

1985

## Synopsis of the Hydrometridae of Arkansas

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### Recommended Citation

Harp, George L. (1985) "Synopsis of the Hydrometridae of Arkansas," *Journal of the Arkansas Academy of Science*: Vol. 39 , Article 37.  
Available at: <http://scholarworks.uark.edu/jaas/vol39/iss1/37>

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## General Notes

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## A SYNOPSIS OF THE HYDROMETRIDAE OF ARKANSAS

Information pertaining to the Hydrometridae (marsh treaders) of Arkansas is restricted to their infrequent listing among aquatic macroinvertebrates from particular sites within the state (Harp and Harp, 1980; Farris and Harp, 1982; Huggins and Harp, 1983). The purposes of this paper are to report the occurrence of a second hydrometrid species in Arkansas, to delineate the distribution of both species, and to state their preferred habitats, insofar as current knowledge will allow. Froeschner's (1962) key to Missouri species is suitable for identification of Arkansas' species as well.

The data presented are a synthesis of the contributions from all the sources listed in the Acknowledgments, pertinent published records, and materials collected by myself. The museum collections at the University of Arkansas-Fayetteville and -Little Rock have been examined. The specimens I collected are preserved in 70% ethanol and housed in the Aquatic Macroinvertebrate Collection of the Arkansas State University Museum of Zoology (ASUMZ).

The state's most common marsh treader, *Hydrometra martini* Kirkaldy, was first listed by Farris and Harp (1982). Huggins and Harp (1983) also listed this species. To date 150 collections have provided 376 specimens from 44 counties (Fig. 1). The collection site is known for approximately 85% of this material. The plasticity of *H. martini* is evidenced by several observations. First, although approximately one-third of the individuals have been collected from ponds and another one-third from creeks, the remaining individuals have been collected from springs, rivers, ditches, lakes, swamps, acid bogs, acid bauxite lakes and sewage lagoons, in order of decreasing frequency of collection. Further, they have been taken from creeks in all five natural divisions, as defined by Foti (1974). Wilson (1958) reported that in Mississippi *H. martini* was collected most commonly in clear, shady streams, ponds covered with emergent vegetation, shallow drainage canals, roadside borrow pits covered with vegetation, and shady *Lemna*-covered sloughs in swamps.

Of the 364 adults in this study, 294 (81%) were macropterous. Sprague (1956) reported that between 1-3% of the adult specimens she examined from Kansas, Michigan and Massachusetts were macropterous. European investigators have found brachypterous and apterous forms of some species of Gerridae to be more common in the north, macropterous forms in the south. They correlated wing form with temperature (Sprague, 1956). It is not a matter of temperature strictly with *H. martini*. Macropterous forms were collected every month of the year, and apterous forms were collected during March and from May through November. There is no correlation between the macropterous:apterous ratios and monthly mean temperatures, either in this study or that by Sprague (1956). It may be that latitude was the initial triggering mechanism, but that the frequency of the two forms is now determined genetically.

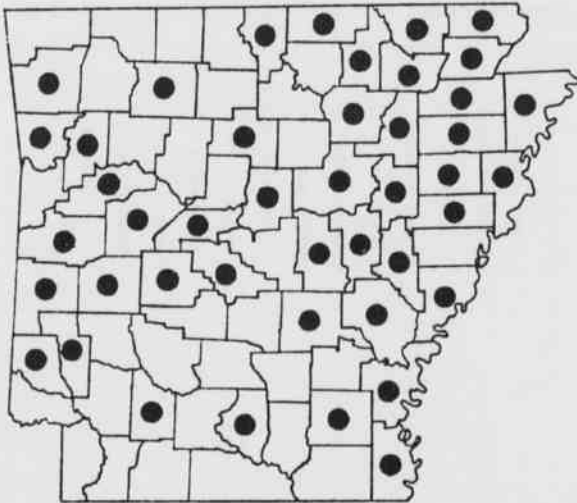
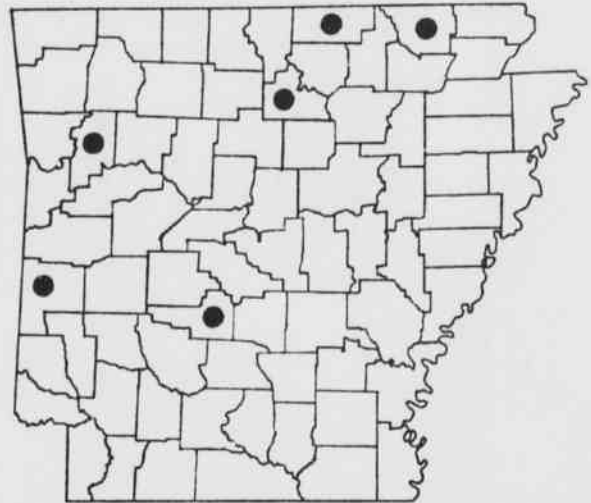
Twelve early instar nymphs were collected in this study, three in May, six in June, and three in October. Sprague (1956) noted that in northern states this species has three generations per year with adults hibernating. Froeschner (1962) found adults in Missouri from 28 April through 8 October. Nymphs can be expected to be found most of the year in Arkansas, since Hungerford (1920) has observed that under favorable conditions the complete life cycle requires approximately 15 days.

This paper documents the occurrence of one additional marsh treader species in Arkansas, *Hydrometra hungerfordi* Bueno. Its presence is established with 15 collections totalling 20 individuals (Fig. 2). It is obviously an uncommon species, and it may be more restricted as to preferred habitat. All 15 collections are from streams: seven from Ozark streams (tributary of Fourche River in Randolph Co., Eleven Point R., Dry Creek tributary of Eleven Point R., South Fork of Spring R., North Sylamore Creek, and Hell Creek - twice), two from Ouachita streams (Mountain Fork of Little Red R. and Cove Creek) and six from the intervening Arkansas River Valley (Prairie, or Hiatt Creek). Wilson (1958) reported the collection of this species in Mississippi to be generally from cool, clear, shady streams and ponds, and shady clear, spring-fed seepage areas at the base of hills. Froeschner (1962) reported that less than 12 specimens had been collected in Missouri, all from the Ozarks.

Of the 20 *H. hungerfordi* collected in Arkansas, all have been apterous. These were collected in March and from May through November. Wilson (1958) reported their being collected in Mississippi during February and from July through October. Froeschner (1962) reported collections of Missouri specimens from 17 March through 26 May.

A third marsh treader may be found in Arkansas. Drake and Hottes (1952) reported collections of *Hydrometra wileyae* Hungerford from Florida, Mississippi, Texas and Kansas. Herring (1951) collected this species in Florida only from calcareous streams which were characterized by clear, cold water derived from huge springs of a calcareous nature.

## Arkansas Academy of Science

Figure 1. *Hydrometra martini*Figure 2. *Hydrometra hungerfordi*

## ACKNOWLEDGMENTS

I gratefully acknowledge the contributions of Harvey E. Barton (ASU Entomological Museum), Robert T. Allen (UA-Fayetteville Entomological Museum), and John Rickett (UA-Little Rock Entomological Museum).

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## FURTHER DISTRIBUTIONAL RECORDS FOR ARKANSAS ANISOPTERA

Harp and Rickett (The dragonflies [Anisoptera] of Arkansas, *Proc. Ark. Acad. Sci.*, 31:50-54, 1977) reviewed earlier literature concerning Arkansas Anisoptera and reported 84 species for the state. Dunkle (New records of North American Odonata, *Ent. News*, 94:136-138, 1983) added one species, and Harp (New and unusual records of Arkansas Anisoptera, United States, *Notul. odonatol.*, 2[2]:26-27, 1983) added six species but deleted two reported by Harp and Rickett (1977), bringing the state list at that time to 89. The purposes of this paper are to make current both the Arkansas Anisoptera species list and the distribution records of each species by county.

The majority of new distributional information reported herein derives from collections by the authors. Supplementing this have been specimens and records transmitted to us by several considerate supporters. Two species are reported for Arkansas for the first time. *Gomphurus modestus* Needham was collected on the Saline R. at U.S. Hwy 70, approximately 4 mi SW Dierks, Howard County, on 20-VI-84. *Brechmorhoga mendax*