Parapentaneura bentogomensis Stur, Fittkau et Serrano (Diptera, Chironomidae, Tanypodinae) taken in Southeastern, Brazil: additional characters and modified generic diagnosis

Caroline Silva Neubern de Oliveira¹,³, Alaíde Aparecida Fonseca-Gessner² & Mário Antônio Navarro-Silva¹

¹Programa de Pós-graduação em Entomologia, Universidade Federal do Paraná – UFPR, CP 19020, CEP 81531-980, Curitiba, PR, Brasil, e-mail: cneubern@yahoo.com.br, mnavarro@ufpr.br
²Departamento de Hidrobiologia, Universidade Federal de São Carlos – UFSCar, CP 676, CEP 13565-905, São Carlos, SP, Brasil
³Corresponding author: Caroline Silva Neubern de Oliveira, e-mail: cneubern@yahoo.com.br


Abstract: The genus Parapentaneura was established in 2006 and is composed of a single species, Parapentaneura bentogomensis, originally from Mato Grosso State. This species was collected in São Paulo State and is thus redescribed. The specimens from both localities were compared, adding new characters to the description of the species and emending the genus diagnosis. The new record increases considerably the geographical distribution of Parapentaneura.

Keywords: new record, non-biting midges, redeescription, species, taxonomy.


Resumo: O gênero Parapentaneura foi estabelecido em 2006 e apresenta somente uma espécie, Parapentaneura bentogomensis, proveniente do Estado do Mato Grosso. Esta espécie foi coletada no Estado de São Paulo e então redescrita detalhadamente, apresentando caracteres adicionais. Os espécimes de ambas as localidades foram comparados, possibilitando o aperfeiçoamento da diagnose do gênero. O novo registro amplia consideravelmente a distribuição geográfica de Parapentaneura.

Palavras-chave: novo registro, quironomídeo, redescrição, espécie, taxonomia.
Introduction

The genus *Parapentaneura* Stur, Fittkau et Serrano was established in 2006, originally described from Mato Grosso State, Brazil. This genus is similar to *Pentaneura* (Philippi, 1865) and *Hudsonomyia* (Roback, 1979) with respect to the lyrate tibial spurs and the rather short and robust hypopygium (Stur et al., 2006). The pupal stage of *Parapentaneura* resembles that of *Larsia* due characters of thoracic horn. The larval stage resembles that of *Pentaneura* due to the presence of the dark supraanal setae, which are longer and stronger than the anal setae and mounted on small humps (Stur et al., 2006).

The genus includes a single species, *Parapentaneura bentogomensis* and can be diagnosed by the following characters: imagines with lyrate tibial spurs; R2 branch absent; R2+3 connecting bentogomensis and can be diagnosed by the following characters: 

> than the anal setae and mounted on small humps (Stur et al., 2006).

Material and Methods

The material examined was mounted on slides, in Euparal, following the procedures outlined by Pinder (1983, 1986, 1989). The general terminology follows Saether (1980), Roback (1985), Kowalik (1985), Langton (1994) and Oliver & Dillon (1989). Unless otherwise indicated, measurements are given in μm and are given as ranges followed by the mean when more than three specimens have been measured. All the larvae were measured in the fourth instar exuviae. The coloration concerns slide mounted specimens.

The paratypes are housed in the entomological collection of Instituto Oswaldo Cruz, Rio de Janeiro, Brazil. The additional material examined is housed in the Laboratório de Entomologia Aquática of the Universidade Federal de São Carlos – UFSCar, São Paulo, Brazil and in the collection “Pe. Jesus Santiago Moura”, Departamento de Zoologia, Universidade Federal do Paraná – UFPR, Paraná, Brazil.

Results

*Parapentaneura Stur, Fittkau et Serrano*

**Generic Diagnosis.** Male: wing length 1.1-1.4 mm. Antenna with 13 flagellomeres, apical flagellomere indistinctly offset, AR 1.1-1.3. Eyes with dorsomedian extension; temporals uniserial. Antennal lobes separated medially; scutal tubercle absent; lateral antenopentral, anepisternal, preepisternal and postnotal setae absent. Wing unmarked; membrane evenly covered with pale macrotrichia; Costa ending between M1+2 and M4+5; R2+3 reaching Costa; R1 branch absent; anal lobe well developed. Fore and hind tibiae with single spur; mid tibia with two spurs; all tibial spurs lyrate, with 3-4 teeth; pulvilli absent. Tergite IX with strong posterior setae. Phallapodeme and lateral sternapodeme with characteristic shape. Gonocoxite robust, 1.5 times longer than wide, inner margin slightly concave; dorsal surface with longer marginal setae and field of short bristles medially. Gonostylus simple, short, about half the length of gonocoxite, HR 1.54-1.65. Pupa: Exuviae coloration brownish with a dark brown spots. Thoracic horn flattened, elongated; alveolar horn atrium with central duct, connected to large plastron plate by narrow neck; corona present, more than half the length of horn; thoracic comb well developed, consisting of rounded tubercles, longest tubercle more than twice as long as wide; additional small rounded projections near base of horn; anterior median surface of thorax wrinkled. Scar on tergite I elongated, pigmented. Tergite I with one prominence on each side of scar and without shagreen. Tergites with short spines partially serially arranged in groups of 2 and 3; abdominal D setae all filamentous, robust, apically round; segment VII with 3 LS setae, shorter than length of segment; segment VIII with 5 LS setae. Anal lobe about 2 times longer than wide; outer margin sclerotized and with spines beyond distal macroseta; remaining part hyaline, with shagreen basally; anal macrosetae with adhesive sheaths, proximal macrosetae dorsal; male genital sac about one-third the length of the anal lobe. Larva: head capsule 430-600 long; AR 3.68-4.22; ring organ near middle of basal segment. Ring organ in distal half of basal maxillary palp segment; mandible slender, basal tooth distinct; ligula with 5 subequal teeth, row of teeth straight to slightly convex, inner teeth with apices turned outwards; paraligula bi- or trifid, third tooth on inner side varying in size; pecten hypopharyngis with 6-11 teeth; S5, DP and S8 in row, slightly posteriorly directed; S7 anterolateral to S8; S9 anterior to VP; S10 posterior to VP. Anal tubules slender; supraanal setae on small tubercles with transversal grooves, stronger and longer than anal setae; posterior parapods with spines in the extremity; claws of posterior parapods simple or with inner teeth.

*Parapentaneura bentogomensis* Stur, Fittkau et Serrano, 2006: 59 (Figures 1-13)

**Material Examined:** Paratypes, 2 males with pupal exuviae, Brazil, Mato Grosso, Bento Gomes river near Poconé, 15° 54' S and 56° 33' W, 14.x.1993, Serrano M. A. leg. 7 males with larval and pupal exuviae Brazil, São Paulo, São Carlos, UFSCar, Mayaca pond, 21° 58' 02.,1" S and 47° 33’ 01.,7" W, 13.ix.2004, Oliveira C.S.N. leg.

**Male Imago (n = 7; Figures 1-5)**

Total length 2.63-2.66, 2.65 mm. Wing length 1.28-1.46, 1.37 mm. Total length/wing length 1.82-2.05, 1.94. Wing length/length of profemur 2.06-2.21, 2.14.

**Coloration:** Head, pedicel, antenna and thorax brownish. Wings with membrane evenly covered with pale macrotrichia. Legs brownish. Abdomen brownish.

**Head:** AR 1.12-1.28, 1.18. Apical flagellomere 50-55, 53 long. Dorsomedial extension with 3-4 facets. Temporal setae 8-9, two anterior margin weakly concave 170.0-197.5, 180.8 long. Palpomere lengths 27.5-30.0, 29.2; 43.7-55, 48.7; 63.7-70.0, 67.9 wide at largest part. Labium with one seta. Ocular coronal setae. Clypeus with 8-13 setae, 80-83.7, 81 long and 137.5-160.0, 150.4. Total length/wing length 1.82-2.05, 1.94. Wing length/length of profemur 2.06-2.21, 2.14.

**Legs (Figures 2-13)**

**Male Imago (n = 7; Figures 1-5)**

Total length 2.63-2.66, 2.65 mm. Wing length 1.28-1.46, 1.37 mm. Total length/wing length 1.82-2.05, 1.94. Wing length/length of profemur 2.06-2.21, 2.14.

**Coloration:** Head, pedicel, antenna and thorax brownish. Wings with membrane evenly covered with pale macrotrichia. Legs brownish. Abdomen brownish.

**Head:** AR 1.12-1.28, 1.18. Apical flagellomere 50-55, 53 long. Dorsomedial extension with 3-4 facets. Temporal setae 8-9, two anterior margin weakly concave 170.0-197.5, 180.8 long. Palpomere lengths 27.5-30.0, 29.2; 43.7-55, 48.7; 63.7-70.0, 67.9 wide at largest part. Labium with one seta. Ocular coronal setae. Clypeus with 8-13 setae, 80-83.7, 81 long and 137.5-160.0, 150.4. Total length/wing length 1.82-2.05, 1.94. Wing length/length of profemur 2.06-2.21, 2.14.

**Coloration:** Head, pedicel, antenna and thorax brownish. Wings with membrane evenly covered with pale macrotrichia. Legs brownish. Abdomen brownish.

**Head:** AR 1.12-1.28, 1.18. Apical flagellomere 50-55, 53 long. Dorsomedial extension with 3-4 facets. Temporal setae 8-9, two anterior margin weakly concave 170.0-197.5, 180.8 long. Palpomere lengths 27.5-30.0, 29.2; 43.7-55, 48.7; 63.7-70.0, 67.9 wide at largest part. Labium with one seta. Ocular coronal setae. Clypeus with 8-13 setae, 80-83.7, 81 long and 137.5-160.0, 150.4. Total length/wing length 1.82-2.05, 1.94. Wing length/length of profemur 2.06-2.21, 2.14.

**Coloration:** Head, pedicel, antenna and thorax brownish. Wings with membrane evenly covered with pale macrotrichia. Legs brownish. Abdomen brownish.
Parapentaneura bentogomensis taken in Southeastern, Brazil

Discussion

The Southeastern specimens falls well within the species description given by Stur et al. (2006), with the following exceptions: male, AR 1.12-1.28; wing length 1.28-1.46 mm and BV of hind leg 2.45-2.63; pupa, wavy plastron plate and branched or simple respiratory atrium; larva, head capsule length 430.0-445.0; AR 3.6-4.2; supraanal seta with transversal grooves, length of supraanal seta/length of the highest anal seta 0.25-0.33, 0.29 mm width. Thoracic horn (Figure 7) 182.0-200.0, 189.0 long, maximum width 70.0-82.0, 75.6, branched or simple respiratory atrium, plastron plate 40.0-43.7, 42.0 long, wavy surface plastron plate, corona 60.0-100.0, 75.8 long, surface of thoracic horn with spines. Basal lobe next to with 8 protuberances. Thoracic comb with seven well development rounded teeth.

Abdomen (Figures 6, 8, 9): AI without shagreen, AVII-VIII with shagreen as in figure 8, tergite I with scar 120.0-133.7, 127.0 long and with one prominence on each side of scar. AVII with 3 taeniae, LS, 112.5-127.5, 120.0. AVIII with 5 taeniae, LS, 50.0-67.5. Anal lobe (Figure 9) 350.0-375.0, 360.0 long, with 2 anal macrosetae 237.5-275.0, 256.2 long. LS, anal macroseta 80.0-92.0, 86.5, LS, anal macroseta 137.5-152.5, 144.6, medially membranous and with spines beyond distal macroseta in the outer margins. Genital sac smaller than anal lobe, with 140-171.2, 152.9 long.

Larva (n = 7; Figures 10-13)

Head capsule (Figures 10, 11): Length 430.0-445.0, 435.0, width 240.0-290.0, 261.6, A, 225.0-237.5, 230.8 long, ring organ 117.5-130, 125 from the base, A, 50-52.5, 51.6 μm long. AR 3.6-4.2, 3.8. Maxillary palp with one segment, P1 32.5-36.2, 34.5 long, 8.7-10.0, 9.0 wide. A/P, 6.4-7.0, 6.7. Mandible (Figure 10) length 62.5-65.0, 63.3, with 3 lateroventral setae and 1 sensillum campaniforme, basal tooth 18.7-22.5, 20.0 from apex of mandible and with seta subdentalis 12.5 long, A/MD 3.5-3.8, 3.6. Dorsumorum with three teeth on each side distant 33.0-35.0, 34.0. Ligula (Figure 11) 53.7-55.0, 54.5 long and maximum width 30.0-31.2, with 5 teeth, It/O 1.0, Mt/O 0.7, It/Li 0.1, muscle attachment 8.7-11.2 long, tridif paraligula 27.5-31.2, 30.0 long, pecten hypopharyngis with 11 sharp teeth.

Body (Figures 12, 13): Abdomen with several setae. Procerci 155.0-162.5, 158.8 long, 16.2-20.0, 17.5 wide, with seven anal setae and one simple lateral seta, L/W 7.7-10.9, Supraanal seta (Figure 12) on small tubercles, 420.0-470.0, 450.0 long and with transversal grooves, length of supraanal seta/length of the longest anal seta 1. Anal tubes slender, smaller than parapods. Posterior parapods with hooklets in the extremity, five claws with fine inner teeth (Figure 13).

The comparison among the materials allowed to include some characters in the generic diagnosis: male, fore and hind tibia with single spur; mid tibia with two spurs; phallapodeme and lateral sternapodeme with characteristic shape; pupa, coloration brownish with a dark brown spots; tergite I with one prominence on each side of scar and without shagreen; larva, anal tubules slender; supraanal setae on small tubercles with transversal grooves, stronger and longer than anal setae; posterior parapods with spines in the extremity; claws of posterior parapods simple or with inner teeth.

The larvae were collected in a small pond on the Universidade Federal de São Carlos campus, São Paulo State, Brazil. The pond’s maximum depth is 1.30 m and the larvae were found associated with the aquatic macrophyte Mayaca.
Acknowledgements

We are indebted to Dr. Elisabeth Stur for explanation of some characters and also to the Fundação do Instituto Oswaldo Cruz, Fiocruz, Rio de Janeiro, Brazil, for the loan of the paratypes, and anonymous reviewer for valuable comments on the manuscript. The first author received grants from CNPq (140179/2007-0). Thanks are also due to the Programa de Pós Graduação em Entomologia da Universidade Federal do Paraná - UFPR, Brazil.

References


Received 14/12/09
Revised 08/06/10
Accepted 16/06/10