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Acanthagrion viridescens (Odonata: Coenagrionidae): description of the final larval stadium and biological notes

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Abstract

The development of the nymphal stages of *Acanthagrion viridescens* Leonard was examined under laboratory conditions. Based on specimens collected in Minas Gerais state (Brazilian Southeastern Region), we described and illustrated the last-instar nymph and illustrated the egg and other nymphal stages. The nymphs of *A. viridescens* went through 11 instars, each of them with an average duration of approximately 13 days. The combinations of the following characteristics distinguish the last-instar nymph of *A. viridescens* from congeners: prementum with 2+1 setae in each side; labial palp with six apical denticles; mandibular formula L 1+2 3 4 5 y a, R 1+2 3 4 5 y- a b; presence of trifid spine in the ventral distal region of the tibia and in the tarsi; format of the male and female gonapophyses; and the distinctive pattern of the tracheae in the caudal gills. This also represents the first record of this species from southeastern Brazil.

Key words: damselflies, aquatic insects, life cycle, taxonomy

Introduction

The Neotropical genus of damselflies *Acanthagrion* Selys, 1876 has 40 described species (Garrison & von Ellenrieder 2014), and its distribution ranges from south-central United States (Texas) to central Argentina. These insects normally inhabit temporary pools, ponds and slow backwaters of streams and rivers (von Ellenrieder & Lozano 2008, Garrison *et al.* 2010). Currently, only 11 species of *Acanthagrion* have their nymphal stages described, *A. ablutum* Calvert, 1909; *A. adustum* Williamson, 1916; *A. aepiolum* Tennessen, 2004; *A. apicale* Selys, 1876; *A. ascendens* Calvert, 1909; *A. fluviatile* (De Marmels, 1984); *A. gracile* (Rambur, 1842); *A. hildegarda* Gloger, 1967; *A. indefensum* Williamson, 1916; *A. lancea* Selys, 1876 and *A. quadratum* Selys, 1876 (Pessacq *et al.* 2005, Geijskes 1943, Lozano *et al.* 2007, Westfall & May 1996, Geijskes 1941, De Marmels 1990, 1992, Anjos-Santos *et al.* 2011, Muzón et. al. 2001, Novelo-Gutiérrez 2009).

Acanthagrion viridescens Leonard, 1977, was described based on adult males and females collected at the Madeira River, near the Bolivian border in the county of Porto Velho, Rondônia State, Brazil. It belongs to a group of related species named the *viridescens* group, which range from the Colombian Andes through Ecuador, Peru, and Bolivia to the lowlands of Paraguay and southeastern Brazil (Leonard 1977). However, the immature stages of this species remained unknown (Lencioni 2006).

Describing the early instars of Odonata species is important to provide data for comparative ontogenetic studies and to make possible the identification of small nymphs in the field (Corbet 2002). Thus, by providing the description of the last-instar nymph of *A. viridescens* and illustrating all earlier stages attempt to fill this knowledge gap. Furthermore, by evaluating the developmental time of these stages under laboratory conditions, we provide new information that may have ecological, genetic, taxonomic and/or applied implications (e.g. biological control of mosquitoes as demonstrated at Saha *et al.* 2012).

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