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***Colydodes flavisetis* sp. nov. (Coleoptera, Zopheridae, Colydiinae), new species from southeastern Brazil with an updated key to the species of the genus**

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Abstract

The species *Colydodes flavisetis* sp. nov. from southeastern Brazil, at the Biological Station of Boracéia, Salesópolis, São Paulo, is described and illustrated, raising *Colydodes* diversity from 7 to 8 known species. An updated key to the species of the genus is given.

Key words: Estação Biológica de Boracéia, taxonomy, new species

Resumo

A espécie *Colydodes flavisetis* sp. nov. do sudeste do Brasil, da Estação Biológica de Boracéia, Salesópolis, São Paulo, é descrita e ilustrada, elevando a diversidade de *Colydodes* de 7 para 8 espécies conhecidas. Uma chave atualizada para a identificação das espécies do gênero é fornecida.

Introduction

The specimen described in this work was found by accident, while the first author was checking if a Cerambycidae larva collected by him at Estação Biológica de Boracéia (an Atlantic tropical rainforest biological station in São Paulo state) was still alive six months after its collection. A small beetle that was found on the rotting log substrate was collected along with the Cerambycidae larva. Immediately, the specimen was captured and fixed in alcohol 70° for later identification. The *Colydodes* specimen was most likely collected as an immature and metamorphosed throughout the months. However no evidence of immature stages (such as larval or pupal exuviae) was found.

The genus *Colydodes* Motchulsky, 1855 belongs to the subfamily Colydiinae (Zopheridae) and was previously composed of seven Neotropical and Australasian species (Ivie & Ślipiński, 1989). The species of the genus are easily recognized by the cylindrical body form, the paired, salient, globose tubercles on the anterior margin of pronotum, and the complex canal system on the pronotal disc that includes a complete transverse canal behind the anterior tubercles (Ivie & Ślipiński, 1989).

The nomenclatural and taxonomic problems of the group began as a result of the lack of a written genus description by Motchulsky (1955) and the later loss of the type specimen. Following Motschulsky, other authors described a handful of new species and proposed new combinations (e.g., Pascoe, 1860; Sharp, 1894; Hetschko, 1930; Hinton, 1935, 1936). The nomenclatural problems were rectified in a revision of the genus conducted by Ivie and Ślipiński (1989), in which a neotype for the lost Motchulsky type was designated, one lectotype was designated, three synonymies were proposed, and two new species were described.

Material and methods

The genitalia of the specimen used in this study were dissected in 70% ethanol. Then the single specimen was

mounted on a black triangle and deposited into the Museum of Zoology of the University of São Paulo (MZSP). The genitalia are preserved in a glycerine-filled micro-vial pinned beneath the specimen.

The images were taken using a Zeiss AxioCam MRc5 camera mounted on a Zeiss Discovery V12 dissecting microscope with Plan S 1.0x FWD 81mm lens and Zeiss ZEN Pro 2011 software. The image layers were montaged using Zerene Stacker Version 1.04 (64-bit) software. The final pictures were then resized and edited for color correction, contrast correction, and increased sharpness, using Adobe Photoshop CC. For lighting, a dome light (Kerr *et al.*, 2008; Fisher, 2012) was used. Rectangular black paper card pieces were placed at a right angle in the plasticine to create or enhance the shadows, and white paper strips were placed around the specimen, also on the plasticine, to emphasize the specimen edges and the setae (Ide-dos Santos, 2013). The genitalia drawings were made using Adobe Illustrator CS5. The 3D anaglyph images were made using Zerene Stacker and Adobe Photoshop CC.

Morphological terms are based on Lawrence *et al.* (2011) for general morphology and Ivie & Ślipiński (1989) for thorax and male genitalia.

In addition to comparison with the descriptions and drawings of Ivie & Ślipiński (1989) the new species was compared with the paratypes of *C. simplex* Ivie and Ślipiński, 1989, *C. peruviansis* Ivie and Ślipiński, 1989 and exemplars of other species in the Montana Entomology Collection (MTEC), with the type material of *C. batesii* (Pascoe, 1863), *C. mammillaris* (Pascoe, 1860) and *C. simplex* and non-type material, all from the Natural History Museum London (NHM).

Results

Updated key to *Colydodes* species (modified from Ivie & Ślipiński 1989)

The discovery of *Colydodes flavisetis* Ferreira & Ide-dos-Santos, new species, requires a modification of the key to *Colydodes* species from Ivie & Ślipiński (1989). To accommodate the new species, the following must replace couplet 2-2' of the key from Ivie & Ślipiński (1989, page 241) and add a step in all other couplets:

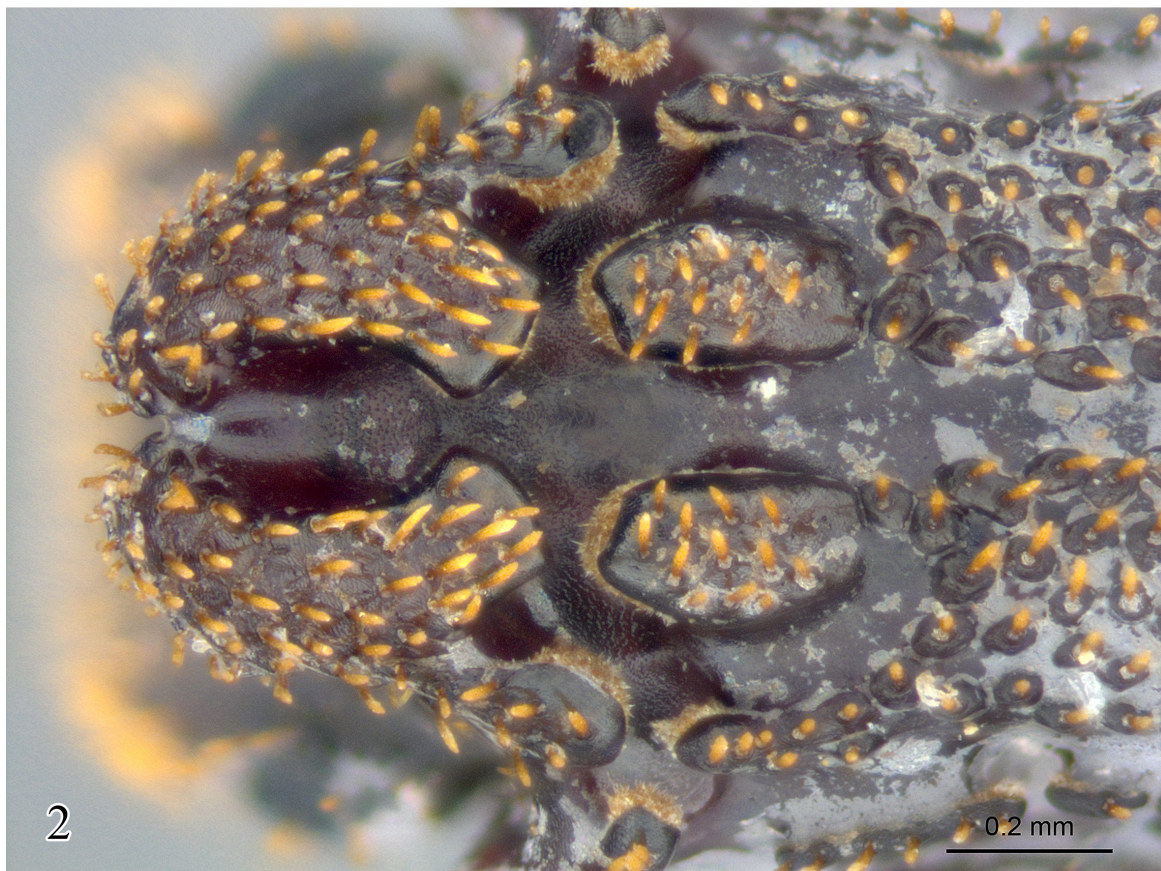
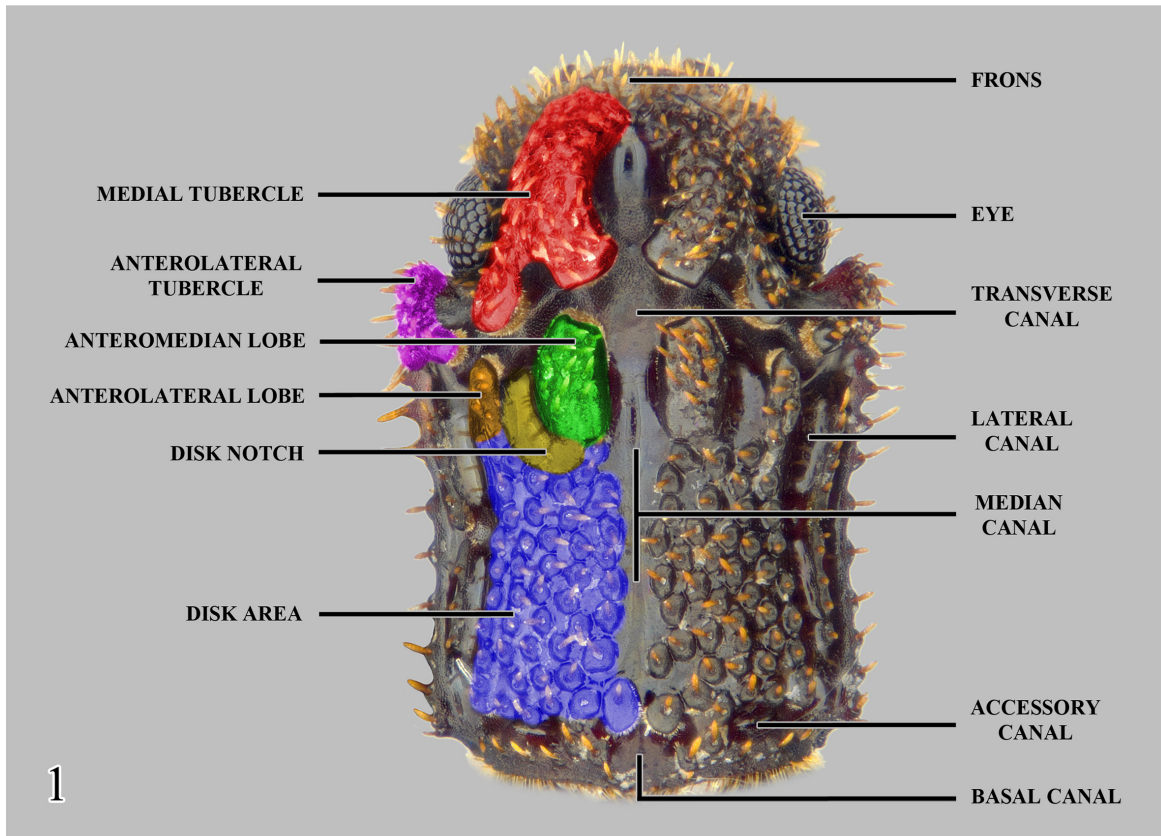
2. Each side of the pronotal tuberculate area of disk divided at the anterior third by a deep oblique notch (from the transverse canal, almost reaching the median canal, separated by a single microtubercle), forming two disk lobes curved over part of the transverse canal (as in Figs 1–2, 12–13). All projections over the transverse canal bearing brush-like setae (Fig. 2).
. *Colydodes flavisetis* Ferreira & Ide-dos Santos, new species.
- 2'. Disk lobes absent or not curved over part of the transverse canal. Projections over the transverse canal glabrous, not bearing brush-like pronotal setae 3

Colydodes flavisetis Ferreira & Ide-dos Santos, sp. nov.

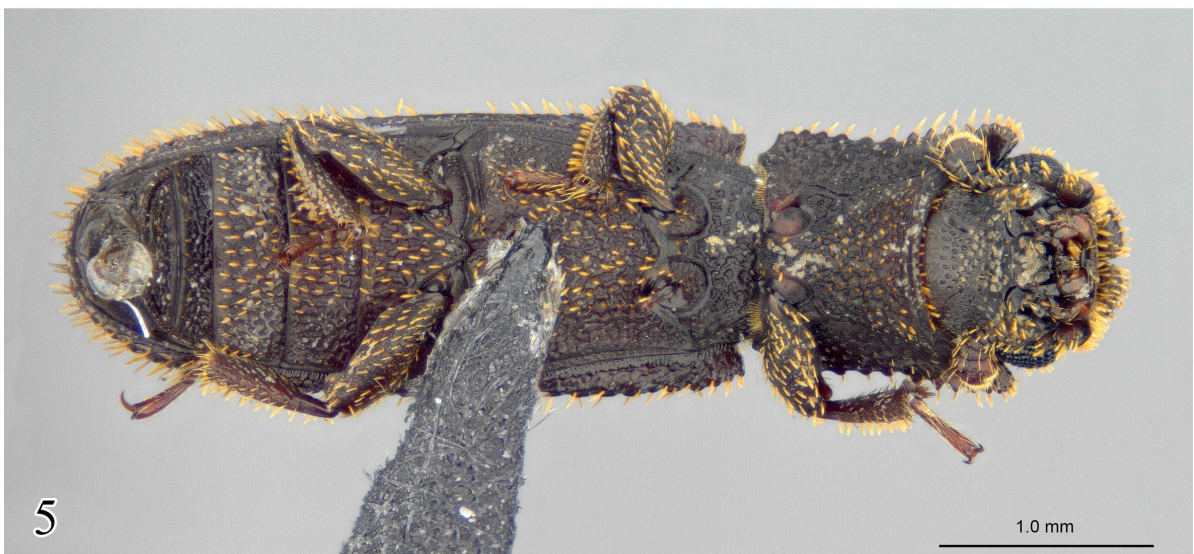
(Figs 1–16)

Diagnosis. The strongly produced pronotum extending anteriorly over the head with disk area deeply notched anteriorly and the conspicuous yellowish brush-like setae under the dorsal projections of the pronotum distinguish this species from the other known *Colydodes*.

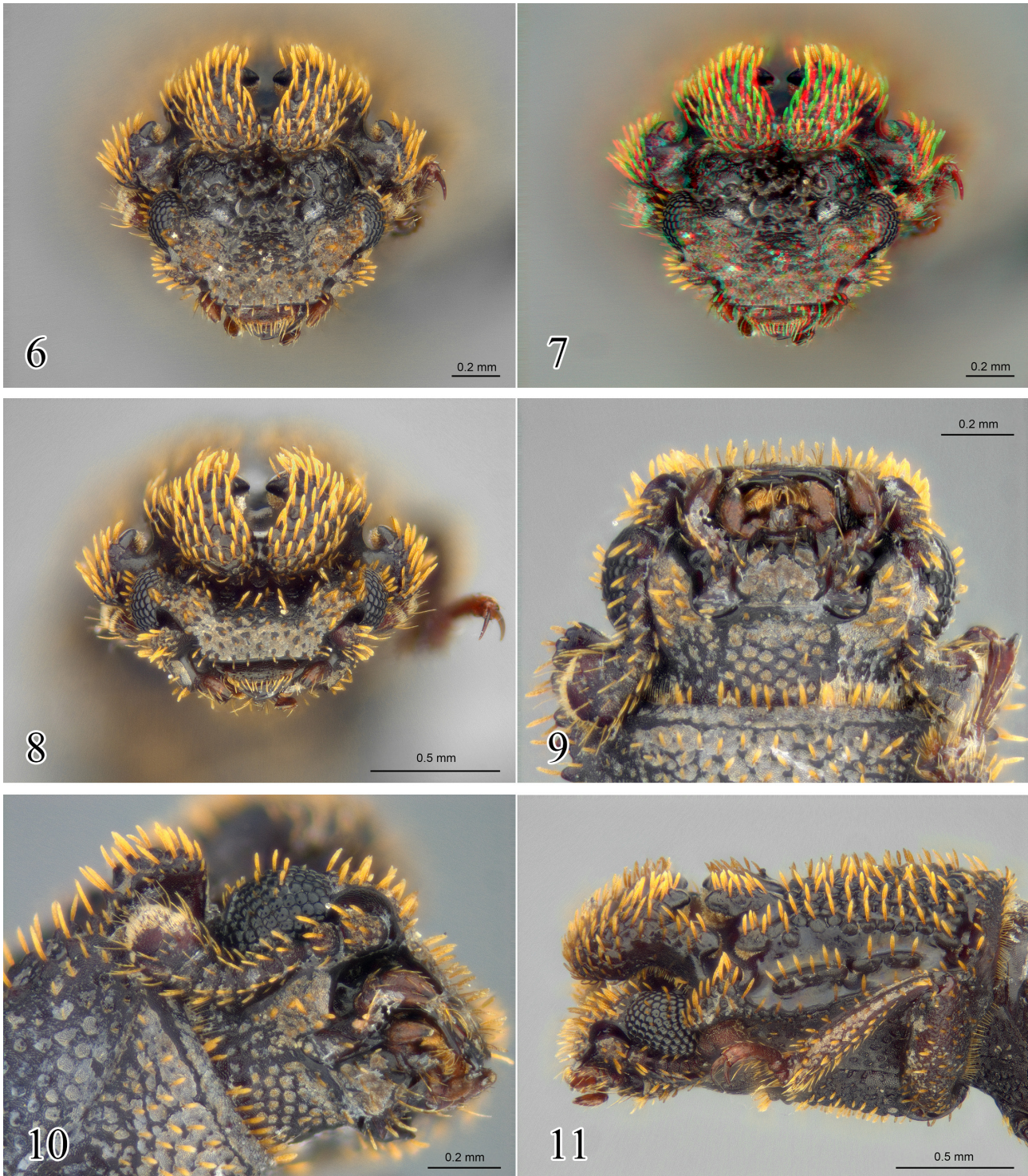
Description. General coloration: dark brown. Vestiture: dorsally and ventrally covered with yellowish scale-like setae; ventrally with less dense. Head prognathous, dorsoventrally flattened, impressed with sparse microtubercles, each one bearing a single seta; frons large, with rounded lateral margins, flat in the middle and prominent laterally over the scape, lateral margins rounded; posterior portion of head convex, hidden when the head is raised (Fig. 8), with a smooth area on each side (Figs 6–7). Gula covered with small setae (Fig. 9). Clypeus fused to cephalic capsule, curved downwards. Labrum free, rounded, anterior margin bearing a row of yellowish setae. Eyes lateralized, coarsely granulated, with setae between ommatidia (Figs 10–11). Antennae 11-segmented, with sparse setae on the surface, scape wider and twice as long as the pedicel, segments I–III sparser than III–XI, the last three segments forming a club, club segments with few aristate setae, segment XI with a high concentration of small setae at the apex (Fig. 10). Maxillary palpus 4-segmented, apical segment robust, fusiform, with a pointed tip, approximately twice as long as segment III, palpomeres I–III subequal in length, palpomeres with sparse setae.



FIGURES 1–2. *Colydodes flavisetis* sp. n., holotype. **1.** Head and prothorax, dorsal view with terms pointed **2.** Detail of the anterior part of prothorax.

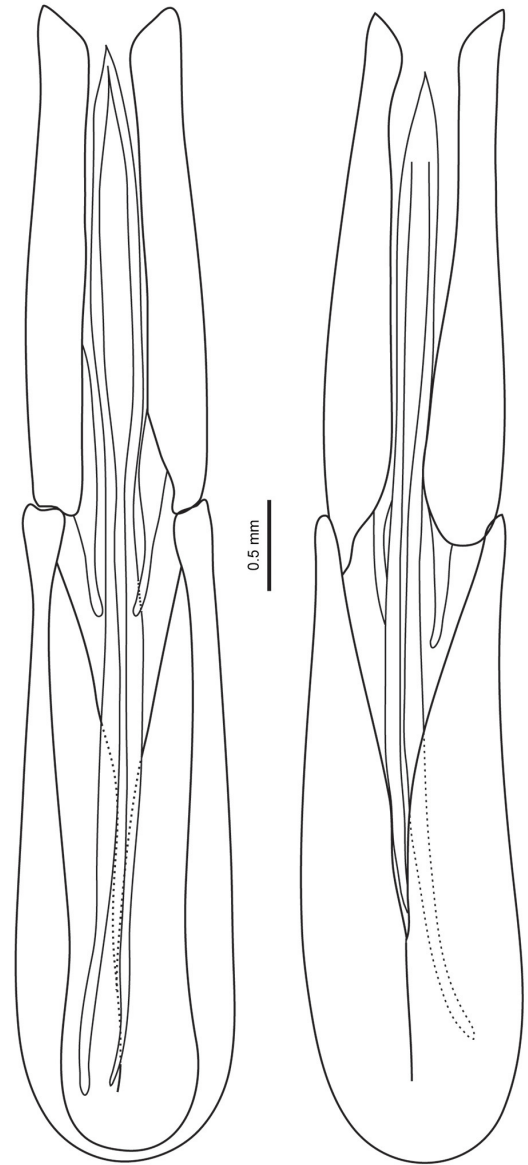
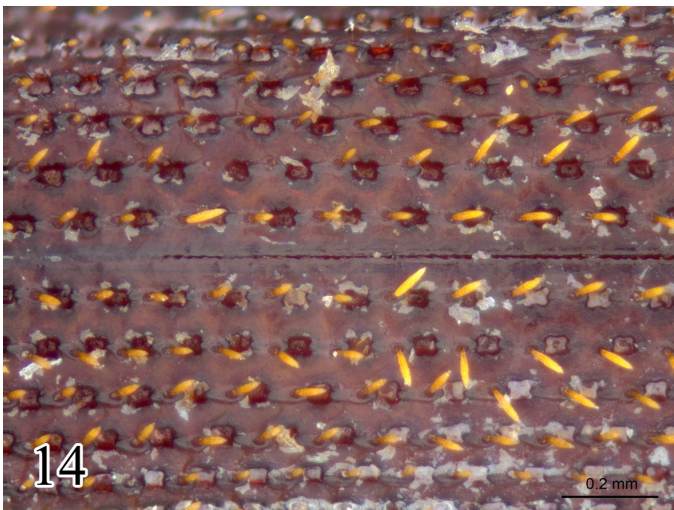


FIGURES 3–5. *Colydodes flavisetis* sp. n., holotype. 3. Dorsal view 4. Lateral view 5. Ventral view.



FIGURES 6–11. *Colydodes flavisetis* sp. n., holotype. Head: **6.** Frontal view **7.** Frontal view, 3D anaglyph picture (red/blue anaglyph glasses needed) **8.** Frontal view, head raised **9.** Ventral view **10.** Ventrolateral view **11.** Head and pronotum, lateral view.

Labial palp 3-segmented, segment III wider, robust, twice as long as II, segment I 1/2 shorter than I. Mentum transverse, ventral surface concave, anteriorly with a median tooth between two depressions, lateral and anterior margins with sparse setae; ligula slightly notched anteriorly, with two pairs of setae ventrally (Figs 9–10). Pronotum longer than wide (length/width = 1.43), with anterior margin bearing small anterolateral tubercles, tubercles triangular when viewed laterally, separated from adjacent structures, with a slender projection over transverse canal; pronotal disk with two paired medial tubercles strongly produced towards head, but not reaching it, with anterior edge of the two paired medial tubercles convergent, diverging and widening backwards; posterior



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16

FIGURES 12–16. *Colydodes flavisetis* sp. n., holotype. Head and pronotum, dorsal view: **12.** Normal picture **13.** 3D anaglyph picture (red/blue anaglyph glasses needed) **14.** Detail of the elytra; Male genitalia: **15.** Ventral view **16.** Dorsal view.

part of medial tubercles extending over transverse canal, notched at middle, bearing brush like yellowish setae under projections (Figs 1–2, 12–13); pit present between medial tubercles; transverse canal connected to anterior part of lateral and median canals; lateral canals divided longitudinally by a ridge; ridge divided in the middle by a secretory pit; median canal concave, without margins, almost reaching basal canal, separated by a line of

microtubercles; basal canal concave, almost complete, separated from accessory canal by two microtubercles on each side; accessory canal small, concave, bearing a pair of pits; disk area densely microtuberculate, split in two by median canal, each side of the pronotal disk divided at the anterior third by a deep oblique notch, forming an anterolateral and an anteromedian lobe, both lobes rounded and bearing brush-like yellowish setae ventrally and curved over part of the transverse canal, almost reaching the posterior projections of the median tubercles; notch almost reaching the median canal posteriorly, separated by a single microtubercle. Elytra elongate, with parallel sides, narrower at round apex, each elytron with 9 rows of subquadrate punctures, with a single microtubercle bearing a scale-like seta between punctures (Figs 3–4, 14). Aedeagus symmetrical, pointed apically (Figs 15–16). Parameres robust, slightly longer than median lobe, median struts long, almost reaching apex of phallobase. Phallobase symmetrical, divided dorsally, 1/3 longer than parameres.

Type material. Holotype (♂) deposited at Museu de Zoologia da Universidade de São Paulo (MZSP): Labeled: Brazil, SP, Salesópolis, Estação Biológica de Boracéia, 23°39'2,6"S, 45° 53' 32, 1° W, 17–21.VI.2013, V.S.Ferreira, F.F. Barbosa, E.A. Abrantes colls. Fixed in laboratory on: 31.I.2014 by V.S. Ferreira.

Etymology. From latin: *flavus* (yellow) + *setis* (dative plural of seta, setae) referring to the yellowish brush-like setae under the pronotal projections (tubercles and lobes) over the transverse canal.

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