

A STUDY OF THE VESPIDAE DESCRIBED BY  
WILLIAM J. FOX (INSECTA: HYMENOPTERA), WITH  
ASSESSMENT OF TAXONOMIC IMPLICATIONSJAMES M. CARPENTER<sup>1</sup>J. VAN DER VECHT<sup>2</sup>

## ABSTRACT

The Vespidae described by William J. Fox and deposited in The Carnegie Museum of Natural History are reviewed. Lectotypes are designated for most of the species. New synonymy is as follows: Eumeninae—*Tricomenes* Giordani Soika, 1978 = *Pirhosigma* Giordani Soika, 1978; *Nortonia lugens* Schulthess, 1904 and *Odynerus paraguayensis* Brèthes, 1909 = *Stenonartonia apicipennis* (Fox, 1902). New combinations are: Polistinae—*Agelaia angulata* (Fabricius), *Agelaia angulicollis* (Spinola), *Agelaia fulvofasciata* (DeGeer), *Agelaia multipicta* (Haliday), *Agelaia myrmecophila* (Ducke), *Agelaia pallipes* (Olivier), *Agelaia testacea* (Fabricius), *Protopolybia chartergoides* (Gribodo), *Protopolybia fuscatus* (Fox); Eumeninae—*Ancistroceroides atripes* (Fox), *Ancistroceroides conjunctus* (Fox), *Ancistroceroides cordatus* (Fox), *Ancistroceroides fulvimaculus* (Fox), *Ancistroceroides rufimaculus* (Fox), *Cephalastor rufosuffusus* (Fox), *Hypancistrocerus abdominalis* (Fox), *Hypancistrocerus coxalis* (Fox), *Hypancistrocerus dentiformis* (Fox), *Hypancistrocerus inusitatus* (Fox), *Hypancistrocerus reflectorius* (Dalla Torre), *Pachodynerus corumbae* (Fox), *Pachodynerus sericeus* (Fox), *Parancistrocerus areatus* (Fox), *Parancistrocerus dorsonotatus* (Fox), *Parancistrocerus herbertii* (Fox), *Parancistrocerus longicornutus* (Dalla Torre), *Parancistrocerus striatus* (Fox), *Pirhosigma pilosum* (Fox), *Stenodynerus convolutus* (Fox), *Stenodynerus suffusus* (Fox), and *Stenonartonia apicipennis* (Fox). Changes in status are as follows. Polistinae—*Mischocyttarus picturatus* Bequaert is raised to specific rank; and *Parachartergus smithii* var. *fasciatus* (Fox) = *P. smithii* (Saussure). Eumeninae—*Alphamenes campanulatus gladiator* Giordani Soika, *A. c. luctuosus* Giordani Soika, *A. c. mango*, and *A. c. nanicolor* = *A. campanulatus* (Fabricius); *Eumenes filiformis* Saussure, *E. fulvomaculatus* Fox and *E. rufomaculatus* Fox are treated again as distinct species; *Minixi brasilianum compactum* (Fox) = *M. brasilianum* (Saussure); *Omicron aequale jucundum* Giordani Soika and *O. a. nigrum* Giordani Soika = *O. aequale* Giordani Soika; *Pirhosigma superficiale impurum* Giordani Soika = *superficiale* (Fox); and *Pseudodynerus griseus* (Fox) is raised again to specific rank.

## INTRODUCTION

Around the beginning of this century the American hymenopterist William J. Fox described a large number of aculeate Hymenoptera from Brazil. His work was based on an extensive collection made by Herbert H. Smith in the period 1874–86. Details on the localities where this material was obtained were given by Fox (1896) in a first contribution dealing with the Scoliidae. The Vespidae were treated in three contributions: Polistinae in no. 5 (Fox, 1898), and Eumeninae in contributions no. 7 (*Zethus*, *Labus*, *Eumenes*, *Montezumia*, *Monobia*; Fox, 1899) and no. 8 (*Odynerus*; Fox, 1902). The great majority of the specimens described or recorded by Fox are deposited in The Carnegie Museum of Natural History (CMNH). However, syntypes of a number of species were sent by Hugo Kahl in 1937 to Joseph Bequaert, who discussed them in some of his papers, and retained a few specimens in the collection of the Museum of Comparative Zoology

<sup>1</sup> Museum of Comparative Zoology, Harvard University, Cambridge, MA 02138.

<sup>2</sup> Burg Vermeerlaan 4, 3881GZ Putten, Netherlands.

Submitted 26 June 1990.



(MCZ). Naumann (1968) examined the Carnegie Museum material of *Brachygastra* for his revision, but Richards did not study the collection for his monograph on Neotropical Polistinae (1978). Rather, he examined material retained or determined by Bequaert. Thus, lectotypes were never designated for most of the social wasps. Most of the *Zethus* were studied by Bohart and Stange (1962, 1965), who designated lectotypes. Giordani Soika (1978, 1990) studied syntypes of the *Eumenes*, but for the most part did not designate lectotypes. The remaining material has been unstudied. Although Fox's descriptions are fairly extensive and accurate for that time, it has proven very difficult to identify his species without consulting the type material. Due to the large number of new species he described in *Odynerus*, the "Fox collection" is presently the single most important collection of Neotropical Eumeninae unstudied by modern workers. Research on the Neotropical fauna will be hindered until these species are assigned to genera according to current generic concepts (*cf.* Carpenter, 1986).

This study of the Fox collection began in 1974, when, through the intermediary of Karl V. Krombein, George F. Wallace of The Carnegie Museum of Natural History made the Fox collection of Eumeninae available for detailed study by van der Vecht. Van der Vecht in turn made the species described in the genus *Eumenes* available to A. Giordani Soika for study during one of the latter's visits to The Netherlands. The results of Giordani Soika's work were included in the revision of Neotropical *Eumenes* and related genera (Giordani Soika, 1978, 1990), where he referred to syntypes labelled as lectotypes by van der Vecht. However, no lectotype designations were published by van der Vecht, who was unable to complete the work. He therefore requested that Carpenter, who was studying the cladistic relationships of the Neotropical genera as part of the world generic revision begun in Carpenter and Cumming (1985), take up the project. The opportunity is taken here to include lectotype designations for the Polistinae and species described in the genera *Montezumia* and *Monobia*. Notes are also provided on specimens of *Zethus* not seen by Bohart and Stange.

Most of the specimens in the collection bear small printed labels indicating only the locality and the month of collection. Single specimens described by Fox as new species generally bear a label in Fox's handwriting, giving the name and the indication "type". Of new species based on two or more specimens, as a rule only one specimen bears a type label. Some specimens have a yellow label giving the name and appellation "type", but the handwriting is unrecognized. These may be specimens previously sent to Bequaert for study and returned. Syntype specimens retained in the MCZ were labelled in Bequaert's handwriting as "paratype" or "cotype".

In the present paper lectotypes are designated for all the species based on two or more specimens. Generally we have selected as lectotype the specimen bearing Fox's original label, but in a few cases it appeared desirable to deviate from this rule, as explained in such instances below. The remaining specimens of a series have been marked as paralectotypes. In a few cases, Fox described variants, primarily based on color, with the term "Var.". We have not designated any such specimens as lectotypes, following Article 72(b) (i) of the current International Code of Zoological Nomenclature (International Commission on Zoological Nomenclature, 1985a), which excludes specimens described as variants from the type series. This also applies to specimens doubtfully attributed to a species. We have labelled such specimens as paralectotypes, with a notation indicating their



status. We have also attached holotype labels to the specimens of species based on unique specimens. The order of species follows that in Fox's papers.

We give here some information on the type localities. In addition to Fox (1896), we have consulted Papavero (1973:377–380), who traced some of the localities not found on modern maps or in gazeteers. These papers should be referred to for more complete information.

**Santarem:** 2°26'S, 54°42'W, town in Amazonas at the junction of the Tapajós and Amazon rivers. Most of the Hymenoptera labelled Santarem were collected a few miles inland in campo (savanna) habitat, or at settlements in heavy forest down the Amazon (Fox, 1896). **Mararú** is one of these settlements (spelled Marurú by Fox, 1896).

**Rio de Janeiro:** land originally forest; all specimens collected below 2500 ft altitude (Fox, 1896).

**Corumbá:** 19°1'S, 57°39'W, town in Matto Grosso on the western bank of the Paraguay, near the border with Bolivia; climate dry and hot and vegetation open (dry forest, full of cacti and other thorny plants). Specimens labelled "lowland" were collected on the opposite side of the river in a semi-swampy floodplain (Fox, 1896). The floodplain was mostly open grassland, with some gallery forest (Papavero, 1973:380).

**Pedra Branca** (Piedra Blanca), Bolivia: four miles west of Corumbá, near Lake Jacadigo; damp lowland covered with heavy forest (Fox, 1896).

**Chapada:** 15°26'S, 55°45'W, Matto Grosso; stretches of open land and semi-forest, interspersed with large patches of heavy forest; climate never very warm. Here the greater part of the collection was made, mainly on flowers and in muddy places near the streams (Fox, 1896). The town is now known as Chapada dos Guimarães (Papavero, 1973:379), and the collections were made at elevations ranging from 1500 to 2500 ft.

**Uacarizal** was not listed in Fox (1896). It apparently was a plantation in Mato Grosso near either the Río Paraguay or Cuyabá, probably the former (Papavero, 1973:380).

#### SPECIES DESCRIBED OR LISTED IN THE POLISTINAE

##### *Mischocyttarus*

1. *Mischocyttarus labiatus* (Fabricius); Fox, 1898:445, "About 50 specimens", 43 specimens are present from Rio de Janeiro; Mararú; Chapada; Uacarizal; Pedra Branca.

##### *Apoica*

1. *Apoica pallida* (Olivier); Fox, 1898:445, "15 specimens", 14 are present; two, Rio de Janeiro and six, Chapada, January–April, = *A. gelida* Vecht; one, Chapada, October, = *A. flavissima* Vecht; four, Santarem, September and October, = *A. thoracica* Buysson; one, Santarem, = *A. pallens* (F.).

##### *Synoeca*

1. *Synoeca testacea* Saussure; Fox, 1898:446, eight specimens from Mararú and Santarem, = *S. virginea* (Fabricius) (synonymy by Richards, 1978:182).
2. *Synoeca surinama* (Linnaeus); Fox, 1898:446, "A large series", 68 specimens are present from Chapada; Uacarizal; Rio de Janeiro; Santarem.



Here also belongs the male (Uacarizal, February) discussed by Fox as "very close to *surinama*". It bears a label in his hand "*Synoeca* n. sp.?".

3. *Synoeca cyanea* (Fabricius); Fox, 1898:446, two specimens from Rio de Janeiro.
4. *Synoeca azurea* Saussure; Fox, 1898:446, one specimen from Chapada, =*S. surinama* (L.), misidentification.

### *Polistes*

1. *Polistes ferrerii* Saussure; Fox, 1898:446, "A large series", 49 specimens are present from Corumbá and Chapada. Another 35 specimens from Chapada, Santarem, and Rio de Janeiro, =*P. lanio* (F.); 12 specimens from Corumbá, Chapada and Uacarizal, =*P. canadensis* (L.); misidentifications.
  2. *Polistes bicolor* Lepeletier; Fox, 1898:446, two specimens from Santarem, =*P. occipitalis* Ducke (synonymy by Bequaert, 1937:186).
  3. *Polistes versicolor* (Olivier); Fox, 1898:446, "About 75 specimens", 76 specimens are present from Benevides; Mararú; Rio de Janeiro; Chapada; Santarem.
  4. *Polistes carnifex* (Fabricius); Fox, 1898:447, nine specimens recorded from Chapada; Rio de Janeiro; Corumbá; Santarem. Six specimens are present.
  5. *Polistes cinerascens* Saussure; Fox, 1898:447, ten specimens are present from Chapada and Rio de Janeiro.
  6. *Polistes pacificus* Fabricius; Fox, 1898:447, six specimens are present from Mararú and Santarem.
  7. *Polistes acteon* [= *actaeon*] Haliday; Fox, 1898:447, one specimen from Rio de Janeiro.
  8. *Polistes subsericeus* Saussure; Fox, 1898:447, 16 specimens recorded from Chapada. Fourteen specimens are present. In the MCZ there is a male with the same locality and date labels, which apparently is from this series.
  9. *Polistes thoracicus* Fox, 1898:447, described from six specimens, Chapada, February to April. Lectotype female, Chapada, March, CMNH, by present designation. Additional material in the CMNH includes two females, Chapada, March; one male, Chapada, April; one female with a handwritten Chapada label and no date (paralectotypes). One of the March females, which lacks the metasoma, is labelled by Bequaert "cotype". Fox did not mention a male, as noted by Bequaert (1937:174), who suggested the worker sign in Fox's description was an error for a male sign. It is the male which is labelled by Fox with the determination and the word "Types", but selection of a female as lectotype seems less likely to cause confusion regarding Fox's description. Bequaert mentioned seeing only five cotypes. In the MCZ there is a female from Chapada, February, labelled by Bequaert a "paratype" of this species. This is apparently a syntype, and we have labelled it paralectotype. It is perhaps possible that the specimen with the handwritten label was not part of the syntypic series, but other specimens undoubtedly seen by Fox bear such labels, so it seems more likely that the sixth syntype was never sent to Bequaert.
- Richards (1978:533) incorrectly stated that the "holotype" of this species is deposited in the Academy of Natural Sciences in Philadelphia.
10. *Polistes geminatus* Fox, 1898:448, described from two specimens, Chapada, March. Lectotype female, Chapada, March, CMNH, by present designation. In the MCZ there is a female, labelled by Bequaert "*Polistes geminatus* Fox



paratype 'var. of Fox' " with the same locality and date labels. This specimen corresponds to Fox's description of the "Var.", and so is apparently the second syntype. We have labelled it paralectotype.

### *Polybia*

1. *Polybia fulvofasciata* (DeGeer); Fox, 1898:448, 43 specimens recorded from Chapada. Thirty-four specimens are present, =*Agelaia fulvofasciata*, new combination (generic nomenclature following Carpenter and Day, 1988).
2. *Polybia fasciata* Lepeletier; Fox, 1898:448, "About 100 specimens", 100 specimens are present from Chapada, =*P. emaciata* Lucas (synonymy by Richards, 1978:117).
3. *Polybia fastidiosuscula* Saussure; Fox, 1898:448, "Over 100 specimens", 121 specimens are present from Chapada. Six collected in October were sent to Bequaert, who labelled them as a variety with a manuscript name, and retained two specimens in the MCZ. These specimens have most of the second metasomal tergum yellow, but are otherwise typical.
4. *Polybia surinamensis* Saussure; Fox, 1898:448, 16 specimens recorded from Rio de Janeiro; Mararú; Santarem. Ten specimens are present, =*Mischocyttarus surinamensis*. An additional specimen (Rio de Janeiro, July) is in the MCZ. Another specimen from Santarem =*M. synoecus* Richards, and a further specimen from Santarem =*M. lecointei* (Ducke).
5. *Polybia occidentalis* (Olivier); Fox, 1898:449, "About 250 specimens of typical *occidentalis*, and over 60 representing *pygmaea* Fabr.", 244 and 20 specimens, respectively, are present from Chapada; Santarem; Rio de Janeiro. Some of these specimens are dated November, which was not mentioned by Fox. Fox also alluded to "Quite as large a series of individuals, having the head reddish", which he stated was not distinct as a species from typical *occidentalis*. There are 26 specimens from Chapada corresponding to this description, =*P. ruficeps* Schrottky. An additional six specimens of this latter species are present from Corumbá, but this locality was not mentioned by Fox.
6. *Polybia oecodoma* Saussure; Fox, 1898:449, six specimens recorded from Rio de Janeiro and Chapada. Five specimens are present, =*P. fastidiosuscula* Saussure, misidentification. The other specimen (Chapada, November) is in the MCZ, determined as *fastidiosuscula* by Bequaert.
7. *Polybia scutellaris* (White); Fox, 1898:449, "Nearly 100 specimens", 83 specimens are present from Chapada, =*P. erythrogaster* Richards. These are labelled by Fox as "*scutellaris* var.", and determined by Bequaert as *P. ruficeps* Schrottky. Fox stated that 90% of the specimens "represent a variety with the head and part of the thorax above, rusty-red", and several of the specimens have the scutum black, which was apparently not the case for the type series of *erythrogaster* (Richards, 1978:77). There is another specimen, with Fox's label, which is *scutellaris*. However, this is from "Rio Paraná, below Rozario", which is in Argentina. This cannot have been part of the original series, and perhaps the label was switched (the specimen was also labelled by Bequaert).
8. *Polybia pumila* Saussure; Fox, 1898:449, "About 100 specimens", 107 specimens are present from Chapada and Sebastiae, =*Protopolybia sedula* (Saussure) (synonymy by Richards, 1978:150). One of the Chapada, October, specimens is labelled by Bequaert with a manuscript name as the holotype of a variety of *Protopolybia rotundata*. Two additional specimens (Chapada, Sep-



tember and October) are in the MCZ; one is labelled "*Polistella pumila* Sauss." by Bequaert.

9. *Polybia pediculata* Saussure; Fox, 1898:449, "Over 60 examples", 52 specimens are present; 50 Chapada = *Metapolybia aztecoides* Richards; two, Santarem, = *M. unilineata* (Ihering).
10. *Polybia rejecta* (Fabricius); Fox, 1898:449, "About 50 specimens", 43 specimens are present from Mararú; Chapada; Santarem; Sebastiae.
11. *Polybia jurinei* Saussure; Fox, 1898:449, "Over 60 examples", 56 specimens are present from Chapada; Rio de Janeiro; Mararú; Santarem.
12. *Polybia metathoracica* Saussure; Fox, 1898:449, three specimens from Chapada; Mararú; Santarem, = *Mischocyttarus metathoracicus*.
13. *Polybia bifasciata* Saussure; Fox, 1898:449, two specimens from Santarem.
14. *Polybia rufidens* Saussure; Fox, 1898:450, one specimen from Corumbá, April, and one from Chapada, May. One female in the CMNH is the holotype of *Mischocyttarus metathoracicus* var. *picturatus* Bequaert, 1938a; the other, paratype female is in the MCZ (Bequaert, 1938a). Richards (1978:307) suggested that *picturatus* was a synonym of nominotypical *metathoracicus*, but recommended that the holotype (stated to be in MCZ) be re-examined.

Examination of these specimens shows: (1) The holotype is not a synonym of *metathoracicus*, but a valid species, *M. picturatus* Bequaert, new status; (2) the paratype is not the same species, but is a specimen of *M. bertonii* Ducke, misidentification.

Bequaert (1938a:135) gave the label data as Corumbá for the holotype and Chapada for the paratype. This is an error; the respective type labels are attached to the opposite specimens. That it is a reporting error, and not a label mix-up, seems apparent from the fact that the description does not correspond to the holotype, but rather to the paratype. The pronotum, upper corner of the mesepisternum and lower plate of the metapleuron are described as reddish, but they are black in the holotype. Also, most of the vertex is blackish, not just the ocellar area. Presumably, the detailed description was prepared after the holotype had been returned to the CMNH.

The specimens both represent species in the subgenus *Kappa* Saussure, but differ in several important characters, in addition to color. The holotype (*M. picturatus*) has the occipital carina quite weak, the pronotal carina transversely straight, the mesepisternum dull with punctation uniform, the propodeal concavity shallow with the longitudinal medial carina strong ventrally, the propodeal valvulae broadly triangular posteriorly, and metasomal tergum I wider. The paratype (*M. bertonii*) has the occipital carina strong, the pronotal carina posteriorly concave in dorsal view, the mesepisternum shiny with distinct macropunctures interspersed among micropunctures, the propodeal concavity deep with the longitudinal medial carina effaced, the propodeal valvulae very short and straight in lateral view, and metasomal tergum I narrower and relatively more dilated apically.

In Richards' (1978:289-292) key, *M. picturatus* keys to couplet 16, but comes from a different locality and does not correspond to the description of any of the other three species falling here. Using the descriptions in Richards, these four species all differ in color from *M. picturatus*, which has the entire clypeus and frons reddish, the tegula with a posteromesal spot, and the wings hyaline, contrasting with the other species. In addition, compared to



*M. villarricanus* Zikán (known only from Villarrica, Paraguay), the coloration of the head is reddish, not red-brown; the clypeus has some macropunctures; the pronotal carina is not "concave anteriorly"; the hindtibial spurs are yellowish at the tips; and the meso- and metasoma are not suffused with red. Compared to *M. funerulus* Zikán (known only from Rio de Janeiro, Itatiaia), the clypeus has some macropunctures dorsally; the pronotal carina is not "rather strong, a little concave anteriorly"; and the hindtibial spurs are yellowish only at the tips. Compared to *M. mocsaryi* (Ducke) (known only from Pará, Obidos), the mesepisternal punctation is not "almost honey-comb like"; and the hindtibial spurs are partly brownish.

The paratype keys to couplet 20 in Richards (1978). Its metasoma is not really reddish brown, as stated in couplet 19, but neither is the metasoma in specimens of *M. bertonii* examined, including the paratype in the MCZ seen by Richards (1978:301). The mesepisternal punctation and propodeal valvulae match the species in the *injucundus* group, while the pronotal carina and propodeal concavity match *bertonii*. The head and mesosoma are somewhat more reddish than other specimens examined or described, but this does not seem significant compared to the correspondence in other features.

15. *Polybia atra* (Olivier); Fox, 1898:450, "About 250 examples", 253 specimens are present from Chapada and Santarem, = *P. ignobilis* (Haliday) (synonymy by Bequaert, 1943c:718; Richards, 1978:106). An additional specimen (Chapada, March) is in the MCZ, labelled "*nigra* Sss." by Bequaert, an additional junior synonym of *ignobilis*.
16. *Polybia dimidiata* (Olivier); Fox, 1898:450, 34 specimens from Chapada. Thirty-three specimens are present. A further male specimen is in the MCZ, labelled by Bequaert.
17. *Polybia socialis* Saussure; Fox, 1898:450, one specimen from Rio de Janeiro, = *Mischocyttarus atramentarius* Zikán (synonymy by Richards, 1978:298).
18. *Polybia sylveirae* Saussure; Fox, 1898:450, three specimens from Rio de Janeiro. Two specimens are present, = *Protonectarina sylveirae*. The other specimen is in the MCZ, labelled by Bequaert.
19. *Polybia pallipes* (Olivier); Fox, 1898:450, "About 45 specimens", three specimens are present from Santarem, = *Agelaia pallipes* (Olivier), new combination (generic nomenclature following Carpenter and Day, 1988). The following are all misidentifications in the original series. Twenty-nine specimens from Chapada, Corumbá, Pedra Branca, Mararú, Santarem, and "Brazil", = *Agelaia multipicta* (Haliday), new combination. Three specimens from Rio de Janeiro, = *Agelaia myrmecophila* (Ducke), new combination. Eight specimens from Chapada, = *Agelaia myrmecophila* or a species near; the first metasomal segment is shorter and broader than other *myrmecophila*. One specimen from Santarem, = *Polybia bistrata* (F.). One specimen from Chapada, = *Mischocyttarus cerberus* Ducke, typical color pattern.
20. *Polybia vespiceps* Saussure; Fox, 1898:450, "About 60 specimens", 59 specimens are present from Sebastiae and Chapada, = *Pseudopolybia vespiceps*. Three specimens (Chapada, October and March; Sebastiae) labelled "*testacea*" (a variety of *vespiceps*) by Bequaert in the MCZ may also be from this series. Fox did not report any dates for the Chapada material.
21. *Polybia liliacea* (Fabricius); Fox, 1898:450, "A large series", 13 specimens are present from Santarem and Mararú. An additional 88 specimens from



- Chapada and Santarem, =*P. striata* (F.); misidentification. Two further specimens (Chapada, March and April) in the MCZ were determined by Bequaert as *P. striata*.
21. *Polybia angulata* (Fabricius); Fox, 1898:450, 11 specimens from Santarem. Ten specimens are present, =*Agelaia angulata* (F.), new combination (generic nomenclature following Carpenter and Day, 1988).
  22. *Polybia carbonaria* Saussure?; Fox, 1898:450, one male from Rio de Janeiro. The nominal species is now placed in the subgenus *Clypeopolybia* of *Mischocyttarus*. However, this specimen is misidentified. It belongs in the subgenus *Megacanthopus*, and is evidently an undescribed species. It has the characteristic anterior pronotal flange of *Megacanthopus*, and the terminal antennal flagellomere is flattened and more or less truncate. The mandibles have a small fourth tooth, unlike the other species in this subgenus (Richards, 1978).
  23. *Polybia angulicallis* [= *angulicollis*] (Spinola); Fox, 1898:450, two specimens from Santarem, =*Agelaia angulicollis* (Spinola), new combination (generic nomenclature following Carpenter and Day, 1988).
  24. *Polybia lugubris* Saussure; Fox, 1898:450, one specimen from Rio de Janeiro. This specimen is labelled as *P. flavitincta* Fox by Bequaert, but Fox's identification is correct.
  25. *Polybia flavicans* (Fabricius); Fox, 1898:451, 18 specimens from Mararú and Santarem, determined as "*Polybia flavicans* Fabr. (= *testacea* Fabr.)". Sixteen specimens are present, =*Agelaia testacea* (F.), new combination (generic nomenclature following Carpenter and Day, 1988). Fox followed Saussure (1854: 183) in treating *flavicans* and *testacea* as synonyms. The former species is now placed in the genus *Mischocyttarus*.
  26. *Polybia paraensis* Saussure; Fox, 1898:451, five specimens from Mararú and Santarem. Four specimens are present, =*Angiopolybia paraensis*. A further specimen (Santarem) is in the MCZ, labelled by Bequaert.
  27. *Polybia chrysothorax* (Lichtenstein); Fox, 1898:451, "About 40 specimens", 42 specimens are present from Chapada and Santarem.
  28. *Polybia sericea* (Olivier); Fox, 1898:451, "Nearly 200 specimens from various localities", 173 specimens are present.
  29. *Polybia mexicana* Saussure?; Fox, 1898:451, four specimens from Rio de Janeiro; three females = *Mischocyttarus adjectus* Zikán, one male = *M. parallelogrammus* Zikán.  
*Mischocyttarus adjectus* was hitherto known only from the holotype, which has not been examined. Zikán described three species from Rio de Janeiro, Itatiaia, which are separated in Richards' (1978:282) key by the form of the pronotal carina. These three specimens are actually somewhat variable in this feature: only one has a clear raised central angle, but the other two approach this. It is possible that there are fewer species than described.
  30. *Polybia infernalis* Saussure; Fox, 1898:451, two specimens from Santarem, = *P. bistriata* (Fabricius), misidentification.
  31. *Polybia emaciata* Lucas; Fox, 1898:451, 12 specimens from Mararú and Santarem. Seven specimens are present, = *Angiopolybia pallens* (Lepeletier), misidentification.
  32. *Polybia sedula* Saussure; Fox, 1898:451, "Over 75 specimens", 87 specimens are present from Chapada, Mararú, and Sebastiae, = *Protopolybia exigua* (Saussure) (synonymy by Richards, 1978:142). A further specimen (Chapada, October) is in the MCZ, labelled "*sedula*" by Bequaert.



33. *Polybia latior* Fox, 1898:451, described from three specimens, Chapada, October, = *Mischocyttarus latior*. Lectotype female, Chapada, October, CMNH, by present designation. Additional material in the CMNH is one female with a handwritten locality label and without a date label (paralectotype). It is the latter specimen that bears Fox's determination label and the word "Types", but we are selecting the specimen with more complete label data as lectotype. In the MCZ is another female labelled by Bequaert as "cotype", apparently the other syntype, which we have labelled paralectotype.

Richards (1978:294) erroneously stated that the "holotype" of this species is deposited in the Academy of Natural Sciences in Philadelphia.

34. *Polybia flavitincta* Fox, 1898:452, described from two specimens, Santarem. Lectotype female, Santarem, CMNH, designated by Richards (1978:113), who incorrectly gave the depository as the Academy of Natural Sciences in Philadelphia. Additional material in the CMNH includes the paralectotype female. Both specimens are labelled by Bequaert as synonym of *P. mediamericana* Bequaert.
35. *Polybia tinctipennis* Fox, 1898:452, described from two specimens, Chapada, September and December. Lectotype female, Chapada, September, CMNH, by present designation. The female from December is now in the MCZ, labelled by Bequaert as "cotype". We have labelled it as paralectotype.

Richards (1978:103) erroneously listed the "holotype" of this species as deposited in the Academy of Natural Sciences in Philadelphia.

36. *Polybia chapadae* Fox, 1898:453, described from three specimens, Chapada, February, = *Mischocyttarus chapadae*. Lectotype female, Chapada, February, CMNH, by present designation. Additional material in the CMNH includes a second female (paralectotype). The third syntype is now in the MCZ (paralectotype female).

Richards (1978:331) studied the MCZ syntype of this species, and incorrectly stated that the other types are deposited in the Academy of Natural Sciences in Philadelphia.

37. *Polybia gorytoides* Fox, 1898:454, described from 12 females, Chapada, September, and Santarem. Lectotype female, Chapada, September, CMNH, by present designation. Additional material in the CMNH includes three females, Chapada, September; four females, Santarem (paralectotypes). There is also one female from Chapada, December, which may not be part of the type series, since Fox did not mention this date. We have nevertheless labelled it paralectotype. In the MCZ is another female from Chapada, September, labelled by Bequaert as "cotype", which we have labelled paralectotype.

Richards (1978:102) erroneously listed the "holotype" of this species as deposited in the Academy of Natural Sciences in Philadelphia.

38. *Polybia suffusa* Fox, 1898:455, described from "About 60 specimens", Chapada, May and October, = *Metapolybia suffusa*. Lectotype female, Chapada, October, CMNH, by present designation. Additional material in the CMNH includes 38 females, October, and 23 females, May (paralectotypes). Another specimen collected in May is now in the MCZ, labelled by Bequaert "cotype" (paralectotype).

Richards (1978:188) erroneously listed the "holotype" of this species as deposited in the Academy of Natural Sciences in Philadelphia.

39. *Polybia frontalis* Fox, 1898:455, described from "Ten females (workers?), one male", Chapada, October and November, = *Mischocyttarus frontalis*. Lectotype female, Chapada, October, CMNH, by present designation. Additional



material in the CMNH includes eight females, Chapada, October (paralectotypes). In the MCZ are one female (November) and two males (October and no date), labelled by Bequaert as "cotype" or "paratype" (paralectotypes). The male without a date label has a handwritten locality label by Bequaert, and is possibly not a syntype. However, Fox's count may have been incorrect.

Richards (1978:296) incorrectly stated that the types are deposited in the Academy of Natural Sciences in Philadelphia.

40. *Polybia marginata* Fox, 1898:456, described from four specimens, Chapada, September and October, =*Mischocyttarus marginatus*. Lectotype female, Chapada, September, CMNH, by present designation. Additional material in the CMNH includes one female, October, and one female without date label (paralectotypes). Another female collected in October is now in the MCZ, labelled by Bequaert "cotype" (paralectotype).

Richards (1978:326) incorrectly stated that the types are deposited in the Academy of Natural Sciences in Philadelphia.

### *Tatua*

1. *Tatua morio* (Fabricius); Fox, 1898:457, "About 40 specimens", 41 specimens are present from Chapada and Santarem, =*Epipona tatua* (Cuvier).

As pointed out by Bequaert (1938b:115), *Tatua* Saussure, 1854, was proposed as a replacement name for *Epipona* Latreille, 1802, under the incorrect impression that *Epipona* was preoccupied (by Latreille, not Kirby as stated by Bequaert). Bequaert himself overlooked that Blanchard (1840:394) had designated *Vespa morio* Fabricius, 1798, as the type species of *Epipona*, the same species Ashmead (1902:166) designated as the type species of *Tatua*. The latter name is thus a junior objective synonym, as noted by Bequaert (1943b:4). The synonymy of *V. morio* F. with *V. tatua* Cuvier, 1797, was pointed out by Dalla Torre (1904:82).

### *Chartergus*

1. *Chartergus apicalis* (Fabricius); Fox, 1898:457, "Over 60 specimens", 50 are present from Sebastiae; Chapada; Corumbá; Mararú; =*Parachartergus fraternus* (Gribodo). Another specimen (Chapada, October) is in the MCZ, labelled "*Parachartergus apicalis* var. *fraternus* Grib." by Bequaert.
2. *Chartergus smithii* Saussure; Fox, 1898:457, one specimen from Corumbá, =*Parachartergus smithii*.
3. *Chartergus ater* Saussure; Fox, 1898:457, two specimens from Chapada and Santarem. The specimen from the former locality is now in the MCZ.

These two specimens, along with a female from "Anapolis, Goyaz (G. Fairchild)" in the MCZ, were all the material seen by Bequaert (1938b:111) when he described the monotypic subgenus *Chartergellus* for *Vespa frontalis* Fabricius, 1804. He treated *Chartergus ater* Saussure, 1854, as a synonym, following Ducke (1910). Bequaert also noted that this latter name was preoccupied by *Chartergus ater* Lepeletier, 1836, a synonym of *Parachartergus apicalis* (F.).

*Chartergellus* was raised to generic rank by Richards (1978), who noted that *Vespa frontalis* F. was itself preoccupied by *Vespa frontalis* Latreille, 1802, a synonym of *Dolichovespula sylvestris* Scopoli, 1763. Ducke (1910) had treated *Chartergus zonatus* Spinola, 1851, as a synonym of *V. frontalis* F., but Richards did not follow this. He described four new species of *Char-*



*tergellus* and, although not seeing the type of *Chartergus zonatus*, stated that the description did not resemble any specimens he had seen, and treated this taxon as *incertae sedis*. He proposed *Chartergellus amazonicus* as a replacement name for *V. frontalis* F., which he thus considered the name of the type species of the genus.

Richards (1978:217) suggested that *V. frontalis sensu* Bequaert was probably a mixture of species, and implied that this rendered tentative his treatment of *C. amazonicus* as the type species. In fact, all of the specimens studied by Bequaert are *Chartergellus communis* Richards, but this is irrelevant to the question of the type species. Bequaert's designation of *V. frontalis* could only be affected if it were considered that he had misidentified this species (Article 70 of the Code). His subgenus was monotypic for the nominal species. Hence, it is unaffected by the uncertain status of *Chartergus zonatus*, since he regarded that as a synonym (Article 69(d)). Plainly, Richards' subsequent description of new species from material that formerly was considered one taxon also does not affect Bequaert's identification (Article 17).

4. *Chartergus chartarius* (Olivier); Fox, 1898:457, "Nearly 50 specimens", 44 specimens are present from Chapada and Santarem. Two additional specimens (Chapada, October) are in the MCZ.
5. *Chartergus globiventris* Saussure; Fox, 1898:457, two specimens from Sebastiae.
6. *Chartergus fasciatus* Fox, 1898:457, one female, Mararú, April (holotype), =*Parachartergus smithii* (Saussure), new status. Richards (1978) did not include *fasciatus* in his synonymy or key. Bequaert (1938b:111) treated it as a variety of *smithii*, stating that "I cannot detect on the type the differences mentioned by Fox", but noted that the color is distinctive. He also recorded a second specimen from Pirapora, Minas Gerais. This specimen is in the MCZ, and comparison of it and the holotype of *fasciatus* with typical *smithii* confirms that the proportions of the mesosomal dorsal sclerites do not differ, contrary to Fox. Bequaert stated that the forewing was more infuscated, but *smithii* is quite variable in this regard; for example, specimens in the MCZ from Tingo Maria, Peru, have the forewings as dark as in *fasciatus*. And whereas the first three metasomal terga are darker than in typical *smithii*, there is variation in this as well. The first tergum is often quite dark, and the second tergum is often somewhat darker basally than apically. We regard the color differences as trivial, and treat *fasciatus* as a synonym of *smithii*.
7. *Chartergus griseus* Fox, 1898:458, described from nine specimens, Mararú, April, and Santarem, =*Parachartergus griseus*. Lectotype female, Santarem, CMNH, by present designation. Additional material in the CMNH includes five females, Santarem; two females, Mararú, April (paralectotypes). Another female (Santarem) is now in the MCZ, labelled by Bequaert "cotype" (paralectotype).

Richards (1978:213) incorrectly stated that the types are deposited in the Academy of Natural Sciences in Philadelphia.

### *Charterginus*

1. *Charterginus fulvus* Fox, 1898:458, 459, described from eight specimens, Mararú, April, and Santarem. Lectotype female, Santarem, CMNH, by present designation. Additional material in the CMNH includes six females, Santarem (paralectotypes). There is also a specimen from Santarem, Novem-



ber, labelled in an unrecognized hand as "type", which is perhaps not a syntype, as Fox did not mention any date for this locality. We have, however, labelled it paralectotype. Richards (1978:131) stated that a "paratype" is now in the British Museum, and in the MCZ there is a female labelled by Bequaert as from Santarem and "paratype", which we have labelled paralectotype. It seems likely that Fox's count was incorrect.

2. *Charterginus fuscatus* Fox, 1898:459, one female, Mararú, April (holotype), =*Protopolybia fuscatus*, new combination (generic placement following Ducke, 1905:15; nomenclature following Carpenter and Wenzel, 1990).
3. *Charterginus cinctellus* Fox, 1898:459, described from seven specimens, Chapada, October, =*Protopolybia chartergoides* (Gribodo), new combination (generic placement following Ducke, 1907:161; nomenclature following Carpenter and Wenzel, 1990). Richards (1978:155-156) treated this taxon as a "morph" of *chartergoides*, which is a category without nomenclatural standing. Lectotype female, Chapada, October, CMNH, by present designation. Additional material in the CMNH includes five paralectotype females. The specimen with Fox's type label is missing part of the metasoma, therefore we have selected an undamaged specimen as lectotype. In the MCZ is another female labelled by Bequaert "cotype", which is evidently the remaining syntype (paralectotype).

### *Nectarinia*

1. *Nectarinia lecheguana* (Latreille); Fox, 1898:459, "About 50 specimens", 53 specimens are present from Chapada; Corumbá; Santarem; =*Brachygastra lecheguana*.

*Nectarinia* is an incorrect spelling of *Nectarina* Swainson and Shuckard, 1840, an unnecessary replacement name for *Brachygastra* Perty, 1833, which was erroneously thought to be preoccupied by *Brachygaster* Leach, 1830. *Brachygastra* has been used as the valid name for this genus since 1943 (Bequaert, 1943a:303).

2. *Nectarinia bilineolata* Spinola; Fox, 1898:459, 35 specimens from Chapada. Thirty-four specimens are present, =*Brachygastra moebiana* (Saussure), misidentification. These specimens were also labelled by Naumann as *bilineolata*.
3. *Nectarinia augusti* Saussure; Fox, 1898:459, 25 specimens from Chapada and Santarem, =*Brachygastra augusti*.
4. *Nectarinia scutellata* Spinola; Fox, 1898:459, one specimen from Chapada, =*Brachygastra scutellaris* (Fabricius) (synonymy by Ducke, 1905:11).

### SPECIES DESCRIBED OR LISTED IN THE EUMENINAE

#### *Zethus*

1. *Zethus prominens* Fox, 1899:408, described from four specimens from Chapada, March, April. Bohart and Stange (1962:31) studied two females, one of which was designated as lectotype. The other, which they termed "Topotypical lectoparatype", was listed as being in the MCZ but it is not. In Bohart and Stange (1965:36) it is listed as being in the collection of the University of California at Davis.
2. *Zethus striatifrons* Fox, 1899:409, described from seven females and two males from Chapada, March, October and December. Bohart and Stange (1962:32) designated one male as lectotype, and mentioned four female "To-



pototypical lectoparatypes". One of these was listed as being in the MCZ, where there is also a male, labelled by Bequaert as "paratype" and Bohart and Stange as "lectoparatype".

3. *Zethus rufipes* Fox, 1899:411, described from an unspecified number of males, Chapada, January and March. Bohart and Stange (1962:31) mentioned three males, one of which they designated lectotype. A "Topotypical lectoparatype" was stated to be in the MCZ, but is not there. This species was omitted from Bohart and Stange (1965).
4. *Zethus campanulatus* Fox, 1899:415, described from five females and one male from Chapada, March. Bohart and Stange (1962:29) designated as lectotype one female, and alluded to four females "Topotypical lectoparatypes". In Bohart and Stange (1965:50) they indicated that they had studied only four females. There are one female and one male at the CMNH, labelled with a note: "By oversight never card-catalogued; never sent to R M Bohart GEW—1974". They have the same date/locality labels as the type series; the female also has a handwritten label "*campanulatus* Fox types", which the male is labelled by Bequaert "prob. not true male of *campanulatus* Fox". We have labelled these specimens as paralectotypes.
5. *Zethus? ferrugineus* Saussure; Fox, 1899:421, four specimens from Santarem. Bohart and Stange (1965:184) did not state how many specimens they saw from the CMNH. There are two in the collection that are possibly part of the original material, = *Z. biglumis ferrugineus*.
6. *Zethus proximus* Fox, 1899:422, described from one female, Corumbá, April; and one male, Uacarizal, February. The female was seen by Bohart and Stange (1962:31), who designated it as lectotype. A male in the CMNH from Uacarizal is labelled "*proximus* Fox type" and "By oversight never card-catalogued; never sent to R. M. Bohart GEW—1974". We have labelled it as paralectotype.

### *Labus*

1. *Labus brasiliensis* Fox, 1899:434, described from one female, Chapada, September; and one male, Santarem. The female was seen by Bohart and Stange (1962), who designated it as lectotype (1965:113). A male in the CMNH from Santarem is labelled "*Labus brasiliensis* Fox type" and "This is prob. *not* the spmn that was card-catalogued in 1941 (GW 1974)". We have labelled it as paralectotype. *Labus brasiliensis* Fox is a junior secondary homonym of *Zethus brasiliensis* Saussure, 1853, and the name has been replaced by *Z. adonis* Bohart and Stange (1965:113).

### *Eumenes*

1. *Eumenes chrysothorax* Saussure; Fox, 1899:437, one male, Corumbá, April, = *Pachymenes sericeus* Saussure (synonymy by Giordani Soika, 1990:96).
2. *Eumenes sericea* Saussure; Fox, 1899:437, two females, Corumbá, April; two females, Santarem; = *Pachymenes ghilianii* (Spinola), misidentification. One of the Santarem specimens is labelled in Bequaert's handwriting "*Eumenes pallipes* Saussure (called *sericea* by Fox)". *Pachymenes pallipes* Saussure (1852:75) was not originally described as a new species, but as a doubtful synonym of *Vespa pallipes* Olivier (a social wasp now in the genus *Agelaia*). Saussure (1855:153) indicated that *P. pallipes* was not a synonym, but Giordani Soika (1990:77) reduced this taxon to a synonym of *Pachymenes ghilianii* (Spinola).



3. *Eumenes bipartita* Fox, 1899:437, one female, Corumbá, April (holotype), = *Pachymenes bipartitus* (Fox) (generic placement by Giordani Soika, 1990:76, 104). In the MCZ there is a male with the same locality and date labels, and labelled by Bequaert a "paratype" of this species. It does not seem to us likely that Fox would have overlooked a second specimen, and he did not describe the male. We therefore do not regard this specimen as part of the original type species. There is considerable topotypic material from Smith in the CMNH, deposited after Fox's publications, and we presume that this male is one of these specimens.
4. *Eumenes testacea* Fox, 1899:438, described from one female and two males, Santarem, = *Stenosigma testaceum* (Fox) (generic placement by Giordani Soika, 1990:148, 149). Lectotype male, Santarem, CMNH, by present designation. The lectotype bears a type label in Bequaert's handwriting. Giordani Soika (1990:149) referred to this specimen as "designato Lecto-olotipo del Van der Vecht"; we do not regard this as a valid lectotype designation. Additional material in the CMNH includes the paralectotype male and female. The paralectotype male is missing the terminal part of the metasoma. The female paralectotype is labelled by Fox "*Eumenes testacea* Fox Types", but in this case the male was described first and more completely. In the MCZ there is a female with the same locality and date labels, and labelled by Bequaert as a "paratype" of this species, but Fox only mentioned three specimens, and there seems to be no reason to regard this as part of the type series.
5. *Eumenes laevis* Saussure; Fox, 1899:439, six females, Santarem; two females, Pedra Branca; one female, Mararú; = *Santamenes santanna* (Saussure) (synonymy by Giordani Soika, 1990:117). Fox also mentioned Corumbá as a locality, but there are no specimens with this label.
6. *Eumemes* [!] *novarae* Saussure; Fox, 1899:439, one female, Chapada, December; four females and one male, Santarem; = *Santamenes novarae* (Saussure) (generic placement by Giordani Soika, 1990:117, 128). One of the Santarem females is labelled by Bequaert "*Eumenes novarae* Sauss. (Fox det.)".
7. *Eumenes insignis* Fox, 1899:439, described from two females and four males, Chapada, March, October, and November, = *Alphamenes insignis* (Fox). Lectotype female, Chapada, October, CMNH, by present designation. The lectotype bears a Fox type label. Additional material in the CMNH includes one female and one male, March; one male, November (paralectotypes). Giordani Soika (1978:332, 355, 357) examined the type series, but referred to the specimens only as "Lecto-paratipo".

Giordani Soika (1978) recognized three subspecies of *insignis*. We have not examined specimens of *insignis richardsi* or *insignis loquax*, but their distinction was based solely on color, and we anticipate that their recognition will prove to be the same sort of partitioning of continuous variation demonstrated in the genus *Zeta* by Carpenter (1988).

8. *Eumenes laeviventris* Fox, 1899:440, described from two females and eight males, Corumbá, April, = *Pachymenes laeviventris* (Fox) (generic placement by Giordani Soika, 1990:76, 115). Lectotype female, Corumbá, April, CMNH, by present designation. The lectotype has a Fox type label. Giordani Soika (1990:115) referred to this specimen as "che il Van der Vecht designò Lecto-olotipo"; we do not regard this as a valid lectotype designation. Additional



material in the CMNH includes one female and eight male paralectotypes. A male and the female were labelled as types by Bequaert.

9. *Eumenes convexa* Fox, 1899:441, described from two specimens, Santarem, November, = *Alphamenes convexus* (Fox). Lectotype male, Santarem, November, CMNH, designated by Giordani Soika (1978:333, 347). Additional material in the CMNH includes a paralectotype male. Both specimens are damaged by dermestids: the lectotype has the apical antennal flagellomeres missing; the paralectotype has lost the head and prothorax. The paralectotype has Fox's type label, and the lectotype is labelled as type by Bequaert. Giordani Soika designated the lectotype by illustrating the less damaged specimen and referring to it as "lecto-olotipo" on pages 348 and 349. He did not label it because he was simply recording the specimens as labelled by van der Vecht. Nevertheless, his action takes precedence (Article 74 of the Code). We have appropriately labelled each specimen.
10. *Eumenes superficialis* Fox, 1899:441, described from one female and two males, Corumbá, April; Chapada, December; = *Pirhosigma superficiale* (Fox). Lectotype female, Chapada, December, CMNH, designated by Giordani Soika (1978:230, 236). Additional material in the CMNH includes two males, Corumbá, April (paralectotypes). Giordani Soika's lectotype designation was inadvertent, by referring to the female as "lecto-olotipo", and he did not label it. We have done so.

Giordani Soika (1978) recognized two subspecies of *superficiale*. These "subspecies" are distinguished solely by the relative extent of the yellow apical bands on the metasomal segments, which moreover varies within *superficiale impurum*, as noted by Giordani Soika (1978:239). Examination of extensive series of both subspecies in the MCZ shows that this is trivial variation, and we herewith treat *P. superficiale impurum* Giordani Soika, 1978:230 (in key), 239, as a synonym of *P. superficiale* (Fox), new status.
11. *Eumenes usitata* Fox, 1899:442, described from one female and 12 males, Corumbá, April, May; Santarem; = *Alphamenes usitatus* (Fox). Lectotype female, Corumbá, April, CMNH, by designation of Giordani Soika (1978:334, 345). Additional material in the CMNH includes five males, Corumbá, April; one male, Corumbá, May; one female and two males, Santarem (paralectotypes). Fox evidently mistook the sex of one of the males. One of the Corumbá, April males is labelled as type by Bequaert. An additional male paralectotype from Santarem = *A. campanulatus* (F.), misidentification. In the MCZ is one male from Santarem, which is apparently one of the other syntypes (paralectotype). It is labelled as *Eumenes usitatus* by Bequaert. Some paralectotypes are badly damaged. Giordani Soika's lectotype designation was inadvertent, when he referred to the Corumbá female as "lecto-olotipo", and he did not label it. We have done so.
12. *Eumenes incerta* Saussure; Fox, 1899:443, one female and two males, Rio de Janeiro, November, = *Alphamenes incertus* (Saussure) (generic placement by Giordani Soika, 1978:333, 350).
13. *Eumenes callimorpha* Saussure; Fox, 1899:444, recorded from seven specimens, "all females", Mararú, April, and Santarem. Present are one female and two males, Mararú, April; one female and one male, Santarem; = *Alphamenes campanulatus* (Fabricius) (synonymy by van der Vecht, 1970:21; generic placement by van der Vecht, 1977:238, 242, 243). Van der Vecht



(1977) was overlooked by Giordani Soika (1978:334–342). In the MCZ is an additional specimen evidently from this series, a male from Santarem labelled by Bequaert "*Eumenes callimorpha* var. *incertus* Sauss." and determined by Giordani Soika as "*campanulatum incertum*". These are misidentifications; this specimen is *campanulatus*.

Giordani Soika (1978) recognized five subspecies of *campanulatus*: the nominotypical form; *A. c. mango* Giordani Soika, 1978:334 (in key), 342; *A. c. nanicolor* Giordani Soika, 1978:334 (in key), 343; *A. c. gladiator* Giordani Soika, 1978:334 (in key), 343; and *A. c. luctuosus* Giordani Soika, 1978:334 (in key), 344. The MCZ male is the nominotypical form. However, these "subspecies" are based solely on color differences, and their distributions overlap. Examination of four of these subspecies represented in the MCZ (including the holotypes of *mango* and *nanicolor*) confirms that these taxa represent partitioning of continuous variation, as was demonstrated in the genus *Zeta* by Carpenter (1988). We regard this practice as dubious, and herewith treat all of the subspecies as synonyms of *A. campanulatus* (Fabricius), new status.

14. *Eumenes picturata* Fox, 1899:444, described from two females and one male, "Pedra Branca and Corumbá, in April", = *Pachymenes picturatus* (Fox) (generic placement by Giordani Soika, 1990:75, 108). Lectotype female, Pedra Branca, April, CMNH, by present designation. Giordani Soika (1990:112) referred to this specimen as "scelta V. d. Vecht come Lecto-olotipo"; we do not regard this as a valid lectotype designation. Additional material in the CMNH includes one female, Pedra Branca, April; one male, Corumbá, April (paralectotypes). The female paralectotype and the male are labelled as types by Bequaert.
15. *Eumenes consobrina* Saussure; Fox, 1899:444, 14 specimens recorded from Corumbá, March, April; Rio de Janeiro, November. Present as one female and seven males, Corumbá, April; one female and one male, Rio de Janeiro, November; = *Cyphomenes anisitsii* (Brèthes), misidentification (according to Giordani Soika, 1978:211).

Giordani Soika (1978) recognized two subspecies of *anisitsii*, and listed this series under the nominotypical form. We have not examined specimens of *anisitsii ornatissimus* Giordani Soika, but as before the distinction of these subspecies is based solely on color, so we regard their recognition as dubious.

16. *Eumenes parvula* Saussure; Fox, 1899:444, 14 specimens recorded from Corumbá, April, May; Chapada, January, April, December; Rio de Janeiro, November. Present are one female and one male, Corumbá, April; two males, Chapada, January; one male without label; = *Omicron minutum* (Fabricius) (synonymy by Giordani Soika, 1978:78). The Corumbá male is labelled by Bequaert "*Eumenes parvulus* Sauss. det. Fox". Giordani Soika determined the following three specimens evidently from this series as other species: one female, Corumbá, April, = *Omicron microscopicum* (Saussure); one male Chapada, April, labelled by Bequaert "*Eumenes parvulus* Sauss. det. Fox, = *Omicron nanum* (Kirsch); one female, Rio de Janeiro, November, = *Omicron spegazzinii* (Brèthes). None of these specimens was recorded by Giordani Soika (1978), and the first two are from localities well outside the distributions of the respective species reported by Giordani Soika.
17. *Eumenes suffusa* Fox, 1899:445, described from 11 females and three males, Corumbá, April; Chapada, November, December; = *Minixi suffusum* (Fox).



Lectotype female, Corumbá, April, CMNH, by present designation. Additional material in the CMNH includes six females and four males, Corumbá, April; one female, Chapada, November; one female and one male, Chapada, December (paralectotypes). One of the Corumbá females is labelled as type by Bequaert. Giordani Soika (1978:370, 379) referred to a female from Corumbá as "lecto-olotipo", but did not distinguish a specimen. However, this was undoubtedly the specimen labelled as lectotype by van der Vecht but not published.

18. *Eumenes uruguayensis* (!) Saussure [*recte uruguyensis*]; Fox, 1899:446, one female Chapada, December, one male, November, = *Minixi brasilianum compactum* (Fox) (according to Giordani Soika, 1978:375).
19. *Eumenes compacta* Fox, 1899:446, described from four females and one male, Corumbá, April; Chapada, November, December; = *Minixi brasilianum* (Saussure), new status. Lectotype female, Chapada, November, CMNH, by present designation. Additional material in the CMNH includes one female, Chapada, November; two females, Chapada, December; one male, Corumbá, April (paralectotypes). A December female and the male are labelled as types by Bequaert. Giordani Soika (1978:375) alluded to a female "lecto-olotipo" but did not specify the date or label the specimen. However, this was undoubtedly the specimen already labelled as lectotype by van der Vecht but not published.

Giordani Soika (1978) treated *compacta* as a subspecies of *M. brasilianum*. The subspecies were separated by *compacta* having the mesosoma with reddish markings, while nominotypical *brasilianum* has the mesosoma black. However, the extent of reddish coloration varies considerably in *compacta*, and the MCZ male from Belém seen by Giordani Soika (1978:374) has a few small reddish marks. We do not believe that partitioning minor color variation into "subspecies" serves any useful purpose, and we treat *M. brasilianum compactum* as a synonym of *M. brasilianum*.

20. *Eumenes colorata* Fox, 1899:447, described from one female and one male, Chapada, September; Santarem; = *Pararhaphidoglossa colorata* (Fox). Lectotype female, Santarem, CMNH, by designation of Giordani Soika (1978:263, 265, 323). Additional material in the CMNH includes the male, Chapada, September (paralectotype). The male is labelled as type by Bequaert. Giordani Soika's designation of the lectotype was inadvertent, when he referred to it as "lecto-olotipo". We have labelled the specimens appropriately.
21. *Eumenes tinctura* Fox, 1899:448, described from one female, Corumbá, April, and one male, Chapada, January; = *Pararhaphidoglossa tinctura* (Fox). Fox referred the male to this species "doubtfully". Lectotype female, Corumbá, April, CMNH, designated by Giordani Soika (1978:262, 264, 319). The paralectotype male is also in the CMNH. Giordani Soika's lectotype designation was inadvertent, when he referred to it as "lecto-olotipo". We have labelled the specimens appropriately.
22. *Eumenes invenusta* Fox, 1899:448, one female, Santarem (holotype), = *Pararhaphidoglossa invenusta* (Fox) (generic placement by Giordani Soika, 1978:263, 301).
23. *Eumenes confluenta* Fox, 1899:449, described from one female and one male, Santarem, = *Pararhaphidoglossa confluenta* (Fox). The male was referred to this species "with much doubt". Lectotype female, Santarem, CMNH, designated by Giordani Soika (1978:259, 264, 268). The paralectotype male is



also in the CMNH. Giordani Soika's lectotype designation was inadvertent, when he referred to the types as "olotipo" and "allotipo". We have labelled the specimens appropriately.

Giordani Soika (1978) recognized two subspecies of *confluenta*, referring *simillima* Zavattari to this species. His key (1978:260) separates them using only color characters, however the single specimen of *simillima* examined, in the MCZ, is considerably smaller than the material of nominotypical *confluenta* we have seen. Giordani Soika gave measurements that overlapped, but the status of these taxa should be re-examined.

24. *Eumenes proxima* Fox, 1899:450, one female, Santarem (holotype), =*Pararhaphidoglossa proxima* (Fox) (generic placement by Giordani Soika, 1978:260, 278).
25. *Eumenes cribrosa* Fox, 1899:451, described from six specimens, Mararú, April; Santarem; =*Omicron globicolle* (Spinola) (according to Giordani Soika, 1978:59, 177). Lectotype female, Santarem, CMNH, by present designation. Paralectotypes in the CMNH include one female, Santarem; one female Mararú, April. The Mararú paralectotype is labelled as type by Bequaert.  
 Three additional paralectotypes (two females, Santarem; one female, Mararú) in the CMNH were described as "Var. (?)" and labelled as *E. foxi* Schulz by van der Vecht. One of the Santarem specimens lacks the head. Giordani Soika (1978:181) regarded these specimens as conspecific with *O. globicolle*, stating that *O. foxi* is a different species. It is evidently true that these specimens are not *foxi* Schulz, but we do not agree that they are conspecific with *globicolle*. The distinguishing characters used in Giordani Soika's (1978:59) key conflict: while these specimens match *globicolle* in the clypeus, the form of the parategula matches *foxi*. The pronotum with medially sparse punctation, a character not mentioned by Giordani Soika, also matches *foxi*. The "Var. (?)" of Fox appears to represent an undescribed species. The Santarem paralectotype of *cribrosa* also belongs to this species, not *globicolle*.
26. *Eumenes globicollis* Spinola; Fox, 1899:452, recorded from three specimens. Present are one female, Mararú, April; two females, Santarem; =*Omicron ypsilon* Giordani Soika, misidentification (according to Giordani Soika, 1978:181).
27. *Eumenes gracilis* Fox, 1899:452, described from two specimens, Santarem. Junior homonym of *Eumenes gracilis* Saussure, 1852, =*Eumenes critica* Schulz (1906:214, new name) =*Omicron criticum* (Schulz). Lectotype female, Santarem, CMNH, designated by Giordani Soika (1978:120). The lectotype is missing the terminal segments of the metasoma. In the CMNH there is also one male, Santarem (paralectotype). Apparently Fox mistook the male for a female, for he mentioned having two specimens, but described only the female. The male is labelled by Bequaert as type. Giordani Soika's lectotype designation was inadvertent, when he referred to the female as "olotipo", mentioning that it had been labelled "holotype" by van der Vecht. We have appropriately labelled each specimen.

Giordani Soika (1978) recognized four subspecies of *criticum*. These "subspecies" are distinguished in the key and descriptions solely by color, and we regard their recognition on that basis alone as without value. However, examination of the specimens in the MCZ reveals pronounced differences in the metanotal punctation, and to some extent in the clypeus, which are uncorrelated with the color differences. Giordani Soika (1978:123) described



the metanotal punctation as “piccoli e radi”, but most of the Brazilian specimens have medium punctation. The status of these forms should be re-examined.

28. *Eumenes fornicata* Fox, 1899:452, described from two males, Santarem, November, = *Minixi brasilianum* (Saussure) (synonymy by Giordani Soika, 1978:370). Lectotype male, Santarem, November, CMNH, by present designation. The paralectotype is also in the CMNH, labelled by Bequaert as type.
29. *Eumenes deforma* Fox, 1899:453, described from three specimens, Corumbá, April, = *Pirhosigma deforme* (Fox) (generic placement by Giordani Soika, 1978:230, 231). Lectotype female, Corumbá, April, CMNH, by present designation. Additional material in the CMNH includes one female and one male (paralectotypes). Fox described only the female.
30. *Eumenes pilosa* Fox, 1899:454, described from two specimens, “Rio de Janeiro and Chapada, November”, = *Pirhosigma pilosum* (Fox), new combination. Lectotype female, Chapada, November, designated by Giordani Soika (1978:257). Additional material in the CMNH includes one female, Rio de Janeiro, November (paralectotype). The paralectotype is badly damaged by dermestids. Giordani Soika’s lectotype designation was inadvertent, when he referred to the Chapada female as “lecto-olotipo”. We have appropriately labelled each specimen.

Giordani Soika (1978:10, 254) established the monotypic genus *Tricomenes* for *E. pilosa* Fox. The only character by which it was differentiated from *Pirhosigma* in the key, a broad longitudinal median carina on the propodeum, is an autapomorphy of *pilosa*. Giordani Soika’s discussion compared *Tricomenes* only to *Omicron*, but *pilosa* is clearly more closely related to *Pirhosigma*. It shares with the species in that genus the apomorphic form of the first metasomal tergum: apically flask-shaped, with a preapical fossa and the apical lamella not preceded by a transverse swelling, and the stem laterally with two longitudinal carinae. Giordani Soika (1978:230) characterized *superficiale* as having one carina, which is incorrect; the ventral carinae approximate medially. This petiole form is unique among members of the *Eumenes s. l.* clade (cf. Carpenter and Cumming, 1985). In addition, the pronotal carina is sinuous on the humeri, the parategula is thick and bluntly pointed, and the apical lamella of the second metasomal tergum is elongate, all of which are probably apomorphic conditions, although not unique. This also applies to the “inconsueto” [unusual] metasomal pilosity, mentioned by Giordani Soika (1978:257). Further, *pilosa* may be closely related to two species described by Fox and now placed in *Pirhosigma*, *superficiale* and *deforme*. The second metasomal sternum is strongly depressed basally, followed by a noticeable swelling in all three species (actually, there is variation in *superficiale*, with some specimens of the subspecies *impurum* in the MCZ lacking a swelling). The female mandibular teeth are enlarged relative to the only other species of *Pirhosigma* available for comparison, *aenigmaticum* Giordani Soika (a probable synonym of *simulans* Saussure); this condition is exaggerated in *pilosa*. Unlike *superficiale* and *deforme*, the second metasomal tergum is not gibbous in *pilosa*.

Other distinguishing traits of *pilosa* are probably autapomorphies. Giordani Soika noted the presence of an incomplete pretegular carina (posterior to the spiracular operculum) and an epicnemial carina, which might be thought to be plesiomorphic (cf. Carpenter and Cumming, 1985). *Pirhosigma* is stated



to have the pretegular carina absent or "molto confusamente accennata" and to lack an epicnemial carina (Giordani Soika, 1978:229). However, *deforme* does have an epicnemial carina ventrally, and *superficiale* has the pretegular carina similar to the condition in *pilosa*, only less pronounced. Actually, both character states may be secondary in *pilosa*, associated with its coarse punctation. The epicnemial carina is not really present dorsally in *pilosa*, rather the border between the impunctate anterior part and coarsely punctate posterior part of the episternum appears sharply differentiated. Other definite apomorphies include the forewing second recurrent vein (2m-cu) interstitial between the second and third submarginal cells (see Carpenter and Cumming, 1985). This is well known in the genus *Pararaphidoglossa*, but is also found in *Pirhosigma aenigmaticum*. The condition is approached in three female paratypes of *aenigmaticum* in the MCZ (from Costa Rica, Panama and Colombia), and is fully developed in two males in the MCZ, from Panama and Venezuela, labelled as paratypes by Giordani Soika but not listed in his description. Finally, the tegula of *pilosa* is much broader than in other species of *Pirhosigma*, but *aenigmaticum* approaches this state somewhat.

Recognition of *Tricomenes* thus renders *Pirhosigma* paraphyletic, and we herewith synonymize these genera, new synonymy. Both genera were described in 1978, with the detailed description of *Pirhosigma* appearing first. As first revisers, we select *Pirhosigma* as the valid name.

There is an additional specimen of *P. pilosum* in the MCZ, a female from Napo, Limoncocha, Ecuador, 250 m, 15–28 June 1976, S. and J. Peck.

31. *Eumenes tegularis* Fox, 1899:455, described from two specimens, Corumbá, March, and Chapada, April, = *Omicron tegulare* (Fox) (generic placement by Giordani Soika, 1978:60, 208). Lectotype female, Corumbá, March, CMNH, by present designation. In the CMNH is also one female, Chapada, April (paralectotype).
32. *Eumenes tuberculata* Fox, 1899:456, described from 24 females and one male, Corumbá, April and May, = *Omicron tuberculatum* (Fox) (generic placement by Giordani Soika, 1978:60, 203). Lectotype female, Corumbá, April, CMNH, by present designation. Additional material in the CMNH includes 18 females, Corumbá, April, one female and one male, May (paralectotypes). The latter two specimens are labelled by Bequaert as types. Fox described an unspecified number of females as "Var.(?)". In the collection are one female, Chapada, September, one female, January, one male without date; three females Mararú, April; which correspond to the description. The September female is labelled by Fox "*Eumenes tuberculata* ? var. ? Fox", however none of these localities was reported, and given the discrepancy in the number of specimens, it is perhaps questionable whether these are syntypes. In addition to having the petiole with the stem more slender, these specimens have the clypeus narrower than in typical *tuberculatum*, as in *aequale* Giordani Soika. These two species are distinguished in Giordani Soika's (1978:60) key primarily by clypeal proportions, as well as by the extent of reddish maculation on the mesosoma of *aequale*. The "Var.(?)" specimens are more extensively reddish than stated in the couplet for *aequale*. However, a paratype of *aequale jucundum* in the MCZ (a female from Trinidad, stated by Giordani Soika [1978] to be in the British Museum), has large reddish scutal and propodeal marks, contradicting the key. The coloration appears to be without much



value in distinguishing these species, hence the "Var.(?)" of Fox corresponds to *O. aequale jucundum*.

Giordani Soika (1978) described three subspecies of *aequale*. As with *Zeta argillaceum* (Carpenter, 1988) and several species discussed above, these "subspecies" are based solely on color, and their distributions overlap. *Omicron aequale jucundum* was described from Mexico and Trinidad, the nominotypical form occurs only in Mexico, and *O. aequale nigrum* was described from specimens ranging from Brazil to Venezuela. Giordani Soika (1978: 202, 203) recorded some variation in color in his descriptions, and the specimens in the Fox collection show that the variation is extensive. We are therefore treating *O. a. nigrum* and *O. a. jucundum* as synonyms of *aequale*, new status.

33. *Eumenes chalicodoma* Saussure; Fox, 1899:457, recorded from ten specimens; present are six females and two males, Chapada, February–April; one female, Corumbá, April; one female, Santarem; = *Brachymenes dyscherus* (Saussure). The specific synonymy was established by Bequaert (1925a). Giordani Soika (1961:243) placed this species in his new genus *Brachymenes*.

The usual narrow, pale yellow band at apex of the petiole is absent in one female and two males from Chapada; in these specimens the thorax is also more extensively black.

34. *Eumenes canaliculatus* (Olivier); Fox, 1899:457, "A large series", present are 11 females and 22 males, Chapada, January, March, October, December; four females and eight males, Corumbá, April; three females, Santarem; one female, Rio, November; one male, Uacarizal; = *Zeta argillaceum* (L.). The synonymy was established by van der Vecht (1959:128), Giordani Soika (1975), and Carpenter (1988).
35. *Eumenes filiformis* Saussure; Fox, 1899:457, one female, Santarem = *Eumenes* (*Zeteumenoides*) *filiformis*, revised status.

Giordani Soika (1972:110) described the genus *Zeteumenoides* for *filiformis* (the type species), *E. rufomaculatus* Fox and *E. fulvomaculatus* Fox. Later, Giordani Soika (1978:17, 40) treated *Zeteumenoides* as a subgenus of *Eumenes*, and the originally-included species as subspecies of *versicolor* (*fulvomaculatus* as a synonym of the nominotypical form, following Giordani Soika, 1941:223). His key distinguished the subspecies only by coloration, and although he illustrated (Giordani Soika, 1978: figs. 35, 37, 39) some differences in the digitus of the male genitalia, he characterized these as not appreciable (Giordani Soika, 1978:40). He cited agreement with van der Vecht for this treatment, but also remarked that it was a "notevoli perplessità" that Cooper had collected *rufomaculatus* and *filiformis* in the same locality. He suggested that this fact merited ecological and biological investigation.

In contrast to the subspecies discussed previously, these taxa do appear to be distinct. The ranges overlap to some extent, but the coloration does not intergrade. In addition, morphological differences exist. These differences are subtle, but they appear to be consistent in the specimens examined in the MCZ. Besides the digitus, the clypeus differs. In *filiformis* it is somewhat more elongate and narrower than in the other two taxa, and the punctation is coarser basally in both sexes. In *versicolor*, the clypeal punctation is more superficial than in *rufomaculatus*, which is thus intermediate between the other two taxa.

Thus, these taxa can be consistently diagnosed. We here follow the modern



trend (Nelson and Platnick, 1981; Nixon and Wheeler, 1990) of treating diagnostically distinct taxa as species. The status of these three taxa is therefore revised, and we raise them again to species rank.

36. *Eumenes rufomaculata* Fox, 1899:457, described from two specimens, "Pedra Branca and Corumbá, April", =*Eumenes (Zeteumenoides) rufomaculatus*, revised status. Lectotype female, Corumbá, April, CMNH, by present designation. In the CMNH is also one female, Pedra Branca, April (paralectotype). The paralectotype is labelled as "cotype" by Bequaert. Although Giordani Soika (1978:17, 41) regarded *rufomaculatus* as a subspecies of *E. versicolor*, as discussed above, we here treat this taxon as a species.
37. *Eumenes fulvomaculata* Fox, 1899:458, described from two females, Santarem, =*Eumenes (Zeteumenoides) versicolor* Saussure (synonymy by Giordani Soika, 1941:223). Lectotype female, Santarem, CMNH, by present designation. In the CMNH is also the paralectotype, labelled as "cotype" by Bequaert. Giordani Soika (1978:37, 41) referred to three types, evidently a *lapsus*. As discussed above and in contrast to Giordani Soika (1978), we here treat *versicolor* as a monotypic species.

In addition to these species, there is a series of specimens identified by Fox as *Eumenes infernalis* Saussure, however he did not include it in his publication. This species is represented by one female and three males, Chapada, December, and two males collected in January. This species is the type species of the genus *Cyphomenes* Giordani Soika. Giordani Soika (1978:222) included this series in his list of specimens examined.

### *Montezumia*

1. *Montezumia sparsa* Fox, 1899:462, described from six females, Chapada, March. The MCZ contains a single female, labelled by Bequaert "*Montezumia sparsa* Fox paratype (like holotype)." This specimen is herewith designated as lectotype. This is evidently the specimen seen by Willink (1982:134). According to John E. Rawlins of the CMNH all the other specimens are lost. All the *Montezumia* and *Monobia* specimens studied by Fox were sent out on loan in 1974 by George Wallace separately from the other Eumeninae; they were intended to be studied by Abraham Willink through the intermediary of Karl V. Krombein at the U.S. National Museum of Natural History. There is no record of the loan ever arriving, and it evidently disappeared in the mail.

### *Monobia*

1. *Monobia curvata* Fox, 1899:463, described from five females and two males, Chapada, March and November. Willink (1982:234) saw a female and male from the MCZ, and referred to the male as "paratipo". That male is no longer present in the MCZ, but the female, collected in March, is. This specimen is designated as lectotype, because the rest of the type series was apparently lost along with the *Montezumia* mentioned above.

### *Odynerus*

1. *Odynerus (Stenancistrocerus) apicipennis* Fox, 1902:44, described from two females and three males, Chapada, March, December; Corumbá, April; =*Stenonartonia apicipennis* (Fox), new combination. Lectotype female, Chapada, March, CMNH, by present designation. Additional material in the



CMNH includes one male, Chapada, December; one male Corumbá, April (paralectotypes). In the MCZ is a male from Corumbá, April, labelled by Bequaert as "paratype", and a female from Chapada, March. These are evidently the other syntypes, and we have labelled them paralectotypes. There is a male in the CMNH from Pedra Branca, April, labelled "*Odynerus apicipennis* Fox type" in an unknown hand, but this locality was not mentioned by Fox.

*Stenonartonia* Giordani Soika, 1973, is a replacement name for *Paranortonia* Giordani Soika, 1941, a junior homonym of *Paranortonia* Bequaert, 1940. Originally included species are the type species *polybioides* (Schulthess), *lugens* (Schulthess), *mimica* (Kohl), *guaranitica* (Bertoni) and *flavotestacea* Giordani Soika. *Nortonia lugens* Schulthess, 1904, and *Odynerus paraguayensis* Brèthes, 1909, are junior synonyms of *apicipennis* (new synonymy). Giordani Soika (1941:154) stated that this genus is related to *Leptomenes*, an Afrotropical genus related to the "*Stenodynerus*–*Microdynerus* component" of Carpenter and Cumming (1985), but this appears to be incorrect. The form of the tegula and the pronotal punctation ally *Leptomenes* with *Stenodynerus*, whereas *Stenonartonia* seems to be part of the "*Pseudodynerus*–*Montezumia*" clade, sharing with these genera the synapomorphy of a slitlike axillary fossa (cf. Carpenter and Cumming, 1985). In terms of derived traits, *Stenonartonia* and *Leptomenes* superficially resemble one another only in having the propodeal valvula fused with the submarginal carina, but while the latter is pointed in *Leptomenes*, in *Stenonartonia* only *apicipennis* has this condition. The valvula is larger, and the carina more effaced in *Stenonartonia*. *Stenonartonia* is autapomorphic in having a transverse carina on metasomal tergum I, a trait that has evolved numerous times within Eumeninae (Carpenter and Cumming, 1985).

Additional specimens of *apicipennis* examined are as follows. BRAZIL: five females and ten males, Santa Catarina, Nova Teutonia, 1948, 1964–65 and 1967, F. Plaumann (MCZ; National Natuurhistorisch Museum, Leiden; University of California, Davis; Snow Entomological Museum, Lawrence); two males, São Paulo, 29–31 January 1969, C. Porter (MCZ); one male, Uacarizal, February (MCZ). ARGENTINA: one female, Paso de la Patria, 5–7 November 1969; one female, Sombrerito, 8 November 1969; one female, Santa Anna, 8 May 1971, C. Porter and L. Stange (Instituto Miguel Lillo, Tucumán, one female now in Leiden); two males, Yuto, 10 January 1966, H. and M. Townes (American Entomological Institute and Leiden); two females, Salta, Rio Pescado, 19–25 November 1967; four females and ten males, Orán, Abra Grande, 18–25 December 1968 and 18 April–5 May 1969; one female, near Pocitos, 28 April 1968; three females, Tucumán, Horco Molle, 10–23 December 1962, 25 March–30 April 1966, 9–30 April 1968; one female, near Tañi del Valle, 5 April 1968; one female, Va. Padre Monte–R. Nio, 25 April 1966; all C. Porter (MCZ). BOLIVIA: one female, Coroico (University of California, Davis); one male, 24 km W of Coripata, June 1969, P. and P. Spangler (U.S. National Museum of Natural History). PARAGUAY: one male, Villarrica, August 1940, F. H. Schade (U.S. National Museum of Natural History); same locality, three females and three males (one male determined as *lugens* by Bequaert) MCZ.

The punctuation of the clypeus and first and second metasomal terga appears to be variable, particularly in the males. For example, in the males from



Pedra Branca and Paraguay the punctuation of the posterior part of tergum II is much denser and coarser than in the other males listed above.

2. *Odynerus* (*Stenancistrocerus*) *convolutus* Fox, 1902:45, described from two females and seven males from Corumbá, April, = *Stenodynerus convolutus* (Fox), new combination. Lectotype female, Corumbá, April, CMNH, by present designation. Additional material in the CMNH includes one female and seven males (paralectotypes). In the MCZ is an additional male with the same locality and date labels, and labelled by Bequaert a "paratype" of this species. It is possible that Fox miscounted, but there must remain some doubt about whether this specimen was part of the syntype series. We have nevertheless labelled the specimen as paralectotype.
3. *Odynerus* (*Stenancistrocerus*) *suffusus* Fox, 1902:46, described from eight specimens, "Corumbá and Pedra Branca, April", = *Stenodynerus suffusus* (Fox), new combination. Lectotype male, Corumbá, April, CMNH, by present designation. Additional material in the CMNH includes five males, Corumbá, April; one male Pedra Branca, April (paralectotypes). In the MCZ are one female and one male labelled as "paratype" by Bequaert. The male is from Corumbá, April, and is evidently the remaining syntype (paralectotype). The female, which is labelled only "highland, April", is actually *Cephalastor rufosuffusus* (species no. 20), *q.v.*, and was evidently labelled incorrectly by Bequaert.

An unidentified female in the CMNH, labelled "Chapada, Nov." appears to belong to this species.

4. *Odynerus* (*Stenancistrocerus*) *areatus* Fox, 1902:47, described from two specimens, Chapada, March and December, = *Parancistrocerus areatus* (Fox), new combination. Lectotype male, Chapada, December, CMNH, by present designation. The CMNH also has one male, Chapada, March (paralectotype).
5. *Odynerus abdominalis* Fox, 1902:48, described from three specimens, Chapada, March and December, = *Hypancistrocerus abdominalis* (Fox), new combination. The CMNH also has a female from Chapada, March (paralectotype). A female from Chapada, December, in the MCZ, labelled by Bequaert "paratype", is evidently the remaining syntype (paralectotype).
6. *Odynerus* (*Stenancistrocerus*) *dentiformis* Fox, 1902:48, described from seven females and nine males, Corumbá, April; Chapada, December; = *Hypancistrocerus dentiformis* (Fox), new combination. Lectotype female, Corumbá, April, CMNH, by present designation. Additional material in the CMNH includes three females and eight males, Corumbá, April; one female, Chapada, December (paralectotypes). In the CMNH is also a female labelled only "Brazil" that was perhaps a syntype (paralectotype). In the MCZ are one female and one male from Corumbá, April, labelled by Bequaert as "paratype", which are evidently from the syntype series (paralectotypes).
7. *Odynerus* (*Ancistrocerus*) *fulvimaculus* Fox, 1902:49, described from two females, Chapada, April, = *Ancistroceroides fulvimaculus* (Fox), new combination. Lectotype female, Chapada, April, CMNH, by present designation. The CMNH also has the paralectotype.

*Ancistroceroides* Saussure, 1855, is the generic name applicable to most of the Neotropical species that have been described in *Ancistrocerus*. Bequaert (1925b:61) designated *Odynerus cruentus* Saussure as type species, but since this proved to be a species of the very large Australian genus *Paralastor* Saussure, van der Vecht (1983:111) requested the International Commission



on Zoological Nomenclature to reject Bequaert's designation and to designate *Odynerus alastoroides* Saussure as the type species. This was done in Opinion 1363 (International Commission on Zoological Nomenclature, 1985b).

8. *Odynerus (Ancistrocerus) rufimaculus* Fox, 1902:50, described from one female and three males, "Corumbá and Pedra Branca in April", = *Ancistroceroides rufimaculus* (Fox), new combination. Lectotype female, Corumbá, April CMNH, by present designation. Additional material in the CMNH includes one male, Corumbá, April; one male, Pedra Branca, April (paralectotypes). In the MCZ is a male from Corumbá, May, and labelled by Bequaert as "paratype", which may be the remaining syntype, although Fox did not give May as a date (paralectotype).
9. *Odynerus (Stenancistrocerus) atripes* Fox, 1902:51, described from 11 females and 27 males, Chapada, January, May, October; Corumbá, April; = *Ancistroceroides atripes* (Fox), new combination. Lectotype female, Chapada, January, CMNH, by present designation. Additional material in the CMNH includes five females and five males, Chapada, January, one female, May, 12 males, October, one female and three males, December, one female and four males without date; one male, Corumbá, April (paralectotypes). The December date was not mentioned by Fox, doubtless through oversight. Another female from Chapada, October, and a female labelled only "Jan.", are actually *Ancistroceroides conjunctus* (Fox), misidentification (paralectotypes). In the MCZ are a female from Chapada without date, and a male from Chapada, October, both labelled as "paratype" by Bequaert (paralectotypes).
10. *Odynerus (Ancistrocerus?) conjunctus* Fox, 1902:52, described from "Three females, numerous males", Chapada, April, September, October, December; Corumbá, April; = *Ancistroceroides conjunctus* (Fox), new combination. Lectotype female, Chapada, September, CMNH, by present designation. Additional material in the CMNH includes one female and two males, Chapada, September, one female and ten males, October, two males, November, one male, December, one male, May, four males, without date; one female and 14 males, Corumbá, April, one male, without date; four males without labels (paralectotypes). Another two males from Chapada, October, are actually *Ancistroceroides cordatus* (Fox), misidentification. In the MCZ is another male from Chapada, September, labelled by Bequaert as "paratype" (paralectotype).

Here also belong one female from Chapada, October, and one female labelled only "Jan.", which were part of the syntype series of *Odynerus atripes* Fox.

11. *Odynerus (Hypancistrocerus) advena* Saussure, Fox, 1902:53, recorded from a "large series" from Corumbá and Chapada. Present are five females and 31 females, Corumbá, April, one male, May, one male, February, one male, without date, = *Hypancistrocerus advena* (Saussure). There is also one male, Mararú, April, a locality not mentioned by Fox. In the MCZ is another male from Corumbá, April, labelled by Bequaert as "*Ancistrocerus advena* Sss. named by Fox", which was evidently part of this series.

The yellow spot in front of the scutellum is absent in three males from Corumbá and in the male from Mararú. The specimen recorded by Fox from Chapada appears to belong to a different species, however, its metasoma is lacking.

12. *Odynerus (Hypancistrocerus) reflexus* Fox, 1902:53, described from an un-



specified number of specimens from Chapada, December, January, May; and Corumbá, April. Junior homonym of *Odynerus reflexus* Brullé, 1839; = *Odynerus reflectorius* Dalla Torre, 1904:53, new name, = *Hypancistrocerus reflectorius* (Dalla Torre), new combination. Lectotype female, Chapada, September, CMNH, by present designation. Paralectotypes in the CMNH include two males, Chapada, January, one male, April, one male, May, seven males, December; one male, Corumbá, April. Fox did not mention the September and April dates for Chapada. However, the specimen we have designated as lectotype bears Fox's type label, so there seems to be little reason to doubt that these dates were overlooked. In the MCZ is another male from Chapada, January, labelled by Bequaert as "paratype" (paralectotype).

13. *Odynerus coxalis* Fox, 1902:54, described from two females and one male, Chapada, September; Corumbá, February; = *Hypancistrocerus coxalis* (Fox), new combination. Lectotype female, Chapada, September, by present designation. Additional material in the CMNH includes one male, Corumbá, February; one female, "Brazil" (paralectotypes).
14. *Odynerus herbertii* Fox, 1902:56, described from one female and 11 males, Chapada, September, December, January; Corumbá, April; = *Parancistrocerus herbertii* (Fox), new combination. Lectotype female, Chapada, December, CMNH, by present designation. Additional material in the CMNH includes one male, Chapada, January, one male, September; six males, Corumbá, April; one male without locality, April (paralectotypes). In the MCZ is another male from Corumbá, April, labelled by Bequaert as "paratype", which is evidently one of the missing syntypes (paralectotype).
15. *Odynerus cordatus* Fox, 1902:57, one female without locality label (holotype), = *Ancistroceroides cordatus* (Fox), new combination.

Here also belong two males from Chapada, October, which were part of the syntype series of *Odynerus conjunctus* Fox. In addition to these specimens, the CMNH contains two males unidentified by Fox from Chapada, October and May, which belong to this species.

16. *Odynerus dorsonotatus* Fox, 1902:58, described from four specimens, Chapada, December, = *Parancistrocerus dorsonotatus* (Fox), new combination. Lectotype female, Chapada, December, CMNH, by present designation. The CMNH contains one additional female paralectotype, which is missing the terminal metasomal segments.
17. *Odynerus longicornis* Fox, 1902:59, one male Corumbá, April (holotype). Junior homonym of *Odynerus longicornis* Morawitz, 1895; = *Odynerus longicornutus* Dalla Torre, 1904:48, new name, = *Parancistrocerus longicornutus* (Dalla Torre), new combination.
18. *Odynerus striatus* Fox, 1902:60, described from three females and four males, Chapada, September, December, January, March, = *Parancistrocerus striatus* (Fox), new combination. Lectotype female, Chapada, September, CMNH, by present designation. Additional material in the CMNH includes one female and two males, Chapada, December, one female and two males, January, one male, March (paralectotypes). Fox recorded only seven specimens, but there is nothing to indicate that any of the specimens present do not belong, so we are inferring that he miscounted. In the MCZ is another male from Chapada, March, labelled by Bequaert as "paratype", which may also be a syntype (paralectotype).

In addition to the specimens noted above, the CMNH contains eight males



unidentified by Fox from Chapada, collected from October to January, which belong to this species.

19. *Odynerus inusitatus* Fox, 1902:61, described from two males, Chapada, December, = *Hypancistrocerus inusitatus* (Fox), new combination. Lectotype male, Chapada, December, by present designation. The CMNH also contains the paralectotype male.
20. *Odynerus rufosuffusus* Fox, 1902:62, described from three females, Corumbá, April, = *Cephalastor rufosuffusus* (Fox), new combination. Lectotype female, Corumbá, April, CMNH, by present designation. The CMNH also contains a paralectotype. In the MCZ is a female, which is labelled only "highland, April", and "*Ancistrocerus suffusus* Fox paratype" by Bequaert. This is evidently the remaining syntype, with Bequaert's label being an error (paralectotype). The CMNH paralectotype belongs to the "Var. b" described by Fox.

*Cephalastor* Giordani Soika (1982:33, 40) was described as a monotypic subgenus of *Hypalastoroides*. Carpenter (1986:67) synonymized the type species, *H. depressus* Giordani Soika, 1969, with *Odynerus relativus* Fox, 1902. *Cephalastor* is not closely related to *Hypalastoroides*; it does not possess the outstanding apomorphy of the latter genus. Figure 2 in Giordani Soika (1969), showing a clearly petiolate second submarginal cell in the forewing of *depressus*, is inaccurate. On the type specimen, the cell is petiolate only on one wing; it is strongly narrowed on the other. Nor is the cell basally truncate, as in *Hypalastoroides* and closely related genera, rather it is acute. Carpenter (1986) raised *Cephalastor* to generic rank: it is part of the "*Stenodynerus-Leucodynerus* component" of Carpenter and Cumming (1985), sharing with members of that clade an expanded, campanulate tegula.

21. *Odynerus relativus* Fox, 1902:63, one female Corumbá, April (holotype), = *Cephalastor relativus* (Fox) (generic placement by Carpenter, 1986:67).
22. *Odynerus praecox* Saussure; Fox, 1902:63, recorded from "Eight females, and a large series of males". Present are one female, Chapada, March, one female, April, nine males, September, two females and nine males, October, 12 males, November; one male, Corumbá, February, two females and 18 males, April; two females and three males, Santarem; one female and one male, Uacarizal, February; one male, Mararú, April; one female and three males, Pedra Branca; = *Pachodynerus praecox* (Saussure). The Uacarizal and Mararú localities were not mentioned by Fox. In the MCZ are a female from Chapada without date, labelled by Bequaert "*Od. praecox* Sss. named by Fox", and a male from Chapada, November, which apparently belonged to this series.

In most specimens only metasomal terga I and II have a yellow band; in one of the females from Santarem and in the males from Pedra Branca, tergum III is also banded; another female and the males from Santarem have bands on terga I–V or I–VI, respectively.

Two additional males from Corumbá, April, appear to represent an undescribed species. The clypeus has macropunctures and is not closely micropunctate, there is no mesopleural process, and metasomal tergum I is unbanded. There is some variation in *praecox* in the degree of development of the mesopleural process and band on tergum I, but the clypeus of these specimens is quite different from that of all *praecox* we have examined.

23. *Odynerus nasidens* Latreille; Fox, 1902:63, one female Chapada, September, = *Pachodynerus nasidens* (Latreille).
24. *Odynerus brevithorax* Saussure; Fox, 1902:63, one female, Chapada, April.



Not found. There is another female from Chapada, March, determined by Fox as "*Odynerus brevithorax* ? Sauss.", = *Pachodynerus brachygaster* (Saussure).

25. *Odynerus corumbae* Fox, 1902:63, one female, Corumbá, April (holotype), = *Pachodynerus corumbae* (Fox), new combination.
26. *Odynerus* (*Odynerus*) *chapadae* Fox, 1902:64, described from two females, Chapada, February and October, = *Pachodynerus argentinus* (Saussure) (synonymy by Willink, 1972:69). Lectotype female, Chapada, February, CMNH, by present designation. In the CMNH is also one female, Chapada, October (paralectotype). Willink (1972) mentioned seeing a specimen "from the original series of Chapada, in Harvard". Actually that specimen is only topotypical.
27. *Odynerus* (*Odynerus*) *sericeus* Fox, 1902:65, one female, Chapada, March (holotype), = *Pachodynerus sericeus* (Fox), new combination.
28. *Odynerus* (*Stenodynerus*) *serratus* Fox, 1902:65, one male Corumbá, April (holotype), = *Pseudodynerus serratus* (Fox) (generic placement by Bequaert, 1941:2, 6).
29. *Odynerus* (*Stenodynerus*) *griseus* Fox, 1902:66, described from two females and two males, Chapada, March; Corumbá, April; = *Pseudodynerus griseus* (Fox), revised status. Lectotype female, Chapada, March, CMNH, by present designation. In the MCZ are one female and one male from Chapada, March, labelled by Bequaert as "paratype", which are evidently the "paratypes" he mentioned in 1941 (paralectotypes). The Corumbá, April, specimen cannot be found.

Bequaert (1941:6, 7) treated this taxon as a variety of *serratus*, stating that he was "unable to find a reliable structural character to separate" *griseus* and *serratus*. However, these taxa co-occur without intergrading in color. Not only were both described from Corumbá in the same month, in the MCZ are series of each collected at Nova Teutonia, Santa Catarina, with some specimens taken on the same dates. And although like Bequaert we have not found any diagnostic characters of external sculpturing that do not vary, dissections of the male genitalia reveal consistent differences. The digitus in *griseus* is somewhat more robust, and much more strongly haired. We therefore are treating *griseus* as a valid species.

30. *Odynerus* (*Stenodynerus*) *subapicalis* Fox, 1902:67, described from six females and one male; "Mararú and Chapada (April)"; Rio de Janeiro, November; Santarem; = *Pseudodynerus subapicalis* (Fox) (generic placement by Bequaert, 1941:2, 6). Lectotype female, Santarem, CMNH, by present designation. Additional material in the CMNH includes one female, Mararú, April; one female, Rio de Janeiro, November; two females, Chapada, April (paralectotypes).

#### ACKNOWLEDGMENTS

We thank John E. Rawlins of The Carnegie Museum of Natural History for his cooperation in the completion of this study, and Antonio Giordani Soika, Karl V. Krombein, Arnold S. Menke and Abraham Willink for their assistance in tracing the history of the loaned material. We also thank an anonymous reviewer with handwriting amazingly like Arnold Menke's for bringing the Papavero reference to our attention. Support for visits to Putten by the senior author was provided by a Milton Fund grant and National Science Foundation grant BSR-8508055; a visit to the Carnegie Museum was supported by National Science Foundation grant BSR-8817608.



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Carpenter, James M. and Vecht, J. van der. 1991. "A study of the Vespidae described by William J. Fox (Insecta: Hymenoptera), with assessment of taxonomic implications." *Annals of the Carnegie Museum* 60(3), 211–241.  
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