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Stephen W. Chordas III
Ohio State University, stevechordas@sbcglobal.net

Henry W. Robison
Southern Arkansas University

Eric G. Chapman
Kent State University

Betty G. Crump
U.S. Forest Service

Peter W. Kovarik

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STEPHEN W. CHORDAS III[1,6], HENRY W. ROBISON[2], ERIC G. CHAPMAN[3], BETTY G. CRUMP[4] AND PETER W. KOVARIK[5]

[1]*The Ohio State University, 1063 West 2nd Avenue, Columbus, OH 43212-3612,*
[2]*Department of Biology, Southern Arkansas University, P.O. Box 9354, Magnolia, AR 71754-9354*
[3]*Department of Biology, Kent State University, Kent, OH 44242*
[4]*U.S. Forest Service, P.O. Box 1270, Hot Springs, AR 71902*
[5]*239 Crestview Road, Columbus, OH 43202.*

[6]Correspondent: chordas.2@osu.edu

Abstract:

The terrestrial true bug (Hemiptera: Heteroptera) fauna of Arkansas is poorly represented in the literature. Between 1998 and 2004, we retained Hemiptera specimens collected while conducting a few scattered entomological projects. Ninety-nine species of terrestrial Hemiptera, representing 15 families, were collected from various locations within 9 Arkansas counties. Of these 99 species, 54 are new state records for Arkansas. The majority of these 54 new state records are of common, widespread species that would be expected for Arkansas. Twenty-two of the 54 species have been reported for at least 4 states bordering Arkansas, whereas only 5 species (all Miridae) were not previously reported for any bordering state. Our specimens of *Pycnoderes convexicollis* (Blatchley, 1926) represent a fairly significant range extension for this species, previously known only from Indiana and Illinois.

Introduction

The aquatic and semi-aquatic true bug (Hemiptera: Heteroptera) fauna of Arkansas is fairly well known. There have been several state-wide studies (Chordas and Harp, 1991; Harp and Harp, 1990; Harp, 1985) as well as other regional aquatic investigations (e.g., Chordas et al, 1996; Cochran and Harp, 1990; Harp and Harp, 1980) that included Hemiptera. Conversely, the terrestrial Hemiptera of Arkansas are less well documented. There are 5 terrestrial hemipteran families that have been comprehensively investigated for Arkansas: Aradidae (flat bugs; Taylor and McPherson, 1989), Pentatomidae (stink bugs; Barton and Lee, 1981) and Cydnidae (burrower bugs), Scutelleridae (shield back bugs), Thyrecoridae (negro bugs; Lee and Barton, 1983). The remaining terrestrial Hemiptera are largely underreported for Arkansas. Based on distribution records in the *Catalog of True Bugs* (Henry and Froeschner, 1988), 20 families of terrestrial hemipterans should occur in Arkansas. However, only 17 have been recorded in the literature. Three small families, Enicocephalidae (unique-headed bugs), Largidae (largid bugs), Piesmatidae (piesmatid bugs), lack literature records for Arkansas (Henry and Froeschner, 1988). Further, many of the hemipteran families that are recorded for Arkansas have several common, widespread species, which, although expected for the state, are as of yet unreported in the literature.

We retained Hemiptera that were collected during a few of our ongoing localized insect projects. The purposes of this paper are to report 54 hemipteran species as new state records for Arkansas and to provide a list of hemipteran species that we collected during our isolated projects.

Materials and Methods

Hemipterans were collected during sampling for projects targeting other insect groups. Bugs were collected in sweepnets, pitfall traps, black light pan traps, and sheets. Bugs were also collected with beating sheets or aspirated/hand captured. Collections were made while investigating the Diptera fauna of the White River National Wildlife Refuge (Chordas et al., 2004), the insect fauna of springs in the Ouachita Highlands in the Ouachita National Forest (i.e., Beyers and Robison, 1997), the insect fauna inhabiting pocket gopher borrows (both *Geomys bursarius ozarkensis* and *Geomys breviceps*) in the White River basin, and aquatic Hemiptera (plus general) collecting in wildlife or park areas. Samples from 17 collection sites in 9 counties contained hemipteran specimens that were identifiable (Fig. 1, Table 1). Specimens were preserved in 70-80% ethanol. Voucher specimens of state records were deposited in the University of Arkansas arthropod museum (Fayetteville, Arkansas). Remaining specimens were deposited in the senior author's collection (SWAC Collection, Columbus Ohio).

Blatchley (1926), Kelton (1978), Knight (1941),

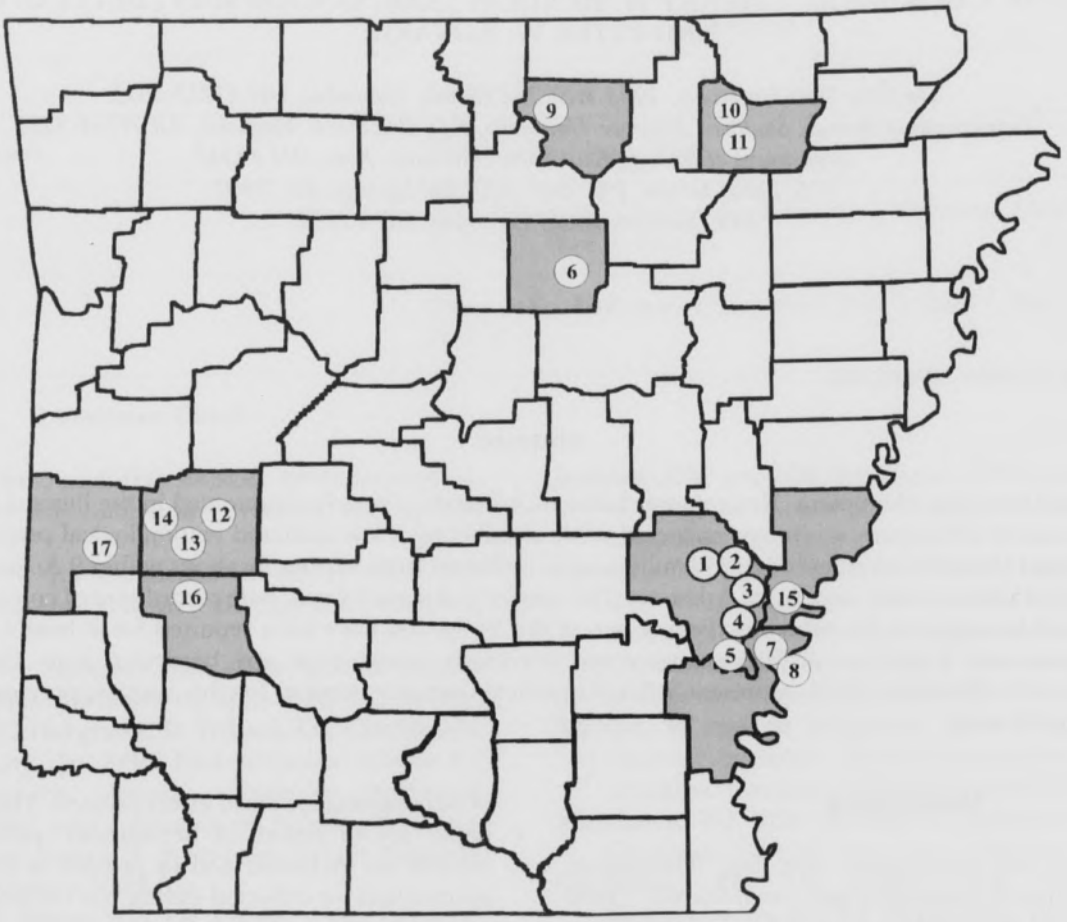

Fig. 1. Collection sites (see Table 1 for site specifics).

McPherson (1982), McPherson et al. (1990), and Moore (1955) were used as taxonomic references, and a few specimens were sent to recognized experts for verification (see Acknowledgements). Only specimens that were confidently determined to the species level are included herein. Barton and Lee (1981), Blatchley (1926), Lee and Barton (1983), Henry and Froeschner (1988), Lariviere and Larochelle (1991), McPherson (1982), McPherson et al. (1990), McPherson et al. (1991) and Taylor and McPherson (1989) were used as distributional references.

Results and Discussion

We collected 99 species of Hemiptera, representing 15 families, from 9 Arkansas counties (Table 2, Fig. 1). Of these, 54 are recorded for the first time from Arkansas (Table 2).

The majority of the species we are reporting as new for Arkansas are common, widespread species that, based on distributional data, would be expected for Arkansas. Of the 54 species new for Arkansas, 22 (40%), including all 9 of the Lygaeidae, have been reported for at least 4 of the 6 states bordering Arkansas (Table 2). Only 5 of the 54 species (9%) have not been reported for any bordering state. Interestingly, all five species are Midridae. This indicates that the Arkansas hemipteran fauna has been truly under-reported.

***Alydidae* (*Broad-Headed Bugs*).**—Prior to our addition of *Megalotomus quinquespinosus* as a new state record, only a single broad-headed bug species *Alydus eurinus* had been reported from Arkansas (Henry and Froeschner, 1988). *Alydus eurinus* is a common and widespread species. *Megalotomus quinquespinosus* was previously known only from Missouri of those states bordering Arkansas. Both species were collected in 3 separate regions of Arkansas (Tables 1 and 2), and we suspect that both species likely occur statewide. A few additional, less common, broad-headed bug species may also occur in Arkansas.

***Anthocoridae* (*Minute Pirate Bugs*).**–Three anthocorid species are now known for Arkansas. Prior to our 2 new state records (Table 2), only a single anthocorid species *Macrotracheliella nigra* (Parshley, 1917) was known for the state. Both species we encountered, represented by single specimens, were hand collected/aspirated while searching for Aradidae. Arkansas is within the known range, which nearly spans the southern United States, for both species (Henry and Froeschner, 1988). Some anthocorids are attracted to lights, which makes their collection easier. Several additional anthocorid species may be found by searching around outdoor lights.

***Aradidae* (*Flat Bugs*).**–All 4 aradid species we encountered were previously reported for Arkansas by Taylor and McPherson (1989). All specimens were hand collected by pulling bark off of fallen timber. These insects are cryptic and are one of the few insects we targeted during general collecting. For a full treatment of the 9 species known for Arkansas, see Taylor and McPherson (1989).

***Berytidae* (*Stilt Bugs*).**–Three species of stilt bugs are known from Arkansas. The 2 species of stilt bugs we encountered are common species in the United States: *Jalysus whickhami* occurs coast to coast, and *Jalysus spinosus* is commonly found east of about the 100th meridian. *Jalysus whickhami* is reported as a potential economically important pest species in North America (Wheeler and Henry, 1981). We often encountered both species in samples. These two species likely occur abundantly in Arkansas. In addition to these two *Jalysus* species, *Neides muticus* (Say, 1832) is known from Arkansas, and 1 other species *Metacanthus multispinus* (Ashmead, 1887) occurs in bordering states and may occur in Arkansas.

***Coreidae* (*Leaf-Footed Bugs*).**–Leaf-footed bugs are larger bodied bugs (specimens of 10–15 m are common) that are almost exclusively plant feeders. On appropriate host plants, they can occur in large numbers. Our collections were of either a single or a few specimens that we sporadically encountered. Four of the 6 species we collected (66%) are new state records for Arkansas. One of our new state records, *Leptoglossus fulvicornis*, is an eastern species that appears to be migrating west (McPherson et al., 1990). The other 3 new state records are widespread species and were expected for Arkansas. There are about 10 species of leaf-footed bugs now known for Arkansas with about twice that many known from bordering states.

***Cydnidae* (*Burrowing Bugs*).**–Lee and Barton (1983) provided an excellent treatment of this family for Arkansas. Our collection methods were not appropriate for attracting or collecting cydnids; our 3 specimens, therefore, were unexpected in our traps. We did not find any additional taxa for Arkansas.

***Lygaeidae* (*Chinch Bugs*).**–With about 3,000 species worldwide, this large, diverse family is second only to the Miridae in number of species. Over 320 species occur in North America (Henry and Froeschner, 1988). Nine of the 14 species we collected (64%) are new state records for Arkansas. All 9 species are common and widespread species that were anticipated for the state, as all are known from four or more states bordering Arkansas.

***Miridae* (*Plant Bugs*).**–We found the mirids to be difficult to identify and only utilized intact specimens that could be confidently identified; often only male specimens were able to be confidently determined. Miridae is the largest, most specious family of Hemiptera. In the genus *Phytocoris* alone, there are more than 200 species known for North America. All 6 of the Phytocoris species that we collected are new state records (Table 2). One mirid species is an Arkansas endemic (*Lopidea arkansae* Knight, 1965). We did not find this species, but the single species that we did find in this genus is a new state record (Table 2).

There are relatively few literature records of Arkansas Miridae. As a consequence, 79% of the mirid species we collected are new state records (Table 2). Although we encountered common and fairly widespread species that would be expected for Arkansas, there was at least one notable find. Our specimens of *Pycnoderes convexicollis* represent a significant range extension for this species. It was previously known only from Illinois and Indiana (Blatchley, 1926; Henry and Froeschner, 1988). An additional species of interest is *Fulvius slateri* which, although listed as occurring from California to Florida (Henry and Froeschner, 1988), had not previously been reported for Arkansas or any bordering state. Two additional species *Phytocoris puella* and *Phytocoris quercicola* lack records from states bordering Arkansas.

***Nabidae* (*Damsel Bugs*).**–Damsel bugs belong to a small predatory family of bugs that usually have a consistent morphology. Males are most reliable to identify. We report 3 nabid species as new for Arkansas (Table 2). All 3 have been reported for 2 or more states bordering Arkansas. There are now 6 damsel bug species reported for the state. In addition to the 4 species we found (Table 2), *Hoplistoscelis sericans* (Reuter, 1872) and *Nabis capsiformis* (Germar, 1838) are also recorded from Arkansas.

***Pentatomidae* (*Stink Bugs*).**–The Stink bug family is a large family; its members are some of the most commonly encountered and collected bugs. Barton and Lee (1981) provided an excellent treatment of this family for Arkansas. We did not find any additional taxa in our collections.

***Phymatidae* (*Ambush Bugs*).**–Ambush bugs are aptly named because they hide, often in flowers, waiting for unsuspecting prey to approach. They are voracious predators and many can capture prey larger than themselves. There have been 4 ambush bug species reported for Arkansas. Based on distribution, there are several more that may occur in the state (see Henry and Froeschner, 1988). The species that we found is the most common and widespread species, which likely

occurs statewide.

***Reduviidae* (*Assassin Bugs*).**–The members of this family are robust, predatory insects that will feed on almost anything that they can capture. Assassin bugs will inflict a very painful bite to humans, primarily as a defense mechanism. The senior author personally experienced the bite of a *Rasahus hamatus* specimen at a black light in the White River National Wildlife Refuge. The individual escaped, but left a severely painful reminder of its presence. A few (such as the *Triatoma*) feed on blood and will bite mammals. Many of these blood feeding species, however, have a painless bite.

Of the seventeen species we encountered, twelve (70%) are recorded for Arkansas for the first time. The ranges of all twelve species overlap Arkansas, and thus, were expected for the state. Ten of these twelve had been reported for at least 3 bordering states. Only 1 species *Rocconota annulicornis* was known from a single bordering state, Texas. Among these 12 is the "wheel bug" (*Arilus cristatus*). This easily recognizable and large species was known from Missouri, Oklahoma and Texas. Given its notoriety and distinctive characters for identification, the authors were surprised that this species had not been previously reported. Additionally, on a taxonomic note, we follow McPherson et al. (1991) in recognizing *Melanolestes abdominalis* (Herrich-Schaeffer, 1846) as a junior synonym of *Melanolestes picipes.*

***Rhopalidae* (*Scentless Plant Bugs*).**–Six rhopalid species have been reported for Arkansas (Henry and Froeschner, 1988). The 3 species that we encountered are common and widespread, and all had previously been reported for Arkansas. One rhopalid species *Boisea trivittata* (Say, 1825) (the box elder bug) is not listed for Arkansas by Henry and Froeschner (1988), and we could not find a record of it in the literature through 2004. This species has been reported for every state bordering Arkansas (except Louisiana) and undoubtedly occurs in the state.

***Thyreocoridae* (*Negro Bugs*).**–Lee and Barton (1983) provided an excellent treatment of this family (under the junior family name of Corimelaenidae) for Arkansas. We did not find any additional taxa in our collections.

***Tingidae* (*Lace Bugs*).**–These small (most species are under 5 millimeters) phytophagous insects are replete with anastomotic veins throughout their expanded membranous covering, which gives them their common name. Four of the 5 species that we collected are new for Arkansas (Table 2). These 4 species are common, as all have been reported for at least 25 states in the United States (Henry and Froeschner, 1988). Further, all 4 species were previously reported for Missouri and Texas, as well as at least 1 other bordering state and were expected for Arkansas. Several more widely distributed lace bug species likely occur in Arkansas.

Approximately 170 species of terrestrial Hemiptera have previously been reported from Arkansas. Almost half of those come from the 3 works of Barton and Lee (1981–50 species), Lee and Barton (1983–24 species) and Taylor and McPherson (1989–9 species). The addition of our 54 new records brings the known terrestrial hemipteran fauna of Arkansas to over 220 species. Based on distributional data (Henry and Froeschner, 1988), 220 species may be only a fraction (less than half) of the Arkansas terrestrial hemipteran fauna.

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Table 1. Collection sites (arranged by alphabetical order of county).

Site #	County	Location	Collection Method	Co-ordinates	Date
1	Arkansas	White River at State Route 1 bridge (White River National Wildlife Refuge)	Pitfall	N34.38 : W-91.12	22 June 2001
2	Arkansas	White River at State Route 1 bridge (White River National Wildlife Refuge)	Sweepnet	N34.38 : W-91.12	22 June 2001
3	Arkansas	White River & Arkansas Post Canal confluence (White River Refuge)	Sweepnet	N34.02 : W-91.18	21 June 2001
4	Arkansas	Lowland forest area of Panther Creek (White River National Wildlife Refuge)	Black-light sheet & pan	N34.29 : W-91.11	21 June 2001

Table 1. Continued.

Site #	County	Location	Collection Method	Co-ordinates	Date
5	Arkansas	Jack's Bay Landing, off Jack's Bay Road (White River National Wildlife Refuge)	Sweepnet	N34.10 : W-91.16	21 June 2001
6	Cleburne	Greers Ferry Lake, John F. Kennedy park	Sweepnet	N35.50 : W-91.97	2,5 September 1999 & 2000
7	Desha	Alligator Lake, (White River National Wildlife Refuge)	Black-light sheet	N34.05 : W-91.09	22 June 2001
8	Desha	Alligator Lake, (White River National Wildlife Refuge)	Sweepnet	N34.05 : W-91.09	22 June 2001
9	Izard	Roadside vegetation, (State Route 9 & CR 3 junction)	Sweepnet/hand coll.	N36.03 : W-91.91	25 May 2004
10	Lawrence	Open field, wetland area, off CR 316: (Shirey Bay-Rainey Brake Wildlife Area)	Black-light pan/hand coll.	N35.98 : W-91.11	22 May 2004
11	Lawrence	Open field, wetland areas, off CR 316: (Shirey Bay-Rainey Brake Wildlife Area)	Sweepnet/ beating sheet	N35.98 : W-91.11	23 May 2004
12	Montgomery	Boxx Spring, Forest service road 73 (Ouachita National Forest)	Black-light sheet	N34.44 : W-93.78	25 June 2001
13	Montgomery	Caddo ponds and Gardens, (Ouachita National Forest)	Black-light sheet	N34.38 : W-93.50	26 June 2001
14	Montgomery	Rattlesnake Creek Spring, (Ouachita National Forest)	Sweepnet	N34.43 : W-93.57	25 June 2001
15	Phillips	Hudson's Landing of the White River (White River National Wildlife Refuge)	Sweepnet	N34.22 : W-91.06	22 June 2001
16	Pike	Brier Creek/Little Missouri River (Ouachita National Forest)	Sweepnet	N34.38 : W-93.86	25 June 2001
17	Polk	McKinley Mountain (Ouachita National Forest)	Aspirated/Pitfalls/ hand collected	N34.43 : W-94.01	26 June 1998

Table 2. Species list of Hemiptera collected from Arkansas.

Family: Species	Collection Sites (from Table 1)
Alydidae: Broad-Headed Bugs (2 species; 1 new state record)	
Alydus eurinus (Say, 1825)	5, 7, 14
**Megalotomus quinquespinosus* (Say, 1825)	8, 9, 14
Anthocoridae: Minute Pirate Bugs (2 species; 2 new state records)	
**Lytocoris stalii* (Reuter, 1871)	10
**Xylocoris sordidus* (Reuter, 1871)	10
Aradidae: Flat bugs (4 species)	
Aradus robustus (Uhler, 1871)	10
Mezira granulata (Say, 1832)	10
Mezira sayi (Kormilev, 1982)	10
Neuroctenus simplex (Uhler, 1876)	9
Berytidae: Stilt Bugs (2 species)	
Jalysus spinosus (Say, 1824)	6, 8, 11, 16
Jalysus wickhami (Van Duzee, 1906)	6, 7, 11, 16
Coreidae: Leaf-Footed Bugs (6 species; 4 new state records)	
***Acanthocephala terminalis* (Dallas, 1852)	3, 11, 12
**Chariesterus antennator* (Fabricius, 1803)	11
**Euthochtha galeator* (Fabricius, 1803)	16
Leptoglossus corculus (Say, 1832)	16
**Leptoglossus fulvicornis* (Westwood, 1842)	16
Leptoglossus opposites (Say, 1832)	11
Cydnidae: Burrowing Bugs (2 species)	
Amnestus pusillus (Uhler, 1876)	10
Pangaeus bilineatus (Say, 1825)	17
Lygaeidae: Chinch Bugs (14 species; 9 new state records)	
Antillocoris pilosulus (Stal, 1874)	4, 12
Blissus leucopterus (Say, 1832)	16
***Cymus angustatus* (Stal, 1874)	5, 11
Geocoris punctipes (Say, 1832)	6, 16
Geocoris uliginosus (Say, 1832)	6
***Heraeus plebejus* (Stal, 1874)	13
***Kleidocerys resedae geminatus* (Say, 1832)	11
Myodocha serripes (Olivier, 1811)	6, 12, 13
***Neopamara albocincta* (Barber, 1953)	4, 7, 12
***Neopamara bilobata* (Say, 1832)	6
***Neortholomus scolopax* (Say, 1832)	16
***Oedancala dorsalis* (Say, 1832)	5, 8, 11, 13, 16
***Phlegyas abbreviatus* (Uhler, 1876)	5, 13, 16
***Pseudopachybrachius basalis* (Dallas, 1852)	6
Miridae: Plant Bugs (24 species; 19 new state records)	
***Agnocoris rossi* (Moore, 1955)	10
**Alepidia gracilis* (Uhler, 1895)	12
**Ceratocapsus quadrispiculus* (Knight, 1927)	12
**Ceratocapsus modestus* (Uhler, 1887)	11
Deraeocoris nebulosus (Uhler, 1872)	4, 5, 10
**Deraeocoris histrio* (Reuter, 1876)	10
**Fulvius slateri* (Wheeler, 1977)	1
**Lopidea confluenta* (Say, 1832)	16
Lygus lineolaris (Palisot, 1818)	6, 8, 10, 11, 13
Neurocolpus jessiae (Knight, 1934)	14, 16
Neurocolpus nubilus (Say, 1832)	2
**Phytocoris angustifrons* (Knight, 1926)	12
**Phytocoris canadensis* (Van Duzee, 1920)	10
**Phytocoris eximius* (Reuter, 1876)	10
**Phytocoris mundus* (Reuter, 1909)	12, 13
**Phytocoris puella* (Reuter, 1876)	12
**Phytocoris quercicola* (Knight, 1920)	10
**Plagiognathus obscurus* (Uhler, 1872)	9
**Plagiognathus politus* (Uhler, 1895)	8, 11
**Prepops fraternus fraternus* (Knight, 1923)	10
***Prepops rubrovittatus* (Stal, 1862)	3, 11
***Pseudoxenetus regalis* (Uhler, 1890)	10
**Pycnoderes convexicollis* (Blatchley, 1926)	13
Reuteroscopus ornatus (Reuter, 1876)	10, 16
Nabidae: Damsel Bugs (4 species; 3 new state records)	
***Hoplistoscelis sordidus* (Reuter, 1872)	2, 8
**Lasiomerus annulatus* (Reuter, 1872)	2
Nabis alternatus (Parshley, 1922)	16
***Nabis americoferus* (Carayon, 1961)	6
Pentatomidae: Stink Bugs (9 species)	
Acrosternum hilare (Say, 1832)	10, 13
Banasa dimiata (Say, 1832)	4
Brochymena cariosa (Stal, 1872)	16
Euschistus servus servus (Say, 1832)	2, 3, 5, 9, 16
Euschistus tristigmus tristigmus (Say, 1832)	8, 11, 13, 14
Mormidea lugans (Fabricius, 1775)	5, 16
Oebalus pugnax (Fabricius, 1775)	7
Podisus maculiventris (Say, 1832)	17
Thyanta accerra (McAtee, 1919)	10
Phymatidae: Ambush Bugs (1 species)	
Phymata americana americana (Melin, 1930)	6, 11

Table 2. Continued.

Family: Species	Collection Sites (from Table 1)
Reduviidae: Assassin Bugs (17 species; 12 new state records)	
**Arilus cristatus* (Linnaeus, 1763)	6
***Barce fraterna fraterna* (Say, 1832)	4, 7
**Emesaya brevipennis brevipennis* (Say, 1828)	15
Melanolestes picipes (Herrich-Schaeffer, 1846)	17
**Microtomus purcis* (Drury, 1782)	17
**Oncocephalus geniculatus* (Stal, 1872)	7
**Pnirontis modesta* (Banks, 1910)	10
***Pselliopus barberi* (Davis, 1912)	2, 6, 9
***Pygolampis pectoralis* (Say, 1832)	10
**Rasahus hamatus* (Fabricius, 1781)	4, 12
**Rocconota annulicornis* (Stal, 1872)	4
Sinea diadema (Fabricius, 1776)	6
Sinea spinipes (Herrich-schaeffer, 1846)	5
Triatoma sanguisuga (Leconte, 1856)	17
***Zelus cervicalis* (Stal, 1872)	6
Zelus luridus (Stal, 1862)	3, 11
Rhopalidae: Scentless Plant Bugs (3 species)	
Arhyssus lateralis (Say, 1825)	3, 6
Arhyssus nigristernum (Signoret, 1859)	6, 13
Harmostes reflexulus (Say, 1832)	6
Thyreocoridae: Negro Bugs (4 species)	
Corimelaena lateralis (Fabricius, 1803)	8, 9, 11
Corimelaena marginella (Dallas, 1851)	5, 6
Corimelaena pulicaria (Germar, 1839)	5, 16
Galgupha loboprostethia (Sailer, 1940)	5, 6, 8
Tingidae: Lace Bugs (5 species; 4 new state records)	
Corythucha aesculi (Osborn & Drake, 1916)	5
**Corythucha arcuata* (Say, 1832)	5
***Corythucha ciliata* (Say, 1832)	15
***Corythucha marmorata* (Uhler, 1878)	5, 13, 15, 16
**Leptoypha mutica* (Say, 1832)	4

*new state record for Arkansas.

**new state record + species previously recorded from 4 (or more) of the states bordering Arkansas (Louisiana, Mississippi, Missouri, Oklahoma, Tennessee, Texas)

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