



MUSEU PARAENSE EMÍLIO GOELDI
UNIVERSIDADE FEDERAL DO PARÁ
PROGRAMA DE PÓS-GRADUAÇÃO EM ZOOLOGIA
CURSO DE MESTRADO EM ZOOLOGIA

SOFIA LINS LEAL XAVIER DE CAMARGO

**DESCRIÇÃO E NOTAS TAXONÔMICAS COMPARATIVAS DAS
TERMINÁLIAS FEMININAS DE ESPÉCIES DE *Peckia* ROBINEAU-
DESVOIDY, 1830 (DIPTERA, SARCOPHAGIDAE) DA AMAZÔNIA
BRASILEIRA**

Orientador: Dr^a.: Maria Cristina Esposito

ICB/UFPA

Co-Orientador: Dr.: Fernando Carvalho-Filho

CZO/MPEG

Belém – PA

2014

Pós-Graduação
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Dissertação apresentada ao Programa de Pós-Graduação em Zoologia, do convênio entre a Universidade Federal do Pará e o Museu Paraense Emílio Goeldi, como parte dos requisitos para obtenção do título de Mestre em Zoologia.

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Dissertação apresentada como requisito parcial para obtenção do título de Mestre do Programa de Pós-graduação em Zoologia da Universidade Federal do Pará e do Museu Paraense Emílio Goeldi, para comissão avaliadora formada pelos doutores:

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Sumário

Índice de figuras.....	7
Introdução Geral.....	10
Capitulo 1: Description and comparative morphological notes of female terminalia of species of <i>Peckia</i> Robienau-Desvoidy, 1830 (Diptera, Sarcophagidae) from the Brazilian Amazon.....	13
Material and Methods.....	15
Results.....	16
Key to the female species of <i>Peckia</i> from Brazilian Amazon.....	16
Descriptions.....	19
Discussion.....	35
References.....	38
Figures.....	40

Lista de figuras

Figures 1-4. *Peckia (Euboettcheria) anguilla* (Curran & Walley, 1934), female: **1A.** Terminalia and abdominal sternites, ventral view. **1B.** Epiproct, cercus and hipoproct, frontal view. **1C.** spermathecae, frontal view. **2.** Abdomen, posterior view. **3.** Abdomen, ventral view. **4.** Abdomen, dorsal view. (Abbreviations: ce= cercus; ep= epiproct; hp=hipoproct; spt= spermathecae; St= sternite; T= tergite).....40

Figures 5-8. *Peckia (Euboettcheria) collusor* (Curran & Walley, 1934), female: **5A.** Terminalia and abdominal sternites, ventral view. **5B.** Epiproct, cercus and hipoproct, frontal view. **5C.** spermathecae, frontal view. **6.** Abdomen, posterior view. **7.** Abdomen, ventral view. **8.** Abdomen, dorsal view. (Abbreviations: ce= cercus; ep= epiproct; hp=hipoproct; spt= spermathecae; St= sternite; T= tergite).....12

Figure 9-12. *Peckia (Euboettcheria) epimelia* (Lopes, 1938), female: **9A.** Terminalia and abdominal sternites, ventral view. **9B.** Epiproct, cercus and hipoproct, frontal view. **9C.** spermathecae, frontal view. **10.** Abdomen, posterior view. **11.** Abdomen, ventral view. **12.** Abdomen, dorsal view. (Abbreviations: ce= cercus; ep= epiproct; hp=hipoproct; spt= spermathecae; St= sternite; T= tergite).....42

Figures 13-16. *Peckia (Euboettcheria) subducta* (Lopes, 1935), female: **13A.** Terminalia and abdominal sternites, ventral view. **13B.** Epiproct, cercus and hipoproct, frontal view. **13C.** spermathecae, frontal view. **14.** Abdomen, posterior view. **15.** Abdomen, ventral view. **16.** Abdomen, dorsal view. (Abbreviations: ce= cercus; ep= epiproct; hp=hipoproct; spt= spermathecae; St= sternite; T= tergite).....43

Figures 17-20. *Peckia (Pattonella) intermutans* (Walker, 1861), female: **17A.** Terminalia and abdominal sternites, ventral view. **17B.** Epiproct, cercus and hipoproct, frontal view. **17C.** spermathecae, frontal view. **18.** Abdomen, posterior view. **19.** Abdomen, ventral view. **20.** Abdomen, dorsal view. (Abbreviations: ce= cercus; ep=epiproct; hp=hipoproct; spt= spermathecae; St= sternite; T= tergite).....44

Figures 21-24. *Peckia (Pattonella) smarti* (Lopes, 1941), female: **21A.** Terminalia and abdominal sternites, ventral view. **21B.** Epiproct, cercus and hipoproct, frontal view. **21C.** spermathecae, frontal view. **22.** Abdomen, posterior view. **23.** Abdomen, ventral view. **24.** Abdomen, dorsal view. (Abbreviations: ce= cercus; ep=epiproct; hp=hipoproct; spt= spermathecae; St= sternite; T= tergite).....45

Figures 25-28. *Peckia (Peckia) chrysostoma* (Wiedemman, 1830), female: **25A.** Terminalia and abdominal sternites, ventral view. **25B.** Epiproct, cercus and hipoproct, frontal view. **25C.** Vaginal plate, frontal view. **25D.** Spermatheca, frontal view. **26.** Abdomen, posterior view. **27.** Abdomen, ventral view. **28.** Abdomen, dorsal view. (Abbreviations: ce= cercus; ep= epiproct; hp=hipoproct; spt= spermathecae; St= sternite; T= tergite; vp = vaginal plate).....46

Figures 29-32. *Peckia (Peckia) gulo* (Fabricius, 1805), female: **29A.** Terminalia and abdominal sternites, ventral view. **29B.** Epiproct, cercus and hipoproct, frontal view. **29C.** spermathecae, frontal view. **30.** Abdomen, posterior view. **31.** Abdomen, ventral view. **32.** Abdomen, dorsal view. (Abbreviations: ce= cercus; ep= epiproct; hp=hipoproct; spt= spermathecae; St= sternite; T= tergite).....47

Figures 33-36. *Peckia (Peckia) hillifera* (Aldrich, 1916), female: **33A.** Terminalia and abdominal sternites, ventral view. **33B.** Epiproct, cercus and hipoproct, frontal view. **33C.** spermathecae, frontal view. **34.** Abdomen, posterior view. **35.** Abdomen, ventral view. **36.** Abdomen, dorsal view. (Abbreviations: ce= cercus; ep= epiproct; hp=hipoproct; spt= spermathecae; St= sternite; T= tergite).....48

Figures 37-40. *Peckia (Peckia) lutzi* (Lopes, 1958), female: **37A.** Terminalia and abdominal sternites, ventral view. **37B.** Epiproct, cercus and hipoproct, frontal view. **37C.** Vaginal plate, frontal view. **37D.** Spermathecae, frontal view. **38.** Abdomen, posterior view. **39.** Abdomen, ventral view. **40.** Abdomen, dorsal view. (Abbreviations: ce= cercus; ep= epiproct; hp=hipoproct; spt= spermathecae; St= sternite; T= tergite; vp = vaginal plate).....49

Figures 41-44. *Peckia (Peckia) pexata* (Wulp, 1895), female: **41A.** Terminalia and abdominal sternites, ventral view. **41B.** Epiproct, cercus and hipoproct, frontal view. **41C.** vaginal plate, frontal view. **41D.** Spermathecae, frontal view. **42.** Abdomen, posterior view. **43.** Abdomen, ventral view. **44.** Abdomen, dorsal view. (Abbreviations: ce= cercus; ep= epiproct; hp=hipoproct; spt= spermathecae; St= sternite; T= tergite; vp = vaginal plate).....50

Figures 45-48. *Peckia (Peckia) uncinata* (Hall, 1933), female: **45A.** Terminalia and abdominal sternites, ventral view. **45B.** Epiproct, cercus and hipoproct, frontal view. **45C.** Vaginal plate, frontal view. **45D.** Spermathecae, frontal view. **46.** Abdomen, posterior view. **47.** Abdomen, ventral view. **48.** Abdomen, dorsal view. (Abbreviations: ce= cercus; ep= epiproct; hp=hipoproct; spt= spermathecae; St= sternite; T= tergite; vp = vaginal plate).....51

Figures 49-52. *Peckia (Sarcodexia) lambens* (Wiedemman, 1830), female: **49A.** Terminalia and abdominal sternites, ventral view. **49B.** Epiproct, cercus and hipoproct, frontal view. **49C.** spermathecae, frontal view. **50.** Abdomen, posterior view. **51.** Abdomen, ventral view. **52.** Abdomen, dorsal view. (Abbreviations: ce= cercus; ep= epiproct; hp=hipoproct; spt= spermathecae; St= sternite; T= tergite).....52

Figures 53-56. *Peckia (Squamatodes) ingens* (Walker, 1849), female: **53A.** Terminalia and abdominal sternites, ventral view. **53B.** Epiproct, cercus and hipoproct, frontal view. **53C.** spermathecae, frontal view. **54.** Abdomen, posterior view. **55.** Abdomen, ventral view. **56.** Abdomen, dorsal view. (Abbreviations: ce= cercus; ep= epiproct; hp=hipoproct; spt= spermathecae; St= sternite; T= tergite).....53

Figures 57-60. *Peckia (Squamatodes) trivittata* (Curran, 1927), female: **57A.** Terminalia and abdominal sternites, ventral view. **57B.** Epiproct, cercus and hipoproct, frontal view. **57C.** spermathecae, frontal view. **58.** Abdomen, posterior view. **59.** Abdomen, ventral view. **60.** Abdomen, dorsal view. (Abbreviations: ce= cercus; ep= epiproct; hp=hipoproct; spt= spermathecae; St= sternite; T= tergite).....54

Figures 61-66. **61.** *Peckia (Sarcodexia) lambens* (Wiedemman, 1830), female: median leg, lateral view. **62.** *Peckia (Squamatodes) ingens* (Walker, 1849), female: lower calypter, dorsal view. **63.** *Peckia (Euboettcheria) subducta* (Lopes, 1935), female: gena, lateral view. **64.** *Peckia (Pattonella) intermutans* (Walker, 1861), female: gena, lateral view. **65.** *Peckia (Peckia) chrysostoma* (Wiedemman, 1830), female: gena, lateral view. **66.** *Peckia (Peckia) lutzi* (Lopes, 1958), female: gena, lateral view.....55

Introdução Geral

Sarcophagidae possui cerca de 3.094 espécies descritas (Pape *et al.*, 2011) para todas as regiões biogeográficas, exceto para os polos, sendo que a região Neotropical é uma das mais ricas (Pape, 1996). A uniformidade recorrente na morfologia externa entre as espécies desta família dificulta a identificação específica. A terminália masculina possui um número maior de estruturas com importância taxonômica, se comparada à feminina, e pode ser facilmente exteriorizada e analisada nos espécimes alfinetados. Diante da quantidade de estruturas e da possibilidade de caracterização das mesmas através de ilustrações, os trabalhos taxonômicos sobre sarcófagídeos são baseados principalmente na análise das estruturas da terminália masculina. (Buenavetura & Pape, 2013; Giroux *et al.*, 2010; Carvalho-Filho *et al.*, 2013). Portanto, são poucos os trabalhos que contenham descrições da terminália feminina, por isso, as fêmeas de muitas espécies, não podem ser identificadas e as informações sobre a terminália das mesmas não são utilizadas em estudos taxonômicos e filogenéticos.

Mesmo contendo poucas estruturas, as terminálias femininas, algumas vezes, apresentam diferenças morfológicas perceptíveis que permitem a identificação em nível genérico e/ou específico (Mello-Patiu & Santos, 2001). Lopes (1957) aponta que as relações genéricas entre os sarcófagídeos carecem da análise da morfologia de ambos os sexos e dos estádios imaturos. Neste mesmo trabalho, Lopes (1957) levantou e ilustrou estruturas das larvas, das terminálias de machos e de fêmeas de espécies de seis gêneros considerados afins, e apontou sua importância para a caracterização dos gêneros.

Tibana & Mello (1985) estudaram as terminálias femininas de 38 espécies de *Oxysarcodexia* Townsend, 1917 e estabeleceram grupos de espécies baseado nos padrões do tergito 6 (denominado de sintergito 6+7 pelos autores). A terminália feminina de 14

espécies de *Nephoaetopteryx* Townsend, 1934 foram detalhadamente descritas e ilustradas por Mello-Patiu & Santos (2001), onde o esternito 8 e a placa vaginal foram apontados como importantes na caracterização específica. Neste mesmo estudo foi registrada a importância da análise conjunta das estruturas da terminália uma vez que, para as espécies analisadas, não houve uma única estrutura capaz de caracterizar as espécies e permitir sua identificação.

Apesar disso, as fêmeas de muitos gêneros de Sarcophagidae ainda não foram descritas e não há trabalhos ou chaves taxonômicas que permitam a identificação das fêmeas. *Peckia* Robineau-Devoidy, 1830 é um gênero reconhecido como um dos mais especiosos da região Neotropical (Buenaventura & Pape, 2013). Pape (1996), no catálogo dos Sarcophagidae do mundo, dividiu o gênero em quatro subgêneros: *Euboettcheria* Townsend, 1927; *Pattonella* Enderlein, 1928; *Peckia* Desvoidy e *Squamatodes* Curran, 1927. Buenaventura & Pape (2013) revisaram o gênero e propuseram a inclusão do subgênero *Sarcodexia* Townsend, 1892 e apontam a redução do estilo mediano como uma das principais características de *Peckia*. Entretanto, nesta revisão foram analisados apenas espécimes machos e a chave de identificação fornecida é baseada somente em estruturas da terminália masculina.

Peckia representa uma porção importante da fauna de dípteros saprófagos do Brasil, principalmente da Amazônia, apresentando valores elevados de riqueza de espécies e abundância (Dias *et al.*, 1984; Leandro & D'almeida, 2005; Carvalho-Filho & Esposito, 2009; Souza *et al.*, 2011). Entretanto, estes dados de riqueza e abundância baseiam-se somente na identificação dos espécimes machos e as fêmeas são identificadas apenas até o nível de subgênero. Diante da importância das espécies de *Peckia* para a região amazônica e da impossibilidade na identificação das fêmeas em nível específico, trabalhos taxonômicos sobre as terminálias femininas são necessários. As fêmeas de algumas

espécies deste gênero já foram previamente estudadas (Lopes: 1957, 1974, 1976 e Lopes & Tibana, 1982), porém as descrições e imagens fornecidas para a maioria das espécies não são suficientes para a identificação específica. Para que a identificação específica das fêmeas seja possível, as terminálias devem ser descritas e ilustradas por completo, de forma detalhada, expondo as diferenças entre as estruturas através de desenhos e notas sobre sua morfologia.

Neste sentido, o objetivo do presente trabalho é de descrever as terminálias femininas de 15 espécies do gênero *Peckia* que ocorrem na Amazônia Brasileira, visando permitir a identificação dos espécimes fêmeas destas espécies. Para isso são fornecidas, informações, fotos e ilustrações detalhadas das estruturas das terminálias, bem como uma chave de identificação baseada nestas estruturas. O título do artigo é “Descrição e notas taxonômicas comparativas da terminália feminina de espécies de *Peckia* Robienau-Desvoidy, 1830 (Diptera, Sarcophagidae) da Amazônia Brasileira” e será submetido à Revista Brasileira de Entomologia.

Description and comparative morphological notes of female terminalia of species of *Peckia* Robienau-Desvoidy, 1830 (Diptera, Sarcophagidae) from the Brazilian Amazon

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ABSTRACT. Description and comparative morphological notes of female terminalia of species of *Peckia* Robienau-Desvoidy, 1830 (Diptera, Sarcophagidae) from the Brazilian Amazon. In order to contribute and allow specific identification of female of the genus *Peckia*, the terminalia of 15 species that occurs in Brazilian Amazon are described, illustrated and an identification key to females is given. Besides gena color and the presence of setulae in gena and calypter, the shape of spermathecae and tergite 6 can also be used in the subgenus determination. The shape of the sternites 6, 7 and 8, the position of spiracle 6 and the microtrichosity of tergite 6 revealed important to specific identification. The tergite 8 is present only in the species *Peckia* (*Pattonella*) *intermutans* (Walker, 1861). The shape of vaginal plate, a structure present only in four species of subgenus *Peckia*, differs in shape and can be used to characterize these species. Therefore, a combined analysis of these features of female terminalia is necessary in the species determination of the females of *Peckia*. *Peckia* (*Peckia*) *hilifera* (Aldrich, 1916) is recorded for the first time from Brazil.

KEY-WORDS: Flesh flies, Oestroidea, Sarcophaginae, taxonomy.

RESUMO. Descrições e notas taxonômicas comparativas das terminalias femininas de 15 espécies de *Peckia* Robienau-Desvoidy, 1830 (Diptera, Sarcophagidae) da Amazônia Brasileira. Para contribuir com a caracterização e também possibilitar a identificação específica das fêmeas do gênero *Peckia*, as terminálias de 15 espécies com ocorrência na Amazônia Brasileira são descritas, ilustradas e uma chave de identificação para fêmeas é fornecida. Além da cor da gena e presença de sétulas da gena e calíptro, o formato das espermatecas e do tergito 6 também podem ser utilizados para caracterização dos cinco subgêneros de *Peckia*. O formato dos esternitos 6, 7 e 8, a posição do espiráculo 6 e a polinosidade do tergito 6 revelaram-se importantes para identificação das espécies. O tergito 8 está presente apenas na espécie *Peckia (Pattonella) intermutans* (Walker, 1861). O formato da placa vaginal, estrutura presente em apenas quatro espécies do subgênero *Peckia*, difere entre elas e pode ser utilizado para identificação específica. Portanto, uma análise conjunta destas características da terminália feminina é necessária para identificação específica de fêmeas de *Peckia*.

PALAVRAS-CHAVE: moscas-da-carne, Oestroidea, Sarcophaginae, taxonomia.

Sarcophagidae is a family of flies (Diptera) whose identification is based mainly on morphological features of male terminalia, due to the absence of remarkable differences in external morphology between the species and/or genera (Giroux, *et al.*, 2010). There are few studies on female terminalia since it shows fewer structures than male terminalia and the identification of most of species is possible only when the females are obtained from bred series or the mating pair is captured (Lopes, 1957; Lopes & Tibana, 1982; Mello-Patiu & Santos, 2001).

However, some studies have shown that female terminalia have useful features to specie-groups determination and to phylogenetic analysis (Tibana & Mello, 1985; Mello-Patiu & Santos, 2001). Although, the females of many genera have not been described or

keyed. Therefore, in most of entomological collections the females are identified until the generic or subgeneric level.

Peckia Robineau-Desvoidy, 1830 is one of the largest genus of Neotropical flesh-flies and an important component of Amazonian fauna of necrophagous flies (Buenaventura & Pape, 2013; Carvalho-Filho & Esposito, 2009). The genus was recently revised by Buenaventura & Pape (2013), which described the males and provided a key based only on male terminalia characteristics. The female terminalia of some species of *Peckia* were studied by Lopes (Lopes: 1957, 1974, 1976; Lopes & Tibana, 1982). However, the specific identification of females *Peckia* is a difficult task, because the terminalia were not properly illustrated or described. Therefore, detailed illustration and description of female terminalia is necessary to identification. In this work descriptions, illustrations and a key to females of 15 species of *Peckia* from Brazilian Amazon are provided.

MATERIAL AND METHODS

This work is based on females, obtained mainly from breeding series deposited in the Museu Paraense Emílio Goeldi, Pará (MPEG) and Museu Nacional do Rio de Janeiro, Rio de Janeiro (MNRJ).

Breeding series of *Peckia* (*P.*) *chrysostoma*, *P.* (*Pa.*) *intermutans* and *P.* (*S.*) *lambens* were obtained from gravid females collected in forest in Belem city, state of Pará, Brazil. Females specific identification was based on identification of their sibling male with the key of Buenaventura & Pape (2013)

The female abdomens were cleared in 10% potassium hydroxide and posteriorly washed in distilled water and 10% acetic acid. After the study, female terminalia were stored in plastic microtubes and pinned below the source specimen.

The illustrations were produced with drawing tube. Photographs were obtained using a Leica DFC450 system camera on a Leica M205A stereomicroscope.

Terminology follows Shewell (1987), except for the term “vaginal plate” that follows Lopes (1939). The terms tergite and sternite were abbreviated as “T” and “st”, respectively. The abbreviation used within figures for other structures is given on its respective figure caption.

RESULTS

Key to the female of *Peckia* species from Brazilian Amazon

(The species *Peckia (Pattonella) pallidopilosa* (Curran & Walley, 1934), *Peckia (Peckia) urceola* (Hall, 1933) and *Peckia (Sarcodexia) tridentata* (Hall, 1937) are excluded as they are known only from the male sex).

1. Lower calypter covered with black setulae dorsally (Fig. 62).....2
 -Lower calypter without black setulae dorsally3
- 2(1). T5 with golden microtrichosity dorsally and silver spots ventrally; T6 with golden microtrichosity in the anterior margin; abdominal sternites with yellow setulae; st6 quadrangular; st7 with membranous latero-posterior margins (Figs. 53A, 54, 55, 56)
*Peckia (Squamatodes) ingens* (Walker, 1849)
 -T5 with silver microtrichosity; T6 with silver microtrichosity in the anterior margin; abdominal sternites without yellow setulae; st6 elongated; st7 totally sclerotized (Figs. 57A, 58, 59, 60).....*Peckia (Squamatodes) trivittata* (Curran, 1927)

3(1').T6 undivided; mid tibia with long setae reaching the apex of tibia (Fig. 49A).....	<i>Peckia (Sarcodexia) lambens</i> (Wiedemman, 1830)	
-T6 divided; mid tibia without seta reaching the apex of tibia.....		4
4(3'). Gena with black and golden setulae (Fig.64)		5
-Gena exclusively with black, golden or white setae		7
5(4). T6 with posterior margin widely opened; epiproct present; spermathecae spherical without constrictions.....	<i>Peckia (Euboettcheria) anguilla</i> (Curran & Walley, 1934)	
-T6 with posterior margin almost closed; epiproct absent; spermathecae pyriform with longitudinal constrictions.....		6
6(5). T8 divided in two small plates under the T6; st6 rectangular; st8 wider than long (Fig. 17A).....	<i>Peckia (Pattonella) intermutans</i> (Walker, 1861)	
-T8 absent; st6 rounded; st8 about as wide as long (Fig. 21A).....	<i>Peckia (Pattonella) smarti</i> (Lopes, 1941)	
7(4'). Gena with black setulae. ; spermathecae spherical, without chamber where it receives the spermathecal duct (Fig.63).....		8
-Gena with golden or white setulae; spermathecae globular, striated, with a small chamber where it receives the spermathecal duct (Figs.29C, 65,66).....		10

- 8(7). Spiracle 6 in the sclerite; st8 wide and short; epiproct undivided.....*Peckia (Euboettcheria) subducta* (Lopes, 1935)
 -Spiracle 6 in the membrane; st8 reduced; epiproct divided.....9
- 9(8') St7 with posterior margin quadrangular; st7 and st8 connected by membrane (Fig. 5A)..... *Peckia (Euboettcheria) collusor* (Curran & Walley, 1934)
 - St7 with posterior margin rounded; st7 and st8 collapsed, not connected by membrane (Fig. 9A)..... *Peckia (Euboettcheria) epimelia* (Lopes, 1938)
- 10(7'). T5 reddish, with strong spine-like setae in the posterior margin; T6 reddish with grooves (Fig. 29A, 30).....*Peckia (Peckia) gulo* (Fabricius, 1805)
 -T5 dark brown, without strong spine-like setae in the posterior margin (Figs. 34, 38); T6 brown, orange or yellow, without grooves(Figs. 33C, 37 D).....11
- 11(10'). Gena with silver microtrichosity, covered with silver or white setulae.....12
 -Gena with golden microtrichosity, covered with golden or yellow setulae.....13
- 12(11). St7 and st8 not fused; vaginal plate absent (Fig. 33A).....*Peckia (Peckia) hilifera* (Aldrich, 1916)
 -St7 and st8 fused; vaginal plate present (Figs. 37A, 37C).....*Peckia (Peckia) lutzi* (Lopes, 1958)
- 13(11'). St6 and st7 fused; vaginal plate with posterior margin wider than anterior (Figs. 41A, 41C, 42).....*Peckia (Peckia) pexata* (Wulp, 1895)

-St6 and st7 not fused; vaginal plate with posterior margin narrower than anterior.....14

14 (13'). St8 wider than long; vaginal plate with three projections in the posterior margin (Figs. 25A, 25C).....*Peckia (Peckia) chrysostoma* (Wiedemman, 1830)

-St8 as large as long; vaginal plate with three projections in the anterior margin (Figs. 45A, 45C).....*Peckia (Peckia) uncinata* (Hall, 1933)

Descriptions

Peckia (Euboettcheria) anguilla (Curran & Walley, 1934)

(Figs. 1-4)

Description. Female. Differs from male described by Buenaventura & Pape (2013) in the following: Abdomen. Tergites brown. T2 and T4 with one pair of lateral setae. T4 with one pair of median marginal setae (Figs. 3, 4).

Female terminalia. T5 with elliptical posterior opening, brown in color with golden microtrichosity dorsally and silver spots laterally (Figs. 2–4). T6 divided, orange in color, with posterior margin opened, with a row of setae along the posterior margin. Spiracle 6 on intersegmentary membrane and 7 on the tergite. T8 absent (Fig. 1). Epiproct undivided, covered with fine and long setae. Cercus covered with fine and long setae. Hipoproct represented by a triangular membranous area, covered with fine long setae (Fig. 1). ST6 rectangular, covered with setulae and with a row of setae on posterior margin. ST7 squared, with fine small setae on the posterior margin. ST8 triangular, covered with fine small setae (Fig. 1). Spermatheca rounded (Fig. 1).

Material examined. BRAZIL. *Rio de Janeiro*: Angra dos Reis, 11.XII.72, H. S. Lopes *leg.* (1 ♀, MNRJ); *idem*, 1.IV.72, H. S. Lopes *leg.* (1 ♀, MNRJ). *Espirito Santo*: Novo Horizonte, Conceição da Barra, X-72, Alvarenga and Roppa *leg.* (1 ♀, MNRJ).

Taxonomic remarks. The female terminalia of *P. (E.) anguilla* and *P. (E.) collusor* are morphologically similar, since they have T5 with elliptic posterior opening and spiracles 6 in the intersegmentary membrane and spiracle 7 within the tergite (Figs. 37, 40, 43, 46). However, *P. (E.) anguilla* differs from *P. (E.) collusor* in having ST8 triangular while in *P. (E.) collusor* it is reduced and joined to ST7. (Figs. 37, 43).

Peckia (Euboettcheria) collusor (Curran & Walley, 1934)

(Figs. 5-8)

Description. Female. Differs from male described by Buenaventura & Pape (2013) in the following: Head. Gena golden with black setulae. Abdomen. Tergites brown. Abdomen with golden and gray microtrichosity. T4 with one pair of lateral setae and one pair of central setae (Figs. 7, 8).

Terminalia. T5 with elliptical opening, brown in color with golden microtrichosity and posterior margin opened (Fig. 6). T6 divided, orange in color with golden microtrichosity, posterior margin widely opened and with a row of setae along its posterior margin (Figs. 5A, 6). Spiracle 6 in the membrane and 7 in the sclerite. T8 absent (Fig. 5A). Epiproct divided, represented by two small plates covered with setulae. Cercus covered with fine and long setulae. Hipoproct large, without setulae (Fig. 5B). St6 wider than long, with posterior margin enlarged, with few setulae and a row of strong setae along posterior margin. St7 narrowed posteriorly with anterior margin larger than posterior one, without

setae. St8 is represented by a small oval plate, joined with st7 by a membranous region and covered with short setulae (Fig. 5A). Spermatheca spherical without marks (Fig.5C).

Material examined. BRAZIL. *Rio de Janeiro*: Teresópolis – Imbiu, 1997, P. Araujo *leg.* (1♀, MNRJ); Floresta da Tijuca, IX.88, E. M. O. Cordillo *leg.* (1♀, MNRJ); São Cristovão, Quinta da Boa Vista, 20.IX.73, R. Tibana *leg.*(1♀, MNRJ). *Mato Grosso*: Juína, V.1985, O. Roppa and B. Silva *leg.*(1♀, MNRJ).

Taxonomic remarks. *Peckia (Euboettcheria) collusor* and *P. (E.) epimelia* share the following features: st6 widened posteriorly, st8 reduced, spiracle 6 in the intersegmentary membrane and epiproct divided in two small plates (Fig.5A, 5B). *P. (E.) collusor* can be distinguished from *P. (E.) subducta* by the quadrangular posterior margin of st7 and the presence of a membrane between st7 and st8 (Fig. 1C).

Peckia (Euboettcheria) epimelia (Lopes, 1938)

(Figs. 9-12)

Description. Female. Differs from male described by Buenaventura & Pape (2013) in the following: Thorax. Chaetotaxy: basal scutellars = 3. Abdomen. Tergites brown with golden and gray microtrichosity. T2, T3 and T4 with one pair of lateral setae. T4 with one pair of central setae (Fig.12).

Terminalia. T5 with elliptical opening, brown in color, with golden microtrichosity and posterior margin opened (Fig.10). T6 divided, brown in color, with golden microtrichosity, posterior margin opened and a row of setae along the posterior margin (Figs. 9A, 10). Spiracle 6 in the intersegmentary membrane and 7 in the sclerite. T8 absent (Fig. 9A). Epiproct triangular, covered with fine and long setulae. Cercus covered with

long and fine setulae. Hipoproct larger than long, triangular, covered with fine and long setulae (Fig. 9B). St6 larger than long, with posterior margin enlarged, covered with setulae and with strong setae in the posterior margin. St7 conical, without setulae or setae. St8 reduced, covered with setulae (Fig. 9A). Spermatheca spherical with furrows in the apical surface (Fig. 9C).

Material examined. Brazil. *Mato Grosso*: Sinop, X.75, Alvarenga and Roppa *leg.* (3♀, MNRJ)

Taxonomic remarks. *Peckia (Euboettcheria) epimelia* and *P. (E.) collusor* share many morphological similarities (see taxonomic remarks in *P. (E.) collusor*. However *P. (E.) epimelia* can be differentiated by the st7 with posterior margin rounded and by the st7 and st8 not fused (Fig. 9A).

Peckia (Euboettcheria) subducta (Lopes, 1935)

(Figs. 13-16)

Description. Female. Differs from male described by Buenaventura & Pape (2013) in the following: Thorax. Chaetotaxy: intra-alars = 1+2, basal scutellars = 3. Abdomen. Tergites black. T2 and T3 with one pair of lateral setae (Fig.16).

Terminalia. T5 with elliptical opening, black in color, with red spots in the posterior margin and golden microtrichosity (Fig. 14). T6 divided, red in color, with golden microtrichosity and a row of setae along the posterior margin. Spiracles 6 and 7 within the sclerite. T8 absent (Figs. 13A, 14). Epiproct represented by two small plates covered with fine long setulae. Cercus covered with long and fine setulae. Hipoproct triangular, with fine and long setulae along the posterior margin (Fig. 13B). St6 rectangular, covered with

setulae and with stronger setae in the posterior margin. St7 longer than large, bell shaped. St8 reduced, rectangular, covered with few long and fine setulae (Fig. 13A). Spermathecae spherical, without grooves or marks on its surface (Fig. 13C).

Material examined. Brazil. *Espirito Santo*: Linhares, VI.72, P. C. Elias leg.(2♀, MNRJ). *Mato Grosso*: Sinop, X.45, Alvarenga and Roppa leg.(1♀, MNRJ). *Rio de Janeiro*: Três Rios, 5.X.84, H. S. Lopes det. (1♀, MNRJ).

Taxonomic remarks. *Peckia (Euboettcheria) subducta* and *P. (E.) anguilla* share many morphological similarities (see taxonomic remarks in *P. (E.) anguilla*). However *P. (E.) subducta* have st7 and st8 not fused and T5 predominantly gray microtrichosity (Figs. 13A, 15).

Peckia (Pattonella) intermutans (Walker, 1861)

(Figs. 17-20)

Description. Female. Differs from male described by Buenaventura & Pape (2013) in the following: Thorax. Chaetotaxy: dorsocentrals=0+2, basal scutellars=3. Abdomen. Tergites black. T2 and T3 with one pair of lateral setae. T4 with two pairs of lateral setae and one pair of central setae (Fig.20).

Terminalia. T5 with elliptical opening, black in color, with golden microtrichosity dorsally and silver spots ventrally (Figs. 18, 19). T6 divided, brown in color, with golden microtrichosity, posterior margin closed and a row of setae along the posterior margin. Spiracles 6 and 7 in the sclerite. T8 present, represented by two small plates (Figs. 17A, 18). Epiproct absent. Cercus covered with long and fine setulae. Hipoproct triangular, covered with long setae (Fig. 17B). St6 larger than long, covered with setae in the posterior

margin. St7 with posterior margin widened, with a row of setae. St8 reduced, wider than long, with a median row of four setae (Fig. 17A). Spermatheca elongated, transversely striated with segmental constrictions along its length (Fig. 17C).

Material examined. Brazil. *Pará*: Belém, 05.V.2013, A. A. Silva *leg.* (3♀, MPEG).
Idem, Utinga, 4.X.2012, S. L. L. X. Camargo *leg.* (2♀, MPEG).

Taxonomic remarks. *Peckia (Pattonella) intermutans* and *P. (Pa.) smarti* share golden gena with golden and black setulae, T6 divided with membranous region reduced, spermatheca pyriform and epiproct absent (Figs. 17A, 17B, 17C). *P. (Pa.) intermutans* can be differentiated from *P. (Pa.) smarti* by the presence of T8. In addition, *P. (Pa.) intermutans* has st8 rectangular (Fig. 17A) while in *P. (Pa.) smarti* the st8 is quadrangular.

Peckia (Pattonella) smarti (Lopes, 1941)

(Figs. 21-24)

Description. Female. Differs from male described by Buenaventura & Pape (2013) in the following: Thorax. Chaetotaxy: dorsocentrals = 0+2, intra-alars = 1+2, basal scutellars = 3. Abdomen. Tergites black covered with silver and gray microtrichosity. T2 and T4 with one pair of lateral setae each (Fig. 24).

Terminalia. T5 with elliptical opening, black in color, with silver microtrichosity spots and posterior margin opened (Fig. 22). T6 divided, brown with golden microtrichosity and a silver spot in the anterior margin, with a row of setae along the posterior margin. Spiracles 6 and 7 in the sclerite. T8 absent (Figs. 21A, 22). Epiproct

absent. Cercus covered with long and fine setulae. Hipoproct triangular, with fine and long setulae (Fig. 21B). St6 oval, covered with few setulae and with strong setae in the posterior margin. St7 with three small lobes and few setae in the posterior margin. St8 square-shaped, with fine and long setae along the posterior margin (Fig. 21A). Spermatheca pyriform, with segmental constrictions along its length (Fig. 21C).

Material examined. Brazil. *Amapá*: Serra do Navio, XI. 1997, P. Magno *leg.* (1♀, MNRJ). *Mato Grosso*: Sinop, X.1975, Alvarenga and Roppa *leg.*(1♀, MNRJ). *Pará*: Belém-Aurá, H. S. Lopes *det.*(1♀, MNRJ). *São Paulo*: Campos do Jordão, Lopes and Izecksohn *leg.* (1♀, MNRJ).

Taxonomic remarks. The terminalia of *Peckia (Pattonella) intermutans* is similar to that of *P. (Pa.) smarti* (see taxonomic remarks in *P. (Pa.) intermutans*). However, *P. (Pa.) smarti* differs from *P. (Pa.) intermutans* mainly by the absence of the T8 and quadrangular st8 (Fig. 21A).

Peckia (Peckia) chrysostoma (Wiedemman, 1830)

(Figs. 25-28)

Description. Female. Differs from male described by Buenaventura & Pape (2013) in the following: Head. Gena golden with golden setulae. Thorax. Chaetotaxy: e katepisternal setae = 3. Abdomen. Tergites black. T2 and T4 with one pair of lateral setae. T4 with one pair of central seta (Fig. 28).

Terminalia. T5 with elliptical opening, brown in color with golden microtrichosity dorsally and gray microtrichosity ventrally (Fig. 26). T6 divided, brown in color, with golden microtrichosity and a row of setae in the posterior margin. Spiracle 6 and 7 in the sclerite.

T8 absent (Figs. 25A, 26). Epiproct triangular, covered with long setulae. Cercus covered with long and fine setulae. Hipoproct covered with fine and long setulae (Fig.25B). St6 as large as long, covered with strong setae in the posterior margin. St7 and st8 joined. St7 rectangular, with setae restricted to postero-lateral margin. St8 larger than long, with short setulae and one pair of lateral robust setae in posterior margin (Fig. 25A). Vaginal plate poorly sclerotized, short and with three projections in the posterior margin (Fig. 25C). Spermatheca globular, with parallel grooves restricted to distal half and a small rounded chamber where it receives the spermathecal duct (Fig. 25D).

Material examined. Brazil. *Pará*: Belém, 18.IV.2013, A. A. Silva *leg.* (3♀, MPEG).

Taxonomic remarks. *Peckia (Peckia) chrysostoma*, *P. (P.) pexata* and *P. (P.) uncinata* share many morphological similarities, since they have golden gena covered with golden setulae and both spiracles 6 and 7 are within the sclerite (Figs. 25A, 41A, 45A). *Peckia (P.) chrysostoma* can be distinguished from *P. (P.) uncinata* by the shape of st8 that is wider than long and by the st8 that is collapsed with st7. (Figs. 25A, 25C).

Peckia (Peckia) gulo (Fabricius, 1805)

(Figs. 29-32)

Description. Female. Differs from male described by Buenaventura & Pape (2013) in the following: Thorax. Chaetotaxy: dorsocentrals = 0+2, katepisternal setae = 3. Abdomen. Tergite brown. T2 and T3 with one pair of lateral setae. T4 with two pairs of lateral setae and one pair of central seta (Fig. 32).

Terminalia. T5 with triangular opening, reddish in color, with golden microtrichosity and a row of strong spine-like setae in the posterior margin (Fig. 30). T6

divided, brown in color, covered with golden microtrichosity, with grooves in the surface (visible in dry specimens) and strong setae in the posterior margin but not in its entire extension. Spiracle 6 and 7 in the sclerite. T8 absent (Fig. 29A, 30). Epiproct triangular, poorly esclerotized, represented by a cluster of setulae in the membrane near the cercus. Cercus covered with fine setulae. Hipoproct triangular, covered with fine and long setulae (Fig. 29B). St6 elongated, with a pair of strong setae in the posterior margin. St7 shield-shaped, without setae. St8 larger than long, with lateral margin convex and a row of setae in the posterior margin (Fig. 29A). Spermatheca globular with grooves in the surface and a small rounded chamber where it receives the spermathecal duct (Fig. 29C).

Material examined. Brazil. *Pará*: Bragança, 5.X.1995, N. Bittencourt *leg.* (7♀, MPEG). *Idem*, 11.V.2007, R. Santos *leg.* (1♀, MPEG). *Idem*, 11. IV. 2008, R. Santos. (1♀, MPEG). *Idem*, 7.III.1983, F. F. Ramos and R. B. Neto *leg.* (5♀, MPEG).

Taxonomic remarks. *Peckia (Peckia) gulo* shares some morphological similarities with *P. (P.) hilifera* and *P. (P.) lutzii* like the T5 with triangular opening (Figs. 30, 34, 38). In addition, these species are distributed only along the coast. Females of *P. (P.) gulo* can be distinguished from *P. (P.) hilifera* and *P. (P.) lutzii* by the following features: T5 reddish with spots of silver microtrichosity and a row of strong spine-like setae in the posterior margin; st6 with only one pair of median robust setae; T6 with grooves in the surface (Figs. 29A, 30, 32). In addition, *P. (P.) gulo* is a large and robust species, reaching 20mm in length, while *P. (P.) hilifera* and *P. (P.) lutzii* reach about 17 mm.

Peckia (Peckia) hilifera (Aldrich, 1916)

(Figs. 33-36)

Description. Female. Differs from male described by Buenaventura & Pape (2013) in the following: Head. Golden gena with golden setulae. Thorax. Chaetotaxy: supra-alars = 1+3, katapisternal setae = 3. Abdomen. Tergites brown with silver gray microtrichosity. T2 with one pair of lateral setae. T4 with two pairs of lateral setae and one pair of central seta (Fig. 36).

Terminalia. T5 with triangular opening, brown in color, with gray microtrichosity and a row of strong setae in the posterior margin (Fig. 34). T6 divided, yellow in color, with golden microtrichosity and a row of strong setae in the posterior margin. Spiracle 6 in the intersegmentary membrane and 7 in the sclerite. T8 absent (Fig. 33A). Epiproct triangular, covered with fine setulae. Cercus covered with fine and long setulae. Hipoproct triangular, covered with fine setulae (Fig. 33B). St6 quadrangular, covered with setulae, except basally and with strong setae in the posterior margin. St7 quadrangular, with short setulae sparsely distributed and a median depression. St8 reduced, larger than long, with a row of median setulae and two pairs of median strong setae (Fig. 33A). Spermatheca globular with grooves on its surface and a small rounded chamber where it receives the spermathecal duct (Fig. 33C).

Material examined. Brazil. *Pará*: Bragança, 11.III.2008, R. Santos *leg.* (7♀, MPEG)

Taxonomic remarks. *Peckia (Peckia) hilifera* is similar to *P. (P.) lutzi* (see taxonomic remarks of *P. (P.) gulo* since both have golden gray gena covered with yellow or white setulae, T5 brown with golden and gray microtrichosity dorsally and T6 orange (Figs. 34, 38). *Peckia (P.) hilifera* differs from *P. (P.) lutzi* in the shape of st8 that is wider

than long, spiracle 6 placed in the intersegmentary membrane and vaginal plate absent (Fig. 33A).

Peckia (Peckia) lutzii (Lopes, 1958)

(Figs. 37-40)

Description. Female. Differs from male described by Buenaventura & Pape (2013) in the following: Thorax. Chaetotaxy: dorsocentrals=0+2, intra-alars= 1+1, supra-alars=1+3, katepisternal setae = 3. Abdomen. Tergites brown. T4 with one pair of lateral setae and one pair of central seta (Fig. 40).

Terminalia. T5 with triangular opening, brown in color, golden microtrichosity dorsally and silver spots ventrally (Fig. 38). T6 divided, yellow in color, golden microtrichosity restricted to anterior half and a row of setae along the posterior margin. Spiracles 6 and 7 in the sclerite. T8 absent (Figs. 37A, 38). Epiproct is represented by a row of fine and long setulae. Cercus covered with long and fine setulae. Hipoproct is represented by a row of long and fine setulae (Fig. 37B). St6 large and long, with posterior margin larger than anterior, covered with few setulae and stronger setae in the posterior margin. St7 and st8 fused, almost squared, with two rows of setae (Fig. 37A). Vaginal Plate with quadrangular anterior margin and elongated lateral projections in the posterior margin (Fig. 37C). Spermatheca globular, with grooves in the surface and a small rounded chamber where it receives the spermathecal duct (Fig. 37D).

Material examined. Brazil. *Pará*: Bragança, 21.IX.1956, E. Lobato *leg.* (2♀, MNRJ). Bolivia. Santa Cruz de la Sierra, XII.1956, M. Alvarenga *leg.* (1♀, MNRJ).

Taxonomic remarks. *Peckia (Peckia) lutzii* and *P. (P.) hilifera* share many morphological similarities (see taxonomic remarks of *P. (P.) hilifera*). *Peckia (P.) lutzii* is

distinguished from *P. (P.) hilifera* by the T5 with silver microtrichosity spots ventrally, T6 golden microtrichosity restricted to anterior half, vaginal plate present and st7 and st8 fused (Figs. 37A, 37C, 38).

Peckia (Peckia) pexata (Wulp, 1895)

(Figs. 41-44)

Description. Female. Differs from male described by Buenaventura & Pape (2013) in the following: Thorax. Chaetotaxy: dorsocentrals = 0+2, intra-alars = 1+1, katepisternal setae = 3. Abdomen. Tergites brown. T2, T3 and T4 with one pair of lateral setae. T4 with one pair of central seta (Fig. 44).

Terminalia. T5 with hexagonal opening, brown in color, with golden and gray microtrichosity dorsally and silver ventrally (Figs. 42, 43, 44). T6 divided, orange in color with golden microtrichosity, covered with setulae and with a row of stronger setae in the posterior margin. Spiracles 6 and 7 in the sclerite. T8 absent (Figs. 41A, 42). Epiproct triangular, covered with fine and long setulae. Cercus covered with long and fine setulae. Hipoproct covered with fine and long setulae (Fig. 41B). St6 and st7 fused. St6 rounded, with setulae restricted to posterior half and a row of strong setae in the posterior margin. St7 squared, with posterior margins projected laterally with a patch of setulae in postero-lateral corner. St8 reduced, larger than long, with a single row of small setae on its center. (Fig. 41A). Vaginal plate widened posteriorly (Fig. 41C). Spermatheca globular, with grooves in the surface and a small rounded chamber where it receives the spermathecal duct (Fig. 41D).

Material examined. Brazil. *Mato Grosso*: Juína, V.1985, O. Roppa and B. Silva leg. (2♀, MNRJ). "J.O.C\ cultura 725" "Paraphriss. ♀\ pexata\ (Wulp)\ Det. H. S. Lopes". (1♀, MNRJ)

Taxonomic remarks. *Peckia (Peckia) pexata* is similar to *P. (P.) chrysostoma* and *P. (P.) uncinata* (see taxonomic remarks of *P. (P.) chrysostoma*). However, *P. (P.) pexata* can be distinguished from *P. (P.) chrysostoma* and *P. (P.) uncinata* by the hexagonal opening and by the fused st7 and st8 (Figs. 41A, 41D, 42).

Peckia (Peckia) uncinata (Hall, 1933)

(Figs. 45-48)

Description. Female. Differs from male described by Buenaventura & Pape (2013) in the following: Thorax. Chaetotaxy: intra-alars= 0+2, katepisternal setae = 3. Abdomen. Tergites black. T2, T3 and T4 with one pair of lateral setae. T4 with one pair of central seta (Fig. 48).

Terminalia. T5 with elliptical opening, brown in color, with golden and gray microtrichosity and posterior margin widely opened (Fig. 46). T6 divided, orange in color, with golden microtrichosity, covered with setulae and with a row of setae along the posterior margin. Spiracles 6 and 7 in the sclerite. T8 absent (Figs. 45A, 46). Epiproct triangular, with a row of fine setae. Cercus covered with long and fine setulae. Hipoproct triangular, covered with fine and long setulae (Fig. 45B). St6 almost rectangular, covered with setulae and with setae in the posterior margin. St7 rectangular with lateral margins projected laterally, covered with setulae except basally and with setae in the posterior margin. St8 squared, with setulae restricted to posterior half and with setae in the posterior margin (Fig. 45A). Vaginal plate very sclerotized, with anterior margin with three lobes, rectangular posterior margin and darkened central node (Fig. 45C). Globular spermatheca, with conspicuous grooves in the surface and a small rounded chamber where it receives the spermathecal duct (Fig. 41D).

Material examined. Brazil. *Mato Grosso*: Juína, V. 1985, O. Roppa and B. Silva leg. (2♀, MNRJ).

Taxonomic remarks. *Peckia (Peckia) uncinata* shares morphological similarities with *P. (P.) chrysostoma* and *P. (P.) pexata* (see taxonomic remarks of *P. (P.) chrysostoma*). *Peckia (P.) uncinata* can be distinguished from *P. (P.) pexata* by the st6 and st7, which are individualized in *P. (P.) uncinata* (Figs. 41A, 45A). *Peckia (P.) uncinata* can be distinguished from *P. (P.) chrysostoma* by the st8 as large as long and vaginal plate with three lobes in the anterior margin (Figs. 25A, 25C, 45A, 45C).

Peckia (Sarcodexia) lambens (Wiedemman, 1830)

(Figs 49-52)

Description. Female. Differs from male described by Buenaventura & Pape (2013) in the following: Thorax. Chaetotaxy: dorsocentrals=0+2, intra-alars= 0+2. Abdomen. Tergite black. T4 with a row of setae in the posterior margin (Fig. 52).

Terminalia. T5 with elliptical opening, black in color, with golden microtrichosity and posterior margin widely opened (Fig. 50). T6 undivided, brown in color, with golden microtrichosity, posterior margin opened and a row of setae in the posterior margin. Spiracle 6 in the intersegmentary membrane and 7 within the sclerite. T8 absent (Figs. 49A,50). Epiproct wide and short, with fine and long setulae along the margin. Cercus covered with setulae. Hipoproct broad and short, with fine setulae along the margin (Fig. 49B). St6 rectangular, covered with setulae and with setae in the posterior margin. St7 reduced and shield-shaped, without setulae or setae. St8 is represented by a row of setae in

the membrane near the hipoproct (Fig. 49A). Spermatheca spherical without stripes or grooves (Fig. 49C).

Material examined. Brazil. *Pará*: Belém, 4.III.2013, A.A. Silva leg.(3♀, MPEG)

Taxonomic remarks. *Peckia* (*Sarcodexia*) *lambens* and *Peckia* (*Sarcodexia*) *tridentata* (Hall, 1937) are the only species of subgenus *Sarcodexia* recorded from Brazilian Amazon. However, the female of *P.* (*S.*) *tridentata* are unknown. *Peckia* (*S.*) *lambens* differs from the other studied species by the T6 undivided with spiracle 6 in the intersegmentary membrane, st7 reduced and shield-shaped and st8 not sclerotized, represented by a row of setae (Fig. 49A).

Peckia (*Squamatodes*) *ingens* (Walker, 1849)

(Figs 53-56)

Description. Female. Differs from male described by Buenaventura & Pape (2013) in the following: Thorax. Chaetotaxy: intra-alars = 0+1, basal scutellars = 2, katepisternal setae = 2. Abdomen. Tergites black. T2 with one pair of lateral setae. T4 with two pairs of lateral seta (Fig. 56).

Terminalia. T5 with elliptical opening, brown in color with golden microtrichosity dorsally, silver microtrichosity ventrally and posterior margin widely opened (Figs. 54, 55, 56). T6 undivided, well-developed, orange in color, with golden microtrichosity restricted to the anterior margin, covered with setulae and a row of strong setae along the posterior margin. Spiracles 6 and 7 in the sclerite. T8 absent (Figs. 53A, 54). Epiproct represented by some strong setae in the membrane near the cerci. Cercus covered with setulae, with short setae along the posterior margin. Hipoproct triangular, covered with short setulae and

long setae (Fig. 53B). St6 reduced, quadrangular and with setae in the posterior margin. St7 reduced, quadrangular, with lateral and posterior margins membranous and one pair of setae on the terminal portion of sclerotized region. St8 U-shaped, without setae (Fig. 53A). Spermatheca spherical, with tiny rounded furrows (Fig. 53C).

Material examined. Brazil. *Pará*: Bragança, X.1965, A. Souza *leg.* (1♀, MPEG). “Brasil, Pará\ Marajó-Breves\ Rio Caneaca\ 21. #. 1988”; “ ACAMP.\ M^a Martins (1♀, MPEG)”.

Taxonomic remarks. The species of subgenus *Squamatodes* can be characterized by the following features: T6 bright orange, undivided and well developed, projected posteriorly (visible in dry specimens); spiracle 6 within the sclerite; st6, st7, st8 reduced and spermathecae with tiny furrows (Figs. 53A, 53C, 54, 57A, 57C, 58). *Peckia* (*Sq.*) *ingens* differs from *P. (Sq.) trivittata* by the abdomen with golden microtrichosity, T6 with golden microtrichosity in the anterior margin, st6 quadrangular and st7 with membranous latero-posterior margin (Figs. 53A, 55, 56).

Peckia (Squamatodes) trivittata (Curran, 1927)

(Figs 57-60)

Description. Female. Differs from male described by Buenaventura & Pape (2013) in the following: Thorax. Chaetotaxy: intra-alars = 0+1, basal scutellars = 2. Abdomen. Tergites black covered with silver and gray microtrichosity. T4 with one pair of lateral setae (Fig. 60).

Terminalia. T5 with elliptical opening, black in color, with silver microtrichosity and posterior margin widely opened (Fig. 58). T6 undivided, well-developed and projected

posteriorly (visible laterally in dry specimens); orange in color, with silver microtrichosity restricted to the anterior margin and a row of strong setae along the posterior margin. Spiracles 6 and 7 in the sclerite. T8 absent (Figs. 57A, 58). Epiproct larger than long, with fine and long setulae along the posterior margin. Cercus covered with setulae, with small setae along the posterior margin. Hipoproct triangular shaped, with fine and long setulae along the posterior margin (Fig. 57B). St6 elongated, narrow, with one pair of setae in the posterior margin. St7 reduced, almost rounded, without setulae or setae. St8 U-shaped, without setulae or setae (Fig. 57A). Spermatheca spherical, with rounded furrows sparsely distributed (Fig. 57C).

Material examined. Brazil. *Maranhão*: Caxias, 29. VII. 2010, J. O. A. Silva *leg.* (3♀, MPEG).

Taxonomic remarks. *Peckia (Squamatodes) trivittata* differs from *P.(Sq.) ingens* in having abdomen with silver gray microtrichosity (visible in dry specimens), T6 with silver microtrichosity in the anterior margin, st6 elongated and narrowed anteriorly and st7 reduced, with anterior margin quadrangular and posterior margin rounded (Figs. 57A, 59, 60).

Discussion

The studied females of *Peckia* have tergite 5 black, brown or reddish covered with gray, golden or silver microtrichosity which are useful to identification of some species. The female of *P.(P.) gulo* has tergite 5 reddish and a row of stout spine-like setae posterior margin. This feature is present only in this species, as previously mentioned by Lopes (1974).

The tergite 6 has two conditions: undivided and divided. The undivided pattern is present only in three species of the subgenus *Sarcodexia* and *Squamatodes*. The undivided pattern consists in one entire sclerotized plate. The divided pattern consists in two paired plates connected at apex by a membranous region. The membranous region shows different degrees of reduction among the species. The tergite 6 also shows the membranous condition, where it is entirely membranous and the two pairs of spiracles are in the membrane (Tibana & Mello, 1985). However, this pattern was not found in any of studied species.

Another distinctive feature of this structure is the position of the spiracle 6, which shows two conditions: in the intersegmentary membrane or in the sclerotized plate. This feature is important to specific determination.

Tergite 8 is absent in most of studied species and is present only in *P. (Pa.) intermutans*, which is represented by two small plates. This structure was found in most studied species of *Sarcophagula*, *Nephochaetopteryx* and *Oxysarcodexia* (Lopes 1974; Tibana & Mello, 1985; Mello-Patiu & Santos, 2001).

The epiproct shows three conditions: absent, divided and undivided. The epiproct is absent in the studied species of subgenus *Pattonella*. *P. (E.) collusor* and *P. (E.) subducta* were the only species with divided epiproct. The undivided pattern is the most common, usually represented by a triangular setose plate with different degrees of development.

The vaginal plate is present only in the species *P. (P.) chrysostoma*, *P. (P.) lutzi*, *P. (P.) pexata* and *P. (P.) uncinata*. This structure shows different degrees of sclerotization and distinctive shapes, thus contributing to the species determination. This vaginal plate is

present in all the analyzed species of *Nephoaetopteryx*, and their shape is a useful feature in species determination (Mello-Patiu & Santos, 2001).

The sternites 1 to 5 usually do not show remarkable modifications between the studied species while only the sternites 6 to 8 show differences in shape and chaetotaxy. In *Nephoaetopteryx* the sternite 8 was considered an important feature for female identification (Mello-Patiu & Santos, 2001).

The shape and ornamentation of the spermathecae of the subgenus *Pattonella*, *Peckia* and *Squamatodes* show diagnostic features, useful to subgenus characterization. The spermathecae of *Euboettcheria* is similar that of *Sarcodexia*, which is spherical and without marks. However, the features of spermathecae are not useful to species segregation.

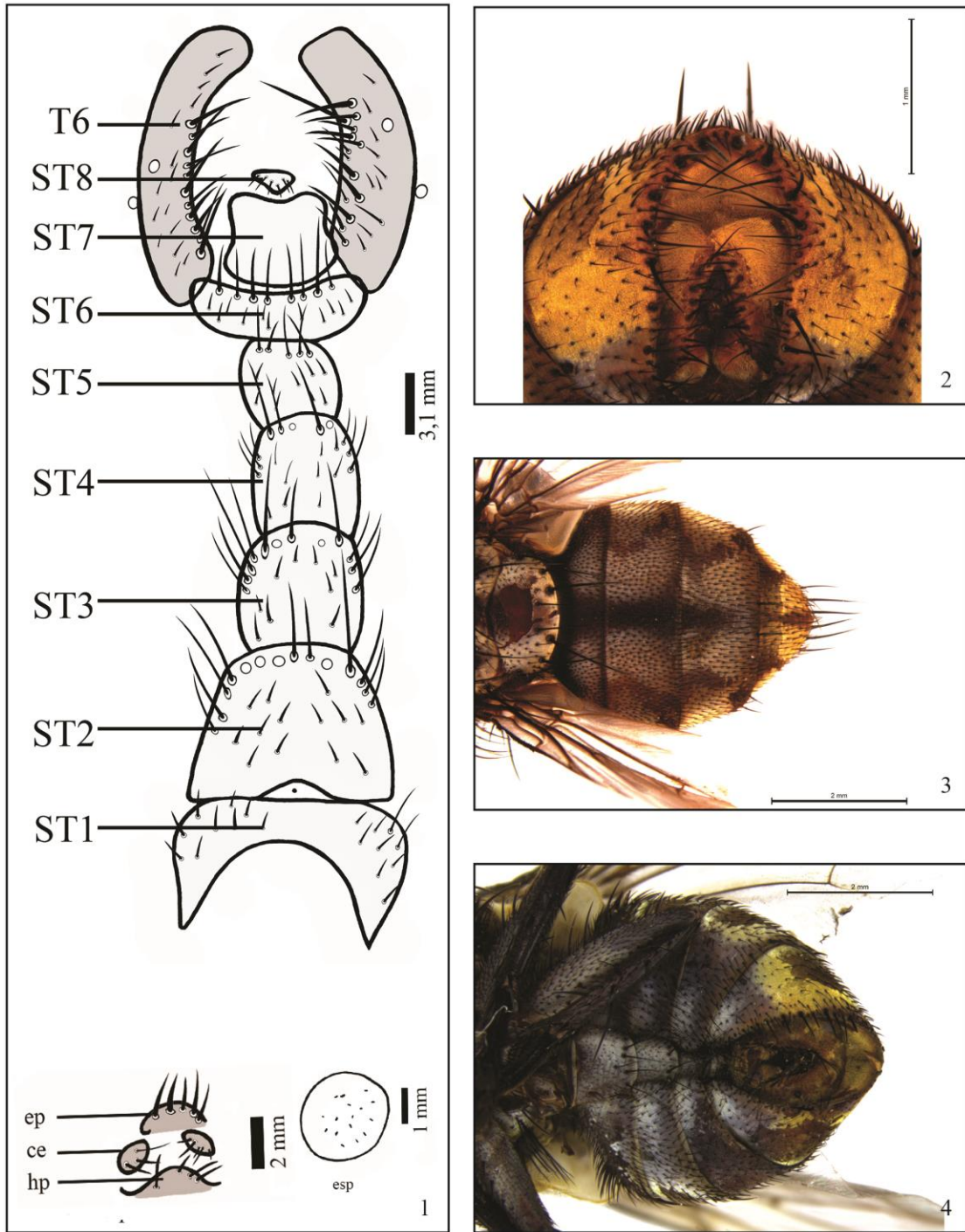
The female terminalia of the studied species of *Peckia* have distinctive features, which are useful to specific identification. However, it is not possible to point out a single structure of female terminalia that is diagnostic of one species. Therefore, a combined analysis of the structures that compose the female terminalia is necessary to specific identification.

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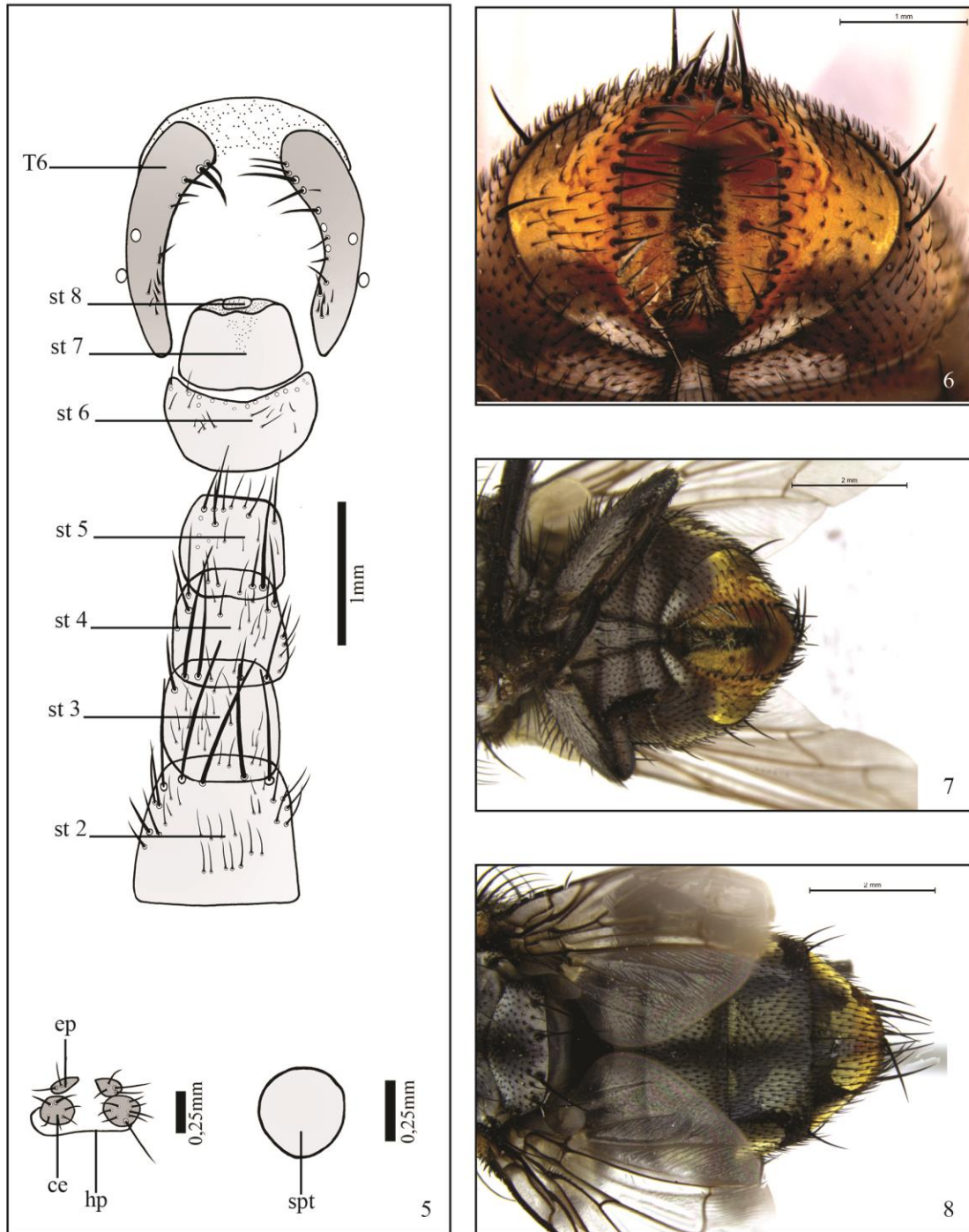
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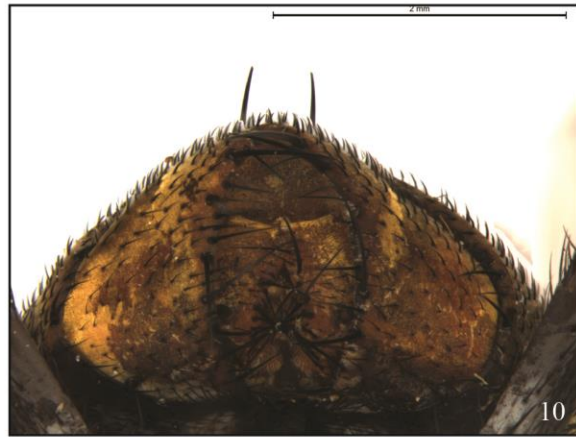
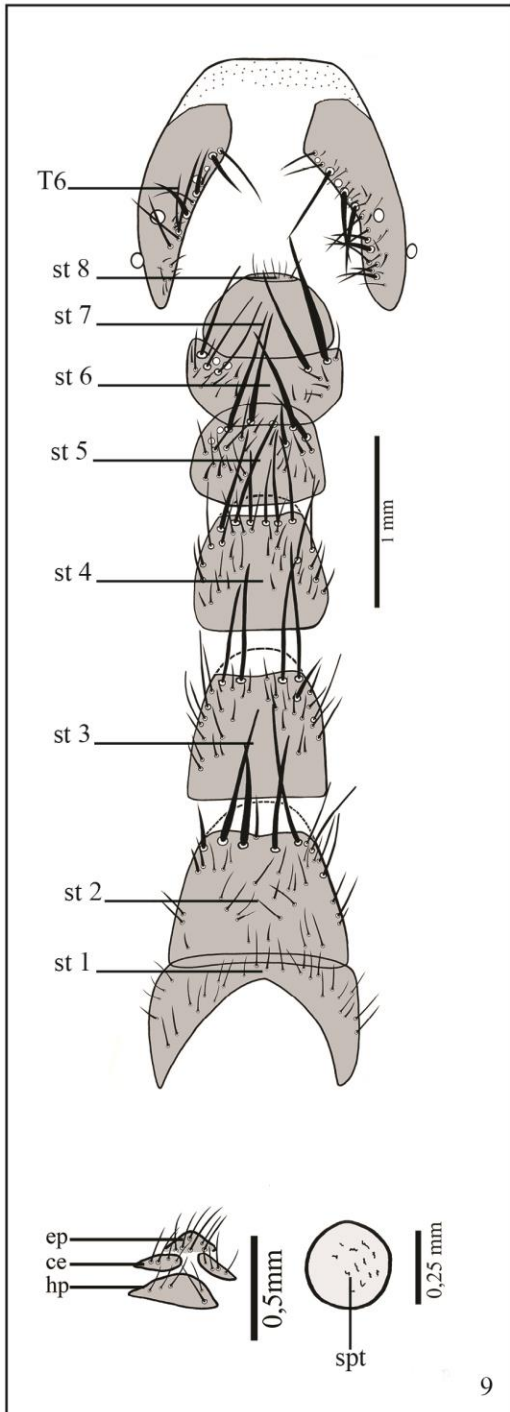
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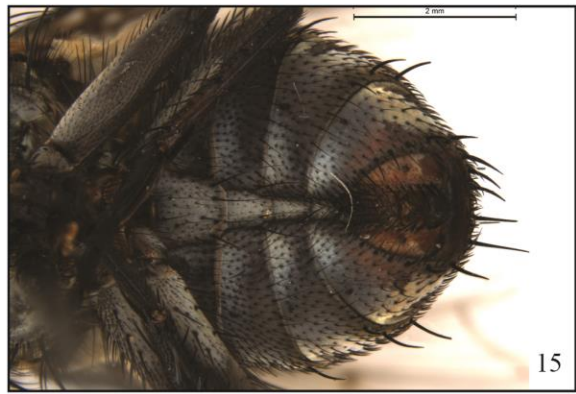
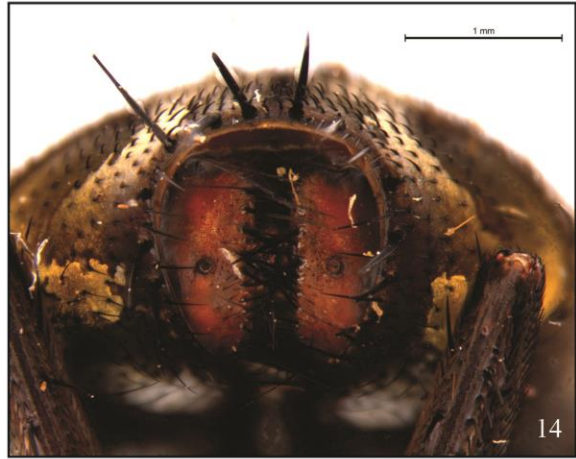
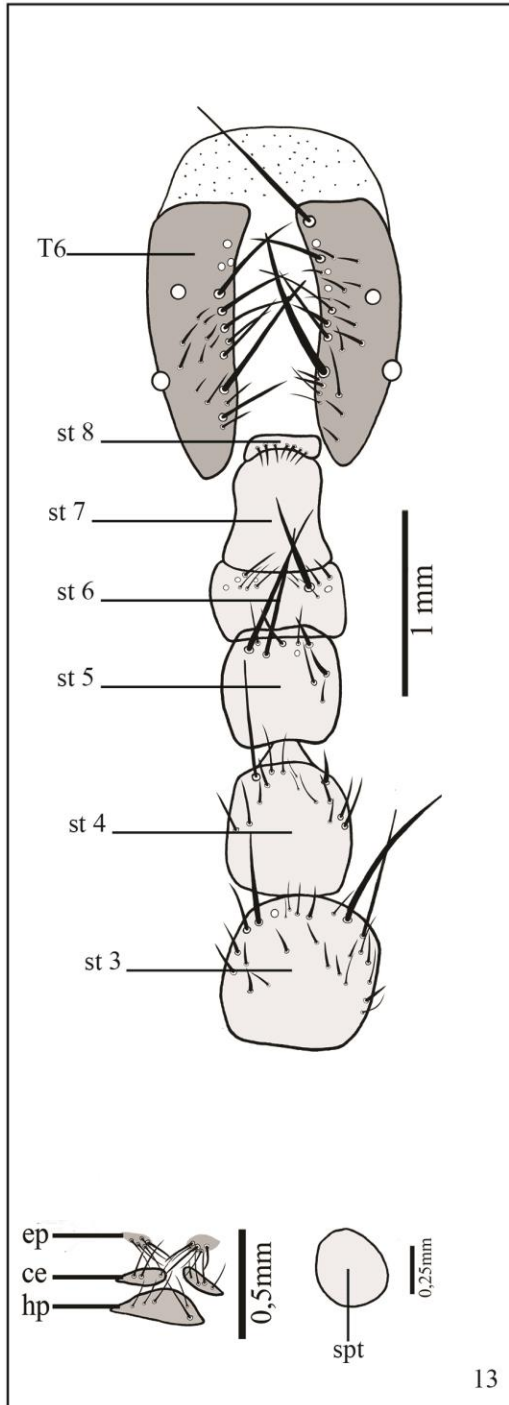
Figures 1 - 4. *Peckia (Euboettcheria) anguilla* (Curran & Walley, 1934), female: 1. Terminalia, abdominal sternites, ventral view; spermathecae, frontal view. 2. Abdomen, posterior view. 3. Abdomen, ventral view. 4. Abdomen, dorsal view. (Abbreviations: ce= cercus; ep= epiproct; spt= spermathecae; St= sternite; T= tergite).



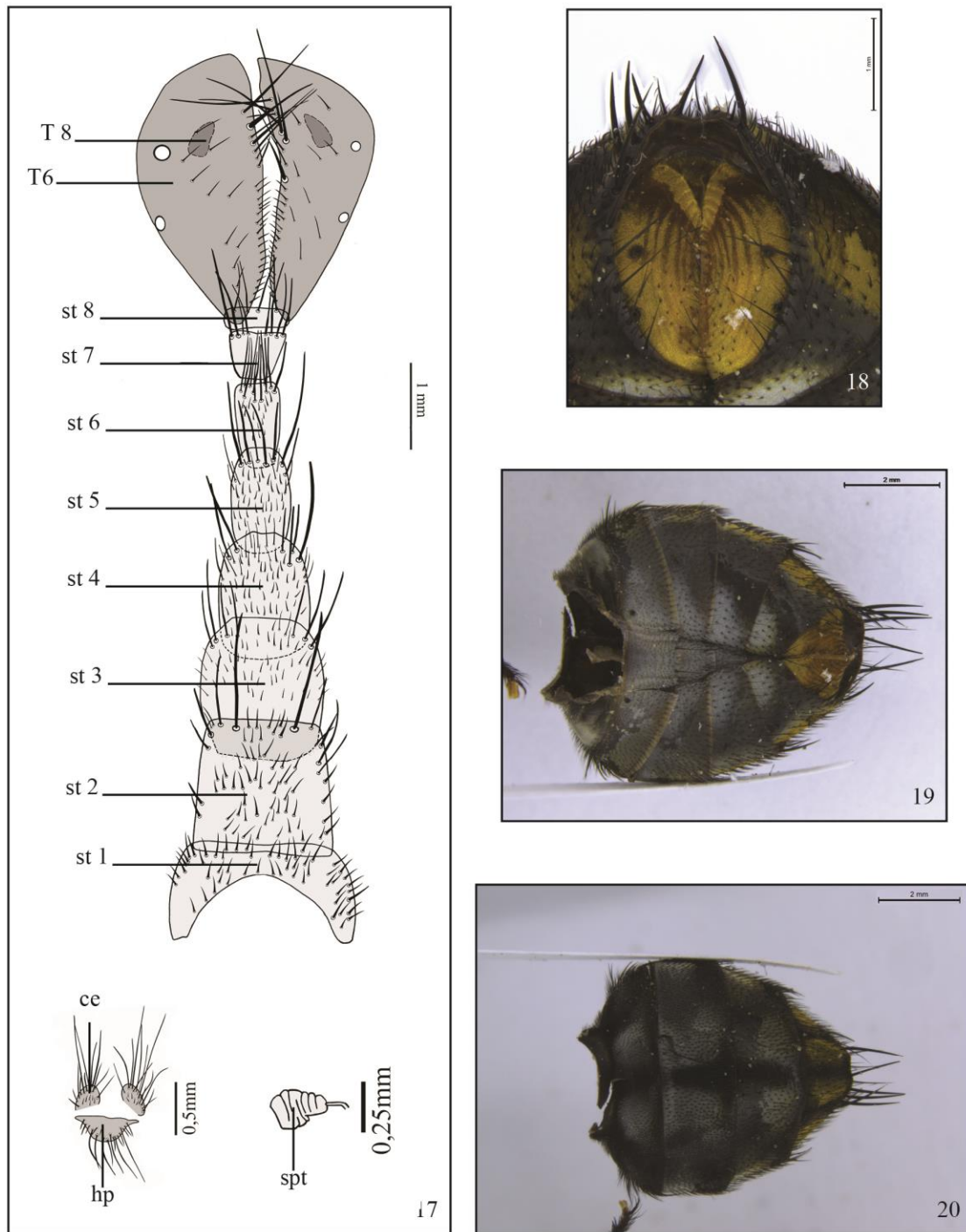
Figures 5-8. *Peckia (Euboettcheria) collusor* (Curran & Walley, 1934), female: 5. Terminalia and abdominal sternites, ventral view; spermatheca, frontal view. 6. Abdomen, posterior view. 7. Abdomen, ventral view. 8. Abdomen, dorsal view. (Abbreviations: ce= cercus; ep= epiproct; hp= hipoproct; spt= spermathecae; st= sternite; T= tergite).



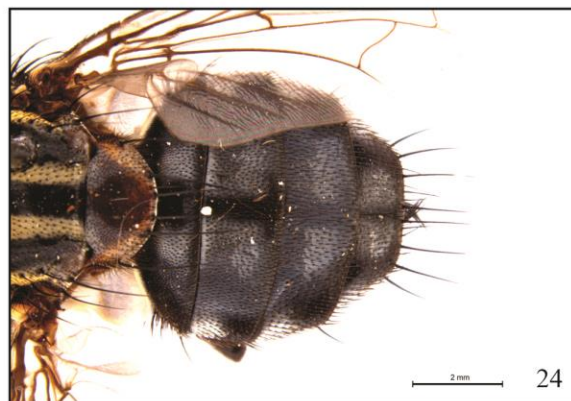
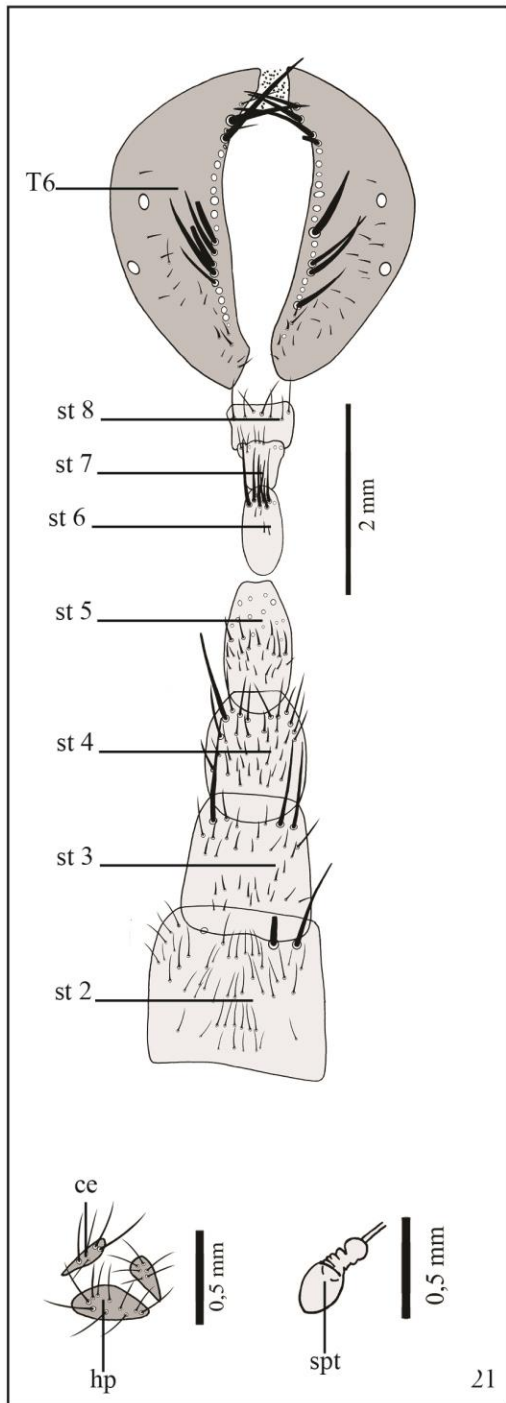
Figures 9-12. *Peckia (Euboettcheria) epimelia* (Lopes, 1938), female: 9. Terminalia and abdominal sternites, ventral view; spermathecae, frontal view. 10. Abdomen, posterior view. 11. Abdomen, ventral view. 12. Abdomen, dorsal view. (Abbreviations: ce= cercus; ep= epiproct; hp= hipoproct; spt= spermatheca; st= sternite; T= tergite).



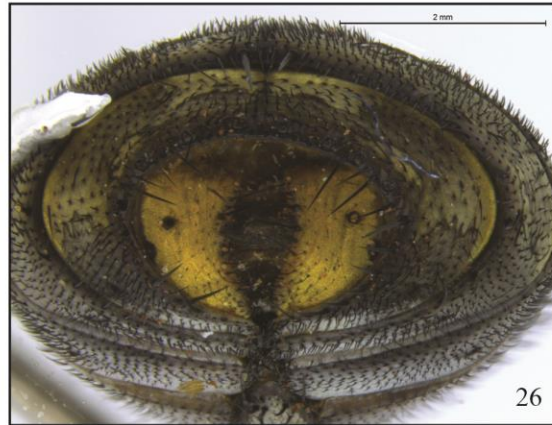
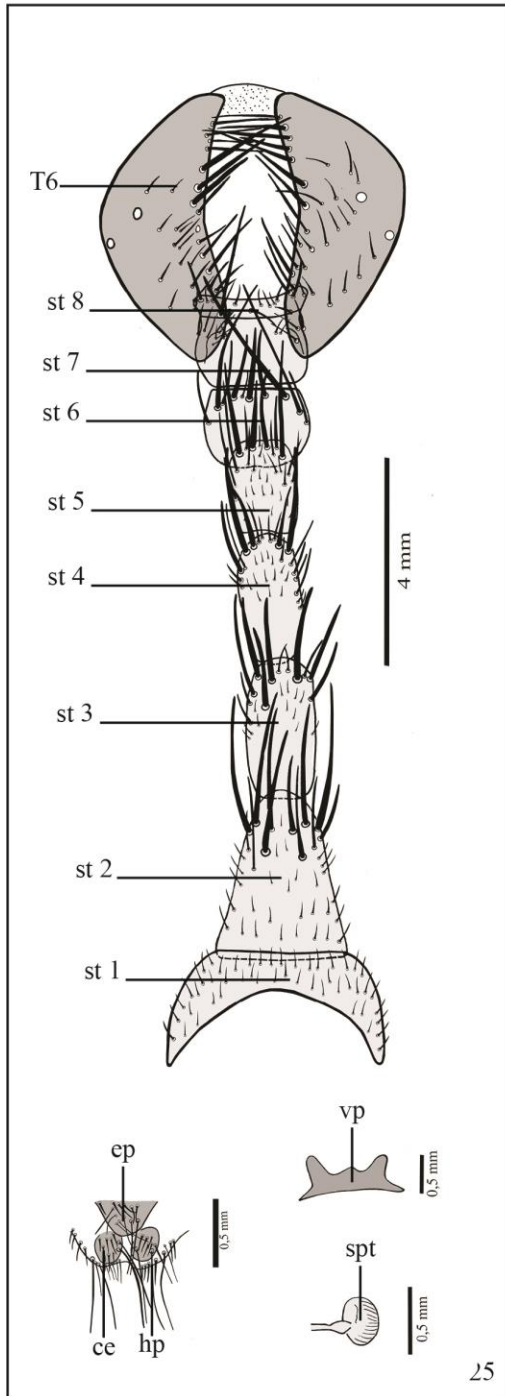
Figures 13-16. *Peckia (Euboettcheria) subducta* (Lopes, 1935), female: 13. Terminalia and abdominal sternites, ventral view; spermathecae, frontal view. 14. Abdomen, posterior view. 15. Abdomen, ventral view. 16. Abdomen, dorsal view. (Abbreviations: ce= cercus; ep= epiproct; hp= hipoproct; spt= spermatheca; st= sternite; T= tergite).



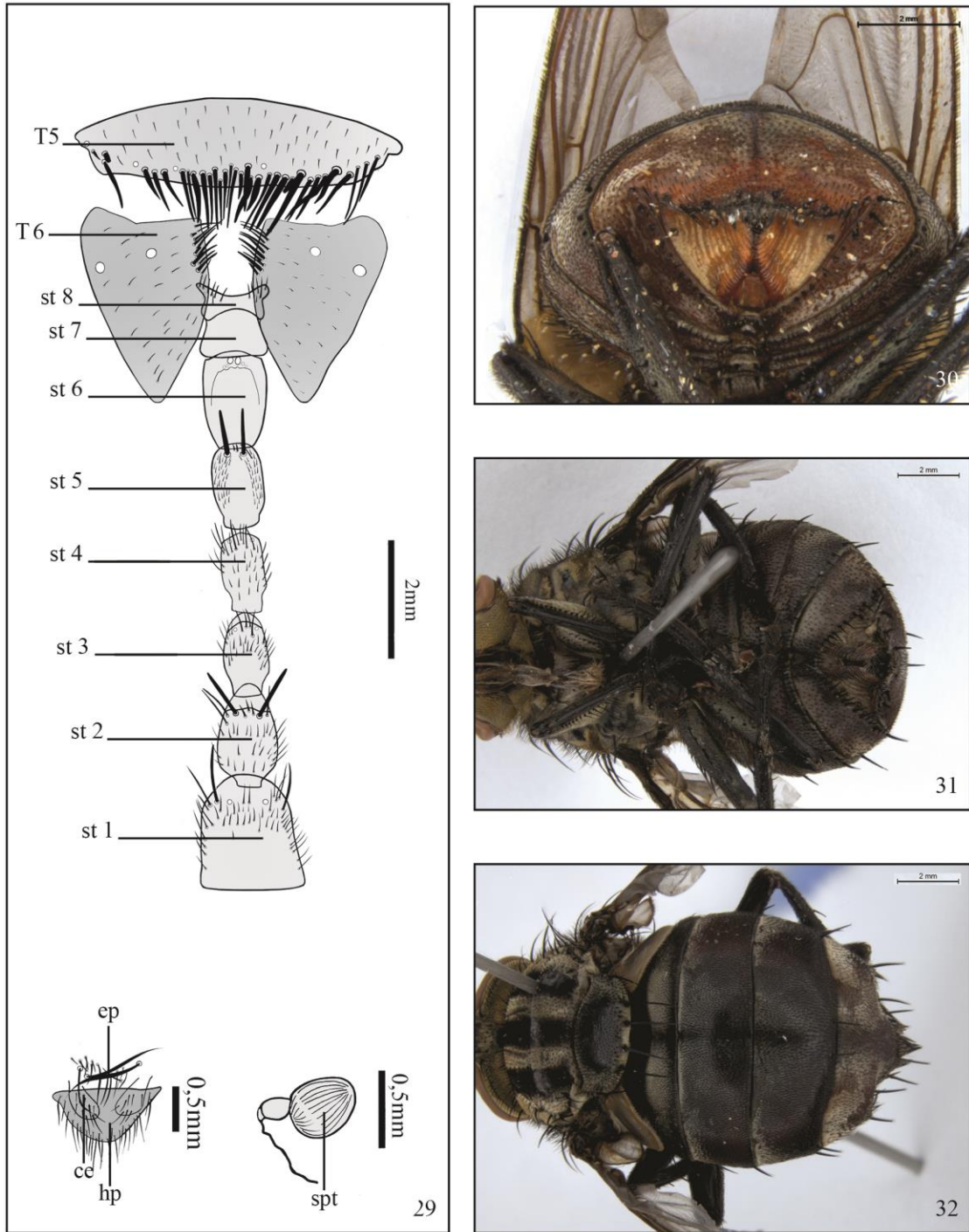
Figures 17-20. *Peckia (Pattonella) intermutans* (Walker, 1861), female: 17. Terminalia and abdominal sternites, ventral view; spermathecae, frontal view. 18. Abdomen, posterior view. 19. Abdomen, ventral view. 20. Abdomen, dorsal view. (Abbreviations: ce= cercus; hp= hipoproct; spt= spermatheca; st= sternite; T= tergite).



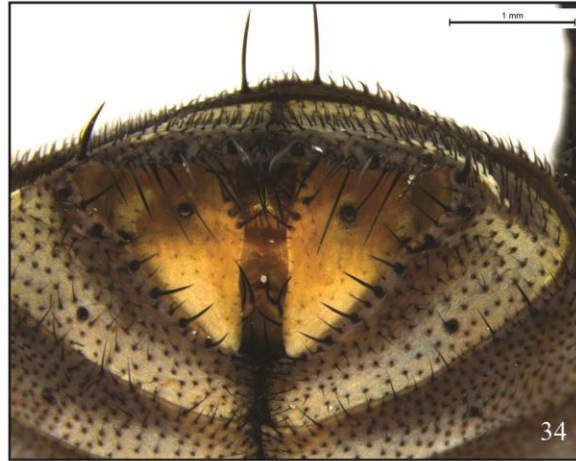
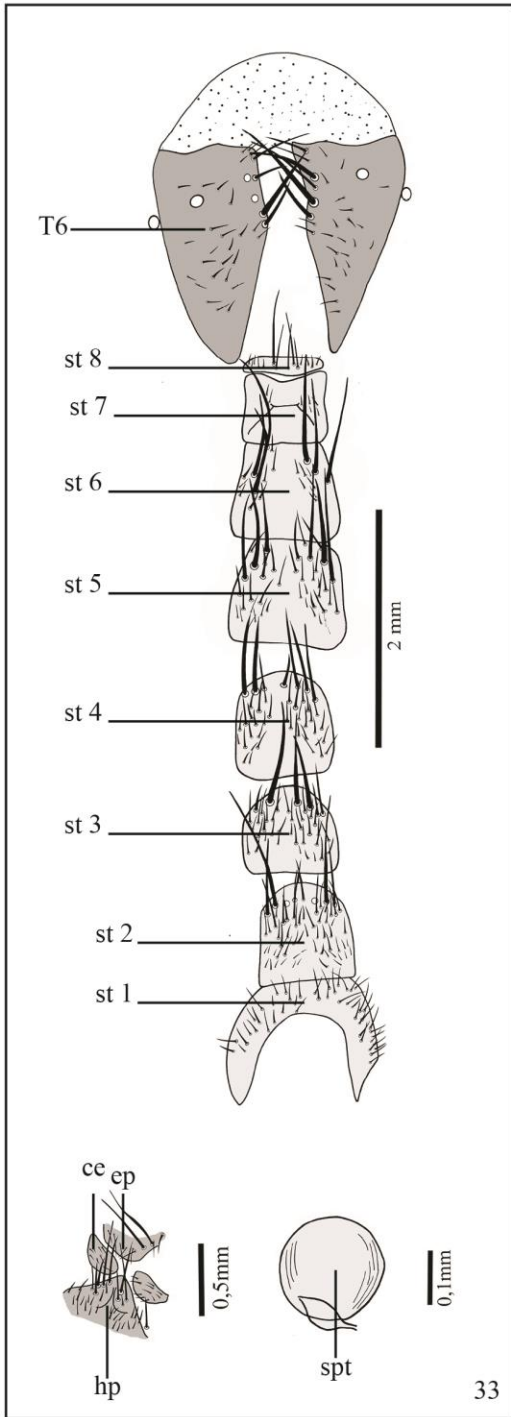
Figures 21-24. *Peckia (Pattonella) smarti* (Lopes, 1941), female: 21. Terminalia and abdominal sternites, ventral view; spermathecae, frontal view. 22. Abdomen, posterior view. 23. Abdomen, ventral view. 24. Abdomen, dorsal view. (Abbreviations: cc=cercus; hp=hipoproct; spt= spermatheca; st= sternite; T= tergite).



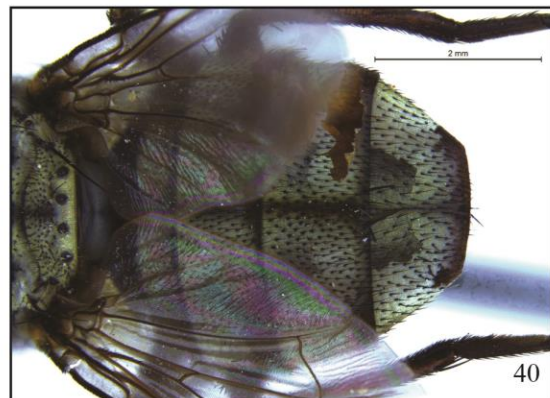
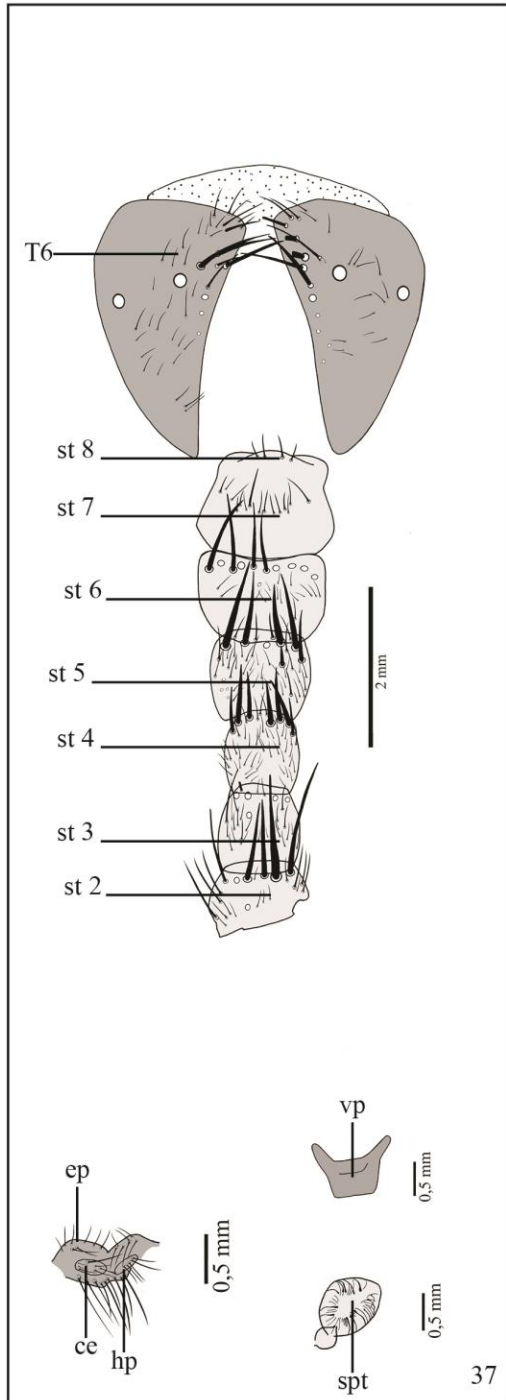
Figures 25-28. *Peckia (Peckia) chrysostoma* (Wiedemman, 1830), female: 25. Terminalia and abdominal sternites, ventral view; vaginal plate, frontal view; spermatheca, frontal view. 26. Abdomen, posterior view. 27. Abdomen, ventral view. 28. Abdomen, dorsal view. (Abbreviations: ce= cercus; ep= epiproct; hp= hipoproct; spt= spermatheca; st= sternite; T= tergite; vp = vaginal plate).



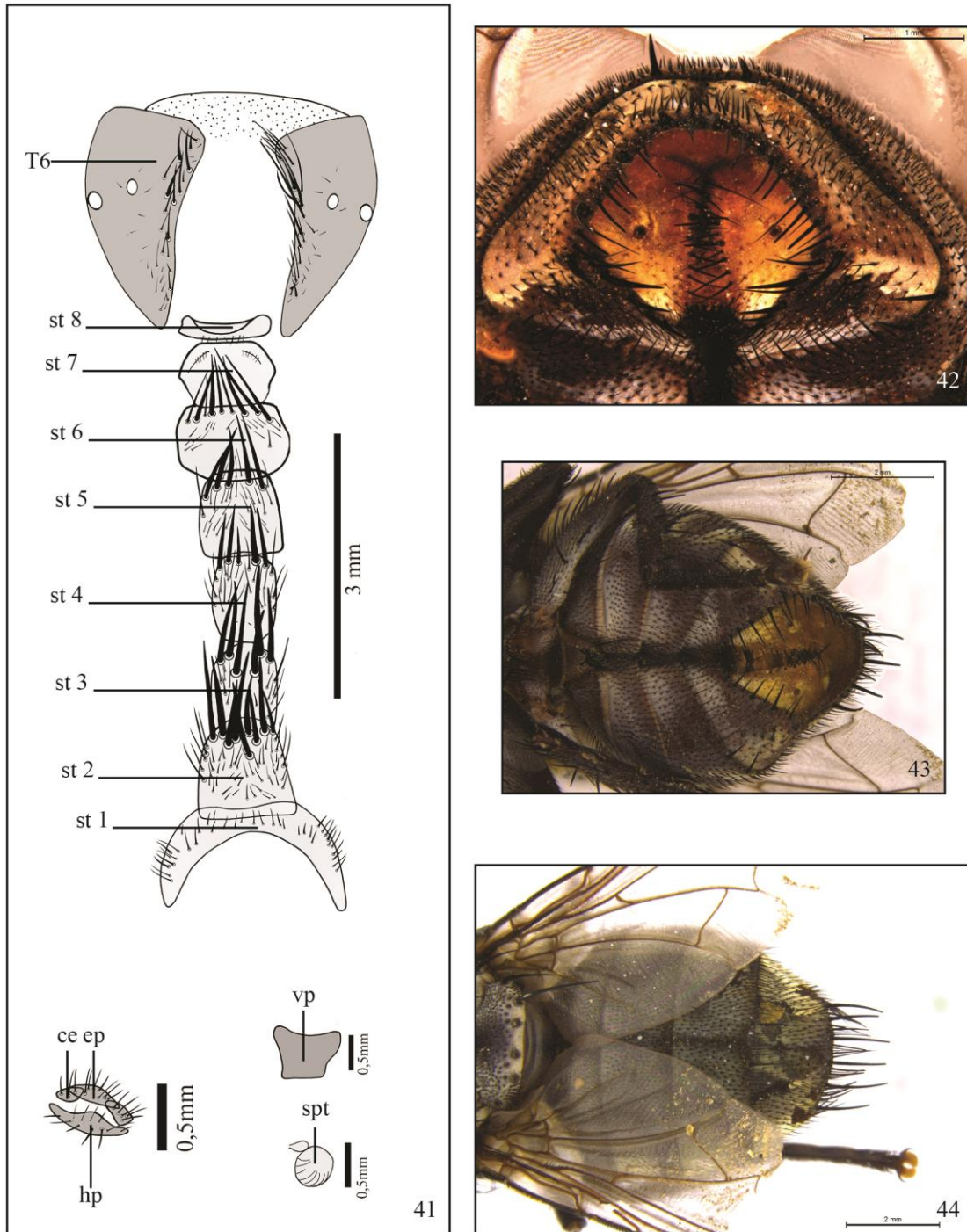
Figures 29-32. *Peckia (Peckia) gulo* (Fabricius, 1805), female: 29. Terminalia and abdominal sternites, ventral view; spermathecae, frontal view. 30. Abdomen, posterior view. 31. Abdomen, ventral view. 32. Abdomen, dorsal view. (Abbreviations: ce= cercus; ep= epiproct; hp= hipoproct; spt= spermatheca; st= sternite; T= tergite).



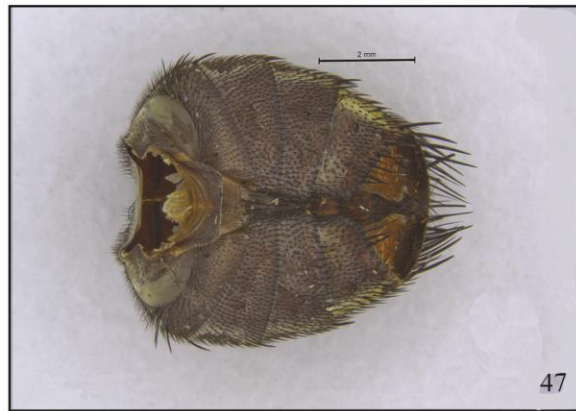
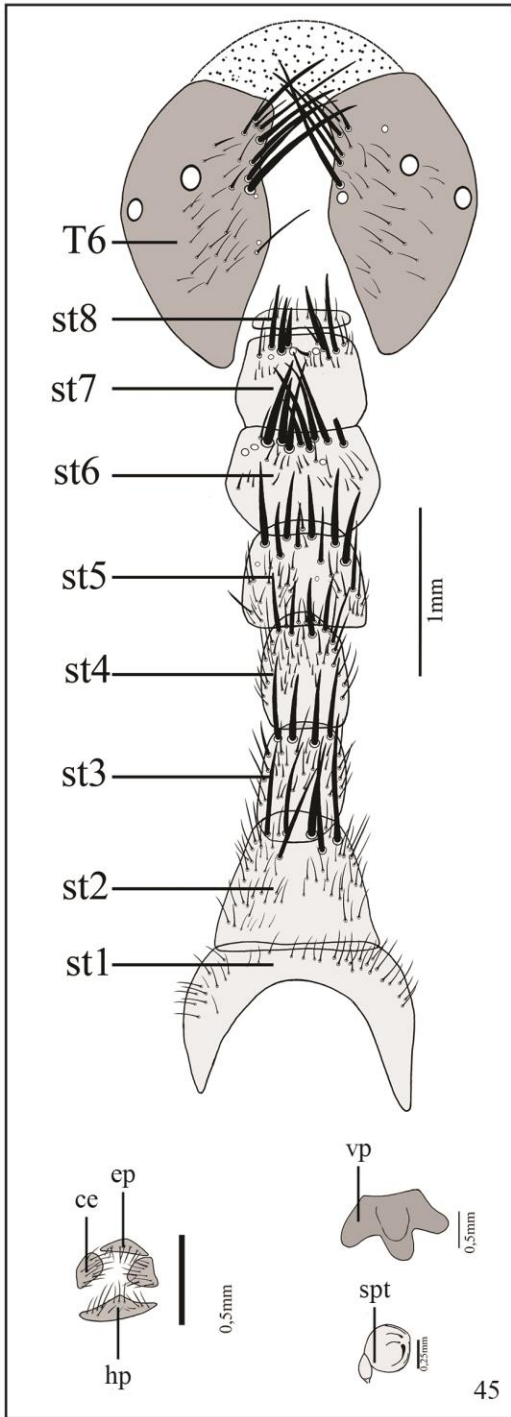
Figures 33-36. *Peckia (Peckia) hillifera* (Aldrich, 1916), female: 33. Terminalia and abdominal sternites, ventral view; spermathecae, frontal view. 34. Abdomen, posterior view. 35. Abdomen, ventral view. 36. Abdomen, dorsal view. (Abbreviations: cc= cercus; ep= epiproct; hp= hipoproct; spt= spermatheca; st= sternite; T= tergite).



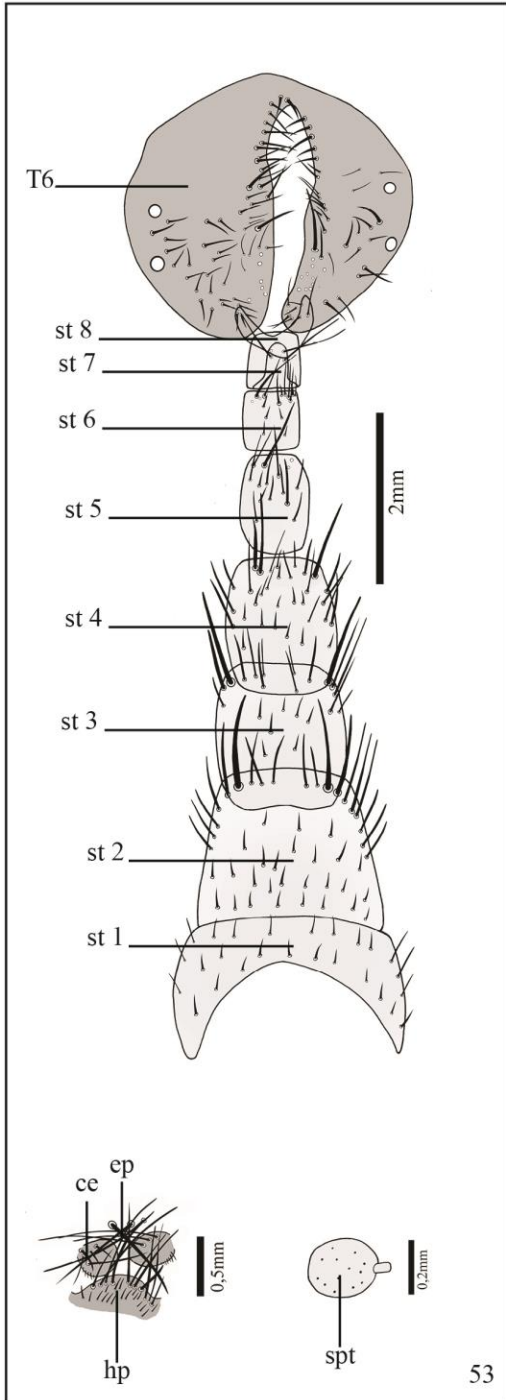
Figures 37-40. *Peckia (Peckia) lutzi* (Lopes, 1958), female: 37. Terminalia and abdominal sternites, ventral view; vaginal plate, frontal view; spermathecae, frontal view. 38. Abdomen, posterior view. 39. Abdomen, ventral view. 40. Abdomen, dorsal view. (Abbreviations: ce= cercus; ep= epiproct; hp= hipo-proct; spt= spermatheca; st= sternite; T= tergite; vp = vaginal plate).



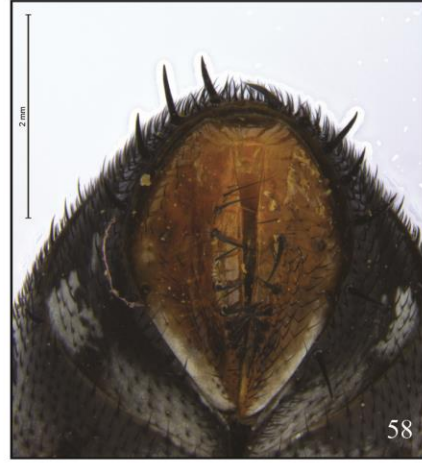
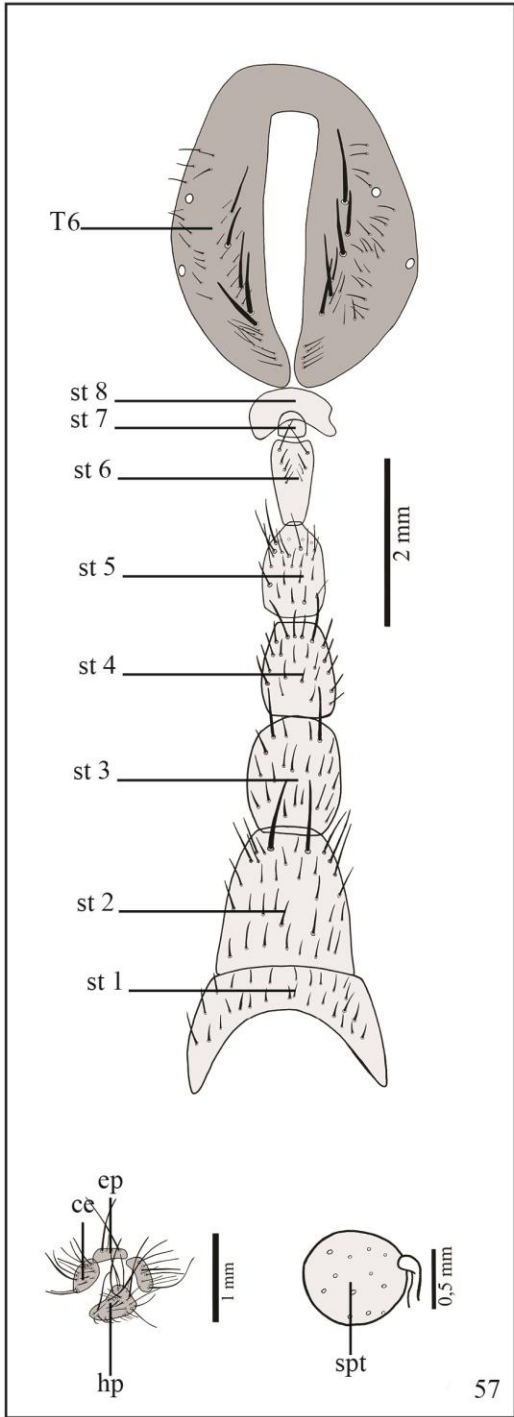
Figures 41-44. *Peckia (Peckia) pexata* (Wulp, 1895), female: 41. Terminalia and abdominal sternites, ventral view; vaginal plate, frontal view; spermathecae, frontal view. 42. Abdomen, posterior view. 43. Abdomen, ventral view. 44. Abdomen, dorsal view. (Abbreviations: ce=cercus; ep=epiproct; hp=hipoproct; spt=spermatheca; st=sternite; T=tergite; vp=vaginal plate).



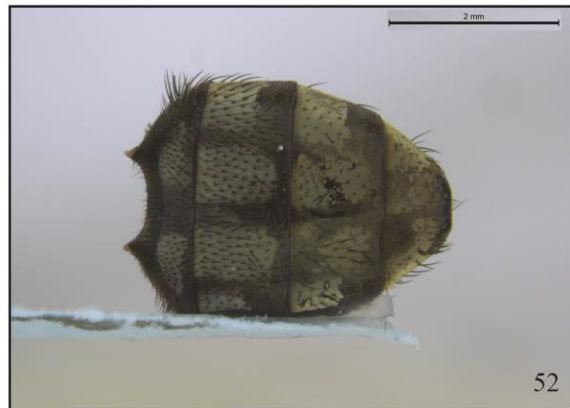
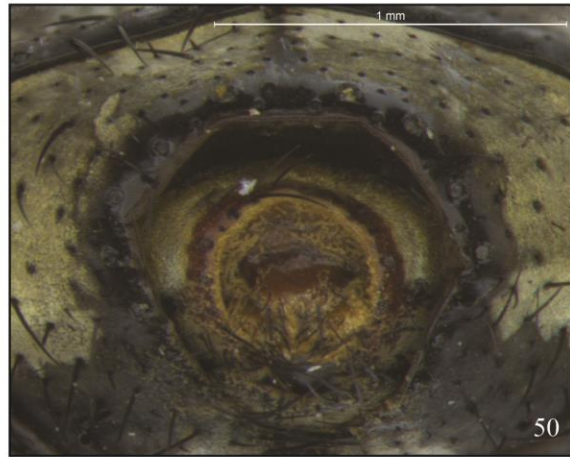
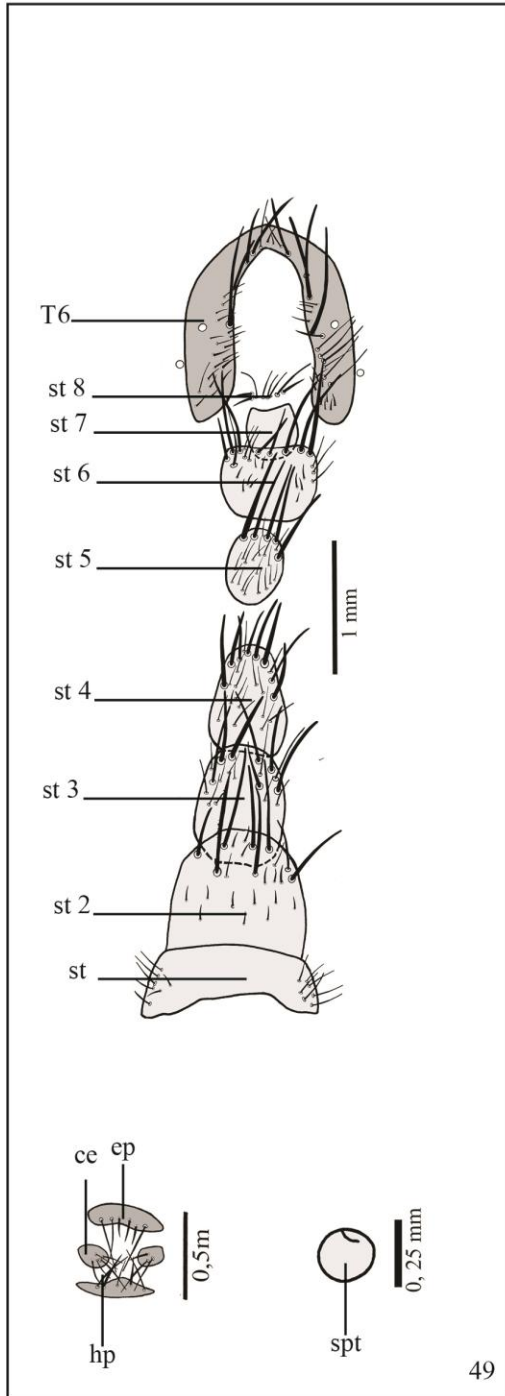
Figures 45-48. *Peckia (Peckia) uncinata* (Hall, 1933), female: 45. Terminalia and abdominal sternites, ventral view; vaginal plate, frontal view, spermathecae, frontal view. 46. Abdomen, posterior view. 47. Abdomen, ventral view. 48. Abdomen, dorsal view. (Abbreviations: ce=cercus; ep=epiproct; hp=hipoproct; spt= spermatheca; st= sternite; T= tergite; vp = vaginal plate).



Figures 53-56. *Peckia (Squamatodes) ingens* (Walker, 1849), female: 53. Terminalia and abdominal sternites, ventral view; spermathecae, frontal view. 54. Abdomen, posterior view. 55. Abdomen, ventral view. 56. Abdomen, dorsal view. (Abbreviations: ce= cercus; ep= epiproct; hp= hipoproct; spt= spermatheca; st= sternite; T= tergite).



Figures 57-60. *Peckia (Squamatodes) trivittata* (Curran, 1927), female: 57. Terminalia and abdominal sternites, ventral view; spermathecae, frontal view. 58. Abdomen, posterior view. 59. Abdomen, ventral view. 60. Abdomen, dorsal view. (Abbreviations: ce= cercus; ep= epiproct; hp=hipoproct; spt= spermatheca; st= sternite; T= tergite).



Figures 49-52. *Peckia (Sarcodexia) lambens* (Wiedemman, 1830), female: 49. Terminalia and abdominal sternites, ventral view; spermathecae, frontal view. 50. Abdomen, posterior view. 51. Abdomen, ventral view. 52. Abdomen, dorsal view. (Abbreviations: ce= cercus; ep= epipect; hp= hipoproct; spt= spermatheca; st= sternite; T= tergite).