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Larvae of *Cueta sauteri* (Esben-Petersen) and *Myrmeleon bore* (Tjeder) (Neuroptera, Myrmeleontidae): description and behavioral notes

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Abstract

Antlion larvae of *Cueta sauteri* (Esben-Petersen) and *Myrmeleon bore* (Tjeder) from mainland China were collected in the field and reared to adults in the laboratory. Larval morphology of each species was described and complemented with behavioral observations. Their most important diagnostic characteristics are head capsule markings, mandibular length, mandibular teeth length, distance between mandibular teeth, bristle number between the distal mandibular tooth and apex of the mandible, morphology of labial palpi and antennae, peduncle of mesothoracic spiracle and the arrangement of digging bristles. Larvae of these two species construct similar conical pits and wait for prey at the bottom of the traps.

Key words: Larval morphology, antlion, pit building behavior, mainland China

Introduction

The family Myrmeleontidae (Neuroptera) comprises 1,522 species recorded worldwide (Stange 2004). Larval morphological characters have played an important role in the taxonomy of Myrmeleontidae. Stange (2004) lists ten larval keys for Myrmeleontidae (one key to tribes and nine keys to genera). But the study of larvae of antlions is still insufficient, as most species of antlions lack a detailed description of their larvae.

Cueta comprises 77 known species (Stange 2004) distributed in Africa and Eurasia. Three species have been found in China: *C. lineosa* (Rambur, 1842), *C. plexiformia* Krivokhatsky, 1996, and *C. sauteri* (Esben-Petersen, 1913). Previously, the larvae of *C. sauteri* from Taiwan have been briefly accounted for by Stange *et al.* (2003). However, larval features were not described in detail and there were no clear photographs of corresponding larval characters.

Myrmeleon, as the largest genus of Myrmeleontidae, comprises 177 known species and it is widely distributed in the world. Nineteen species have been recorded from China, including seven species collected from Taiwan. The larvae of six Taiwanese species, *M. alticola* Miller & Stange, *M. heppneri* Miller & Stange, *M. persimilis* Miller & Stange, *M. punctinervis* Banks, *M. taiwanensis* Miller & Stange, and *M. wangi* Miller & Stange, have been briefly described (Stange *et al.* 2003). Wang and Li (2011) described the larvae of *M. ferrugineipennis* Bao *et al.* 2009 and *M. trivialis* Gerstaecker, 1885 collected from Guizhou, China. At present, the larval morphology of *M. bore* (Tjeder, 1941) from mainland China has not been comprehensively described.

Larval morphology of *M. bore* from Europe and Japan has been described by several authors. The head capsule markings and labial palpi of *M. bore* from north-Europe and Japan have been depicted (Friheden 1973; Matsura 1987b). Nicoli Aldini (2007) described the larval morphology of *M. bore* collected in northern Italy. He provided scanned electronic micrographs of several characteristics, but no color photos were available. Krivokhatsky (2011) provided the photos of head and labial palpi. However, details of mandibular teeth, the bristle between distal mandibular tooth and apex of the mandible, the details of antennae, peduncle of mesothoracic spiracle and digging bristles of *M. bore* larvae were not described. The life cycle, foraging behavior, construction of the pits, oviposition and behavioral response to starvation of *M. bore* larvae have been reported (Matsura 1987a; Gepp 1989; Matsura *et al.* 1991; Matsura & Murao 1994; Matsura *et al.* 2001; Matsura 2003).

Because of the limited information on *Cueta sauteri* and the fact that the morphological characters of

Mirmoayedi 2002; Mirmoayedi 2003; Krivokhatsky 2011). So we conclude that the number of bristles between the distal tooth and the apex of the mandible should be a distinguishing trait between the larvae of *Myrmeleon* and *Cueta*.

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