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Leeches (Annelida: Hirudinida) of Northern Arkansas

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Abstract.—Twenty-one lotic and lentic environments throughout central and northern Arkansas were surveyed for the presence of leeches during June 2004 and April, July – October 2005. Fourteen species of leeches (*Helobdella elongata*, *Helobdella papillata*, *Helobdella stagnalis*, *Placobdella cryptobranchii*, *Placobdella multilineata*, *Placobdella ornata*, *Placobdella papillifera*, *Placobdella parasitica*, *Placobdella phalera*, *Placobdella picta*, *Haemopsis marmorata*, *Erpobdella fervida*, *Erpobdella microstoma*, and *Erpobdella punctata*) representing 3 families were collected. Five species (*H. elongata*, *P. cryptobranchii*, *P. multilineata*, *H. marmorata*, and *E. fervida*) are reported from Arkansas for the first time. The natural history of the 22 species of leeches now known from Arkansas is reviewed.

Key words.—Leeches, *Helobdella elongata*, *Helobdella papillata*, *Helobdella stagnalis*, *Placobdella cryptobranchii*, *Placobdella multilineata*, *Placobdella ornata*, *Placobdella papillifera*, *Placobdella parasitica*, *Placobdella phalera*, *Placobdella picta*, *Haemopsis marmorata*, *Erpobdella fervida*, *Erpobdella microstoma*, *Erpobdella punctata*, Arkansas, lotic, lentic.

Introduction

There are approximately 80 species of leeches known from North America; however, limited data are available on their distribution (Klemm 1985, Sawyer 1986). The leech fauna of the southern United States is particularly understudied with only a few studies in the region (Meyer 1937, Sawyer 1967, Sawyer and Shelley 1976). Although several new leech species have been described from the southern United States, many have not been found since their original description (Sawyer and Shelley 1976, Johnson and Klemm 1977, Klemm 1985). Little is known about the leech fauna of Arkansas. Published accounts have described parasitism and the life histories of a few leech species or have documented the fauna in a very limited geographic area (Becker et al. 1966, Curry 1976, Harp and Harp 1980, Cochran and Harp 1990, Chordas et al. 1996, Briggler et al. 2001, Turbeville and Briggler 2003). There has not been a holistic survey of the state.

This study presents new survey data along with a summary of information gleaned from museum specimens and published records to serve as a baseline for further comprehensive study of the leech biodiversity of Arkansas.

Materials and Methods

Twenty-one lotic and lentic localities in central and northern Arkansas were surveyed for leeches during June 2004 and April, July – October 2005. Leeches were hand-collected from beneath submerged rocks, branches, logs, and vegetation, and by dip-net. The latitude and longitude of the collecting sites were recorded with a Garmin Vista receiver (datum: WGS 84), and published specimen records and unpublished museum specimens were geocoded with Topozone, Delorme Street Atlas, and the US Geological Survey Geographic Names Information System (GNIS) gazetteer. Data points were plotted using ArcView 3.3 (ESRI Corporation, Redlands, California).

Leech specimens were relaxed in 5-10% ethanol (added dropwise in a vessel until the leech no longer reacted to a probe), fixed in 10% buffered formalin, preserved in 70% ethanol, and examined under a dissecting microscope. Additional leech specimens were preserved in 95% ethanol. Voucher specimens of leeches were deposited in the Invertebrate Zoology collections of the National Museum of Natural History, Smithsonian Institution (accession no. 2041351).

Table 1. Checklist of the Leech Fauna of Arkansas

Superorder Euhirudinea
Order Rhynchobdellida
Family Glossiphoniidae
<i>Helobdella elongata</i> Castle 1900 *†
<i>Helobdella papillata</i> Moore 1952 †‡
<i>Helobdella stagnalis</i> (Linnaeus 1758) †‡
<i>Placobdella cryptobranchii</i> (Johnson and Klemm 1977) *†
<i>Placobdella montifera</i> Moore 1906 ‡
<i>Placobdella multilineata</i> Moore 1953 *†
<i>Placobdella ornata</i> (Verrill 1872) †‡
<i>Placobdella papillifera</i> (Verrill 1872) †‡
<i>Placobdella parasitica</i> (Say 1824) †‡
<i>Placobdella phalera</i> (Graf 1899) †‡
<i>Placobdella picta</i> (Verrill 1872) †‡
Family Piscicolidae
<i>Cystobranchnus verrilli</i> Meyer 1940 ‡
<i>Gonimosobdella klemmi</i> Williams and Burrenson 2005 ‡
<i>Myzobdella lugubris</i> Leidy 1851 ‡
<i>Piscicolaria reducta</i> Meyer 1940 ‡
Order Arhynchobdellida
Family Haemopidae
<i>Haemopsis terrestris</i> (Forbes 1890) ‡
<i>Haemopsis marmorata</i> (Say 1824) *†
Family Hirudinidae
<i>Macrobdella diploptertia</i> Meyer 1975 ‡
<i>Macrobdella ditetra</i> Moore 1953 ‡
Family Erpobdellidae
<i>Erpobdella fervida</i> (Verrill 1871)*†
<i>Erpobdella microstoma</i> (Moore 1901) †‡
<i>Erpobdella punctata</i> (Leidy 1870) †‡

* - Arkansas State Record

† - This study

‡ - Published records

Results and Discussion

Fourteen species of leeches representing 3 families were found, of which 5 are reported from Arkansas for the first time (Table 1).

Order Hirudinida
Suborder Rhynchobdellida
Family Glossiphoniidae

Helobdella elongata
Castle, 1900* (Fig. 1)

Locality: Conway County, Brewer Lake (35 13.661 N 92 36.661 W), 1 spm; Conway County, Overcup Lake (35 12.613 N 92 42.712 W), 1 spm; Faulkner County, Lake Conway,

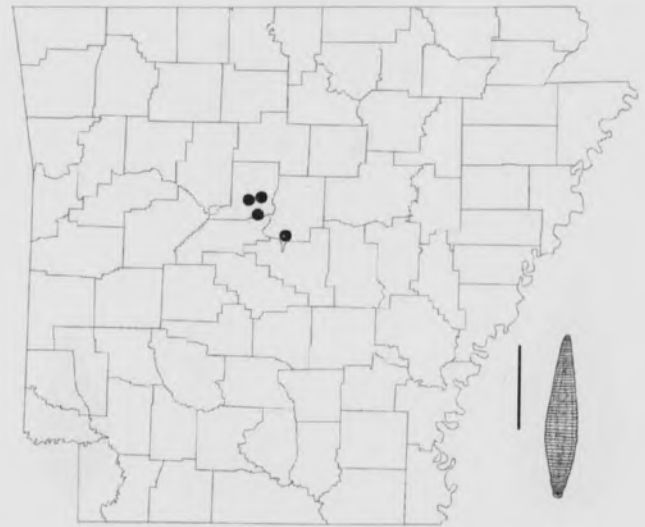


Fig. 1. Distribution map and line drawing of *Helobdella elongata* from Arkansas (circles – current study; scale bar is 0.5 cm).

Mayflower, off Route 40 (35 58.2466 N 92 25.314 W), 3 spms; Perry County, Plummerville Bottoms, Arkansas River (35 06.663 N 92 38.350 W), 1 spm.

In a recent phylogenetic analysis of the genus *Helobdella*, Siddall and Borda (2003) transferred *H. elongata* from the genus *Gloiobdella*. *H. elongata* is infrequently found, and has a scattered distribution throughout North America, including Louisiana, Mississippi, Missouri and Texas (Klemm 1985). This study is the first report of this species from Arkansas.

Helobdella elongata is a predaceous leech, feeding on the soft body tissues/fluids of insect larvae, aquatic oligochaetes and snails (Sawyer 1974, Klemm 1985, 1991). This leech is small, elusive, and frequently overlooked in studies. *H. elongata* is often associated with organically polluted water (Sawyer 1974, Klemm 1991), which is probably a response to an abundance of potential prey.

Helobdella papillata
Moore, 1952 (Fig. 2)

Locality: Van Buren County, South Fork of Little Red River, South of Clinton (35 35.0218 N 92 26.5145 W), 1 spm; Van Buren County, McIntire Pond no.2 (35 36.585 N 92 28.824 W), 3 spms.

In previous keys, specimens collected in this study would fall under the description of *Helobdella triserialis* (Klemm 1982, 1985, Sawyer 1986). Based upon the original species descriptions and the results of a phylogenetic analysis, Siddall and Borda (2003) differentiated *H. papillata* (three irregular rows of papillae irrespective of size and pigmentation) and *H. triserialis* (cephalic transverse banding). *Helobdella papillata*, as it is now defined, is common and widely distributed throughout eastern North America. Additional records of *H. papillata* from

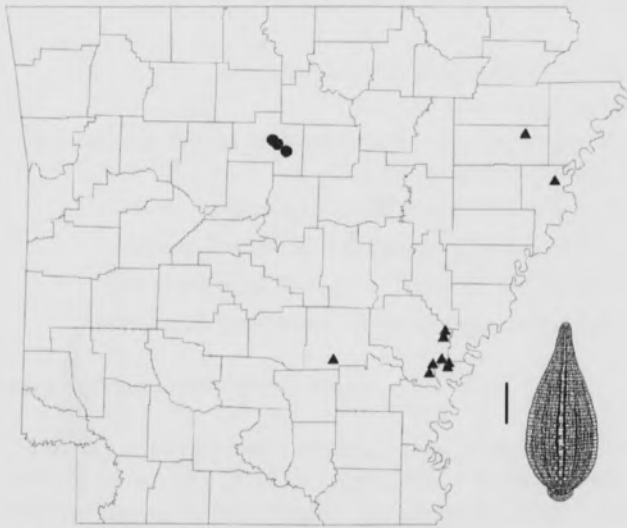


Fig. 2. Distribution map and line drawing of *Helobdella papillata* from Arkansas (circles – current study; triangles – published records; scale bar is 0.5 cm).

Arkansas have been reported by Curry (1976) from Bayou Bartholomew, Harp and Harp (1980) from Wapanocca National Wildlife Refuge, Cochran and Harp (1990) from St. Francis Sunken Lands, and Chordas et al. (1996) from White River National Wildlife Refuge.

Helobdella papillata is predaceous, feeding on the soft body tissues of mollusks, especially gastropods (Sawyer 1974, 1986, Klemm 1985, 1995). It is typically found beneath submerged

substrata or within snail shells.

Helobdella stagnalis
 (Linnaeus 1758) (Fig. 3)

Locality: Conway County, Overcup Lake (35 12.613 N 92 42.712 W), 1 spm; Faulkner County, Lake Conway, Mayflower, off Route 40 (35 58.2466 N 92 25.314 W), 10 spms; Randolph County, Eleven Point River, 5 spms.

Helobdella stagnalis has a cosmopolitan distribution and is known from every continent, except for Australia and Antarctica. It is prevalent in northern North America and less abundant in the southern United States. Additional records of *H. stagnalis* from Arkansas have been reported by Curry (1976) from Bayou Bartholomew, Harp and Harp (1980) from Wapanocca National Wildlife Refuge, Cochran and Harp (1990) from St. Francis Sunken Lands, and Chordas et al. (1996) from White River National Wildlife Refuge. It has also been reported from Louisiana, Mississippi, Missouri, and Texas (Klemm 1985).

Helobdella stagnalis is predaceous, feeding on the soft body tissues/fluids of a variety of prey, including oligochaetes, aquatic insect larvae, crustaceans, and small mollusks (Sawyer 1972, 1974, 1986, Klemm 1985, 1991, 1995). *H. stagnalis* is more abundant in organically polluted waters (Sawyer 1974, 1986) and is commonly found beneath submerged substrata and between the leaves of reeds and cattails.

Placobdella cryptobranchii
 (Johnson and Klemm 1977)* (Fig. 4)

Locality: Fulton County, Spring River, 193 spms; Randolph County, Eleven Point River, 62 spms.

Although not included in the phylogenetic analysis and

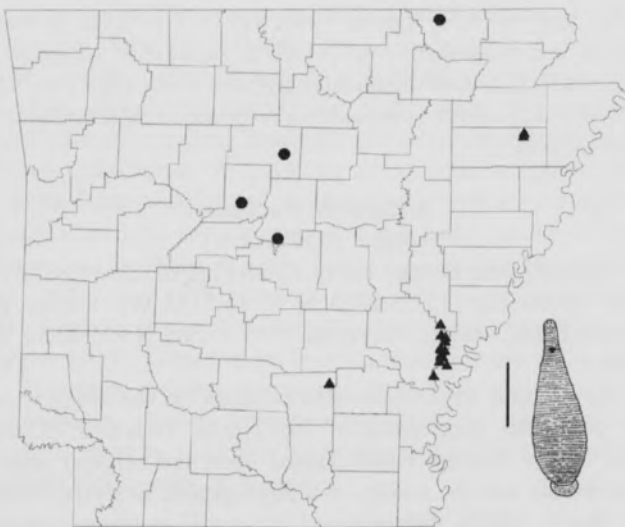


Fig. 3. Distribution map and line drawing of *Helobdella stagnalis* from Arkansas (circles – current study; triangles – published records; scale bar is 0.5 cm).

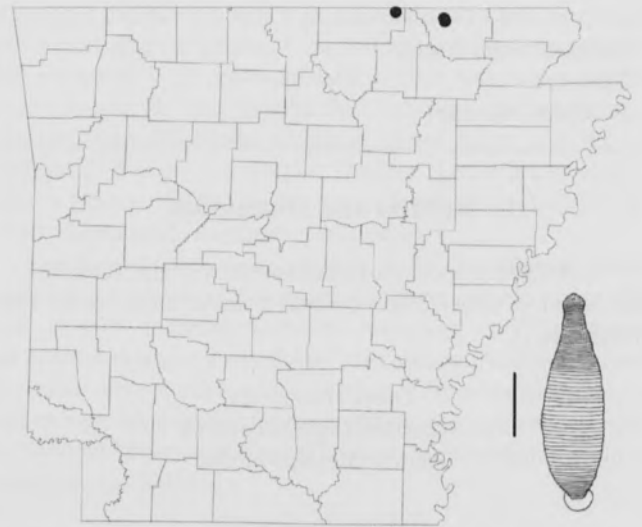


Fig. 4. Distribution map and line drawing of *Placobdella cryptobranchii* from Arkansas (circles – current study; scale bar is 0.5 cm).

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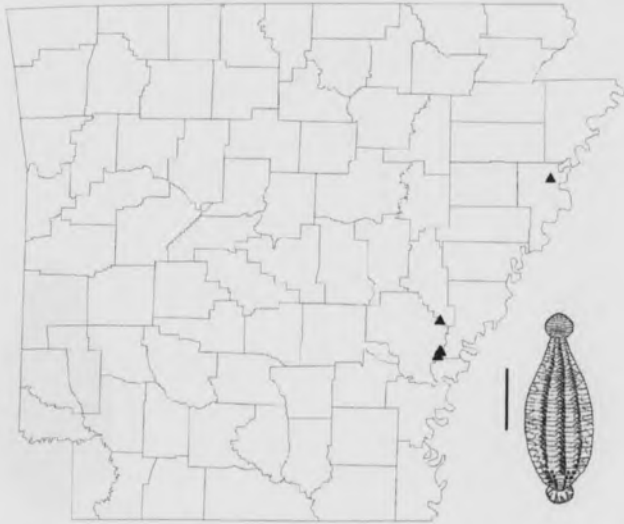


Fig. 5. Distribution map and line drawing of *Placobdella montifera* from Arkansas (triangles – published records; scale bar is 0.5 cm).

subsequent suppression of the genus *Desserobdella* by Siddall et al. (2005), *Placobdella cryptobranchii* represents a new combination due to its morphological similarity to the other members of the former genus *Desserobdella*. *P. cryptobranchii* was previously only known from its type locality in the North Fork of the White River (Ozark County, Missouri) and had not been collected since its description. This study is the first report of *P. cryptobranchii* from Arkansas. It is also known from several localities in Missouri (Moser et al. unpublished data). The only known host of *P. cryptobranchii* is the Ozark Hellbender, *Cryptobranchus alleganiensis bishopi*, and it has never been collected detached from its host (Johnson and Klemm 1977, Moser et al. unpublished data).

Placobdella montifera
Moore, 1906 (Fig. 5)

Placobdella montifera has been reported throughout Canada and the eastern and midwestern United States, including Louisiana, Missouri, and Texas (Klemm 1985). It was reported from Arkansas by Harp and Harp (1980) in the Wapanocca National Wildlife Refuge and by Chordas et al. (1996) in the White River National Wildlife Refuge. *P. montifera* is an opportunistic blood-feeding leech with a variety of fish species being the most commonly described hosts, including members of the families Lepisosteidae, Acipenseridae, Percidae, Centrarchidae, Ictaluridae, Catostomidae, Cyprinidae, Salmonidae, and Esocidae (Hoffmann 1967, Sutherland and Holloway 1979, Amin 1981, Sawyer 1986). It also has been regularly found in the mantle cavity of freshwater clams, but it is unknown if the leech feeds on the clam or if the clam is clandestine shelter (Curry and Vidrine 1976, 1977, Curry 1977, 1979).

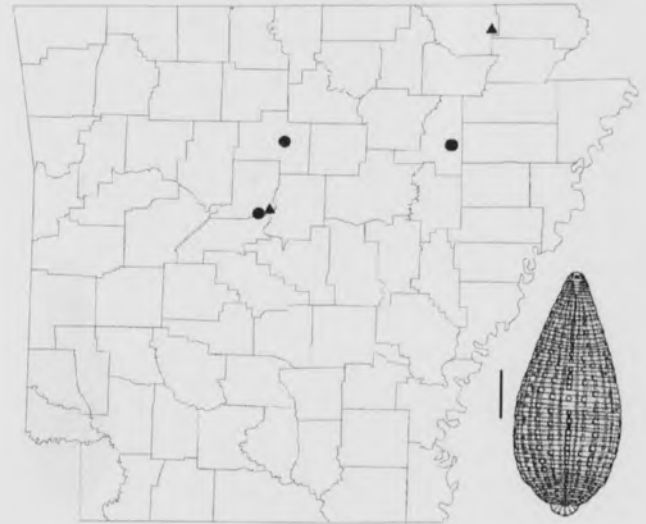


Fig. 6. Distribution map and line drawing of *Placobdella multilineata* from Arkansas (circles – current study; triangles – museum specimens; scale bar is 1.0 cm).

Placobdella multilineata
Moore, 1953* (Fig. 6)

Locality: Jackson County, Roadside ditch off US 14, 1.4 km W of Amagon (35 33.780 N 91 07.664 W), 1 spm; Jackson County, Roadside ditch off US 14, southside of road, 0.3 km W of Amagon (35 33.716 N 91 06.936 W), 2 spms; Perry County, Plummerville Bottoms, Arkansas River (35 06.663 N 92 38.350 W), 2 spms; Van Buren County, Honey Hill Pond (35 35.5407 N 92 26.1546 W), 1 spm.

Placobdella multilineata is a common species in the southern United States whose range extends northward through the Mississippi Valley. An additional two specimens of *P. multilineata* from Randolph County (Current River) and Conway County (near Menifee) also were found in the USNM collections (USNM 50221-50222). This study is the first published report of *P. multilineata* from Arkansas.

Placobdella multilineata is a blood-feeding leech on reptiles and amphibians. Reported hosts include turtles, alligators, and amphiumas (Sawyer and Shelley 1976, Forrester and Sawyer 1974, Saumure and Doody 1998). It is unknown whether *P. multilineata* exhibits seasonal host attachment. Specimens were found free-living on 31 July 2005 and 2-3 August 2005 in this study.

Placobdella ornata
(Verrill 1872) (Fig. 7)

Locality: Randolph County, Eleven Point River, 1 spm; White County, Lake Bald Knob (35 20.4069 N 91 35.2448 W), 1 spm.

Placobdella ornata is common and has a widespread distribution throughout northern North America but is less well

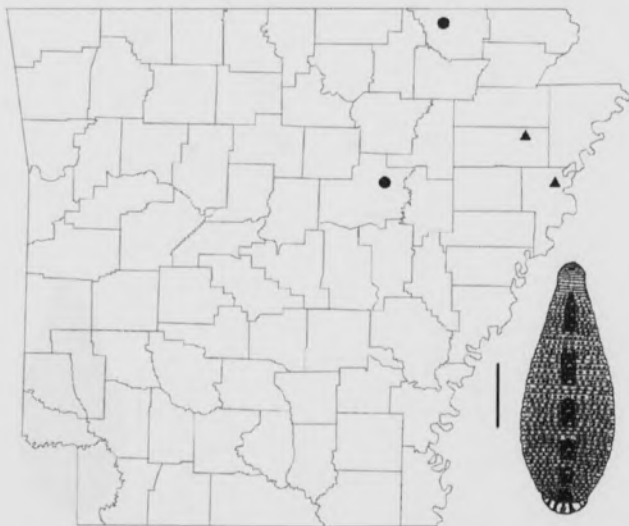


Fig. 7. Distribution map and line drawing of *Placobdella ornata* from Arkansas (circles – current study; triangles – published records; scale bar is 1.0 cm).

known in the southern United States. It has been reported from Oklahoma and Texas (Klemm 1985) and in the Wapanocca National Wildlife Refuge and St. Francis Sunken Lands in Arkansas (Harp and Harp 1980, Cochran and Harp 1990).

Placobdella ornata is a opportunistic blood-feeding leech. It principally blood-feeds on turtles, but other reported hosts include fish, amphibians, birds, and humans (Moore 1964, Sawyer 1972, 1986, Klemm 1991, 1995, Moser 1991). *P. ornata* does not exhibit seasonal host attachment. After a blood-meal, it detaches from its host (Sawyer 1986). In this study, the specimen from the Eleven Point River was found free-living, and the specimen from Lake Bald Knob was found on the leg of one of the authors (WEM) after walking through aquatic vegetation.

Placobdella papillifera
 (Verrill 1872) (Fig. 8)

Locality: Conway County, Overcup Lake (35 12.613 N 92 42.712 W), 4 spms; Independence County, Unamed creek NE of Batesville (35 47.6333 N 91 36.8666 W), 1 spm; Van Buren County, Honey Hill Pond (35 35.5407 N 92 26.1546 W), 1 spm.

Placobdella papillifera is widely distributed throughout North America, including sites in Arkansas, Louisiana, Mississippi and Texas (Klemm 1985, Chordas et al. 1996). It is a temporary blood-feeding leech on reptiles. Reported hosts include turtles and alligators, but the species is typically found free-living (Klemm 1985, Sawyer 1986). All specimens reported in this study were found free living and attached beneath submerged substrata.

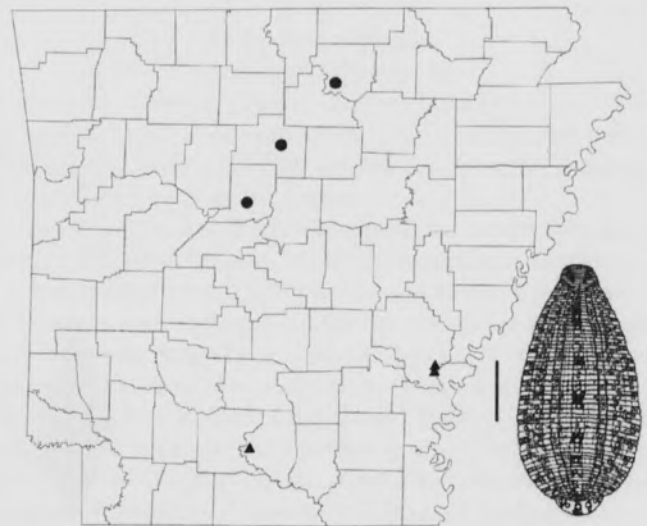


Fig. 8. Distribution map and line drawing of *Placobdella papillifera* from Arkansas (circles – current study; triangles – published records; scale bar is 1.0 cm).

Placobdella parasitica
 (Say 1824) (Fig. 9)

Locality: Conway County, Brewer Lake (35 13.661 N 92 36.661 W), 2 spms; Conway County, Overcup Lake (35 12.613 N 92 42.712 W), 1 spm; Independence County, White River vic. Batesville (35 45.21N 91 37.94 W), 1 spm; Fulton County, Warm Fork River (36 29.63 N, 91 31.93 W), 3 spms; Van Buren County, Choctaw Lake, boat launch (35 31.7887 N 92 22.7164

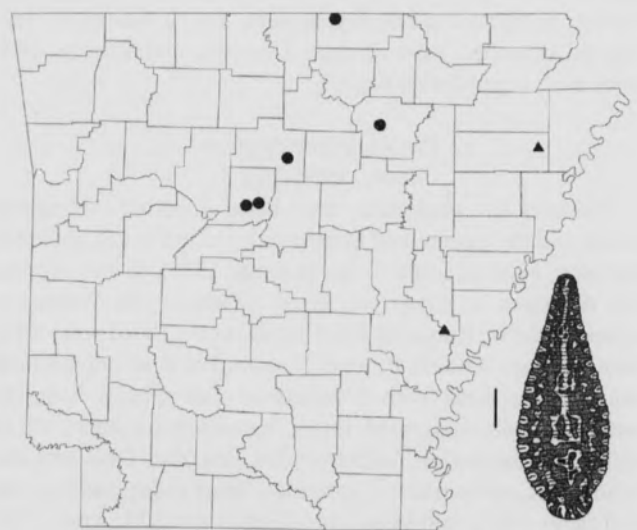


Fig. 9. Distribution map and line drawing of *Placobdella parasitica* from Arkansas (circles – current study; triangles – published records; scale bar is 1.0 cm).

Leeches (Annelida: Hirudinida) of northern Arkansas

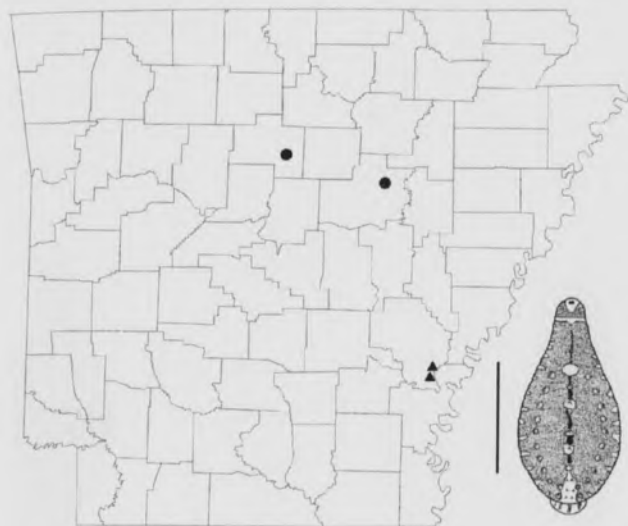


Fig. 10. Distribution map and line drawing of *Placobdella phalera* from Arkansas (circles – current study; triangles – published records; scale bar is 0.5 cm).

W), 1 spm.

Placobdella parasitica has been reported throughout Canada and the eastern United States. Additional records of *P. parasitica* from Arkansas were reported by Cochran and Harp (1990) from St. Francis Sunken Lands and by Chordas et al. (1996) from White River National Wildlife Refuge. It was also reported from Arkansas by Sawyer (1972) but no locality data were given.

Placobdella parasitica is an opportunistic blood-feeding leech on turtles. Reported turtle host species are listed by Moser (1995) and Watermolen (1996). Any turtle species occurring in North America is considered a potential host. *P. parasitica* exhibits seasonal host attachment, detaching in the spring to fall in order to breed and brood (Sawyer 1972, Koffler et al. 1978, Moser 1993). Specimens were found attached to *Chelydra serpentina* (Common Snapping Turtle) on 22 September 2005 and *Pseudemys concinna* (Eastern River Cooter) on 3 October 2005. *P. parasitica* was also found free-living on 2-3 August 2005.

Placobdella phalera
(Graf 1899) (Fig. 10)

Locality: Van Buren County, Choctaw Lake, boat launch (35 31.7887 N 92 22.7164 W), 1 spm; White County, Lake Bald Knob (35 20.4069 N 91 35.2448 W), 3 spms.

In a recent phylogenetic analysis of the family Glossiphoniidae, Siddall et al. (2005) reestablished the combination *Placobdella phalera* and suppressed the genus *Desserobdella*. *P. phalera* has a scattered distribution throughout eastern North America. It has been reported from Louisiana and Texas by Klemm (1985). Additional records of *P. phalera* from Arkansas have been reported by Chordas et al. (1996) from the

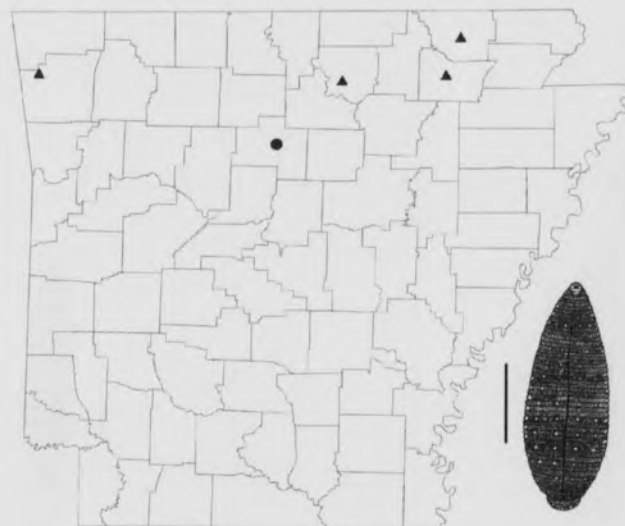


Fig. 11. Distribution map and line drawing of *Placobdella picta* from Arkansas (circle – current study; triangles – published records and museum specimens; scale bar is 1.0 cm).

White River National Wildlife Refuge.

Placobdella phalera is a blood-feeding leech on fish. It is opportunistic having been reported from fishes of the families Centrarchidae, Ictaluridae, Amiidae, and Acipenseridae in the field, and Anguillidae, Cyprinidae, Esocidae, Gasterosteidae, and Salmonidae in the laboratory (Smith and Taubert 1980, Amin 1981, Jones and Woo 1990). All specimens of *P. phalera* found in this study were free-living and attached beneath submerged substrata.

Placobdella picta
(Verrill 1872) (Fig. 11)

Locality: Van Buren County, McIntire Pond no.2 (35 36.585 N 92 28.824 W), 4 spms.

The former type species of the genus *Desserobdella*, *Clepsine picta*, was reclassified as *Placobdella picta* by Siddall et al. (2005). *P. picta* is widely distributed throughout northern North America. It has also been reported from Arkansas by Klemm (1982, 1985), McAllister et al. (1995) from SW of Melbourne (Izard County), Briggler et al. (2001) from a small pond in Washington County (36 05 N 94 23 W), and Turbeville and Briggler (2003) with no locality specified.

Placobdella picta is a temporary ectoparasite on amphibians (Sawyer 1972, Barta and Sawyer 1990, Klemm 1985) and is an important regulator of amphibian populations (Brockleman 1969, Berven and Boltz 2001). In this study, specimens were found in a small woodland pond, which is the typical habitat of *P. picta* (Sawyer 1972, Briggler et al. 2001).



Fig. 12. Distribution map and line drawing of *Cystobranchus verrilli* from Arkansas (triangle – published record; scale bar is 0.5 cm).

Family Piscicolide

Cystobranchus verrilli
 Meyer, 1940 (Fig. 12)

Cystobranchus verrilli is infrequently collected and has a scattered distribution throughout eastern North America (Klemm 1985). Becker et al. (1966) reported this species from Arkansas in the White River drainage prior to the impoundment of Beaver Reservoir. *C. verrilli* is a blood-feeding leech on fish with

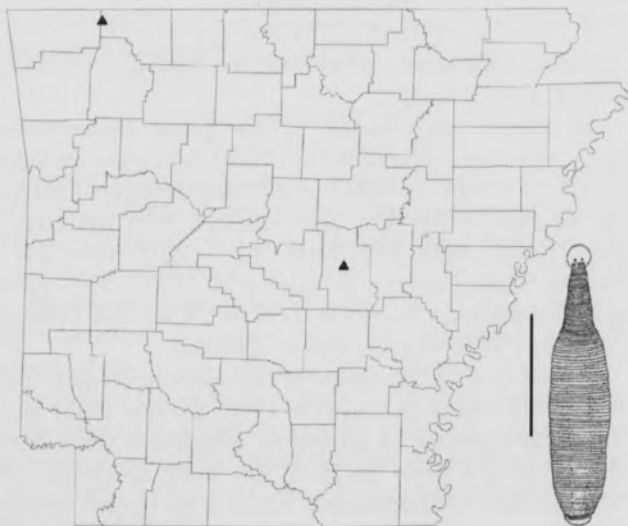


Fig. 14. Distribution map and line drawing of *Myzobdella lugubris* from Arkansas (triangles – published records; scale bar is 0.5 cm).



Fig. 13. Distribution map and line drawing of *Gonimosobdella klemmi* from Arkansas (triangles – published records) (drawing from Williams and Burreson 2005; reprinted with permission; scale bar is 0.5 cm).

Gonimosobdella klemmi

Williams and Burreson, 2005 (Fig. 13)

Gonimosobdella klemmi is a new genus and species that was recently described by Williams and Burreson (2005) from cyprinid fishes in Arkansas (The type locality is the Middle Fork of the Little Red River in Searcy County, just N of the Van Buren County line), Illinois, and Missouri. The species superficially resembles the genus *Cystobranchus*. The full distribution and host preference of *G. klemmi* is not known.

Myzobdella lugubris

Leidy, 1851 (Fig. 14)

Myzobdella lugubris is common and widely distributed throughout North American fresh and brackish waters (Sawyer and Shelley 1976, Klemm 1985). Becker et al. (1966) reported this species from Arkansas in the White River drainage prior to the impoundment of Beaver Reservoir and Lonoke Hatchery. *M. lugubris* is an opportunistic blood-feeding leech on fish. Any fish species occurring in North America is considered a potential host. Reported fish host species are listed by Meyer (1940, 1946), Sawyer (1986), and Klemm (1982, 1995).

Piscicolaria reducta

Meyer, 1940 (Fig. 15)

Piscicolaria reducta is infrequently collected and has a scattered distribution in eastern North America (Great Lakes and Mississippi drainage systems; Klemm, 1985). This species was

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Fig. 15. Distribution map and line drawing of *Piscicolaria reducta* from Arkansas (the specimen location is unknown; scale bar is 0.5 cm).

reported from Arkansas by Klemm (1982), however no locality data was given. *Piscicolaria reducta* is an opportunistic blood-feeding leech on fish. It has been reported from a wide variety of fish, including members of the family Cyprinidae, Percidae, Catostomidae, Centrarchidae, Ictaluridae, and Cichlidae (Meyer 1940, 1946, 1954, Booth and Aliff 1979, Klemm 1982, Price and Nadolny 1993).



Fig. 16. Distribution map and line drawing of *Haemopsis terrestris* from Arkansas (triangle – published record; scale bar is 1.0 cm).

Suborder Arhynchobdellida
Family Haemopidae

Haemopsis terrestris
(Forbes 1890) (Fig. 16)

Haemopsis terrestris is a terrestrial leech. It is rarely encountered and has a general mid-western distribution. *Haemopsis terrestris* was reported from Arkansas by Klemm (1982, 1985) based on a specimen from Pine Bluff in the USNM (USNM 20804). *Haemopsis terrestris* is typically found in damp soil beneath rocks and logs, where it feeds upon large earthworms (Sawyer and Shelley 1976, Shelley et al. 1979).

Haemopsis marmorata
(Say 1824)* (Fig. 17)

Locality: Benton County: in a small tributary of Spavinaw Creek just off State Highway 279, at a point 2.95 km N of its junction with St. Hwy 102 (36 23.06 N, 94 19.55 W), 1 spm; Fulton County, Spring River - Bayou Access (36 27.79 N, 91 31.56 W), 1 spm.

Haemopsis marmorata is widely distributed throughout North America but is less well known from the southern United States (Klemm 1985). This study is the first report of *H. marmorata* from Arkansas.

Haemopsis marmorata is an opportunistic predaceous and scavengous feeder. Reported foods include earthworms, aquatic worms, insect larvae, small crustaceans, other leeches, dead vertebrates, and whole snails and clams (Sawyer 1972, 1974, 1986, Klemm 1995). It is an amphibious nocturnal leech that forages some distance from the water's edge (Moore 1912, Moser 1991). Specimens in this study were found in the shallow

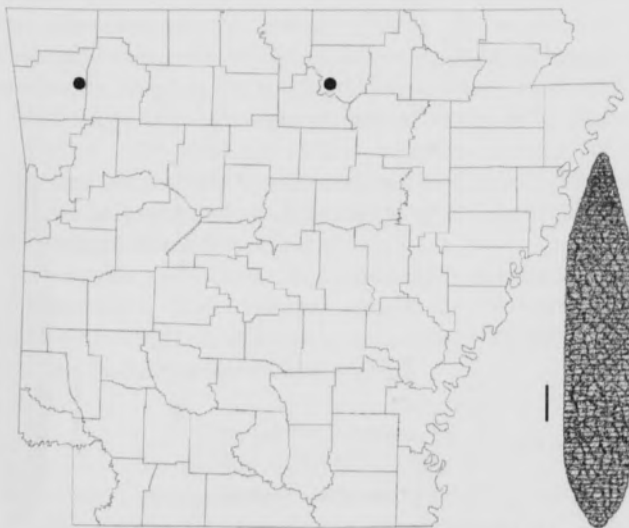


Fig. 17. Distribution map and line drawing of *Haemopsis marmorata* from Arkansas (circles – current study; scale bar is 1.0 cm).



Fig. 18. Distribution map and line drawing of *Macrobodella diplotertia* from Arkansas (triangles – published records; scale bar is 1.0 cm).

water of a small creek and crawling across an open gravel area between a river's bank and aquatic vegetation.

Family Hirudinidae

Macrobodella diplotertia
 Meyer, 1975 (Fig. 18)

Macrobodella diplotertia is only known from Missouri, Arkansas and Kansas (Meyer 1975, Klemm 1985, Turbeville and Briggler 2003, Trauth and Neal 2004). *M. diplotertia* is an omnivore. It has been reported to feed on frog and salamander eggs, and human blood (Turbeville and Briggler 2003, Trauth and Neal 2004). *M. diplotertia* likely blood-feeds on amphibians as do other members of the genus.

Macrobodella ditetra
 Moore, 1953 (Fig. 19)

Macrobodella ditetra is distributed throughout the southern United States (Sawyer 1967, Klemm 1985). It was reported from Arkansas by Klemm (1985) based on two specimens collected from Locust Bayou (USNM 56782). *M. ditetra* is an omnivore. Reported hosts include frogs, small fish, and frog eggs (Moore 1953, Beckerdite and Corkum 1973).

Family Erpobdellidae

Erpobdella fervida
 (Verrill 1871)* (Fig. 20)

Locality: Faulkner County, Beaver Fork Lake, near Conway (35 08.140 N 92 27.523 W), 6 spms; Jackson County, Roadside



Fig. 19. Distribution map and line drawing of *Macrobodella ditetra* from Arkansas (triangle – published record; scale bar is 1.0 cm).

ditch off US 14, southside of road, 0.3 km W of Amagon (35 33.716 N 91 06.936 W), 1 spm.

Siddall (2002) suppressed the genus *Mooreobdella* and made the combination *Erpobdella fervida*. *E. fervida* is widely distributed throughout northern North America but is less well known from the southern United States (Klemm 1985). It has been reported from Kansas and Missouri (Sawyer 1967, Klemm 1985). This study constitutes the first report of this species from Arkansas.

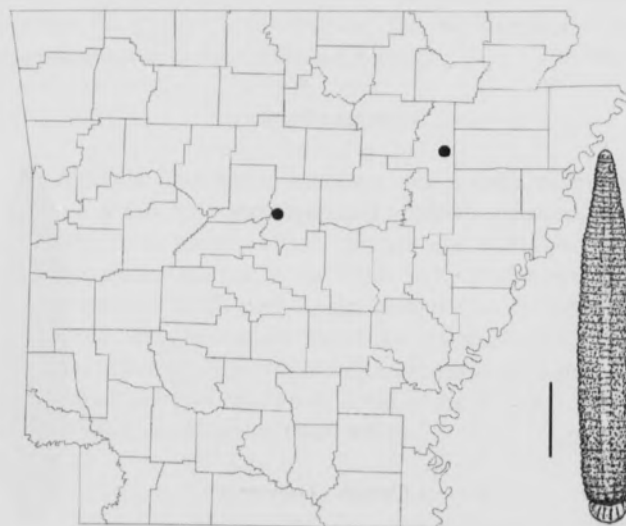


Fig. 20. Distribution map and line drawing of *Erpobdella fervida* from Arkansas (circles – current study; scale bar is 1.0 cm).

Leeches (Annelida: Hirudinida) of northern Arkansas



Fig. 21. Distribution map and line drawing of *Erpobdella microstoma* from Arkansas (circles – current study; triangle – published record; scale bar is 1.0 cm).

Erpobdella fervida is a predaceous and scavengous feeder. It has been reported to feed on oligochaetes and insect larvae and is commonly associated with dead animals at the shoreline (Moore 1912, Sawyer 1972).

Erpobdella microstoma
(Moore 1901) (Fig. 21)

Locality: Conway County, Overcup Lake (35 12.613 N 92 42.712 W), 3 spms; Perry County, Plummerville Bottoms, Arkansas River (35 06.663 N 92 38.350 W), 4 spms.

Erpobdella microstoma was transferred from the suppressed genus *Mooreobdella* by Siddall (2002). *E. microstoma* is widespread throughout the United States and Eastern Canada. It is commonly found in the southern United States, especially in the Mississippi-Ohio drainage systems (Sawyer 1972, Sawyer and Shelley 1976, Klemm 1985). Additional records of *E. microstoma* from Arkansas were reported by Curry (1976) from Bayou Bartholomew and by Chordas et al. (1996) from the White River National Wildlife Refuge.

Erpobdella microstoma is a predaceous species, feeding on oligochaetes, insect larvae, and snails (Sawyer 1972, Klemm 1985, 1995). It seems to be associated with low-oxygen organically polluted water (Klemm 1985).

Erpobdella punctata
(Leidy 1870) (Fig. 22)

Locality: Conway County, Brewer Lake (35 13.661 N 92 6.661 W), 6 spms; Conway County, Overcup Lake (35 12.613 N 92 42.712 W), 4 spms; Faulker County, Lake Conway, Mayflower, off Route 40 (35 58.2466 N 92 25.314 W), 10 spms; Jackson County, Roadside ditch off US 14, 1.4 km W of Amagon

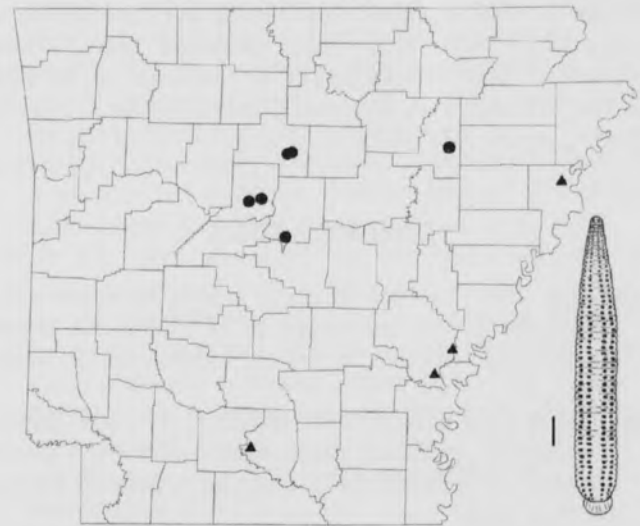


Fig. 22. Distribution map and line drawing of *Erpobdella punctata* from Arkansas (circles – current study; triangles – published record and museum specimens; scale bar is 1.0 cm).

(35 33.780 N 91 07.664 W), 6 spms; Van Buren County, Choctaw Lake (35 31.6007 N 92 24.4126 W), 1 spm; Van Buren County, Choctaw Lake, Bruce's Ferry Landing (35 32.1396 N 92 22.2735 W), 3 spms.

Erpobdella punctata is common throughout northern North America but is less well known from the southern United States (Klemm 1985). It has been reported from Louisiana (Sawyer 1967, Klemm 1985) and from Arkansas in the Wapanocca National Wildlife Refuge (Harp and Harp 1980) and the White River National Wildlife Refuge (Chordas et al. 1996). An additional specimen of *E. punctata* from Calhoun County (Ouachita River, Locust Bayou) also was found in the USNM collections (USNM 52048).

Erpobdella punctata is an opportunistic predator and scavenger. Reported food items include aquatic insect larvae, oligochaetes, small crustaceans, and snails (Sawyer 1970, 1972, Davies and Everett 1975, Klemm 1991, 1995). *E. punctata* is associated with organically enriched habitats where its food is in abundance (Klemm 1995).

Conclusions

Twenty-two species of leeches are now known from Arkansas. Additional studies are needed to elucidate the entire leech fauna of Arkansas, as many regions of the state remain unstudied. Based on their presence in surrounding states, an additional 8 species of leeches (*Actinobdella inequianmulata*, *Glossiphonia complanata*, *Placobdella nuchalis*, *Placobdella pediculata*, *Placobdella translucens*, *Piscicola punctata*, *Philobdella gracilis*, and *Erpobdella melanostoma*) likely occur in Arkansas but have not been collected.

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