



## Larval morphology of the antlion *Neuroleon microstenus* (McLachlan, 1898) (Neuroptera, Myrmeleontidae), with notes on larval biology

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### Abstract

Larval stages of the Mediterranean antlion species *Neuroleon microstenus* (McLachlan) are described and illustrated. Larvae do not build pitfall traps. They pursue prey by digging in sand backwards and waiting a prey. Second and third instar larvae move backwards or forwards on sand surface, whilst first instar larvae only forwards. Characteristic for the larvae of *N. microstenus*—like for other non-pit-builders—are prominent eye tubercles and sparse mandibular bristles. On the abdominal tip two bulges occur, each with four digging bristles. On the dorsal side of the head of second and third instar larvae black pigmentation occur forming “V” mark. Campaniform sensilla, sensilla coeloconica and sensilla basiconica are recognized for the first time in antlion larvae.

**Key words:** Larvae, rearing, sensilla coeloconica, sensilla basiconica, campaniform sensilla

### Introduction

Antlions (Neuroptera: Myrmeleontidae) with about 2000 described species represent the largest family of lacewings. Myrmeleontidae occur on all continents and most large islands of the world, further emphasizing their success which is attributed largely to their colonization of sand habitats (Mansell 1996). The genus *Neuroleon* Navás, 1909 includes about 120 valid species and is confined to Africa, southern Europe and large parts of Asia (Hölzel 1986; Aspöck *et al.* 2001). It is assumed that larvae of all *Neuroleon* species live in sand without constructing pits (Gepp & Hölzel 1989). In Europe there are only 8 species of *Neuroleon*, and knowledge of their ecology and distribution—as well as for non-European *Neuroleon* species—is poor; usually only single specimens have been collected in European countries. The exception in this respect is France, where Steffan (1971, 1975) studied five species of the genus in detail. In his paper Steffan (1975) erroneously describes larvae of *Neuroleon distichus* (Navás, 1903) under the name *Neuroleon microstenus*. *Neuroleon microstenus* (McLachlan, 1898) is a polycentric Mediterranean species (Aspöck *et al.* 2001). Adults of *N. microstenus* can easily be distinguished from other *Neuroleon* species following key-characters given by Aspöck *et al.* (1980), principally by a small spot on fore wings, and the abdomen of male being much longer than the wings. Till now, the morphology of *Neuroleon microstenus* larvae has not yet been described comprehensively. Previously, the first instar larva was depicted by Gepp (1974) without detailed description. Due to the fact that only scarce information is available concerning the species, we present larval morphology and biology of this species originating on the basis of specimens collected in Istria, Croatia.

### Material and methods

Antlion larvae were collected from surroundings of Rovinj, Istria, Croatia (N 45° 3.9', E 13° 39.5'). Single specimens of first instar larvae were collected by hand in September 2007 and second instar larvae in June 2005 and June 2006. Second instar larvae of *N. microstenus* collected in June 2005 and June 2006 occurred