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Two new *Cincticostella* species from China with a larval key to species of the genus (Ephemeroptera: Ephemerellidae)

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Abstract

The larvae of *Cincticostella bifurcata* sp. nov. and *C. szechuanensis* sp. nov. have obvious and well-developed pro- and mesothoracic projections, which indicates that they belong to the ephemerellid genus *Cincticostella*. These larvae have unique characters within the genus. *Cincticostella bifurcata* sp. nov. has bifurcated abdominal tubercles on terga 5–8, and *C. szechuanensis* sp. nov. has no prominent, paired processes on the abdominal terga. The evolutionary trend of this genus is assumed to be a flattening and decrease in size of the body and a reduction or loss of the maxillary palpi. A key to all known larvae of the genus is provided.

Key Words: *Cincticostella*, Larva, New Species, China, Ephemerellidae

Introduction

Allen (1971) established the *Ephemerella* Walsh subgenus *Cincticostella* Allen based on the type species *Ephemerella nigra* Uéno 1928. Tshernova (1972) subsequently established and synonymized the genus *Asiatella* Tshernova, based on its having the same type species as *Cincticostella*. Allen (1980) followed Tshernova (1972) and recognized *Cincticostella* at the genus level. The group has received sporadic treatment since its original description (e.g., Allen 1975, Kang and Yang 1995, Yu 1998, Quan *et al.* 2002, Ishiwata 2003, Jacobus and McCafferty 2003, Kluge 2004, Jacobus *et al.* 2005, Jacobus and McCafferty 2008, Ogden et al. 2009). Larvae of the genus are easily recognized by having the antero-lateral angles of the prothorax projecting anteriorly and by having a pair of large, wide mesothoracic antero-lateral processes. Currently, twelve valid species are included in this genus group (Jacobus and McCafferty 2008): *C. braaschi* Jacobus and McCafferty, 2008, *C. colossa* Kang and Yang, 1995, *C. corpulenta* (Braasch, 1981), *C. elongatula* (McLachlan, 1875), *C. femorata* (Tshernova, 1972), *C. fusca* Kang and Yang, 1995, *C. gosei* (Allen, 1975), *C. indica* (Kapur and Kripalani, 1961), *C. insolta* (Allen, 1971), *C. levanidovae* (Tshernova, 1952), *C. nigra* (Uéno, 1928) and *C. orientalis* (Tshernova, 1952). Among them, five species have been found in China previously: *C. colossa* and *C. fusca* were described and figured by Kang and Yang (1995) from Taiwan, and *C. levanidovae* and *C. orientalis* were reported for Northeastern China (Yu 1998; Quan *et al.* 2002). *Cincticostella elongatula* was first reported from North China by Ulmer (1929), although later Ulmer (1935-1936) doubted its occurrence there.

In recent years, *Cincticostella* species have been collected frequently in Mainland China by some of us. These species include *C. femorata* (Tshernova, 1972), *C. gosei* Allen, 1975, *C. nigra* (Uéno, 1928), *C. insolta* Allen, 1971 and *C. fusca* Kang and Yang, 1995. Additionally, there are some unnamed species in our collections. Among them, one kind of larva is extremely unique, in that is has a significantly flattened body and legs, and its abdominal tubercles are distinctly bifurcated. LMJ examined Chinese specimens that have

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