

Original Article

New species and new records of Ichneumonidae (Hymenoptera) in Southeast Brazil

Nova espécie e novos registros de Ichneumonidae (Hymenoptera) no Sudeste do Brasil.

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Abstract

During an inventory of Ichneumonidae wasps in the urban area of São Carlos, São Paulo, using Malaise traps, was found the first records in Brazil for *Lissonota pseudeleboea* Ugalde and Gauld, 2002 and *Syzeuctus vedoris* Ugalde and Gauld, 2002 (Hymenoptera, Ichneumonidae, Banchinae) and was described and illustrated a new species of *Zonopimpla Ashmead* (Hymenoptera, Ichneumonidae, Pimplinae).

Keywords: Ichneumonidae, first records, new species.

Resumo

Durante um inventário de vespas Ichneumonidae na área urbana de São Carlos, São Paulo, usando armadilhas Malaise, foram encontrados os primeiros registros no Brasil para *Lissonota pseudeleboea* Ugalde e Gauld, 2002 e *Syzeuctus vedoris* Ugalde e Gauld, 2002 (Hymenoptera, Ichneumonidae, Banchinae) e foi descrita e ilustrada uma nova espécie de *Zonopimpla Ashmead* (Hymenoptera, Ichneumonidae, Pimplinae).

Palavras-chave: Ichneumonidae, primeiro registro, nova espécie.

1. Introduction

Ichneumonidae one of the largest groups of all animals, is the largest family of Hymenoptera with 44 subfamilies (Yu et al., 2016). It has about 1,600 genera, 465 of which occur in the tropical region (Palacio et al., 2007; Yu et al., 2016). There are estimates of more than 100,000 species distributed throughout the world, 955 species described in Brazil (Gauld et al., 2002; Yu et al., 2016).

Zonopimpla Ashmead (Pimplinae) is a neotropical genus, including thirty five species and four from Brazil (Yu et al., 2016; Fernandes et al., 2022).

Lissonota Gravenhorst, 1829 (Banchinae, Atrophini) is a very heterogeneous group of species occurring mainly in Central America; the genus includes 409 species, of which 39 in the Neotropical Region (Gauld et al., 2002); in Brazil, the tribe has 19 species (Fernandes et al., 2022). It is known that most of the records of hosts of species of *Lissonota* are related to larvae of Lepidoptera which live hidden in plant tissues (Gauld et al., 2002).

Syzeuctus Förster, 1869 (Banchinae, Atrophini) is a large cosmopolitan genus which includes about 120 species, most of which are found in the Old World; 19 species of this genus are reported for the Neotropical Region (Yu et al., 2016).

In this study we describe a new species of *Zonopimpla Ashmead* (Hymenoptera, Ichneumonidae, Pimplinae)

and report the first occurrence of *Lissonota pseudeleboea* Ugalde and Gauld, 2002 and *Syzeuctus vedoris* Ugalde and Gauld, 2002 (Hymenoptera, Ichneumonidae, Banchinae) in Brazil obtained through collections with Malaise traps in urban areas of the municipality of São Carlos, São Paulo state, Brazil.

2. Material and Methods

The studied specimens were sampled with Malaise traps (Townes, 1972) using alcohol 96% as a preservative, in four collections carried out during four weeks in October 2018 in urban area of São Carlos, São Paulo, Brazil (22°09'39" 21°35'50"S, 48°05'27" 47°43'09"W), approximately 850 m above sea level (Camacho and Moschini, 2021). The studied material is deposited at "Coleção Taxonômica do Departamento de Ecologia e Biologia Evolutiva da UFSCar" (DCBU).

According to the Köppen Geiger classification, the climate in São Carlos is tropical semi-humid with hot humid summer and cold dry winter; the average temperature is 21.1°C, the average monthly rainfall is about 120 mm and the annual total rainfall is about 1,400 mm (CEPAGRI, 2015).

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The specimens were identified using the keys provided by Gauld et al. (1998, 2002).

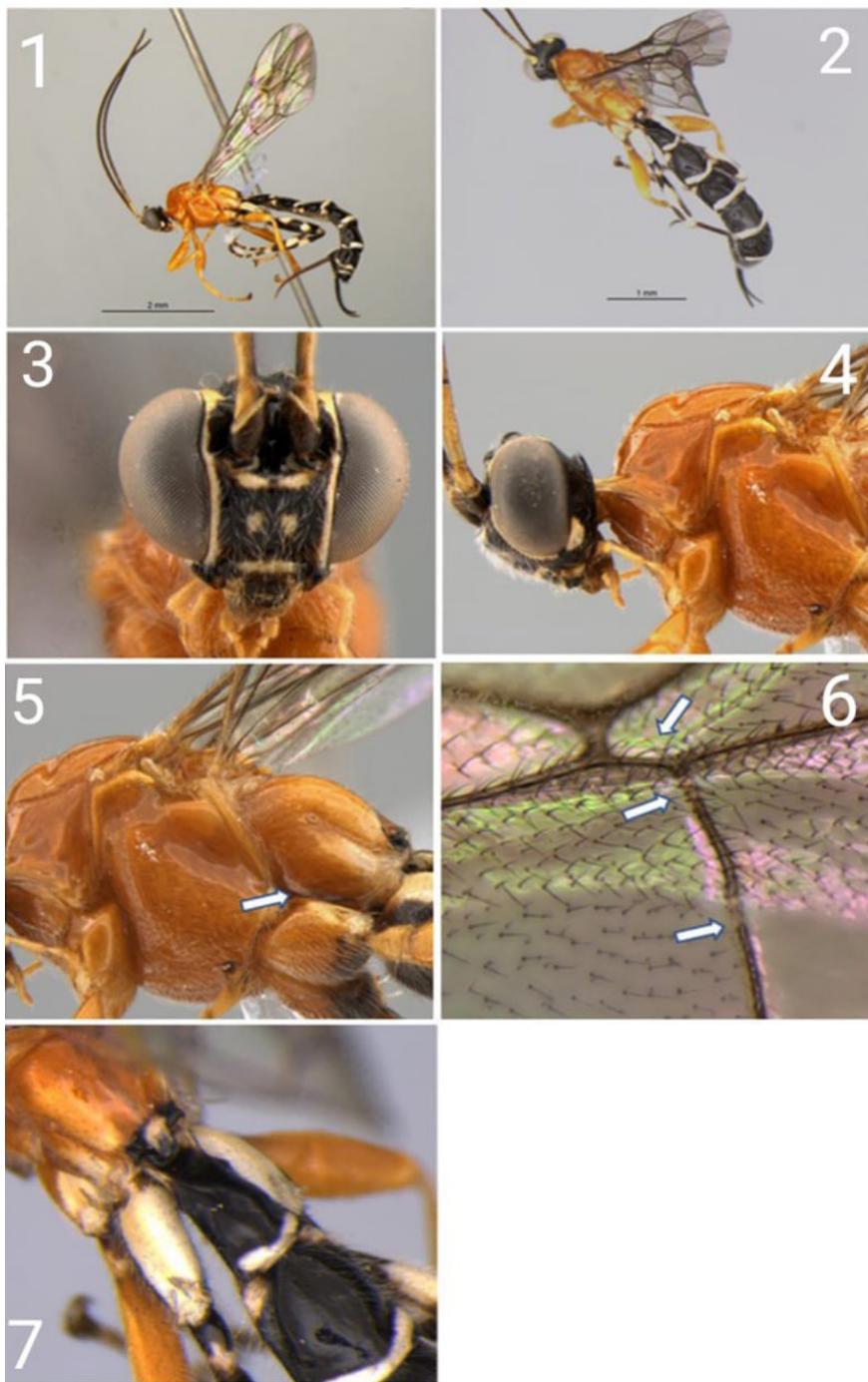
Images were obtained using a Leica DFC295 camera attached to a Leica M165C stereomicroscope and stacked with the Leica Application suite software v3.7.0. Pictures were later processed using Adobe Photoshop.

3. Results and Discussion

Zonopimpla tundisii sp. n. Pentead-Dias & Victorino

(Figures 1-7)

Type material. Holotype female (DCBU 482925) labeled "Brazil, São Carlos, SP, Escola Estadual Conde do Pinhal,



Figures 1-7. *Zonopimpla tundisii* sp. n. Holotype female. 1, habitus, lateral; 2, habitus, laterodorsal; 3, head, frontal; 4, head and part of mesosoma, lateral; 5, mesosoma, lateral (arrow indicating submetapleural carina); 6, part of fore wing (arrows indicating areolet absent, 3rs-m with 2 bullae); 7, propodeum and tergites I and II, dorsolateral.

armadilha Malaise, S21°50'46"W47°54'14", 823m, 11.X.2018, Penteadó-Dias and team col."

Etymology. The species' name honors Dr. José Galizia Tundisi, scientist who encouraged the study of biodiversity in São Carlos, SP, Brazil.

Description. Female: body 5 mm long (Figures 1, 2), mandibles strongly tapered, upper tooth longer than the lower; malar space 0.4 times basal mandibular width; lower face polished, with fine scattered setiferous punctures, 1.1 times as wide as medially high (Figures 3, 4). Gena evenly rounded behind eye; posterior ocellus separated from eye by 0.8 times its own maximum diameter; ocelli forming equilateral triangle. Pronotum mediodorsally short, smooth, shining, with sparse fine setae. Mesoscutum smooth, shining, with fine sparse pale setation anteriorly and laterally, notauli weakly impressed; mesopleuron polished (Figure 4), with scattered fine setae; epicnemial carina reaching to level of lower corner of pronotum; metapleuron weakly convex, smooth, polished, almost glabrous; submetapleurale carina complete (Figure 5). Propodeum in profile abruptly declivous, with scattered setiferous punctures laterally; pleural carina absent (Figure 6). Fore wing length 6.0 mm; vein 3rs-m absent, not enclosing an areolet; abscissa of M between 2rs-m and 2m-cu 3 times as long as 2rs-m; hind wing with abscissa of Cu1 between M and cu-a almost straight, 3 times as long as cu-a; distal abscissa of Cu1 distinct. Metasoma moderately stout (Figure 7); tergite 1 in profile weakly convex, about 2.0 times as long as posteriorly broad, with anteriorly smooth, broadly concave central area defined laterally by longitudinal carinae on anterior 0.2 of tergite, posterior part of tergite 1 shining, with scattered fine setae central and laterally; tergite 2 with smooth and polished convex central area, very sparsely punctuate; tergites 3–6 with biconvex central area and isolated punctures laterally. Ovipositor 1.8 times length of hind tibia; ovipositor shaft straight, moderately stout and compressed, apex of lower valve not expanded laterally, not enclosing upper valve, with distinct oblique teeth.

Color: Head black, with light yellow marks on face, clypeus and gena; antenna mostly black, pedicel and first flagellomere yellowish; palp light yellow, mandible black with transversal light-yellow stripe. Mesosoma, tegula, fore and middle leg yellow; propodeum and metapleuron light yellow, tarsi 1–4 of middle leg white, infuscate at apex. Hind coxa white dorsally and black ventrally; trochanter predominantly black with a white spot apically; femur black with white dorso basal and apical spots, tibia white and black at the base and apex; tarsi white at base with black apex. Wing hyaline, pterostigma blackish. Metasoma black with posterior transversal white stripes on tergites 1–7. Ovipositor reddish brown, sheath blackish.

Male: unknown.

Comments. *Zonopimpla tundisii* sp. n. is similar to *Z. vargasi* Gauld, 1991 (without reported occurrence for Brazil), with predominantly black metasoma and white marks and yellow metapleuron, which is black in *Z. vargasi*. *Zonopimpla tundisii* sp. n. differs from *Z. sebastiani* Valera and Diaz, 2010 (without reported occurrence for

Brazil) by submetapleurale carina present and pleural carina absent; from *Z. atriceps* Cresson, 1874 and *Z. pseudoatrics* Valera and Diaz, 2010 (both without reported occurrence for Brazil) by the black and white metasoma, orange and orange and black in *Z. atriceps* and *Z. pseudoatrics*, respectively; and hyaline wings that are uniformly infuscated or with a black stripe at apex and a triangular black spot close to vein Rs and M respectively in *Z. atriceps* and *Z. pseudoatrics*; from *Z. aguilar* Gauld, 1991, *Z. barbosa* Gauld, 1991, *Z. carolinae* Gauld, 1991 and *Z. lilae* Gauld, 1991 (all with related occurrence for Brazil) by the areolet absent in fore wing and from *Z. ashmeadi* Enderlein, 1919 (with related occurrence for Brazil) by the yellow metasoma, black and reddish in *Z. ashmeadi*, and by the infuscated fore wing.

Lissonota pseudeleboea Ugalde and Gauld, 2002.

(Figures 8–19)

New record: São Carlos, São Paulo state, Brazil.

Material examined: 13 females. "São Carlos, SP, Brasil, E.E. Conde do Pinhal, S21°59'46"W47°54'14", Armadilha Malaise (823m), 27.IX.2018, Penteadó-Dias and team col.", 2 females (DCBU 482926, DCBU 482930); same data except 04.X.2018, 1 female (DCBU 482938); same data except 11.X.2018, 1 female (DCBU 82932); "São Carlos, SP, Brasil, E.E. Prof. Bento da Silva César, S21°59'26"W47°55'42", Armadilha Malaise (869m), 08.X.2018, Penteadó-Dias and team col.", 2 females (DCBU 482921, DCBU 482927); same data except 16.X.2018, 4 females (DCBU 482928, DCBU 482929, DCBU 482931, DCBU 482934); same data except 22.X.2018, 1 female (DCBU 482940); "São Carlos, SP, Brasil, E.E.I.E.F Oca dos Curumins, S22°00'48"W47°52'24", Armadilha Malaise (894m), 24.X.2018, Penteadó-Dias and team col.", 2 females (DCBU 482935, DCBU 482936); "São Carlos, SP, Brasil, E.M.E.B. Profa Dalila Galli, S21°58'45"W47°54'05", Armadilha Malaise (862m), 25.X.2018, Penteadó-Dias and team col.", 1 female (DCBU 482933).

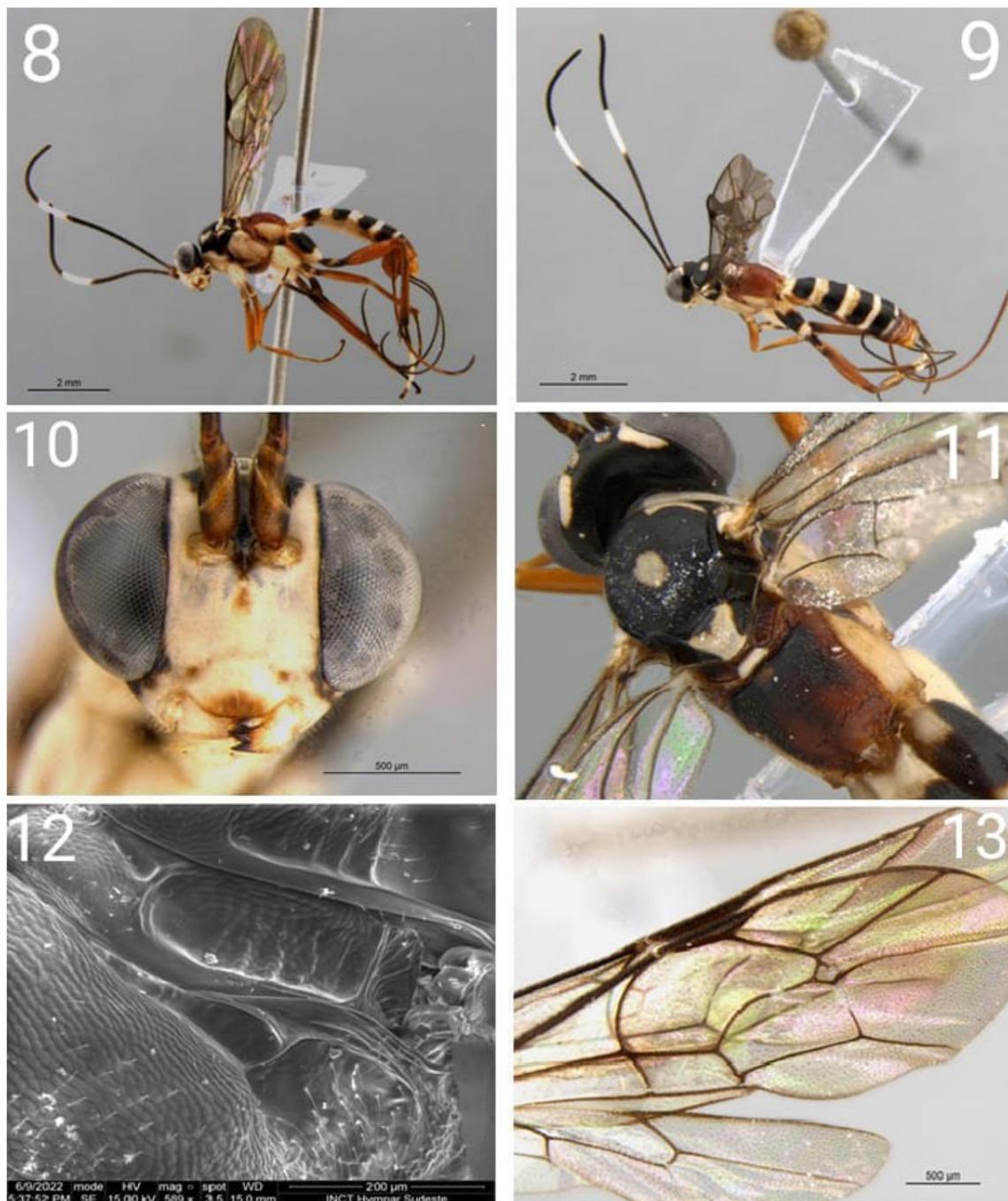
Lissonota pseudeleboea Ugalde and Gauld, 2002 is a small species characterized by the flattened metanotal margin distinctly broadened into a lateromedian tooth (Figure 12); fore wing with large bulla (Figure 13); mesosoma granulate, with very few punctures (Figures 14–19). Chromatically with areas black to reddish brown, yellowish to white, and with the intercellular area and occiput black. Areolet present.

Syzeuctus vedoris Ugalde and Gauld, 2002.

(Figures 20–27)

New record: São Carlos, São Paulo state, Brazil

Material examined: 1 female and 7 males. "São Carlos, SP, Brasil, E.E. Prof. Bento da Silva César, S21°59'26"W47°55'43", Armadilha Malaise (860m), 08.X.2018, Penteadó-Dias and team col.", 1 female (DCBU 492924), 2 males (DCBU 492922, DCBU 492939); same data except 16.X.2018, 1 male (DCBU 492944); same except 22.X.2018, 1 male (DCBU 492943); same data except E.E. Conde do Pinhal, 11.X.2018, 2 males (DCBU 492923, DCBU 492941); "São Carlos, SP, Brasil, EMEB Profa Dalila Galli, S21°58'45"W 47°54'05", Armadilha



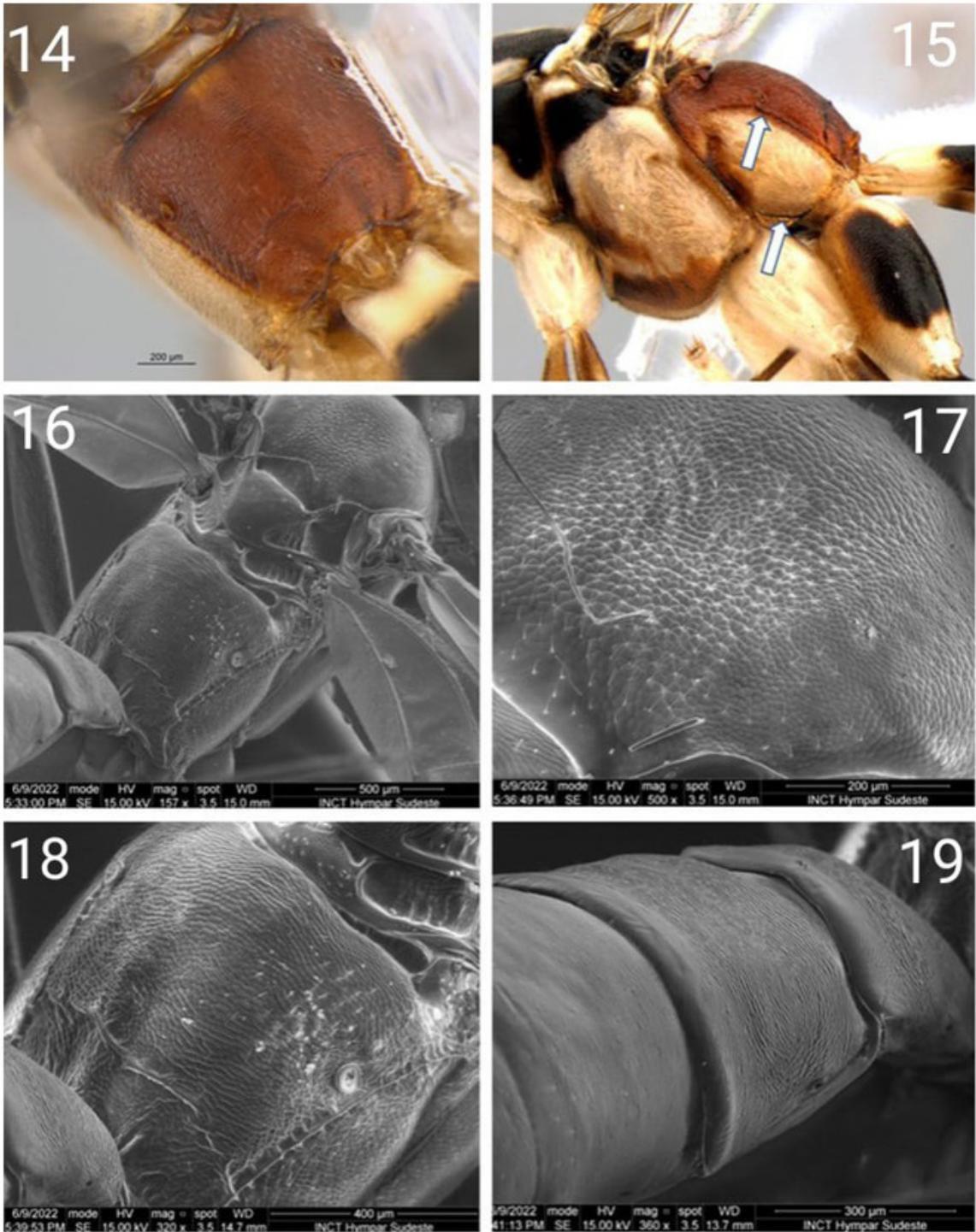
Figures 8-13. *Lissonota pseudeleboea*, female. 8, habitus, lateral; 9, habitus, laterodorsal; 10, head, frontal; 11, head and mesosoma, dorsal; 12, metanotum (arrow indicating lateromedian tooth); 13, fore wing with large bulla and areolet present.

Malaise (862m), 25.X.2018, Pentead-Dias and team col.”, 1 male (DCBU 492942).

Species of *Syzeuctus* Förster, 1869 are recognized by the petiolate areolet in fore wing (Figure 24); most species have frontal crests (Figures 25, 26) and black and yellow coloration (Figures 22, 23). Sixteen species of *Syzeuctus* are present in Costa Rica, mostly occurring in relatively humid

areas from sea-level up to 2,000 meters; a single species, *S. minasensis* Brêthes, 1927, has citation of occurrence for Brazil, in the states of Minas Gerais and Rio de Janeiro (Fernandes et al., 2022).

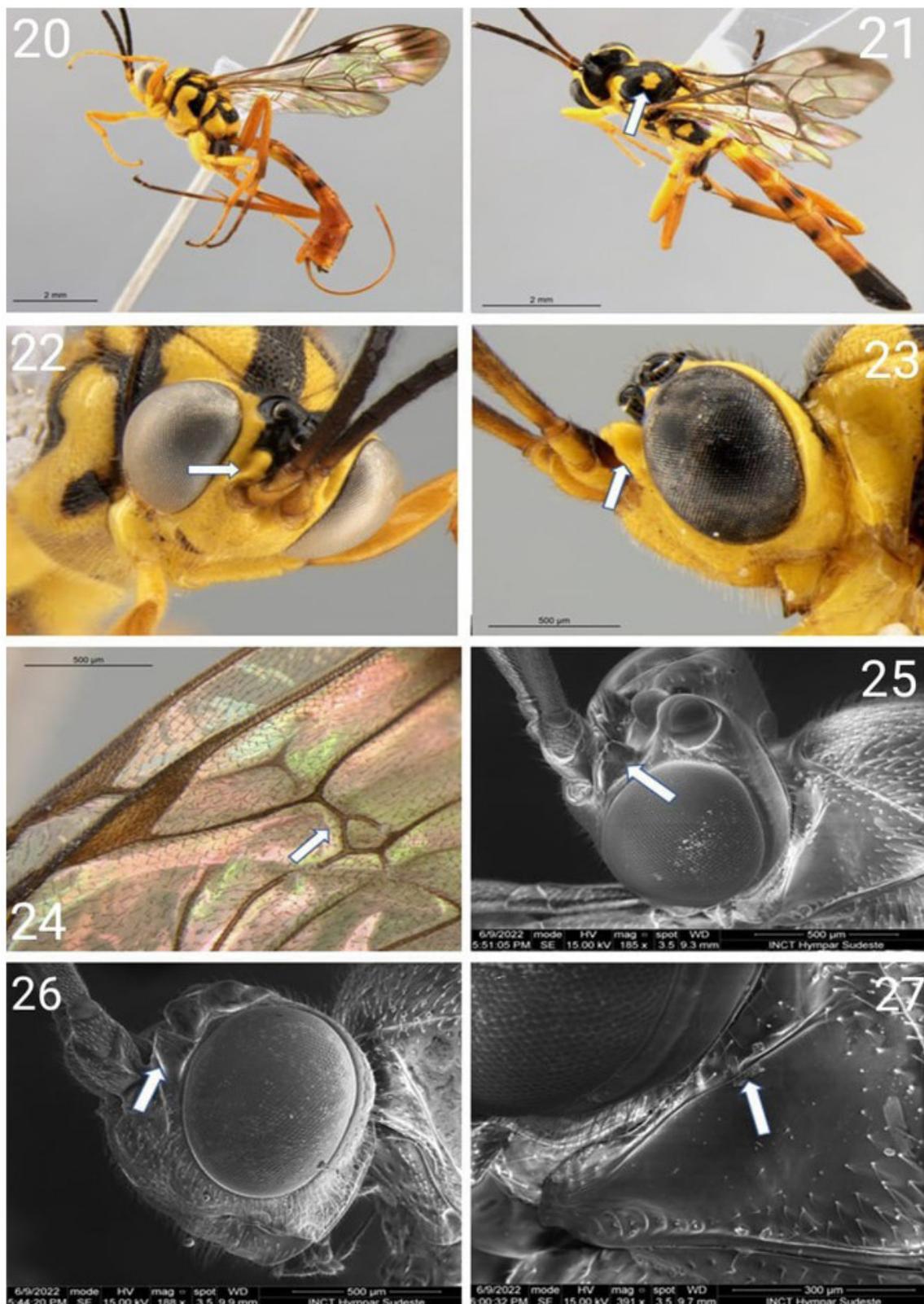
S. vedoris Ugalde and Gauld, 2002 (Figures 22, 23) is only known from Costa Rica, in wet forests on the coastal plains up to about 1,100 meters. The species differs from



Figures 14-19. *Lissonota pseudeleboea*, female. 14, propodeum, dorsal; 15, propodeum and metapleuron, lateral (arrows indicating submetapleural and metapleural carinae); 16, mesosoma, dorsal; 17, mesoscutum, latero dorsal; 18, propodeum, dorsal; 19, tergites I, II and III, laterodorsal.

the other species of the genus in having a more closely and coarsely punctate metapleuron and a stronger epomia crest, with the upper end distinctly broadened into a small triangular lobe (Figure 27); mesoscutum

centrally with a crown-shaped yellow spot (Figure 21) and hind basitarsus slightly stouter, about 10 times as long as broad, basally pale. This is the first record of *S. vedoris* in Brazil.



Figures 20-27. *Syzeuctus vedoris*. 20, female, habitus, lateral; 21, male, habitus, latero dorsal (arrow indicating mesoscutum centrally with a crown-shaped yellow spot); 22, 23, head (arrows indicating raised lamella above antennal socket); 24, wings (arrow indicating rhombic and peciolate areolet); 25, 26, head (arrows indicating raised lamella above antennal socket); 27, pronotum, lateral (arrow indicating strong epomial crest).

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