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## Description of the final stadium larva of *Heliocypha perforata perforata* (Percheron), with discussion of the taxonomic characters of the larvae of the genus *Heliocypha* Fraser (Odonata: Zygoptera: Chlorocyphidae)

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### Abstract

The final stadium larva of *Heliocypha perforata perforata* is described and illustrated for the first time. It is characterized by having a row of filiform setae present laterally on distal half of prementum, 6-7 setae on the outer side of palpal lobe, very long lateral gills and distinct abdominal color pattern. The taxonomic characters of the larvae of the genus *Heliocypha* Fraser are discussed and summarized. *Heliocypha* larvae share a high similarity with *Rhinocypha* in general appearance and cannot be clearly distinguished from the latter in structure.

**Key words:** Odonata, *Heliocypha perforata perforata*, *Heliocypha* Fraser, larva, taxonomic characters

### Introduction

*Heliocypha perforata* (Percheron, 1835) is a small colorful stream damselfly, divided into three subspecies (Fraser, 1934; Tsuda, 2000): (1) *H. p. beatifica* (Fraser, 1927), distributed in India; (2) *H. p. limbata* (Selys, 1879), distributed in China, India, Laos, Myanmar, Malaysia and Thailand; and (3) *H. p. perforata* (Percheron, 1835), distributed in China, Laos and Vietnam. To date, only a penultimate stadium larva of *H. p. perforata* from Hong Kong has been illustrated and very briefly described (Dudgeon, 1999). During field work in Nanjing County, southern Fujian, in recent years, eight final stadium larvae of *H. p. perforata* were collected and carried back to the laboratory, measured and photographed. Their identification was confirmed by comparison with the exuviae from which adults had just emerged, observed and collected in the field at the same time. In the present paper, the final stadium larva of *H. p. perforata* is described and illustrated for the first time, and, after analysis of the common morphological characters of the four known larvae (*H. bifurcata*, *H. bisignata*, *H. fenestrata* and *H. p. perforata*), the taxonomic characters of the larvae of the genus *Heliocypha* Fraser are discussed and summarized.

### Description of the final stadium larva

**Specimens studied.** 5 final stadium larvae: 4♂, 1♀, 22.IV.2012, Nanjing County (24°38' N, 117°11' E), Fujian Province, China, Qi-han XU leg. 3 final stadium larvae: 2♂, 1♀, 27.IV.2014, the same locality, Qi-han XU leg. All specimens are deposited in Department of Garden and Horticulture, Zhangzhou City University.

**Description.** Body small, short and robust. General appearance and color pattern as shown in Fig. 1.

**Head:** Pentagonal in shape, triangular anteriorly. Compound eyes small, protruding laterally. Postocular lobe (Fig. 2) roughly rounded, with a row of robust irregular spines on the outer edge and a robust black process on the middle of the sub-marginal zone. Antennae (Fig. 3) 7-segmented, filiform, around 3.5 mm in length, length ratio of segments as follows: 1: 0.35 : 0.36 : 0.22 : 0.24 : 0.11 : 0.09; scape widest and longest, with two dark brown bands, one at base and another toward distal end; pedicel banded same as scape, distal band black; remaining segments with blurred bands. Prementum (Fig. 4) longer than wide, in a ratio of 1.5 : 1, extending posteriorly near to level of

Two examples can show the difficulty in differentiating between larvae of *Heliocypha* and *Rhinocypha*: (1) Fraser (1934) once summarized the characters of the larvae of *Rhinocypha*, which includes both *Heliocypha* and *Rhinocypha* today, and the characterization he gave agrees closely with the characters of *Heliocypha* larvae listed above; (2) Kumar & Prasad (1977) provided a key to the larvae of *Rhinocypha* from Garhwal Hills, and the only difference between *H. biforata* on the one hand and *R. unimaculata* Selys and *R. trifasciata* Selys on the other was the body length.

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