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# Millipeds (Arthropoda: Diplopoda) of the Ark-La-Tex. I. New Distributional and State Records for Seven Counties of The West Gulf Coastal Plain of Arkansas

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## Abstract

Unlike the Diplopoda of the Ozark Mountains region of north Arkansas, the millipeds of the West Gulf Coastal Plain of the state are poorly known. During the winter months of 2001-2002, we collected millipeds in four counties (Hempstead, Lafayette, Little River, and Miller) of southwest Arkansas and three counties (Columbia, Nevada, and Ouachita) of south Arkansas. We found the following species/subspecies *Eurymerodesmus dubuis* and *Pseudopolydesmus pinetorum* from Hempstead County; *E. birdi birdi*, *E. mundus*, *Oxidus gracilis*, and *Pseudopolydesmus ? minor* from Lafayette County; *Aniulus (Hakiulus) diversifrons diversifrons*, *P. pinetorum*, and a possible new species of *Tiganogona* in Little River County; *Abacion ? texense*, *E. mundus*, *O. gracilis*, *P. pinetorum*, *Thrinaxoria lampra*, and a new species of *Aniulus (Hakiulus)* from Miller County; *Auturus louisianus louisianus*, *E. dubuis*, *Cambala minor*, *O. gracilis*, *P. pinetorum*, and a female xystodesmid of the tribe Pachydesmini from Columbia County; *Virgoiulus minutus*, *C. minor*, *P. pinetorum*, and *A. l. louisianus* from Nevada County; and *P. pinetorum*, *Eurymerodesmus* sp., *Narceus americanus*, and *C. minor* from Ouachita County. A new state record is documented for *T. lampra* from Miller County, and the finding of *V. minutus* in Miller and Nevada counties represents the southwesternmost distributional records for the genus and species. To our knowledge, all millipeds reported herein for Little River County are the first ever documented for that county, including a potentially new species of *Tiganogona*, a genus known previously from Carroll, Clay, Sebastian, and Washington counties, Arkansas, Lincoln Parish, Louisiana, and more distant locales in Missouri and Indiana.

## Introduction

Although there has never been a consolidated listing of Arkansas millipeds, the fauna of the mountainous northwestern region was well collected by the late Dr. Nell B. Causey (1910-1979), who lived for many years in Fayetteville, Washington County. She collected extensively in that region of the state and amassed a large collection of millipeds (transferred to the Florida State Collection of Arthropods, Gainesville, upon her death), publishing numerous papers on these arthropods (Causey, 1950, 1951, and others). However, little collecting has been done in other parts of the state, particularly the Mississippi Valley and Gulf Coastal Plain of southern and southwestern Arkansas. (Shelley, 1990a). We have therefore focused our fieldwork on this relatively neglected area, particularly the southwestern corner of Arkansas near Texarkana (Little River and Miller counties). In the first in a series of reports on the millipeds of the Ark-La-Tex region, we report several new distributional records for Arkansas counties, including a new state record.

## Materials and Methods

Between October 2001 and March 2002, we collected millipeds in four counties (Hempstead, Lafayette, Little River, and Miller) of southwest Arkansas and three counties (Columbia, Nevada, and Ouachita) of south Arkansas. The majority of specimens were taken from damp areas off trails in pine and hardwood forests by overturning decaying logs and leaf litter with potato rakes. Occasional millipeds were collected by peeling bark off rotting logs and stumps. At each locale, specimens were placed in individually labeled vials containing 70% ethanol and returned to the laboratory for preliminary processing and sorting. Millipeds were shipped to the third author (RMS) and identified to the lowest taxonomic level by examining aspects of the male genitalia (aperture and gonopods). Voucher specimens are deposited in the North Carolina State Museum of Natural Sciences (NCSM).

## Results and Discussion

A total of 15 species and subspecies of millipeds, representing 11 genera, 11 families, and six orders was

found during our six-month survey; there were also two unidentifiable samples, one of juveniles of *Eurymerodesmus* and one of a female of the family Cleidogonidae. By far the most common order represented in our collection was the Polydesmida, the largest order in the class Diplopoda, with eight species in five families. The most common species was *Pseudopolydesmus pinetorum* (Bollman, 1888) collected from all seven counties surveyed. A complete list of taxa collected is presented below and annotated with distributional and ecological information.

#### Annotated List

##### Order Polydesmida

##### Family Xystodesmidae

*Thrinaxoria lampra* (Chamberlin, 1918). A male and female of *T. lampra* were collected in Miller County, 1.6 km S Genoa off St. Hwy 196 on 14 February 2002. This substantiates the prediction of Shelley (1984a) that it be listed as probable for southwestern Arkansas and constitutes new state records for both the genus and species. *Thrinaxoria lampra* is known from neighboring Caddo Parish, Louisiana (Shelley, 1984a), and from Longview, Gregg County, Texas (Shelley, 1990b). In addition, a female xystodesmid, assigned to the tribe Pachydesmini because of the large, thickened body and transverse sternal swellings between the legs, was collected from Logoly State Park in Columbia County on 19 December 2001. While geographically consistent with the known range of *T. lampra*, this individual is much larger than the female from Miller County and ones that we have collected in northeast Texas and has a different color pattern; furthermore, the sternal swellings are consistent with the genus *Pachydesmus* Cook (Hoffman, 1958). This genus comprises two species, *P. crassicutis* (Wood), with eight subspecies occurring east of the Mississippi River from Shelby County, Tennessee, and Baton Rouge, Louisiana, to southern South Carolina and Gaston County, North Carolina (Hoffman 1958; Shelley and Filka, 1979; Filka and Shelley 1980), and *P. clarus* (Chamberlin), which occurs west of the Mississippi in Beauregard, Grant, LaSalle, Lincoln, Natchitoches, and Rapides parishes, Louisiana, and Gregg and Newton counties, Texas (Hoffman, 1958; Causey, 1963; Shelley, 1990b). Additional collecting of males at this site will be necessary to confirm its identity.

##### Family Euryuridae

*Auturus louisianus louisianus* (Chamberlin, 1918). Specimens were taken from the Spring Branch trail at Logoly State Park, Columbia County, on 28 December 2001 and from the Beech Ridge, Coastal Plains, and Spring Branch trails at White Oak Lake State Park, Nevada

County, on 19 December 2001. Shelley (1982) revised the genus and summarized locales for Arkansas. All seven Arkansas counties reported previously for *A. l. louisianus* are south of the Arkansas River (Shelley, 1982). These are new county records and supplement its known range in south Arkansas.

##### Family Eurymerodesmidae

*Eurymerodesmus* sp. Juveniles not identifiable to species were collected from Poison Springs State Historical Park trail in Ouachita County. Additional collecting will be necessary in an attempt to obtain males for specific identity.

*Eurymerodesmus birdi birdi* Chamberlin, 1931. Adult males, females, and juveniles were collected from a site in Lafayette County, 12.9 km S Lewisville off St. Hwy 29 on 14 February 2002. This represents a new county record; in addition to numerous locales in other parts of Arkansas, and also in Louisiana and Texas, *E. b. birdi* has been reported previously from nearby Caddo Parish, Louisiana, and Bowie County, Texas (Shelley, 1990a).

*Eurymerodesmus dubuis* Chamberlin, 1943. Adult males and juveniles of this species were found at Logoly State Park on 28 December 2001 and 3.2 km SW Spring Hill off State Hwy 355 in Hempstead County on 14 February 2002. Shelley (1990a) previously reported *E. dubuis* from Ouachita County. Hempstead County represents a new county record.

*Eurymerodesmus mundus* Chamberlin, 1942. Previous Arkansas locales for *E. mundus* include only two counties, Polk and Sevier, in the western part of the state (Shelley, 1990a). We collected five males of *E. mundus* on 14 February 2002 from the same Lafayette County locale noted herein for *E. b. birdi*. An additional male was taken on 14 February 2002 at the same site in Miller County reported for *T. lampra*. Although *E. mundus* has not been reported from Louisiana, we anticipate finding it in suitable habitat in the northwestern part of adjacent Caddo Parish.

##### Family Paradoxosomatidae

*Oxidis gracilis* (Koch, 1847). Juveniles of this common introduced species were taken on 17 February 2002 from Columbia County (Logoly State Park) and our Lafayette County site on 14 February 2002, and a male was collected in Doddridge, Miller County, on 1 March 2002. It should be expected in urban habitats throughout the Coastal Plain of southern Arkansas.

##### Family Polydesmidae

*Pseudopolydesmus ?minor* (Bollman, 1888). A small-bodied male of the genus *Pseudopolydesmus* was collected on 14 February 2002 at the Lafayette County site and is provisionally assigned to this poorly-known species. The specimen is clearly distinct from the more

common, larger-bodied *P. pinetorum* because of its small size and different gonopods. The genus *Pseudopolydesmus* occurs widely across eastern North America from James Bay, Ontario, to northern peninsular Florida and, east-west, from the Atlantic Ocean to the western periphery of the eastern forested biome from Texas to Nebraska. While the genus has not been revised, the species in the eastern half of the range have been reasonably well defined in faunal studies (Shelley, 1978, 1988; Hoffman, 1974, 1999), but the midwestern species, especially those occurring west of the Mississippi River, are poorly known, and modern drawings of the diagnostic gonopodal features are not available. This fauna thus needs comprehensive review, and lacking such, our determination is tentative.

*Pseudopolydesmus pinetorum* (Bollman, 1888). While our determination of *P. minor* is provisional, we are more confident about *P. pinetorum* because of the dactyliform process at midlength on the lateral side of the gonopodal telopodite. This is the most common species in woodlands west of the Mississippi River, and we found it throughout the winter study period from all the study sites in Columbia, Hempstead, Lafayette, Little River, Miller, Nevada, and Ouachita counties. *Pseudopolydesmus pinetorum* has been reported previously from extreme NE Texas in Bowie County (Stewart, 1969).

#### Order Spirostreptida

##### Family Cambalidae

*Cambala minor* Bollman, 1889. Numerous males, females, and juveniles of this species were collected on 28 December 2001 and 17 February 2002 from Columbia County, on 29 October 2001 from Ouachita County, and on 19 December 2001 in Nevada County. Members of the genus appear to prefer cool weather conditions, as noted by Shelley (1978, 1979) for the representatives in the southern Appalachian Mountains and eastern Piedmont Plateau. Identification is somewhat difficult since they possess small gonopods recessed internally, with both leg pairs on segment seven modified into gonopods.

#### Order Chordeumatida

##### Family Cleidogonidae

Unidentifiable Cleidogonidae. A single female representing an unidentifiable genus and species of cleidogonid was collected from Columbia County on 17 February 2002. It will be necessary to obtain males from this site to render a determination.

*Tiganogona* sp. A possible new species of *Tiganogona* was collected along the Waterfowl and Wildlife Way trails of Millwood State Park in Little River County on 24 November 2001, 19 December 2001, and 3 January 2002. Three males were encountered on the underside of decaying oak bark in flooded habitat. These

specimens represent a significant generic range extension, as *Tiganogona* is previously known from northern and westcentral Arkansas (Carroll, Clay, Sebastian, and Washington counties), northcentral Louisiana (Lincoln Parish), and more distant locales in Missouri and Indiana.

#### Order Callipodida

##### Family Abacionidae

*Abacion ?texense* (Loomis, 1937). A female of *Abacion* was collected on 10 March 2002 in Miller County (Genoa site). Two species of *Abacion* are known from Arkansas, *A. tessellatum* Rafinesque and *A. texense* (Shelley 1984b), and we provisionally assign our specimen to the latter based on its small size and the fact that *A. texense* is the only species known from southwestern Arkansas. Previous Arkansas records (shown on a county dot map by Shelley 1984b, Fig. 12) are from Clark, Hempstead, and Pike counties, so Miller County constitutes a new county record. It is rather surprising that this is the only specimen of both the genus and species collected during our study, as *Abacion* is very common throughout the eastern United States, and *A. texense* is extremely abundant in Louisiana and eastern Texas.

#### Order Julida

##### Family Parajulidae

*Aniulus (Hakiulus) diversifrons diversifrons* (Wood, 1867). A male and female of this subspecies was collected from the Millwood State Park trail sites in Little River County on 3 January 2002. It represents an additional species for an Arkansas county previously devoid of milliped records.

*Aniulus (Hakiulus)* n. sp. A single male representing an undescribed species of this subgenus was collected at the Miller County site on 14 February 2002. More males are desirable to facilitate description. This specimen possesses a strong, spiniform epiproct, whereas the structure is short and blunt in other representatives of the subgenus. This is the first record of the subgenus for the county.

##### Family Blaniulidae

*Virgoiulus minutus* (Brandt, 1841). Two juvenile females of *V. minutus* were collected on 19 December 2001 from Nevada County and on 10 March 2002 from Miller County (Genoa site) under the bark of decaying pine stumps. The only previous record of the species in Arkansas was by Bollman (1888), who reported it from Little Rock, Pulaski County, and "Argenta," which we cannot locate. As the species' range includes much of the southeastern United States from Louisiana north to Illinois and Pennsylvania and east to North Carolina, our specimens are both new county records and the southwesternmost localities for *V. minutus* in the United States (Enghoff and Shelley, 1979; Enghoff, 1984).

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Order Spirobolida  
Family Spirobolidae

*Narceus americanus* (Beauvois, 1805). Although *N. americanus* is very common in much of the eastern United States, it is less so west of the Mississippi River, and we only encountered one individual, an adult female from the Poison Springs site in Ouachita County during our six-month study period. It is one of the few millipeds that can be identified without an adult male.

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