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Redescription of *Leptohyphes cornutus* Allen, 1967 (Ephemeroptera: Leptohyphidae) and description of three related new species

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Abstract

Leptohyphes cornutus Allen from Brazil (Santa Catarina) and Misiones, Argentina is re-studied from new material and newly diagnosed as follows: tubercles on head (two pairs), pronotum (two pairs, anterior pair very small), and mesonotum (two pairs), abdominal terga without paired tubercles, nor remnants of them; fore femur length/maximum width, 1.4–1.8; tarsal claws denticulation 4–11+1; hind wing pads present in females; gill formula 3/10/8/8/5. Three new species are described from the nymphal stage: **1)** *Leptohyphes airuoca* **sp. nov.** from Minas Gerais and Rio de Janeiro (Brazil) characterized by: **i)** two paired tubercles on head, two pairs on pronotum, and one pair on mesonotum, abdominal terga VI–IX with single medial tubercle projecting from hind margin; **ii)** fore femur length/maximum width, 1.7–2.0; **iii)** tarsal claws denticulation 4+0; **iv)** hind wing pads absent in female; **v)** gill formula 3/9/9/7/6. **2)** *Leptohyphes cornutillus* **sp. nov.** from Espírito Santo (Brazil), with: **i)** paired tubercles on head (two pairs), pronotum (two pairs, anterior pair very small), and mesonotum (three pairs), abdominal terga with remnants of paired tubercles on hind margin (blunt and short undulations in dorsal view); **ii)** fore femur length/maximum width, 2.1–2.3; **iii)** tarsal claws denticulation 6+1; **iv)** hind wing pads present in females; **v)** gill formula 3/11/9/9/6. And **3)** *Leptohyphes nebulosus* **sp. nov.** from Espírito Santo (Brazil), with: **i)** two paired tubercles on head, one pair on pronotum, and one pair on mesonotum, abdominal terga VI–VII with paired submedian tubercles on hind margin; **ii)** fore femur length/maximum width, 1.6; **iii)** tarsal claws denticulation 5+1; **iv)** hind wing pads present in females; **v)** gill formula 3/9/9/9/6.

Key words: aquatic insects, Atlantic Forest, South America, mayflies, taxonomy

Introduction

The genus *Leptohyphes* Eaton, 1882 (Ephemeroptera: Leptohyphidae) is represented by more than 30 described species, distributed in South and Central America, including the Antilles, and North America. Of these, 22 are reported from South America, but only six have been recorded from Brazil (Dias *et al.* 2007a, b). *Leptohyphes* was originally described from a female imago (Eaton 1882), posteriorly Kluge (1992) described the nymphal and egg stages, finally Molineri (2003) described the male imago and revised the South American species, and Baumgardner & McCafferty (2010) revised the North and Central American species.

Among the South American species, *Leptohyphes cornutus* Allen, 1967 is remarkable due to the presence of paired tubercles on head and thorax (Molineri 2003, Dias *et al.* 2007a, b). This species was described based on a single immature nymph from the State of Santa Catarina, Southern Brazil (Allen, 1967). Later, Molineri (2003) redescribed the nymphs and described the adults (male and female) based on material from Argentina (Misiones) and Brazil (Rio de Janeiro, Santa Catarina and Goiás states). Dias *et al.* (2007a, b) expanded the known distribution of the species to Southeastern Brazil, states of Espírito Santo, São Paulo and Minas Gerais. Notably, with the exception of the report from Goiás (Brazilian Savannah), all remaining records are from the Atlantic Forest, one of

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