

## Notes on Neotropical Eumeninae, with the description of a new species of *Pachodynerus* de Saussure (Hymenoptera, Vespidae)

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ABSTRACT. Notes on Neotropical Eumeninae, with the description of a new species of *Pachodynerus* de Saussure (Hymenoptera, Vespidae). Taxonomic information on Neotropical Eumeninae is provided. A new species, *Pachodynerus fessatus* sp. nov. is described from southeastern São Paulo, Brazil. Additional material of *Pachodynerus sericeus* (Fox) was examined, representing the first further specimens after the original description and including the previously unknown male. The examination of new material of the genus *Stenonartonia* adds some new distribution records and shows some previously unrecorded individual variation for some species. The males of *Stenonartonia guaraya* Garcete-Barrett and *Stenonartonia rejeptoides* Garcete-Barrett are described for the first time.

KEYWORDS. Description; distribution; eumenine; Insecta.

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The Eumeninae is the least known subfamily within the vespids, despite its great species richness and wide range of behavioral traits, which play a central role in the understanding of the evolution of social behavior among the Vespidae. Although some phylogenetic work had been carried out recently (e.g. Hermes & Melo 2008; Garcete-Barrett & Hermes 2010), the relationships among eumenine genera remains elusive. The naturalness of many taxa remains to be investigated and, in addition to phylogeny, much work is still needed in terms of descriptions, distribution and biology.

*Pachodynerus* was revised and phylogenetically analyzed at species level by Willink & Roig-Alsina (1998). Despite the fact that this work is the most comprehensive one dealing with this diverse genus, it is clear that much work still lies ahead as can be exemplified by the case of the widely distributed *Pachodynerus guadulpensis*. The concept for this taxon, adopted by Willink & Roig-Alsina (1998) included a wide variation in coloration, from very dark specimens to others with a great deal of yellow markings. Furthermore, variation in some structures and especially in the integumental sculpture also makes the case for a deep investigation on the nature of this taxon (as well as some others), which is likely to include more than one species. Here we provide the description of a new species of *Pachodynerus*, as well as the description of the male of *Pachodynerus sericeus*, which comprise the first specimens studied since the holotype.

*Stenonartonia* was taken for a small Neotropical genus until the publication of Garcete-Barrett (2011), which revealed a greater diversity contained within the taxon. However, this genus is not as diverse as *Pachodynerus* (at least concerning our current knowledge) and is very poorly represented in most vespidae collections. This is a combined result of few specialists and potentially small populations of species of *Stenonartonia*,

making collecting in new areas a potential source of new information for the group. Males of *Stenonartonia guaraya* and *S. rejeptoides* are described herein, and new distributional information for other species included in the genus is provided.

This paper is based on material deposited in the entomological collections of the *Departamento de Zoologia, Universidade Federal do Paraná* (DZUP), *Museu de Zoologia, Universidade de São Paulo* (MZUSP) and American Museum of Natural History (AMNH). A few abbreviations have been used in the descriptions: MOD (mid ocellar diameter) refers to the maximum width of the mid ocellus, commonly used as a proportional measuring unit in vespidae taxonomy. T and S accompanied by a number from 1 to 7 refer to metasomal terga and sterna respectively. F accompanied by a number refers to antennal flagellomeres.

### *Pachodynerus fessatus* sp. nov.

(Figs. 1–5)

Diagnosis and comments. Deep black, stout bodied, medium size wasps with a remarkably bright yellow metanotum and other yellow markings very scarce. Fore femur ecarinate, metanotum almost smooth, upper propodeal lamellae regularly high all along, mid propodeal carina narrow above, second metasomal tergum with differentiated apical band of coarse and dense macropunctuation, propodeal concavity without reflective pilosity and wings lightly infuscated. According to the key and the punctuation of T2 as described by Willink & Roig-Alsina (1998), this species seems to be closer to *Pachodynerus ucayali* Willink & Roig-Alsina, but differs substantially in color pattern and distribution.

Male. Body length 8.3 mm. Wing length 8.3 mm. Color pattern. Deep black with intense yellow as follows: a discal and

an anterior condylar spot on mandible; a small diffuse ventroapical spot on scape; small apicolateral and paraocular spots on clypeus; a thin inner ocular margin from the clypeal margin to the lower ocular sinus; a brief and narrow central pronotal band; whole metanotal disc (including declivity) except for the very narrow hind margin; base of the upper propodeal crest all along; a small latero-apical mark on T1, an extremely narrow, almost imperceptible apical band on T2 and extremely narrow and mostly diffuse subapical bands on S2-S6. Wings moderately brownish grey infuscated, just a little suffusely darker along a very narrow anterior margin. Venation chestnut.

**Structure.** Clypeus oval, very convex, wider than long, with apical concavity shallow and slightly broader than the distance between the antennal sockets, with moderate apical teeth. Interocellar region with a slight longitudinal mid furrow. Pronotal carina lamellar, about 0.6 MOD in height. Fore femur ecarinate. Mesepimeral tooth opaque, large, but rather blunt. Metanotum wide, convex above and with a diffuse transversal carina of blunt and separate teeth. Upper propodeal lamella high and of regular elevation from middle to the propodeal angles. Mid propodeal carina narrow above and gradually widening below.

**Tegumental sculpture.** Clypeus covered with moderately spaced micropunctuation mixed with shallow and sparse macropunctuation. Frons, pronotum and mesoscutum covered with dense macropunctuation which is slightly striatopunctate on frons, coarser on pronotum, partly confluent on both, and sparser and smoother posteriorly towards the middle on mesoscutum. Scutellum covered with regularly spaced macropunctuation. Metanotum free of macropunctures and smooth on its upper surface. Mesepisternum and propodeum above coarsely and densely alveolate. Propodeal side loosely alveolate. Propodeal concavity mostly smooth and with some striae towards the marginal region. Tegula with a lateral subanterior smooth area; T1 without visible macropunctures. T2 with indistinct, almost imperceptible and very sparse macropunctures on its basal two thirds and apical third depressed and covered with very dense and coarse macropunctuation. Following terga with macropunctuation similar to that on apical third of T2 but progressively smoother and sparser on each sequential tergum, until being very smooth and regularly sparse on T7. S1 transversely microrugate and shallowly macropunctate at middle. S2-S6 covered with moderately spaced macropunctures which are progressively smoother on each sequential sternum. S7 with a few sparse macropunctures.

**Pilosity.** Clypeus and lower gena covered with dense, white appressed pile and sparse semierect yellowish bristles. Frons and vertex covered with brownish and moderately spaced short semierect pilosity and long erect bristles, sparser on vertex. Pronotum, mesoscutum and scutellum with a similar pilosity but much shorter and sparser. Mesepisternum covered with whitish subappressed whitish long pilosity and long suberect bristles. Propodeal side covered with whitish sparse semiappressed pile and sparse semierect hairs. Metanotum with sparse erect bristles towards its summit. Metanotal declivity and propodeal concavity covered with light fulvous sparse ap-

pressed and short pile mixed with even sparser semierect bristles directed upward. Metsoma covered with abundant fulvous and very short decumbent pilosity and sparse bristles. Female. Unknown.

**Etymology.** The name refers to the yellow metanotal strip on the deep black background of the body, reminiscent of a fess on a heraldic shield.

Type material. Holotype: BRAZIL: São Paulo: Sete Barras/1.ii.2005/(*P. Marchi*) [1 male: DZUP]. Paratype: same data as holotype [1 male: DZUP].

### *Pachodynerus sericeus* (Fox)

(Fig. 6)

A couple of specimens in the collection of DZUP represent the first further specimens found after the original description. The female has the connections between the anterior and posterior pronotal bands broken, the scutellum has no markings, the mid tibiae are completely black and the upper propodeal lamella is less developed than described by Willink & Roig-Alsina (1998), rapidly decreasing toward the side.

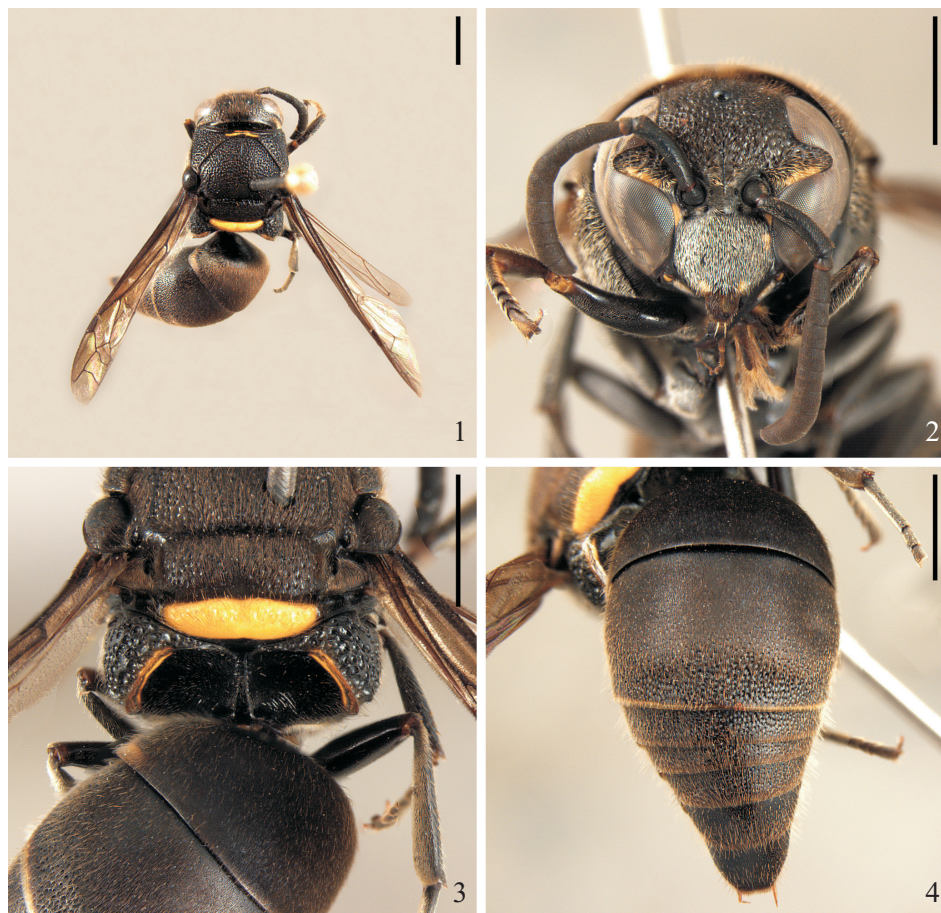
The male is similar to the female, with pale yellow markings distributed as follows: labrum; a small basal spot on mandible; scape below; lower half of the clypeus, below the tubercles; two large interantennal spots almost touching each other; inner orbital line including the lower ocular sinus; broad anterior pronotal band, broader at humeri and connected medially by a narrow posterior pronotal band; a small anterior spot on tegula; inner dorsal line on distal third of forefemur; anterior longitudinal line on fore, mid and hind tibiae; fore tarsomeres dorsally; small lateral spots on scutellum; a thick metanotal band; a stripe along each upper propodeal lamella.

Some morphological traits to remark about in the male are: the clypeus has a slightly concave apical margin, moderate apical teeth, bears submedial tubercles and is all covered with abundant micropunctuation, as well as some chagration, especially below; the interocellar elevations are somewhat well defined; the upper propodeal lamella is more defined all along until reaching the propodeal lateral angle.

Material examined. BRAZIL: Mato Grosso do Sul: Cáceres/7.ii.1985/(*C. Elias*) [1 female: DZUP]; same data but/28.i.1985/[1 male: DZUP].

### *Stenonartonia guaraya* Garcete-Barrett

**Male.** The diagnostic features of this species, including the inward appressed long pilosity covering the scutellar crest, the general shape and structure of T1 and the proportionally narrow T2, are constant in the single male specimen examined. It differs from the female by its smaller body size (body length of 9.5 mm and wing length of 10 mm), the propodeum completely devoid of striation, by an obtuse metanotal profile and the even darker (mostly black to blackish chestnut) body markings which include the following additions: frontal marks broader below; a tiny spot on the lateral pronotal fovea, some slight, almost imperceptible lower mesepisternal suffusion; a well-marked anterior submedial propodeal spot



Figs. 1–4. *Pachodynerus fessatus* sp. nov., paratype male; 1, Habitus, dorsal view; 2, Head, frontal view; 3, Posterior half of the mesosoma, dorsal view; 4, Metasoma in dorsal view. Scale bars for each figure = 1 mm.

and most of the propodeal side (much narrower posteriorly); the posterior surface of the mid coxa and a tiny basal spot on mid trochanter and femur; the hind coxa, trochanter and femur, except for a complete longitudinal streak; an elongate flame-like inner apical marking on hind tibia.

The clypeus is finely alutaceous and sparsely covered with shallow macropunctures. The antennal apex is similar to that of male *Stenonartonia cooperi*, but with F11 a bit narrower. Mid femur without basal depression below and just slightly flattened behind.

**Remarks.** This species was known just from the female holotype collected in Santa Cruz de la Sierra, Bolivia. This second specimen gives an opportunity to describe the male and extends the distribution of this species in about 1300 kilometers eastward from the type locality.

**Material examined.** BRAZIL: Minas Gerais: Pedra Azul/i.1971/(*F.M. Oliveira*) [1 male: MZUSP].

#### *Stenonartonia rejectoides* Garcete-Barrett

(Fig. 7)

The female from Acre is larger (body length 11.0 mm and wing length 9.9 mm) and the male a little smaller (body

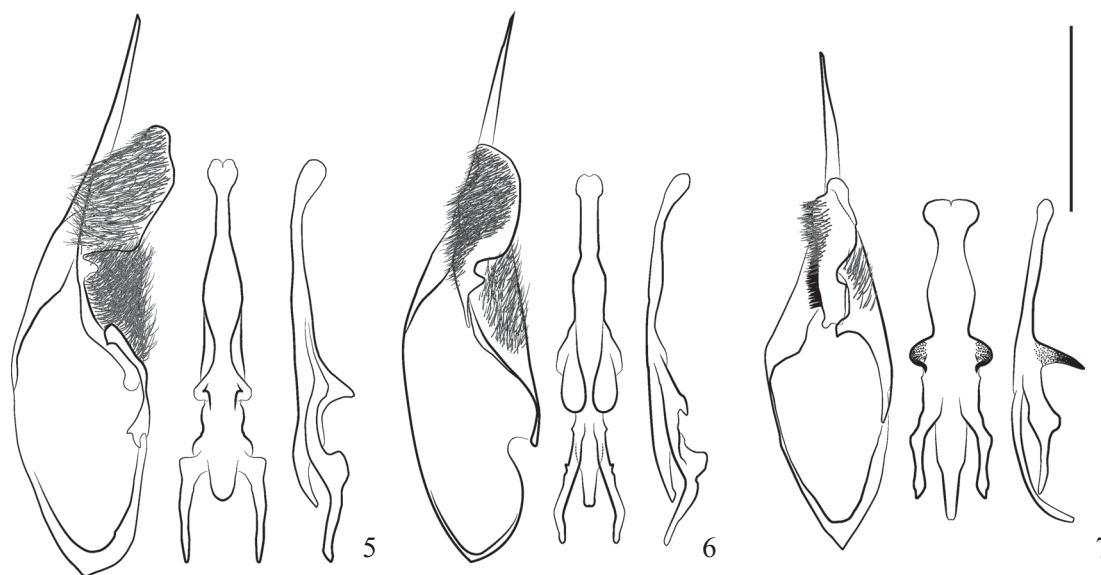
length 8.9 mm and wing length 8.1 mm) than the type from Manaus. Apart from it, the female fits very well with the type. The male specimen is very similar to the female in color and structure, being just different as follows: inner yellow ocular margin more elongate, reaching the lower ocular sinus; metanotal band interrupted at middle; pronotum strongly bent along humerus, but not forming a carina; metasomal sculpture stronger, with coarser and better defined macropunctures all over and those on the apical bands of T2–T5 very coarse, especially those on T2, which resemble an irregular honeycomb-like surface. Genitalia very similar to that of *Stenonartonia occipitalis* Garcete-Barrett, including long and very sharp aedeagal ventral lobes, a downcurved acute basivolsellar projection and the digitus with a knobbed apex and a strong dorsal patch of coarse setae.

**Material examined.** BRAZIL: Acre: Senador Giomard, Reserva Catuaba, 10°04'S 67°36'W/2.xii.2002/Ninho n° 2605 (*E.F. Morato*) [1 female: AMNH]; same data but/27.xi.2002/Ninho n° 2610 [1 male: AMNH].

#### *Stenonartonia tanykaju* Garcete-Barrett

Two males collected by MGH have a darker background color and are more richly yellow marked than the types by having: well defined posterior pronotal margin and humeral longi-





Figs. 5–7. Male genitalia, showing the right paramere and volsella in lateral inner view to the left, the aedeagus in ventral view at the middle, and the aedeagus in lateral view to the right. 5, *Pachodynerus fessatus* sp. nov., holotype; 6, *Pachodynerus sericeus* (Fox); 7, *Stenonartonia rejectoides* Garcete-Barrett. Scale bar for all figures = 1 mm.

tudinal streak (broken in one of the specimens); pronotal lobe, thin submedial mesoscutal line; lateral scutellar spot; metanotal band (broken in one specimen); upper mesepisternal spot; posterior lower mesepisternal spot (darker in one specimen); lower metapleural spot (darker in one specimen); lower sublateral spot on propodeum (very small and dark in one specimen); moderately thick and well defined apical band on T1 and T2; thin but laterally well defined bands on T3–T5 (broadly interrupted medially in one specimen, in which the one on T5 is almost absent) broad apical bands on S2–S6 (ill-defined on S6 of one specimen); a large discal spot on S7 (all dark in one specimen).

One of the specimens is slightly different from the type material, namely: the humeral angles a little more projecting, the lower part of the medial propodeal channel is more defined by higher inferior propodeal ridges, and the middle of the transverse carina of T1 angularly projects backward at middle. The lower reflective pilosity on the propodeal channel is also absent in this specimen. Nevertheless, that pilosity is fainter than in the types in the other specimen now studied. These discrepancies are nevertheless difficult to evaluate at this moment, so we consider more cautious to treat both specimens as *Stenonartonia tanykaju* until more material is available as to reach more solid conclusions.

Material examined. BRAZIL: São Paulo: Serra da Bocaina, 10 km SW of São José do Barreiro, 22.721°S 44.625°W, 1560 masl/23.x.2011/(M.G. Hermes) [2 males: DZUP].

#### *Stenonartonia apicipennis* (Fox)

A specimen adds an additional record to the distribution of this species.

Material examined. BRAZIL: São Paulo: Ribeirão Grande, Fazenda Intermontes/26.v.2006/(S.B. Vosguerichian) [1 female: DZUP].

#### *Stenonartonia cooperi* Garcete-Barrett

A specimen adds a western record to the Brazilian distribution of this species.

Material examined. BRAZIL: Amazonas: Estirão do Ecuador, Rio Javari/x.1979/(Alvarenga) [1 female: MZUSP].

#### ACKNOWLEDGEMENTS

The authors thank the people responsible for the collections under their care for giving us access to the material: Gabriel Melo (DZUP), Carlos Brandão (MZUSP) and James Carpenter (AMNH). We also thank the National Council for Scientific and Technological Development (CNPq) for the scholarships supporting our work.

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Received 25 January 2013; accepted 17 April 2013  
Associate Editor: Kevin A. Williams