

NOTE

Reinstatement of *Rhithrogena manifesta* Eaton (Ephemeroptera: Heptageniidae)

The name *Rhithrogena manifesta* Eaton, 1885, was based on certain adult heptageniid mayfly specimens collected from Rock Island, Illinois in the early 1860s by B. D. Walsh. Walsh (1862) misidentified those specimens as *Baetis debilis* Walker (a species now in the genus *Paraleptophlebia* Lestage). Eaton (1885), as was his practice at the time, did not designate type specimens for his species, and any *de facto* syntypes of *R. manifesta* have been heretofore undocumented. Walsh's collections, in general, were deposited in the Chicago Museum (subsequently destroyed in the Great Chicago fire of 1871) or with H. Hagen in Prussia (subsequently placed in the Museum of Comparative Zoology, Harvard University [MCZ]) (see Burks 1953). *Rhithrogena manifesta* was placed with species in the genus *Heptagenia* Walsh by McDunnough (1924), who originally believed the genus *Rhithrogena* Eaton was equivalent with *Heptagenia*. Although McDunnough (1926) later recognized some species in *Rhithrogena*, Eaton's *manifesta* has continued to be regarded as *Heptagenia manifesta*. This is because McDunnough (1924) suggested that *H. manifesta* was related to particular species of *Heptagenia*, which more recently have been transferred to the genus *Nixe* Flowers. Flowers (1980) chose not to place *H. manifesta* in *Nixe* until more was known about the species. The only other report of the occurrence of the species was from Quebec by Walley (1927). McCafferty (1996) treated *H. manifesta* as a *nomen dubium* because of the many uncertainties surrounding it.

Recently, we located and studied four adult specimens in the MCZ that Walsh had collected from Rock Island in 1860 and 1863 and identified as *B. debilis*. These specimens were consistent with Eaton's de-

scription of *manifesta*. We also discovered and studied a series of 15 adult specimens from New Brunswick and Quebec in the Canadian National Collection of Insects, Agriculture and Agri-Food Canada (CNC) that had been identified as *H. manifesta* by McDunnough. We found the CNC specimens to be the same species as those in the MCZ and thus correctly identified by McDunnough. Our study of these two series of specimens also revealed important additional data regarding the species. It was clear that the species belongs in the genus *Rhithrogena*, as Eaton (1885) had originally surmised, not in *Heptagenia*. Also, whereas the species fits the rather incomplete description given by Eaton (1885), the species also fits the more completely defined and relatively well-known species *R. pellucida* Daggy (Daggy 1945, Burks 1953, Leonard and Leonard 1962, McShaffrey and McCafferty 1988, Durfee and Kondratieff 1994). *Rhithrogena pellucida* is a relatively widespread North American species that also is known from the vicinity of the type locality of Eaton's species (Randolph and McCafferty 1998, Durfee and Kondratieff 1994). Our study of comparative material showed it to be the same as *H. manifesta*.

Based on the above observations, four steps are now required to remediate the taxonomic and nomenclatural problems associated with *H. manifesta*. First, we replace the species to its proper genus, as *Rhithrogena manifesta* Eaton (recombination). Second, we place *R. pellucida* as a subjective junior synonym of *R. manifesta* (**new synonym**). Third, we designate a lectotype from the Rock Island material collected by Walsh (see material examined below) for the purpose of fixing the identity of *R. manifesta*. Fourth, we remove *R. manifesta* from *nomen dubium* status. It should be noted

that although Eaton (1885) listed *R. manifesta* as a renaming, *R. manifesta* was technically a new name. Walsh (1862) did not describe *B. debilis* as new. Thus, no secondary homonym of that name should be construed, as might be incorrectly interpreted from the synonymy given by Eaton (1885) for *R. manifesta*.

Material examined.—*Rhithrogena manifesta*: lectotype, 1 ♂ adult, Illinois, Rock Island, 1863, Walsh [MCZ]. Other material: 1 ♂ adult, Illinois, Rock Island, Walsh [MCZ]; 1 ♀ adult, Illinois, Rock Island, 1860, Walsh [MCZ]; 1 ♀ adult, Illinois, Rock Island, Walsh [MCZ]; 1 ♂ adult, 6 ♀ adults, New Brunswick, Fredericton, VII-1928, W. J. Brown [CNC]; 1 ♀ adult, Quebec, Cascades Point, 30-VIII-1930, L. J. Milne [CNC]; 2 ♂ adults, same data but 26-VII-1930 (one set genitalia on slide) [CNC]; 1 ♀ adult, Quebec, Kirk's Ferry, 4-VII-1925, G. S. Walley [CNC]; 1 ♀ adult, Quebec, Lachine, 6-VIII-1924, G. S. Walley [CNC]; 2 ♂ adults, Quebec, Laprarie, 21-VII-1925, F. P. Ide [CNC]; 1 ♀ adult, Quebec, Richelieu, 5-VII-1927, G. S. Walley [CNC].

*Rhithrogena pellucida*: 1 ♂ adult, 1 ♀ adult, Indiana, West Lafayette, 13-VII-1974, H. R. Lawson [Purdue Entomological Research Collection, West Lafayette, Indiana].

We thank R. D. Waltz (Indianapolis, Indiana) and R. W. Flowers (Tallahassee, Florida) for comments on an early stage of the manuscript, and we thank A. V. Provonsha (West Lafayette, Indiana) for hand-delivering specimens from the MCZ. This study has been funded in part by CanaColl Foundation grant 178 to LMJ and NSF grant DEB-9901577 to WPM. This paper has been assigned Purdue ARP Journal No. 16505.

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