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## New Records and Notes on the Natural History of Selected Invertebrates from Southern Arkansas

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The invertebrate fauna of southern Arkansas is less well known than that of other regions of the state, largely due to the fact that few invertebrate biologists are located in the region. The lack of expertise in identifying invertebrate species, especially larval or juvenile forms, and a lack of seasonal collecting also have limited the knowledge of species occurrence.

This report documents new records of distribution and provides notes on the natural history of selected invertebrates from southern Arkansas. Southwestern Arkansas lies almost entirely within the West Gulf Coastal Plain natural division (Foti 1974), whereas southeastern Arkansas includes part of the Mississippi Alluvial Plain.

Field observations and collections were made by the authors and students at Henderson State University (HSU) and Southern Arkansas University (SAU). Invertebrate specimens were preserved in 70% or 90% isopropanol and housed at HSU or Brigham Young University (BYU). Digital photography also was used to document species within their habitats (images available from RT).

### Class Turbellaria:

*Bipalium kewense* Moseley – land planarian. Land planarians are native to tropical Asia and have been dispersed inadvertently via the trade in tropical plants. So they are observed most commonly in greenhouses or by citizens that find these worm-like organisms in the soil of potted plants. As an invasive species, *B. kewense* has become established across the southern United States (Ducey et al. 2007). In Arkansas, it has been reported by Daly and Darlington (1981) from the counties (cities) of Pulaski (Little Rock), Faulkner (Conway), and Ouachita (Camden).

On 12 June 2009, a specimen of *B. kewense*, representing a new county record, was collected from a landscaped area by the Reynolds Science Center at Henderson State University, Arkadelphia, Clark

County, AR (Sec. 17, T7S, R19W). Another individual from the same location was photographed 10 October 2007. Custodians informed us that they commonly see these creatures on early Spring mornings after rain. Daly and Darlington (1981) also noted that *B. kewense* was found after heavy rains on driveways in Little Rock; otherwise their specimens were discovered under wet boards, logs, rotting trees, railroad ties, and concrete patio slabs.

A single 14 cm long specimen of *B. kewense* was collected on 14 May 1982 from the sidewalk of the HWR residence in Magnolia, AR which represents another new county record (Columbia County) for this land planarian. The sidewalk was wet from a recent rain and the worm was fully extended, displaying the diagnostic spade-like head and bi-colored body.

### Class Arachnida:

*Nephila clavipes* (Linnaeus) – the golden orbweaver, golden-silk orbweaver, or banana spider. Being a primarily neotropical genus, *Nephila clavipes* is the only species that occurs in North America. It ranges from Central America and through the Gulf Coastal states of the United States, primarily in the warmer portions of the subtropical regions (Comstock 1948, Evans 2007). Dorris (1985) included this spider in her list of species occurring in Arkansas, but no locality data were provided and she (*pers. comm.*) did not remember where specimens might have been taken.

In summer of 2009, we found individuals of *N. clavipes* in swampy habitats immediately adjacent to the Ouachita River in Ashley and Union counties of southeastern Arkansas, representing the first documented state records for the species. The initial encounter was in Union County near the Ouachita River bridge over U.S. Hwy. 82 (Sec. 18, T18S, R10W). On 10 July 2009, an adult female was photographed in the center of her web, about 1.5 m above the ground. The web was about 2 m in width

(typical of the species, Comstock 1948) and anchored between two small oak (*Quercus* sp.) trees. The web was oriented to face east-west, and was located within 50 m of the river in the overflow woodlands.

On 5 September 2009, a more extensive search for *N. clavipes* conducted in the same area revealed 3 additional female individuals on their webs (all were photographed). One was located on a web positioned similar to the one found on 10 July, but about 40 m S of that location. The position of the webs near the ground was typical for this species. However, a second female was found positioned in the center of her web about 4 m above the ground, anchored between a red maple (*Acer rubrum*) and oak tree. A third female was located at an elevation of about 10 m, anchored between a muscadine (*Vitis rotundifolia*) vine and red maple tree.

The search was conducted between 1700-1800 hrs, and all of the spiders were found on webs facing the east-west direction. It is not known whether the spiders purposely built webs oriented in that direction, or if webs and spiders so-oriented were seen more easily. In all cases, the spiders were positioned with the venter facing westward.

Also on 5 September 2009, the Ashley County (eastern) side of the Ouachita river was searched, and 1 adult female *N. clavipes* was found on a typical web constructed between two small oak trees, about 1.3 m above ground. This location was only about 2 m from the river (Sec. 18, T18S, R10W).

#### Class Insecta:

*Plecia nearctica* Hardy – Nearctic love bug. The name “love bug” is due to this dipteran’s tendency to be found most commonly in breeding aggregations with many individuals in the process of mating. They are small (6-9 mm in length, males are smaller than females) black flies with a reddish thorax. At the time of its description (Hardy 1940), this fly was known to be most common in Texas and Louisiana, but Buschman (1976) documented its subsequent dispersal through the Gulf Coast states and into Florida.

Factors associated with populations include adequate moisture, decaying vegetation, and adequate exposure for favorable soil temperatures (Hetrick 1970), conditions often found in grassy habitats of pastures and along roadsides (Buschman 1976). Large aggregations of these flies along highways can become a nuisance to motorists as they splatter on windshields, and they can cause damage to automobile cooling

systems by clogging radiators (Denmark et al. 2009).

An established population of *Plecia nearctica* was found along a power line that runs northward on the east side of Crossett, Ashley County, AR (Sec. 32, T18S, R8W). Photographs of the flies were taken at this site on 1 and 22 October 2006, and 16 May 2008, but the flies were not seen during other months. Observations of 2 emergences (spring and fall) were similar to those described for Florida, where *P. nearctica* is known to have 2 major emergences in April-May and August-September (Denmark et al. 2009). During the fall emergence, mating pairs were seen very commonly on goldenrods (*Solidago* sp.).

The present records appear to be the first report of this neotropical invader into Arkansas, and perhaps the first record in a state not bordering the Gulf or Atlantic Coasts (Denmark et al. 2009). The senior author grew up near this site and spent much of his childhood exploring the power line area, and does not recall ever seeing this insect until the last few years.

*Icerya purchasi* Maskell – Cottony Cushion Scale. *Icerya purchasi* is a scale insect commonly associated with citrus trees, although it sometimes infests fruit and shade trees and ornamentals (Peairs and Davidson 1956). It apparently was introduced into California from Australia or New Zealand about 1868 (Metcalf et al. 1962). A larger scale insect, it reaches a length of 8 mm and appears as a white mass with waxy filaments covering most of the body and a reddish-brown anterior dorsal area (Peairs and Davidson 1956).

On 6 November 2009, several specimens of *I. purchasi* were found by K. Benjamin on false indigo (*Amorpha fruticosa* L.) planted in the arboretum on the campus of Henderson State University, Clark County, AR. The original indigo plant had been collected about 4 years earlier near the banks of the Red River, growing in the vicinity of a highway overpass in Hempstead County, AR. Thus, we cannot be certain that the insect was not inadvertently transplanted from Hempstead County along with the indigo plant. The plant, collected in late October, was about 0.5 m tall when transplanted to the arboretum. Searches of other plants in the arboretum did not reveal infestations of the scale, but we did find specimens about 400 m distant on mistletoe (*Phoradendron leucarpum*) growing on a willow oak (*Quercus phellos*) tree.

The only previous Arkansas record of *I. purchasi* was collected from Arkansas County, AR, 16 November 1910 (apparently unpublished, housed in the University of Arkansas Arthropod Museum, Fayetteville; J. K. Barnes, *pers. comm.*).

## New Records and Notes on the Natural History of Selected Invertebrates from Southern Arkansas

### Class Crustacea:

*Fallicambarus petilicarpus* Hobbs and Robison – the Slenderwrist Burrowing Crayfish. This burrowing crayfish was described by Hobbs and Robison (1989) from specimens captured in a roadside seepage in 1982 in Union County, AR. This species is an Arkansas endemic (Robison and Allen 1995) previously known only from the type locality in Union County, AR. An additional 3 female specimens (BYU) of this species were collected on 19 April 1991 from a roadside ditch area 0.5 km (0.3 mi.) W of the Columbia-Union County line on AR St. Hwy. 57 (Sec. 20, T16S, R18W), Columbia County, AR. A third locality was discovered by HWR on 16 March 2006 in Union County at a roadside seepage near Marysville Church in Marysville, 33.22560 -92.95307 NAD27 (3 specimens - BYU).

By using shovels and/or trowels, all specimens were dug from complex burrows in roadside ditches or seepage areas with *Juncus* sp. common. Depth of capture ranged from 20 cm (8 in.) to 48 cm (19 in.). This collection represents only the second and third known localities for this rare crayfish species, and the specimens from Columbia County represent a new county record.

*Fallicambarus fodiens* (Cottle) – the Digger Crayfish. Hobbs and Robison (1989) compiled all Arkansas records for *F. fodiens*. This burrowing crayfish is common in Arkansas, but herein we report 3 new county records: (1) burrow ca. 14.5 km (9 mi.) W of Chicot Junction, on AR St. Hwy. 278 (Sec. 16, T17S, R3W), Chicot County, AR, 17 May 1981, HWR (1 specimen - BYU); (2) roadside ditch 1.6 km (1 mi.) S of Whelen Springs, on AR St. Hwy. 53 (Sec. 34, T10S, R20W), Clark County, AR, 12 April 1980, HWR (2 specimens - BYU); (3) burrow in ditch, 2.25 km (1.4 mi.) SE of Chidester, on AR St. Hwy. 24 (Sec. 24, T12S, R18W), Ouachita County, AR, 29 May 1989, HWR (1 specimen - BYU).

Hobbs and Robison (1989) reported this crayfish to be primarily an inhabitant of temporary bodies of water and burrows in Arkansas. The 2 specimens of *F. fodiens* from Clark County were collected from a temporary water situation in a roadside ditch by use of an aquatic dip net, whereas the other 2 specimens were dug from burrows 36 cm (14 in.) and 53 cm (21 in.) in depth.

*Faxonella clypeata* (Hay) – the Ditch Fencing Crayfish. Only 8 localities for *F. clypeata* in southern

Arkansas were presented by Reimer (1963) in maps of the crayfishes of Arkansas. The following represent new records of distribution: (1) roadside seepage, 4.8 km (3 mi.) NE of Banks on AR St. Hwy. 4 (Sec. 10, T12S, R11W), Bradley County, AR, 15 March 1979, HWR (3 specimens - BYU); (2) roadside ditch, 1.6 km (1 mi.) S of Willisville on U.S. Hwy. 371 (Sec. 29, T14S, R21W), Nevada County, AR, 20 May 1992, HWR (1 specimen - BYU); (3) roadside seepage, ca. 8 km (5 mi.) NW of Camden on AR St. Hwy. 24 (Sec. 3, T13S, R18W), Ouachita County, AR, 2 May 1978, HWR (5 specimens - BYU); (4) roadside ditch, 10.1 km (6.3 mi.) W of El Dorado on U.S. Hwy. 82 (Sec. 25, T17S, R17W), Union County, AR, 21 April 1974, HWR (2 specimens - BYU).

*Faxonella clypeata* is a secondary burrower, but all specimens collected herein were taken by aquatic dip nets from lentic bodies of water with substrates of decaying leaves. These collections include new county records for Bradley, Nevada, Ouachita, and Union counties.

*Orconectes lancifer* (Hagen) – the Shrimp Crayfish. Reimer (1963) presented only 5 localities in southern Arkansas for this species. We document 4 additional localities for *O. lancifer* from the following: (1) roadside ditch 5 km (3.1 mi.) SE of Hamburg on AR St. Hwy. 8 (Sec. 28, T17S, R6W), Ashley County, AR, 19 April 1990, HWR (3 specimens - BYU); (2) roadside ditch 8.4 km (5.2 mi.) SE of Harrell on AR St. Hwy. 160 (Sec. 4, T15S, R15W), Calhoun County, AR, 15 June 1979, HWR (7 specimens - BYU); (3) roadside ditch 1.1 km (0.7 mi.) W of Magnolia on U.S. Hwy. 82 (Sec. 34, T16S, R21W), Columbia County, AR, 26 April 1982, HWR (2 specimens - BYU); (4) flooded ditch 2.4 km (1.5 mi.) E of Strong on U.S. Hwy. 82 (Sec. 35, T18S, R12W), Union County, AR, 10 July 1993, HWR (3 specimens - BYU).

All specimens were collected with aquatic dip nets from turbid, lentic waters with mud substrates. These collections include the first county records for *O. lancifer* from Ashley, Calhoun, and Union counties.

*Procambarus ouachitae* Penn – the Ouachita River Crayfish. Reimer (1963) reported *P. ouachitae* from 11 counties in southern Arkansas. We herein report this crayfish for the first time from Bradley County: Snake Creek at Board (Sec. 30, T16S, R9W), 20 April 1984, HWR. The single specimen (BYU) was collected from a vegetated region of lentic water, by use of an aquatic dip net.

*Procambarus tulaneus* Penn – the Giant Bearded Crayfish. Reimer (1963) reported localities for this burrower in southern Arkansas from only Columbia and Ouachita counties. Hobbs and Robison (1988) provided additional records within those 2 counties, and added new records for Ashley, Drew, Hot Spring, Jefferson, Lafayette, Montgomery, and Nevada counties. We document an additional 5 localities for *P. tulaneus* from: (1) roadside ditch at culvert near power line W of El Dorado along U. S. Hwy. 82 (33.13106 - 92.47953 NAD27), Union County, AR, HWR et al. (6 specimens - BYU); (2) roadside ditch at Marysville on U.S. Hwy. 82 (Sec. 27, T17S, R18W), Union County, AR, 15 April 1989, HWR (1 specimen - BYU); (3) burrow 10.5 km (6.5 mi.) SW of Hermitage on AR St. Hwy. 15 (Sec. 30, T15S, R11W), Bradley County, AR, 17 May 1981, HWR (1 specimen - BYU); (4) burrow ca. 6.5 km (4 mi.) W of Warren on U.S. Hwy. 278 (Sec. 9, T13S, R10W), Bradley County, AR, 20 April 1984, HWR (1 specimen - BYU); (5) unnamed drainage creek on campus of Henderson State University, Arkadelphia, Clark County, AR, (Sec. 17, T7S, R19W), 6 May 2009, RT (2 specimens - HSU).

Some specimens of *P. tulaneus* were taken by use of aquatic dip nets from lentic water in roadside or other small drainage ditches, and others were physically removed from burrows 28 cm (11 in.) to 68.5 cm (27 in.) deep using shovels and trowels. The Bradley and Clark County localities represent new county records for *P. tulaneus* in Arkansas.

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