

DISTRIBUTION AND ABUNDANCE OF *EULONCHUS MARIALICIAE* (DIPTERA: ACROCERIDAE)¹

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ABSTRACT: *Eulonchus marialiciae*, a rare parasitoid of the folding trapdoor spider *Antrodiaetus unicolor*, was recorded from cool, humid, mixed forests at elevations above 1200 m in five counties of western North Carolina. Adults were on the wing during June and August. Smooth blackberry (*Rubus canadensis*) served as a nectar source. Host spiders and nectar sources of this fly are abundant, and most of the habitat in which it has been found is federally protected.

The larvae of all known members of the family Acroceridae are internal parasitoids of spiders; however, the biologies of many of the species are poorly known (Schlinger 1981). Some of the more colorful species are in the genus *Eulonchus* which consists of seven described species and at least 17 species that are undescribed; all but one species in the genus are restricted to western North America (Schlinger 1966, 1981).

Eulonchus marialiciae Brimley, informally known as Mary Alice's small-headed fly (Fig. 1), was described from a single male captured 23 June 1923 on Andrews Bald Mt., Swain Co., NC (Brimley 1925). The only other report of this fly comes from a study of the folding trapdoor spider *Antrodiaetus unicolor*

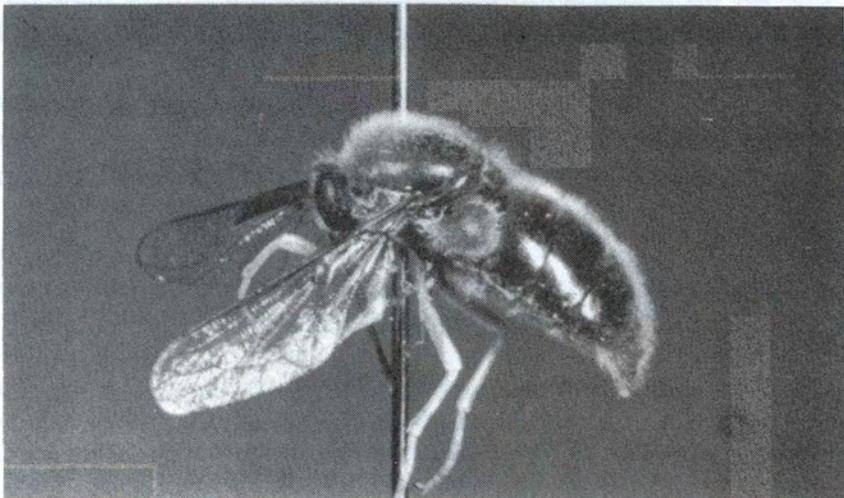


Fig. 1. Male of *Eulonchus marialiciae* collected 8 June 1965 at Heintooga Overlook, Blue Ridge Parkway, Swain Co., NC (specimen housed in Canadian National Collection).

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(Hertz) (Araneae: Antrodiaetidae) by Coyle (1971). On 1 and 2 August 1966, Coyle (1971) recovered one pupa that produced an adult, one freshly emerged adult, and an unspecified number of pupal exuviae from "several" burrows of *A. unicolor* along Rhododendron Trail at the Highlands Biological Station (1250 m elevation), Macon Co., NC. He also observed 18 adults hovering near burrows, and noted that adults often aggregated around burrows that he was excavating during the day, leading him to suggest that the flies were responding to a chemical released during the excavations. Coyle's original field notes state that of five flies taken from these aggregations, all were males; this observation suggests to us that mating might take place near the host burrows. Although Coyle (1971) unearthed many burrows of *A. unicolor* from Pennsylvania to Alabama, he found no other specimens of *E. marialiciae*.

Eulonchus marialiciae was one of 15 Diptera in the United States formerly placed in Category 2 of the Federal Register (United States Fish and Wildlife Service 1994). This designation denotes taxa for which endangered or threatened status is possibly appropriate but for which conclusive data are lacking. To obtain additional information on the distribution and status of this fly, we spent 42 days from June through mid-September, 1993 and 1994, prospecting at 43 sites in the mountains of western North Carolina and South Carolina. We ran Malaise traps, excavated burrows of *A. unicolor*, and inspected potential nectar sources; we also examined museum collections. Five males from our study have been deposited as voucher specimens in the Clemson University Arthropod Collection.

Other than the holotype (U. S. National Museum), we located only one other museum specimen. The Canadian National Collection in Ottawa contains a male taken on *Rubus* by J. G. Chillcott, 8 June 1965, at Heintooga Overlook along the Blue Ridge Parkway, Swain Co., NC.

During our field work, we found 10 flies (8♂, 2 sex unknown [not captured]) feeding on the floral nectar of smooth blackberry (*Rubus canadensis* L.) along the Blue Ridge Parkway in North Carolina:

Haywood Co., Beartrail Ridge Parking Area, 1790 m, 16 June 1994 (1 sex unknown); **Haywood Co.**, Spot Knob Overlook, 1723 m, 16 June 1994 (1♂); **Jackson Co.**, 1.0 km N of Doubletop Mt. Overlook, 1635 m, 16 June 1994 (1♂); **Jackson Co.**, 1.1 km N of Doubletop Mt. Overlook, 1634 m, 16 June 1994 (1♂); **Swain Co.**, Heintooga Overlook, 1626 m, 15 June 1994 (1♂, 1 sex unknown); **Swain Co.**, Mollies Gap, 1631 m, 13 June 1994 (2♂); **Transylvania Co.**, Mt. Hardy Viewing Area, 1650 m, 17 June 1994 (2♂).

We observed feeding from 1200 to 1600 h on sunny and overcast days. Flies could be approached within less than a meter as they probed individual blooms while stationed on the flowers. One male fed for 3-100 sec (mean + SE = 25.5 + 6.8 sec, 24 °C) per flower. Flies carried a light dusting of pollen on their bodies. Three males that were brought to the laboratory fed on a 10%

solution of honey. Dissections 24 h later revealed a lack of stored nutrient in the abdomen, suggesting a dependence on sugar sources such as nectar. Our small sample suggests that males are more likely to be found nectaring than are females; in fact, we have no evidence that females take nectar, although we suspect that they do. Other described species in the genus *Eulonchus* are usually found probing flowers for nectar and are considered important pollinators (Schlinger 1981).

In total, we account for 32 adult flies that have been seen or collected since the type specimen was taken in 1923. All were found at elevations of 1250 m or higher in five mountainous counties of western North Carolina. This region is characterized by cool, humid woodlands with a liberal humic layer and dominated by hemlock (*Tsuga canadensis* (L.) Carr.), oaks (*Quercus* spp.), and rhododendron and flame azalea (*Rhododendron* spp.). Our records, coupled with those of Coyle (1971), suggest either that two generations of flies are produced yearly, with adults on the wing during June and August, or that a single brood with prolonged emergence occurs. Flies emerging after June would require a nectar source other than *R. canadensis*, which does not bloom beyond that time.

We conclude that *E. marialiciae* is rare but probably not threatened or endangered. Its known spider host and nectar source, as well as habitat, are abundant over much of western North Carolina, southwestern Virginia, and eastern Tennessee, suggesting that it exists over an area greater than our records indicate. Most sites where this fly has been recorded are within federally protected areas.

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