



New Neotropical species of the genus *Austrotinodes* Schmid (Trichoptera: Ecnomidae)

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Abstract

Six new species of *Austrotinodes* Schmid (Trichoptera: Ecnomidae) from the Neotropics are described: *A. abrachium* (Brazil), *A. belchioris* (Brazil), *A. boliviensis* (Bolivia), *A. cressae* (Venezuela), *A. longispinum* (Brazil), and *A. taquaralis* (Brazil). Illustrations of male genitalia are provided. These additions bring the total world fauna of *Austrotinodes* to 55 species.

Key words: Trichoptera, caddisflies, *Austrotinodes*, new species, Neotropical

Introduction

Schmid (1955) established the genus *Austrotinodes* to accommodate 2 new species from Chile; 2 species previously described by Navás (1934) were also included. In 1973, Flint reviewed the genus and described 4 new species, including new records from Mexico and Central America. Flint & Denning (1989) also reviewed the genus, providing new records from Costa Rica, and described 14 new species from elsewhere in the Neotropics. Bowles (1995) described the first species from the United States. Additional species descriptions and distributions have been provided by Schmid (1958, 1964), Flint (1969, 1983, 1996), Kumanski (1987), Botosaneanu (1990), Muñoz-Quesada & Holzenthal (1993), Angrisano (1994), and Flint & Sykora (2004). Up to and including Flint & Sykora (2004), *Austrotinodes* had only been recorded in the Neotropical or southern Nearctic biogeographic regions. Cartwright (2009) recorded the genus for the first time in Australia and described 11 new species, bringing the total world fauna to 49 species. Of the 11 Australian species, 4 display close similarities with some of the Neotropical species, including the type species, *A. latior* Schmid; these similarities may be indicative of a Gondwanan origin (Cartwright 2009). In a recent phylogenetic analysis (Johanson & Espeland 2009), *Austrotinodes* was consistently monophyletic within the family Ecnomidae. In this paper, we describe 6 new species from Bolivia, Brazil, and Venezuela.

Larvae have been collected in deep pools with coarse substrate, but most likely are tube-dwellers occurring in the sand or gravel of stream bottoms or on rocks and large boulders (Flint 1973, Bowles 1995). Larvae construct elongate, flimsy tubes composed of sand, rock fragments and silk (Flint 1973, Wiggins 1996). Larval foods are unknown (Flint *et al.* 1999). Prepupae and pupae have been collected on the underside of rocks in riffles or sandy rocky streams (Flint 1973).

Morphological terminology used for male genitalia follows that of Flint & Denning (1989). For simplicity, paired structures are discussed in the singular. Procedures for specimen preparation followed those explained in detail by Blahnik *et al.* (2007). For specimen examination and illustration, cleared genitalia were placed in a watch glass with glycerin and a small amount of cotton. Cotton strands held the genitalia in place and allowed structures to be viewed in precise lateral, dorsal, ventral, and caudal positions. Genitalia were examined with an Olympus BX41 compound microscope at 250–500 X magnification. Structures were traced in pencil with the use of a *camera lucida* (drawing tube) mounted on the microscope. Pencil sketches were then scanned (Fujitsu ScanSnap S1500M scanner), edited in Adobe Photoshop (v. 9.0.2, Adobe Systems Inc.),