

## GENETICALLY DETERMINED COLOUR POLYMORPHISM IN LARVAE OF *CERIAGRION CHAOI* (INSECTA: ODONATA: COENAGRIONIDAE)

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**ABSTRACT.** — Although genetically determined colour polymorphism is quite common in adult odonates, there is no report on this phenomenon in the larvae of any odonate species up to now. This paper reports, for the first time, the occurrence of two colour morphs (dark and brown) in both the male and female larvae of the damselfly *Ceriagrion chaoi* Schmidt. The species identity of these colour morphs was confirmed by the partial sequences of 16S rRNA gene as well as observation on emergence. Only a single invariant haplotype was observed, which differed from a congeneric species *Ceriagrion cerinorubellum* (Brauer) by 39 base pairs. The partial sequences of 16S rRNA gene constitute the first report for these damselflies. Available data indicate that environment/habitat does not seem to play a role in the determination of the colouration in the larvae of *C. chaoi*. The inheritance and significance of the colour polymorphism however remain to be verified.

**KEY WORDS.** — colour polymorphism, odonate larva, damselfly, *Ceriagrion chaoi*, *Ceriagrion cerinorubellum*, 16S rDNA sequences

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### INTRODUCTION

Female-limited colour polymorphism is quite common in adult odonates. It has been documented for more than hundred species, comprising the suborders Anisoptera and Zygoptera (Fincke et al., 2005). Two examples are the trimorphic females in the blue-tailed damselfly *Ischnura elegans* (Vander Linden) in Europe (Sánchez-Guillén et al., 2005) and the common bluetail *Ischnura senegalensis* (Rambur) in Asia and Africa (Orr, 2005; Tan et al., 2010). By contrast, male-limited polymorphisms are not so common (van Gossum et al., 2008).

Generally odonate larvae are green or brown, resembling or blending with their backgrounds (Corbet, 1999). A particular

case of polymorphism in odonate larvae is the strip pattern of first instars of Aeshnidae, which seems to serve as a disruptive colouration (Rowe, 1991). Some larvae, when they moult, may be able to take on the predominant colour of their backgrounds (Silsby, 2001). An example is the dragonfly *Epiophlebia superstes* Selys (Eda, 2007; Tabaru, 1984). As far as known, there is no published record or encounter of the occurrence of genetically determined colour polymorphism in odonate larvae (Matti Hämäläinen, pers. comm., 2008).

*Ceriagrion chaoi* is a member of the zygopteran family Coenagrionidae (Silsby, 2001). It occurs in Peninsular Malaysia, Singapore, Thailand and Myanmar. In Peninsular Malaysia it is rare and local in open habitats (Orr, 2005;