Additional Distributional Records for a Rare Caddisfly in the Ozarks, Frenesia missa (Milne) (Trichoptera: Limnephilidae)

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Cover Page Footnote
I thank Tim Vogt, Missouri Department of Conservation for providing specimens from Husman Fen Natural Area, Greg Courtney for collecting specimens in Arkansas, and Joy Mathis for clarifying the location of the Roam farms.

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Additional Distributional Records for a Rare Caddisfly in the Ozarks, 
Frenesia missa (Milne) (Trichoptera: Limnephilidae)

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Running Title: Frenesia missa in the Ozarks

The caddisfly, Frenesia missa (Milne) (Trichoptera: Limnephilidae), is widely distributed in the northern and eastern United States and south and eastern Canada (summarized in Moulton and Stewart 1996). In contrast, it has been rarely collected in the Ozarks Physiographic Province (Figure 1). This species was first reported from the Ozarks by Bowles and Mathis (1989) from a small spring near Savoy, Arkansas. Moulton and Stewart (1996) reported several additional specimens of F. missa that were reared from pupae collected from the same spring referenced in Bowles and Mathis (1989). Bowles et al. 2020) reported it from a spring in Newton County, Arkansas. It was subsequently reported from two intermittent springs in Pulaski County, Missouri (Mathis and Bowles 1992). Moulton and Stewart (1996) indicated F. missa is found in spring seeps on the Springfield Plateau and Osage-Gasconade Hills of the Salem Plateau, and some records from Newton County, Arkansas are located in the Boston Mountains. All Missouri collection records are located on the Salem Plateau. A recent collection from Benton County, Arkansas reported here is a new county record for the state. Likewise, a collection from Reynolds County is a new county record for Missouri, and the first known occurrence from a fen habitat. Arkansas represents the southernmost and likely the westernmost known distributional limit for this species.

The larva was described by Ross (1944) who also illustrated the male and female genitalia. Wiggins (1996) illustrated the larva. Mathis (1997) described the primary larval setation of F. missa, which is useful for identifying early instar larvae.

The biology of F. missa was presented by Flint (1956). Subsequently, Mathis (1999) described the life history of this species from the Ozarks, which he found was distinctly univoltine. Throughout its range, F. missa adults emerge from September through January (Mathis 1999) (Figure 2). Mathis (1999) also noted that F. missa is day active and not strongly attracted to light, with only a few individuals being collected using standard light trap methods. That observation matches my experience with this species. The late flight period for adults, coupled with their poor attraction to lights, may help explain why this species is not commonly collected.

The various records reported here indicate a potentially wide yet scattered distribution of F. missa in the Ozarks. Given that the primary habitat of this species is small spring seeps, it is recommended this species be made a species of conservation concern in both Arkansas and Missouri. Although small springs and seeps are abundant in the Ozarks, they are highly vulnerable to a variety of anthropogenic stressors. For example, drying associated with lowered aquifer levels due to groundwater pumping and drought, threatens to dewater the habitats where this species lives. Some small seeps in the Ozarks have already stopped flowing (personal observation). It is anticipated that climatic droughts will become longer and more frequent with the increasing impacts of global climate change (IPCC 2021).


Ozarks Regional Collection Data

Enns Museum, University of Missouri-Columbia (UMC); University of Arkansas Insect Collection
Frenesia missa in the Ozarks


Acknowledgments

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Literature Cited


