

TAXONOMIC STATUS OF THREE SPECIES OF *FALLCEON* (EPHEMEROPTERA: BAETIDAE)¹

W. P. McCafferty, C. R. Lugo-Ortiz²

ABSTRACT: The taxonomic status of three species of *Fallceon* (Ephemeroptera: Baetidae) is discussed based on the examination of type materials. The syntypes of *Centropitulum poeyi* are identifiable as *Fallceon poeyi* and *Fallceon* sp., but they do not include *F. longifolius*. Recent material from Cuba that was misidentified as *Baetis* (*Fallceon*) *poeyi* is shown to represent a distinct new species, *Fallceon nikitai* McCafferty and Lugo-Ortiz. The Mexican species *Fallceon eatoni*, recently synonymized with *Fallceon quilleri*, is reinstated as a valid species and confirmed in *Fallceon*. The shape of the costal process in the hindwings is shown to be variable among *Fallceon* species.

Fallceon poeyi (Eaton)

Eaton (1885) described *Centropitulum poeyi* from Cuba. Edmunds (1974) recombined this species with the genus *Baetis* Leach based on its possession of hindwings and double marginal intercalaries in the forewings. McCafferty and Waltz (1991) placed it in *Fallceon*, a genus which had been erected by Waltz and McCafferty (1987). Kluge (1992) recognized it in *Fallceon*, but regarded *Fallceon* only as a subgenus of *Baetis*. We continue to recognize *Fallceon* as a distinct genus. It clearly does not belong in *Baetis* based on its lack of a femoral villopore in the larvae. The possession of the villopore is an apomorphic characteristic which defines a distinct phylogenetic lineage containing *Baetis* and other genera related to *Baetis* (Waltz and McCafferty 1987).

Our recent study of the syntypes of *Centropitulum poeyi* (all pinned, alate specimens housed at the Museum of Comparative Zoology, Harvard University, MCZ white tag series No. 4965) indicated that three of the four original syntypes of this species possessed hindwings with an unhooked costal process, and one specimen possessed hindwings with a hooked costal process. The latter condition has been considered typical of the genus. All other characters visible on these poorly preserved specimens, including patterns of crossvenation in the forewings and position and development of the costal process of the hindwings, continue to suggest their placement in *Fallceon*. Two species of *Fallceon*, however, rather than one are represented by Eaton's syntypes.

It cannot be determined from Eaton's (1885:179) written description

¹ Received December 8, 1993. Accepted January 15, 1994.

² Department of Entomology, Purdue University, West Lafayette, IN 47907

of *Centroptilum poeyi* which of the components of his type material is closest to his intended species concept. With figure 12 of Plate 65 of Eaton's monograph, however, he illustrated the hindwing of his *C. poeyi*. This hindwing clearly matches those specimens with the unhooked, symmetrically produced costal process. We interpret this illustrated hindwing as an indication that these particular specimens typified Eaton's intended concept of the species. In this respect, we are able to recognize the single male adult among these three specimens as the lectotype (Eaton's green tag No. 61) of *F. poeyi*, so designated by Kluge (1992).

The single Eaton syntype with the hooked costal process was identified by Kluge (1992) as *Baetis (Fallceon) longifolius* Kluge, a valid species he described in the same paper, based on larvae and adults he reared in Cuba. On the basis of the poor condition of this specimen, including the lack of genitalia, it is impossible to identify it to species, and given its small size, it is difficult to accept that it is this species since larvae on which the description is based are nearly twice as long as this adult (we have not seen such a size reduction from larva to adult in baetid species). Therefore, we consider that specimen of Eaton's (Eaton's green tag No. 711) as *Fallceon* sp. It is doubtful if it can ever be placed accurately to any particular species of *Fallceon*.

Fallceon nikitai McCafferty and Lugo-Ortiz, NEW SPECIES

Kluge (1992) described Cuban larvae of what he thought to be *Baetis (Fallceon) poeyi*, based on reared associations with adults that he presumed were that species. From Kluge's description, it is clear that this material is *Fallceon* but definitely not Eaton's *poeyi*. Our conclusion is based primarily on the presence of a hooked costal process in the hindwings of Kluge's material. Nonetheless, because the material represents an adequately described, distinct species, we name it after Nikita Kluge as follows: *Fallceon nikitai* McCafferty and Lugo-Ortiz, new species [= materials previously collected, described and illustrated as *Baetis poeyi* (Eaton) by Kluge (1992:40)]. We designate the holotype of the new species as follows: HOLOTYPE, male adult reared from larva, Cuba, Pinar de Río Province, Soroa, IV-1-1989, N. Kluge, deposited at Zoological Institute of the Russian Academy of Sciences, St. Petersburg, Russia.

Fallceon eatoni (Kimmins), REINSTATEMENT

Kimmins (1934) described adults from the state of Sonora in northern Mexico as *Baetis eatoni*. Waltz and McCafferty (1987) recombined

this species with the genus *Fallceon*. McCafferty and Waltz (1991) subsequently synonymized it with *Fallceon quilleri* (Dodds).

Our examination of the type material from the British Museum has revealed that it is not *F. quilleri*. While there are striking similarities in the genitalia of *F. eatoni* and *F. quilleri*, both with respect to the bilobed process of the subgenital plate and the elongate terminal segment of the forceps (see Kimmins 1934), the hindwings of the two species are distinct. In fact, the hindwings of *F. eatoni*, similar to those of *F. poeyi* discussed above, do not possess the hooked costal process associated with other species of the genus. Except for this structural difference, however, it appears that *F. eatoni* and *F. quilleri* are closely related.

We continue to consider this species in *Fallceon* rather than *Baetis* because the general similarities in the genitalia of *F. eatoni* and *F. quilleri* would be too difficult to explain as convergences. The hooked costal process of the hindwing obviously cannot be used as a distinguishing characteristic for *Fallceon*. It will be important to discover and examine the still unknown larvae of both *F. eatoni* and *F. poeyi* because the most critical characters of the genus are apparently found in that stage (Waltz and McCafferty 1987).

ACKNOWLEDGMENTS

We thank P. C. Barnard of the British Museum and D. Furth of the Museum of Comparative Zoology for the loan of type materials. We also thank R. D. Waltz of the Indiana Department of Natural Resources for discussing the paper. This paper has been assigned Purdue Experiment Station Journal No. 13947.

LITERATURE CITED

- Eaton, A. E.** 1885 (1883-1888). A revisional monograph of recent Ephemeridae or mayflies. Trans. Linn. Soc. Lond. 2nd Ser.-Zool. 3:1-352.
- Edmunds, G. F., Jr.** 1974. Some taxonomic changes in Baetidae (Ephemeroptera). Proc. Entomol. Soc. Wash. 76:289.
- Kimmins, D. E.** 1934. Notes on the Ephemeroptera of the Godman and Salvin Collection, with descriptions of two new species. Ann. Mag. Nat. Hist. 14:338-353.
- Kluge, N.** 1992. Cuban mayflies of the family Baetidae (Ephemeroptera). 3. Subgenus *Fallceon* of the genus *Baetis* s.l. Zool. Zh. 71:38-48. [in Russian].
- McCafferty, W. P. and R. D. Waltz.** 1990. Revisionary synopsis of the Baetidae (Ephemeroptera) of North and Middle America. Trans. Am. Entomol. Soc. 116:769-799.
- Waltz, R. D. and W. P. McCafferty.** 1987. New genera of Baetidae from some Nearctic species previously included in *Baetis* Leach (Ephemeroptera). Ann. Entomol. Soc. Am. 80: 667-680.