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## REVISION OF *PROPHOROSTOMA* TOWNSEND, 1927 (DIPTERA, TACHINIDAE, DEXIINAE), WITH THE DESCRIPTION OF A NEW SPECIES

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### ABSTRACT

*Revision of Prophorostoma Townsend, 1927 (Diptera, Tachinidae, Dexiinae), with the description of a new species. The Neotropical dexiine genus Prophorostoma Townsend, 1927 is revised; the type species Prophorostoma pulchra Townsend, 1927 is redescribed; and a new species (Prophorostoma tomjobimi Nihei) is described from the state of Rio de Janeiro, Brazil.*

KEYWORDS: Dexiini, Diptera, Neotropical region, *Prophorostoma*, taxonomy.

### INTRODUCTION

Townsend (1927) described the new genus *Prophorostoma* to include a single new species, *Prophorostoma pulchra*. The description was based on 12 males and 1 female collected from Itaquaquetuba, state of São Paulo, Brazil. Townsend (1927, 1936, 1938) treated the genus within the Prosenini, and this placement was kept by Guimarães (1971). In the last catalogue of Nearctic Tachinidae, O'Hara & Wood (2004) included the Nearctic genera of Prosenini into the tribe Dexiini, which was enlarged to include also the Theresiini and Zeliini. Following the systematic classification of O'Hara & Wood (2004), *Prophorostoma* is here regarded as a member of the tribe Dexiini.

In the present study, the type species is redescribed and new geographical records are provided. Known only from the type locality since the description, the geographical occurrence of *P. pulchra* is widened to include the states

of Minas Gerais and Santa Catarina. Also, a new species is described, *P. tomjobimi* Nihei sp. nov., from Rio de Janeiro state, Brazil, and a key is given to distinguish both species.

### MATERIAL AND METHODS

The examined material is deposited at the Museu Nacional, Universidade Federal do Rio de Janeiro, Rio de Janeiro (MNRJ) and Museu de Zoologia, Universidade de São Paulo, São Paulo (MZSP). Morphological terminology follows that of McAlpine (1981) and Wood (1987).

The male holotype of *P. pulchra* deposited at the United States National Museum (Washington) was examined by Norman Woodley (USNM) and kindly compared with the present redescription, which was based on one male paratype and non-type specimens. This comparison was exclusive on external morphological

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characters, not including the terminalia, and, whenever observed, the variable features are mentioned along the redescription (enclosed by brackets).

## RESULTS

### *Prophorostoma* Townsend, 1927

*Prophorostoma* Townsend, 1927:227 (generic description, in key), type species: *Prophorostoma pulchra* Townsend, 1927.

*Prophorostoma*, Townsend, 1936:137 (in key to genera of 'Prosenini'), Townsend, 1938:363 (generic diagnosis), Guimarães, 1971:32 (cat.), O'Hara, 2005:51 (list).

**Diagnosis.** General colouration brown to black with whitish pruinosity. Arista plumose. Antennal bases well separated. Facial carina high, but in profile not visible extending beyond first flagellomere, and wide, in frontal view wider than facial ridge, and with a median longitudinal groove. Antennal axis as long as oral axis. Haustellum moderately developed, shorter than head height. Prosternum bare. Proepisternum setulose. Katepisternals 3. Presutural acrostichals weakly developed. Postsutural dorsocentrals 4. Vein M bent forward toward  $R_{4+5}$ , without appendix and ending at wing margin. Wing membrane light-brownish tinged, darker along veins. Tarsi elongate, longer than tibiae. Abdomen ovate or oblong-ovate, no discal setae on segments 1+2 to 4, a pair of median marginal setae on tergite 3, and abdomen chaetotaxy not spinose (without setae strongly developed, not spine-like).

### *Prophorostoma pulchra* Townsend, 1927

(Figs. 1-5)

*Prophorostoma pulchra* Townsend, 1927:352 (male and female description), type locality: Brazil, São Paulo, Itaquaquecetuba.

*Prophorostoma pulchra*, Townsend, 1938:363 (types location).

*Prophorostoma pulchrum*, Guimarães, 1971:32 (cat.).

**Male** (Fig. 1): Body length: mean 11.4 mm (10.5-11.8 mm,  $n = 10$ ); wing length: mean 10.6 mm (10.3-11.5 mm,  $n = 10$ ).

**Colouration** (Fig. 1): Head dark-brown with whitish pruinosity, the gena reddish-brown. Antenna brown,

first flagellomere orange at base. Palpus orange. Thorax blackish (eventually dark brownish in some non-type specimens) with whitish pruinosity. Scutum with five black stripes separated by dense pruinosity, with three narrow median (one median stripe between the acrostichal rows, and the other two between the acrostichal and dorsocentral rows) ending just before postsutural acrostichals, and two lateral stripes between the dorsocentral and intra-alar rows almost reaching the scutellum (eventually some non-type specimens may have the three median stripes forming a single broad median stripe). Scutellum brown with whitish pruinosity. Wing membrane slightly brownish, darker at base and along veins. Legs black, but the mid third of tibiae brownish; coxae and femora with some whitish pruinosity. Abdomen orangish-brown with dense pale yellow (golden) pruinosity, conspicuously beautiful with a plush appearance specially at dorsum (probably the reason why Townsend named it 'pulchra' – meaning beautiful, pretty); with a black triangular macula narrowing posteriorly on tergites 1+2 and 3 and continuing just as a median narrow spot on tergites 4 and 5, and tergite 5 darker at apex. [The male holotype, seen by N. Woodley, has the posterior half of the postsutural scutum yellowish brown, concolour with the scutellum; and abdominal tergites 4 and 5 have only faint dark markings.]

**Head:** Frontal vitta at mid level about twice as wide as fronto-orbital plate, but subequal at level of lunule. Interocular space strongly constricted above, a little before the ocellar triangle. Frontal setae slightly proclinate.

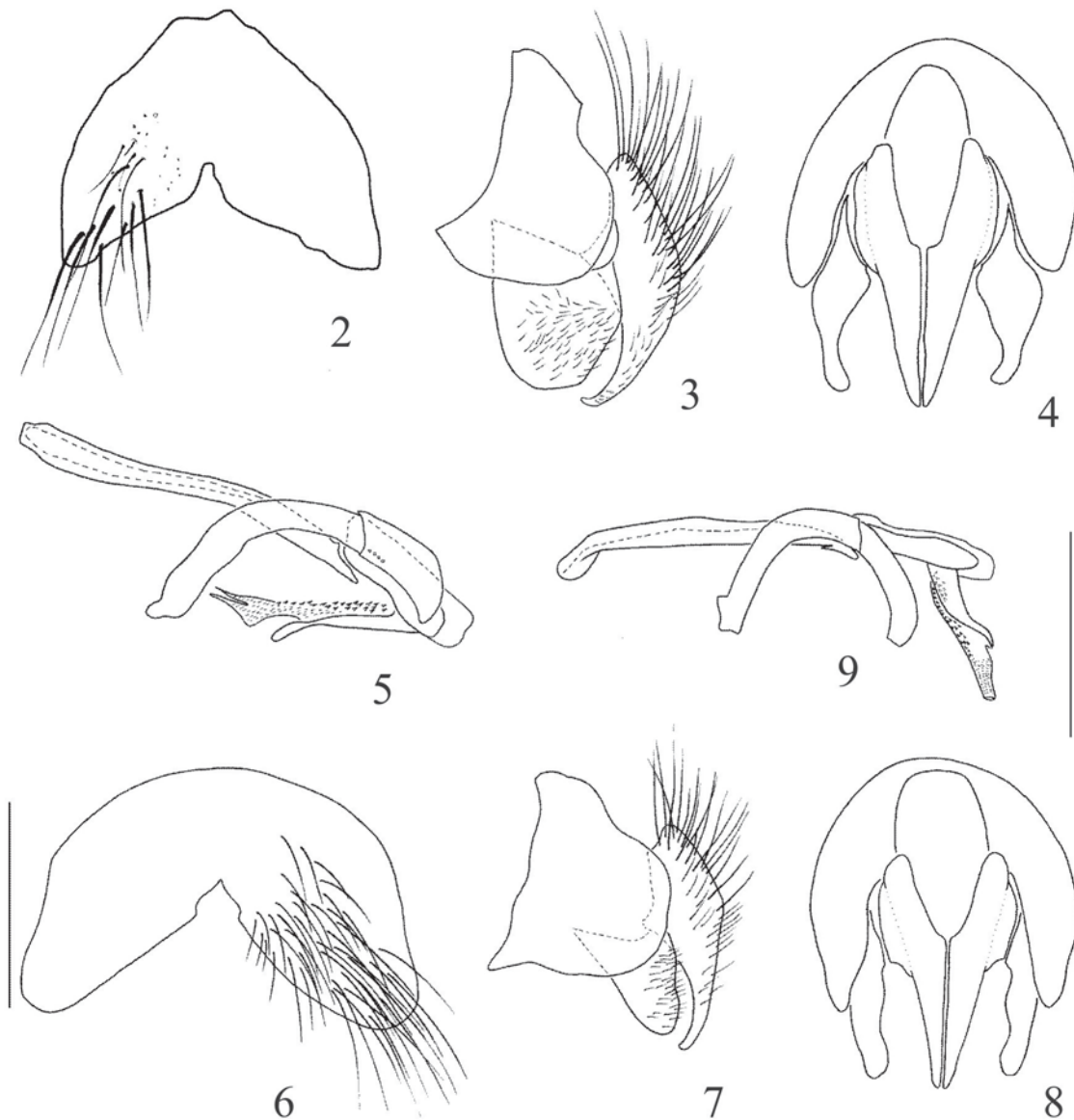


FIGURE 1. *Prophorostoma pulchra* Townsend, male, lateral view.

Fronto-orbital plate short setulose, but without developed proclinate seta. Antennal axis about 3/5 head height and conspicuously lower than eye mid level; antennal axis as long as oral axis. First flagellomere twice as long as pedicel, the tip rounded (thumb-like). Arista plumose, with dorsal, ventral and inner-dorsal cilia from base to apex, the length of most basal cilia about 3 times the basal width of arista. Parafacial bare and as wide as epistome. Epistome strongly projecting. Gena about 1/2 the eye height. Palpus cylindrical and long, a

little shorter than haustellum. Haustellum about 1/2 the head height. Labella moderately developed.

*Thorax*: Presutural portion as long as postsutural portion. Acrostichals 0+2 (presutural acrostichals might be present but weakly developed) [the holotype has 2-3 weak presutural acrostichals]; dorsocentrals 3+4; 4 humerals, but sometimes 5 (an anterior seta between the median and the inner setae); 2 presutural intra-alars; 1 presutural supra-alar; 2 postsutural intra-alars; intra-



**FIGURES 2-9.** *Prophorostoma pulchra* Townsend: 2, male sternite 5, dorsal view; 3, male terminalia, lateral view; 4, same, posterior view; 5, aedeagus, lateral view. *Prophorostoma tomjobimi* Nihei, sp. nov.: 6, male sternite 5, dorsal view; 7, male terminalia, lateral view; 8, same, posterior view; 9, aedeagus, lateral view. (Figs. 1-3 and 5-7 at same scale, and Figs. 4 and 8, idem. Scale bars: 0.5 mm.)

postalar undeveloped; 3 postsutural supra-alars, the prealar moderately developed – slightly shorter than first postsutural dorsocentral and about half the strongest supralar. Proepisternum setulose, with black setulae. Katepimeron (barette) setulose. Scutellum with 2 lateral pairs, one long convergent apical pair but shorter than the laterals, and 1-3 discals in a transverse row, but usually 2 long discals are present.

*Wing*: M vein bent forward toward  $R_{4+5}$ , without forming an appendix, and convex after bend. Node of Rs setulose dorsally and ventrally.

*Legs*: Fore femur with dorsal, posterodorsal and posteroventral rows of setae. Mid femur with a posteroventral row of setae on basal half; 1-3 median anterior setae [the holotype with one median seta]; and 2 oblique preapical posterodorsal setae. Hind femur with dorsal, anteroventral and posteroventral rows of setae, the two latter longer on basal half; and 2 oblique preapical posterodorsal setae. Fore tibia with 2 median posterior setae. Mid tibia with one (sometimes 2) submedian anterodorsal seta [the holotype with one seta]; 2 median posterior setae; and one submedian ventral. Hind tibia with 2 developed anterodorsal setae together with weak setae in a series; 2 posterodorsal setae; and one submedian anteroventral setae, but sometimes a weak supramedian seta is present [the holotype with a single submedian seta].

*Abdomen*: Ovate and wider than thorax. Tergites 1+2 and 3 with lateral marginal setae; tergite 3 with a pair of median marginal setae; tergites 4 and 5 with a row of marginal setae; and tergite 5 with an irregular row of discal setae dorsally. Sternites covered. *Terminalia* (Figs. 2-5): Sternite 5 as in Fig. 2. Cercal plate enlarged at base and tapering to the apex in posterior view (Fig. 4), long setulose on base, the tip narrow and inwardly curved in profile (Fig. 3). Surstyli broad and round in profile (Fig. 3), rather concave and enlarged basally in posterior view (Fig. 4). Aedeagal apodeme elongate and epiphallus short (Fig. 5). Pregonites and postgonites firmly connected each other, the first twice the length of the second and curved, postgonite with only the tip curved and subacuminate (Fig. 5). Distiphallus, in an acute angle with epiphallus, with spinulose membrane anteriorly and with microtrichiae at apex (Fig. 5).

*Female*: Body length: 10-11.4 mm ( $n = 2$ ); wing length: mean 10.5 mm (9.1-11.4 mm,  $n = 3$ ). Differs from male by the following: head, thorax and legs with lighter colouration; first flagellomere mostly orange; proclinate

outer orbital setae present and located on upper portion, near the level of ocellar triangle; interocular space narrowing gradually toward the vertex; abdominal tergites 1+2 and 3 with a black median band not clearly defined and continuing just as a narrow stripe on tergites 4 and 5 (the remaining colouration features of abdomen as in male); tergite 5 without discal setae.

Type material examined: Paratype male, BRAZIL, *São Paulo*, Itaquaquetuba, 26.x. [Townsend leg.] (MZSP). The paratype is labelled as follows: “Itq. 26.X / On foliage”; “PARATIPO” (pink label); “Prophorostoma / pulchra TT B... / Paratype / Det CHTT”; “dativa / Townsend / 1926 / 12084”. Specimen in good condition, but the left wing broken at middle.

Additional material examined: *Minas Gerais*, Pouso Alegre, 1 female, 18.ix.1962, Rabello leg. (MZSP); *São Paulo*: Água Funda, 1 male, 7.x.1959, Franca leg. (MZSP); Barueri, 3 males, 20.viii.1957, K. Lenko leg. (MZSP); Cantareira, 1 female, viii.1934, S. Lopes & L. Travassos F° leg. (MZSP); *idem*, 1 male, x.1945, M. Carrera leg. (MZSP); Jardim Botânico, 1 male, 30.ix.1959, M. Dary leg. (MZSP); Parque do Estado, 1 male, 21.x.1934, L. Trav. F° leg. (MZSP); *idem*, 2 males (MNRJ); Boracéia, 1 male, xii.1948, L. Travassos F° & E. Rabello leg. (MZSP); Estação Biológica de Boracéia, Salesópolis, 4 males, xi.1965, 3 males, 14.xii.1965, 9 males, 12.ix.1968, 4 males, 25.ix.1968, Rabello leg. (MZSP); *idem*, 1 male, no date, Rabello leg. (MZSP); *idem*, 1 male, ix.1967, J. Oliveira leg. (MZSP); *Santa Catarina*: Nova Teutônia, 1 male, 26.x.1939, 1 male and 1 female, IX.1967, F. Plaumann leg. (MZSP). [Two males from Estação Biológica de Boracéia were dissected.]

*Distribution*: BRAZIL (states of Minas Gerais, São Paulo, Santa Catarina).

*Hosts*: no records.

### *Prophorostoma tomjobimi* Nihei, sp. nov.

(Figs. 6-9)

*Male*: Body length: mean 10.6 mm (9.8-11.3 mm,  $n = 10$ ); wing length: mean 9.9 mm (9.3-10.8 mm,  $n = 10$ ).

*Colouration*: Head dark-brown with silver pruinosity, the gena reddish-brown. Antenna brown, but first flagellomere orange at base. Palpus orange. Thorax black with whitish pruinosity. Scutum with five black stripes

separated by pruinosity, with three narrow median (one median between the acrostichal rows, and the other two between the acrostichal and dorsocentral rows) ending just before the postsutural acrostichals, but the median stripe continuing widened almost until apex of scutellum, and two lateral between the dorsocentral and intralar rows almost reaching the scutellum. Scutellum black with whitish pruinosity on sides and brownish-golden pruinosity on discum. Wing membrane slightly brownish, and a little darker along veins. Legs black; coxae and femora with some whitish pruinosity. Abdomen blackish with white pruinosity; with a conspicuous black median band: on syntergite 1+2 on the excavation, on tergites 3 and 4 trapezoid, and on tergite 5 a linear band; the remaining areas white pruinose, while the dark areas covered by brownish-golden dust. And ventrally, all tergites with the posterior margin black, this macula narrow at middle but enlarging to the sides; the remaining is white pruinose.

*Head:* Frontal vitta at mid level over twice as wide as fronto-orbital plate, and about twice at level of lunule. Interocular space well constricted above, a little before the ocellar triangle. Frontal setae slightly proclinate. Fronto-orbital plate with some scarce and minute setulae; without developed proclinate seta. Antennal axis about 3/5 the head height and conspicuously lower than the eye mid level; antennal axis as long as oral axis. First flagellomere twice as long as pedicel, the tip rounded (thumb-like). Arista plumose, with dorsal, ventral and inner-dorsal cilia from base to apex, the length of most basal cilia about 3 times the basal width of arista. Parafacial bare and as wide as epistome. Epistome strongly projecting. Gena about 2/5 the eye height. Palpus cylindrical and long, a little shorter than haustellum. Haustellum about 1/2 the head height. Labella moderately developed.

*Thorax:* Presutural portion with same size as postsutural portion. Acrostichals 1+2; dorsocentrals 3+4, the second postsutural weak; 3 humerals; 2 presutural intralars; 1 presutural supra-alar; 2 postsutural intralars; intra-postalar undeveloped; 3 postsutural supra-alars, the prealar moderately developed – conspicuously shorter than first postsutural dorsocentral and about half the strongest supralar. Proepisternum setulose, with pale setulae. Katepimeron (barette) setulose. Scutellum with 2 lateral pairs, one long convergent apical pair but shorter than the laterals, and 1-2 discals.

*Wing:* M vein bent forward toward  $R_{4+5}$ , without forming an appendix, and nearly straight after bend. Node of Rs setulose dorsally and ventrally.

*Legs:* Fore femur with dorsal and posteroventral rows of setae. Mid femur with a posteroventral row of setae on basal half; without median anterior setae; and 2 oblique preapical posterodorsal setae. Hind femur with dorsal, anteroventral and posteroventral rows of setae, the two latter longer on basal half; and 2 oblique preapical posterodorsal setae. Chaetotaxy of tibiae weakly developed. Fore tibia with 2 median posterior setae. Mid tibia with one (sometimes 2) submedian anterodorsal seta; 1 (or 2) median posterior setae; and one submedian ventral. Hind tibia with 2 developed anterodorsal setae in a series together with some weak setae; 2 posterodorsal setae; and one submedian anteroventral setae.

*Abdomen:* Oblong-ovate and as wide as thorax. Tergites 1+2 to 4 with lateral marginal setae; tergite 3 and 4 with a pair of median marginal setae; tergite 5 with a row of marginal setae, and with an irregular row of discal setae dorsally. Sternites covered. *Terminalia* (Figs. 6-9): Sternite 5 as in Fig. 9. Cercal plate enlarged at base and acuminate on apex in posterior view (Fig. 8), long setulose on base, the tip narrow and inwardly curved in profile (Fig. 7). Surstyli rather broader at base and round in profile (Fig. 7), slightly concave in posterior view (Fig. 8). Aedeagal apodeme elongate and epiphallus short (Fig. 9). Pregonite and postgonite firmly connected each other, the first 1,5X the length of the second and curved, postgonite rather curved from middle and the tip truncate (Fig. 9). Distiphallus, perpendicular to epiphallus, with spinulose membrane anteriorly and with microtrichiae at apex (Fig. 9).

*Female:* Body length: 8.8 mm ( $n = 1$ ); wing length: 9.4 mm ( $n = 1$ ). Differs from male by the following: first flagellomere orange at base and at apex; abdominal tergites with the longitudinal median band not so conspicuous as in male, and besides this median band there are also posterior dark spots on sides of tergites 3 and 4 but not covered by brownish-golden dust as the median band; frontal vitta at the mid level about twice wider than fronto-orbital plate, and subequal at the lunule level; the interocular space narrowing gradually toward the vertex; palpus slightly spatulate apically; 2 postsutural supra-alars; [forelegs lacking in the only female specimen available]; mid femur with median anterior setae; abdomen ovate and wider than thorax; no discal setae on tergite 5.

Type material: Holotype male, BRAZIL, Rio de Janeiro, Nova Friburgo, Mury, 1-31.i.1965, Gred & Guimarães leg. (MZSP). Labelled as follows: "Mury, Nova Friburgo / Rio de Janeiro – Br. / 1-31.Jan.1965. / Gred & Guimarães col." [printed label]; "Prophorostoma /

tomjobimi sp. nov. / S.S. Nihei det. 2006" [handwriting/printed label]; "Holotipo" [red label].

Paratypes: 25 males and 1 female, with same data as holotype and labelled as well, except for the green label "Parátipo" added.

*Distribution*: BRAZIL (state of Rio de Janeiro).

*Hosts*: no records

*Etymology*: The name is given in homage to the great musician and composer Tom Jobim (1927-1994).

#### Differences between *P. pulchra* and *P. tomjobimi*

There are several remarkable differences between both species of the genus *Prophorostoma*. In order to summarise these differences a key is provided below:

General colouration dark, but abdomen orangish-brown and the middle of tibiae brown. Thorax with the median black stripe between the acrostichal rows finishing just before the postsutural acrostichals. Acrostichals 0+2 (sometimes presutural setae are weakly developed). Humeral 4 (or 5). Proepisternum black setulose. Fore femur with a posterodorsal row of setae. Mid femur with median anterior setae. Wing conspicuously darkened at base. Abdomen with a dark triangle backward directed on tergites 1+2 and 3 and continued as a narrow stripe until apex of abdomen (in females the triangle not well defined) .....  
..... *P. pulchra* Townsend, 1927.

General colouration dark, almost entirely blackish. Thorax with the median black stripe extending until apex of scutellum. Acrostichals 1+2. Humeral 3. Proepisternum pale setulose. Fore femur without posterodorsal row of setae. Mid femur without median anterior setae. Wing not darkened at base. Abdomen with a dark broad band from tergites 1+2 to 5, but at first tergite the band is exactly over the excavation and at tergites 3 and 4 the band is trapezoid, not linear as in tergite 5; this broad band covered by a brownish-golden dust ... *P. tomjobimi* Nihei, sp. nov.

#### RESUMO

Revisão de *Prophorostoma* Townsend, 1927 (Diptera, Tachinidae, Dexiinae), com a descrição de uma nova espécie. O gênero Neotropical *Prophorostoma* Townsend, 1927 é revisado,

incluindo a redescritção de sua espécie-tipo, *Prophorostoma pulchra* Townsend, 1927, bem como a descrição de uma nova espécie, *Prophorostoma tomjobimi* Nihei, do estado do Rio de Janeiro, Brasil.

PALAVRAS-CHAVE: Dexiini, Diptera, região Neotropical, *Prophorostoma*, taxonomia.

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