



## Description of the pupa and male of *Paryphoconus grandis* Macfie (Diptera: Ceratopogonidae)

MARÍA M. RONDEROS<sup>1</sup>, PABLO I. MARINO<sup>2</sup> & FLORENTINA DÍAZ<sup>2</sup>

<sup>1</sup>División Entomología, Museo de La Plata, CONICET-CEPAVE, Paseo del Bosque s/n, 1900 La Plata, Argentina.

E-mail: ronderos@fcnym.unlp.edu.ar

<sup>2</sup>División Entomología, Museo de La Plata, Paseo del Bosque s/n, 1900 La Plata, Argentina.

E-mail: pmarino@fcnym.unlp.edu.ar, mfdiaz@fcnym.unlp.edu.ar

### Abstract

The pupa and male of *Paryphoconus grandis* Macfie are described for the first time. Pupae were collected from the edge of a stream margin in Corrientes province, Argentina and reared to adults. Pupae and adults are illustrated and photographed. The species is known from Mexico to northern Argentina.

**Key words:** Ceratopogonidae, *Paryphoconus grandis*, pupa, male, Neotropical region

### Introduction

The predaceous midges of the genus *Paryphoconus* Enderlein are exclusively in the New World and include 40 medium-sized to large species (Borkent & Spinelli, 2007), 38 of which were reviewed by Spinelli & Wirth (1984). Subsequently, two new species were described by Spinelli (1998). Recently, Mauad & Spinelli (2011) described a new species from Peru. Only six species inhabit Argentina: *P. anomalicornis* Kieffer, *P. misionensis* Spinelli, *P. nigripes* Macfie, *P. paranaensis* Spinelli & Wirth, *P. taragui* Spinelli and *P. grandis*. The latter was recently recorded from the Argentinian province of Corrientes by Spinelli *et al.* 2012 (pers. com.). Of the 41 species of this genus, pupae of only three have been described: *P. oliveirai* Lane (Ronderos *et al.* 2007), *P. mayeri* Wirth, and *P. flavidus* (Johannsen) (incomplete description by Mayer, 1959).

*Paryphoconus grandis* Macfie is a widely distributed species. The original description of this species from Brazil is based only on female specimen. The purpose of this paper is to describe the pupa and the male of *P. grandis* and redescribe the female and provide observations of its biology.

### Material and methods

The pupae of *P. grandis* were collected by pipette from water at the edge of a stream margin of arroyo Vega in Corrientes province, Argentina. The pupae were placed individually in vials with a drop of water and transported to the laboratory. Observations were made daily until adult emergence. Adults were allowed to sclerotize for 24 hours before being preserved to ensure their pigmentation was complete. Pupal exuviae and adults were examined using a binocular compound microscope after being slide-mounted in Canada balsam following the technique described by Borkent and Spinelli (2007). Pupal exuviae were mounted ventral side up. Ink illustrations were made with a camera lucida. Photomicrographs were taken with a digital camera Micrometrics SE Premium, through a Nikon Eclipse E200 microscope.

The distribution map was traced from Google Earth and the track was kept in KLM format. Afterwards, the format was turned into .plt through GPS Visualizer site ([http://www.gpsvisualizer.com/gpsbabel/gpsbabel\\_convert](http://www.gpsvisualizer.com/gpsbabel/gpsbabel_convert)) and drawn on OziExplorer 3.95.4 version.