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## Third instars larvae of *Gepus gibbosus* Hölzel, 1968 (Neuroptera: Myrmeleontidae)

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### Abstract

The third instar larva of *Gepus gibbosus* Hölzel, 1968 are described and figured for the first time using light and scanning electron microscopy. The females were collected from Derik, Mardin Province, Turkey and maintained in the laboratory. The morphology of different parts of the larva such as head, mandibles, and antennae are described and illustrated. *G. gibbosus* is new for the Turkish fauna.

**Key words:** Neuroptera, *Gepus gibbosus*, larvae, scanning electron microscope (SEM), Turkey

### Introduction

Larval characters are of notable importance in systematic of the family Myrmeleontidae (Stange & Miller 1990; Stange 1994, 2004; Badano & Pantaleoni 2014). Potentially they are a considerable tool to fully resolve the complex phylogeny of this group, as already demonstrated for other families of Neuroptera (Principi 1977). However the inadequate state of knowledge about most genera and species is a serious obstacle to perform a complete analysis including the preimaginal stages. The study of the larvae is also necessary to obtain satisfactory information regarding the ecological requirements of these insects, a further poorly known topic, albeit of noticeable interest due to their potential role as bio-indicators in arid environments, including endangered habitats such as coastal sand dunes. Hölzel (1983) revised the genus *Gepus* recognizing 6 valid species (Stange 2004) distributed in Sahara Desert, Saudi Arabia, and the Middle East. Larvae of two species was collected by Miller and Stange in Tunisian sand dunes but, despite that the genus was inserted in the diagnostic key of Stange (2004), was never described. Very recently the larva of the most widespread species *Gepus invisus* Navás, 1912, was described and compared with a species of the near genus *Solter* (Badano *et al.*). In this paper the third instar larva of *Gepus gibbosus* Hölzel, 1968, is described and compared with the congeneric one.

### Material and methods

The gravid females of *G. gibbosus* (Fig. 1) were collected from Derik, Mardin Province, Turkey, using nets or light traps between 2010 and 2012. Females were individually isolated in glass boxes of 10x5x5 cm. They laid 4-6 eggs on the bottom of box. Larvae were placed in glass boxes that were filled with soil brought from the localities where the gravid females were collected. The larvae were kept in laboratory. They were fed an assortment of insects such as ants and fly larvae. Observations and study were made with an Olympus SZX7 Stereomicroscope and photographed with an Olympus Digital Camera mounted on it. Third instar larvae were examined and measured with a Quanta 250 FEG scanning electron microscope (SEM).

(Devetak *et al.* 2013). There are at present no data on the larval morphology of *G. gibbosus*. Devetak *et al.* (2010a) mentioned chemoreceptors on maxillae and both surfaces of mandible, even on mandibular teeth of *Neuroleon microstenus* (McLachlan, 1898) are also present on *G. gibbosus*. In addition, we have observed sensilla trichodea on surface of the abdomen (see Fig.14.)

**Abbreviations:** ant—antenna; cl—claw; dbrst—digging bristle; lp—labial palp; mto1—mandibular tooth 1; mto2—mandibular tooth 2; mto3—mandibular tooth 3. sc—scolus; sco—sensillum coeloconium; sbs—sensilla basiconica; smt—submedian tooth; sp—spiracle; stm—stemmata; str—sensilla trichodea;

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