



A revision of the genus *Aelocampsomeris* Bradley, 1957 (Hymenoptera: Scoliidae: Scoliinae)

Jean-Baptiste Castagnet¹ , Fernando Barbosa Noll² ,
Ivan Fernandes Golfetti^{2*}

¹Independent Researcher, Saint-Martin-Lalande, France.

²Universidade Estadual Paulista "Júlio de Mesquita Filho", Instituto de Biociências, Letras e Ciências Exatas, Departamento de Ciências Biológicas, Laboratório de Aculeata, São José do Rio Preto, SP, Brasil.

ARTICLE INFO

Article history:

Received 11 December 2024

Accepted 11 February 2025

Available online 25 April 2025

Associate Editor: Rodrigo

Gonçalves

Keywords:

Campsomerini

Ectoparasitoid wasps

Morphology

Neotropical Region

Taxonomy

ABSTRACT

Scoliidae is a family commonly found throughout the globe and, currently, one of the most neglected taxa within the Hymenoptera. As expected, information about this group is extremely scarce, confusing, and outdated, especially when it comes to its taxonomy and systematics. Therefore, here the genus *Aelocampsomeris* Bradley, 1957 is revised. This genus comprises three species: *Aelocampsomeris brethesi* Bradley, 1927, *Aelocampsomeris campestris* Burmeister, 1854, and *Aelocampsomeris variegata* Fabricius, 1793. While *Aelocampsomeris variegata*, is a very common and well-known species, *Aelocampsomeris brethesi*, and *Aelocampsomeris campestris*, remain much less known. Examination of the male and female type specimens, as well as new specimens, allowed an accurate review. We provide a detailed morphological redescription, illustrations and a species key.

Introduction

Scoliidae is a common and small family of aculeate wasps which includes representatives distributed throughout the world (Osten, 2005). Composed of approximately 560 species distributed in 43 genera, the family is currently divided into three subfamilies: Archaeoscoliinae† (extinct) (Rasnitsyn, 1993), Proscoliinae (Rasnitsyn, 1977) and Scoliinae (Osten, 2005), this latter is also divided into two tribes: Campsomerini and Scoliini (Day et al., 1981; Osten, 2005).

Despite being commonly collected, Scoliidae still has unresolved taxonomic issues and that there is still much to learn about these wasps. Few works have dealt with its fauna and studies about them are scarce, especially for groups occurring in the Neotropical region. This situation intensifies mainly due to reasons like the lack of identification keys, species poorly described, and the extreme sexual dimorphism present in the family (Betrem, 1928; Bradley, 1945; Betrem, 1967; Betrem and Bradley, 1972; Brothers and Finnamore, 1993; Brothers, 1999; Gupta and Jonathan, 2003; Elliott, 2011; Khouri et al., 2022; Ramírez-Guillén et al., 2022; Golfetti and Noll, 2023a, 2023b).

Belonging to Campsomerini Bartlett, 1912, *Aelocampsomeris* Bradley, 1957 is a genus commonly found throughout the New World, mostly in the Neotropical region, and has three valid species: *Aelocampsomeris brethesi* Bradley, 1927, *A. campestris* Burmeister, 1854 and *A. variegata* Fabricius, 1793 (Bradley, 1957; Osten, 2005). Historically, *Aelocampsomeris* was erected by Bradley (1957) as a subgenus of *Campsomeris* Guérin-Méneville, 1838, with *Campsomeris costalis* Lepeletier de Saint-Fargeau, 1845 as species-type. Then it was posteriorly elevated to genus level by Argaman (1996). In his work on *Campsomeris* of the New World, Bradley (1957) reviewed the species of the subgenus *Aelocampsomeris* and listed three valid species: *Campsomeris* (*Aelocampsomeris*) *brethesi* Bradley, 1927, *C. (A.) campestris* Burmeister, 1854, *C. (A.) variegata* Fabricius, 1793. Bradley also puts in synonymy *Elis* (*Campsomeris*) *pulchella* De Saussure, 1855 as junior synonym of *C. campestris* and *Scolia fuscata* Klug, 1810, *Campsomeris costalis* Lepeletier de Saint-Fargeau, 1845, *Campsomeris lucida* Lepeletier de Saint-Fargeau, 1845, *Scolia irregularis* Smith, 1855 and *Elis lativentris* De Saussure, 1855 as junior synonym of *C. variegata*. Osten (2005) in his checklist of the Scoliidae of the world, also treats *Aelocampsomeris* as a genus, with three species: *Aelocampsomeris brethesi*, *A. campestris* and *A. variegata*. It should be noted that Rasmussen and Asenjo (2009) in their checklist to the

*Corresponding author.

E-mail: ivan.golfetti@unesp.br

wasps of Peru, refute Argaman's work and treat *Aelocampsomeris* as a subgenus of *Campsomeris* Guérin-Méneville, 1838 but the latter do not seem to be aware of Osten's work, which is not cited in the bibliography.

Therefore, aiming to collaborate with the organization of knowledge about Scoliidae and as a first step, the main aim of this work is to list the valid species of the genus *Aelocampsomeris*, give a detailed morphological redescription, a new diagnosis and a determination key.

Material and methods

Dried and pinned specimens were used for the analysis of the external morphology and male genitalia. The following procedure was used to study the of male genitalia: (a) the specimen was kept in a humid chamber for relaxation and easy removal of the genitalia; (b) the genitalia were then treated with a solution of 10% potassium hydroxide for approximately 24 hours, for bleaching of structure and tissue removal; (c) treatment with acetic acid (10%) to neutralize the reaction; and (d) rinsed in water and stored in glycerine.

The terminology followed Betrem (1928, 1935), Bradley (1945, 1957) and Gupta and Jonathan (2003), except for surface sculpturing, which was based on Harris (1979).

Specimens were examined under a Leica M205 C stereoscopic microscope and photos were taken with an attached Flexacam C1 camera using the LASx software, and later edited with the program Adobe Photoshop CS6 (San Jose, CA, USA).

The drawings of male genitalia were made from microscopic preparations, observed using a Wild microscope equipped with a Wild typ 256576 drawing tube. In the line drawings, for the sake of clarity, the bases of the setae have been nearly all depicted, but only a few complete setae have been drawn.

A total of 138 specimens fitting *Aelocampsomeris* and its respective three species were examined. The material used was provided by the following institutions and their respective curators:

AMNH: American Museum of Natural History, New York, USA (Dr. James Carpenter); **CUIC:** Cornell University Insect Collection, Ithaca, Nova York, USA (Dr. Corrie S. Moreau); **HYM-SJRP:** Coleção de Hymenoptera, Instituto de Biociências, Letras e Ciências Exatas, São José do Rio Preto, São Paulo, Brazil (Dr. Fernando Barbosa Noll); **INMA:** Instituto Nacional da Mata Atlântica, Vitória, Espírito Santo, Brazil (Sérgio Lucena Mendes); **INPA:** Instituto Nacional de Pesquisas da Amazônia, Manaus, Amazonas, Brazil (Dr. Marcio Oliveira); **MFN:** Museum für Naturkunde, Berlin, Germany (Dr. Bonnie B. Blaimer); **MNHN:** Muséum national d'Histoire naturelle, Paris, France (Dr. Bernardo Santos); **MZUSP:** Museu de Zoologia da Universidade de São Paulo, São Paulo, Brazil (Dr. Gabriela Procópio Camacho); **RPSP:** Coleção Entomológica "Prof. J.M.F. Camargo", Faculdade de Filosofia, Ciências e Letras de Ribeirão Preto (FFCLRP/USP), São Paulo, Brazil (Dr. Eduardo Andrade Botelho de Almeida); **SNM:** Statens Naturhistoriske Museum, University of Copenhagen, Denmark (Dr. Lars Vilhelmsen); **UFES:** Coleção Entomológica da Universidade Federal do Espírito Santo, Vitória, Espírito Santo, Brazil (Dr. Marcelo Teixeira Tavares); **ZMB:** Museum für Naturkunde (Dr. Bonnie Blaimer); **Coll. JBC:** Private collection Jean-Baptiste CASTAGNET.

Abbreviations

T: Tergum; **S:** Sternum; **"Location":** location of type specimen collection, quoting the text on the specimen tag; **[Location]:** country of type specimen collection, correcting or complementing the location; **(Location):** country and institution which the reference designates as the deposit of the material type; **(cat.):** the reference is a catalog; **(descr.):** the reference has the original description to the species; **(distr.):** the

reference is the distribution of the species; **(key):** the reference is an identification key; **var.:** variety of the species.

Taxonomy

Scoliidae Latreille, 1802

Scoliinae Latreille, 1802

Campsomerini Bartlett, 1912

***Aelocampsomeris* Bradley, 1957** (Figs. 1-8)

Aelocampsomeris Bradley, 1957: 74 (cat.; key) (type species: *Campsomeris variegata* Fabricius, 1793 by designation of Bradley, 1964a [= *Campsomeris costalis* Lepeletier, 1845 by original designation]) (as a subgenus of *Campsomeris* Guérin-Méneville, 1838); Bradley, 1964a: 106 (cat.).

Aelocampsomeris Argaman, 1996: 210, 219 (cat.; key) (as a genus); Hanson, 2006: 616; Osten, 2005: 3 (cat.).

Diagnosis. Females: Very large, with entirely black vestiture and easily recognizable by their short acute black hind tibial spurs. First hind tarsomere cylindrical, differing from others tropical *Campsomerini* that have normally conical ones. Head and mesosoma always wholly black, sometimes having yellow marks on T1–T3 or metasoma entirely black. Transition between dorsal and posterior area of propodeum with a projecting point medially. Hypopygium subquadrate apically projected and with two heavy peg-like lateral teeth. Wings hyaline, hyaline with a fuscous costal border, yellow, or uniformly dark brown.

Males: Large and robust, less than females, but above average for others tropical *Campsomerini*. Posterior tibial spurs are normally black and slightly shortened. T1 and T2 with subapical punctures forming a transversal line. Vestiture is mostly white or yellowish, except in the last segments of the metasoma and in *A. variegata*, darker pilosity is broadly present. Strongly marked with yellow, as are *Dielis dorsata* Fabricius, 1787 and *Lissocampsomeris wesmaeli* Lepeletier, 1845 males, but easily differentiated from them by being larger and having short tibial spurs. Wings hyaline, their membrane bare beyond the cells. Some variations of the typical male coloration may occur.

Redescription. Females: Antennae, especially the flagellum, short and thick. Flagellomeres 2–6 twice wide as long. Clypeus pointed and with apical margin significantly wider medially than on the sides. Vertex and occiput generally with dense punctate, not entirely smooth and shiny. Upper half of mesopleuron with numerous large setigerous punctures, especially on its anterior half. Excavation of pronotum before tegula bordered by a sharp edge but no raised carina. Mesopleura with a distinct epicnemial ridge. Propodeum with a distinct, and sometimes, prominent tubercle. Lateral-dorsal area of propodeum without mirror. Posterior median area of propodeum impunctate. Lateral propodeal carina slightly exceeding beyond spiracle. Hind tibial spurs black, asymmetrical, and acute. Longer spurs of hind tibia short and stout, about 0.4 times length of the metatarsus. Scutum, scutellum, metanotum and propodeum slight to broadly spotted, not entirely smooth and shiny. Hypopygium (S6) subquadrate, with two heavily peg like lateral teeth. Abdominal terga matt. Setae entirely dark brown or black. Head and thorax always wholly black. Abdomen entirely black, or with T1 spotted or banded and, sometimes, with T2 and T3 also spotted. Wings variable: hyaline, hyaline with a fuscous costal border or uniformly dark. Length 24 – 35 mm.

Males: Tegument all black and with yellow markings present on the clypeus, pronotum, tegula, scutellum, metanotum, and propodeum in the medial and lateral areas, and on the legs; T1–T5 banded with yellow apically, bands can be interrupted from T2–T5. These marked areas may have some variations being more or less evident on each specimen. Longer spurs of hind tibia short and stout, about 0.4 times length of the metatarsus. Sternites with dense punctations from which brushes of erect bristles emerge, may occur from S4–S7 or at least S6–S7.

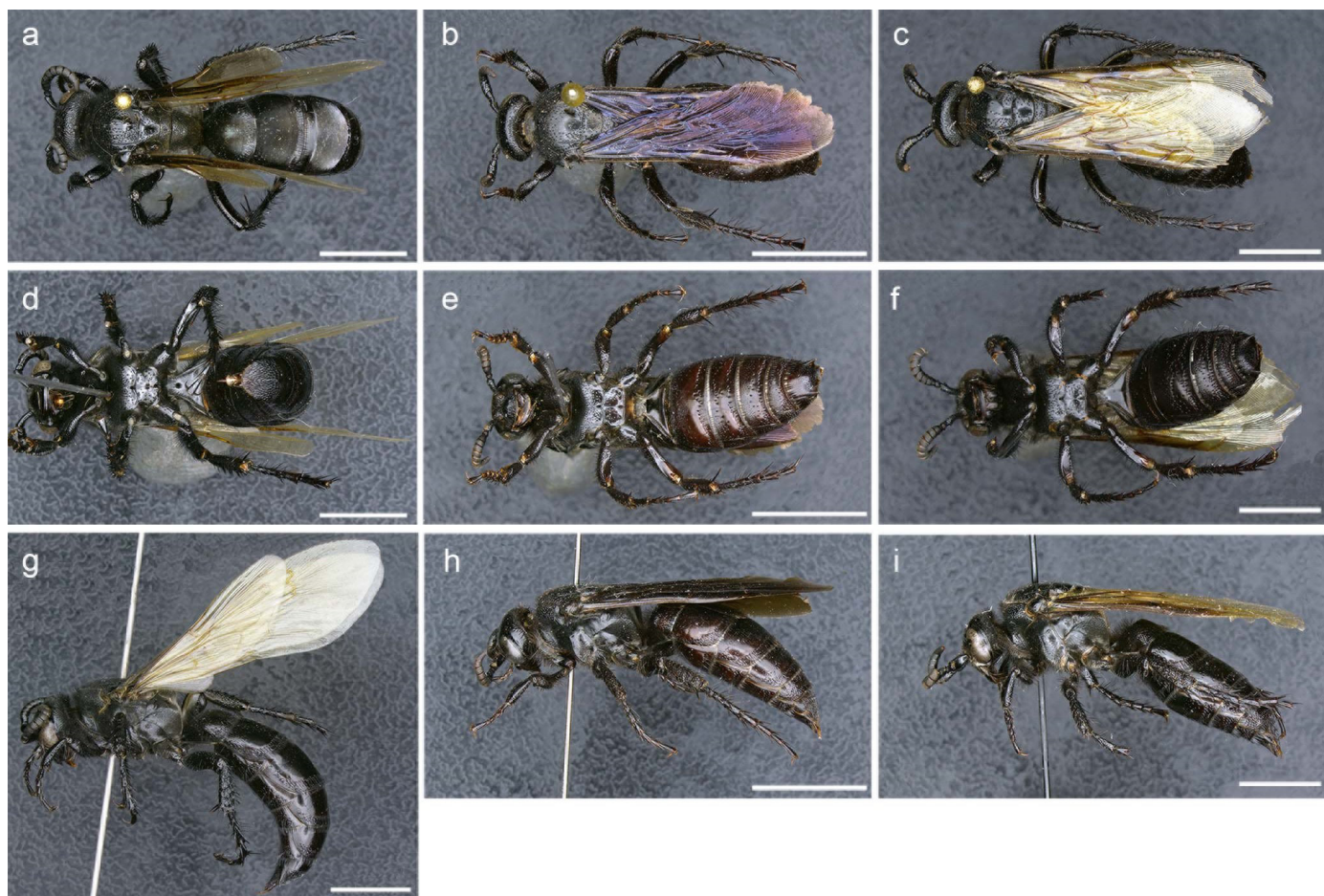


Figure 1 Females of *Aelocampsomeris*. a–c. Habitus dorsal; d–f. Habitus ventral; g–i. Habitus lateral; a, d, g. *Aelocampsomeris brethesi*. b, e, h. *Aelocampsomeris campestris*. c, f, i. *Aelocampsomeris variegata*. Scale bar 5 mm.

Wings hyaline with a fuscous costal border, bare beyond the cells and with hair confined only to the costal margin, and the first submarginal cell with a clear comma shaped mark. There are reports of anomalous males with white or pale tibial spurs. Length 24 – 29 mm.

Cardo is rather elongated, gradually widening in its distal half.

Male genitalia: Paired *squama*, semi-cylindrical in shape, have a strongly reinforced basal opening. Each *squama* extends into a large *paramere*, which gradually widens, with its broadly rounded apex surpassing the apex of the penis valves. *Paramere* bears numerous bristles forming a ventral brush. *Volsella* are composed of two overlapping parts, separated by a transverse groove and, laterally, by a fairly deep notch. Basal part, or *cupsis volsellaris*, is wider than it is long and has a short lateral lobe bearing numerous brown cones. Similar cones are also found along the lateral edge of the distal part, called *lamina volsellaris*. These cones, more or less pointed or rounded at the apex, are articulated on a base and likely function as modified sensory structures. *Cupsis volsellaris* and the lateral half of the *lamina volsellaris* bear numerous bristles that form a shorter brush on the ventral side compared to the one on the *paramere*. *Aedeagus* is composed of two penile valves joined along the midline. Each penile valve has a long basal apodeme, directed obliquely towards the base of the *genitalia*; this apodeme serves as an attachment point for the retractor and protractor muscles of the *aedeagus*. Each penile valve is shaped like a blade, laterally flattened; in lateral view, its ventral edge shows about ten strong, pointed teeth.

Remarks. The genus name appears as both '*Aelocampsomeris*' (Bradley, 1957: 74) and '*Aeolocampsomeris*' (Bradley, 1957: 68) in Bradley's work. Then, Bradley's (1964a) subsequent usage of '*Aelocampsomeris*'

sets that as the correct spelling. *Campsomeris* has long been treated as a "dumping-ground" genus, containing very different taxa (Añino et al., 2024). The different subgenera that compose it have profound morphological differences from each other, so that it seems necessary to treat them as genera on its own. Argaman's work, although highly criticizable, offers some interesting proposals, notably the elevation of a certain number of subgenera to genus level. Like Argaman and Osten, it seems to us more correct to treat *Aelocampsomeris* as a genus level, so we adopt this position in this manuscript.

Distribution. *Aelocampsomeris* currently comprises three species that occur in the Neotropical Region, mainly the northern half of the South American continent, but occurring from the South of Mexico to southern Brazil (De Saussure and Sichel, 1864; Bradley, 1945, 1957; Hanson, 2006; Rasmussen and Asenjo, 2009; Santos et al., 2015; Ramírez-Guillén et al., 2022; Añino et al., 2024).

Aelocampsomeris brethesi Bradley, 1927

(Figs. 1a, 1d, 1g, 2a, 2d, 2g, 3a, 3d, 3g, 4a, 4d, 4g, 5a, 5d, 5g, 5j, 6a, 6d, 6g, 7a, 8a)

Scolia (*Campsomeris*) *brethesi* Bradley, 1927: 168 (key), 169 (descr.). ♀.

Type: Holotype. [Trinidad]. (Female, USA – CUIC n° 839.1).

Type: Allotype. [Perú, Loreto, San Roque]. (Male, USA – CUIC n° 7108) (Not described in original publication).

Campsomeris brethesi Bradley, 1945: 10 (key; **n. comb.** for *Scolia* (*Campsomeris*) *brethesi*), 32 (cat.; male recognized). ♂.

Campsomeris (*Aelocampsomeris*) *brethesi* Bradley, 1957: 74 (cat.; key).

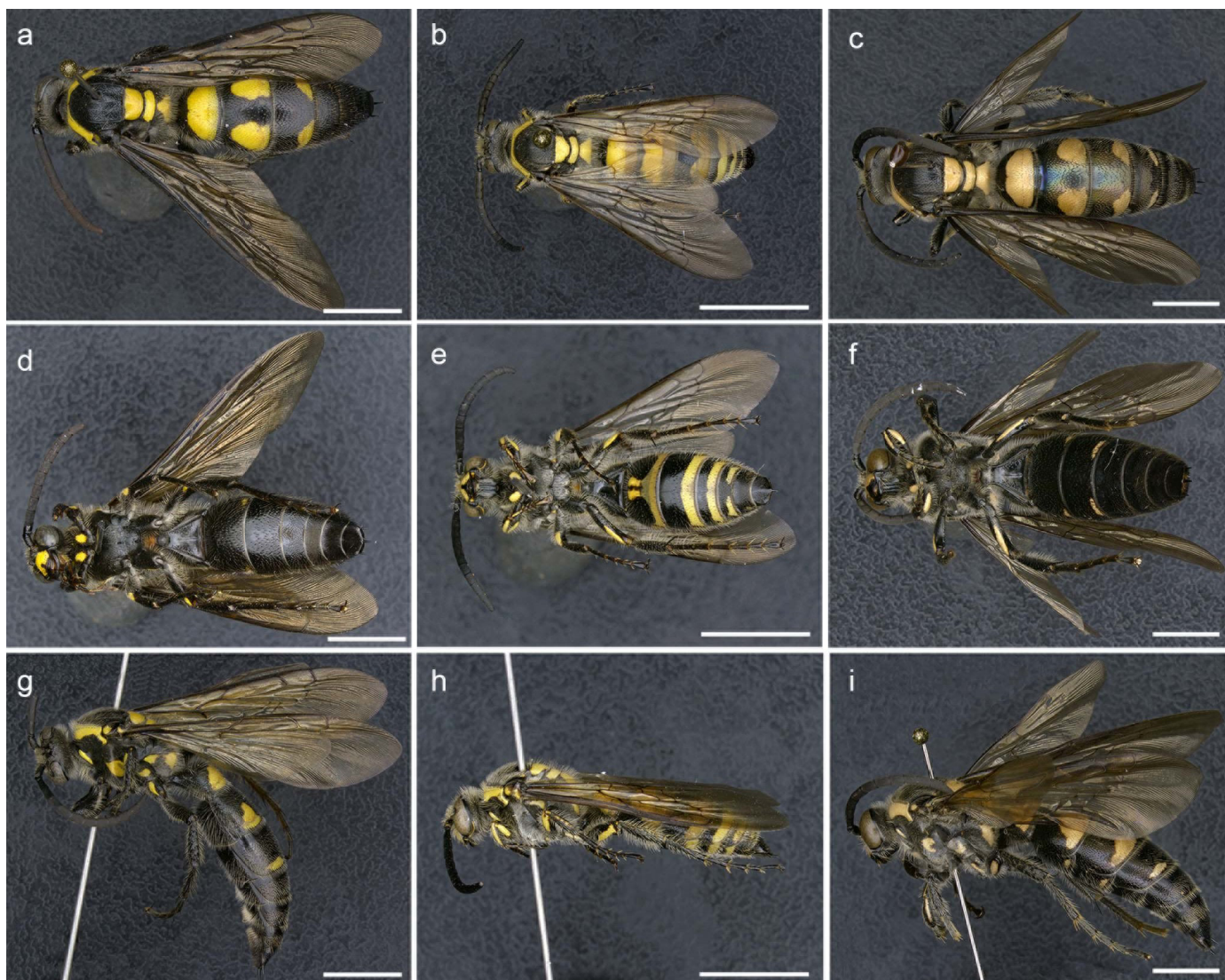


Figure 2 Males of *Aelocampsomeris*. a–c. Habitus dorsal; d–f. Habitus ventral; g–i. Habitus lateral; a, d, g. *Aelocampsomeris brethesi*. b, e, h. *Aelocampsomeris campestris*. c, f, i. *Aelocampsomeris variegata*. Scale bar 5 mm.

Aelocampsomeris brethesi Osten, 2005: 7 (cat.; **n. comb.** for *Campsomeris Aelocampsomeris brethesi*).

Diagnosis. Females: Easily recognized from other *Aelocampsomeris* by the following features: First hind tarsomere with a brush of dense setae. Pronotum with very dense and fine punctation, especially on the transition between dorsal and lateral area. Mesopleural tubercle strongly projected and acute. Tegument normally all black. Wings with variable colour patterns.

Males: Pronotum is very finely and densely punctate. Tibiae and hind tarsus covered with dark brown setae and with brown to black spines, clearly contrasting with the other *Aelocampsomeris* that have yellowish colours. S5–S7 apically with erect brushes of long silky white or black setae.

Redescription. Female – Length 30–34 mm. (Figs. 1a, 1d, 1g, 3a, 3d, 3g, 4a, 4d, 4g).

Head (Figs. 3a, 3d). Mid clypeal lobe triangular in outline, apex blunted and more rounded, without deep notch separating lateral lobes. Clypeus elevated and striated in central region, base and sides with dense coarse punctation. Antennae, especially the flagellum, short and thick. First flagellomere long as wide. Frontal fissure distinct but

weak, not reaching the median ocelli. Frons anteriorly very densely and finely punctate, the punctures very close together, almost coalescing; posteriorly, in front of anterior ocellus, with fine, fairly dense punctation. Ocelli forming an almost flat obtuse triangle. Punctuation around posterior ocellus fine and dense. Vertex with fairly dense, and fine punctation, partly impunctate behind the posterior ocelli.

Mesosoma (Figs. 3g, 4a, 4d, 4g). Pronotum with fine and very dense punctures, almost coalescent. Scutum with denser and finer punctation anteriorly, coarser and more irregular in the middle and posteriorly, the middle with a smooth V-shaped area impunctate. Scutellum with fine and dense punctation, on the sides and posteriorly, sparser anteriorly, medially with a large smooth and shiny surface almost impunctate. Metanotum with dense and fine punctation. Dorso-median area of the propodeum with a prominent tubercle. Dorso-lateral area and dorso-median area of propodeum very finely and densely punctate. Postero-lateral area and postero-median area of propodeum almost impunctate, smooth and shiny. Lateral carina of the propodeum slightly exceeding beyond spiracle. Transition between the dorsal and lateral areas of the propodeum with a slight carina behind. Mesopleura with a distinct epicnemial ridge ending in an acute tubercle. Mesopleural

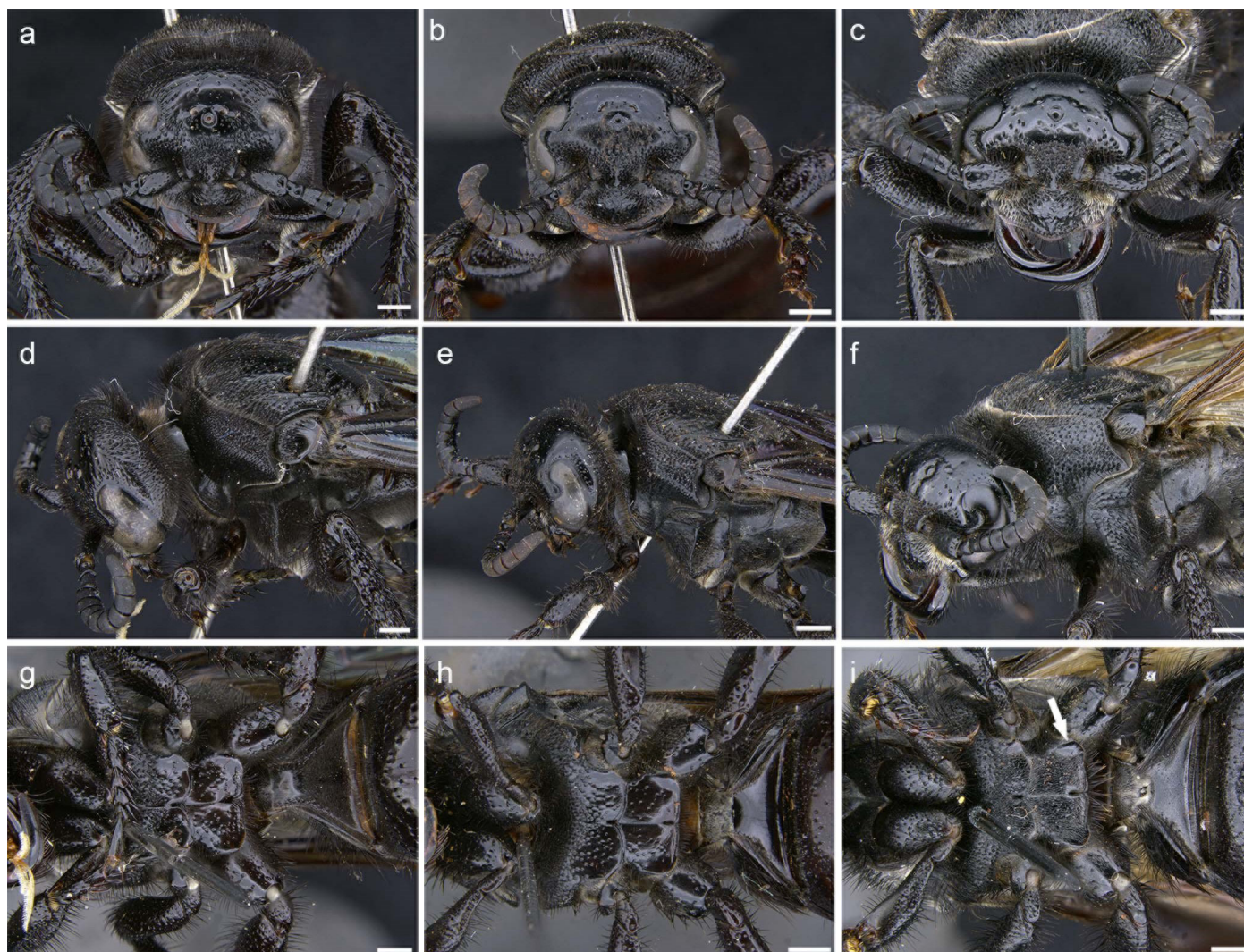


Figure 3 Morphological traits of females of *Aelocampsomeris*. a–c. Head in frontal view. d–f. Pronotum in lateral view. g–i. Mesosoma in ventral view, arrow indicates projecting lobes of metasternal plates at coxae. a, d, g. *Aelocampsomeris brethesi*. b, e, h. *Aelocampsomeris campestris*. c, f, i. *Aelocampsomeris variegata*. Scale bar 1 mm.

tubercle forming a prominent tooth-shaped pyramid, acute, raised well above the level of the pronotal lobe. Transition between the vertical and upper part of the metapleura gradual, without carina. Dorsal plate of metapleuron punctate dorsally, impunctate elsewhere. Metasternum subquadrate and flat but slightly raised in the middle along the suture, the latter ending in a deep pit. Metasternal plates without posteriorly projecting lobes at the coxae, the posterior edge of the metasternal plates strongly indented in the middle at the suture level. Hind tibial spurs acute black. Hind basitarsus with a brush of seta (scopa).

Metasoma (Figs. 3g, 4a) T1 wider than long, twice wide as long. T1 with sparse punctation at the base, almost entirely smooth in the middle and fine and dense apically. T2 and T3 with very sparse fine post basal punctation, not forming a clear transverse line, almost entirely smooth in the middle and with fine and dense subapical row of punctuation at the apex. T4 and T5 are almost entirely smooth in the middle and with coarse and dense subapical row of punctuation apically. T6 completely covered by a dense and coarse punctation. S1 flat, entirely smooth, without punctuation, except for the lateral edges with fine and dense punctuation, the center without a small ridge prominent. S2–S3 with a rather coarse punctuation sparser in the middle and on the sides. S4–S5 with fairly fine punctuation at the

base, coarser and sparser in the middle and apex. S6 subquadrate, with two heavily peg like lateral teeth.

Color (Figs. 1a, 1d, 1g). Wholly black integument. Variable wing coloration, usually hyaline, occasionally hyaline with fuscous costal band or uniformly dark with purple reflections. Vestiture and pubescence black.

Male – Length 26–29 mm. (Figs. 2a, 2d, 2g, 5a, 5d, 5g, 5j, 6a, 6d, 6g, 7a, 8a).

Head (Figs. 5a, 5d). Clypeus finely punctate along apical margin and slightly striated apically in the middle, center slightly elevated and without punctuation, lateral edges having coarse punctuation. Frontal spatium weakly elevated and with fine and dense punctuation. Frontal lamina slender. Cross-furrow of frons weakly indicated. Ocelli forming an almost flat obtuse triangle. Frons densely and rather finely punctate. Ocular sinus with a fovea slightly depressed. Frontal fissure weakly visible, reaching the anterior ocellus. Vertex and gena with fine and dense punctations.

Mesosoma (Figs. 5a, 5d, 5g, 5j). Pronotum with very fine and dense punctuation, the diameter of a point is smaller than the intervals space. Scutum almost as long as it is wide. Scutum quite densely and finely punctate, with center posteriorly coarser and sparser. Parapsidial furrow evident. Tegulas without punctures or bristles apically. Scutellum



Figure 4 Morphological traits of females of *Aelocampsomeris*. a–c. Propodeum and metasoma in dorsal view. d. Hind basitarsus. e–f. Dorsal area of metapleura in lateral view. g–i. Scutum in dorsal view. a, d, g. *Aelocampsomeris brethesi*. b, e, h. *Aelocampsomeris campestris*. c, f, i. *Aelocampsomeris variegata*. Scale bar 1 mm.

and metanotum with fine and dense punctation. Propodeum with fine, dense and regular punctation; with a weak, slightly protruding, tubercle between dorso-median and postero-median areas. Posterior area of propodeum densely and finely punctate. Latero-dorsal region of the propodeum without mirror (impunctate area). Mesopleura with fine and uniform punctation. Upper plate of metapleura punctate on upper third, the rest smooth and shiny without punctation. Lateral carina of the propodeum extended posterior to spiracle. Metasternum flat anteriorly, clearly raised posteriorly at the level of coxae, posterior edge of metapleural plate strongly indented. Scopa (brush) of tibiae and hind tarsus covered with dark brown setae. Tarsus of legs midleg and hindleg covered with brown to black spines. First submarginal

cell of forewing covered with setae, but incomplete. Median cell hair covering less than a third of the cell.

Metasoma (Figs. 6d, 6g). T1 with fairly fine and dense punctation, more irregular and sparser in the middle. T2 and T3 with fairly coarse and dense punctation, more irregular and sparser posteromedially. S1 almost entirely smooth without punctation, except for the coarsely punctate lateral edges, center with a small ridge usually prominent on the posterior half of the segment, not terminating in a small prominent tubercle. S2 densely and coarsely punctate. S3 with fine punctation anteriorly, much coarser posteromedially. S4 with fine punctation anteriorly, much coarser and sparser medially, becoming finer and denser posterad and often with erect brushes of fine setae. Posterior

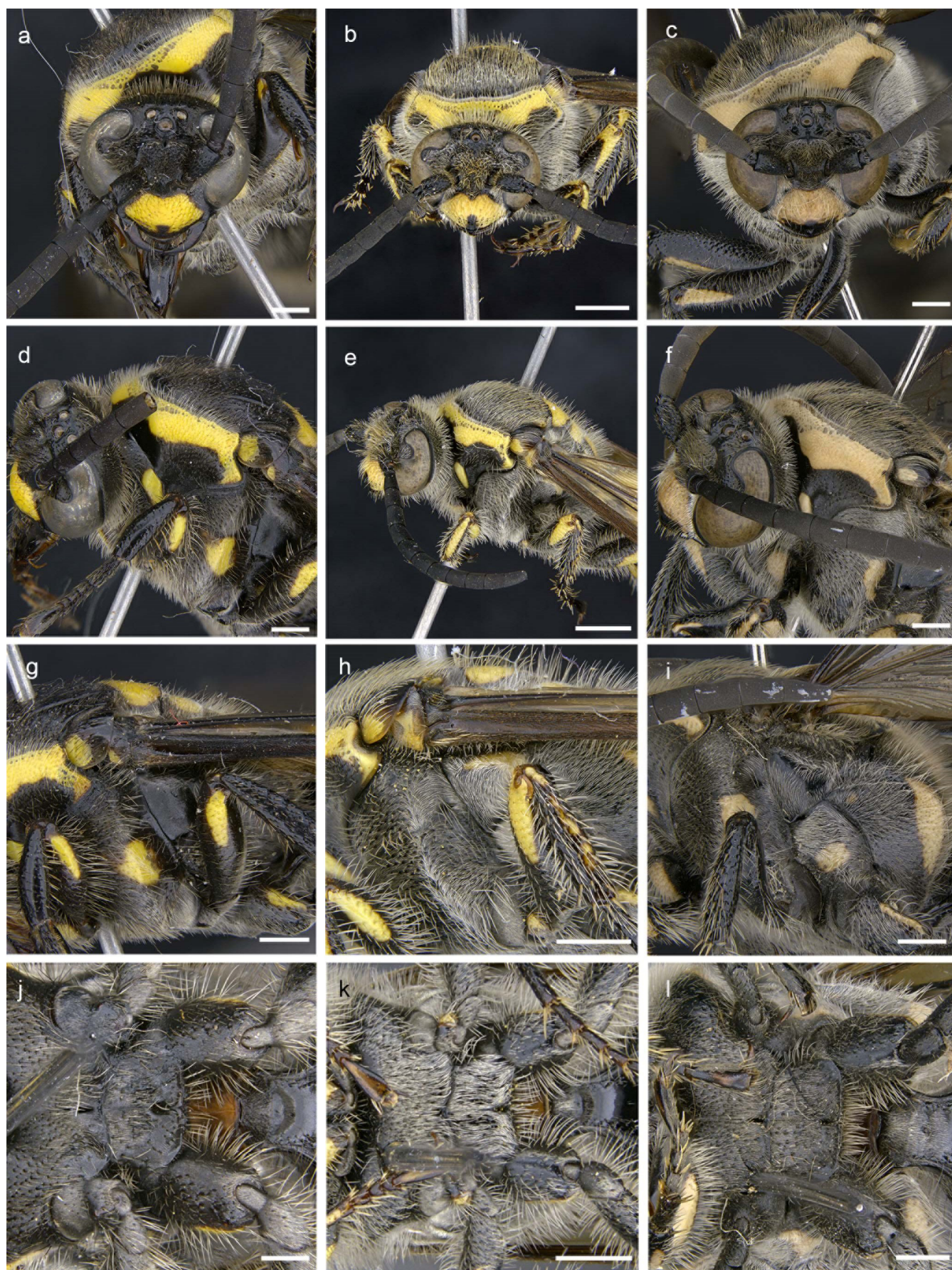


Figure 5 Morphological traits of males of *Aelocampsomeris*. a–c. Head in frontal view. d–f. Pronotum in lateral view. g–i. Mesosoma in lateral view. j–l. Mesosoma in ventral view. a, d, g, j. *Aelocampsomeris brethesi*. b, e, h, k. *Aelocampsomeris campestris*. c, f, i, l. *Aelocampsomeris variegata*. Scale bar 1 mm.

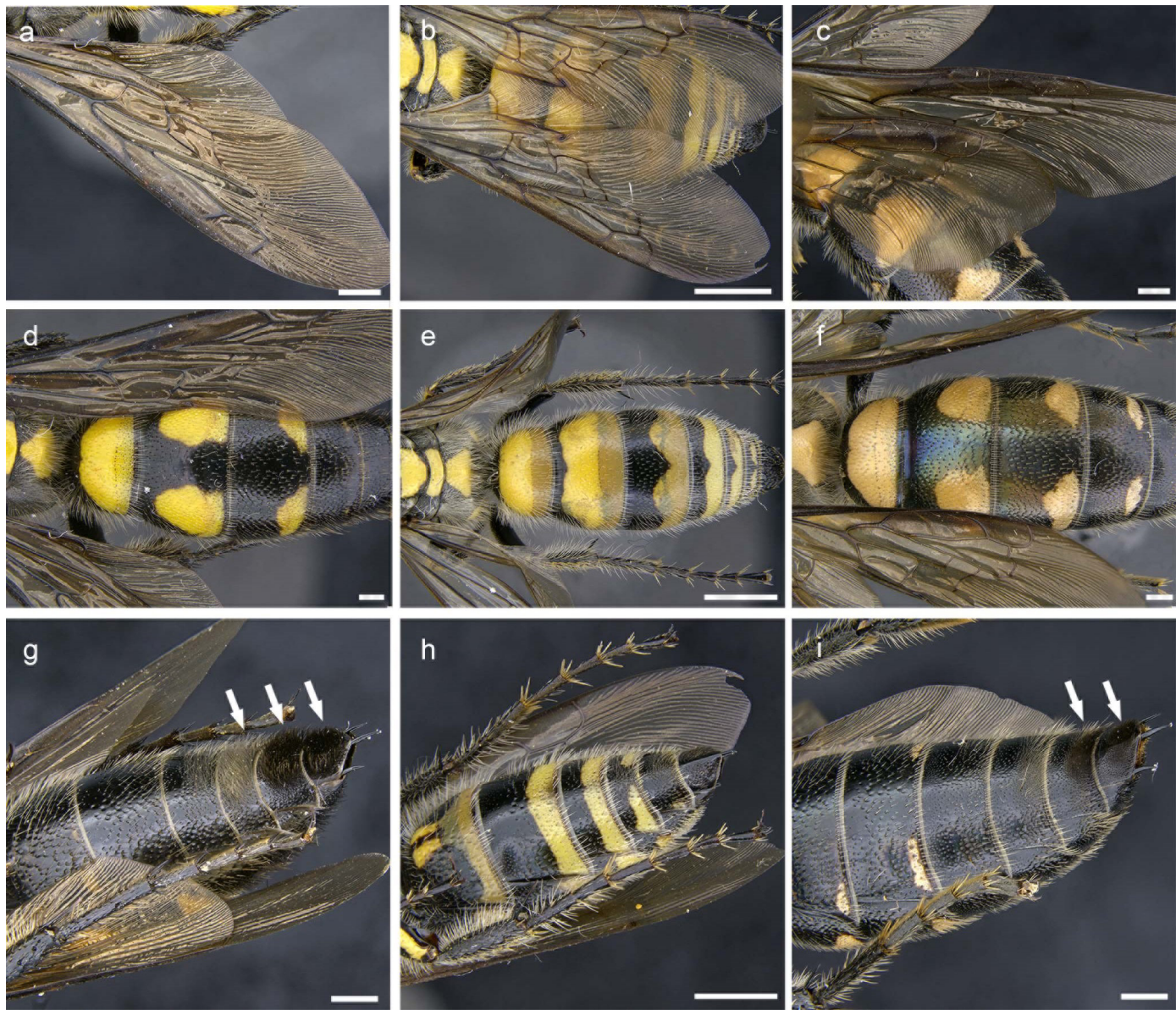


Figure 6 Morphological traits of males of *Aelocampsomeris*. a–c. Forewing. d–f. Propodeum and metasoma in dorsal view. g–i. Metasoma in ventral view, arrows indicate areas densely and finely punctate, with dense, erect brushes of hair. a, d, g. *Aelocampsomeris brethesi*. b, e, h. *Aelocampsomeris campestris*. c, f, i. *Aelocampsomeris variegata*. Scale bar 1 mm.

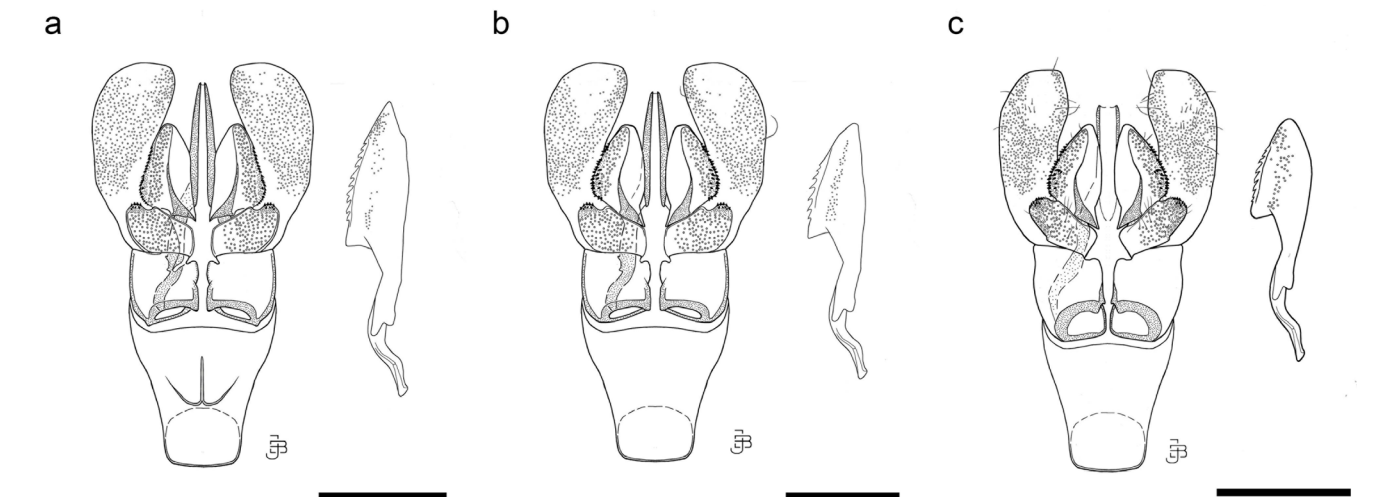


Figure 7 Male genitalia of *Aelocampsomeris* (ventral aspect at left, aedeagus at right). a. *Aelocampsomeris brethesi*. b. *Aelocampsomeris campestris*. c. *Aelocampsomeris variegata*. Scale bar 1 mm.

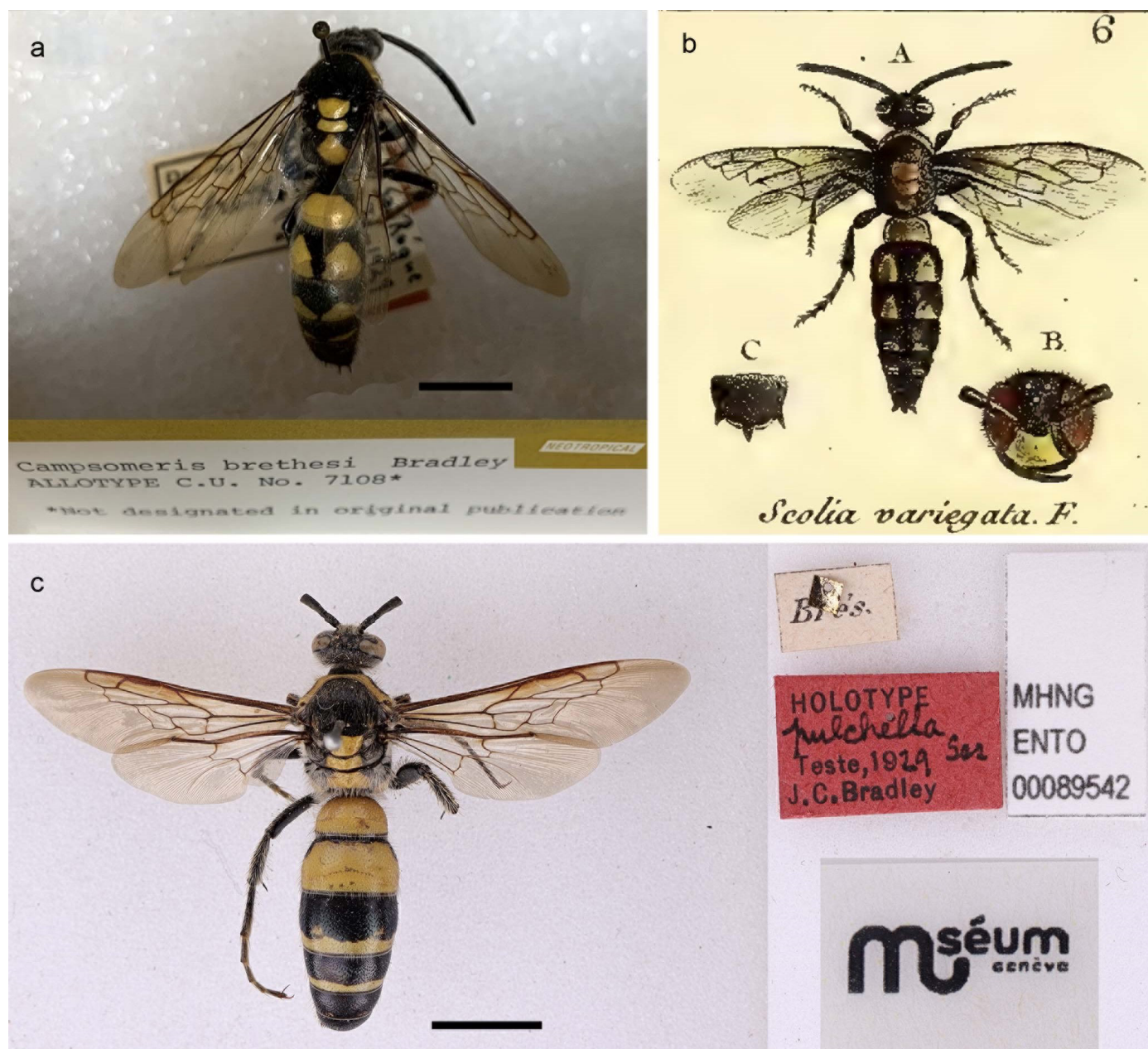


Figure 8 Material type of *Aelocampsomeris* examined. a. Allotype of *Aelocampsomeris brethesi*. b. Lectotype of *Aelocampsomeris variegata*. c. Holotype of *Elis* (*Campsomeris*) *pulchella*. Scale bar 5 mm.

part of S5–S7 very densely and finely punctate with erect brushes of silky white or black hair.

Genitalia (Fig. 7a). Genitalia are similar in all three species. In *A. brethesi*, distal part of the *paramere* is more densely punctuated. *Aedeagus* is almost as long as *paramere* and distinctly pointed at the apex. Dorsal surface of the *cardo* is equipped with a cuticular reinforcement that branches into three parts: one median branch and two divergent branches.

Color (Figs. 2a, 2d, 2g). Black and heavily marked with yellow as follows: clypeus entirely, pronotum except callosity, tegula in part, propleura, lower plate of mesopleura, lower plate of metapleura, lateral area of propodeum, scutellum, metanotum, median and posterior area of propodeum and spots and stripes on legs; T1–T5 banded, the bands may be more or less interrupted on T2–T5. Wings hyaline fuscous.

S2–S3 often with two thin yellow lateral bands. Some reduction of the typical male coloration occurs; entirely black males are unknown. Vestiture and pubescence are predominantly white.

Remarks. Less common species, certainly present throughout northern South America. But probably confused with *A. variegata* in collections.

Etymology. Named by Bradley in honour of Juan Bréthes, in recognition of his studies on the South American hymenopteran fauna.

Distribution. Bolivia; Brazil (Amazonas, Mato Grosso); Colombia; French Guiana (Matoury, Roura, Macouria); Guyana; Panama; Peru (Loreto region, Junín region); Trinidad and Tobago.

Material Examined

Allotype: ♂ “Perú, Loreto, San Roque near Iquitos, alt. 360 ft., Jan 1929 (Klug – CU)” (CUIC n° 7108). Examined by photograph. (Fig. 8a).

Other material

Brazil: 1♀, Amazonas, Manaus, 24.V.1978; 2♀, Amazonas, 16.XII.1986; 1♀, Amazonas, Manaus, 11.X.1977; 1♂, Amazonas, Manaus, 26.IV.1979; 1♂, Amazonas, Manaus, 03-07.VIII.2015; 1♂, Amazonas, Manaus, 21.II.1984; 1♀, Amazonas, Manaus, 09.IX.1986; 1♀, Amazonas, Manaus, 24.IX.1986; 1♀, Amazonas, Manaus, 14.II.1979; 1♀, Espírito Santo, Barra de São Francisco, 15.X.1998; 1♀, Espírito Santo, Cariacica, 27.XII.1987; 1♀, Espírito Santo, Santa Teresa, 24.XI.1996; 1♀, Mato Grosso, Aripuanã, 03.X.1975; 1♀, Mato Grosso, Campo Novo dos Parecis, 18.I.2018; 1♀, Mato Grosso, Carolina S. Grande, 13.XII.2001; 1♀, Mato Grosso, Nova Santa Helena, 18.XI.2018; 1♂, Mato Grosso, Nova Marilandia, 12.I.2018; 1♀, Rio de Janeiro, Niteroi, Morro do Cavalo, 04.XI.1946; **French Guiana:** 1♀, Matoury, X. 2008; 1♀, Roura, Cacao, VI. 2009; 3♂, Roura, Cacao, VII. 2009; 1♂, Roura, Cacao, II. 2010, P. Bonin *leg.*, coll. H. Savina; 4♀, 4♂, Macouria, Matiti, X. 2020; 2♀, Macouria, Matiti, II. 2021. **Perú:** 1♂, 1♀, Junín region, Satipo, IV. 1998; 1♀, Loreto region, Picuro Yacu, 15. V. 2018.

Aelocampsomeris campestris Burmeister, 1854

(Figs. 1b, 1e, 1h, 2b, 2e, 2h, 3b, 3e, 3h, 4b, 4e, 4h, 5b, 5e, 5h, 5k, 6b, 6e, 6h, 7b, 8c)

Scolia campestris Burmeister, 1854: 29. "In Minas Gearaes" (cat.; descr.) ♀ and ♂; Smith, 1855: 106 (cat.); Dalla Torre, 1897: 150 (cat.) ♀ and ♂.

Type: Lectotype (designated by Bradley and Betrem, 1966). [**Brazil**]. (Male, Germany – ZMB).

Type: Paralectotype. [**Brazil**]. (Female, Germany – ZMB).

Elis (Campsomeris) pulchella De Saussure, 1855: 60 (cat.) ♂; Saussure and Sichel, 1864: 240 (distr.; cat.; **syn. jr.** of *Scolia campestris*) ♀ and ♂; Osten, 2005: 7 (cat.).

Elis (Dielis) campestris Saussure and Sichel, 1864: 239 (distr.; cat.;

n. comb. for *Scolia campestris*) ♀ and ♂.

Campsomeris (Aelocampsomeris) campestris Bradley, 1957: 74 (distr.; cat.; key; **n. comb.** for *Elis (Dielis) campestris*); Betrem and Bradley, 1966: 74 (cat.); Bradley, 1974: 463 (cat.).

Aelocampsomeris campestris Osten, 2005: 7 (cat.; **n. comb.** for *Campsomeris (Aelocampsomeris) campestris*).

Diagnosis. Females: Frons and vertex almost without punctation. Dorsal area of metapleura entirely smooth and shiny, impunctate. Metasternal plates without posteriorly projecting lobes at coxae. Mesopleural tubercle short. Tegument all black, sometimes T2–T3 marked with subtle yellowish spots. Wings normally dark brown with dark purple reflections. Relatively smaller than other species of *Aelocampsomeris*.

Males: Dorsal area of metapleura entirely smooth and shiny, without punctation. S5–S7 apically with coarser punctures and normal pilosity, without brushes of erect setae. T1–T4 banded, sometimes T1–T6, T1 and T2 with almost the entire surface covered. Relatively smaller than other species of *Aelocampsomeris*.

Redescription. Female – Length 24–27 mm. (Figs. 1b, 1e, 1h, 3b, 3e, 3h, 4b, 4e, 4h)

Head (Figs. 3b, 3e). Mid clypeal lobe triangular in outline, apex blunted and more rounded, without deep notch separating lateral lobes. Clypeus elevated and striated in central region, base and sides with dense coarse punctation. Antennae, especially the flagellum, short and thick. First flagellomere 1.5 times wider than long. Frontal fissure distinct but weaker on the frontal space, not visible on the front but reaching the median ocelli. Frontal spatium very densely and quite finely punctate, the punctures very close together. Frons impunctate with few fine very scattered punctations. Punctuation between posterior ocellus fairly fine and dense. Ocelli forming an obtuse triangle. Vertex sparsely punctuated, almost entirely smooth and shiny.

Mesosoma (Figs. 3e, 3h, 4b, 4e, 4h). Pronotum with coarse and dense punctation, the inter-dot space is often greater or equal than the diameter of a puncture. Scutum with sparse and irregular punctation

anteriorly and laterally, predominantly smooth, impunctate medially and posteriorly, partially covered with micro-punctuation. Scutellum almost impunctate, smooth and shiny, some coarse and very sparse punctures anteriorly and laterally. Metanotum densely and finely punctate. Dorso-median area of propodeum lacking visible tubercle. Dorso-lateral area and dorso-median area of propodeum finely and densely punctate, more finely so dorsolaterally punctate. Postero-median area of propodeum impunctate, smooth and shiny. Lateral propodeal carina extending slightly beyond propodeal spiracle dorsally. Transition from dorsal to lateral propodeal areas ecarinate posteriorly. Mesopleura with distinct epicnemial ridge ending in a blunt tubercle. Transition from ventral to dorsal metapleural plates gradual, weakly carinate. Dorsal plate of metapleura smooth and shiny, impunctate. Metasternum subquadrate and flat, with medial longitudinal suture ending in a shallow pit. Metasternal plates without posteriorly projecting lobes at coxae, posterior edge of metasternal plates almost straight. Hind tibial spurs acute and black. Hind basitarsus without a brush of seta (scopa).

Metasoma (Figs. 4b, 4h). T1 wider than long, 2.5 times wider than long. T1 with sparse punctuation at base, almost entirely smooth medially and, finely and densely punctate posteriorly. T2 and T3 with very sparse fine post basal punctation, not forming a clear transverse line, almost entirely smooth medially and with fine and dense subapical row of punctures apically. T4 and T5 almost entirely smooth medially and with coarse and dense subapical row of punctures apically. T6 completely covered by dense and coarse punctuation. S1 flat, entirely smooth, impunctate, except for lateral edges with few fine and sparse punctures; lacking small prominent ridge medially. S2–S3 with post basal row of coarse punctuation, almost entirely smooth medially, and with a subapical row of coarse punctuation. S4–S5 with fine punctuation basally, coarser and sparser apico-medially. S6 subquadrate, with two conspicuous peg like lateral teeth.

Color (Figs. 1b, 1e, 1h). Normally, entirely black integument. However, a specimen from Brazil (Rondônia) is marked with two yellow spots on T2 and T3. Wings uniformly dark with purple reflections. Vestiture and pubescence black.

Male – Length 23–27 mm. (Figs. 2b, 2e, 2h, 5b, 5e, 5h, 5k, 6b, 6e, 6h, 7b, 8c).

Head (Figs. 5b, 5e). Clypeus apical margin finely punctate and slightly striated medially, discal region slightly elevated and impunctate, lateral margin with coarser punctuation. Frontal spatium clearly elevated having fine dense punctuation and a longitudinal short carina medially. Frontal lamina narrow. Cross-furrow of frons slightly defined. Frons densely and finely punctate. Ocelli forming an obtuse triangle. Ocular sinus with a slightly depressed fovea. Frontal fissure weakly visible, reaching the anterior ocellus. Vertex and gena with fine dense punctations. Carina occipitalis medially interrupted.

Mesosoma (Figs. 5b, 5e, 5h, 5k, 6b). Pronotum with fine and dense punctuation, puncture diameter smaller than intervals. Scutum flat, with dense fine punctures medially and posteriorly with sparser and coarse punctuation. Parapsidal furrow shallow. Tegulas without punctures or bristles apically. Scutellum and metanotum with fine dense punctuation. Propodeum with fine, dense, and regular punctuation; a weak, slightly protruding tubercle between dorso-median and postero-median areas. Posterior area of propodeum densely and finely punctate and having erect pilosity. Latero-dorsal region of the propodeum without mirror (impunctate area). Mesopleura with fine and uniform punctuation. Dorsal plate of metapleura punctate on the dorsal third, the rest smooth and shiny without punctuation. Lateral carina of the propodeum extended beyond the spiracle. Metasternum almost completely flat, slightly raised posteriorly at the coxae level, the posterior edge of the metapleural plate almost straight. Scopa (brush) of the tibiae and hind tarsus covered with whitish to yellowish setae. First tarsomere with apicoventral setae not

reaching the middle of segment. Midtarsus and hind tarsus covered with whitish to yellowish spines. First submarginal cell of forewing half covered with bristles, median cell pilosity covering less than half the cell; pilosity restricted to costal margin.

Metasoma (Figs. 6e, 6h). T1 with fine dense punctation, more irregular and sparser in the middle; long setae reaching until the apex of tergum. T2 and T3 with coarse and dense punctation. S1 entirely smooth without punctation, lateral edges with long bristles, center without a small prominent ridge along most of the length of the segment. S2–S3 with post basal row fine punctation, almost entirely smooth medially. S4–S5 with fine punctation at base, coarser and sparser in the middle and apically.

Genitalia (Fig. 7b). Genitalia are similar in all three species. *A. campestris* and *A. variegata* are difficult to distinguish on the base of the *genitalia*. Unlike *A. brethesi*, these two species have distal part of the *paramere* more unpunctuated, *aedeagus* shorter than *paramere*, *cardo* without a three-branched reinforcement on the dorsal surface. *A. campestris* has a longer, pointed *aedeagus* at the apex than *A. variegata*.

Color (Figs. 2b, 2e, 2h). Black and broadly marked with yellow as follows: clypeus almost entirely, sometimes not reaching the apical margin; dorsal pronotal area and callosity; tegula inner area; scutellum; metanotum; dorso-median, posterior and lateral area of propodeum; spots on femurs and stripes on tibia of forelegs; T1–T5 banded; T1 and T2 dorsal area completely covered; T3–T5 the bands can be more or less interrupted; S2 with a apical band continuous and a spot on transition of basal to ventral surface; S3–S4 with apical bands interrupted medially, forming spots laterally. Wings hyaline without a fuscous costal bar, sometimes first submarginal cell with a comma shape mark. Some reduction of the typical male coloration occurs; entirely black males are unknown. Vestiture and pubescence predominantly yellowish and white, except for S7 and, sometimes, S6 having dark brown pilosity.

Remarks. Rare species, normally present in central-southern South America. Probably also confused with *A. variegata* in collections. Bradley and Betrem (1966) designated the lectotype of *A. campestris*, due to a different female species within Burmeister's type series. There is a specimen misidentified by Osten in the Museum für Naturkunde, in Berlin (MFN) with the following labels: "Casapava Sella S.; Zool. Mus. Berlin; *Campsomeris* (*Aelocamps.*) *campestris* T. Osten det. Burm; MFN URI". This specimen probably belongs to the genus *Pygodasis* Bradley, 1957. According to Burmeister, this species lives in large anthills on the ground ("*Die Art lebt in den Erdhaufen der grossen Ameise*"). No association between ants and Scoliidae wasps have been recorded in the scant literature about the biology of these wasps. To the best of our knowledge all scoliids are parasitoids of Scarabeoidea grubs and therefore it is likely that Burmeister's observation was simply coincidental. However, it is worth mentioning that there are groups of coleoptera, such as the subfamily Cetoniinae and the tribe Crematocheilini, strongly associated with anthills (Puker et al., 2015), which could explain the association with Scoliidae.

Etymology. The word *campestris* comes from the Latin word *campus*, *campester* (neuter), which means "of the fields". It's used to describe something that normally occurs in fields or plains.

Distribution. Brazil (Amazonas, Brasília, Mato Grosso, Minas Gerais, Rondônia).

Material Examined

Holotype: ♂ "Brés, Holotype, *pulchella*, Teste, 1929, Sas., J. C. Bradley" (MHNG ENTO 00089542). Examined by photograph. (Fig. 8c).

Other material

Brazil: 1♂, Amazonas, Manaus, 20.V.1999; 1♂, Amazonas, 04.VI.1982; 1♂, Amazonas, Manaus; 2♂, Mato Grosso, Campo Novo do Parecis, 18.I.2018; 1♂, Mato Grosso, Campo Novo do Parecis, 19.I.2018; 3♂, Mato Grosso, Diamantino, 12.I.2018; 1♂, Mato Grosso, Diamantino,

13.I.2018; 1♂, Mato Grosso, Nova Maringá, 31.XII.2017; 1♂, Mato Grosso, Nova Mutum, 21.XII.2018; 6♂, Mato Grosso, Nova Mutum, 22.XII.2018; 1♀, 3♂ Mato Grosso, Sapezal, 10.XII.2017; 9♂, Mato Grosso, Sorriso, 16.XII.2018; 6♂, Mato Grosso, Tangará da Serra, 05.I.2018; 1♀, Mato Grosso, Uirapuru, Usine Alcomat, 14°16'4"S 59°14'1"W, 20.I.1996; 1♂, Minas Gerais, Betrizal, 12.XII.2012; 1♂, Rondônia, Guajará Mirim, 07-11.IX.1999; 1♀, 1♂ Rondônia, Seringueiras, 27.XII.2000.

Aelocampsomeris variegata (Fabricius, 1793)

(Figs. 1c, 1f, 1i, 2c, 2f, 2i, 3c, 3f, 3i, 4c, 4f, 4i, 5c, 5f, 5i, 5l, 6c, 6f, 6i, 7c, 8b)

Scolia variegata Fabricius, 1793: 230. "n. 10. Habitat Cajennae Mus. Dom. Olivier" (cat.) ♀; Coquebert, 1801: 55 (cat.); Fabricius, 1804: 241 (cat.); Klug, 1805: 28 (cat.) ♀ and ♂; Jurine, 1807: 157 (cat.) ♂; Lepeletier, 1845: 544 (cat.); Burmeister, 1854: 29 (cat.) ♀ and ♂; Schomburgk, 1848: 589; Smith, 1855: 108 (cat.); Dalla Torre, 1897: 186 (cat.) ♀ and ♂.

Type: Lectotype (designated by Bradley, 1964b as follow: "The type should be in the Paris Museum, but I have not been able to find it there and it may be presumed to be lost. I hereby designate Coquebert, 1801: 55, to represent the lectotype"). [French Guiana, Cayenne]. (Female, Paris – MNHN).

Scolia hoffmannsseggi var. *maculis albidis* Klug, 1805: 37 (descr.; distr.; cat.) ♂; Burmeister, 1854: 29 (distr.; cat.); Smith, 1855: 106 (distr.; cat.); Saussure and Sichel, 1864: 226 (distr.; cat.; **syn. jr.** of *Scolia variegata*) ♀ and ♂.

Scolia fuscata Klug, 1810: 213 (cat.) ♀; Burmeister, 1854: 29 (distr.; cat.; **syn. jr.** of *Scolia hoffmannsseggi* var. *maculis albidis*); Osten, 2005: 24 (cat.).

Campsomeris costalis Lepeletier, 1845: 497 (cat.) ♀; Smith, 1855: 107 (cat.); Osten, 2005: 24 (cat.).

Campsomeris lucida Lepeletier, 1845: 498 (cat.) ♀; Osten, 2005: 24 (cat.).

Colpa variegata Lepeletier, 1845: 544 (cat.) ♂; Saussure and Sichel, 1864: 226. (distr.; cat.; **syn. jr.** of *Scolia variegata*) ♀ and ♂.

Colpa bistrimaculata (indetermined variation) Lepeletier, 1845: 546 (descr.; distr.; cat.); Burmeister, 1854: 29 (distr.; cat.; **syn. jr.** of *Scolia hoffmannsseggi*); Saussure and Sichel, 1864: 226 (distr.; cat.; erroneous synonym of *Scolia variegata*. Saussure and Sichel comment about one probable variation but never confirms this synonymy) ♀ and ♂; (erroneous synonym by Cameron 1893: 229 following De Saussure and Sichel, 1864).

Scolia costalis Burmeister, 1854: 22 (cat.; **n. comb.** for *Campsomeris costalis*) ♀; Smith, 1855: 107 (cat.); Dalla Torre, 1897: 153 (cat.) ♀ and ♂; Bradley, 1927: 168 (cat.; key); Bradley, 1940: 6 (cat.; **syn. jr.** of *Campsomeris variegata*).

Elis (*Campsomeris*) *lativentris* De Saussure, 1855: 59 (cat.) ♀; Saussure and Sichel, 1864: 226 (distr.; cat.; **syn. jr.** of *Scolia variegata*) ♀ and ♂; Osten, 2005: 24 (cat.).

Type: Holotype. [Brazil]. (Female, Paris – MNHN).

Scolia irregularis Smith, 1855: 107 (cat.) ♀ and ♂; Saussure and Sichel, 1864: 226 (distr.; cat.; **syn. jr.** of *Scolia variegata*) ♀ and ♂; Osten, 2005: 24 (cat.).

Elis (*Dielis*) *lucida* Saussure and Sichel, 1864: 219 (distr.; cat.; **n. comb.** for *Campsomeris lucida*) ♀.

Elis (*Dielis*) *costalis* Saussure and Sichel, 1864: 223 (distr.; cat.; **n. comb.** for *Scolia costalis*) ♀ and ♂.

Elis (*Dielis*) *variegata* Saussure and Sichel, 1864: 226, 303 (distr.; cat.; **n. comb.** for *Scolia variegata*) ♀ and ♂.

Elis (*Dielis*) *variegata* var. *hoffmannsseggi* Saussure and Sichel, 1864: 226 (cat.); Dalla Torre, 1897: 186 (cat.) ♀ and ♂.

Elis (*Dielis*) *variegata* var. *bistrimaculata* Saussure and Sichel, 1864: 227 (cat.); Dalla Torre, 1897: 186 (cat.) ♂.

Elis costalis Cameron, 1893: 229 (cat.); Fox, 1896: 302 (cat.) ♀ and ♂.

Elis variegata Cameron, 1893: 229 (cat.); Fox, 1896: 302 (cat.) ♂.

Scolia lucida Dalla Torre, 1897: 168 (distr.; cat.; **n. comb.** for *Elis lucida*) ♀; Bradley, 1927: 167 (key; misidentification identification of Bradley with *Campsomeris luciflua*, according with Bradley, 1940).

Elis lucida Fox, 1896: 301 (cat.).

Campsomeris variegata Bradley, 1940: 6 (cat.; **n. comb.** for *Scolia variegata*); Bradley, 1945: 30-32 (cat.; key) ♀ and ♂.

Campsomeris servillei Bradley, 1945: 31 (distr.; cat.; key). (erroneous synonym of Bradley).

Campsomeris (Aelocampsomeris) variegata Bradley, 1957: 67, 68 (key) (misspelling *Aelocampsomeris*), 74 (cat.); Bradley, 1964b: 27 (cat.); Bradley, 1974: 448 (cat.); Bradley and Betrem, 1967: 310 (cat.).

Aelocampsomeris variegata Osten, 2005: 24 (cat.; **n. comb.** for *Campsomeris variegata*); Ramírez-Guillén et al., 2022: 51 (key), 52 (cat.), 53 (distr.).

Diagnosis. Females: Recognized from other *Aelocampsomeris* as follow: Vertex densely and coarsely punctate. Scutum sparsely punctate and medially with a large smooth area. Propodeum with a weak tubercle, slightly protruding. Metasternal plates with posteriorly projecting lobes at coxae. Tergum matt, especially T1–T3, and usually having yellowish marks on T2–T3.

Males: Dorsal area of metapleura with coarse punctation anteriorly. S5–S7 with dense and fine punctation, having dense and short setae. Forewing pilosity dense. Usually with a yellow dot behind posterior ocelli. Easily found species.

Redescription. Female – Length 29–35 mm. (Figs. 1c, 1f, 1i, 3c, 3f, 3i, 4c, 4f, 4i).

Head (Figs. 3c, 3f, 4i). Mid clypeal lobe triangular in outline, apex acute and protruding, without deep notch separating lateral lobes. Clypeus elevated and striated centrally; basally and laterally with fairly dense coarse punctations. Antennae, especially the flagellum, short and thicker. First flagellomere 1.5 times wider than long. Frontal fissure distinct, reaching the median ocellus. Frons anteriorly with very dense and fine punctation, punctures almost fusing. Frons, posteriorly, next to anterior ocellus, with a smooth band, almost impunctate, with few scattered coarse punctures laterally anterior ocellus. Punctuation around posterior ocelli sparse and coarse. Ocelli forming an obtuse triangle. Vertex with dense, coarse, and irregular punctation.

Mesosoma (Figs. 3f, 3i, 4c, 4f, 4i). Pronotum with coarse and dense punctation. Scutum with sparse and irregular punctation anterolaterally, smooth, impunctate in the middle and posteriorly. Scutellum with coarse and dense punctation, laterally and posteriorly, sparser anteriorly, the middle with a large smooth and shiny surface almost without punctation. Metanotum densely and finely punctate. Dorso-median area of the propodeum with a weak, slightly protruding tubercle. Dorso-lateral and dorso-median areas of propodeum very finely and densely punctate. Postero-lateral area of propodeum with coarse punctation anterolaterally, postero-median area of propodeum without punctation, smooth and shiny. Lateral carina of the propodeum reaching the spiracle. Transition between dorsal and lateral areas of propodeum with a slight carina posteriorly. Mesopleura with a distinct epicnemial ridge ending in a blunt tubercle. Transition between dorso-lateral area of metapleura gradual and without a distinct carina. Dorsal area of the metapleura punctate dorsally, the rest without punctation. Metasternum subquadrate and flat; suture ending in a shallow pit. Metasternal plates posteriorly with projected lobes at coxae; the posterior edge of the metasternal plates weakly indented medially. Hind tibial spurs acute and black.

Metasoma (Figs. 3f, 3i). T1 wider than long, 2.5 times wider than long. T1 with sparse punctation at the base, almost entirely smooth medially and, posteriorly, fine and dense at the apex. T2–T3 with coarse

and dense post basal punctation forming a transverse line, almost entirely smooth in the middle and with fine and dense subapical row of punctation apically. T4 and T5 are almost entirely smooth in the middle, with a coarse and dense subapical row of punctation. T6 completely covered by dense and coarse punctation. S1 flat, entirely smooth, without punctation, except for the lateral edges with quite fine and dense punctation, the center with a small ridge usually prominent on the posterior half of first stern. S2–S3 with post basal row fine punctation, almost entirely smooth medially. S4–S5 with slight fine punctation at base, coarser and sparser in the middle and apically. S6 subquadrate, with two heavily peg like lateral teeth. **Color** (Figs. 1c, 1f, 1i). Head and thorax always wholly black; abdomen black or reddish brown; sometimes T1 spotted, and/or banded with yellowish tones; T2 and T3 also spotted with yellow marks. Wings hyaline, hyaline with a fuscous costal border, yellow, or uniformly dark with purple reflections. Vestiture and pubescence black.

Male – Length 26–29 mm. (Figs. 30, 33, 36, 39, 42, 45, 48, 51, 54, 57, 60). (Figs. 2c, 2f, 2i, 5c, 5f, 5i, 5l, 6c, 6f, 6i, 7c)

Head (Figs. 5c, 5f). Clypeus finely punctate along apical margin and slightly striated apically in middle, center slightly elevated and impunctate, the lateral edges have coarse punctation. Frontal spatium clearly elevated and with fine dense punctation. Frontal lamina slender. Cross-furrow of frons distinctly defined. Frons dense finely punctate. Ocelli forming an obtuse triangle. Ocular sinus with fovea distinctly depressed. Frontal fissure weakly perceptible, reaching the anterior ocellus. Vertex and gena with fine dense punctations.

Mesosoma (Figs. 5f, 5i, 5l, 6c). Pronotum with fine dense punctation, the diameter of punctures is greater than the intervals. Scutum densely and finely punctate; medially and posteriorly with sparser coarse punctation Parapsidal furrow evident. Tegulae without punctures or bristles apically. Scutellum and metanotum with fine dense punctation. Propodeum with fine, dense, and regular punctation; a weak, slightly protruding tubercle between dorso-median and postero-median areas, present. Posterior area of propodeum densely and finely punctate. Latero-dorsal region of the propodeum without mirror (impunctate area). Mesopleura with fine and uniform punctation. Dorsal area of metapleura punctate anteriorly. Lateral propodeal carina extending beyond spiracle. Metasternum almost completely flat, slightly raised posteriorly at the level of the coxae, posterior edge of the metapleural plate straight, very slightly indented medially at the suture. Scopa (brush) of the tibiae and hind tarsus covered with whitish to yellowish setae. Midtarsus and hindtarsus covered with whitish to yellowish spines. First submarginal cell of forewing almost entirely covered with bristles, median cell pilosity covering almost half the cell.

Metasoma (Figs. 6f, 6i). T1 with fine and dense punctation, more irregular and sparser medially. T2 and T3 with coarse and dense punctation. S1 almost entirely smooth without punctation, except for the coarsely punctate lateral edges, the center with a small ridge generally prominent along most of the length of segment and ending apically in a small prominent tubercle. S2 densely and coarsely punctate. S3 with fine punctation anteriorly, much coarser in the middle and posteriorly; S4 with fairly fine dense punctation. Posterior part of S5–S7 densely and finely punctate without erect brushes of silky setae.

Genitalia (Fig. 7c). Genitalia are similar in all three species. *A. variegata* and *A. campestris* are difficult to distinguish on the base of the *genitalia*. Unlike *A. brethesi*, these two species have distal part of the *paramere* more unpunctuated, *aedeagus* shorter than *paramere*, *cardo* without a three-branched reinforcement on the dorsal surface. *A. variegata* has a shorter, rounded *aedeagus* at the apex than *A. campestris*.

Color (Figs. 2c, 2f, 2i). Black and heavily marked with yellow: clypeus entirely; usually, a dot behind the posterior ocelli; pronotum except callosity; tegula in part; propleura; lower plate of mesopleura

and metapleura; lateral area of propodeum; scutellum; metanotum; median and posterior area of propodeum and spots and stripes on legs; T1–T5 banded, this bands can be more or less interrupted on T2–T5. S2–S3 often with two thin yellow lateral bands, sometimes S4 as well. Wings hyaline or hyaline with a fuscous costal bar. Some reduction of the typical male coloration occurs; entirely black males are unknown. Vestiture and pubescence are predominantly white.

Remarks. According to Bradley and Betrem (1966) the type of *A. variegata* was supposed to be housed in Paris (MNHN) but was not found in that institution nor in the collections of Copenhagen (Sweden) or Kiel (Germany), which are known to contain types of Fabricius. The same author then designates the dorsal habitus illustration provided by Coquebert (1801, plate 13, Fig. 6) to represent the type.

Very common species. This species, especially the females, has a wide range of color variation. Therefore, we can identify some variations according to each colour combination that occurs. Overall, we can identify four types of variations in female (these “forms” have no taxonomic value, and intermediate individuals between these forms can be found):

var. *fuscata*: Mostly black and with dark bristles. T1 with two yellow spots. Dark brown wings with blue reflections; var. *costalis*: All body and bristles black. Wings hyaline or yellow with a fuscous costal border, sometimes with a clear comma-shaped mark on the bar; var. *lucida*: Dark and spotless body. Wings uniformly fuscous violet with green reflections; var. *lativentris*: Dark body with black bristles. T2 and T3 are spotted with yellow marks. Wings orangish brown.

Etymology. The word *variegata* comes from the Latin word *variegatus*, which means “variously coloured”. It’s used to describe something that has distinct markings of different colors, or is various, diverse, or varied.

Distribution. Bolivia (La Paz); Brazil (Rio de Janeiro, São Paulo, Bahia, Mato Grosso); Colombia (Puerto Gaitán); Costa Rica; French Guiana (Matoury, Roura, Cacao, Bélizon, Cayenne); Guatemala (Cobán); Guyana; Honduras; Mexico; Panama; Peru (Loreto, Iquitos, Huánuco); Suriname; Venezuela.

Material Examined

Lectotype: ♂ “*Scolia variegata* F.” Coquebert, 1801: 55, plate 13. Examined by photograph. (Fig. 8b).

Other material

Bolivia: 2♂, La Paz department, Caranavi, XI. 2009. **Brazil:** 2♂, Minas Gerais state, Pouso Alegre, VII. 2018; 1♀, Minas Gerais state, Pouso Alegre, XI. 2018; 1♀, Amazonas, 02-25.V.1977; 1♀, Amazonas, Manaus, 01.III.1977; 1♀, Amazonas, Manaus, 07.V.1976; 1♀, Amazonas, Manaus, 14.IX.1977; 1♀, Amazonas, Manaus, 16.IX.1977; 1♀, Amazonas, Manaus, X.2001; 1♂, Amazonas, 05.III.1934; 1♂, Amazonas, Itacoatiara, 02.V.1996; 1♂, Amazonas, Manaus, 03.X.1984; 1♂, Amazonas, Manaus, 03-07.VIII.2015; 1♂, Amazonas, Manaus, 05.III.1988; 1♂, Amazonas, Manaus, 08.V.1977; 1♂, Amazonas, Manaus, 10-16.VIII.2010; 1♂, Amazonas, Manaus, 12.IV.1986; 1♂, Amazonas, Manaus, 13.V.1986; 1♂, Amazonas, Manaus, 14.II.1976; 1♂, Amazonas, Manaus, 15.IV.1993; 1♂, Amazonas, Manaus, 16.V.1976; 1♂, Amazonas, Manaus, 20.II.1986; 1♂, Amazonas, Manaus, 20.V.1986; 1♂, Amazonas, Manaus, 21.X.2017; 1♂, Amazonas, Manaus, 22.IV.2003; 1♂, Amazonas, Manaus, 24.IX.1986; 1♂, Amazonas, Manaus, 29.IX.1977; 1♂, Amazonas, Manaus, 30.III-03. IV.2012; 4♂, Espirito Santo, Cariacica, 03.XII.1987; 3♂, Espirito Santo, Cariacica, 21.XII.1987; 1♀, Espirito Santo, Santa Teresa, 05.III.1989; 1♀, Espirito Santo, Santa Teresa, 16.III.1996; 1♂, Mato Grosso, Brasnorte, 01.XII.2017; 1♀, Mato Grosso, Nova Santa Helena, 17.XI.2018; 1♀, Mato Grosso, Santo Afonso, 04.I.2018; 1♂, Mato Grosso, Vera, 12.XII.2018; 1♂, Roraima, 02-03.V.1987; 1♀, Roraima, 11.XII.2015; **Colombia:** 1♀, Meta department, Puerto Gaitán, XI. 2015. **French Guiana:** 1♀, Matoury, X. 2008; 1♂, Matoury, X. 2008; 2♂, Roura, Cacao, VI. 2009; 2♂, Roura, Bélizon, XI. 2018. **Guatemala:** 1♀, Alta Verapaz department, Cobán, VII. 2010. **Perú:** 1♀, Loreto region, Iquitos, II. 2005; 1♂, Huánuco region,

Tingo-Maria, 5-10. IV. 2008; 1♀, 1♂, Loreto region, Iquitos, XII. 2010; 1♀, Loreto region, Picuro Yacu, 15. V. 2018.

Key to the species of *Aelocampsomeris*

Females

1. First antennal flagellomere as long as wide. Punctuation of forehead in front of ocelli with fine and dense punctuation (Figs. 3a, 3g). Punctuation of the pronotum fine and very dense (Fig. 3g). Scutum densely punctate, in the middle with a small, smooth, shiny V-shaped area (Fig. 4g). Mesopleural tubercle forming a prominent tooth-shaped pyramid, acute, raised well above the level of the pronotal lobe. Propodeum with a distinct, projecting tubercle. Metasternum subquadrate and flat but slightly raised in the middle along the suture; the suture ending in a deep pit, the posterior edge of the metasternal plates strongly indented in the middle at the suture level (Fig. 3g). Hind basitarsus with a brush of setae (Fig. 4d). T1 twice as wide as long (Fig. 4a). 30–34 mm.....

Aelocampsomeris brethesi

1’. First antennal flagellomere 1.5 times wider than long. Forehead anteriorly of ocelli almost entirely smooth, the punctuation very sparse and coarse (Figs. 3b–c, 3e–f). Punctuation of the pronotum rather coarse and dense (Figs. 3e–f). Scutum more sparsely punctate, in the middle with a large smooth, shiny area (Figs. 4h–i). Mesopleural tubercle a weak, blunt and low pyramid. Propodeum with a weak, slightly protruding tubercle. Metasternum subquadrate and flat; the suture ending in a shallow pit, the posterior edge of the metasternal plates weakly indented in the middle, sometimes almost straight (Figs. 3h–i). Hind basitarsus without a brush of seta. T1 2.5 times wider than long (Figs. 4b–c).....

2. Frons sparsely punctate, vertex densely and coarsely punctate (Figs. 3f, 4i). Scutellum is largely smooth, more densely and coarsely punctate on the sides and at the apex (Fig. 4i). Dorsal area of metapleura with coarse punctuation on the anterior third (Fig. 4f). Metasternal plates with posteriorly projecting lobes at coxae, the posterior edge of the metasternal plates weakly indented in the middle (Fig. 3i). T2 and T3 with coarser, dense post basal punctuation forming a transverse line (Fig. 4c). 29–35 mm.....

2’. Frons and vertex almost impunctate, with a few very sparse and fine punctations (Figs. 3e, 4h). Scutellum almost impunctate (Fig. 4h). Dorsal area of metapleura is entirely smooth and shiny, without punctuation (Fig. 4e). Metasternal plates without posteriorly projecting lobes at coxae, the posterior edge of the metasternal plates almost straight (Fig. 3h). T2 and T3 with very sparse fine post basal punctuation, not forming a clear transverse line (Fig. 4b). 24–27 mm.....

Males

1. Cross-furrow of frons weakly indicated (Fig. 5a). Pronotum very finely and densely punctate (Fig. 5d). Metasternum flat anteriorly, clearly raised posteriorly at the level of coxae, the posterior edge of the metapleural plate significantly indented (Fig. 5j). Scopa (brush) of the tibiae and hind tarsus covered with dark brown setae. Tarsus of legs 2 and 3 covered with brown to black spines (Fig. 6g). T2 and T3 with fairly coarse and dense punctuation, more irregular and sparse posteriorly in the middle, with a smooth, shiny surface at the rear in the middle. Posterior part of S5–S7 very densely and finely punctate with erect brushes of long silky white or black hair (Fig. 6g). Wings hyaline fuscous, dark (Figs. 6a, 6d). 26–29 mm.....

1’. Cross-furrow of frons distinctly defined (Figs. 5b–c). Pronotum more coarsely and less densely punctate (Figs. 5e–f). Metasternum flat, slightly raised posteriorly at the level of coxae, the posterior edge of the metapleural plate slightly indented, almost straight (Figs. 5k–l). Scopa (brush) on tibiae and hind tarsus covered with whitish to yellowish setae. Midtarsus and hindtarsus covered with whitish to yellowish spines (Figs. 6h–i). T2 and T3 with coarse and dense punctuation all over. Posterior part of S5–S7 less densely and finely punctate and without erect brushes of long hair but sometimes with dense, short

hair (Figs. 6h–i). Wings hyaline or hyaline with a fuscous costal bar, but always translucent (Figs. 6b–c, 6e–f) **2**

2. Forewing pilosity dense, first submarginal cell almost entirely covered with setae and median cell pilosity clearly evident (Fig. 6c). Dorsal area of metapleura with coarse punctation on the anterior third (Fig. 5i). Central rear part of S5–S7 densely and finely punctate, with dense, fine and short setae (Fig. 6i). Vertex usually with a yellow dot behind posterior ocelli. T1–T4 banded, sometimes T1–T5, the bands always interrupted in the middle on T2 to T5, often forming two dots (Fig. 2c, 6f). 26–29 mm..... *Aelocampsomeris variegata*

2'. Forewing pilosity sparse, only the upper half of the first submarginal cell is covered with setae and the median cell only with a few setae (Fig. 6b). Dorsal area of metapleura entirely smooth and shiny, without punctation (Fig. 5h). Posterior part of S5–S7 with rather coarse punctures and normal pilosity (Fig. 6h). Vertex behind posterior ocelli black, without yellow spot. T1–T4 banded, sometimes T1–T6, bands of T1 and T2 cover almost the entire surface and are not interrupted, the subsequent bands are thinner (Figs. 2b, 6e). 23–27 mm..... *Aelocampsomeris campestris*

Conclusions

This is the first study that revisits *Aelocampsomeris* since its creation by Bradley in 1957. In this contribution, the authors present updated and complete redescrptions, with photos and pictures, that contribute to the identification of species belonging to this genus. In addition to being a pioneering initiative, being the first Neotropical genus of Scoliidae to be reviewed, this study also presents an identification key for the species of the genus, facilitating specimens to be correctly identified. Finally, it is worth highlighting that even though this is a first step in the attempt to organize this group with a troubled taxonomic past, more work is still needed to be able to resolve the Neotropical Scoliidae taxonomic problems.

Acknowledgments

The authors would like to thank the curators of all the institutions that kindly provided the specimens for this work.

Funding

This work was supported by São Paulo Research Foundation (FAPESP) (grants #2019/09215-6, #2020/07895-7), Prope/UNESP (grants #03/2023 PROPE, 06/2024/PROPG -PROPe) and CAPES (grant #1690228/2019-0487).

Data statement

The additional data that support this study will be shared upon reasonable request to the corresponding author.

Conflicts of interest

The authors declare no conflicts of financial or non-financial interest.

Author contribution statement

All authors contributed to the study conception and design. Material and data collection were performed by J-BC and IFG. Resources and supervision were provided by FBN. The first draft of the manuscript

was written by J-BC and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

References

- Añino, Y., Cambra, R. A., Díaz, D., Gómez, J., Ramos, C., Hanson, P. E., Ramírez-Guillén, L. D., 2024. New records and a comprehensive checklist of mammoth wasps (Hymenoptera, Scoliidae) in Panama. *Neotrop. Biol. Conserv.* 19 (3), 361–366. <http://doi.org/10.3897/neotropical.19.e127528>.
- Argaman, Q., 1996. Generic synopsis of Scoliidae (Hymenoptera, Scolioidea). *Ann. Hist.-Nat. Mus. Natl. Hung.* 88, 171–222.
- Bartlett, O. C., 1912. The North American digger wasps of the subfamily Scoliinae. *Ann. Entomol. Soc. Am.* 5 (4), 293–340. <http://doi.org/10.1093/aesa/5.4.293>.
- Betrem, J. G., 1928. Monographie der Indo-Australischen Scoliiden (Hym. Acul.). Mit Zoogeographischen Betrachtungen. H. Veenman Zonen. *Treubia* 9 (Suppl.), 1–388.
- Betrem, J. G., 1935. Beitrage Zur Kenntnis der Paläarktischen Arten des genus *Scolia*. C.H. Meijere, H. Coldwey, F.T.V. Lucassen. *Tijdschr. Entomol.* 78, 1–78.
- Betrem, J. G., 1967. Het Sexuele Dimorfisme bij de Campsomeinae (Hymenoptera, Scoliidae). *Entomol. Ber.* 27, 103–106.
- Betrem, J. G., Bradley, J. C., 1972. The African Campsomerinae (Hymenoptera, Scoliidae). *Monografieen Van De Ned. Entomol. Vereniging* 6, 1–326.
- Bradley, J. C., 1927. Sobre las hembras de las especies Americanas de *Scolia* del subgenero *Campsomeris* (*Dielis*) [Hymenoptera Scoliidae] con color del cuerpo y ropaje completamente negros. *An. Soc. Cient. Argent.* 103, 164–173.
- Bradley, J. C., 1940. Otras consideraciones sobre las especies Americanas de *Campsomeris* (Hymenoptera: Scoliidae) de coloración absolutamente negra. *An. Soc. Cient. Argent.* 130, 1–12.
- Bradley, J. C., 1945. The Scoliidae (Hymenoptera) of Northern South America, with especial reference to Venezuela. 1. The genus *Campsomeris*. *Bol. Entomol. Venez.* 4, 1–36.
- Bradley, J. C., 1957. The Taxa of *Campsomeris* (Hymenoptera: Scoliidae) occurring in the New World. *Trans. Am. Entomol. Soc.* 83, 65–77.
- Bradley, J. C., 1964a. Further notes on the American taxa of *Campsomeris* (Hymenoptera: Scoliidae). *Entomol. News* 75, 101–108.
- Bradley, J. C., 1964b. The Fabrician types of Scoliidae (Hymenoptera), with notes and an appendix by J.G. Betrem. *Spolia. Zool. Mus. Haun.* 21, 1–38.
- Bradley, J. C., Betrem, J. G., 1966. Burmeister's work on Scoliidae with especial reference to types and synonymy. *Beitr. Entomol.* 16, 73–84.
- Bradley, J. C., Betrem, J. G., 1967. The types of the Scoliidae described by Frederick Smith (Hymenoptera). *Bull. Br. Mus. Nat. Hist.* 20, 289–326.
- Bradley, J. C., 1974. The types of the Scoliidae (Hymenoptera) described by Henri De Saussure or by Jules Sichel or by Them Jointly. *Rev. Suisse Zool.* 81 (2), 417–485. <http://doi.org/10.5962/bhl.part.76015>.
- Brothers, D. J., 1999. Phylogeny and evolution of wasps, ants and bees (Hymenoptera, Chrysidoidea, Vespoidea and Apoidea). *Zool. Scr.* 28 (1–2), 233–249. <http://doi.org/10.1046/j.1463-6409.1999.00003.x>.
- Brothers, D. J., Finnamore, A. T., 1993. Superfamily Vespoidea. In: Goulet, H., Huber, J.T. (Eds.), *Hymenoptera of the World: an Identification Guide to Families*. Agriculture Canada, Ottawa, chap. 8, pp. 161–278.
- Burmeister, H., 1854. Bemerkungen über den allgemeinen Bau und die Geschlechtsunterschiede bei den Arten der Gattung *Scolia*. *Fabr. Abh. Nat.forsch. Ges. Halle.* 1 (4), 1–46.
- Cameron, P., 1893. Insecta. Hymenoptera (Fossores) Scoliidae. *Biol. Centr.-Amer.* 2, 222–234.
- Coquebert, A. J., 1801. Quae in Musaeis Parisinis observavit et in lucem edidit Joh. Christ. Fabricius, Paramissis ejusdem descriptionibus;

- Accedunt species Plurimae, Vel minus aut nondum cognite. Societas Philom et Hist Nat Paris, Paris.
- Dalla Torre, C. G., 1897. Catalogus Hymenopterum hucusque descriptorum systematicus et synonymicus vol. 8. Fossores (Sphegidae). Guilelmi Engelmann, Lipsiae.
- Day, M. C., Else, G. R., Morgan, D., 1981. The most primitive Scoliidae (Hymenoptera). J. Nat. Hist. 15 (4), 671-684. <http://doi.org/10.1080/00222938100770471>.
- De Saussure, H., 1855. Mélanges Hyménoptérologiques 1. Mem. Soc. Phys. Hist. Nat. Geneve. 14, 1-67.
- De Saussure, H., Sichel, J., 1864. Catalogue des espèces de l'Ancien Genre *Scolia*, contenant les diagnoses, les descriptions et la synonymie des espèces, avec des remarques explicatives et critiques. Henri Georg, Paris.
- Santos, E. F., Grandinete, Y. C., Noll, F. B., 2015. Additions to the checklist of Scoliidae, Sphecidae, Pompilidae and Vespidae of Peru, with notes on the endemic status of some species (Hymenoptera, Aculeata). ZooKeys 519, 33-48. <http://doi.org/10.3897/zookeys.519.6501>.
- Elliott, M. G., 2011. Annotated catalogue of the Australian Scoliidae (Hymenoptera). Tech. Rep. Aust. Mus. 22, 1-17. <http://doi.org/10.3853/j.1835-4211.22.2011.1562>.
- Fabricius, J. C., 1793. Entomologia systematica emendata et aucta. Secundum classes, ordines, genera, species adjectis synonymis, locis, observationibus, descriptionibus. Vol. 2. Christ, Gottl Proft, France.
- Fabricius, J. C., 1804. Systema Piezatorum secundum ordines, genera, species adiectis synonymis, locis, observationibus, descriptionibus. Carol Reichard, France.
- Fox, W. J., 1896. Contributions to a knowledge of the Hymenoptera of Brazil. No 1. Scoliidae. Proc. Acad. Nat. Sci. Phila. 48, 292-307.
- Golfetti, I. F., Noll, F. B., 2023a. After more than half a century: *Dielis diabo* (Hymenoptera: Scoliidae: Scoliinae), a new scoliid from the Neotropics. Zootaxa 5231 (3), 345-350. <http://doi.org/10.11646/zootaxa.5231.3.10>.
- Golfetti, I. F., Noll, F. B., 2023b. *Stygocampsomeris manauara* (Hymenoptera: Scoliidae: Scoliinae), a new scoliid from the Amazon Forest. Acta Amazon. 53 (4), 351-355. <http://doi.org/10.1590/1809-4392202300741>.
- Gupta, S. K., Jonathan, J. K., 2003. Fauna of India and the Adjacent Countries (Hymenoptera: Scoliidae). Zoological Survey of India, Kolkata, 277 pp. <http://doi.org/10.13140/RG.2.2.25424.94727>.
- Hanson, P. E., 2006. Familia Scoliidae. In: Hanson, P.E., Gauld, I.D. (Eds.), Hymenoptera de la región Neotropical. Mem. Am. Entomol. Inst., Gainesville, pp. 614-616.
- Harris, R. A., 1979. A glossary of surface sculpturing. Occas. Papers. Entomol. 28, 1-31.
- Jurine, L., 1807. Nouvelle methode de classer les Hymenopteres et les Dipteres. Chez J.J. Paschoud, Imprimeur-Libuaire, Geneve.
- Khourri, Z., Gillung, J. P., Kimsey, L. S., 2022. The evolutionary history of mammoth wasps (Hymenoptera: Scoliidae). Biorxiv. In press. <http://doi.org/10.1101/2022.01.24.474473>.
- Klug, J., 1805. Versuch einer berichtigung der fabriciusschen gattungen *Scolia* und *Thipia*. Beitr. Naturk. 1, 8-40.
- Klug, J., 1810. Fortsetzung des im vorigen bande abgebrochenen versuchs über die gattunge *Scolia* und *Tiphia*. Beitr. Naturk. 2, 167-215.
- Latreille, P. A., 1802. Histoire Naturelle, générale et particulière des crustacés et des insectes. Familles naturelles des genres. Vol. 3. F. Dufart, Paris.
- Lepelletier de Saint-Fargeau, A., 1845. Histoire Naturelle des Insectes. Hyménoptères. In Brullé, M. (Ed.), Librairie Encyclopédique de Roret. Vol. 3. Suites À Buffon, Paris.
- Osten, T., 2005. Checkliste der dolchwespen der welt (Insecta: Hymenoptera, Scoliidae). Ber. Naturforsch. Ges. Augsb. 62, 1-62.
- Puker, A., Rosa, C. S., Orozco, J., Solar, R. R. C., Feitosa, R. M., 2015. Insights on the association of American Cetoniinae beetles with ants. Entomol. Sci. 18 (1), 21-30. <http://doi.org/10.1111/ens.12085>.
- Ramírez-Guillén, L. D., Falcon-Brindis, A., Gómez, B., 2022. The Scoliidae wasps (Hymenoptera: Scoliidae) of Mexico: Taxonomy and Biogeography. Zootaxa 5214 (1), 47-88. <http://doi.org/10.11646/zootaxa.5214.1.2>.
- Rasmussen, C., Ansejo, A., 2009. A checklist to the wasps of Peru (Hymenoptera, Aculeata). ZooKeys 15, 1-78. <http://doi.org/10.3897/zookeys.15.196>.
- Rasnitsyn, A. P., 1977. A new subfamily of scoliid wasps (Hymenoptera, Scoliidae, Proscoliinae). J. Zool. 56, 522-529.
- Rasnitsyn, A. P., 1993. Archaeoscoliinae, an extinct subfamily of scoliid wasps (Insecta: Vespida = Hymenoptera: Scoliidae). J. Hymenopt. Res. 2 (1), 85-96.
- Schomburgk, R., 1848. Schomburgk's reisen in British-Guiana in den Jahren, 1840-1844. Versuch einer fauna und flora von Britisch-Guiana. In Auftrag Sr. majestat des Königs Von Preussen. "Daily Chronicle" Office, Georgetown, [British Guiana].
- Smith, F., 1855. Catalogue of Hymenopterous Insects in the Collection of the British Museum. Part III. Mutillidae and Pompilidae. Trustees, London.