



Two new species of *Paratanytarsus* (Diptera: Chironomidae) from southeast of Brazil

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Abstract

The adults and immature stages of *Paratanytarsus corbii* **sp. n.** and the male adult of *Paratanytarsus silentii* **sp. n.** are described and illustrated. *P. corbii* larvae were collected on sediment and aquatic vegetation of the headwater of the Anhumas Reservoir (Américo Brasiliense, SP) and reared in laboratory to obtain the pupal exuviae and associated adults. The adult males of *P. silentii* were obtained from Malaise net put over the Córrego do Silêncio located in Parque Estadual do Jaraguá (São Paulo, SP). The shape of the anal point and the absence of anal point crests are the main characteristics that distinguish *P. corbii* and *P. silentii* males from the majority species of the genus. The arrangement of spines on tergites III–V separates the pupae of *P. corbii* from other species. The length of pedicels and the pecten epipharyngis design are diagnostic for the larvae of *P. corbii*.

Key words: Diptera, Chironomidae, *Paratanytarsus*, new species, Neotropical region, Brazil

Introduction

The genus *Paratanytarsus* was erected by Thienemann & Bause in Bause (1913), with *Tanytarsus lauterborni* Kieffer, 1909 as type species, posteriorly designated as *Paratanytarsus lauterborni* by Reiss & Säwedal (1981). Although the genus has many species recorded from all zoogeographical regions (Wang & Guo 2005), only two species have been described in the Neotropical Region (Spies & Reiss 1996): *P. grimmi* (Schneider 1885), a cosmopolitan parthenogenetic species, with records in Argentina, Chile and Peru and *P. tolucensis* Reiss 1972, in Mexico. In Brazil, *Paratanytarsus* is only recorded from ecological studies with larvae and pupal exuviae (Wiedenbrug & Ospina-Torres 2005; Nessimian *et al.* 2003; Roque *et al.* 2003). In the present study, two new species from the southeast of Brazil are described and diagnosed. These species present the most unusual characters included in the generic emendation by Bolton *et al.* (2010, in press).

Material and methods

The specimens examined were slide-mounted in Euparal. The general terminology follows Sæther (1977, 1980), except that the term “taenia” is used for any broad, flattened pupal seta according to Langton (1994). Measurements are given as the value of the holotype, followed by the range [in square brackets] and the number of specimens examined in parenthesis if it differs from the number (n) stated at the beginning of description.

The material examined is deposited in the Coleção de Referência do Laboratório de Entomologia Aquática (LEA) of the Universidade Federal de São Carlos (UFSCar), São Paulo State, Brazil.

***Paratanytarsus corbii* sp. n.**

(Figs. 1–17)

Material examined. Holotype: adult male with pupal and larval exuviae (in Euparal), Brazil, São Paulo, Américo Brasiliense, Anhumas Reservoir (21° 42' S, 48° 00' W), leg. S. T. Strixino, 24/x/2000. Paratypes (mostly in Euparal): 1 male with pupal exuviae same data as holotype except for 20/x/2000; 1 male as previous; 1 male and 1 female with pupal and larval exuviae in the same slide, same data as holotype; 1 pupa with pharate male same data as holotype except for 19/x/2000; 1 pupal exuviae same data as holotype except for 20/x/2000; 5 larvae same data as holotype except for 25/x 2000, leg. J. J. Corbi.

Etymology. Named in honour to Dr. Juliano José Corbi who first collected the larvae of this species in the Anhumas Reservoir.

Diagnosis. Adult male: wing membrane transparent, covered with setae; AR 0.75–0.89; LR 1.66–2.00; hypopygium with anal tergite bands separated; anal point long, without anal crests; superior volsella somewhat quadrangular, digitus well developed; median volsella with several spatulate and setiform lamellae distally. **Adult female:** wing membrane as in male; fore tibia with 1 short spur, middle and hind tibia with combs bearing 1 spur; genitalia with GpVIII divided into 2 lobes; floor under vagina of moderate size; notum 1.5 times as long as seminal capsules; GcIX without seta. **Pupa:** frontal apotome and cephalic tubercles granulose; thoracic horn elongate, with distal fringe of setae; thorax with strong granulation; scutal tubercle present; tergite III–V with longitudinal lateral paired patches of spines; IV and V with 2 circular field of short spines anteriorly in addition with 3 long spines; pedes spurii B absent. **Larva:** clypeal seta S3 simple; pecten epipharyngis with three indented scales; antenna 5–segmented, 1.5 times shorter than head length; Lauterborn organs large on pedicels longer than antennal segments 3–5.

Description. Male (n = 4 unless otherwise stated)

Dimensions. Small, length c. 2.0 mm. Wing length 1050 µm [1050–1250].

Coloration. Head pale, yellowish green, flagellum and maxillary palp yellowish. Thorax green yellowish, postnotum slightly brownish, scutellum greenish. Wing membrane transparent, veins yellowish. Abdomen yellowish green. Legs yellowish.

Head. Eyes ratio 1.09 [1.00–1.10]. Antenna with 13 flagellomeres; antennal flagellum 756 µm long [756–850]; AR = 0.75 [0.75–0.89]. Palpomeres 1–5 length (3): 21, 25 [25–31], 69 [56–69], 75 [75–88], 137 [137–156] µm. Frontal tubercles 24 [20–27] µm long (3) (Fig. 1). Temporal setae 8–9, uniserial. Clypeus 52 [43–60] µm long with 18 [13–18], (3) setae.

Thorax. Acrostichals 12–14 (3) biserial, beginning near anteprototum; dorsocentrals 7, uniserial; prealar 1, scutellars 4. Each haltere with 4 setae (1). Scutal tubercle absent.

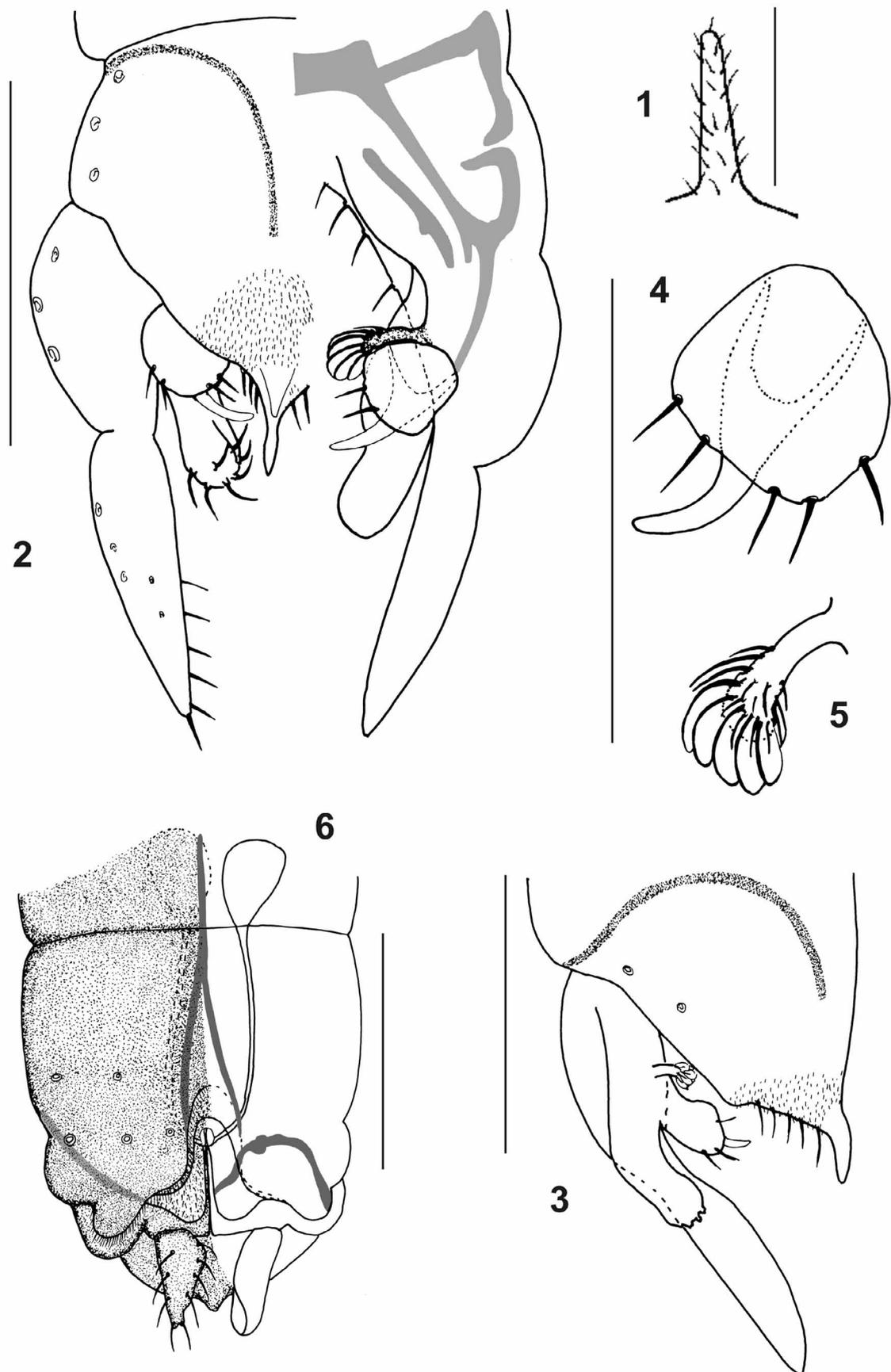
Wing 300 [282–337] (3) µm wide. C ending close to R₄₊₅, before wing apex; R₄₊₅ ending slightly distally to apex of M₃₊₄; R₂₊₃ indistinct. Membrane covered with setae, becoming dense in distal ½. Setae present on all veins except M and basal third of M₁₊₂; brachiolum with 1 (3) seta; squama bare. RM proximal to FCu, VR= 1.37 [1.34–1.35] (3).

Legs. Fore tibia with short slender white spur 8 [8–14] µm long. Mid and hind tibiae with black combs, each tibia with only one spur. Lengths and proportions as Table 1.

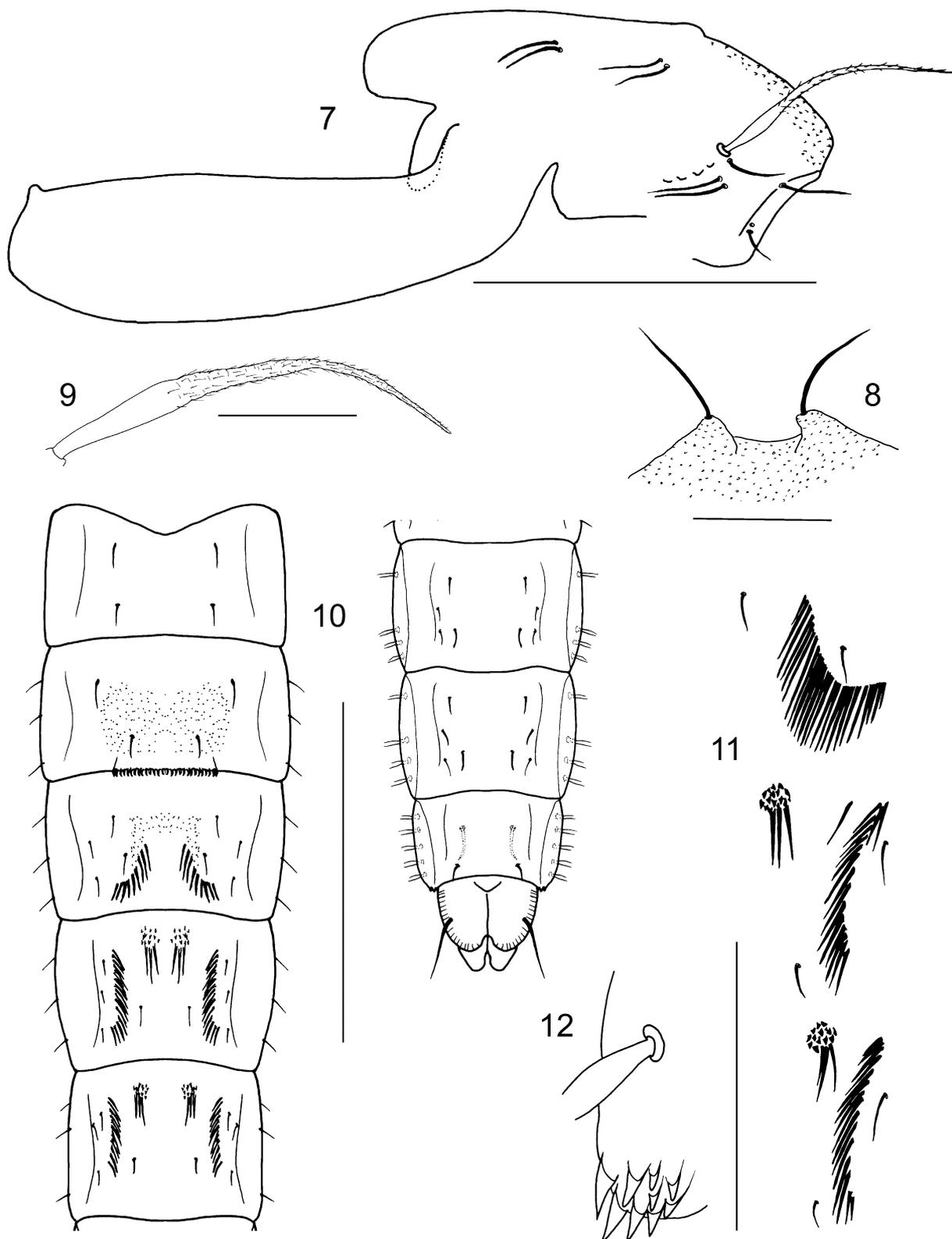
TABLE 1. Lengths (in µm) and proportions of legs of *Paratanytarsus corbii* sp. n., male (n = 2).

	fe	ti	ta ₁	ta ₂	ta ₃	ta ₄	ta ₅	LR
p ₁	463–519	275–312	550–519	281–331	212–250	156–194	75	1.66–2.00
p ₂	487–562	400–425	219–231	110–125	80–106	50–69	44	0.54–0.55
p ₃	531–619	481–544	300–350	181–206	150–194	94	50–56	0.62–0.64

Hypopygium (Figs. 2, 3). Anal tergite bands separated; median setae absent. Anal point long and slender 22 [22–30] µm long (3); anal crests absent. Superior volsella (Fig 4) somewhat quadrangular, with five lateral robust setae; digitus well developed, extending well beyond posteromedian corner of superior volsella. Inferior volsella bent in median part, extending beyond base of gonostylus; tip slightly folded. Median volsella short 21 [15–21] µm long (3), with several spatulate and setiform lamellae distally (Fig 5).



FIGURES 1–6. *Paratanytarsus corbii* sp. n., male (1–5) and female (6). 1. Frontal tubercle. 2. Hypopygium, dorsal view left, ventral view right. 3. Hypopygium lateral view. 4. Superior volsella. 5. Median volsella. 6. Genitalia. Scales: Fig 1 = 25 μ m; Figs. 2, 3, 6 = 100 μ m; Figs. 4, 5 = 50 μ m.



FIGURES 7–12. *Paratanytarsus corbii* sp. n., pupa. **7.** Thorax, lateral view. **8.** Cephalic tubercles. **9.** Thoracic horn. **10.** Abdomen tergites. **11.** Ornamentation of tergites III–V. **12.** Comb. Scales: Figs. 7, 10 = 500 μ m; Figs. 8, 9 = 100 μ m; Fig. 12 = 50 μ m.

Female (n = 1). *Dimension and coloration.* Length near 1.7 mm. Wing length 1019 μ m. Coloration as in male. *Head.* Eyes bare, with little dorsomedian extension. Eyes ratio 1.50. Antennal flagellum slightly shorter than

palp; Fm 2–5 length: 42, 38, 38, 46 μm . Palpomeres 1–5 length: 14, 15, 42, 51, 115 μm . Frontal tubercles not discernible in slide preparation. Temporal setae 7. Clypeus 50 μm long, with 16 setae.

Thorax. Acrostichals 13, biserial, beginning near antepnotum; dorsocentrals 6; prealar 1; scutellars 4. Scutal tubercle absent.

Wing. 312 μm wide. VR = 1.43. Macrotrichia covering all cells and veins except M and basal third of M_{1+2} . R_{2+3} not distinct; R_{4+5} ends proximal of M_{3+4} .

Legs. Fore tibia with one short spur, 12 μm long; mid and hind tibiae with combs, each one bearing one black spur. Lengths and proportions as in Table 2.

TABLE 2. Lengths (in μm) and proportions of legs of *Paratanytarsus corbii* sp. n., female (n = 1).

	fe	ti	ta ₁	ta ₂	ta ₃	ta ₄	ta ₅	LR
p ₁	375	244	–	–	–	–	–	–
p ₂	406	306	175	94	68	50	44	0.57
p ₃	431	406	237	144	119	62	50	0.58

Genitalia (Fig. 6). Sternite VIII bearing 12 setae distributed regularly; SVIII form a short size floor under anterior part of vagina; posteromedian contour of SVIII rounded. GpVIII divided, and covered with short caudolateral microtrichia. Notum as long as free rami. Notum 1.5 as long as seminal vesicles. Seminal vesicles ovoid, near 40 μm long, without neck. Spermathecal duct nearly straight. GcaVIII straight, running diagonally to posterior corner of SVIII. GcIX without setae.

Pupa (n = 4). *Dimension.* Length of abdomen: male 1.98 (2) mm; female 1.88 (2) mm.

Cephalothorax. Frontal setae elongate, slender, 57 μm long arising apically from prominent cephalic tubercles. Frontal apotome, including cephalic tubercles granulose (Fig. 8). Thoracic horn elongate, c. 328 μm long, with fringe of setae on distal $\frac{2}{3}$ (Fig. 9). Thorax with strong granulation close to anterior median suture; scutal tubercle short (Fig. 7). Wing sheath with prominent nose; pearl row absent. Chaetotaxy of thorax: 3 precorneals (Pc_{1-3}) and 2 lateral antepnotals ($LAp_{1,3}$) present on each side. Pc_1 situated in front and ventral of the basal ring of thoracic horn. $LAp_{1,3}$ situated in front and at the same level as Pc_1 ; LAp_3 situated more ventrally than Pc_{2-3} . Dc_{1-4} situated in two groups, widely separated.

Abdomen. Tergite I without shagreen; II with central transverse field of fine shagreen; III with posterior pair of patches of long spines bands; bands strongly curved and divergent posteriorly; IV and V with lateral paired patches of spines (Fig. 10), and 2 circular field of short spines anteriorly in addition with 3 long spines (Fig. 11); VI to VIII without shagreen. Hook row continuous, occupying $\frac{1}{3}$ width of segment II. Pedes spurii B absent. Segment VIII with posterolateral combs consisting of 4–5 marginal and 5–6 overlapping ventral teeth (Fig. 12). Anal lobe with 23–24 taeniae and 1 large dorsal taenia on each side. Abdominal setation as in Table 3.

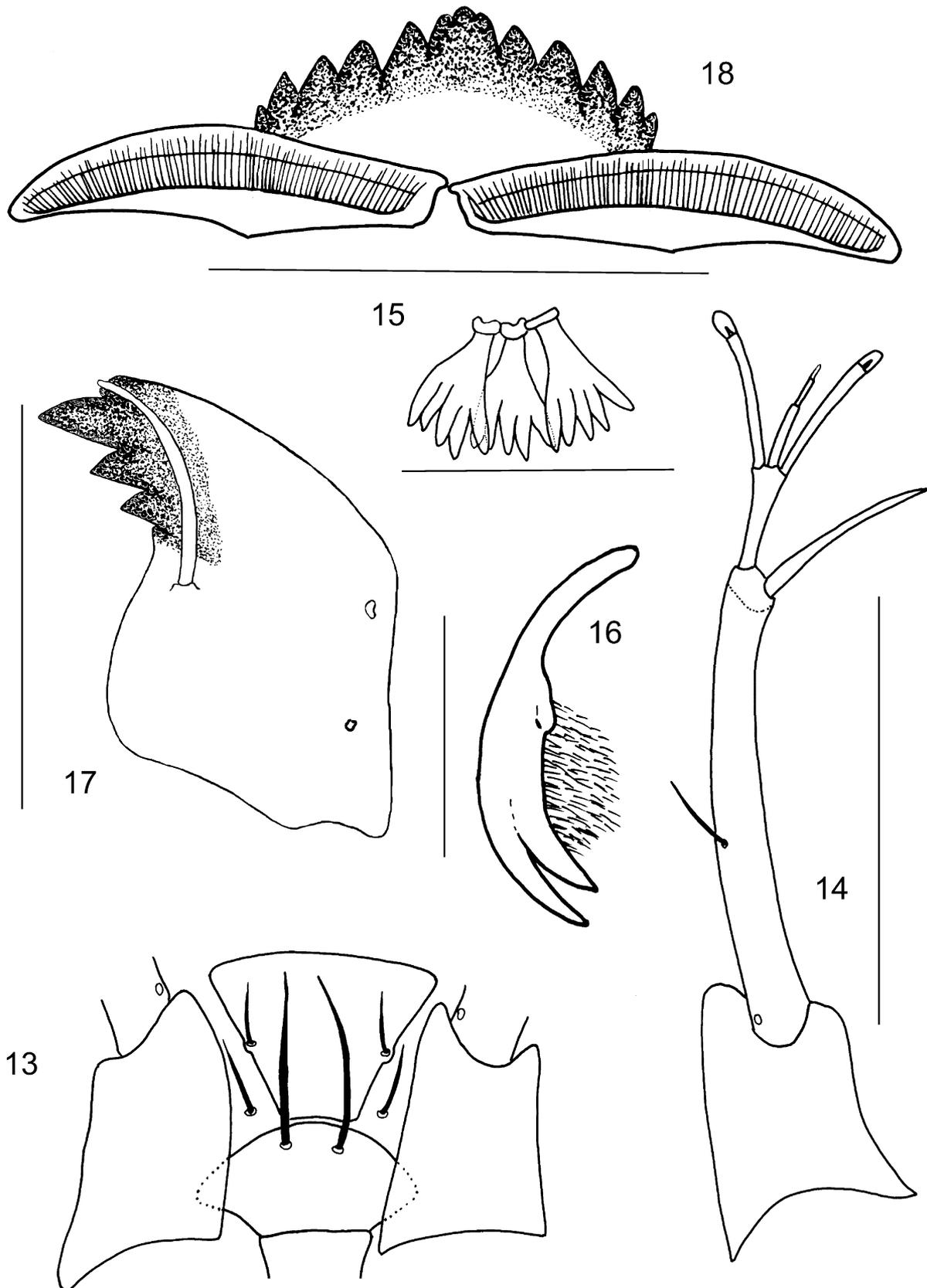
TABLE 3. Pupal abdominal chaetotaxy of *P. corbii* sp. n. Abbreviations: O = O-setae, Te = Tergite, S = Sternite, L = Lateral, T = Taenia, ST = semitaeniae.

segment	O	Te	S	L
I	0	2	0	0
II	0	2	2	3
III	0	4	2	3
IV	0	4	4	3 ST
V	0	4	4	3 ST
VI	0	4	4	4 T
VII	0	4	2	4 T
VIII	0	1	1	5 T

4th instar larva (n = 5). *Dimension.* Small, total length 3.20 mm [2.89–3.58].

Head. Length 312 μm [294–325], width 225 μm [212–237]. Clypeal seta (S3) simple (Fig. 13).

Antenna (Fig. 14). With 5 segments placed on prominent pedicel, 61 μm long [58–65]; basal segment 123 μm , longer than flagellum and slightly bent outside; basal ring organ and small seta in proximal $\frac{1}{2}$ part; segment 2 (31 μm) slightly longer than segments 3–5 (14, 6, 5 μm); Lauterborn organs large, pedicels near 31 μm long, longer than segments 3–5.



FIGURES 13–18. *Paratanytarsus corbii* sp. n., larva. **13.** Clypeal seta S3 and antennal tubercles. **14.** Antenna. **15.** Pecten epipharyngis. **16.** Premandible. **17.** Mandible. **18.** Mentum and ventromental plates. Scale: Fig. 15 = 50 μ m; Figs. 14, 16, 17, 18 = 100 μ m.

Labrum. Labral seta SI pectinate, bases fused; SII distally plumose, situated on short pedestal; SIII simple, seta-like; SIV not discernible. Labral lamella well developed. Pecten epipharyngis consisting of 3 distally serrated scales (Fig. 15). Premandible with 2 teeth (Fig. 16); brush well developed.

Mandible (Fig 17). 100µm long [92–108] with dorsal, apical and two inner teeth brown.

Mentum (Fig. 18). 68 µm long [61–72] with median tooth slightly notched laterally and 5 pairs of lateral teeth all brownish. Ventromental plates longer than mentum (81 µm) close together medially.

Abdomen with anal tubules shorter than parapods. Claws of posterior parapods simple.

Remarks. The long and slender anal point and the absence of anal crests are the main characteristics that differentiate *Paratanytarsus corbii* **sp. n.** male, from other species of the genus, except *P. silentii* **sp. n.** and an undescribed species (Bolton *et al.* 2010, in press); the length of the anal point and the shape of median volsella separate *P. corbii* from the latter. The arrangement of spines on tergites III–V and the absence of pearl row distinguish the pupa of *P. corbii* from other species. The length of pedicels and the pecten epipharyngis design differentiate the larvae of *P. corbii* from other *Paratanytarsus*.

Paratanytarsus silentii, **sp. n.**

(Fig. 19)

Type material. Holotype male, **Brazil:** São Paulo State, São Paulo, Córrego do Silêncio, Parque Estadual do Jaraguá (23°24' S e 45°44' W), leg. F. O. Roque, 03/VIII/2000. Paratype: 1 male same data as holotype.

Etymology. From Latin *silentii*, refers to the name of the stream (Córrego do Silêncio) where the specimens were collected.

Diagnosis. Adult male: wing membrane transparent, covered with setae; AR 1.22; LR 2.58–2.77; hypopygium with anal tergite bands separated; anal point long, without anal crests; superior volsella quadrangular, digitus very long, extending well beyond posteromedian corner of superior volsella; median volsella slender and very long (58 µm), with several spatulate lamellae distally.

Description. Male (n = 2). *Dimensions.* Small, length c. 3.30 mm. Wing length 1415–1562 µm.

Coloration. Head pale yellowish green, flagellum and maxillary palp yellowish. Thorax green yellowish. Wing membrane transparent and veins pale. Abdomen yellowish. Legs pale.

Head. Eyes ratio 1.27–1.54. Antenna with 13 flagellomeres; flagellum 906 µm long; AR 1.22. Palpomeres 1–5 length: 25, 31–50, 125–156, 187–221 µm. Frontal tubercles short, 6 µm long (1). Temporal setae 8–9. Clypeus with 12–14 setae.

Thorax. Acrostichals 15, biserial beginning near antepnotum; dorsocentrals 8, uniserial; prealar 1; scutellars 6.

Wing. 418 µm wide; C ending close to R₄₊₅, before wing apex; R₄₊₅ ending slightly distally to apex of M₃₊₄; R₂₊₃ indistinct. Membrane covered with setae, becoming dense in distal ½ part. Setae present on all veins except M and RM; brachiolum with 1 seta; squama bare. RM proximal to FCu, VR 1.16–1.26.

Legs. Fore tibia with short white spur 17–20 µm long. Mid and hind tibiae with black combs; each tibia with only one spur. Lengths (in µm) and proportions as table 4.

TABLE 4. Lengths (in µm) and proportions of legs of *Paratanytarsus silentii* **sp. n.**, male (n = 2).

	fe	ti	ta ₁	ta ₂	ta ₃	ta ₄	ta ₅	LR
p ₁	625–787	363–388	1000–1006	525–550	381–387	287–281	106–131	2.58–2.77
p ₂	756–781	556–562	356–369	187–194	119–131	81	50–62	0.63–0.66
p ₃	794–800	669–681	500–512	312–319	219–237	137–144	62–81	0.73–0.76

Hypopygium (Fig. 19). Anal tergite bands separated; median setae absent. Anal point long and slender; anal point crests absent. Superior volsella quadrangular, with five lateral robust setae; digitus very long, extending well beyond posteromedian corner of superior volsella. Inferior volsella slightly bent in median part, extending slightly beyond base of gonostylus. Median volsella slender and very long (58 µm), with several spatulate lamellae distally and 4–5 setiform lamellae on inner margin.

Remarks. The absence of anal crests in the male hypopygium of *Paratanytarsus silentii* **sp. n.** agrees with *Paratanytarsus corbii* and the undescribed species (op.cit.). The main characteristic that differentiates the male of *P. silentii* **sp. n.** from these two species is the very long stem of the median volsella and digitus.

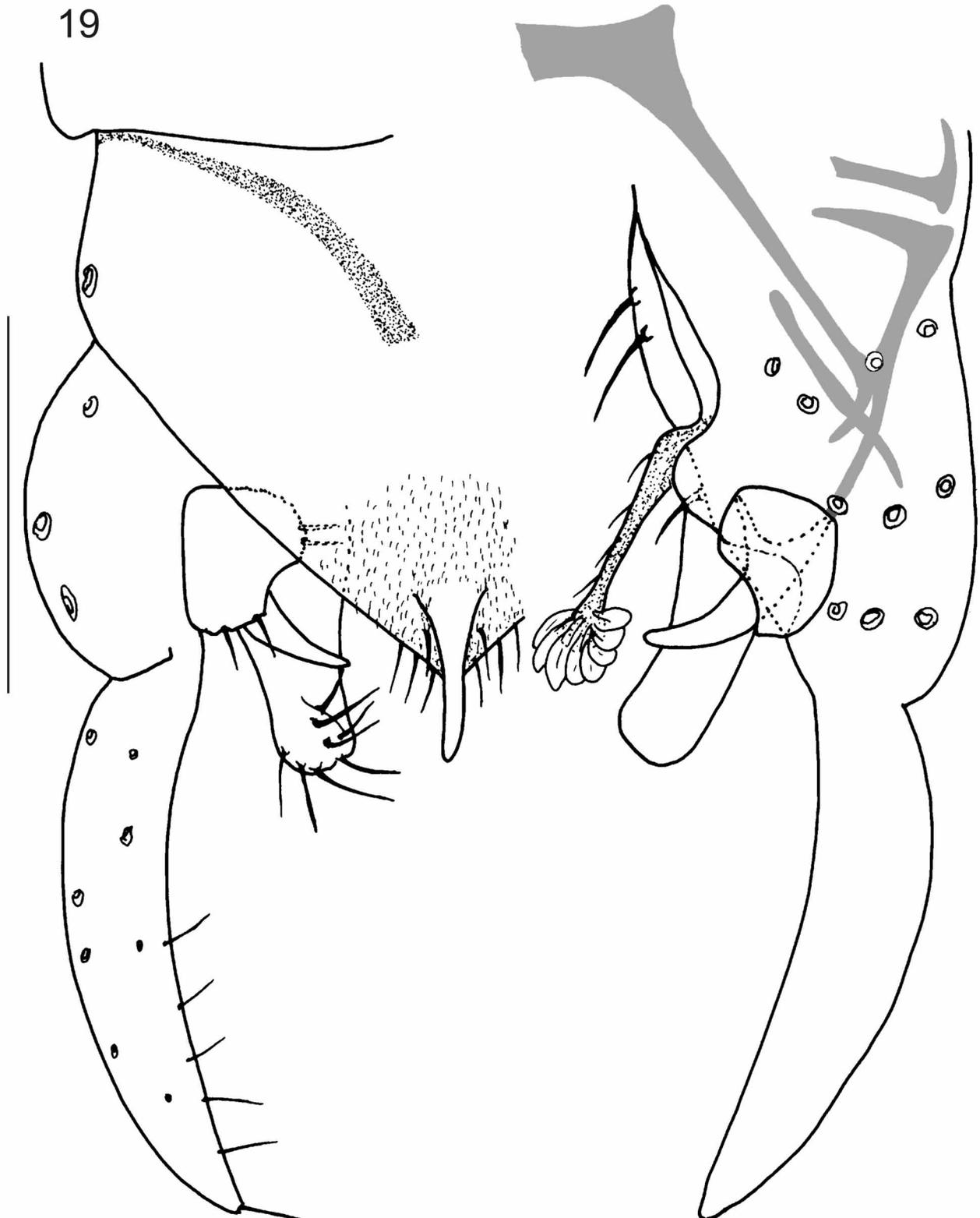


FIGURE 19. *Paratanytarsus silentii* **sp. n.**, male. Hypopygium, dorsal view left, ventral view right. Scale: 100 μ m.

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References

- Bause, E. (1913) Die metamorphose der gattung *Tanytarsus* und einige verwandter Tendipedidenarten. Ein beitrag zur systematik der tendipediden. *Archiv für Hydrobiologie*, Supplement 2, 1–126.
- Bolton, M.J., Ekrem, T., Sublette, J.E & Sublette, M.F. (2010) A new species of *Paratanytarsus* Thienemann and Bause (Diptera: Chironomidae) with unusual larval and adult male morphology. In: Ferrington, L.C. Jr. (Ed.), *Proceedings of the XV International Symposium on Chironomidae*, pp. 262–271, in press.
- Langton, P.H. (1994) If not “filaments” then what? *Chironomus*, 6, 9.
- Nessimian, J.L., Amorim, R.M., Henriques Oliveira, A.L. & Sanseverino, A.M. (2003) Chironomidae (Diptera) do Estado do Rio de Janeiro. Levantamento dos gêneros e habitats de ocorrência. *Publicações Avulsas do Museu Nacional*, 98, 1–16.
- Reiss, F. & Säwedal, L. (1981) Keys to males and pupae of the Palaearctic (excl. Japan) *Paratanytarsus* Thienemann & Bause, 1913, n. comb., with descriptions of three new species (Diptera: Chironomidae). *Entomologia scandinavica*, Supplement 15, 73–104.
- Roque, F.O., Correia, L.C.S., Trivinho-Strixino, S. & Strixino, G. (2004) A review of Chironomidae studies in lentic systems in the state of São Paulo, Brazil. *Biota Neotropica* v4(n2) <http://www.biotaneotropica.org.br/v4n2/pt/abstract?article+BN03104022004>.
- Sæther O.A. (1977) Female genitalia in Chironomidae and other Nematocera: morphology, phylogenies, keys. *Bulletin of the Fisheries Research Board of Canada*, 197 1-211.
- Sæther O.A. (1980) Glossary of chironomid morphology terminology (Diptera: Chironomidae). *Entomologia scandinavica*, Supplement 14, 1–51
- Spies M., Reiss F. (1996) Catalog and bibliography of Neotropical and Mexican Chironomidae (Insecta, Diptera). *Spixiana*, Supplement 22, 61–119.
- Wang, X. & Guo, Y. (2005) *Paratanytarsus* Thienemann & Bause from China (Diptera: Chironomidae: Tanytarsini). *Zootaxa*, 940, 1–15.
- Wiedenbrug, S., Ospina-Torres, R. (2005) A Key to pupal exuviae of Neotropical Tanytarsini (Diptera: Chironomidae). *Amazoniana* (Kiel), 18, 317–371.