

FIRST ADULT DESCRIPTION FOR *EPHEMERELLA HISPIDA* (EPHEMEROPTERA: EPHEMERELLIDAE)¹

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ABSTRACT: Reared material from Tennessee and South Carolina provide the bases for the first adult description of *Ephemerella hispida*. Structural characters associated with the male genitalia, such as the number and placement of ventral spines on the penes, differentiate this species from sympatric congeners.

Herein, we provide the first adult description for the southeastern Nearctic species *Ephemerella hispida* Allen and Edmunds, based upon material reared from South Carolina and Tennessee. Some materials examined in this study were collected in conjunction with the All Taxa Biodiversity Inventory (ATBI) project underway in the Great Smoky Mountains National Park (GSMNP) (Kaiser 1999, Pedersen 1999). All material is deposited in the Purdue University Entomological Research Collection, West Lafayette, Indiana.

Ephemerella hispida Allen and Edmunds

Male adult.—Length: body 8.8-10.0 mm, forewings 9.5-11.0 mm, caudal filaments 11.0-12.5 mm. Head pale yellow-beige. Antennae with scape and pedicel pale; pedicel ringed with brown at base; flagella light brown. Ocelli white with black base. Upper portion of dioptic compound eyes pale beige, lower portion black; compound eyes nearly contiguous. Thorax pale yellow-beige; prothorax with dorsal, median ridge. Wings hyaline, with milky tinge; costa and subcosta light yellow; veins, intercalaries, and crossveins hyaline; stigmatic area lightly clouded in white. Fore-, mid-, and hindlegs light yellow, paler dorsally and proximally; tibiae light brown apically. Length of segments of forelegs, in millimeters: trochanter = 0.5, femur = 1.8, tibia = 2.9, tarsus I = 0.1, tarsus II = 1.2, tarsus III = 1.4, tarsus IV = 1.1, tarsus V = 0.4. Abdomen pale yellow; middle segments translucent; segments 1 and 8-10 opaque, pale yellow-beige. Terga 1-8 with faint brown, transverse stripe along posterior margin and single pair small, beige, sublateral maculae; terga 8-10 unmarked. Pleural margins pale. Sterna pale, unmarked. Genitalia (Figs. 1,2) pale; penes with eight to twelve, ventrolateral, stout spines, and ten to twelve, dorsolateral, stout spines, and no ventroapical spines; mesoapical lobe present on forceps segment 2; forceps segment 3 ovoid; posterior margin of subgenital plate slightly convex. Medial filament and cerci subequal in length, beige proximally, pale distally, with pale annulations at apex of proximal segments and moderately covered with short, intrasegmental setae.

Adult diagnosis. The male adult of *E. hispida* may be best differentiated from other eastern Nearctic *Ephemerella* species based upon the following combination of structural characters associated with the genitalia (Figs. 1,2): penes shaped as in figure 2, a mesoapical lobe on genital forceps segment 2, a gently rounded posterior margin of the subgenital plate, and penes with 10-12

¹ Received: February 2, 2002. Accepted: March 26, 2002.

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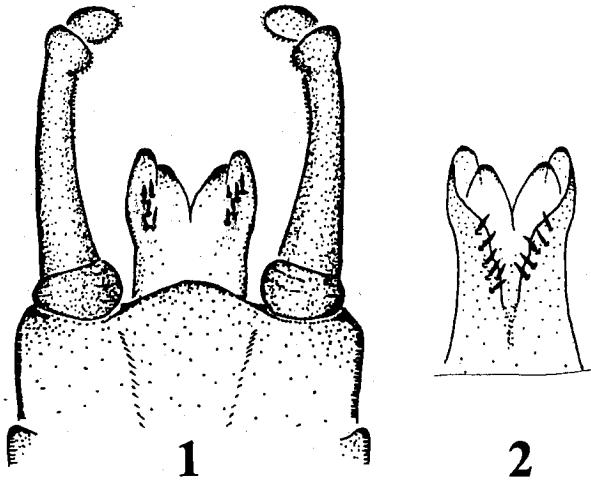


Figure 1-2. *Ephemarella hispida*, male genitalia. 1. Ventral view. 2. Penes, dorsal view.

dorsolateral spines, 8-12 ventrolateral spines, and no apical spines.

Biology. Larvae of this species are usually collected in association with aquatic mosses, algae, and other vegetation in small waterfalls and other high gradient sections of streams. These habitats are commonly exploited by a number of species in the genus *Ephemarella* Walsh (Edmunds et al. 1976). The alate stages of *E. hispida* we examined were collected in May and June.

Material examined. Two male subimagos, one female subimago, associated exuviae, eight larvae, Tennessee, Sevier Co., Elkmont, GSMNP, ca. 35°40'N 83°35'W (NAD27), 16-V-2001, C. D. & R. P. Randolph, L. M. Jacobus; two male adults and associated exuviae (one set genitalia on slide, one set destroyed), South Carolina, Greenville Co., Watson Heritage Preserve, Matthews Cr., 7-V-1997 and 4-VI-1997, S. Spichiger.

ACKNOWLEDGMENTS

Discover Life In America, Inc. and the U. S. National Park Service provided funding and facilities, respectively, for collecting and rearing in GSMNP. Rearings in South Carolina were funded in part by a Clemson University E. W. King Memorial Grant to SS. USEPA Fellowship 91601701-0 to LMJ and NSF Grant DEB-9901577 to WPM provided additional funding.

LITERATURE CITED

- Allen, R. K. and G. F. Edmunds. 1965. A revision of the genus *Ephemarella* (Ephemeroptera, Ephemerellidae) VIII. The subgenus *Ephemarella* in North America. Misc. Publ. Entomol. Soc. Am. 4: 243-282.
- Edmunds G. F., S. L. Jensen, and L. Berner. 1976. The mayflies of North and Central America. University of Minnesota Press, Minneapolis.
- Kaiser, J. 1999. Great Smokies species census under way. Science 284: 1747-1748.
- Pedersen, D. 1999. The search for hidden life: Scientists are trying to identify every living thing in the Smokies National Park. Newsweek 133(21): 82-83.