

STATE RECORDS AND CONFIRMATIONS OF ARKANSAS FLAT BUGS (HETEROPTERA: ARADIDAE)

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ABSTRACT

Eight aradid species are reported for the first time from Arkansas including *Aneurus pygmaeus*, *Aradus cincticornis*, *Aradus crenatus*, *Quilnus niger*, *Mezira granulata*, *Mezira lobata*, *Mezira sayi*, and *Neuroctenus simplex*. The presence of *Aradus acutus*, *Aradus falleni*, and *Aradus robustus* in Arkansas is confirmed.

Few records have been published on Arkansas Aradidae. Parshley (1922) reported *Aradus acutus* Say and *Aradus falleni* Stål from the state and Drake and Kormilev (1958) extended the range of *Acaricoris ignotus* Harris and Drake from Louisiana, Mississippi, and Georgia to include Arkansas. Leschen and Taylor (1987) found *Aradus robustus* Uhler in Arkansas and provided information on its biology.

Because information on these bugs in Arkansas is so limited, a faunal survey was conducted from 1984 to 1987. A total of 1,125 specimens of 11 species was collected, most by hand picking. For the listing of these specimens below, data were collected by SJT unless stated otherwise. Specimens collected by SJT were found under bark of dead hardwoods unless stated otherwise. Collections from under bark of dead *Quercus* sp. are indicated by UBDQ. Numbers of adult males and females and additional host plant data are indicated in parentheses following each locality. Cadron Settlement Park, Quail Restoration Area, and Bell Slough Wildlife Management Area, the most frequent collection localities, are indicated by CSP, QRA, and BSWMA, respectively. Immature stages were not included in counts since they cannot be reliably identified; however, immatures often outnumbered adults at various sites. The sequence of aradid taxa follows Kormilev and Froeschner (1987). Specimens are deposited in the SJT collection and the Southern Illinois University Entomology Collection (SIUEC).

ANEURINAE

Aneurus pygmaeus Kormilev is known from Florida, Georgia, Texas, and California (Picchi 1977). Here we report material representing a northern range extension for the species and the first record of *Aneurus* in Arkansas.

FAULKNER Co.: CSP, 12-VI-85 (4 ♂♂, 3 ♀♀); 13-VI-85 (1 ♀), S. and J. D. Taylor, coll.; 1-V-86 (4 ♂♂, 7 ♀♀, UBDQ); 2-XII-86 (1 ♂, 1 ♀, UBDQ).

ARADINAE

Aradus acutus Say is one of the most frequently encountered species of *Aradus*, and is widely distributed from Maine and Florida west to Washington, California, and Texas

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(Matsuda 1977). Parshley (1922) reported *A. acutus* from Arkansas, and its presence in Arkansas is here confirmed.

CONWAY Co.: Petit Jean State Park-near Rock House Cave, 16-III-85 (1 ♀). FAULKNER Co.: Conway-near Hwy 64, 21-VIII-84 (10 ♂♂, 8 ♀♀). 5 mi E of Conway, 22-VII-85 (1 ♀). 2 mi E of Hwy 65 on Lower Ridge Road, 24-XI-84 ([14 ♂♂, 19 ♀♀, UBDQ][5 ♂♂, 6 ♀♀, under bark of dead tree]). CSP, 29-V-85 (1 ♀); 11-IX-85 (1 ♂); 15-IX-85 (1 ♂); 2-XII-86 (7 ♂♂, 6 ♀♀, UBDQ). Near CSP, 19-XI-85 (2 ♂♂, 4 ♀♀, under bark of dead *Quercus marilandica*). QRA, 24-X-85 (1 ♀, under bark of standing dead *Quercus stellata*). 1 1/2 mi NW of Davis Lake-W of Mayflower, 6-XI-85 (3 ♂♂, 4 ♀♀). Near Lake Conway Spillway, 11-III-85 (12 ♂♂, 3 ♀♀, UBDQ). BSWMA-S end, 11-IV-86 (1 ♂ UBDQ). IZARD Co.: 9 mi S of Melbourne off Hwy 9, 5-X-85 (2 ♀♀, under bark of dead *Salix nigra*).

Aradus cincticornis Bergroth was described from Alabama and subsequently reported from Missouri by Froeschner (1942). It is here reported as a first record for Arkansas.

FAULKNER Co.: CSP, 13-II-87 (13 ♂♂, 29 ♀♀, UBDQ). 1/2 mi E of CSP, 30-XII-86 (5 ♂♂, 14 ♀♀, under bark of fallen dead *Q. marilandica* branches). IZARD Co.: 9 mi S of Melbourne off Hwy 9, 28-XII-84 (6 ♂♂, 15 ♀♀, UBDQ), S. and M. J. Taylor, coll. LOGAN Co.: Mt. Magazine-Sloakum Springs, 19-III-87 (21 ♂♂, 20 ♀♀, under *Quercus velutina* bark), R. Leschen, coll.

Aradus crenatus Say occurs throughout much of eastern North America from Quebec and Ontario south to Georgia, Alabama, Illinois, and Mexico (Blatchley 1926). It was formerly thought to be a Holarctic species, but the European taxon (*Aradus conspicuus* Herrich-Schaeffer) is now considered a separate species (Heiss 1980). *A. crenatus* has not previously been reported from Arkansas.

LOGAN Co.: Mt. Magazine (RL-367), 1-VII-86 (1 ♀, on fungus *Polyporus caesius*), R. Leschen, coll. Cove Lake-9 mi SE of Paris, 3-X-87 (1 ♀, on *Bjerkandra adusta*), R. Leschen, coll. WASHINGTON Co.: Fayetteville, 3-V-86 (8 ♂♂).

Aradus falleni Stål is the most widespread of the New World *Aradus* species, being found from Brazil north to British Columbia and New York (Parshley 1922). Parshley (1922) reported this species from Arkansas, and its presence in Arkansas is here confirmed.

POPE Co.: Ozark National Forest, Long Pool, 23-VI-85 (1 ♀, on rainfly of tent).

Aradus robustus Uhler is widely distributed from the Northwest Territories, Nebraska, and Texas east to Quebec and Florida (Leschen and Taylor 1987). It has previously been reported from Arkansas (Leschen and Taylor 1987) and additional Arkansas material reported here includes a new county record (Polk County).

POLK Co.: Bard Springs, 15-III-87 (1 ♂, 1 ♀, on *Irpex lacteus*), R. Leschen, coll. WASHINGTON Co.: Lake Wedington, 5-III-87 (7 ♂♂, 18 ♀♀, on *I. lacteus* on branch), R. Leschen, coll.

Quilnus niger (Stål) is found from Nova Scotia and South Carolina west to Colorado, Texas, and Mexico (Blatchley 1926). This genus has not previously been reported from Arkansas.

PULASKI Co.: Little Rock, Maumelle Park, 10-III-85 (1 ♂, under bark of dead *Pinus* sp.).

MEZIRINAE

Mezira granulata (Say) ranges from Maryland and Florida west to Missouri and Texas; it has also been reported from Cuba and Mexico (Blatchley 1926). *Mezira sayi* Kormilev was recently described (Kormilev 1982), and, since these two species are both common, closely related, and appear to have broadly overlapping ranges, distributions of both species need to be confirmed. Kormilev (1982) reported *M. granulata* from Maryland and North Carolina. It has not previously been reported from Arkansas.

CONWAY Co.: Petit Jean State Park-near rock house cave, 16-III-85 (6 ♂♂, 5 ♀♀). Petit Jean State Park-Cedar Falls trail, 5-IV-86 (1 ♂, 3 ♀♀, under bark of fallen dead

Quercus alba). FAULKNER Co.: Conway, 16-III-84 (8 ♂♂, 5 ♀♀). Conway-500 ft S of N entrance to railroad tunnel, 23-XI-84 (10 ♂♂, 2 ♀♀, under bark of dead *Q. alba*). 2 mi E of Hwy 65 on Lower Ridge Road nr. Conway, 24-XI-84 (95 ♂♂, 74 ♀♀, UBDQ). CSP, 12-III-85 (1 ♂, 3 ♀♀); 14-X-85 (12 ♂♂, 1 ♀, under bark of dead *Q. stellata*); 20-XI-85 (1 ♂, under bark of dead *Q. alba*); 23-VIII-86 (2 ♀♀, under bark of dead tree); S. Taylor and R. Leschen, coll.; 12-IX-86 (2 ♂♂, 3 ♀♀, UBDQ); 12-IX-86 (3 ♂♂, 4 ♀♀, under bark of *Q. alba* branch on ground). QRA, 19-VI-85 (3 ♂♂, 4 ♀♀, UBDQ); 13-I-86 (21 ♂♂, 10 ♀♀, UBDQ); 18-IX-85 (4 ♀♀, UBDQ). Near Lake Conway Spillway by swamp, 12-VII-85 (10 ♂♂, 1 ♀). Near Lake Conway Spillway, 20-VII-85 (10 ♂♂, 7 ♀♀). Near upper end of Lake Conway, 16-VIII-86 (3 ♂♂, 2 ♀♀). 1 1/2 mi NW Davis Lake-W of Mayflower, 12-XI-85 (11 ♂♂, 9 ♀♀, under bark of dead *Q. alba*). 9.7 mi S of Hwy 64 on Hwy 286, 28-V-85 (3 ♂♂, 2 ♀♀, UBDQ). BSWMA-E end, 31-X-86 (13 ♂♂, 16 ♀♀, under bark of fallen dead *Quercus phellos*). BSWMA-S end, 1-IV-86 (5 ♂♂, 11 ♀♀, UBDQ); 3-XII-86 (3 ♂♂, 1 ♀). IZARD Co.: 9 mi S of Melbourne off Hwy 9, 28-XII-84 (1 ♂, 1 ♀, under bark of dead *Q. alba*), S. and M. J. Taylor, coll. LITTLE RIVER Co.: Near Lake Millwood, 19-X-85 (3 ♀♀, UBDQ). LOGAN Co.: 2 mi NW of Mt. Magazine, 17-VII-85 (3 ♂♂, 1 ♀, under bark). LOGAN or YELL Co., near common border: Workman's cabin on Mt. Magazine, 17-VIII-86 (2 ♂♂, 2 ♀♀, under bark of fallen logs), R. Leschen, coll. PERRY Co.: near Cypress Creek Park, 27-II-86 (1 ♀). PULASKI Co.: Little Rock, Maumelle Park, 10-III-85 (1 ♀). Pinacle Mountain, northeast face, 26-XI-87 (2 ♀♀, Berlese funnel), C. E. Carlton, coll. STONE Co.: Blanchard Springs, 27-VIII-84 (6 ♂♂, 4 ♀♀, under bark of *Q. stellata* and *Quercus falcata*), D. and A. Johnson, coll. WASHINGTON Co.: 2 mi S of Hwy 156 × Hwy 265, 1/2 mi E of Hwy 265, 3-V-86 (2 ♀♀). Lake Weddington, 24-V-86 (1 ♂, on fungus), R. Leschen, coll. 2 mi NW of Lake Weddington, 4-V-86 (8 ♂♂, 6 ♀♀).

Mezira lobata (Say) ranges from New York and Georgia west to California and Texas (Blatchley 1926) and has been reported from Canada (Kormilev 1971). It has not previously been reported from Arkansas.

FAULKNER Co.: Conway, 17-III-84 (2 ♂♂, 3 ♀♀). Near Lake Conway Spillway, 11-III-85 (2 ♀♀, under bark of dead tree). Near Lake Conway Spillway by swamp, 12-VII-85 (1 ♀). LITTLE RIVER Co.: Near Lake Millwood, 20-X-85 (9 ♂♂, 4 ♀♀), S. Taylor and A. Johnson, coll. LOGAN Co.: Mt. Magazine-electronic site, 19-III-87 (13 ♂♂, 7 ♀♀, in rotten log), R. Leschen, coll.

Mezira sayi Kormilev is known from Florida, Georgia, South Carolina, and Indiana (Kormilev 1982). Some reported records for *M. granulata* are probably based on this species. We here report *M. sayi* from Arkansas.

DREW Co.: Seven Devils Swamp, 16-III-87 (1 ♂, on *Stereum ostrea* in log), R. Leschen, coll. FAULKNER Co.: Conway-500 ft S of N entrance to railroad tunnel, 23-XI-84 (1 ♀, under bark of dead *Q. alba*); 24-XII-84 (1 ♂, UBDQ). 3 mi W of Conway off Hwy 65, 19-II-86 (4 ♂♂, 2 ♀♀, UBDQ). CSP, 20-VII-84 (1 ♂, 2 ♀♀, under bark); 12-III-85 (12 ♂♂, 4 ♀♀); 12-VI-85 (1 ♂); 13-VI-85 (10 ♂♂, 7 ♀♀), S. and J. D. Taylor, coll.; 6-III-86 (6 ♂♂, 3 ♀♀); 17-X-86 (2 ♂♂); 22-X-86 (12 ♂♂, 7 ♀♀). Near CSP, 31-X-85 (4 ♂♂, 3 ♀♀); 2-XI-85 (2 ♂♂, 2 ♀♀, under bark of dead *Q. alba* limb); 18-XI-85 (1 ♀, under bark of dead *Q. marilandica*). QRA, 19-VI-85, 1 ♀, UBDQ; 18-IX-85 (5 ♂♂, 1 ♀, UBDQ); 24-X-85 (2 ♂♂, 1 ♀, under bark of dead *Q. stellata* limb). Between Lake Conway Spillway and Clear Lake, 24-VII-84 (1 ♂, 1 ♀, under bark), N. Murray, D. Johnson, and S. Taylor, coll. Near Lake Conway Spillway, 11-III-85 (2 ♀♀, under bark of dead tree). Near Lake Conway Spillway by swamp, 12-VII-85 (1 ♀). Near upper end of Lake Conway, 16-VIII-86 (2 ♀♀). 1 1/2 mi NW of Davis Lake-W of Mayflower, 6-XI-85 (1 ♂). BSWMA, 29-X-85 (28 ♂♂, 9 ♀♀); 28-III-86 (1 ♀, UBDQ); 24-VIII-86 (3 ♂♂, 2 ♀♀); 17-XII-86 (1 ♂, UBDQ). BSWMA-S end, 3-III-86 (7 ♂♂, 1 ♀); 11-IV-86 (4 ♂♂, 7 ♀♀, UBDQ); 17-IV-86 (9 ♂♂, 5 ♀♀). IZARD Co.: 9 mi S of Melbourne off Hwy 9, 28-XII-84 (1 ♀, UBDQ), S. and M. J. Taylor, coll.; 28-XII-84 (1 ♂, under bark of dead *Q. alba*), S. and M. J. Taylor, coll. LITTLE RIVER Co.: Near Lake Millwood, 19-X-85 (1 ♂, 3 ♀♀); 19-X-85 (11 ♂♂, 3 ♀♀, under bark of fallen limb). LOGAN Co.: Flattop Mt., 1/2 mi W of Cove

Lake near Cove creek, 17-VII-85 (2 ♂♂, 1 ♀). LONOKE Co.: Near Coy, 5-VI-86 (1 ♀, under bark of fallen dead *Q. phellos* limb). PERRY Co.: Harris Brake Wildlife Management Area, 9-IX-85 (4 ♂♂, 1 ♀). PULASKI Co.: Little Rock-Maumelle Park, 10-III-85 (13 ♂♂, 9 ♀♀). WASHINGTON Co.: Lake Weddington, 5-VIII-86 (2 ♀♀, on branch), R. Leschen, coll.

Neuroctenus simplex (Uhler) is the commonest of the North American species of *Neuroctenus*, and ranges from Maine and Florida west to Missouri and Texas; it has also been reported from Cuba (Blatchley 1926). This genus has not previously been reported from Arkansas.

FAULKNER Co.: Conway, at white light-1930 h, 30-III-86 (1 ♀). CSP, 12-III-85 (1 ♂, 1 ♀); 29-V-85 (6 ♂♂, 8 ♀♀, UBDQ); 12-VI-85 (1 ♂, 2 ♀♀); 13-VI-85 (12 ♂♂, 6 ♀♀), S. and J. D. Taylor, coll.; 13-II-87 (4 ♂♂, 5 ♀♀, UBDQ). Near CSP, 31-X-85 (2 ♂♂, 4 ♀♀); 2-XI-85 (1 ♂, 1 ♀, under bark of fallen dead *Q. falcata* limb). QRA, 19-VI-85 (2 ♀♀, UBDQ). Near Lake Conway Spillway, 11-III-85 (1 ♂, 2 ♀♀). BSWMA-S end, 12-XII-86 (6 ♂♂, 10 ♀♀). IZARD Co.: 9 mi S of Melbourne off Hwy 9, 28-XII-84 (19 ♂♂, 21 ♀♀, UBDQ), S. and M. J. Taylor, coll. PULASKI Co.: Little Rock, Maumelle Park, 10-III-85 (2 ♀♀).

DISCUSSION

Zoogeographic affinities of aradids at the generic level have been discussed by Slater (1974) and Kormilev and Froeschner (1987). Of the five Arkansas genera reported here (i.e., *Quilnus*, *Aneurus*, *Aradus*, *Mezira*, and *Neuroctenus*), *Quilnus* is Holarctic in distribution, whereas the other genera occur worldwide. The Arkansas species of *Quilnus*, *Aneurus* and *Aradus* have affinities with Palearctic aradids, and those of *Mezira* and *Neuroctenus* are more closely related to the fauna of the Neotropics. *Acaricoris*, which is known from Arkansas (Drake and Kormilev 1958) but was not collected in our study, is primarily a Neotropical genus which includes two species in the southern United States and four Neotropical species.

Slater (1974) reported that the Connecticut aradid fauna is dominated by species associated with the Palearctic region. We found that while the Palearctic element of the Arkansas fauna (*Quilnus*, *Aneurus*, *Aradus*) contains more species, the Neotropical element (i.e., *Mezira*, *Neuroctenus*) appears to contain more individuals.

The distributions of North American species of Aradidae are not well known, possibly because the cryptic coloration and secretive habits of these bugs necessitate specific collecting techniques not usually employed by the general collector. The fact that this paper includes several new state records and yet is based upon collecting done primarily in only a few counties of Arkansas emphasizes how poorly known the distributions of flat bugs are. A general survey of Arkansas Aradidae would probably result in the addition of several more species to the state's known fauna.

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