

NOTE

Reinstatement of *Serratella serratoides* (McDunnough) and Status of *Ephemerella molita* (McDunnough) (Ephemeroptera: Ephemerellidae)

Recent global study of Ephemerellinae (Ephemeroptera: Ephemerellidae) (sensu McCafferty and Wang 2000) has revealed that the status and synonymies of two nominal species should be adjusted. *Ephemerella molita* McDunnough is designated here to be a *nomen dubium*, and *Serratella serratoides* (McDunnough) is removed from synonymy with *E. molita*. Jacobus and McCafferty (2002) considered the two species to be equivalent, based on their observation that the female adult holotype of *E. molita* has sternal markings similar to those of *S. serratoides* and that the coloration of its caudal filaments fall within the range of color variation of *S. serratoides*. We now recognize that the holotype of *E. molita* is also indistinguishable from variants of several other Ephemerellinae species that were not examined as part of the Jacobus and McCafferty (2002) study. These species each have rows of dark maculae on their abdominal sterna and include, for example, the Nearctic species *E. needhami* McDunnough (e.g., McDunnough 1931, Traver 1935, Burks 1953, Allen and Edmunds 1965) and the widespread Palearctic, and possibly Holarctic, species *E. notata* Eaton (e.g., Eaton 1887, Schoenemund 1930: fig. 101, Ulmer 1932: fig. 44, Landa 1969, Elliot and Humpesch 1983: fig. 33, Studemann et al. 1992: fig. 341, Ishiwata 2001). Although the presence of sternal maculations on these *Ephemerella* Walsh species has been documented extensively, no comparisons to them were made by Jacobus and McCafferty (2002), because at that time *E. molita* was thought to be part of the *Ephemerella serrata* Morgan

species group (McDunnough 1931, Traver 1935, Allen and Edmunds 1963), which is recognized widely now as the genus *Serratella* Edmunds (Edmunds 1959, Tshernova 1972, Allen 1980). The confusion surrounding *E. molita* is due in part to the historical lack of global comparisons of Ephemerellinae species and to difficulties surrounding proper identification of female adult Ephemerellinae. Many female adults are indistinguishable from one another using traditional external morphological characteristics. Examination of eggs could contribute to the resolution of the identity of *E. molita* (Jacobus and McCafferty, unpublished), but such action would require destruction of the holotype, the only *bona fide* specimen associated with the name *E. molita* (McDunnough 1930). McDunnough (1931) mistakenly reported a paratype from New Brunswick (Jacobus and McCafferty 2002), and Traver's (1932) discussion appears to be an inadvertent error because no male adult has been associated with the species. *Ephemerella molita* should not be confused with *E. mollitia* Seemann, a species name that is synonymous with *Ephemerella dorothea infrequens* McDunnough (Jacobus and McCafferty 2003).

Unfortunately, *E. molita* has been reported several times since Jacobus and McCafferty (2002) modified its concept. In most of these instances (e.g., Kluge 2004, DeWalt and Heinold 2005, Chandler et al. 2006, DeWalt et al. 2007, Parker et al. in press), specimens are representatives of *S. serratoides*. McCafferty et al. (2006) discussed a report of *E. molita* from Iowa that was

based instead on a misidentification of *E. needhami* (McCafferty et al. 2003). An Arkansas record of *S. sordida* (McDunnough) (Peters and Warren 1966) that Jacobus and McCafferty (2003) treated as a misidentification of *E. molita* is referable to *S. serratoides*.

LITERATURE CITED

- Allen, R. K. 1980. Geographic distribution and reclassification of the subfamily Ephemerellinae (Ephemeroptera: Ephemerellidae), pp. 71–91. In Flannagan, J. F. and K. E. Marshall, eds. *Advances in Ephemeroptera Biology*. Plenum, New York. 552 pp.
- Allen, R. K. and G. F. Edmunds, Jr. 1963. A revision of the genus *Ephemerella* (Ephemeroptera: Ephemerellidae) VI. The subgenus *Serratella* in North America. *Annals of the Entomological Society of America* 56: 583–600.
- . 1965. A revision of the genus *Ephemerella* (Ephemeroptera, Ephemerellidae) VIII. The subgenus *Ephemerella* in North America. *Miscellaneous Publications of the Entomological Society of America* 4: 244–282.
- Burks, B. D. 1953. The mayflies, or Ephemeroptera, of Illinois. *Bulletin of the Illinois Natural History Survey* 26(Art. 1): 1–216.
- Chandler, D. S., G. D. Whitmore, S. K. Burian, and J. F. Burger. 2006. The mayflies (Ephemeroptera) of New Hampshire: Seasonality and diversity of the stream fauna. *Transactions of the American Entomological Society* 132: 25–73.
- DeWalt, R. E. and B. D. Heinold. 2005. Summer emerging Ephemeroptera, Plecoptera, and Trichoptera of Abrams Creek, Great Smoky Mountains National Park. *Proceedings of the Entomological Society of Washington* 107: 34–48.
- DeWalt, R. E., L. M. Jacobus, and W. P. McCafferty. 2007. Summer Ephemeroptera, Plecoptera and Trichoptera of Southwestern Drainages in Great Smoky Mountains National Park. *Proceedings of the Entomological Society of Washington* 109: 136–154.
- Eaton, A. E. 1883–1888. A revisional monograph of recent Ephemeridae or mayflies. *Transactions of the Linnean Society, London, Zoological Series* 3: 1–352.
- Edmunds, G. F., Jr. 1959. Subgeneric groups within the mayfly genus *Ephemerella* (Ephemeroptera: Ephemerellidae). *Annals of the Entomological Society of America* 52: 543–547.
- Elliott, J. M. and U. H. Humpesch. 1983. A key to the adults of the British Ephemeroptera with notes on their ecology. *Scientific Publications of the Freshwater Biological Association No. 47*. Freshwater Biological Association, 101 pp.
- Ishiwata, S.-I. 2001. A checklist of Japanese Ephemeroptera, pp. 55–84. In *The 21st Century and Aquatic Entomology in East Asia: Proceedings of the 1st Symposium of Aquatic Entomologists in East Asia*. The Korean Society of Aquatic Entomology, Korea. 146 pp.
- Jacobus, L. M. and W. P. McCafferty. 2002. Analysis of some historically unfamiliar Canadian mayflies (Ephemeroptera). *The Canadian Entomologist* 134: 141–155.
- . 2003. Revisionary contributions to North American *Ephemerella* and *Serratella* (Ephemeroptera: Ephemerellidae). *Journal of the New York Entomological Society* 111: 174–193.
- Kluge, N. 2004. *The Phylogenetic System of Ephemeroptera*. Kluwer Academic Publishers, Dordrecht. 442 pp.
- Landa, V. 1969. Jecice-Ephemeroptera. *Fauna CSSR* 18: 1–352.
- McCafferty, W. P. and T.-Q. Wang. 2000. Phylogenetic systematics of the major lineages of Pannota mayflies (Ephemeroptera: Pannota). *Transactions of the American Entomological Society* 126: 9–101.
- McCafferty, W. P., T. Hubbard, and J. M. Webb. 2006. Insecta, Ephemeroptera: range extensions and new Iowa state records. *Check List* 2(1): 40–41.
- McCafferty, W. P., T. Hubbard, T. H. Klubertanz, R. P. Randolph, and M. Birmingham. 2003. Mayflies (Ephemeroptera) of the Great Plains. II: Iowa. *Transactions of the American Entomological Society* 129: 77–105.
- McDunnough, J. 1930. The Ephemeroptera of the north shore of the Gulf of St. Lawrence. *The Canadian Entomologist* 62: 54–62.
- . 1931. The eastern North American species of the genus *Ephemerella* and their nymphs (Ephemeroptera). *The Canadian Entomologist* 63: 187–197, 201–216.
- Parker, C. R., O. S. Flint, Jr., L. M. Jacobus, B. C. Kondratieff, W. P. McCafferty, and J. C. Morse. In Press. The Ephemeroptera, Plecoptera, Megaloptera and Trichoptera fauna of Great Smoky Mountains National Park. *Southeastern Naturalist*.
- Peters, W. L. and L. O. Warren. 1966. Seasonal distribution of adult Ephemeroptera in northwestern Arkansas. *Journal of the Kansas Entomological Society* 39: 396–401.

- Schoenemund, E. 1930. Eintagsfliegen oder Ephemeroptera. *Die Tierwelt Deutschlands* 19: 1–106.
- Studemann, D., P. Landolt, M. Sartori, D. Hefti, and I. Tomka. 1992. Ephemeroptera -Insecta. *Helvetica Fauna* 9, 175 pp.
- Traver, J. R. 1932. Mayflies of North Carolina. *Journal of the Elisha Mitchell Scientific Society* 47: 85–236.
- . 1935. Part II: Systematic. North American mayflies order Ephemeroptera, pp. 237–739. In Needham, J. G., J. R. Traver, and Y.-C. Hsu, eds. *The Biology of Mayflies*. Comstock, Ithaca, New York. 759 pp.
- Tshernova, O. A. 1972. Some new species of mayflies from Asia (Ephemeroptera, Heptageniidae, Ephemerellidae). *Entomologicheskoye Obozrenie* 51: 604–614 [English translation 1972 *Entomological Review* 51: 364–369].
- Ulmer, G. 1932. Ordnung: Eintagsfliegen, Ephemeroptera (Agnatha). *Tierwelt Mitteleuropas* 4: 1–43.

Luke M. Jacobus and W. P. McCafferty, *Department of Entomology, Purdue University, West Lafayette, IN, 47907, U.S.A. (e-mail: (LMJ)konchu@tls.net; (WPM)mccaffer@purdue.edu), LMJ current address: Department of Biology, Indiana University, Bloomington, IN, 47405, U.S.A.*