



A new mayfly species of *Caenis* from headwater of Zijin Hill (Nanjing, Eastern China) (Ephemeroptera: Caenidae)

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Abstract

In the headwaters of several small streams of Zijin hill (Nanjing City) we found a new species of the genus *Caenis*. Herein this species is illustrated and described as *Caenis pycnacantha* **sp. nov.** Its main diagnostic characters include: in nymphs, it has “normal” body shape, each femur has a dark brown subapical marking, and the maxillary palpi have relatively long apical segments. In adults, the forceps have dense setae on the surface and four large spines at the apex and the antennae have a slightly expanded base of the flagellum.

Key words: Ephemeroptera, Caenidae, *Caenis*, New Species, China

Introduction

The mayflies (Insecta: Ephemeroptera) are crucial constituents of the detritus food chain in aquatic ecosystems. They are among the most important decomposers in fresh water, the earliest occupiers of head waters, small creeks, new or temporary ponds or streams (see Brittain 1982; Barber-James *et al.* 2008).

The Zijin Hill of Nanjing city (capital of Jiangsu province, eastern China, highest point about 450 m altitude) has several very small streams on the south and north slopes. Originally, this area was the imperial and national cemetery and now is a national park. The area is protected and the streams have not been disturbed for more than 100 years; their headwaters are very clean and usually have current all year although the water may be very shallow and occasionally disappears in some sections.

In our more than 20 years of collections from those streams, at least nine species in four families of Ephemeroptera have been found and identified: Baetidae, at least four species; Heptageniidae, one species; Leptophlebiidae, three species; Caenidae, one species (You *et al.* 1980; Gui *et al.* 1992; Gui & Lu 1999; Zhou & Braasch 2003; Li *et al.* 2006). Papers on the baetid species are in preparation, and a new species of Caenidae is described in this paper from nymphs and imago associated by rearing.

Caenis pycnacantha sp. nov.

Mature larvae (in alcohol): Body length 3.6–5.4 mm, caudal filaments 3.7–4.9 mm. Body generally pale to slightly pale brown or brown. Vertex dark brown with pale ecdysis suture. Ocelli pale, compound eyes dark black (Figs. 1, 12–13). Mouthparts: labrum slightly concave medially, and with dense short hair and spines on anterior margin and dorsal surface (Fig. 2). Mandibles: with long marginal setae on surface and seven to eight spines on inner margin. Left mandible (Fig. 3): outer incisor with three denticles while inner incisor with two; prosthema clavate, with long fine setae and two sharp bristles at apex. Right mandible (Fig. 4): both of the incisors with two denticles, the apex of prosthema represented by a tuft of branched setae. Maxillae (Fig. 5) with 3 obvious bristles at apex and scattered long, fine setae and spines along inner and outer margin. Maxillary palpi segment 2 is the shortest in the three segments (length ratio of them: 1: 0.7: 1.1); segment 1