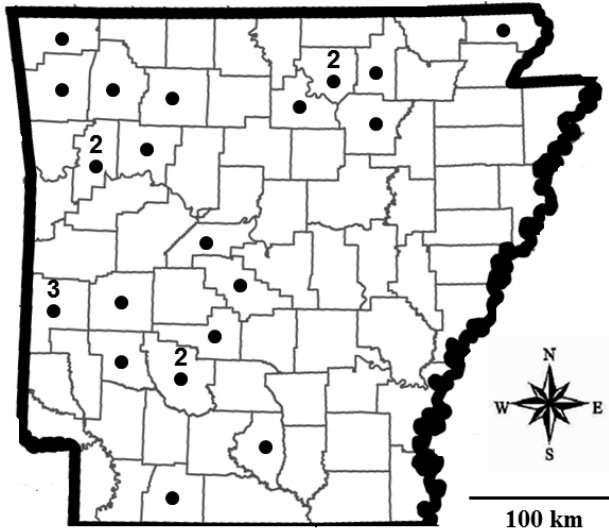


Figure 1. Counties with records of the endemic species reported herein. Numbers above dots represent more than one endemic species record from the particular county.

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