



A New Mayfly Species of *Epeorus* (*Caucasiron*) from Southwestern China (Ephemeroptera: Heptageniidae)

PING CHEN, YU-YU WANG & CHANG-FA ZHOU

The Key Laboratory of Jiangsu Biodiversity and Biotechnology, College of Life Sciences, Nanjing Normal University, Nanjing 210046, China. E-mail: zhouchangfa@njnu.edu.cn

Abstract

The mayflies of the subgenus *Epeorus* (*Caucasiron*) are lotic aquatic insects in Heptageniidae. They are unique in the family because their gills form a disc, gills 1 are strongly expanded anteriorly and contiguous under thorax, gills 7 have a longitudinal fold and are contiguous under apex of abdomen and the pairs of gill 2–6 or 7 have a distinct projection on anterior-dorsal side of leading margin as well as imaginal tubular, diverging penis lobes with titillators. A new species, *Epeorus* (*Caucasiron*) *extraordinarius* sp. nov., collected from southwestern China, is described here. The strongly expanded anterior portion and the concave lateral margins of the nymphal head capsule, the color pattern of nymphs and imagos, and the structure of the male genitalia with relatively small titillators distinguish the new species from previously described members of the subgenus.

Key words: Ephemeroptera, *Epeorus*, *Caucasiron*, Heptageniidae, China

Introduction

Although the family Heptageniidae is the third largest family of Ephemeroptera and over 500 extant nominal species have been proposed (Barber-James et al. 2008), the Chinese fauna is poorly known and only beginning to be studied seriously (Zhou & Zheng 2001, 2003, 2004; Zhou & Braasch 2003; Tong & Dudgeon 2003; Zhou & Peters 2004). So far, less than 40 species have been described from this country, and most of these were reported from a single stage (Braasch 1999; You & Gui 1995; Tong & Dudgeon 2003). Compared to 74 species of Heptageniidae from Japan (Ishiwata 2001), 24 from Korea (Bae & Yoon 1997), 45 from the Russian Far East (Tshernova et al. 1986), and 114 from the entire Oriental Region (Soldán 2001), China must have many more species than presently known.

Historically, the genus *Epeorus* Eaton has been divided into seven subgenera or genera: *Belovius* Tshernova, *Epeorus*, *Iron* Eaton, *Ironodes* Traver, *Ironopsis* Traver, *Caucasiron* Kluge, *Alpiron* Braasch (Tshernova 1981; Kluge 1988, 1997, 2004; Hubbard 1990; Braasch 2006a). Among them, the subgenus *Caucasiron* is unique and specialized because its nymphs have a completely closed gill disc and each gill has a projection on its anterior margin (Kluge 1997). Wang & McCafferty (2004) and Webb & McCafferty (2008) did not recognize subgenera of *Epeorus* and Braasch (2006a) treated it as a subgenus of *Iron*. In this paper we follow Kluge (1997) and treat *Caucasiron* as a valid subgenus of *Epeorus*.

In a 2005 survey of Lei-Gong-Shan Natural Reserve in Guizhou Province several adults and many nymphs of Heptageniidae were collected. Among these is one new species of *Epeorus* (*Caucasiron*) which can be easily recognized based on the nymphal head, imaginal color pattern and shape of genitalia. The new species described below represents the first record of the subgenus from China.