The *Trichomycterus* (Siluriformes: Trichomycteridae) from rio Doce, Southeastern Brazil: integrative taxonomy sheds light on species diversity and distribution patterns

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The identification of *Trichomycterus* species at rio Doce is a difficult task as local species diversity and limits are less understood, deserving further investigation. Morphological diagnosis of the three species recorded from rio Doce and distribution limits are herein revised. We recognized the following morphologically distinct *Trichomycterus* from rio Doce: *Trichomycterus alternatus*, from lower portions of rio Doce at Espírito Santo and eastern Minas Gerais; *T. pradensis*, from coastal tablelands at northern Espírito Santo and southern Bahia, with limits on western portions of middle rio Doce basin, and *T. argos*, from mountain portions along southern portion of rio Doce; the latter recognized as a member of *Trichomycterus brasiliensis* species group. Additionally, an unnamed *Trichomycterus* species was found on upper rio Piracicaba sub-basin differing from congeners at rio Doce by asymmetric or unpaired supraorbital sensory pore S6 (vs. symmetric, paired S6); 6-7 branched pectoral fin rays (vs. 8 in *T. pradensis*); large eyes, 15-17% in Head Length (vs. small, 8-10% in *T. argos*); first pectoral fin ray in a long filament, 20-23% in pectoral fin length (vs. short, less than 15%); high caudal peduncle depth, 11-14% in Standard Length (vs. small, less than 11%) and 38 vertebrae (vs. 37 or less). The difficulties regarding *Trichomycterus* taxonomy are the wide variety of coloration patterns and overlap on some external morphological features among populations. In order to check species identity and their limits, an integrative taxonomic study was taken. Barcoding DNA mitochondrial gene Cytochrome C Oxidase Subunit I (COI) nucleotide sequences were generated for identification of *T. alternatus* (3 haplotypes), *T. argos* (3), *T. pradensis* (6), and also from populations on headwaters along the Serra do Espinhaço at upper rio Piracicaba (3), rio Santo Antônio (2) and rio Corrente Grande (2) river basins. The generated sequences presented 669 base pairs (bp), resulting in a final matrix composed by 32 haplotypes. The phylogenetic tree with maximum-likelihood (ML) recovered the monophyly of all *Trichomycterus* species with high support and minimum genetic distance of 4%, identifying the seven haplotypes of gene COI from lineages along Espinhaço formation, confirming the presence of a single potentially new *Trichomycterus* along upper rio Doce. The distribution patterns of such species is congruent with vicariant events promoted by isolation of river stretches between Dom Silvério group and the Espinhaço escarpments. The tectonic history of Araçuaí belt, at southern Serra do Espinhaço, molded the hydrographic basin by abrupt inflection of upper rio Doce channel,

isolating a population at upper rio Piracicaba and rio Santo Antônio sub-basins. Integrative taxonomic studies, together with geological evidence, contribute to clear the difficulties in recognition of taxonomic complex species, representing an important tool for solving the problems of species identification at rio Doce basin.
Key words: Taxonomy; Systematic; Freshwater; Northeastern Mata Atlântica; cambeva.

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Os *Trichomycterus* (Siluriformes: Trichomycteridae) do rio Doce, Southeastern Brazil: taxonomia integrativa traz uma luz a diversidade de espécies e padrões de distribuição

A identificação das espécies de *Trichomycterus* no rio Doce é uma tarefa difícil pois tanto a diversidade local desses peixes como os respectivos limites de distribuição são mal conhecidos, necessitando maiores investigações. São reconhecidas as seguintes espécies de *Trichomycterus* no rio Doce: *Trichomycterus alternatus*, from lower portions of rio Doce at Espírito Santo and eastern Minas Gerais; *T. pradensis*, from coastal tablelands at northern Espírito Santo and southern Bahia, with limits on western portions of middle rio Doce basin, e *T. argos*, da sub-bacia do rio Casca, nas porções montanhosas ao sul da bacia do rio Doce; esta última reconhecida como uma espécie do grupo *Trichomycterus brasiliensis*.