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ADDITIONS TO THE KNOWN ENDEMIC FLORA AND FAUNA OF ARKANSAS

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ABSTRACT

Robison and Smith's (1982) list of endemic species of Arkansas rendered a valuable service to the community of biologists interested in the endemic biota of the state. These authors listed seven species of plants and forty species of animals endemic to Arkansas. This paper stimulated my interest in the endemic biota of the Ozark/Ouachita Mountain region of Missouri, Arkansas, and Oklahoma. During the course of compiling a list of Ozark/Ouachita endemic species several references were found that listed Arkansas endemic taxa inadvertently overlooked by Robison and Smith. Most notable among these references was Chamberlin and Hoffman (1958), *Checklist of the Millipeds of North America*. This paper chronicles the work of N. B. Causey and R. V. Chamberlin who describe thirty-two species of endemic Arkansas Millipeds. These records as well as a few additional records for other animal and plant taxa are presented in this paper.

INTRODUCTION

Various workers have discussed the taxonomic and geographic relationships between the biota of Arkansas and possible relatives in other areas of eastern North America (Tucker, 1976; Williams, 1954; Heighton, 1962; Ross, 1956; Ross and Ricker, 1971; Allen and Carlton, 1988). These papers and others leave no doubt that the Arkansas biota does have distinct affinities with the biota of eastern North America, especially at the species level. But if one considers higher and more inclusive taxa such as genera, tribes, and/or families, taxonomic and geographic relationships with western North America also become evident. For example, the salamander genus *Plethodon* has a distinct endemic western element which is closely related to the eastern *Plethodon* species (Heighton, 1972). The ground beetle tribe Aniliini in which the genus *Anilinus* occurs in eastern North America has sister genera in west Texas and California. The lace bug genus *Acalypta* has both eastern and western endemic sister groups including an Arkansas species known only from Logan County. This paper also notes one example in the millipedes, *Cibularia profuga*, whose nearest relative occurs in the southwest.

If we consider the origin and evolution of the biota of North America as a whole, the place of the Arkansas biota, especially the endemic biota of the Interior Highlands of Arkansas and Missouri, becomes a critical and important element. We might pose the question, "In America is there a western biota, a mid-continent (Interior Highlands) biota and an eastern biota whose various elements will show a repetitive sister group relationship or relationships?" When we consider the possibility of searching for an answer to the question just posed a knowledge of the endemic biota of Arkansas becomes crucial. And the answer to the question has far greater implications than just listing species that occur within the boundaries of the state. As we study the endemic biota of Arkansas we would be well advised to consider seriously not only the eastern affinities the various taxa might exhibit, but also the possibility that western North America has played some role in the evolution of this rich biota.

ANNOTATED LIST

I. VASCULAR PLANTS.

Order Papaverales

Family Cruciferae — Mustard Family

1. *Cardamine angustata* O. E. Schulz var. *ouachitana* E. B. Smith, 1982:379. Type: University of Arkansas Herbarium. Type locality: Arkansas, Polk Co.: 12.1 miles south of the junction of highways 375 and 8 near Mena; 19 March 1982. Collector, E. B. Smith. Distribution: AR: Howard, Montgomery, and Polk counties. Remarks: Smith presents a discussion of this variety comparing it with the typical *C. angustata angustata*. He notes that the populations of nominate species and the new variety are disjunct by some "400 air Km" from popula-

tions in northeastern Mississippi and central Tennessee. There are five eastern species in the subgenus *Dentaria* to which Smith assigns this variety.

Order Rubiales

Family Rubiaceae — Madder Family

2. *Galium arkansanum* Gray var. *pubiflorum* E. B. Smith, 1979:281. Type: University of Arkansas Herbarium. Type locality: Arkansas, Montgomery Co., Albert Pike Recreation Area, 1.3 miles south of Highway 8, 31 May, 1978. Collector, E. B. Smith. Distribution: AR: Montgomery county. Remarks: See Smith (1979) for a discussion of the variety *arkansanum* and the "Mixed phase" and the distribution of these forms.

II. ANIMALS

Phylum Arthropoda

Class Myriapoda — Millipedes

Order Polydesmida

Family Desmonidae

1. *Desmonus pudicus* (Bollman), 188:3. Type: United States National Museum, No. 154. Type locality: Arkansas, Pulaski county, Little Rock. Distribution: AR: Clark and Pulaski counties. Remarks: This species was originally described and placed in the genus *Sphaeriodesus*. There is one additional species in the genus, *D. earlei*, from Alabama, Tennessee, and Kentucky.

Family Eurydesmidae

2. *Cibularia profuga* Causey, 1955:29. Type: American Museum of Natural History. Type locality: Arkansas, Montgomery Co., Mt. Ida, 5 miles south of the Ouachita River bridge; 14 April, 1954. Distribution: Known only from the type locality. Remarks: The type specimens, three males, three females, one larva, were collected under rocks. The area from which this species was collected is a mixture of pine and hardwoods. There is one additional species in the genus, *C. tuobita* (Chamberlin), from Otero and Lincoln counties in central New Mexico.
3. *Mimuloria davidcauseyi* (Causey), 1950:194. Type: Philadelphia Academy of Sciences. Type locality: Arkansas, Newton Co., Jasper, about 3 miles northwest. Distribution: Known only from the type locality. Remarks: This species was originally placed in the genus *Nannaria*. Causey states that the "two recently molted males and two larvae were collected by Dr. David Causey on 25 August 1950 from an oak-hickory woodland on an east hillside." There are five species in this genus, three from the Ozark Mountains and one each from Ohio and Indiana.

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4. *Mimuloria depalmai* (Causey), 1950:1. Type: Philadelphia Academy of Sciences. Type locality: Arkansas, Carroll County, 2 mi. S. of Lake Leatherwood. Lake Leatherwood is east of Eureka Springs on Hwy. 62. Distribution: Known only from the type locality. Remarks: This species was originally placed in the genus *Castanaria*. Also see *M. davidcauseyi*.

5. *Pleurolooma miribilia* (Causey), 1951:85. Type: Philadelphia Academy of Sciences. Type locality: Arkansas, Clay County, 12 mi. NE of Piggott, on highway 62. Distribution: Known only from the type locality. Remarks: Causey notes that the habitat of this species was "rather dry litter on a north oak-hickory covered hillside." This species was originally placed in the genus *Zinaria*. Chamberlin and Hoffman note that there are twelve species in the genus and "most of which will probably be shown to be only geographic races of *P. flavipes*." All of the species are eastern in distribution.

Family Euryuridae

The family is divided into two subfamilies. The Aphelidesminae is predominately Neotropical with one species known from Kerr county, Texas. The Euryurinae are known only from eastern North America.

6. *Auturus florus* Causey, 1950:37. Type: Philadelphia Academy of Sciences. Type locality: Arkansas, Newton County, Compton, Hemmed-in Hollow. Distribution: Known only from the type locality. Remarks: The type locality is now within the Buffalo National River Park. A special collecting permit is required. There are ten species in this eastern genus. One species *A. mimites* Chamberlin is endemic to the Christian and Jefferson counties in Missouri.

Family Eurymerodesmidae

7. *Eurymerodesmus angularis* Causey, 1951:69. Type: Philadelphia Academy of Sciences. Type locality: Arkansas, Prairie County. Distribution: Known only from the type locality. Remarks: There are twenty-one species in the genus. All of the species are found in eastern North America.

8. *Eurymerodesmus bentonius* Causey, 1950:268. Type: Philadelphia Academy of Sciences. Type locality: Arkansas, Benton County, Monte Ne. Distribution: Known only from the type locality. Remarks: Much of the area around the Monte Ne community has been flooded by the impoundment of Beaver Lake Reservoir.

9. *Eurymerodesmus compressus* Causey, 1952:169. Type: Philadelphia Academy of Sciences. Type locality: Arkansas, Union County, Junction City. Distribution: Known only from the type locality. Remarks: See *E. angularis*.

10. *Eurymerodesmus dubius* Chamberlin, 1943:38. Type: Field Museum of Natural History, Chicago. Type locality: Arkansas, Pike County, Delight; 16 April 1941. Collected by K. P. Schmidt. Distribution: AR: Clark, Dallas, Hot Spring, Pike, Saline, Sevier counties. Remarks: See *E. angularis*.

11. *Eurymerodesmus goodi* Causey, 1952:3. Type: R. V. Chamberlin Collection. Type locality: Arkansas, Polk County, 16 miles southeast of Mena. Distribution: Known only from the type locality. Remarks: See *E. angularis*.

12. *Eurymerodesmus newtonius* Chamberlin, 1942:6. Type: R. V. Chamberlin Collection. Type locality: Arkansas, Newton County, 12 miles south of Jasper. Distribution: Known only from the type locality. Remarks: See *E. angularis*.

13. *Eurymerodesmus oliphantus* Chamberlin, 1942:6. Type: R. V. Chamberlin collection. Type locality: Arkansas, Jackson County,

Oliphant, 15 miles south. Distribution: Known only from the type locality. Remarks: See *E. angularis*.

14. *Eurymerodesmus schmidtii* Chamberlin, 1943:38. Type: Field Museum of Natural History, Chicago. Type locality: Arkansas, Polk County, Rich Mountain, elevation 2400 feet; 22 March 1958. Collected by K. P. Schmidt. Distribution: AR: Carroll, Polk, Washington. Remarks: See *E. angularis*.

15. *Eurymerodesmus wellesleybentonius* Causey, 1952:171. Type: Philadelphia Academy of Sciences. Type locality: Arkansas, Phillips County, Helena. Distribution: Known only from the type locality. Remarks: See *E. angularis*.

16. *Paresmus columbus* Causey, 1950:272. Type: Philadelphia Academy of Sciences. Type locality: Arkansas, Columbia County, Magnolia. Distribution: Known only from the type locality. Remarks: There are four additional species in the genus: two from type localities in Arkansas and one each from Louisiana and Texas.

17. *Paresmus polkensis* Causey, 1952:5. Type: American Museum of Natural History. Type locality: Arkansas, Polk County, 11 miles north of Mena. Distribution: Known only from the type locality. Remarks: See *P. columbus*.

18. *Paresmus pulaski* Causey, 1950:271. Type: Philadelphia Academy of Sciences. Type locality: Arkansas, Pulaski County, Sweet Home. Distribution: AR: Grant and Pulaski counties. Remarks: See *P. columbus*.

Order Chordeumida
Family Cleidogonidae

19. *Cleidogona arkansana* Causey, 1954:66. Type: American Museum of Natural History. Type locality: Arkansas, Dallas County, 4 miles east of Princeton at a picnic site on Arkansas State Route No. 8; 7 January 1954. Distribution: Known only from the type locality. Remarks: There are about 25 species in the genus of which 17 occur in North America.

20. *Cleidogona aspera* Causey, 1951:78. Type: Philadelphia Academy of Sciences. Type locality: Arkansas, Lawrence County, Imboden, 6 miles east. Distribution: AR: Dallas, Lawrence, and Randolph counties. Remarks: A doubtful Interior Highland species. Also see *C. arkansana*.

21. *Ofcookogona alia* Causey, 1951:121. Type: Philadelphia Academy of Sciences. Type locality: Arkansas, Union County, Junction City. Distribution: Known only from the type locality. Remarks: There are two species in the genus, both described from Arkansas by Causey (1951). *O. alia* was collected from a pine-hardwood forest on 25 December 1950 in Union County near Junction City.

22. *Ofcookogona steuartae* Causey, 1951:121. Type: Philadelphia Academy of Sciences. Type locality: Arkansas, Sebastian County, Greenwood; 26 November 1950. Distribution: Known only from the type locality. Remarks: See *O. alia*.

23. *Ozarkogona glebosa* Causey, 1951:82. Type: Philadelphia Academy of Sciences. Type locality: Arkansas, Washington County, Fayetteville. Distribution: AR: Benton, Johnston, and Washington counties. Remarks: There are two species in the genus, both described from Arkansas by Causey.

24. *Ozarkogona ladymani* Causey, 1952:114. Type: United States National Museum. Type locality: Arkansas, Clay County, Rector. Distribution: Known only from the type locality. Remarks: See *O. glebosa*.

25. *Tiganogona moesta* Causey, 1951:82. Type: Philadelphia Academy of Sciences. Type locality: Arkansas, Carroll County, Blue Spring.

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Distribution: AR: Carroll and Washington Counties. Remarks: The type locality, Blue Spring, is now a commercial tourist venture. It is located west of Eureka Springs on Highway 62.

Family Conotylidae

26. *Trigenotyia parca* Causey, 1951:118. Type: Philadelphia Academy of Sciences. Type locality: Arkansas, Carroll County, Blue Spring. Distribution: AR: Carroll and Washington counties. Remarks: This is a monotypic genus described by Causey (1951) and known only from northwest Arkansas. Blue Spring is now a commercial tourist attraction west of Eureka Springs on Highway 62.

27. *Craspedosoma flavidum* Bollman, 1888:2. Type: United States National Museum. Type locality: Arkansas, Clark County, Okolona. Distribution: Known only from the type locality. Remarks: The types have apparently been lost. It should be noted that other species described in this genus by Bollman have either been synonymized or transferred to another genus, *Branneria*.

Order Julida

Family Paraiulidae

28. *Aliulus carrollus* Causey, 1950:45. Type: Philadelphia Academy of Sciences. Type locality: Arkansas, Carroll County, Blue Spring. Distribution: AR: Carroll and Washington counties. Remarks: There are two other species in the genus: *A. caddoensis* from Oklahoma; *A. rugosus* from Pennsylvania, Ohio, Indiana, and Illinois. The type locality, Blue Spring, is now a commercial venture on Highway 62, west of Eureka Springs.

29. *Okliulus beveli* Causey, 1953:152. Type: American Museum of Natural History. Type locality: Arkansas, Union County, Junction City. Distribution: Known only from the type locality. Remarks: This genus was described by Causey for two species, *O. beveli* from Arkansas, and *O. carpenteri* Causey from Latimer County in Oklahoma.

30. *Oriulus grayi* Causey, 1950:50. Type: Philadelphia Academy of Sciences. Type locality: Arkansas, Prairie County, DeValls Bluff. Distribution: Known only from the type locality. Remarks: This genus contains eight additional species ranging throughout eastern North America with one species reaching as far west as Colorado and Utah.

Order Cambalida

Family Cambalidae

31. *Cambala arkansana* Chamberlin, 1942:3. Type: R. V. Chamberlin Collection. Type locality: Arkansas, Randolph County, Pocahontas. Distribution: Known only from the type locality. Remarks: There are 10 additional species in the genus, all occurring in eastern North America.

Order Polyzoiiida

Family Polyzoiiidae

32. *Polyzonium bikermani* Causey, 1951:138. Type: Philadelphia Academy of Sciences. Type locality: Arkansas, Washington County, Devil's Den State Park. Distribution: Known from the type locality only. Remarks: There are two additional, eastern North American species in the genus. The staphylinid beetle *Derops divialis* Sanderson was also described from Devil's Den State Park and is an Ozark endemic.

Class Symphyla — Symphylids

Order Symphyla

Family Neobisiidae

33. *Microcreagris ozarkensis* Hoff, 1945:34. Type: Illinois Natural History Survey. Type locality: Arkansas, Washington County, Devil's

Den State Park; 3 October 1941. Distribution: AR: Washington county. Remarks: The allotype female was collected in Farmington which is also in Washington County. Both specimens were collected in "woody, leafy debris" (Hoff, 1958).

Family Chernetidae

34. *Pseudozoana occidentalis* Hoff & Bosterli, 1956:170. Type: Illinois Natural History Survey. Type locality: Arkansas, Washington County, Fincher Cave. Distribution: AR: Washington county. Remarks: The type series of this species was composed of a number of specimens from three caves in Washington County: Fincher Cave, Carrol Cave, and Stevenson's Cave. There is one additional species in the genus, *P. mirabilis* (Banks) known from Indian Cave Barren County, Kentucky.

Class Insecta

Order Diplura — Diplurans

Family Japygidae

35. *Catajapyx ewingi* Fox, 1941:28. Type: United States National Museum, Catalogue No. 54834. Type locality: Arkansas, Howard County, Peach Orchard; 7 April 1937. Distribution: Known only from the type locality.

Class Insecta

Order Coleoptera — Beetles

Family Scaphidiidae

36. *Scaphisoma arkansana* Casey. Type: United States National Museum. Type locality: Arkansas. Distribution: Known only from the type locality. Remarks: The original description only listed the state of Arkansas as the area from which this species came. Other records have not been reported in the literature.

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