



New State Records for *Mallochiola gagates* (McAtee & Malloch, 1924), a little-known microphysid in Eastern North America (Hemiptera: Heteroptera: Microphysidae)

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The Microphysidae is one of the smallest heteropteran families, comprised of 30 species and 10 extinct species in 5 genera (Henry 2009, Vinokurov *et al.* 2010). Only six species are known from Canada and the continental United States (Henry 1988, Schwartz 1989, Schwartz *et al.* 1991). Of these six species, only two, *Chinaola quercicola* Blatchley and *Mallochiola gagates* (McAtee and Malloch, 1924), are considered native to North America. The remaining four species are Palearctic in origin. Schuh and Slater (1995) presented an excellent review of the classification, morphology and natural history for the family. Microphysids are recognized by the presence of ocelli, a distinct cuneus, a single closed cell on the hemelytral membrane, and two-segmented tarsi.

McAtee and Malloch (1924) described *gagates* in the genus *Idiotropus* from Plummer's Island, Maryland (USA), the District of Columbia (USA), and Tampico, Mexico. The species was transferred to the monotypic genus *Mallochiola* by Bergroth (1925). No new records of this species have been recorded since its description over 80 years ago.

All specimens cited in this paper are housed in the North Carolina State University Insect Museum (NCSU).

Material examined. 1 female, USA: NORTH CAROLINA, Durham Co., Hill Demonstration Forest, 36.201°N, 78.887°W (±500 m), 7–21.v.2010, Malaise Trap, R.L. Blinn (**new state record**).

2 males, USA: TENNESSEE, Sevier Co., GSMNP, ATBI Plot, Brushy Mountain, 280000E 3950599N, 21 vii–5 viii 2001, Malaise Trap 13, I.C. Stock, MT1320010805; 2 females, USA: TENNESSEE, Sevier Co., GSMNP, ATBI Plot, Brushy Mountain, 280000E 3950599N, 5–21 viii 2001, Malaise Trap, I.C. Stocks, MT1320010821 (**new state record**).

Schuh and Slater (1995), in their remarks about microphysids, state “They have no common name and are known in the field to only a few heteropterists.” How truly rare, or just rarely collected, microphysids are, remains to be seen; but what is true is their small size (<3 mm) and cryptic habits contribute to their rarity in collections. Like so many insects, once we understand something about their host and the habitats they are found in, we know then how and where they can be collected. This point was illustrated well by Wheeler (1992), who reported the occurrence of *Chinaola quercicola* Blatchley in 3 states (South Carolina, Virginia, and Maryland) in the eastern United States (previously known only from Florida) and its close association with lichen-covered branches of red cedar, *Juniperus virginiana*, and scrub oak, *Quercus ilicifolia*.

Mallochiola gagates (Fig. 1), previously known only from females, is distinguished by its small size (approximately 1.5 mm), broad oval shape, and overall shiny black coloration. The presence of a cuneus, a single closed cell in the wing membrane, ocelli, 4-segmented antennae and 3-segmented rostrum, will further help to distinguish this species from other small to minute Heteroptera in the eastern United States and Canada.

The North Carolina collecting locality for *Mallochiola gagates* (McAtee and Malloch, 1924) is a 2,450 acre forest owned by the North Carolina State University and managed by the Department of Forestry and Environmental Resources. Hill Demonstration Forest is a mature Southern mixed hardwoods forest dominated by *Carya*, *Acer*, *Fagus*, and *Quercus*. A series of Malaise traps was set up in the forest from early April to mid-September and the collecting bottles were changed approximately every two weeks. Unfortunately, because a Malaise trap is a passive-collecting technique, no real information can be gained on the biology of *Mallochiola gagates* (McAtee and Malloch, 1924) other than habitat type. The specimen was collected into 95% ethyl alcohol and later critically point-dried and deposited in the North Carolina State University Insect Museum (NCSU). The Tennessee collecting locality was on Brushy Mountain, one of many ATBI (All Taxa Biodiversity Inventory) plots across the Great Smoky Mountains National Park. Brushy Mountain is a mountain summit in Sevier County, Tennessee, which climbs to 4,888 feet (1,489.86 meters) above sea level and is located at GPS coordinates N 35.677872 and W -83.43016.