

SHORT COMMUNICATION

New Synonyms For Three North American Ephemeroptera Species

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Our studies on the biodiversity and faunistics of North American Ephemeroptera species led to the recognition of the specific synonyms noted below. In each case, coloration, which was used to denote species in the absence of morphological differences, is shown to be intraspecifically variable. All material examined is deposited in the Purdue University Entomological Research Collection, West Lafayette, Indiana, U.S.A.

Callibaetis pictus (Eaton), 1871 [= *Callibaetis centralis* Peters, 1959] N. SYN.

Callibaetis centralis was described based upon adult specimens collected from a single location in Douglas County, Kansas (Peters, 1959). Peters (1959) noted that the species was "closely allied to *C. pictus*," with the two species differing only slightly in color, size, and wing venation. We examined specimens of *C. pictus* from the United States and Mexico, which included specimens reared from larvae. Based upon individual variability we observed, we consider *C. centralis* a variant of *C. pictus*. This species previously was shown to be highly variable by Lugo-Ortiz and McCafferty (1996), and in general, populations of species in the genus *Callibaetis* Eaton often exhibit considerable geographic variation (McCafferty and Waltz, 1990). Janice G. Peters (pers. comm.) confirmed that the late W. L. Peters also considered *C. centralis* to be conspecific with *C. pictus*, based on a comparison of type material done in 1982, but which was never published. Type specimens of *C. centralis* are now deposited at Florida A&M University, Tallahassee, Florida, U.S.A.

Material examined: one female adult, Colorado, Fremont Co., Canon City, 9-X-2001, W. P. & N. McCafferty; six female adults, Hidalgo, San Miguel, Regla, 19-VIII-1994, B. Kondratieff; one female adults, Idaho, Elmore Co., Snake R. at Glenn's Ferry, 2-VII-1996, G. F. Edmunds, Jr.; one female adult, Jalisco, Ferreria de Tula, Municipio de Tepalpa, Bosque de Pino, 3-III-2001, K. M. Lopez-Coreas; one adult, two larvae, South Dakota, Fall River Co., Hawkwright Cr. at Red Canyon, 7 mi. N. of U. S. 18, 12-VI-1975, W. P. McCafferty, B. L. Heath, A. V. Provonsha; one female adult, associated larval exuviae, Texas, Blanco Co., small spring at Pedernales Falls St. Pk., 6-V-1977, W. P. McCafferty, A. V. Provonsha, D. Morihara; one male adult, one female adult, three larval exuviae, Texas, Kerr Co., Robinson Cr. at Tex. Hwy. 16, 12 mi. N. of Medina, 6-V-1977, W. P. McCafferty, A. V. Provonsha, D. Morihara; three male adults, twelve female adults, three male adults, eight male subimagos, Utah, San Juan Co., Upper LaSal Cr., 3-IX-1946, G. F. Edmunds.

Nixe criddlei (McDunnough), 1927 [= *Nixe salvini* (Kimmins), 1934;
= *Nixe rosea* (Traver), 1935] N. SYNS.

Edmunds and Allen (1957) placed *N. rubroventris* (Traver) as a synonym of *N. rosea*, because specimens from a single California population of *N. rosea* ranged through the color differences of the two species (Bednarik and Edmunds, 1980). Traver (1935) used similar color differences to separate *N. rosea* and *N. criddlei*. Bednarik and Edmunds (1980) noted that *N. rosea* might be synonymous with the Mexican species *N. salvini*. We examined individual series of *N. criddlei* adults that varied in abdominal coloration. The range of variation included the characterizations that historically have been attributed to *N. salvini* and *N. rosea* (Kimmins, 1934; Traver, 1935).

Material examined: Two male adults, one female adult, one female subimago, one set subimago exuviae, Arizona, Coconino Co., Oak Cr., Oak Creek Canyon S. of Flagstaff at Banjo Bill Campgrounds, 8-V-1969, R. W. Koss, A. V. Provonsha; 49 male adults, one female adult, Colorado, Montrose Co., Crystal Cr. at Hwy 92, 11-VII-1962, D. W. Argyle; one male adult, Montana, Glacier National Park, 5-VIII-1947, F. C. Harmston.

Rhithrogena plana Allen and Chao, 1978 [= *Rhithrogena vitta* Allen and Chao, 1978] N. SYN.

Allen and Chao (1978) described two new species of *Rhithrogena* Eaton from Arizona that differed slightly in size and abdominal coloration, and both new species were collected together in at least one location. Series

of larvae collected from single populations, listed below, show gradations in size and color pattern that encompass the original descriptions of *R. plana* and *R. vitta*.

Material examined: Two larvae, New Mexico, Grant Co., Gila R., 31 mi. N. of Pinos Altos, 11-VII-1973, B. Stark; two larvae, New Mexico, San Miguel Co., Pecos R. just below Lisboa Springs Fish Hatchery, 1 mi. N. of Pecos, 31-VIII-1969, R. W. & D. T. Koss; 16 larvae, Nevada, Washoe Co., Galena Cr. at NV Hwy. 27, 21-IX-1957, G. F. Edmunds, Jr., R. K. Allen.

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Literature Cited

- Allen, R. K., and E. S. M. Chao. 1978. Mayflies of the Southwest: new species and records of Heptageniidae (Ephemeroptera). *The Pan-Pacific Entomologist* 54:311-315.
- Bednarik, A. F., and G. F. Edmunds, Jr. 1980. Descriptions of larval *Heptagenia* from the Rocky Mountain region (Ephemeroptera: Heptageniidae). *The Pan-Pacific Entomologist* 56:51-62.
- Edmunds, G. F., Jr., and R. K. Allen. 1957. A checklist of the Ephemeroptera of North America North of Mexico. *Annals of the Entomological Society of America* 50:317-324.
- Kimmins, D. E. 1934. Notes on the Ephemeroptera of the Godman and Salvin collection, with descriptions of two new species. *Annals and Magazine of Natural History Series* 10; 14:338-353.
- Lugo-Ortiz, C. R., and W. P. McCafferty. 1996. Contribution to the taxonomy of *Callibaetis* (Ephemeroptera: Baetidae) in Southwestern North America and Middle America. *Aquatic Insects* 18:1-9.
- McCafferty, W. P., and R. D. Waltz. 1990. Revisionary synopsis of the Baetidae (Ephemeroptera) of North and Middle America. *Transactions of the American Entomological Society* 116:769-799.
- Peters, W. L. 1959. A new species of *Callibaetis* from Kansas (Ephemeroptera: Baetidae). *Journal of Kansas Entomological Society* 32:173-175.
- Traver, J. R. 1935. Part II Systematic. In Needham, J. G., J. R. Traver, and Y.-C. Hsu. *The Biology of Mayflies*, pp. 239-739. Comstock, Ithaca, New York. xiv + 759 pp.