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ADDITIONS TO THE REVISION OF THE GENUS *HEMISTEPHANUS* ENDERLEIN (HYMENOPTERA: STEPHANIDAE), WITH INCLUSION OF FOUR TAXA AND DESCRIPTION OF TWO NEW SPECIES

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ABSTRACT

Four additional species are included in the genus Hemistephanus*:* H. villosus *(Kieffer) comb. n. and* H. colombiensis *(Ceballos) comb. n., transferred from* Megischus *and redescribed, and* H. costaricensis *sp. n. and* H. stenogulatus *sp. n., described as new;* H. artiosulcatus *Aguiar is proposed as a junior synonym of* H. villosus *Kieffer. The males of* H. arctatus, H. colombiensis, H. submaculatus, *and* H. villosus *are described for the first time. Much new or additional morphometric data is incorporated and discussed for these species and for* H. carinatus, H. erugatus, H. erythrocephalus, H. limpidipennis, H. orfilanus, H. ruficeps, *and* H. velutinus. *New geographical records are presented for all mentioned species and for* H. cylindricus. *Errata for publications on Stephanidae are presented. Misidentified males published as* H. macrurus *by Brullé are assigned to* Megischus furcatus. *A revised and updated key to species, and an updated summary of morphometric information for all* Hemistephanus *species, are presented. Photographic illustrations are provided for all new or transferred taxa, and to* H. carinatus, H. collarifer, H. ruficeps, *and* H. submaculatus.

KEYWORDS: biometry, key, *Megischus*, Neotropical, Central America.

INTRODUCTION

The genus *Hemistephanus* Enderlein was redefined and revised by Aguiar (1998), based on 265 specimens. Since then, 98 new specimens of this genus could be studied by the author, most of them obtained as a result of another work conducted with the family Stephanidae (Aguiar, 2000). This new material is the focus of the present work. It represents about 37% of the number originally studied by Aguiar (1998), and includes type specimens which could not be found or accessed before. A reasonable volume of new or complementary information was generated, including important additions to species previously known only by singletons or incomplete specimens, and is presented and discussed in its entireness in this work. The objective is to provide new taxonomic information for *Hemistephanus*, updating and complementing the revision of Aguiar (1998), to which the reader is referred for an introduction and historic about the genus.

MATERIALS AND METHODS

A total of 98 unstudied specimens of *Hemistephanus* were examined. They were loaned by the

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following instituitions, referred throughout this work with abbreviations from Arnett *et al.* (1993), except IAVH, used for a collection not mentioned in Arnett. The corresponding curators appear between parentheses: AEIC, American Entomological Institute, United States (D. Wahl); AMNH, American Museum of Natural History, United States (M. Smethurst); BHMH, Universidade Federal de Minas Gerais, Brazil (F. Silveira); CNCI, Canadian National Collection of Insects, Canada (J. Huber); DCBU, Universidade Federal de São Carlos, Brazil (Angélica M.P. Martins Dias); DEIC, Deutsches Entomologisches Institut, Germany (S. Blank); EMUS, Utah State University, United States (W. Hanson); FMNH, Field Museum of Natural History, Chicago, United States (P. Parrillo); IAVH, Instituto de Investigación de Recursos Biológicos Alexander von Humboldt, Colombia (M. Sharkey); INBC, Instituto Nacional de Biodiversidad, Costa Rica (J. Carvajal); IZAV, Instituto de Zoologia Agricola, Venezuela (J. Garcia); FSCA, Florida State Collection of Arthropods, United States (J. Wiley); LACM, Los Angeles County Museum of Natural History, United States (R. Snelling); MLPA, Universidad Nacional de La Plata, Argentina (J. Schnack and M. Loiácono); MUCR, Universidad de Costa Rica, Ciudad Universitaria "Rodrigo Facio" (H. Lezama); MNHN, Museum National d'Histoire Naturelle, France (C. Villemant); MNMS, Museo Nacional de Ciencias Naturales, Spain (I. Izquierdo); MZUP, Museu de Zoologia da Universidade de São Paulo, Brazil (C. Roberto F. Brandão); QBUM, Museu Nacional, Rio de Janeiro, Brazil (M. Monné); TAMU, Texas A&M University, College Station, United States (E. Riley); UCDC, University of California – Davis, Bohart Museum, United States (S. Heydon); UGCA, University of Georgia, United States (C. Smith); ZMUC, Zoologisk Museum, Copenhagen University, Denmark (L. Vilhelmsen).

Of the examined specimens, 15 belong to well known species, and were not evaluated for morphometric purposes; all of the remaining 83 specimens (64 females and 19 males) were measured, the results combined to the data provided in Aguiar (1998), and the final result organized here for the first time in tabular form (Tables 1-4). All new taxa and information were incorporated in a revised key to species.

The methodology is generally the same described in Aguiar (2001). Label data from the specimens was incorporated in a world Stephanidae database, available via Internet (Aguiar and Musetti, 2002). Updated distribution maps using all available data can be assessed in the corresponding webpage (http://iris.biosci.ohio-state.edu/projects/stephanids).

For morphological terminology and abbreviations see Aguiar (2001). Sculpturing terminology follows Eady (1968). Conventions and explanations for the abbreviations used here for morphometric ratios are described in Aguiar (2001), except for the following, not used in the mentioned work: *Abd* = maximum petiole length + post-abdomen length (Ptl + Gsl); *Ac* = length of vein 1A of front wing; *aOv* = length of dark apex of ovipositor valves; *Cc* = internal length of cell 2Cu, from apex of 1cu-a to apex of 2Cua; *fb* = length of white subapical band of ovipositor valves. The use of fluorescent illumination is highly recommended for all observations.

In the key, the characters appear in descending order of taxonomic weight. Thus, in each couplet, a given character must be considered of greater taxonomic weight than those subsequent to it. Values between square brackets are expanded limits within which there is no overlap with known limits of closely related species.

Two corrections must be considered in Aguiar (1998): first, its figure 26 illustrates ratio fl3/fl2, and not fl2/fl1; second, the abbreviation T3/T4, as used in the mentioned work, is imprecise, and the respective ratio must be interpreted as T3l/T4w, that is, length of T3 (2nd gastral) over width of T4 (3rd gastral).

MORPHOLOGY AND TAXONOMY

The proposed new synonym, and the four taxa here incorporated to *Hemistephanus*, change the known number of species for this genus from 21 to 24. New descriptive and biometric data are presented and discussed below.

Hemistephanus arctatus Aguiar, 1998

Figs. 1-28 (sp. 13)

Hemistephanus arctatus Aguiar, 1998:399. Holotype ♀ (MZUP) examined.

Description – Male. Very similar to the female, including occipital carina latero-ventrally with same characteristic emargination. Most significant differences are hind tibia posteriorly normal; head, front and mid legs light brown to light orange; vein 2-1A on front wing entirely lacking. Abdomen lost.

Biometry – Updated values for females are shown in Figs. 1-18 (sp. 13) and listed in Tables 1-2; data for the male in Figs. 19-28 (sp. 13) and listed in Tables 3-4.

Distribution – Brazil (AM, PA), Guyana.

New records (1 female, 1 male): Brazil (AEIC): ♂ OSUC22297, Jacareacanga, July 1970, F.R. Barbosa [06°16'00"S 57°39'00"W, Pará]. Following parts lost: apex of left antenna, right anterior wing, and gaster, including petiole; otherwise in good condition. Guyana? (ZMUC): ♀ OSUC22296, Essequibo, "Smids. Mus: S: & T.L:, 'coronator' " [probably Rio Essequibo, Guyana, 07°02'00"N 58°27'00"W]. Pronotum destroyed; mid legs, hind right leg except coxa, and apical tarsomere of hind left leg, lost; otherwise in regular shape, with fungus, glue and dirt.

Hemistephanus carinatus Elliott, 1931

Figs. 1-28 (sp. 10), 40

Hemistephanus carinatus Elliott, 1931:97; Aguiar, 1998:393.

Thorax – The characteristic granular texture of interfoveolar and post-foveolar areas is illustrated in Fig. 40.

Biometry – Updated values for females are illustrated in Figs. 1-18 (sp. 10) and listed in Tables 1-2; values for males in Figs. 19-28 (sp. 10) and Tables 3-4. The revised morphometric limits for females show that the ratio Ov/Ptl, used in the key to species in Aguiar (1998), has values which completely overlap those of *H. erythrocephalus*, to which it is more similar. However, the ratios Pnl/cw, also used in the key, and T4l/T3l, not previously available to *H. erythrocephalus*, are now confirmed to be of great help in isolating these two species (females).

Distribution – Brazil (AM, AP, RO), Colombia, Peru, Guyana.

New records (2 females): Brazil (MZUP): OSUC22290, Rondônia, 62 km southwest Ariquemes, Fazenda Rancho Grande, 13-26 November 1993, D.G. Marqua, 24°50'22"S 48°14'04"W. Colombia (CNCI): OSUC22291, Caqueta, 320 m, 1°20'N 74°30'W, 21 February 1973, Lowland rain forest.

Hemistephanus colombiensis (Ceballos, 1926) comb. n.

Figs. 1-28 (sp. 22), 29-35

Stephanus colombiensis Ceballos, 1926:141; Orfila, 1951:273.

The holotype could not be examined by Aguiar (1998), but was studied for the present work. It is a typical *Hemistephanus*, and belongs to a distinct species from those discussed by that author. The following redescription and comments place the species in context.

Redescription – Female. Head (Fig. 29). Vertex anteriorly and coronal area finely granular in between rugosities, remaining of head polished smooth in between rugosities. Frons transversely striate, centrally more irregular and with some ramifications, laterally highly regular and parallel, latero-dorsally changing to oblique. Hind tubercles cariniform, almost meeting mesally, but not contiguous. Vertex with scarce, short and delicate hairs, sometimes glabrous; 2-3 interocellar carinae, the first wide and blade-shaped, the two remaining as a rugosity, centrally irregular; somewhat irregular-rugose in a small area just behind last interocellar carina, then with rugosities organized in a clearly concentric pattern, with 5-9 complete or incomplete loops. Post vertex simple, convex; finely but conspicuously transverse-rugose to occipital carina, except polished smooth postero-laterally, at limit between temple and gena. Gena polished smooth, with scarce punctures; not prominent. Occipital carina dorsally marginate, becoming progressively wider until clearly projected laterally (as in fig. 113 in Aguiar, 1998), then width decreasing toward apex of carina, which disappears distinctly before reaching hypostomal carina; seen from behind, with distinct curvature at the latero-ventral angle, the sides somewhat convergent ventrally. Postgenal bridge wide in all its extension, finely alutaceous, sinking progressively towards foramen magnum; postgenal line distinct.

Thorax – Pronotum (Figs. 30-33): Apical carina not differentiated (anterior margin of pronotum is sharp) or narrow, slightly wider laterally; weakly but uniformly emarginate; without apparent microsculpturing. Colo flat, wide, with 4 pairs of distinct carinae, the first usually complete, the remaining incomplete (all 4 incomplete in the holotype), the third long and converging to inside pronotal fold. Pronotal fold deep, but with visible end (bottom). Preannular seen dorsally triangular, conspicuously prominent; densely and finely transverse-rugose. Preannular ruga moderately to strongly developed, but blending with overall pronotal sculpturing. Semiannular strongly striate-rugose along dorsal and dorso-lateral margin (as in fig. 16 of Harris, 1979, but densely as in fig. 6 of same author), with several intermixed punctuations; this pattern chang-

ing to striate-alutaceous in all the remaining area. Femoral impression distinct, posteriorly narrow, anteriorly wide, reaching anterior margin of preannular area, its surface polished smooth; ventral area posteriorly with longitudinal rugulosities, which continue anteriorly intermixed with microimbricate or microreticulate-alutaceous, also 2-3 carinae behind margin of pronotal fold, which are weaker than carinae on colo. Prosternum on basal 0.7 convex, changing to nearly flat near apex. Mesonotum richly rugose, polished smooth or with some alutaceous in between macrosculpturing. Parapside with 2-3 foveolae on lateral margin, otherwise densely alutaceous. Axilla finely alutaceous, with 3-4 foveolae mesally. Scutellum weakly alutaceous, without microsulci. Discrimen simple. Crenulate sulcus deep, crenulations well isolated from propodeum, but without a border or carina between them. Interfoveolar area distinctly crenulate or subcrenulate, polished smooth or weakly microreticulate between crenulations; post-foveolar area with several and stout arcuations, area between them polished smooth (Fig. 34). Propodeum (Fig. 32): flank polished smooth, with 3 sparsely distributed foveolae; other foveolae on propodeum arranged in a way to form a central lace or loop, similar to that of *H. cylindricus*, but less well defined, formed usually by 2 rows of foveolae; weakly alutaceous between foveolae, except transversely corrugate; also with sparse punctations. Parapetiolar depression elongate, subcrenulate. Spiracular groove inconspicuous or undefined, its mesal margin not differentiated, lateral margin more evident, but ending before reaching middle of propodeum. Spiracle: anterior and posterior plates smooth or weakly alutaceous. Metapleuron posteriorly finely or inconspicuously reticulate-rugose; remainder with sparse foveolae, densely punctate and very finely rugose among them; not prominent, perfectly contiguous with propodeum, and entirely covered with fine dense white pilosity, also with sparse long hairs in between, except along narrow area posteriorly; posterior margin open. Hind coxa mesally finely and densely transverse-striate. Hind femur unarmed basad of basal tooth. Hind tibia posteriorly simple (as Fig. 147 in Aguiar, 1998). Anterior wing: vein 2r meeting 2+3Rs before apex of pterostigma, its length much shorter than 4Rs (as Fig. 70); 2Cua apically shaped as a sharp hook, curved about 90°.

Abdomen – Tergites: T3 basally rugulose, remainder polished smooth, apically with traces of strigulation; T4 about basal 1/3 very finely transverse-strigulate, about apical 2/3 longitudinally aciculate (Fig. 35); T5 about basal 1/4 very finely transverse-strigulate, apical 3/4 with aciculation in "V" or transverse-arcuate, rarely entirely longitudinal (parallel); T6 changing from basally finely transverse-strigulate to apically weakly transverse-aciculate; T7-8 as T6, but strigulation denser and finer, changing to transverse alutaceous apically; T9 transverse alutaceous. T8 with 2-3 transverse rows of scarce and short hairs. Pygidium wide basally, with long, erect, golden hairs, apically tubular, but tube shorter than basal part, smooth; aligned in relation to T9. Pygidial groove not differentiated, or weakly indicated laterally.

Color – Dark brown; head ferrugineous, but clypeus, mandible base, and antenna basally showing lighter tones. Wings lightly and uniformly infuscate in amber yellow, darker on costal cell; veins dark brown. Melanic specimen entirely black, except mandible basally light brown, and wings lightly but uniformly infuscate.

Biometry – Figs. 1-18 (sp. 22), and Tables 1-2.

Male – Similar to female, except for certain highly variable features, particularly the sculpturing pattern of tergites. Most differences in relation to females are described next. Occipital carina ending closer to hypostomal carina; foveolae on propodeum larger (in relation to propodeum) than in females and more irregularly distributed (although still more numerous centrally); microsculpturing in between foveolae less evident in small specimens, tending to polished smooth; metapleuron on apical half reticulate-rugose in one of the two smallest specimens examined, otherwise as for females. In large specimens T3 basally is more strongly striate, apically with some short striations; T4-5 on entire apical 3/4, or little more, with parallel longitudinal aciculation; T6-7 matt because of dense longitudinal microreticulation, similar to fine fingerprinting pattern; T8-9 weakly alutaceous, almost smooth on T9; pygidium weakly projected, beginning to form a tubular structure, or indistinct.

Color – Lighter intensities tend to be more accentuated in smaller specimens, becoming progressively more reddish brown on pro- and mesothorax, or light brown/yellow, particularly on front and mid legs, and hind tarsi; color for large specimens as for females. Melanic form as for corresponding female, except wings more strongly infuscate.

Biometry – Figs. 19-28 (sp. 22), and Tables 3-4.

Comments – Very similar to *H. ruficeps*, from which it can be isolated by having distinct sculpturing patterns on tergites, especially T4 on apical 2/3 longitudinally aciculate (apical 1/3 coarser in *H. ruficeps*) (Figs. 35 vs. 44); interfoveolar area crenulate or subcrenulate, post-foveolar area with several stout arcuations, and inter and post-foveolar areas polished smooth in between macrosculpturing, or at most with traces of microreticulation (Figs. 34 vs. 43); values for Ov/Ptl and Ov/Tt smaller, fb/aOv larger; and head with dark marks.

Males of *H. ruficeps* have an interfoveolar area always somewhat subcrenulate, or entirely subcrenulate; the smallest specimen observed by Aguiar (1998) also has 5 stout arcuations on post-foveolar area. This complicates the characterization of males of *H. colombiensis*, but does not make a strong argument for the synonymy with *H. ruficeps*, essentially because males of *Hemistephanus* are always much less characteristic, and much more variable morphologically than females (Aguiar, 1998).

In the holotype, the transversely arcuate-aciculate T5 is atypical for the species; the most common pattern, longitudinally aciculate slightly convergent, forming a V-shapped pattern, is the same observed in *H. ruficeps* (as in Fig. 41).

Variation – Two specimens (♀ OSUC22211, and ♂ OSUC22212) from Costa Rica correspond to a melanic form of the species, with body practically entirely black, and infuscate wings (see description); in all other features, they are virtually identical to typical *H. colombiensis*. In addition, the melanic specimens were collected together with typical specimens, sharing therefore same provenance and collecting date.

Distribution – Costa Rica, Colombia.

Types and new records (9 females, 6 males): Holotype ♀ (MNMS), examined: Colombia: "Nouvelle Grenade// Etat Cundinamarca// Cananche// M. de Mathan// 1er Sem. 1900"; "Stephanus// colombiensis// Tipo Ceb [manuscrito]// G. Ceballos det."; "Holotype [red]"; "MNCN// Cat. Tipos No. 8924 [red]". Good condition, except one ovipositor valve lost, hind wings destroyed, gaster glued on propodeum. Other specimens: Costa Rica, Provincia Puntarenas: Estação Sirena, P.N. Corcovado, 0-100 m, G. Fonseca (INBC): ♀ CRI 000 670 447, June 1991, L-S 270500, 508300 (sem abdomen); ♂ CRI 000 790 392, April 1992, L S 270500_508300; ♂ CRI 000 798 919, March 1992, L S 270500_508300; ♀ CRI 001 696 654, Abr 1993, L S 270500_508300 #1992; Z. Fuentes: ♂ CRI 000 772 123, 21 March to 21 April 1992, L-S 270500_508300. Peninsula de Osa, Rancho Quemado, 200 m, April 1992, K. Flores: ♀ CRI 000 698 777, L S 292500_511000; ♂ CRI 000 773 286, L S 292500_511000. Estação Quebrada Bonita: ♀ CRI 000 756 685, 50 m, Res. Biol. Carara, 10 to 28 August 1992, L N 194500_469850. (MUCR): ♀ OSUC22215, Provincia Puntarenas, Golfo Dulce, 3 km SW. Rincón, 10 m, March to April 1992, Hanson, 08°35'00"N 083°16'00"W. Provincia Alajuela, 2 km S Pital, 5-28 September 1988, F.D. Parker, (EMUS): ♀ OSUC22238, (without head) and ♂ OSUC22212 (melanic morph). Provincia Heredia, F. La Selva 3 km S Pto. Viejo, 10°26'N 84°01'W: ♀ OSUC22211 (melanic morph). Panama: Barro Colorado I., Canal Zone: (LACM): ♀ OSUC22217, 14 July 1978, E.M. Fisher, 09°10'45"N 079°56'18"W; (FMNH): ♂ OSUC22237, "CNHM Panama Zool. Exped. (1959)", 2 February 1959, H.S. Dybas, 09°10'45"N 079°56'18"W.

***Hemistephanus costaricensis* sp. n.**

Figs. 1-28 (sp. 8), 36-39

Etymology – Latinization of Costa Rican, in reference to the typical geographical distribution of the species.

Redescription – Female. Head (Fig. 36) polished smooth in between rugosities. Frons ventrally transverse rugose, changing to oblique dorsally. Hind tubercles ill-defined, isolated, their margin mesally irregular, converging toward first carina of vertex. Vertex glabrous; 1-2 interocellar carinae, the first one complete, blade-shaped, the second ill-defined or absent; rugosities strongly undulate, longitudinal, parallel, or weakly convergent; weaker posteriorly, on post-vertex disappearing or becoming rugulosities, which assume various orientations in different specimens. Post-vertex seen laterally simple, convex. Gena smooth, not prominent. Occipital carina dorsally marginate, widening progressively up to 2.5 times wider latero-ventrally, where it is subtriangularly projected; ventrally narrowing quickly, disappearing well before reaching hypostomal carina; seen from behind subcircular, but ventrally V-shaped, strongly convergent, the sides ending very close to one another, near base of hypostomal carina. Post-genal bridge deeply invaginate and mostly enclosed by the post-genae, which are projected in point over it, covering partially a wide and deep cavity (as in fig. 116 in

Aguiar, 1998), more evident immediately behind hypostomal carina; this cavity with dense pilosity of short golden hairs; overall structure similar to that observed in *H. orfilanus*.

Thorax – Pronotum (Fig. 37): apical carina changing from narrow centrally to very wide laterally; distinctly emarginate centrally; dorsal area polished smooth or finely transverse-alutaceous. Colo apically much wider than high, almost flat, polished smooth; then with wide and shallow longitudinal depression; 6-8 oblique carinae (7 in holotype) usually stout, most or all of them incomplete, sometimes extending inside central depression. Pronotal fold distinct, not excavate, or shallow. Preannular area with a few rugosities in front of the conspicuous preannular ruga; space between rugosities polished smooth. Semiannular dorso-laterally or laterally with several foveolae, polished smooth in between; ventro-laterally and posteriorly smooth or, in large specimens, with rugosities straight and transverse, sometimes fused with foveolae; dorso-posterior margin entirely polished smooth. Femoral impression distinct, disappearing anteriorly among preannular sculpturing; anteriorly with transverse rugosities, posteriorly polished smooth; ventral area with 3-7 (usually 5) transverse carinae behind pronotal fold, remainder polished smooth or weakly alutaceous. Prosternum apical half approximately flat, with numerous transverse subparallel rugosities, which are fine or nearly absent in small specimens, and strong and continued posteriorly as subcrenulations along line of junction of hemisternites in large specimens. Mesonotum polished smooth between macroscultpure. Parapside covered by foveolae or microfoveolae. Axilla polished smooth or finely alutaceous between foveolae. Scutellum without microsulci. Discrimen simple. Crenulate sulcus deep, with a border at limit with propodeum; crenulations well isolated from propodeum; central crenulation with parallel sides. Interfoveolar area subcrenulate, typically with 2-3 weak rugosities, or rugosities rarely absent; tegument smooth or sometimes partially finely alutaceous; post-foveolar area with about 2 arcuations, polished smooth or finely alutaceous between them (Fig. 39). Propodeum (Fig. 38), including flanks, covered by large, numerous punctures, separated from each other about 1/3 or less of their diameter; conspicuously transverse-alutaceous between them; sometimes a series of microdepressions aligned centro-longitudinally (present on holotype). Parapetiolar depression wide and elongate, with 1-2 fine transverse rugae, sometimes partially fused to foveolae anteriorly; its surface polished smooth. Spiracular groove reaching crenulate sulcus, but not fused to it; from nearly smooth to subcrenulate, anteriorly rugulose, ending in a transverse carina which isolates it from crenulate sulcus; lateral margin simple; surface polished or weakly alutaceous. Spiracle plates alutaceous. Metapleuron with long sparse pilosity; centrally also with dense white pilosity, and reticulate-rugose, changing to foveolate on its extreme anterior; slightly projected laterally; posterior margin open. Hind coxa mesally transverse-rugulose. Hind femur unarmed basad of basal tooth. Hind tibia posteriorly centrally slightly compressed; the resulting carina slightly deviating from longitudinal axis (as in fig. 145 in Aguiar, 1998). Anterior wing: vein 2r meeting 2+3Rs basad of apex of pterostigma, and much shorter than 4Rs; vein 2Cua apically curved and clavate.

Abdomen – T3 about basal 1/5 rugulose, remainder longitudinally aciculate. T4 with three microsculpturing patterns: basal 1/4 finely and densely alutaceous; centrally, at least in part, finely longitudinally aciculate, divergent towards apex; and apical 1/4 alutaceous. T5-6 gradually changing from basally finely and densely alutaceous to regularly and weakly alutaceous on apical 1/4. T7-9 alutaceous, coarser on T9. Pygidium an arched plate with apical margin not emarginate (as fig. 146 in Aguiar, 1998); angled with T9; conspicuously + pilose and covered with sculpturing derived from cuticular elevation on base of each hair. Pygidial groove deep, Y-shaped.

Color – Black; head red, darkened above, on vertex and dorsal part of coronal area. Hind basitarsus dark with reddish tone; sometimes reddish also on ventral angle of pronotum. Wings clear hyaline, except sometimes costal cell basally weakly infuscate; veins dark brown.

Biometry – Figs. 1-18 (sp. 8), and Tables 1-2.

Variation – The single specimen from Venezuela, a female, differs from specimens from Costa Rica by having the following features: carinae on colo weak and delicate; semiannular dorso-laterally with 4-5 more or less aligned foveolae, ventro-laterally microreticulate-alutaceous; femoral impression distinct, more clearly defined, subcrenulate; ventral area entirely microreticulate-alutaceous; crenulate sulcus imperfectly isolated from propodeum; centro-longidudinal microfoveolae absent; longitudinal strigulation on T4 parallel, and taking about 70% of dorsal part; base of "Y" of pygidial groove inconspicuous. Head uniformly dark orange.

Comments (female) – Very similar and certainly related to *H. orfilanus*, from which it can be distinguished by having the head darkened dorsally, polished smooth in between rugosities; apical carina of pronotum more deeply emarginate and wider laterally than in *H. orfilanus*, and dorsally polished smooth or weakly alutaceous; colo with 6-8 stout carinae (against 4-7 weak or delicate carinae on *H. orfilanus*); semiannular polished smooth centro-laterally; and inter- and post-foveolar areas polished smooth or alutaceous in between macrosculpturing, without the characteristic microreticulation of *H. orfilanus*. Also similar to *H. elimatus*, from which the present species can be promptly isolated by its highly modified hypostomal region.

Male – Generally similar to the female, except by the following: pronotum with 5 carinae on colo, and 0-2 foveolae on semiannular, but with strong depressions and transverse rugosities dorso-laterally; alutaceous in between macrosculpturing; ventral area microreticulate. Propodeum with foveolae relatively larger and closer than observed in the females, the narrow space between them alutaceous. Spiracular groove weakly microreticulate. About 70% of T4 covered by longitudinal strigulation. Color differs from females especially by presence of lighter tones: head orange, front and mid legs brownish, all hind tarsi light brown; wing veins light brown; remainder of body black with reddish tone, distinctly lighter than on females.

Biometry – Figs. 19-28 (sp. 8), and Tables 3-4.

Distribution – Costa Rica (typical forms) and Venezuela (one record).

Material examined – 11 females, 2 males. Holotype (INBC): "*Hemistephanus* ♀ / / *costaricensis* / / Holotype / / APAguiar det / 2002 [red]", "Sector Cerro Cocori, Fca. / / de E. Rojas, 150 m. Prov. / / Limon, Costa Rica. 10 to 30 / / Set 1992. E. Rojas / / L-N 286000, 567500"; "Costa Rica / / INBC / / CRI 000 976 348 [plastic bar code]". Paratypes: Same data as holotype, except where otherwise indicate (INBC): ♀ CRI 000 976 346; ♀ CRI 000 976 349; 12-31 August 1992: ♀ CRI 000 759 603; ♀ CRI 000 759 604; ♀ CRI 000 759 605; ♀ CRI 000 759 607; ♀ CRI 000 759 649; October 1992: ♂ CRI 000 934 744; ♂ CRI 000 934 745; ♀ CRI 000 934 746. Venezuela (IZAV): ♀ OSUC22213, T.F. Amazonas, San Carlos de Rio Negro, 7-13 November 1982, A. Chacon, G. Yepes Gil, 01°55'00"N 67°04'00"W. Brazil (MZUP): ♀ OSUC141241, Utiariti, Mato Grosso, Viana (no date) (13°02'00"S 058°17'00"W).

Hemistephanus cylindricus (Westwood, 1851)

Figs. 1-28 (sp. 24)

Megischus cylindricus Westwood, 1851:230.
Stephanus cylindricus (part): Schletterer, 1889:90, 144; Dalla Torre, 1901:6.
Stephanus vadosus Schletterer, 1889:90, 146.
Parastephanus vadosus: Enderlein, 1905:475.
Parastephanus cylindricus (part): Enderlein, 1905:475.
Hemistephanus cylindricus: Enderlein, 1906:302, 306; Kieffer, 1908:5; Elliott, 1922:776; Elliott, 1931:98; DeSantis, 1980:9; Aguiar, 1998:424.
Hemistephanus vadosus: Enderlein, 1906:302; Kieffer, 1908:5; Elliott, 1922:775; DeSantis, 1980:10.
Stephanus (Hemistephanus) cylindricus: Roman, 1917:6, 10, 14, 15.
Stephanus (Hemistephanus) vadosus: Roman, 1917:6, 11, 15.
Hemistephanus bolivianus Fritz and Scaramozzino, 1993:342.

Variation and biometry – No qualitative variation observed. The specimens examined for this work were not measured; biometric values presented in Aguiar (1998) are condensed here in Figs. 1-18 (sp. 24) and Tables 1-2 for females, and Figs. 19-28 (sp. 13) and Tables 3-4 for males.

Distribution – Bolivia, Brazil (AM, BA, ES, MT, PA, RO, SP), Colombia, Costa Rica, Ecuador, Guyana, Panama, Peru, Suriname, Venezuela. The specimens from Costa Rica represent the first record of this species in Central America.

New records (5 females, 8 males): Brazil (DCBU): ♂♂ OSUC141252, OSUC141253, OSUC141254, OSUC14125, OSUC141256: Reserva Ducke, Manaus, AM, 29 April 1995, A.M. Penteado-Dias, 02°53'S 59°58'W; ♀ OSUC0141258, Amazonas, Coari, Rio Urucu, IUC-18 (4°53'53"S 65°11'58"W), 19 February to 01 March 1993, P.F. Bührnheim, N.O. Aguiar *et al.* col., "à luz mista de mercúrio". Colombia (IAVH): ♂ OSUC141242, PNN Amacayacu Caña Brava, 3°02.33'S 69°59.7'W, 200 m, Red 29 August 2001, M. Sharkey and D. Campos; ♂ OSUC141243, PNN Amacayacu Vía a Palmeras, Vorde, Jameo, 01 September 1997, D. Campos and F. Fernández; ♂ OSUC141245 and ♀ OSUC141244, Magdalena, PNN, Tayrona,

Administración, 5 m, July 2001, C. Sarmiento; ♀ OSUC141246, Leticia, Mocagua, 150 m, 24 April to 5 May 2000, Malaise, A. Parente, "Muestra No. 89". COSTA RICA (INBC): ♀ CRI 001 880 106, Sector Cocori, 30 km N. of Cariari, Finca E. Rojas, A.C. Tortuguero, Provincia Limón, 100 m, May 1994, E. Rojas, L N 286000_567500 #2917 (gaster lost); ♀ CRI 000 468 100, Sector Cerro Cocori, Fca. de E. Rojas, 150 m, Provincia Limon, E. Rojas, May 1992, L N 286000, 5675000.

***Hemistephanus erugatus* Aguiar, 1998**

Figs. 1-28 (sp. 5)

Hemistephanus erugatus Aguiar, 1998:383. Holotype ♀ (INPA) examined.

Variation and biometry – No significant morphological variation observed between the studied specimens and the holotype. Updated biometric values for females are illustrated in Figs. 1-18 (sp. 5) and listed in Tables 1-2; updated values for males are illustrated in Figs. 19-28 (sp. 5) and listed in Tables 3-4.

Distribution – Brazil (AM, ES), Colombia, Costa Rica, Peru. The specimen from Costa Rica represents the first record of this species in Central America.

New records (2 females): Brazil (DCBU): OSUC0141257, Amazonas, Coari, Rio Urucu, prox. IMT-1, 4°49'33"S 65°01'49"W, 17-29 September 1995, P.F. Bührnheim and N.O. Aguiar, "à luz mista de mercúrio". Costa Rica (INBC): CRI 002 164 476, Estação Sirena, Provincia Puntarenas, 1-100 m, DIC 1994, G. Fonseca, L S 270500 508300 #4367.

***Hemistephanus erythrocephalus* (Cameron, 1887)**

Figs. 1-28 (sp. 9)

Megischus erythrocephalus Cameron, 1887:421; Gauld, 1995:184.

Stephanus erythrocephalus: Schletterer, 1889:140; Dalla Torre, 1901:7; Enderlein, 1905:475; Kieffer, 1908:4.

Hemistephanus erythrocephalus: Elliott, 1922:762; Aguiar, 1998:390.

Variation – Aguiar (1998) refers to the occipital carina of this species as "laterally wide, similar to *H. cylindricus*, but width uniform". The range of variation of this feature in *H. erythrocephalus*, however, as observed for the present work, overlaps entirely with that of *H. cylindricus*.

Biometry – Updated values are illustrated in Figs. 1-18 (sp. 9) and listed in Tables 1-2, for females, and Figs. 19-28 (sp. 9) and Tables 3-4, for males. The limits of Ov/Ptl were originally used to aid in the separation of *H. erythrocephalus* from *H. carinatus*, but data from additional specimens resulted in overlapping ranges, indicating that this ratio is not useful as a diagnostic feature for these species.

Distribution – Colombia, Costa Rica, Panama.

New records (20 females, 3 males): Colombia (IAVH): ♀ OSUC0141251, Nariño, Jardines de Sucumbios, Territorio Kofán, Cuenca Alta río Rumiyaco-Ranchería, 700 m, September 1998, W.F. Escobar, 0°30'07"N 77°13'43". Costa Rica: (INBC): Provincia Puntarenas: ♀ CRI 001 088 925, Estac. Quebrada Bonita, 50 m, R.B. Carara, R. Zuniga, April 1989, L S 194500_469850; ♀ CRI 001 718 657, P.N. Manuel Antonio, Quepos, 80 m, April 1992, C. Cano, L S 370900_448800 #1181; ♀ CRI 001 799 826, Est. Sirena, P.N. Corcovado, 1-100 m, May 1994, G. Fonseca, L S 270500_508300 #2899; ♀ CRI 001 918 710 and ♀ CRI 001 918 711, San Luis, Monteverde, A.C. Arenai, 900 m, June 1993, Z. Fuentes, L N 250850_449250 #2198. *Puntarenas, Península de Osa:* ♀ CRI 001 913 109, A.C. Osa, 200 m, 6-12 February 1994, A.L. Marín, L S 292500_511000 #2612; ♂ CRI 001 666 503, Est. Esquinas, Out 1993, M. Segura, L S 3014000_542200 #2450. *Puntarenas, Península de Osa, Rancho Quemado:* ♀ CRI 000 429 123, A.C. Osa, April 1991, J.C. Saborio, L S 292500_511000; ♀ CRI 000 736 187, 200 m, July 1992, F. Quesada, L-S 292500, 511000; ♀ CRI 000 920 657, A.C. Osa, 200 m, December 1992, F. Quesada, L S 292500_511000; ♀ CRI 001 125 227, A.C. Osa, 200 m, 19-27 August 1993, A. Gutiérrez, L S 292500_511000 #2302; ♀ CRI 001 840 374, A.C. Osa, 200 m, 11-28 October 1993, A.H. Guitérrez, L S 292500_511000 #2409; ♀ CRI 001 913 110, A.C. Osa, 200 m, 6-12 February 1994, A.L. Marín, L S 292500_511000. Provincia Here: ♀ CRI 000 640 087, Est. Magsasay, P.N. Braulio Carrillo, 200 m, M. Zumbado, November 1990, L-N 264600, 531100. Provincia Guanacaste: Est. Maritza, 600 m, lado O Vol. Orosi: ♀ CRI 000 888 152, P. Campos, February 1992 and ♀ CRI 001 175 999, 1992, Malaise Trap; both L-N 326900, 373000. (EMUS): Guanacaste, 3 km SE R. Naranjo, F.D. Parker: ♀ OSUC22233, May 1992;

♂ OSUC22234, 24-31 December 1992. (UGCA): ♂ OSUC22301, Parque Nacional Corcovado, Peninsula de Osa, Llorona, 4-13 January 1980, R.W. & J.R. Matthews. Panama, Barro Colorado I., Canal Zone: (AMNH): ♀ OSUC22223 16 February 1929, C.H. Curran, 09°10'45"N 79°56'18"W. (UCDC): ♀ OSUC22235, 2 August 1977, R.B. & L.S. Kimsey, 09°10'45"N 79°56'18"W; ♀ OSUC22236, 12 April 1975, M.L. Siri, 09°10'45"N 79°56'18"W.

Hemistephanus limpidipennis (Schletterer, 1889)

Figs. 1-28 (sp. 14)

Stephanus limpidipennis Schletterer, 1889:89, 147; Dalla Torre, 1901:9.
Stephanus wustneii Schletterer, 1889:89, 149; Dalla Torre, 1901:9; Szépligeti, 1902:534.
Parastephanus wustneii: Enderlein, 1905:475.
Parastephanus limpidipennis: Enderlein, 1905:475.
Hemistephanus limpidipennis: Enderlein, 1906:302; Kieffer, 1908:5; Elliott, 1922:762, 769; DeSantis, 1980:9; Aguiar, 1998:400.
Hemistephanus wustneii: Enderlein, 1906:302; Kieffer, 1908:5; Elliott, 1922: 762; DeSantis, 1980:10.
Stephanus (Hemistephanus) wustneii: Roman, 1917:13.
Stephanus (Hemistephanus) limpidipennis: Roman, 1917:13.

Variation – No significant qualitative variation observed in relation to data presented by Aguiar (1998). Biometric values for females are illustrated in Figs. 1-18 (sp. 14) and listed in Tables 1-2; updated values for males are presented in Figs. 19-28 (sp. 14) and Tables 3-4.

Distribution – Colombia, Bolivia, Brazil (AM, BA, RO, RR), Guyana, Peru. The specimens examined for this work represent the first record of *H. limpidipennis* for Colombia.

New records (3 males): Colombia, Mocagua, (IAVH): PNN, Amacayacu, Malaise, 150 m, A. Parente: OSUC141248, 3-9 April 2000, "Muestra No. 93"; OSUC141250, 27 March to 03 April 2000. Leticia, 150 m: OSUC141249, 24 April to 5 May 2000, Malaise, A. Parente; "Muestra No. 89".

Hemistephanus macrurus (Schletterer, 1889)

Figs. 1-18 (sp. 4)

Stephanus macrurus Schletterer, 1889:128; Dalla Torre, 1901:8.
Parastephanus macrurus: Enderlein, 1905:475.
Hemistephanus macrurus: Enderlein, 1906:302; Kieffer, 1908:5; Viereck, 1914:68; Elliott, 1922:770; Brèthes, 1927:297; DeSantis, 1980:9; Aguiar, 1998:382.
Stephanus (Hemistephanus) macrurus: Roman, 1917:14.

The supposed male of this species was described by Brèthes (1927), but the original specimens, examined for this work, correspond to a different species (see discussion for *M. furcatus*, below). The male of *H. macrurus* remains unknown.

Hemistephanus orfilanus Fritz and Scaramozzino, 1993

Figs. 1-28 (sp. 7)

Hemistephanus orfilanus Fritz and Scaramozzino, 1993:346; Aguiar, 1998:388.
Hemistephanus cariocanus Fritz and Scaramozzino, 1993:344.

Variation – The only new specimen examined for this work, a female, shows atypically weak carinae on colo; preannular ruga weakly defined; inter- and post-foveolar areas with microreticulation present but weaker than in typical specimens; and spiracular groove with lateral margin widening anteriorly, but resulting area with foveae or irregular sculpturing, thus less distinct than in typical specimens.

Biometry – Updated values for females are illustrated in Figs. 1-18 (sp. 17) and listed in Tables 1-2; values for males are illustrated in Figs. 19-23 (sp. 7) and listed in Tables 3-4.

This species is very similar to *H. costaricensis* sp. n., described in the present work; see respective description for diagnostic features.

Errata in Aguiar (1998): (1) The key to species, for female specimens, at couplet 13, mentions vertex with sculpturing transverse or in concentric pattern, but the usual pattern for *H. orfilanus* is longitudinal; the corresponding fig. 77 of that publication illustrates an exception. (2) The correct limits for ratio io/ol in the keys are 2.36-2.67, not "2.36-2.55".

Distribution – Brazil (MT, RJ), Guyana, Peru.

New record (1 female): Guyana (MNMS): OSUC22210, "Guayana, 3rd Saureno du Maroni, E. Se Moult" [probably Maroni creek, 06°25'00"N 58°01'00"W].

***Hemistephanus ruficeps* (Cameron, 1887)**

Figs. 1-28 (sp. 21), 41-44

Megischus ruficeps Cameron, 1887:420.
Stephanus capitatus Schletterer, 1889:151.
Hemistephanus Pehlkei Enderlein, 1906:304.
Hemistephanus ruficeps: Aguiar, 1998:417.

Figures 42-43 illustrate the characteristic microsculpturing of semiannular and post-foveolar area, and Figs. 41 and 44 illustrate the typical sculpturing in the tergites; both these features were not illustrated in Aguiar (1998).

Variation – No qualitative variation observed in relation to data in Aguiar (1998).

Biometry – Updated values for females are illustrated in Figs. 1-18 (sp. 21) and listed in Tables 1-2; values for males are in Figs. 19-23 (sp. 21) and Tables 3-4.

Distribution – Brazil (AM, PA), Ecuador, Colombia, Costa Rica, Guyana, Panama, Peru, Venezuela.

New records (3 females): Ecuador (TAMU): OSUC22995, Napo, Estación Científica Yasuní, 0°40,47'S 76°38,84'W, 16 August 1997, 215 m, A.R. Gillogly. Venezuela (IZAV): OSUC22214 and OSUC22216, Bolivar, Rio Surucun, Sta Elena, Icabaru, 850 m, 04°20'00"N 61°45'00"W, 19-31 January 1985, F. Fernandez y Anibal Chacon & Jurg Demarmels.

***Hemistephanus stenogulatus* sp. n.**

Figs. 1-18 (sp. 2), 45-50

Etymology – Greek *stenos*, narrow + Latin *gula*, throat; in reference to structure of hypostomal area.

Description – Female (holotype). Head (Figs. 45, 46, 48, 50) polished smooth between rugosities. Frons arcuate-areolate, ventrally more transverse, latero-dorsally more vertically. Hind tubercles isolated, almost meeting mesally, but not contiguous, ending on first interocellar carina. Vertex glabrous; two distinct interocellar carinae, the first complete, blade-shaped, continued laterally as a weak rugosity; the second carina small, but with same structure; rugosities delicate, irregular, restricted to central part of vertex; laterally transverse; posteriorly smooth, including post-vertex, which is nearly flat. Gena smooth, not prominent; ventral half widely covered by dense white pilosity. Occipital carina more or less uniformly wide, translucent, centro-dorsally upturned, generating a distinct invagination (Figs. 46-47); apically narrowing until disappearing abruptly far from hypostomal carina; seen from behind subcircular, converging strongly ventrally, the sides ending very close to each other, forming a "V". Post-genal bridge deeply invaginate and mostly enclosed by the post-genae, which are projected in point over it, covering partially a wide and deep cavity (as in fig. 116 in Aguiar, 1998), more evident immediatly behind hypostomal carina; this cavity with dense pilosity of short golden hairs.

Thorax – Pronotum (Figs. 47, 50) apical margin deeply emarginate, U-shaped, weakly upturned, not forming a border with dorsal area. Colo polished smooth, dorsally nearly flat, laterally with vestiges of transverse carinae (visible only with tangential light). Pronotal fold distinct, but as a transverse laminar carina, not excavate; placed anteriorly, making preannular area slightly longer than colo. Preannular area mostly polished smooth, but with 4 transverse laminar rugae, the first and fourth dorsally incomplete; also with a few and obsolescent rugulosities and foveolae. Preannular ruga indistinct. Semiannular almost entirely polished smooth, dorso-laterally with a few and weak foveolae. Femoral impression distinct, polished smooth; ventral area anteriorly with rugosities from preannular, posteriorly with subtle oblique striation; polished smooth between sculpturing. Mesonotum polished smooth between macrosculpturing. Parapside laterally covered by a large fovea; otherwise polished smooth. Axilla and scutellum polished smooth, with a few marginal punctures; scutellum without microsulci. Discrimen simple. Crenulate sulcus deep, and propodeum anteriorly bordered, completely isolating the crenulations (Fig. 49). Interfoveolar area polished smooth post-foveolar area with 3 arcuations. Propodeum (Figs. 49-50): flank indistinct, covered by punctures from propodeum and by spiracular groove; overall area of propodeum generally densely foveolate, centro-longitudinally with stripe of microfoveolae in between foveolae; polished smooth inside and between foveolae; anteriorly a distinct polished smooth area lateral to spiracular groove. Parapetiolar impression elongate, subcrenulate. Spiracular groove long, ending near crenulate sulcus, but with small space between them; lateral margin simple, not forming a carina; surface weakly but densely subcrenulate, generating a corrugate look. Spiracle plates polished smooth. Metapleuron entirely areolate-rugose, formed by large areoles, with long hair centrally in each one; otherwise glabrous, polished smooth

inside and between areoles; slightly projected laterally; posterior margin open. Hind coxa mesally on basal half finely rugulose, changing to weakly striate on remaining area. Hind femur unarmed basad of basal tooth. Hind tibia posteriorly centrally weakly compressed (as in fig. 138 in Aguiar, 1998). Anterior wing vein 2r meeting 2+3Rs beyond apex of pterostigma, with 1/3 of length of 4Rs; 2Cua hook-shaped, internal angle with 1Cu acute (54°).

Abdomen – T3 basally transversely rugulose, apical margin polished smooth, remainder longitudinally finely aciculate, on apical half more widely, strongly and refringent; T4 about basal 0.2 and apical 0.1 polished smooth; central 0.7, including nearly entire width, longitudinally aciculate, densely, regular, and highly refringent, yielding a velvet look; T5 similar, but aciculate area smaller and placed more basally than in T4; T6-9 transversely alutaceous, from weakly shining on T6 to dense and matt on T9. T8 with 3 transverse rows of sparse hairs apically. Pygidium a semicircular plate not emarginate (as in fig. 190 in Aguiar, 1998), angled in relation to T9; pilose; pygidial groove distinct, deep, U-shaped.

Color – Head orange; remainder of body dark brown, with red tones on propodeum, and lighter tones of brown on front and mid legs; hind tarsi lighter than corresponding tibia. Wings hyaline, veins light brown. Paratype color entirely different (see "Variation").

Biometry – Figs. 1-18 (sp. 2), and Tables 1-2.

Male – Unknown.

Variation – The paratype, a female from Trinidad, differs from the holotype in the following: frons arcuate-rugose, from transversely ventrally to vertically dorsolaterally; mesal margin of posterior tubercles almost meeting, but ending near first interocellar carina; a third interocellar carina, very small, also present; rugosity on vertex transverse only posteriorly; carinae on preannular weaker, only the third one complete; preannular ruga weak but distinct; scutellum with small group of foveolae on each lateral angle; metapleuron moderately projected; hind coxa mesally delicately striate, tending to smooth centrally, basally sculpturing is stronger and more irregular; hind femur with minuscule tubercle basad of basal tooth; vein 2r as long as 2/5 of 4Rs; internal angle of 2Cua with 1Cu measures 47°; T5 refringent aciculation on a smaller area, and placed more centrally. Color: head ant T4-5 dark brown; remainder of body light brown, front legs lighter than body, hind tarsi yellowish. Gaster from T6, including ovipositor, lost.

Comments – Morphologically, this species is an intermediate form between *H. adustus*, with which it shares 2r meeting 2+3Rs before apex of pterostigma, and size and general structure typical of *Hemistephanus*, and the group *velutinus/macrurus*, with which it shares the shape of vein 2Cua, number and position of M+Cu setae, and structure of pronotum, among other characters; but differs immediately from these species by the highly modified hypostomal region, the deep anterior emargination on colo (Fig. 48), and occipital carina with dorsal emargination (Fig. 46). Generally more similar to *H. velutinus* than to any other species, but isolated, in addition to the features mentioned above, by having gena ventral half with dense long white pilosity (Fig. 50) (glabrous in *H. velutinus*), velvet microaciculation also on T5 (absent of T5 in *H. velutinus*), and pronotum longer and with general structure more delicate (Figs. 48, 50).

Distribution – Peru and Trinidad.

Material examined (2 females): Holotype (LACM): "*Hemistephanus* ♀ // *stenogulatus* // HOLOTYPE // APAguiar det/2002", "Pucalpa, 200 m. // Loreto, PERU // 11-20 Nov., 1964 // coll. J. Schunke"; "OSUC22208 [plastic, barcode]". Triangle mount, glued from left side; antennae apices lost; otherwise complete, in good condition. Paratype (FSCA): "*Hemistephanus* ♀ // *stenogulatus* // PARATYPE // APAguiar det/2002 [yellow]", "TRINIDAD: Arima Ward // Aripo Valley // 10-VI-1977"; "R.E. Woodruff // coll."; "OSUC22209 [plastic, barcode]". Triangle mount; gaster segments from T6 lost; otherwise complete, in good condition.

***Hemistephanus submaculatus* (Westwood, 1851)**

Figs. 1-28 (sp. 19), 57

Megischus submaculatus Westwood, 1851:230.
Stephanus submaculatus: Schletterer, 1889:126; Dalla Torre, 1901:9; Kieffer, 1908:4.
Stephanus (Hemistephanus) glabricoxis Roman, 1917:5, 9, 12.
Hemistephanus submaculatus: Elliott, 1922:773; DeSantis, 1980:10; Aguiar, 1998:412.
Hemistephanus glabricoxis: Elliott, 1922:764; DeSantis, 1980:9.

Hemistephanus amazonicus Fritz and Scaramozzino, 1993:341.

Description – Male. Similar to female, except for the following. Head (Fig. 57): posterior tubercles separated, mesal margins ending at first interocellar carina, not convergent; two interocellar carinae, the second one irregular. Vertex with a few short hairs; entirely subareolate, rugosities strong; post-vertex anteriorly with same pattern, changing abruptly to transverse-rugulose centrally and posteriorly, this pattern reaching occipital carina; temples polished smooth; occipital carina narrower than in female (similar to fig. 88 in Aguiar, 1998, in contrast with fig. 89 in the same work), and moderately upturned.

Thorax – Pronotum: preannular transversely rugose; preannular ruga blending with overall sculpturing, but distinct laterally as the only structure crossing transversely the femoral impression; semiannular dorso-laterally with short but conspicuous transverse striation or rugosities; parapside posteriorly alutaceous; crenulate sulcus deep, well isolated from propodeum; interfoveolar area apparently polished smooth, but with traces of crenulations; post-foveolar area with microreticulations only at apex of basal lobe; propodeum with shallow foveae, spaced about half diameter from each other, intermixed with microfoveolae and corrugation distributed as follows: lateral 1/3 with conspicuous transverse corrugation, central 1/3 with numerous microfoveolae, parapetiolar impression oval-elongated. Spiracular groove crossing entire length of propodeum, but apical half (toward crenulate sulcus) invaded by overall propodeal sculpturing, and curved outwards, meeting and fusing with pleuropropodeal fovea; mesal margin blending with overall sculpturing; lateral margin distinct, cariniform, but basal half (toward spiracle) irregular. Metapleuron on ventral part of central 1/3 with short pilosity in addition to the long sparse hairs. Hind tibia posteriorly simple, not compressed, not forming a carina.

Abdomen – T4 on basal 1/5 and apical 1/5 transverse-alutaceous, centrally weakly aciculate (not refringent); T5-9 alutaceous.

Color – Specimen entirely black; wings hyaline, veins dark brown.

Biometry – Figs. 19-28 (sp. 19), and Tables 3-4. Values for females condensed in Figs. 1-8 (sp. 19) and Tables 1-2.

Comments – The examined specimen is the first male known for the species. The distinct transverse crenulation on propodeum place this species definitely within the group *marginalis/submaculatus*, isolating it from all other *Hemistephanus*. At the same time, the examined specimen has several of the diagnostic features for the female of *H. submaculatus*, as follows: semiannular laterally polished smooth; corrugation on propodeum restricted to lateral part, absent centrally; and values for ratios io/ol, oc/DO, Pnl/cw, and Pn/Cb within the known ranges for females, being at the same time very distinct from the same values for the only known female of *H. marginalis*. These ratios are used in the key to species in Aguiar (1998) to help isolate these two species; the ratio Ptl/T3l is also used in the key, but it is not minimally equivalent between males and females.

The head black, concolorous with the remaining body, and the presence of striation dorsally on semiannular, are similar to *H. marginalis*; however, the deep black of this male suggests it might be a melanic form of *H. submaculatus*. Melanic forms are known and were described for other species of *Hemistephanus* (e.g., *H. cylindricus* in Aguiar, 1998; and *H. colombiensis*, in the present work). The striation on semiannular, in its turn, is restricted to the dorsal part in the observed male, while covering the entire semiannular in *H. marginalis*.

Frons sculpturing is intermediate between these two species, tending to ventrally transverse and laterodorsally oblique, but rugose, forming some elongate areolations; however, it is not "distinctly reticulate in all its extension", as mentioned by Aguiar (1998) for *H. marginalis*. The hind tibia contrasts with the strong compression, leaving a distinct carina, in females of *marginalis* and *submaculatus*, but the absence of compression in males is common in several other *Hemistephanus* (e.g., *H. erythrocephalus*, *H. tener*).

Distribution – Brazil (AM, AP, MG, PA).

New record (1 male): Brazil (BHMH): "Brazil: Minas Gerais// Ilha de Três Marias// 2-V-1998 D. Yanega"; "*Hemistephanus* ♂ // *submaculatus* (W.)// APAguiar det./99"; "OSUC21360". Triangle mount, complete, in good condition.

***Hemistephanus velutinus* Aguiar, 1998**

Figs. 1-28 (sp. 3)

Hemistephanus velutinus Aguiar, 1998:378.

Variation – No significant qualitative variation observed in relation to data presented in Aguiar (1998).

Biometry – Updated values for females are illustrated in Figs. 1-28 (sp. 3) and listed in Tables 1-2; values for males are illustrated in Figs. 19-23 (sp. 3) and listed in Tables 3-4.

Distribution – Brazil (ES, RJ).

New records (5 females): Brazil, Rio de Janeiro: (QBUM): OSUC22218, Jacarepaguá, 25 February 1983, Luiz Otero, 22°56'34"S 43°21'29"W; OSUC22220, Campos Seabra Collection, Floresta da Tijuca, Guanabara, February 1976, C.A. Campos Seabra, 22°56'57"S 43°17'58"W; OSUC22222, Barra de Itabapoana, October/November 1935, M. Rosa, 21°18'00"S 40°58'00"W; OSUC22219, Barreira, 400 m, Teresópolis, 1-4 February 1957, Pearson G. & H. [head lost]; OSUC22221, Floresta da Tijuca, Guanabara, February 1976, C.A. Campos Seabra, 22°56'57"S 43°17'58"W.

Hemistephanus villosus (Kieffer, 1904) comb. n.

Figs. 1-28 (sp. 16), 51-54

Stephanus villosus Kieffer, 1904:4, 1908:4; Elliott, 1922:743; Orfila, 1951:274, 1959:39.
Stephanus (Megischus) villosus: DeSantis, 1980:8.
Hemistephanus artiosulcatus Aguiar, 1998:405. syn. n.

The reexamination of the holotype and paratype of *H. artiosulcatus* for this work, revealed the following *errata* in Aguiar (1998): (1) legends for figs. 85-86 are inverted; fig. 85 illustrates the paratype, and fig. 86 the holotype; (2) the key to species for female specimens mentions, in couplet 11, vertex with long and strong hairs for *H. artiosulcatus* versus delicate and short hairs for *H. collarifer*, but this information is inverted and incomplete: in *H. artiosulcatus* the hairs on vertex are scarce, short, delicate, curved and without a defined orientation; in *H. collarifer* the hairs are frequent, but well spaced, and long, strong, straight, and decumbent anteriorly.

This species is equivalent to *H. artiosulcatus* Aguiar (see under "synonymy", below). Differences and additions in relation to the original description of *H. artiosulcatus* are described below.

Female – Head (Fig. 51). Frons rugose, from transversely ventrally to oblique laterally, with little or no reticulation. Post-vertex seen laterally, flat.

Thorax – Pronotum (Fig. 53). In the holotype of *Stephanus villosus*, colo with 3 weak carinae on each side near pronotal fold (usually only 2 are present). Discrimen simple, as on most specimens; rarely subcrenulate. Post-foveolar area with about 3 strong and regular arcuations, polished smooth between them, but strongly alutaceous on apexa of ventral lobe. Propodeum (Fig. 52): spiracular groove surface polished smooth. Anterior plate of spiracle conspicuously hexagon-microreticulate; posterior plate polished smooth. Metapleuron slightly but distinctly projected laterally.

Abdomen – T3 basally rugose, then finely longitudinally hexagon-microreticulate, similar to strigulate, or striate (Fig. 54).

Color – Holotype: Head reddish, darkened dorsally; thorax, including propodeum, front and mid legs, dark brown with reddish tones, the pronotum lighter than remainder of thorax; hind legs and petiole dark brown, except light brown tarsomeres; gaster brown, lighter than petiole, but much darker than hind tarsi. Wings weakly infuscate; veins light brown.

Biometry – Figs. 1-18 (sp. 16), and Tables 1-2.

Male – Very similar to female, except for the following: colo with only one carina on each side, on base of pronotal fold; semiannular without strigulation and weakly alutaceous; interfoveolar area subcrenulate; microreticulation on basal lobe of post-foveolar area absent; metapleuron entirely areolate-rugose; axilla weakly alutaceous; scutellum polished smooth; space between foveolae of propodeum polished smooth or weakly alutaceous; hind tibia posteriorly with weak compression, weakly deviating from longitudinal axis; T3 with strong and conspicuous hexagon-microreticulate, practically longitudinally aciculate in one specimen (OSUC22288).

Biometry – Figs. 19-28 (sp. 16), and Tables 3-4.

Variation – In the largest specimens examined (OSUC22283 and 22284), collected in localities distinct from that of other specimens, the following uncommon variations for the species were observed: frons areolate-rugose; hind tubercles widely isolated; vertex centro-anteriorly with scarce but distinct hairs; surface of post-genal bridge polished smooth; apical margin of colo simple, not upturned; femoral impression entirely polished smooth, with weak

TABLE 1. Range of morphometric ratios for species of *Hemistephanus*. Females. Ratios listed in descending order of taxonomic value (except Ov/Abd, of low value, but grouped with Ov/Tt for comparative purposes). Legends: *a*, additional specimens in relation to Aguiar (1998); *Abd*, gaster length, from base of petiole to apex of pygigium; *Ac*, length of vein 1A of front wing; *btl*/w, hind basitarsomere maximum length over maximum width; *Cc*, internal length of cell 2Cu, from apex of 1cu-a to apex of 2Cua; *cw*, minimum dorsal width of colo; *fl1*, maximum length of first flagellomere; *fl2*, maximum length of second flagellomere; *n*, number of specimens measured; *io*, inter-ocellar distance between posterior ocelli; *oo*, ocellum-ocular distance with head in dorsolateral view; *ol*, maximum diameter of left posterior ocellum; *Ov*, ovipositor length, from origin to apex; *Pnl*, pronotum length, measured dorsally from centre of posterior margin of semiannular to apex of colo; *Ptl*, petiole maximum length; *Tt*, total length, from base of anterior coronal tubercle to apex of pygidium. Numbers between parentheses indicate number of measured specimens when different from *n*. New values in relation to Aguiar (1998) appear underlined (only digits which changed are indicated) or, when only a single specimen was previously available, the new values are indicated in italics. Data for Ov/Abd are entirely new. Asterisc (*): new in *Hemistephanus*.

No./Species	Ov/Ptl	Ov/Tt	Ov/Abd	io/oo	Pnl/cw	io/ol	btl/w	Ac/Cc	fl2/fl1	*a*	*n*
01. *H. adustus*	3.85	1.16	1.74	7.00	2.89	3.50	5.75	0.14	1.58	–	1
12. *H. angulicollis*	3.72-4.47	1.31-1.43	1.92-2.08	6.00-6.75	2.19-2.63	2.69-3.27	5.60-6.00	0.16-0.24	1.50-1.59	–	5
13. *H. arctatus*	5.72-6.01	1.58-1.69	2.28-2.46	6.71-9.40	1.23-1.33	3.48-3.62(3)	6.06-7.33	*0.13*-0.17(2)	1.50-1.67(4)	1	4
10. *H. carinatus*	2.87-3.00(7)	1.00-1.10(7)	1.44-1.61(7)	3.75-5.08	3.75-4.49	2.31-2.87	3.20-4.60	0.07-0.17(8)	1.72-2.00(8)	2	9
15. *H. carioca*	2.64-2.83	1.05-1.09	1.49-1.67	4.01-5.25	1.94-2.14	2.63-3.07	2.69-3.50	0.13-0.22	1.30-1.64	–	4
17. *H. collarifer*	3.19-3.61	1.24-1.40	1.83-2.06	2.80-4.43	2.16-2.67	2.33-2.80	4.71-6.00(10)	0.05-0.10(7)	1.46-1.65	1	11
22. *H. colombiensis**	4.18-4.61(8)	1.28-1.39(7)	1.83-2.05(8)	4.59-8.44(8)	1.98-2.45(8)	2.83-3.31(7)	7.86-9.58(8)	0.10-0.24	1.68-1.90(8)	9	9
08. *H. costaricensis**	2.95-3.61	1.05-1.17	1.58-1.71	4.31-6.57	3.28-3.73	2.55-3.54	1.94-2.57	0.06-0.18	1.43-1.76	11	11
24. *H. cylindricus*	3.71-4.22(39)	1.10-1.26(37)	1.57-1.79(38)	3.88-6.83(44)	1.85-2.48(44)	2.50-3.23(44)	7.64-10.00	0.02-0.24(38)	1.79-2.29(44)	–	45
06. *H. elimatus*	3.63-3.86	1.22-1.27	1.79-1.85	2.87-3.13	3.58-4.00	1.74-1.92	3.67-4.29	0.00	1.39-1.50	–	3
05. *H. erugatus*	2.91-3.64	1.03-1.19	1.48-1.79	1.98-2.60	2.61-3.49	1.63-2.08	3.33-5.25	0.07-0.20	1.54-1.95	2	13
09. *H. erythrocephallus*	2.64-3.08(20)	1.01-1.11(20)	1.47-1.64(20)	3.80-6.25	2.81-3.82(22)	2.14-3.18	2.87-4.50(23)	0.08-0.30(23)	1.55-1.92(23)	20	24
14. *H. limpidipennis*	4.05-5.35(14)	1.36-1.57(14)	1.99-2.28(14)	4.71-7.00	1.37-1.94	2.37-3.00	3.86-5.07	0.00-0.19(15)	1.41-1.67(17)	1	18
04. *H. macrurus*	6.19-7.03	1.81-2.02	2.66-3.00	7.14-9.67	2.24-2.42	3.29-3.57	5.82-6.58	0.08-0.10	1.31-1.45	–	3
18. *H. marginalis*	3.80	1.30	1.96	5.29	2.08	4.51	3.57	0.23	1.48	–	1
07. *H. orfilanus*	3.09-3.39(5)	1.05-1.13(5)	1.58-1.66(5)	3.25-4.75	3.23-4.09	2.36-2.67	2.33-3.56	0.04-0.08	1.52-1.70	1	6
21. *H. ruficeps*	5.24-5.85(10)	1.44-1.67(10)	2.08-2.42(10)	4.80-7.75	2.19-2.64(10)	3.25-4.17	7.75-9.85	0.09-0.27(10)	1.70-1.90(11)	3	12
20. *H. simulator*	3.48-3.66	1.04-1.07	1.54-1.59	4.50-4.83	1.94-2.29	2.57-2.64	7.60(1)	0.14-0.20	1.89-1.91	–	2
02. *H. stenogulatus**	3.30(1)	1.10(1)	1.66(1)	5.80-6.84	3.45-3.62	2.42-2.81	2.96-3.47	0.04-0.06	1.60-1.86	2	2
19. *H. submaculatus*	3.57-3.94(3)	1.25-1.36(3)	1.81-2.05(3)	4.84-5.57	2.38-2.72(3)	3.29-3.90	4.09-5.00	0.11-0.19(3)	1.65-1.69(3)	–	4
11. *H. tener*	2.89-3.44	0.99-1.16	1.46-1.72	3.67-5.50(19)	3.00-4.35(19)	2.43-2.77(19)	4.67-6.50	0.07-0.29(15)	1.50-1.76	–	20
23. *H. validus*	3.17-3.63(21)	1.00-1.09(20)	1.43-1.67(21)	4.60-6.67	1.65-2.18	2.21-2.83	7.67-8.73	0.07-0.30(19)	1.88-2.20(21)	–	22
03. *H. velutinus*	2.95-4.13(5)	1.08-1.18(4)	1.57-1.73(5)	8.42-11.50(5)	2.13-2.87	2.97-3.77(5)	3.40-5.00	0.02-0.17	1.58-1.75(5)	5	6
16. *H. villosus**	2.76-3.09	1.00-1.12	1.51-1.70	3.20-5.43	2.08-2.48	2.55-3.08	2.93-4.29	0.06-0.18(7)	1.27-1.47	7	9
Hemistephanus	2.64-7.03	0.99-2.02	1.43-3.00	1.98-11.50	1.23-4.49	1.63-4.51	1.94-10.00	0.00-0.30	1.27-2.29	66	244

TABLE 2. Range of morphometric ratios for species of Hemistephanus. Females. Ratios listed in descending order of taxonomic value. Limits for Ov and Tt correspond to absolute values, in millimeters. Legends: *a*, additional specimens in relation to Aguiar (1998); *aOv*, length of dark apex of ovipositor valve; *fb*, length of white subapical band of ovipositor valve; *Gsl*, post-abdomen length, measured laterally from apex of petiole to apex of pygidium; *Hdl*, head lateral length from base of anterior coronal tubercle to base of occipital carina; *n*, number of specimens measured; *Ov*, ovipositor length, from origin to apex; Pnl, pronotum length, measured dorsally from centre of posterior margin of semiannular to apex of colo; *Ptl/w*, petiole maximum length over maximum dorsal width; *T3l*, maximum length of tergite 3 (gastral tergite 2); *T4l/w*, tergite 4 (gastral tergite 3) maximum length over maximum width; *Tt*, total length, measured laterally from base of anterior coronal tubercle to apex of pygidium. Numbers between parentheses indicate number of measured specimens when different from *n*. New values in relation to Aguiar (1998) appear underlined (only digits which changed are indicated) or, when only a single specimen was previously available, the new values are indicated in italics. Asterisc (*): new in *Hemistephanus*.

No./Species	Ptl/Gsl	Pnl/Hdl	fb/aOv	Ptl/T3l	T3l/T4w	Ptl/w	T4l/w	Ov	Tt	*a*	*n*
01. *H. adustus*	0.82	0.81	1.93	2.53	–	10.63	–	10.23	8.84	–	1
12. *H. angulicollis*	0.87-1.17	0.67-0.80	1.50-2.11	2.50-3.43	2.03-2.13(2)	13.80-18.31	1.16-1.20(2)	23.53-36.71	17.97-26.67	–	5
13. *H. arctatus*	0.65-0.73	0.42-0.43(2)	0.80-1.33	1.98-2.20	2.18-*2.24*(2)	8.70-10.20	1.50-1.59(2)	25.23-29.81	15.93-17.60(3)	1	4
10. *H. carinatus*	0.97-1.17(7)	0.94-1.11	2.00-2.97	2.94-3.38	1.59-2.44	13.14-16.83	1.00-1.63	15.10-20.42	14.80-20.08	2	9
15. *H. carioca*	1.15-1.59	0.64-0.71	1.39-2.11	3.15-3.56	1.42-1.59	13.16-15.69	0.66-0.82	17.62-21.29	16.47-19.78	1	4
17. *H. collarifer*	1.25-1.69	0.64-0.81	1.36-2.60	3.26-3.75	1.44-1.75(9)	14.58-19.00	0.72-0.92(9)	16.54-24.28	12.71-19.58	1	11
22. *H. colombiensis**	0.69-0.81(8)	0.65-0.83(8)	0.88-1.72(6)	2.23-2.56(8)	2.61-3.45(8)	9.36-12.24(8)	1.72-2.10(8)	15.80-27.08(8)	12.39-19.43(7)	9	9
08. *H. costaricensis**	0.89-1.15	0.94-1.09	1.47-2.43	2.84-3.35	1.38-2.64	11.91-15.43	0.96-1.66	11.80-20.00	11.29-17.49	11	11
24. *H. cylindricus*	0.61-0.85(39)	0.56-0.71(43)	1.22-2.67(38)	2.21-2.74(41)	2.52-3.76(35)	9.68-13.83(43)	1.72-2.52(35)	12.97-25.76(39)	11.76-22.11(38)	–	45
06. *H. elimatus*	0.89-0.98	0.87-0.96	1.99-2.41	2.97-3.00	2.07-2.22	13.50-15.00	1.33-1.47	17.74-22.44	14.25-17.68	–	3
05. *H. erugatus*	0.87-1.11	0.71-0.90	2.18-4.00(11)	2.47-3.28	1.84-2.58	9.08-16.16	1.06-1.63	10.11-17.46	9.71-16.00	2	13
09. *H. erythrocephallus*	1.03-1.28(22)	0.88-1.00(22)	1.84-3.26(20)	2.78-3.39(20)	*1.90-2.92*(18)	12.73-16.00(23)	*1.04-1.69*(18)	14.79-23.50(20)	14.49-21.78(22)	20	24
14. *H. limpidipennis*	0.69-1.00(16)	0.48-0.63	1.83-2.87(14)	1.98-2.60(16)	2.14-2.96(12)	8.10-14.21	0.90-1.33(12)	19.08-26.88(14)	13.00-19.43(16)	1	18
04. *H. macrurus*	0.72-0.78	0.69-0.73	1.76-2.33	2.27-2.47	1.74-2.38	8.81-11.59	1.10-1.49	34.64-45.81	18.42-22.67	–	3
18. *H. marginalis*	1.07	0.60	1.84	2.67	–	11.41	–	29.26	22.47	–	1
07. *H. orfilanus*	0.90-1.10(5)	0.88-1.09	1.11-2.47(5)	3.00-3.46(4)	1.86-2.92(4)	11.45-16.20(5)	1.34-1.76(4)	13.00-17.60(5)	12.08-15.58(5)	1	6
21. *H. ruficeps*	0.64-0.81(11)	0.69-0.84(10)	0.49-1.03(10)	2.24-2.67(11)	2.48-2.86(11)	9.33-12.91	1.52-2.00(11)	22.00-37.40(10)	13.89-22.75(11)	3	12
20. *H. simulator*	0.72-0.84	0.61-0.69	1.86-2.46	2.58-2.94	1.92-2.03	9.44-10.51	1.48-1.54	12.80-15.56	11.91-14.94	–	2
02. *H. stenogulatus**	1.02(1)	0.97-1.00	2.97(1)	2.49-2.52	2.98-3.05	14.66-15.42	1.66-1.72	15.30(1)	13.87(1)	2	2
19. *H. submaculatus*	0.93-1.10	0.71-0.82(3)	1.43-2.04(3)	2.96-3.35(3)	1.89-1.98(2)	12.74-16.67	0.93-1.08(2)	24.19-33.30(3)	17.75-26.46	–	4
11. *H. tener*	0.93-1.28	0.66-1.00(19)	1.08-2.10(18)	2.79-3.39	1.59-2.48(16)	11.07-16.19	0.67-1.36(17)	13.93-23.33	12.78-21.17	–	20
23. *H. validus*	0.77-0.92(21)	0.55-0.65	0.68-2.28(18)	2.57-2.96(21)	2.08-2.56(20)	9.65-12.78(21)	1.34-1.94(20)	10.90-20.42	10.82-18.70(21)	–	22
03. *H. velutinus*	0.72-1.15	0.84-0.94(5)	1.43-2.57(5)	2.40-3.25	1.94-2.45	8.96-17.76	1.12-1.36	20.30-29.00(5)	17.55-26.83(5)	5	6
16. *H. villosus**	1.10-1.38	0.70-0.77	1.34-2.26(8)	3.16-3.56	1.28-1.59(7)	13.69-16.55(8)	0.59-1.04(7)	12.28-16.80	11.79-16.19	7	9
Hemistephanus	0.61-1.69	0.42-1.11	0.49-4.00	1.98-3.75	1.28-3.76	8.10-19.00	0.59-2.52	10.11-45.81	8.84-26.83	66	244

TABLE 3. Range of morphometric ratios for species of *Hemistephanus*. Males. Ratios listed in descending order of taxonomic value. Legends: *a*, additional specimens in relation to Aguiar (1998); *Ac*, length of vein 1A of front wing; *btl/w*, hind basitarsomere maximum length over maximum width; *Cc*, internal length of cell 2Cu, from apex of 1cu-a to apex of 2Cua; *cw*, minimum dorsal width of colo; *Gsl*, post-abdomen length, measured laterally from apex of petiole to apex of pygidium; *Hdl*, head lateral length from base of anterior coronal tubercle to base of occipital carina; *io*, inter-ocellar distance between posterior ocelli; *n*, number of specimens measured; *oo*, ocellum-ocular distance with head in dorsolateral view; *ol*, maximum diameter of left posterior ocellum; *Pnl*, pronotum length, measured dorsally from centre of posterior margin of semiannular to apex of colo; *Ptl*, petiole maximum length. Numbers between parentheses indicate number of measured specimens when different from *n*. New values in relation to Aguiar (1998) appear underlined (only digits which changed are indicated) or, when only a single specimen was previously available, the new values are indicated in italics. Asterisc (*): first record or new in *Hemistephanus*.

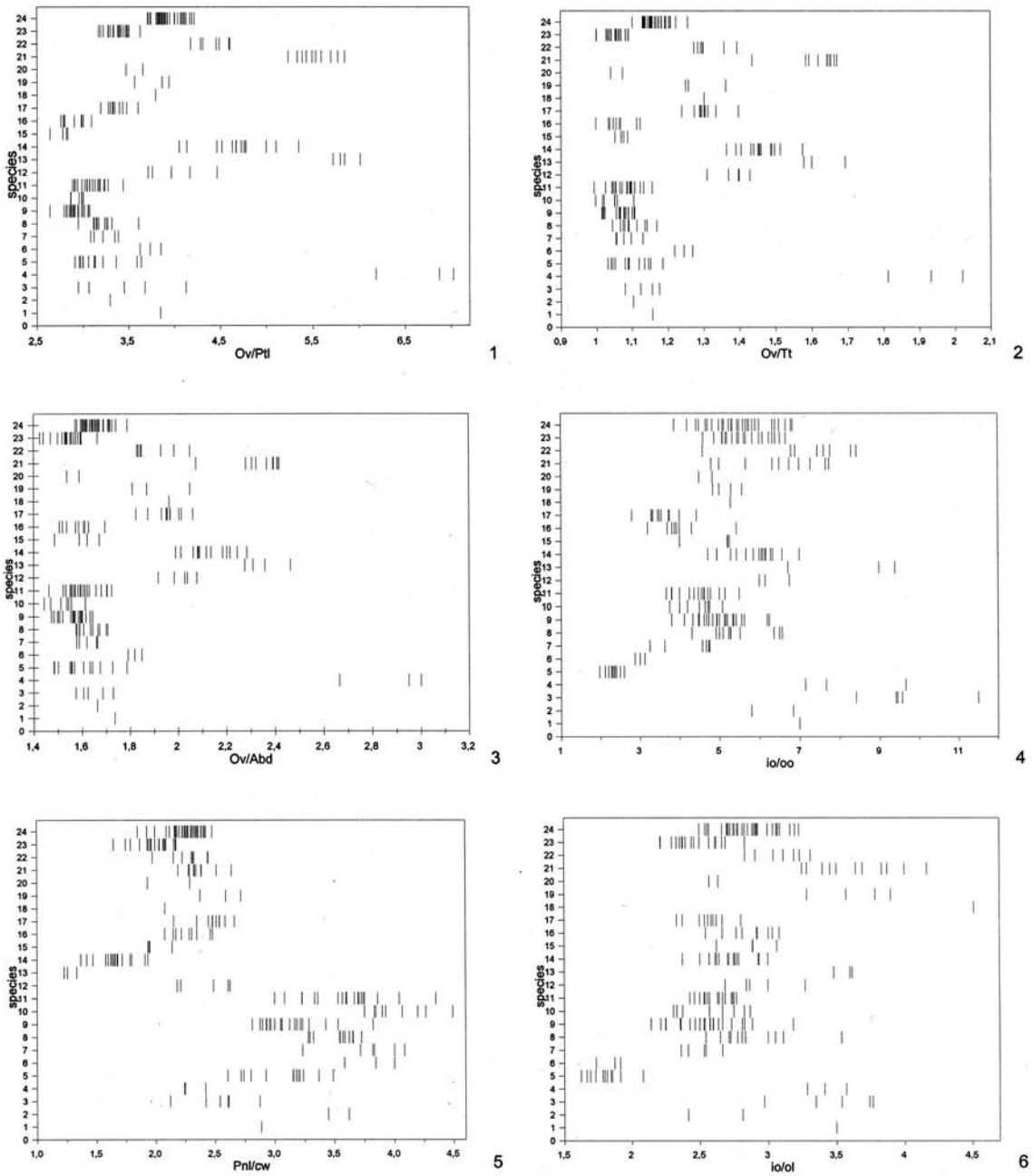
No./Species	Pnl/Hdl	io/ol	Pnl/cw	io/oo	Ac/Cc	Ptl/Gsl	btl/w	*a*	*n*
01. *H. adustus*	0.87	3.57	2.95	7.50	0.14	0.73	6.67	–	1
13. *H. arctatus**	0.53	3.90	1.43	6.00	0.07	0.67	4.68	1	1
10. *H. carinatus*	1.03	2.75	4.25	3.67	0.02	1.13	5.71	–	1
15. *H. carioca*	0.68-0.70	2.33-2.79	1.95-2.00	2.79-3.50	0.15-0.22	1.32(1)	5.23-5.45	–	2
17. *H. collarifer*	0.678-0.74	2.54-2.56(2)	2.23-2.40	3.67-6.33	0.05-0.08(2)	1.07-1.28	5.08-6.00	–	3
22. *H. colombiensis**	0.66-0.74	2.53-2.95	1.95-2.33	5.36-9.84	0.09-0.21	0.68-0.92	5.40-7.50	6	6
08. *H. costaricensis**	0.95-1.00	2.50-2.71	3.47-3.75	3.65-4.33	0.04-0.08	0.98-1.04	3.94-4.00	2	2
24. *H. cylindricus*	0.62-0.69	2.36-3.00	2.00-2.38	3.17-6.52	0.00-0.18	0.63-0.82	5.82-8.33	–	19
05. *H. erugatus*	0.64-0.79	1.57-1.89	2.40-3.00	2.17-2.67	0.05-0.06(3)	1.02-1.18	4.57-5.14	–	4
09. *H. erythrocephallus*	0.84-0.91(4)	2.30-2.68(4)	3.21-3.33	3.73-6.63(4)	0.06-0.15	1.10-1.14(3)	5.63-8.86	3	5
14. *H. limpidipennis*	0.50-0.63(3)	2.87-3.50	1.52-1.54(3)	4.60-5.67	0.05-0.13(3)	0.62-0.83	3.86-5.25	3	4
07. *H. orfilanus*	0.88-0.93	2.65-2.77	3.21-3.70	4.22-4.50	0.08-0.09	0.97-1.25	5.09-5.25	–	2
21. *H. ruficeps*	0.58-0.69	2.71-3.43	1.74-2.44	4.75-7.67	0.10-0.13(4)	0.59-0.77	5.86-7.33	–	5
20. *H. simulator*	0.71	2.70	2.35	4.50	0.07	0.81	6.67	–	1
19. *H. submaculatus**	0.88	3.80	2.46	5.43	0.17	0.97	5.80	1	1
11. *H. tener*	0.82-0.91	2.30-3.00	3.28-3.86	3.33-6.17	0.04-0.18	0.84-1.20	5.00-7.20(10)	–	11
23. *H. validus*	0.53-0.65(28)	2.00-2.64(29)	1.63-2.11(29)	3.75-7.60(29)	0.03-0.23	0.68-0.93	5.45-8.21	–	30
03. *H. velutinus*	0.93	2.77	3.10	12.00	0.04	1.10	7.60	–	1
16. *H. villosus**	0.73-0.76	2.58-3.13	2.14-2.50	4.50-4.77	0.00-0.13	1.21-1.36	5.00-5.11	2	2
Hemistephanus	0.50-1.03	1.57-3.90	1.43-4.25	2.17-12.00	0.00-0.23	0.59-1.36	3.86-8.33	18	101

TABLE 4. Range of morphometric ratios for species of *Hemistephanus*. Males. Ratios listed in descending order of taxonomic value. Limits for Tt correspond to absolute values, in millimeters. Legends: *a*, additional specimens in relation to Aguiar (1998); *fl2*, maximum length of second flagellomere; *fl3*, maximum length of third flagellomere; *n*, number of specimens measured; *Ptl/w*, petiole maximum length over maximum dorsal width; *T3l*, maximum length of tergite 3 (gastral tergite 2); *T4l/w*, tergite 4 (gastral tergite 3) maximum length over maximum width; *Tt*, total length, measured laterally from base of anterior coronal tubercle to apex of pygidium. Numbers between parentheses indicate number of measured specimens when different from *n*. New values in relation to Aguiar (1998) appear underlined (only digits which changed are indicated) or, when only a single specimen was previously available, the new values are indicated in italics. Asterisc (*): first record or new in *Hemistephanus*.

No./Species	fl3/fl2	Ptl/w	T4l/w	T3l/T4l	Ptl/T3l	Tt	*a*	*n*
01. *H. adustus*	1.67	13.19	–	–	–	10.29	–	1
13. *H. arctatus**	1.49	8.02	1.19	1.63	3.15	12.23	1	1
10. *H. carinatus*	1.76	18.90	1.49	1.34	5.21	10.39	–	1
15. *H. carioca*	1.44-1.44	16.00(1)	0.75(1)	1.84(1)	6.27(1)	15.31(1)	–	2
17. *H. collarifer*	1.33-1.47	15.83-19.20	0.71-0.73(2)	1.87-1.89(2)	6.88-7.01(2)	12.75-17.71	–	3
22. *H. colombiensis**	1.63-1.78	5.74-9.75	0.81-1.47	1.37-1.98	3.38-4.34	9.91-16.84	6	6
08. *H. costaricensis**	1.41-1.56	16.75-17.51	1.74-1.79	1.25-1.33	4.30-4.67	8.97-10.35	2	2
24. *H. cylindricus*	1.71-2.03(17)	7.60-10.55	0.88-1.41(18)	1.38-1.89(18)	3.36-4.54(18)	8.28-14.68	–	19
05. *H. erugatus*	1.53-1.75	13.33-18.80	1.16-1.64	1.25-1.41	4.09-4.80	6.88-10.06	–	4
09. *H. erythrocephallus*	1.58-1.82(4)	17.60-21.00	1.71-1.82(3)	1.31-1.47(3)	4.75-5.08(3)	11.59-13.15(3)	3	5
14. *H. limpidipennis*	1.27-1.50	6.20-9.90	1.09-1.34	1.90-2.07	3.53-4.10	9.09-11.54	3	4
07. *H. orfilanus*	1.66-1.48	15.23-16.34	1.65-1.66	1.29-1.45	4.04-4.08	11.98-14.22	–	2
21. *H. ruficeps*	1.68-1.83(4)	7.22-9.95	0.98-1.26	1.60-1.73	3.68-3.80	8.40-18.55	–	5
20. *H. simulator*	2.00	8.18	1.22	1.39	3.41	10.68	–	1
19. *H. submaculatus**	1.53	12.15	0.88	1.71	5.36	12.23	1	1
11. *H. tener*	1.45-1.71(10)	16.17-22.55	1.20-1.67	1.17-1.48	4.44-5.40	9.47-17.50	–	11
23. *H. validus*	1.77-2.00(29)	5.30-11.85	0.85-1.63	1.27-1.77	2.97-4.33	7.19-15.38(29)	–	30
03. *H. velutinus*	1.70	19.67	1.60	1.40	5.08	16.44	–	1
16. *H. villosus**	1.37-1.38	15.57-17.17	0.52-0.79	1.76-2.30	6.11-8.42	11.40-12.46	2	2
Hemistephanus	1.27-2.03	5.30-22.55	0.52-1.82	1.17-2.30	2.97-8.42	6.88-18.55	18	101

subcrenulation (visible only with tangential light); discrimen formed by narrow, shallow, elongate foveae; crenulate sulcus with central crenulations extending over the propodeum, or isolated from it by a strong border, but this border also extending over the propodeum; interfoveolar area polished smooth, with no trace of alutaceous microsculpturing. T3 microsculpturing stronger, almost aciculate.

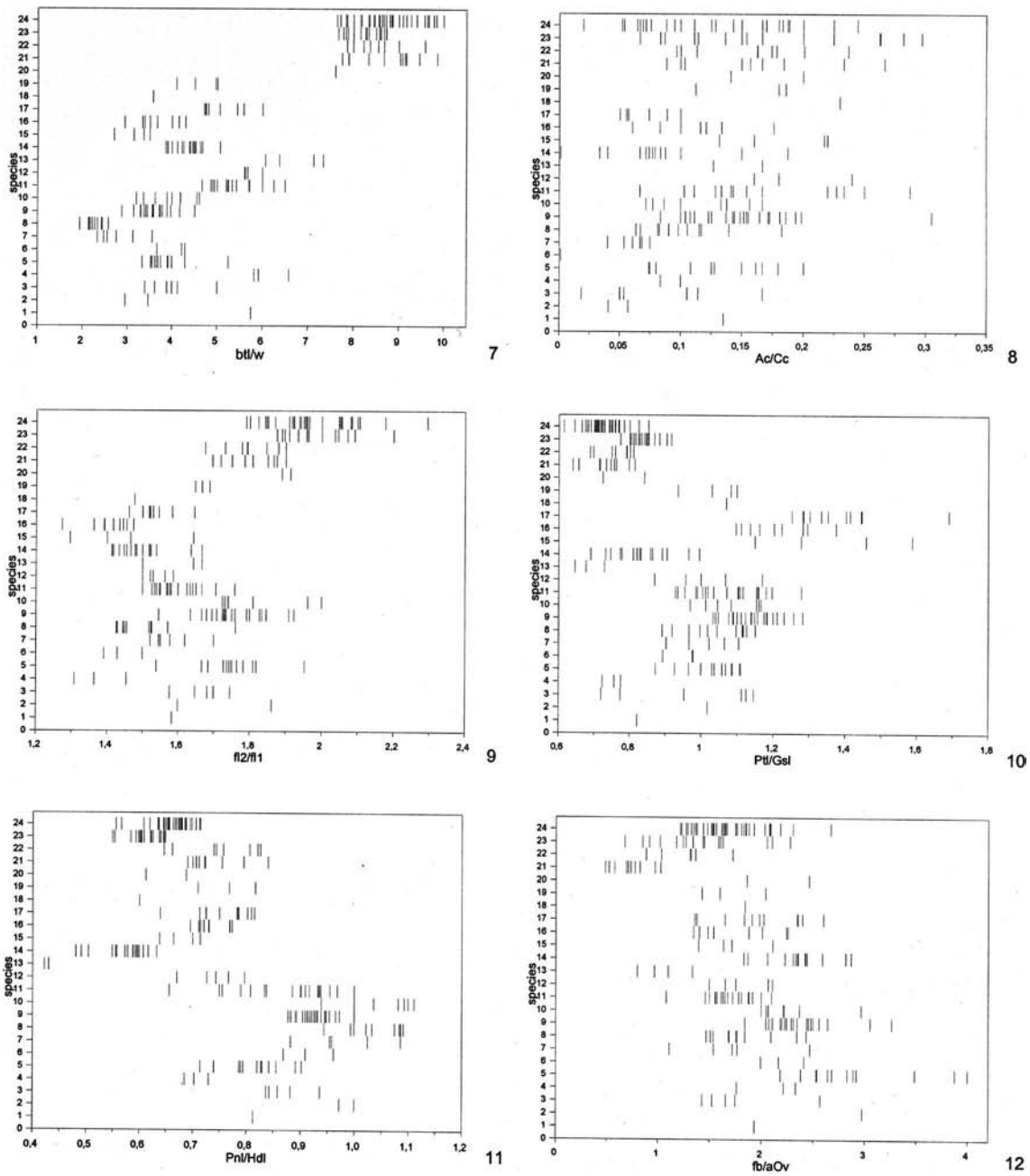
Synonymy – The holotype of *Stephanus villosus* Kieffer could not be examined by Aguiar (1998), but was studied for this work. The direct comparison of the re-



FIGURES 1-6. Values of morphometric ratios for all examined specimens of all species. Females. Species numbers as in Table 1. Ratios: *io/ol*, interocellar distance/ maximum diameter of left posterior ocellum; *Ov/Abd*, ovipositor length/ gaster length; *io/oo*, interocellar distance/ ocello-ocular distance; *Ov/Ptl*, ovipositor length/ petiole length; *Ov/Tt*, ovipositor length/ total body length, excluding ovipositor; *Pnl/cw*, pronotum maximum length/ minimum width.

spective holotypes suggests that *H. artiosulcatus* Aguiar is a junior synonym for *H. villosus* (Kieffer), in spite of a few differences. In particular, the holotype of *H. villosus* has frons with standard rugosity (not reticulate), and larger values for io/ol and Ov/Abd; the overall color pattern also differs from that of the holotype of *H. artiosulcatus*, but is similar to that of the paratype.

The apparently significant differences between holotype and paratype of *H. artiosulcatus*, discussed in Aguiar (1998), dilute themselves among the total mor-

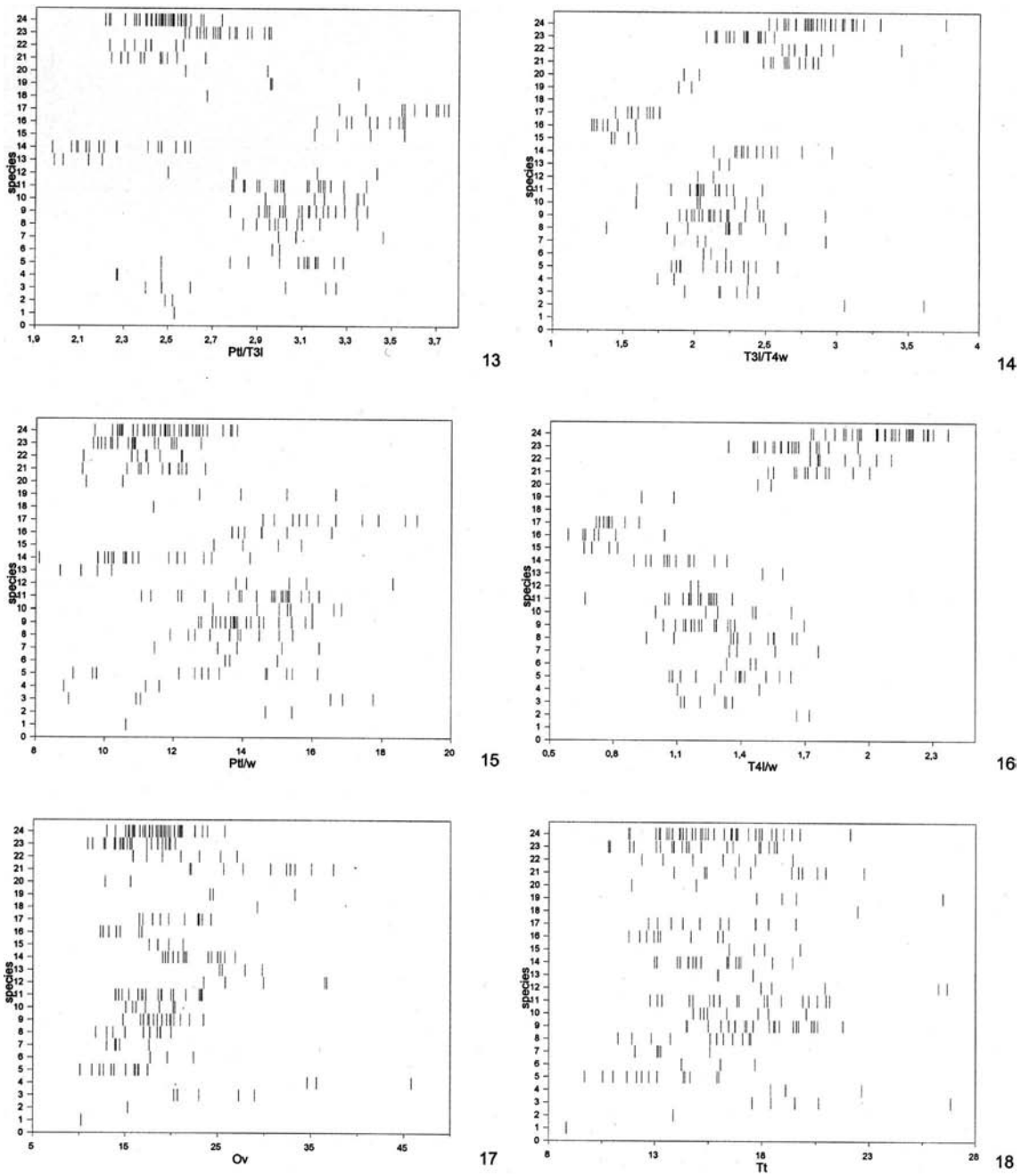


FIGURES 7-12. Values of morphometric ratios for all examined specimens of all species. Females. Species numbers as in Table 1. Ratios: *Ac/Cc*, length of vein 1A/ internal length of cell 2Cu; *btl/w*, hind basitarsus maximum length/ maximum width; *fb/aOv*, length of subapical white band of ovipositor valve/ length of dark apex of ovipositor valve; *fl2/fl1*, length of flagellomere 2/ length of flagellomere 1; *Pnl/Hdl*, pronotum length/ head length; *Ptl/Gsl*, petiole maximum length/ post-abdomen length.

phological variation observed here in the several available specimens of *H. villosus*.

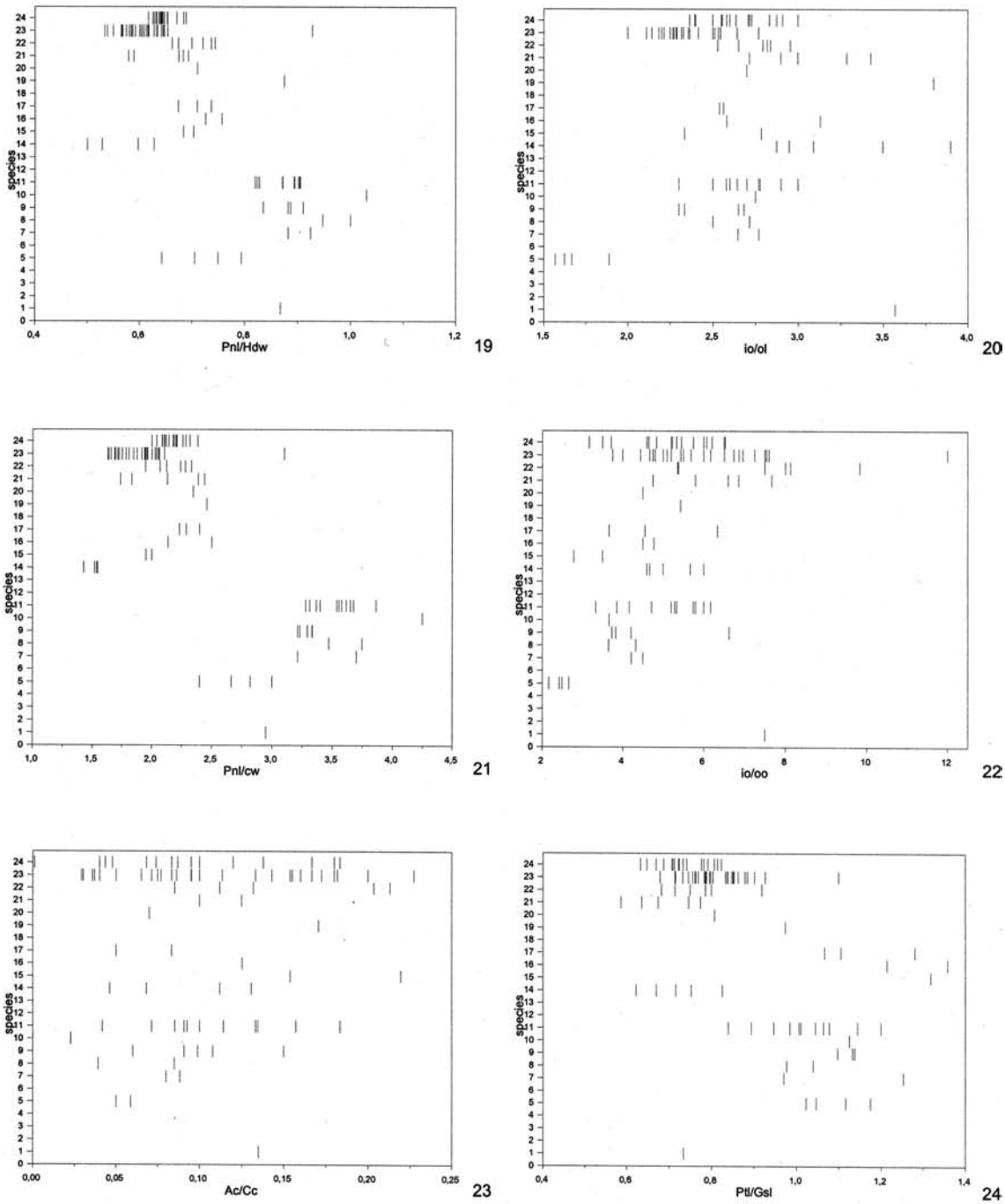
The lectotype designation for *Stephanus villosus* Kieffer is being made in order to stabilize the application of this name.

Comments – Also similar to *H. collarifer* and *H. carioca*, from which it can be isolated, in addition to diagnostic features discussed in Aguiar (1998), by having a hind basitarsus distinctly shorter (i.e., btl/w smaller), spiracular groove reaching crenulate sulcus, and by the



FIGURES 13-18. Values of morphometric ratios for all examined specimens of all species. Females. Species numbers as in Table 1. Ratios or measurements: *Ov*, ovipositor length; *Ptl/T3l*, maximum length of petiole/ maximum length of T3; *Ptl/w*, petiole maximum length/ maximum width; *T3l/T4w*, maximum length of T3/ maximum width of T4; *T4l/w*, T4 maximum length/ maximum width; *Tt*, total body length, from base of anterior coronal tubercle to apex of pygidium.

90° angle between veins 1Cu and 2Cua (acute angle in *collarifer* and *carioca*). From *H. collarifer* it can also be isolated by the T3 basally only with fine rugulosities (Figs. 54 vs. 55), ratio Ov/Ptl smaller, and shape of occipital carina, which narrows abruptly ventrally, then proceeds as a straight line towards hypostomal carina, the sides parallel (progressively narrower, and convergent toward hypostomal carina in *H. collarifer*).



FIGURES 19-24. Values of morphometric ratios for all examined specimens of all species. Males. Species numbers as in Table 1. Ratios: *Ac/Cc*, length of vein 1A/ internal length of cell 2Cu; *io/ol*, interocellar distance/ maximum diameter of left posterior ocellum; *io/oo*, interocellar distance/ ocello-ocular distance; *Pnl/cw*, pronotum maximum length/ minimum width; *Pnl/Hdl*, pronotum length/ head length; *Ptl/Gsl*, petiole maximum length/ post-abdomen length.

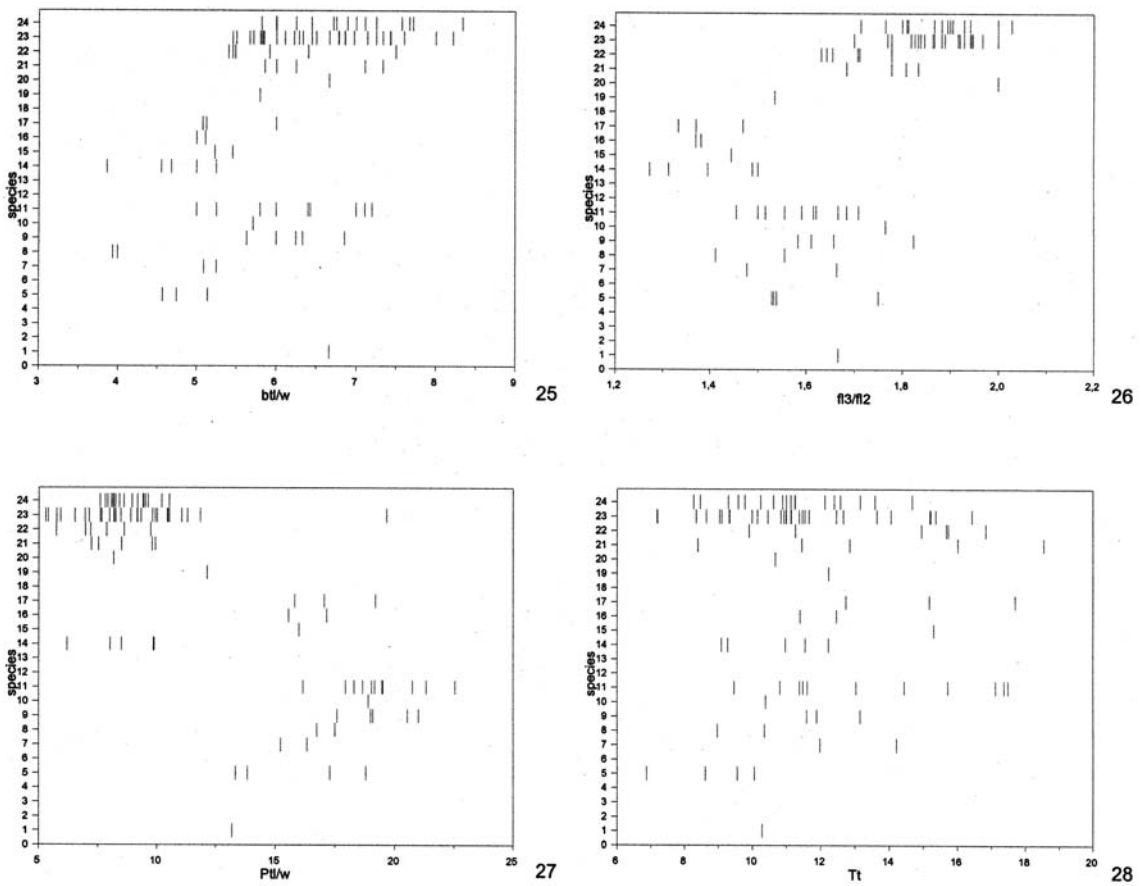
Distribution – Brazil (GO), and Argentina.

Types and new records (7 females and 2 males): Holotype ♀ (MNHN), examined: Brazil: "Jatahy / / Goyaz"; "Museum Paris / / Coll. J. de Gaulle / / 1919"; "*Stephanus villosus* [old handwriting]"; "OSUC141259 [plastic, barcode]"; "*Stephanus villosus* / / Kieffer / / Lectotypus {A.P.Aguiar desig. / / 2002} [red]", present designation. Left antenna and right mid apical tarsomere lost; remainder covered by fungi. Other specimens: Argentina, Tucumán, 11 km. W. Las Cejas, 26°53'00"S 64°44'00"W, Lionel Stange, (AEIC): ♂ OSUC22289 and ♂ OSUC22288, 15 January to 14 February 1967; ♀ OSUC22285 and ♀ OSUC22287, 07-26 March 1967; ♀ OSUC22286, 15 February to 07 March 1967. (MLPA): ♀ OSUC22284, 1935 and ♀ OSUC22283 [no date], Argentina, Loreto, Missiones, 27°00'00"S 55°00'00"W, A.A. Oglobin; ♀ OSUC141240, Argentina, Corrientes, Ituzaingo, M.A. Fritz, December 1981. To the holotype of *H. artiosulcatus* a plastic barcode label was added, with number OSUC0141263; to the paratype, OSUC0141264; both are deposited at CNCI.

***Hemistephanus* sp.**

Fig. 56

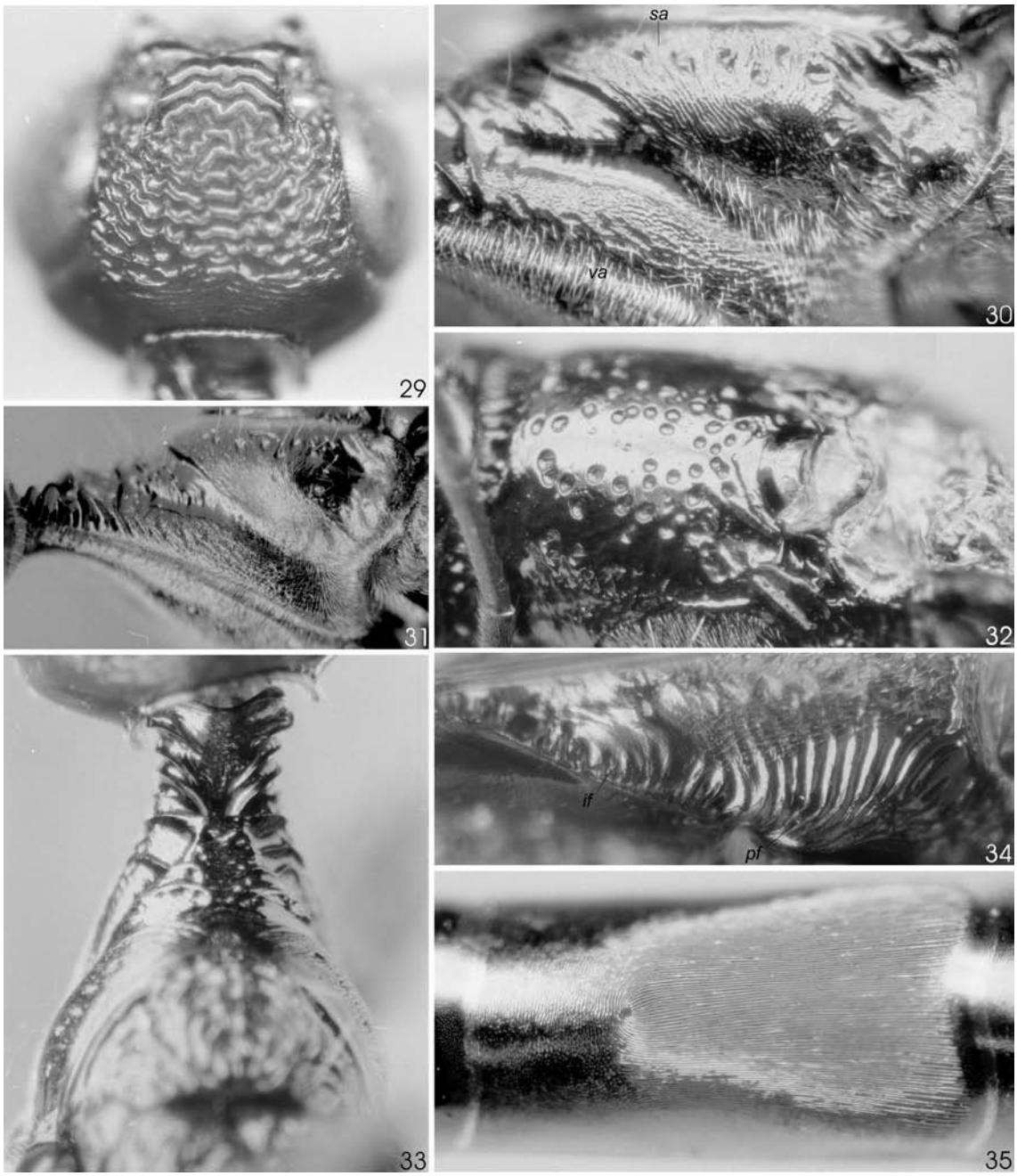
A single female specimen, without gaster, from Costa Rica, has the vertex covered by a microsculpturing pattern with a dense and conspicuous granular look (Fig. 56). The intensity of this pattern seems unique among *Hemistephanus*. However, the overall structure of the specimen is most similar to that of *H. erythrocephalus*, in particular the pronotum, although the carinae are weak, making more evident the polished smooth finish of the entire pronotum, in spite of the macrosculpturing. In addition, the space between foveolae of propodeum, and the interfoveolar area, are both polished smooth, features also distinct



FIGURES 25-28. Values of morphometric ratios for all examined specimens of all species. Males. Species numbers as in Table 1. Ratios: *btl/w*, hind basitarsus maximum length / maximum width; *fl3/fl2*, length of flagellomere 3 / length of flagellomere 2; *Ptl/w*, petiole maximum length / maximum width; *Tt*, total body length, from base of anterior coronal tubercle to apex of pygidium.

from *H. erythrocephalus*. While this may represent an undescribed species, there is also the possibility that the microsculpturing on vertex is only an aberration, fact which is not uncommon in Stephanidae. As a single and incomplete specimen, it is also doubtfully representative as a type specimen. It is premature, therefore, to propose a new taxon without additional specimens to confirm the observed morphology is not part of mere individual variation.

Examined material (1 female): Costa Rica (INBC): CRI 000 455 000, Estación Sirena, P.N. Corcovado, Provincia Puntarenas, 0-100 m, November 1990, G. Fonseca. L S 270500_508300. Triangle mount; gaster lost; otherwise in good condition.



FIGURES 29-35. *Hemistephanus colombiensis*, holotype; **29**, head dorsal; **30**, semiannular and ventral area, lateral; **31**, pronotum lateral; **32**, propodeum dorso-lateral; **33**, pronotum dorsal; **34**, interfoveolar and post-foveolar areas; **35**, T4, dorsal. Legends: *if*, interfoveolar area; *pf*, post-foveolar area; *sa*, semiannular; *va*, ventral area.

***Megischus furcatus* (LePeletier and Serville, 1825)**

Stephanus furcatus LePeletier and Serville, 1825:489; Westwood, 1843:276; 1851:228; Schletterer, 1889:130; Dalla Torre, 1902:7; Enderlein, 1905:475; Kieffer, 1908:4; Elliott, 1922:717; Orfila, 1951: 274; 1959:35; Gauld, 1995:184.

Stephanus Brasiliensis Westwood, 1832:403; 1843:275; 1851:227.

Megischus annulator Brullé, 1846:539; Desmarest, 1860:172; Westwood, 1851:228; Sichel, 1865:482; Cameron, 1887:419 (part).

Bothrioceros Americanus Sichel, 1860:761.

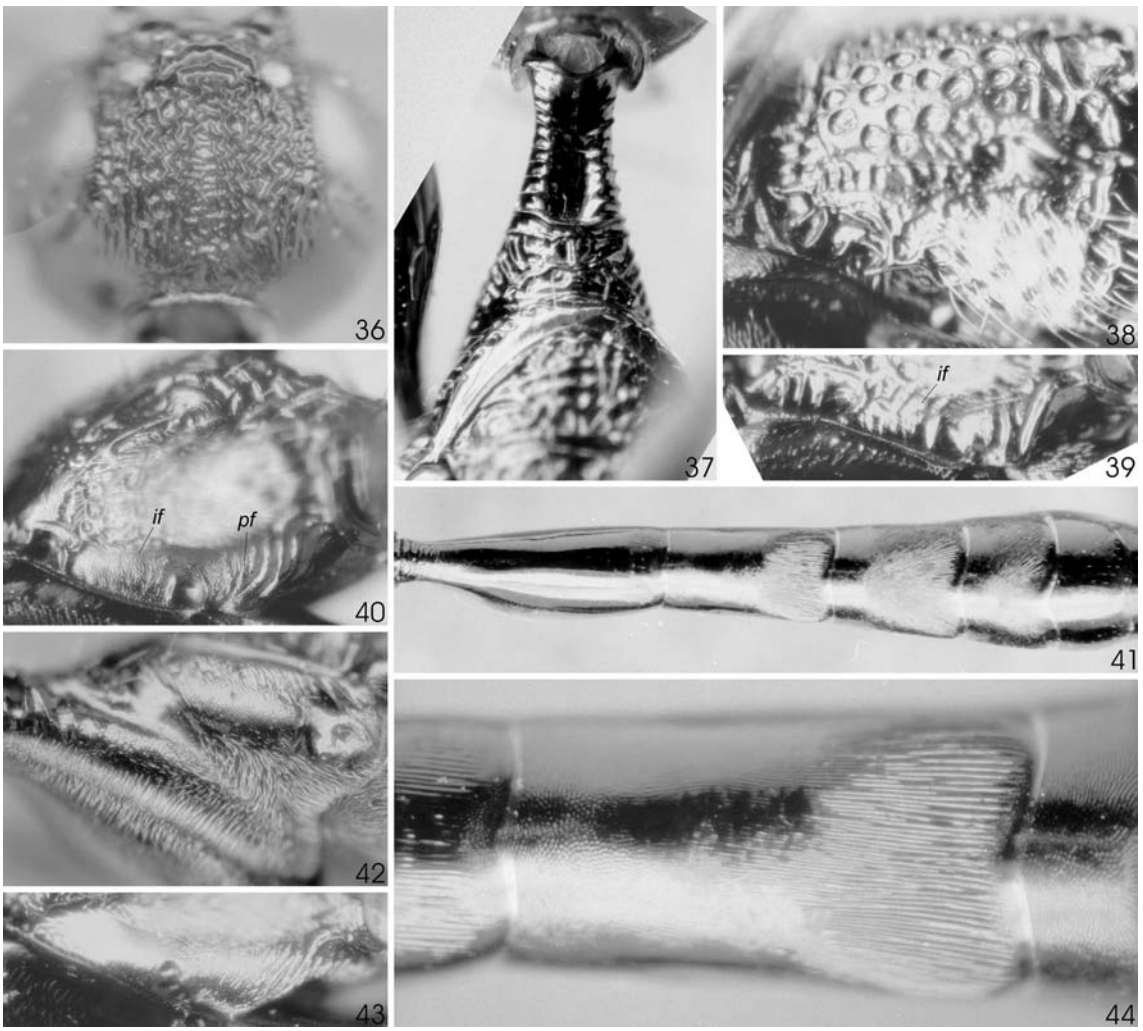
Megischus Americanus: Sichel, 1865:480

Megischus Brasilianus Sichel, 1865:483.

Stephanus (Megischus) furcatus: DeSantis, 1980:8.

Stephanus macrurus Schletterer, 1889: Brèthes, 1927:297 (misidentification).

The two specimens of Stephanidae described as males of *Stephanus macrurus* Schletterer (= *Hemistephanus*) by Brèthes (1927) were found in DEIC, and examined. They correspond, in fact, to *Megischus furcatus*. The label data of these specimens were also published with some mistakes; the correct information, and the added database numbers, are as follows: ♀ OSUC22966, Rio de Janeiro, Silvestre, 31 December 1928 (not "Silvestri", not "31.XI.1918"); ♂ OSUC22967, Rio de Janeiro,



FIGURES 36-40. *Hemistephanus costaricensis* sp. n.; **36**, head dorsal (holotype); **37**, pronotum dorsal (holotype); **38**, propodeum and metapleuron, latero-dorsal; **39**, interfoveolar area; **40**, *H. carinatus*, propodeum lateral, metapleuron and inter- and post-foveolar areas; **41-44**, *H. ruficeps*; **41**, gaster dorsal, showing T3-T7; **42**, pronotum lateral (except colo); **43**, interfoveolar and post-foveolar areas. Legends: *if*, interfoveolar area; *pf*, post-foveolar area.

Silvestre, 25 January 1919 (not "♀ ", not "21.I.1919"). Both specimens complete, in good condition.

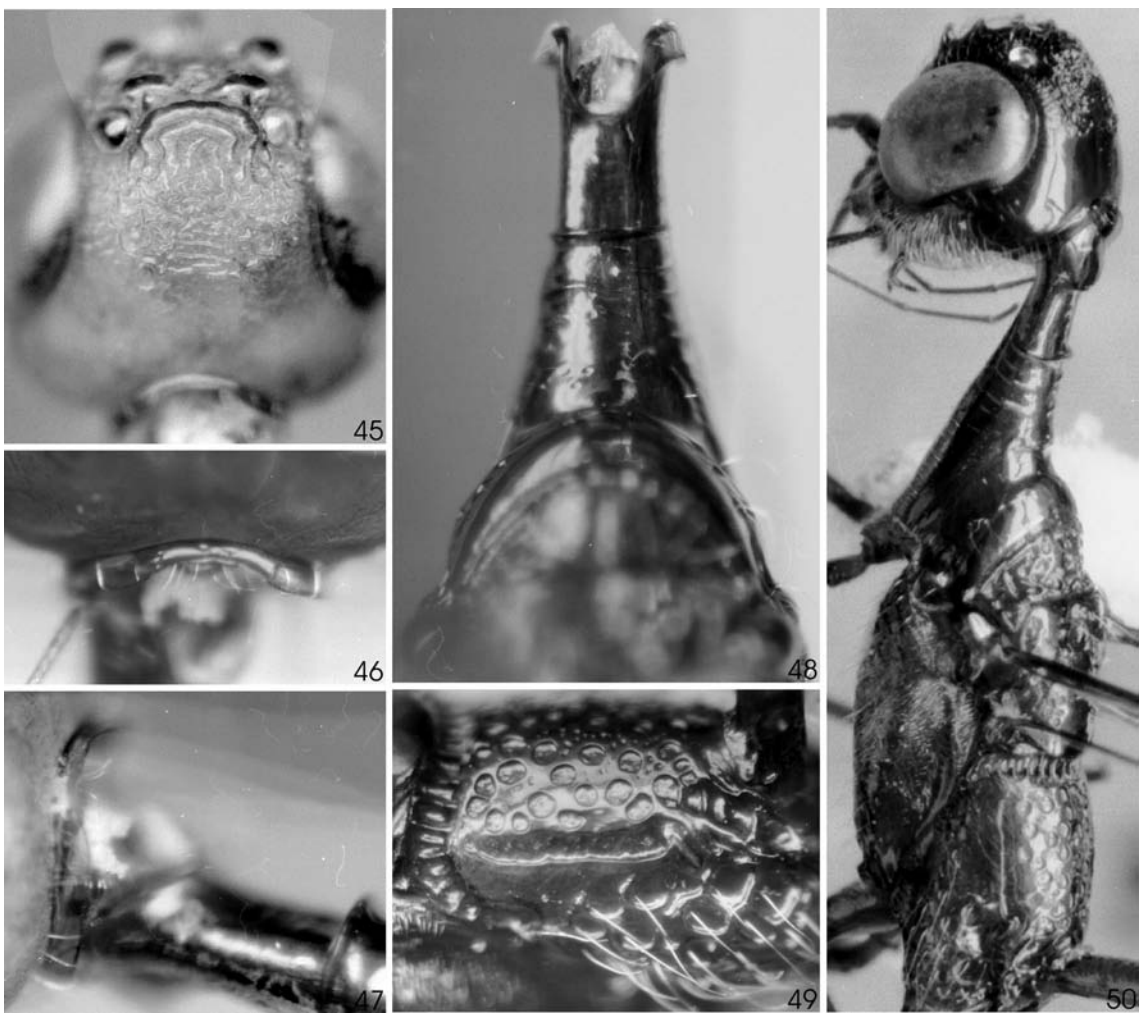
KEY TO SPECIES OF *HEMISTEPHANUS* ENDERLEIN

The volume and wide range of new and complementary information presented here do not make unviable the keys presented in Aguiar (1998), but its incorporation in a revised key, presented below, will be useful in increasing the precision of the identifications. An updated key for males, however, would offer only a modest improvement; because of this, the reader must preferably refer to Aguiar (1998), as well as check new information presented in the body of the present work, when trying to identify a male specimen of *Hemistephanus.*

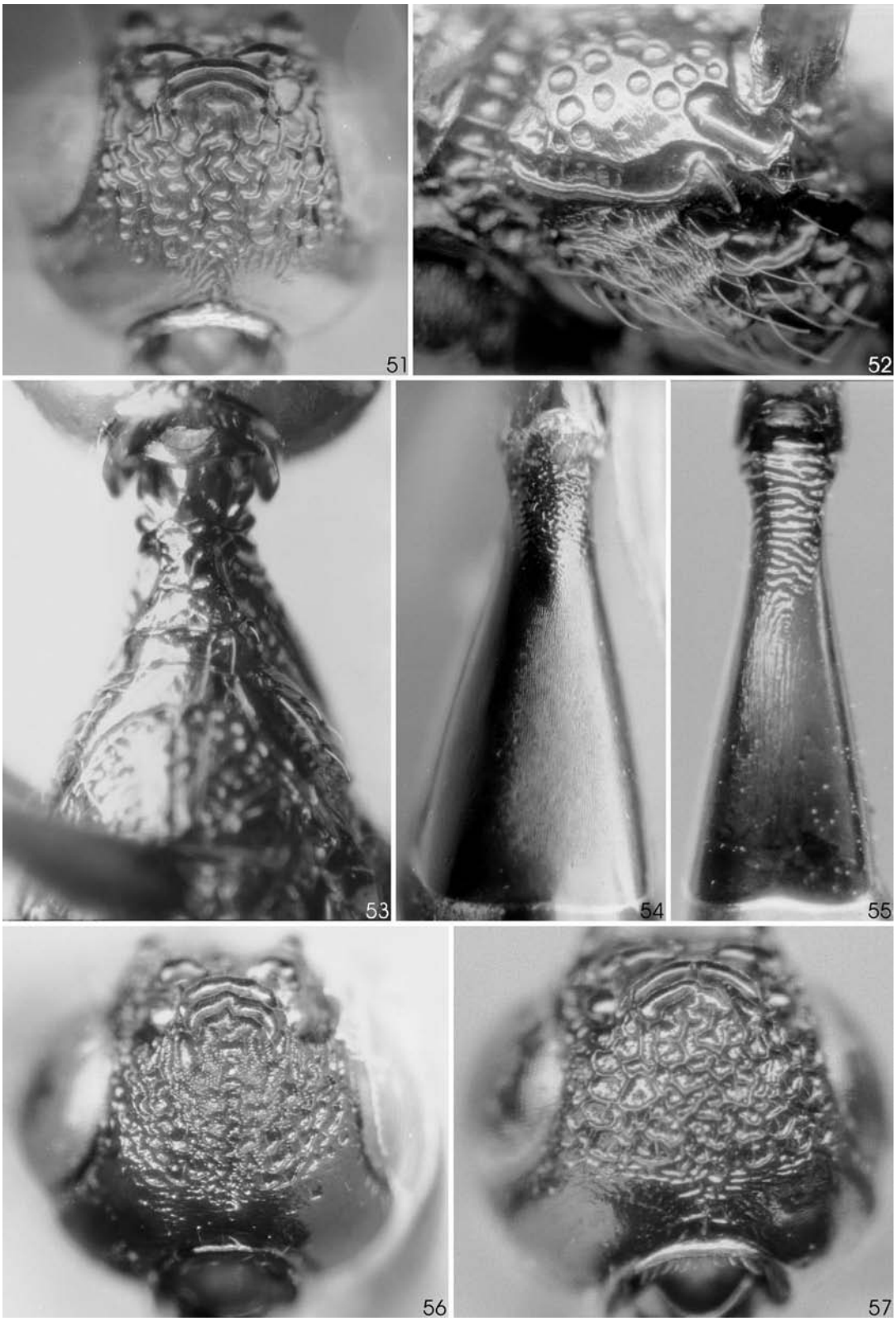
Important – Figure numbers in the format "fig. X" (lower case) in the key below refer to Aguiar (1998); the format "Fig. X" (upper case) refer to figures in the present work.

Females

1. Pronotal fold deeply invaginate, with a large internal space (fig. 62); Pnl/cw < 2.75 2
   Pronotal fold shallow, weakly invaginated, or inconspicuous (fig. 60); Pnl/cw usually > 2.75 (except *H. macrurus* and *H. velutinus*) 13



FIGURES 45-50. *Hemistephanus stenogulatus* sp. n.; **45**, head, dorsal; **46**, occipital carina, dorsal; **47**, occipital carina and colo of pronoto, latero-dorsal; **48**, pronotum, dorsal; **49**, propodeum, dorso-lateral, left; **50**, head and thorax, dorso-lateral.



FIGURES 51-57. *Hemistephanus villosus*; **51**, head, dorsal; **52**, propodeum, dorso-lateral; **53**, pronotum, dorsal; **54**, T3, dorsal (holotype); **55**, *H. collarifer*, T3, dorsal; **56**, *Hemistephanus* sp., head, dorsal; **57**, *H. submaculatus* ♂, head, dorsal.

2(1). Pygidium tubular (figs. 191, 192), aligned or nearly so in relation to dorsal part of T9; bt3c/l greater than 7.50 (as in figs. 51, 63); occipital carina dorsally narrow to linear, or at most moderately wide (figs. 90-93, 112, 113); T4l/w > 1.34 3

Pygidium a convex plate (figs. 182-185, 189, 190), or truncate (figs. 187, 188), distinctly angled in relation to T9; bt3c/l always < 7.50; occipital carina wide to very wide (figs. 80, 83-89, 106-111); T4l/w usually < 1.33 (except *H. arctatus* = 1.50-1.59) 7

3(2). Occipital carina dorsally narrow to linear (figs. 91-93), widening laterally (fig. 113); T5 strigulation arched or V-shaped; hind femur without tubercles basad of basal tooth (fig. 67); hind coxa mesally without punctulation between strigation 4

Occipital carina moderately wide along all its length (figs. 90, 112); T5 strigulation longitudinal; hind femur with two very small tubercles basad of basal tooth (fig. 66); hind coxa mesally densely punctulate between strigation, especially on the basal half .... *H. simulator* Aguiar

4(3). Semiannular microsculpturing typical (Figs. 30, 42); Ov/Ptl = 4.18-5.85 (but rarely < 4.25); preannular area clearly detached, as result of a deep lateral impression (fig. 137); spiracular groove shallow, poorly delimited (fig. 175) 5

Microsculpturing on pronotum absent or inconspicuous; Ov/Ptl = 3.17-4.22; preannular area not detached, lateral impression shallow; spiracular groove usually distinctly delimited 6

5(4). Interfoveolar area without crenulations, finely and characteristically microreticulate (Fig. 43); post-foveolar area without carinae, substrigose or microreticulate-alutaceous (stronger than sculpturing on interfoveolar area) (Fig. 43); Ov/Ptl = 5.24-5.85; Ov/Tt = 1.44-1.67; head uniformly reddish .... *H. ruficeps* (Westwood)

Interfoveolar area subcrenulate to clearly crenulate (Fig. 34); space between macrosculpture polished smooth or with weak microsculpturing; post-foveolar area with strong curved carinae (Fig. 34); Ov/Ptl = 4.18-4.61; Ov/Tt = 1.28-1.39; head reddish with blackish marks .... *H. colombiensis* (Ceballos)

6(4). Ov/Ptl = 3.71-4.22; vertex arcuate-rugose, in distinctly concentric transverse pattern (fig. 92); space in between rugae smooth or with inconspicuous granular microsculpturing; abdomen long and narrow, slightly wider than petiole (fig. 179), T4l/w = 1.72-2.52; semiannular dorso-laterally with a few short rugae (fig. 36); pygidium typically long and narrow, tubular (fig. 192); pygidial groove absent, or at most weakly indicated ..... *H. cylindricus* (Westwood)

Ov/Ptl = 3.17-3.63; vertex with sharply angled rugae generating an irregular zig-zag, sculpturing typically oriented in longitudinal patterns, especially centrally (fig. 91); space in between rugae of coronal area and vertex with strongly granular microsculpturing, always much more evident than in *H. cylindricus*; T4l/w typically between 1.45-1.67 (total variation = 1.34-1.94); semiannular anteriorly and dorso-laterally with distinctly visible, strong rugae; pygidium moderately long, somewhat truncate, apically semicircular in transverse section (as in fig. 191), or distinctly wider than higher; pygidial groove conspicuous, V- or U-shaped ..... *H. validus* Aguiar

7(2). Propodeum, at least laterally, distinctly transversely lacunose or corrugated between foveolae (figs. 172, 174); io/ol > 3.20 8

Propodeum at most weakly corrugated (figs. 167-171); io/ol usually < 3.20; if greater, then Ov/Ptl > 5.50 9

8(7). Semiannular on each side with a series of approximately 20 straight, weakly oblique rugae (fig. 132); strong corrugations or transverse-elongate lacunae on entire propodeum between foveolae (fig. 172); frons conspicuously and entirely areolate (similar to fig. 94); vertex entirely areolate or subareolate, areolae strong, irregular, reaching post-vertex (fig. 88); head dark brown as thorax; Ptl/T3l = 2.67; Pn/Cb = 0.60; oc/DO = 1.17; Pnl/cw = 2.08; io/ol = 4.51 .... *H. marginalis* (Schletterer)

Semiannular mostly polished smooth, with a few small subfoveolae (fig. 133); strong corrugations concentrated near spiracular groove, in an area without foveolae (fig. 174); propodeum centrally with few corrugations or small transverse lacunae, both mostly organized along a medial longitudinal band; frons with subparallel strigation, transverse

ventrally, becoming oblique-arcuate dorsally (as in fig. 96); areolae on vertex oriented longitudinally; post-vertex smooth, with about 2-4 strong medial longitudinal rugae extending to occipital carina (fig. 89); head reddish; Ptl/T3l = 2.96-2.97; Pn/Cb = 0.71-0.82; oc/DO = 1.40-1.47; Pnl/cw = 2.39-2.72; io/ol = 3.29-3.90 .... *H. submaculatus* (Westwood)

9(7). Pygidium truncate (figs. 187, 188); Ov/Ptl = 4.05-6.01; Ptl/T3l = 1.98-2.60 10

Pygidium a convex plate (figs. 185, 189); Ov/Ptl = 2.64-3.61; Ptl/T3l = 3.15-3.75 11

10(9). Metapleuron widely open below petiolar foramen, exposing a large membranous area (fig. 168); semiannular and hind coxa mesally covered by conspicuous microreticulation (individual cells diamond-shaped); occipital carina with a small but distinct emargination on the latero-ventral angle (figs. 106, 114); spiracular groove short, ending just posterior to anterior half of propodeum (fig. 168) .... *H. arctatus* Aguiar

Metapleuron closed below petiolar foramen by a conspicuous and strongly sclerotized plate, (fig. 167); semiannular and mesal face of hind coxa without diamond-shaped microreticulation; occipital carina without emargination (fig. 107); spiracular groove very long, almost reaching crenulate sulcus (fig. 167) ..... *H. limpidipennis* (Schletterer)

11(9). Post-vertex and temple mostly smooth, without general sculpturing of vertex (figs. 85-87); gena uniformly convex, with a few weak foveolae or rugae; Ac/Cc normally between 0.05-0.12 (in a single case = 0.18) 12

Post-vertex and temple widely covered by sculpturing from vertex (fig. 84); gena latero-dorsally with a distinct protuberance, forming a callosity or tubercle; centrally with small foveolae and rugae; Ac/Cc = 0.13-0.22 .... *H. carioca* (Orfila)

12(11). Spiracular groove long, but never reaching or fusing with the crenulate sulcus (figs. 154, 171); Ov/Ptl = 3.19-3.61; Ov/Abd = 1.83-2.06; bt3c/l = 4.71-6.00; vertex with hairs frequent but spaced, long, stout, straight, decumbent anteriorly; semiannular with distinct foveolae or subfoveolae (fig. 128) .... *H. collarifer* (Schletterer)

Spiracular groove crossing the entire propodeum, reaching and often fusing with crenulate sulcus (Fig. 52; fig. 169); Ov/Ptl = 2.79-2.91; Ov/Abd = 1.51-1.52; bt3c/l = 2.93-4.29; vertex with short, delicate, curved hairs, decumbent in all directions; semiannular with stout rugae, without foveolae (fig. 127) ..... *H. villosus* (Kieffer)

13(1). Pronotal fold differentiated (or at least its position distinctly indicated by the dorso-longitudinal depression on colo), relatively close to semiannular, so that preannular area is small, distinctly shorter than colo (figs. 119, 121-126); io/oo = 2.12-6.75; hind femur without tubercles basad of basal tooth (as in fig. 67) 14

Pronotal fold weak or inconspicuous, usually blending somewhat with overall sculpturing; relatively distant from semiannular, so that preannular area is about as long as, or longer than colo (figs. 117, 118, 120); io/oo = 7.00-11.50 (except *H. stenogulatus* = 5.80-6.84); hind femur usually with at least two small tubercles basad of basal tooth (figs. 64-66), rarely with no tubercles at all 21

14(13). Vertex sculpturing primarily longitudinal, convergent posteriorly (figs. 78, 79, 81, 82); colo with numerous carinae or some of them very strong (figs. 123-126) 15

Vertex sculpturing primarily transverse, more or less transverse or forming concentric patterns (figs. 75-77); colo with few and weak carinae, or entirely smooth (figs. 119, 121, 122) 18

15(14). Occipital carina uniformly wide (figs. 81, 82, 104, 105); bt3c/l = 4.67-6.50; vertex sculpturing coarse or very coarse, few or no microramifications (figs. 81, 82) 16

Occipital carina very narrow, at least dorsally (figs. 78, 79, 100); bt3c/l = 3.14-4.60; vertex sculpturing fine, numerous, with frequent microramifications (figs. 78, 79) 17

16(15). Colo with two extremely strong carinae running dorso-longitudinally from pronotal fold, bending laterally at little more than 90° well before apical margin (fig. 126); colo seen laterally with 4-8 carinae; T4 densely longitudinally strigulate; Ov/Ptl = 3.72-4.47, Pnl/cw = 2.19-2.63; io/oo = 6.00-6.75; spiracular groove reaching crenulate sulcus, its surface conspicuously subcrenulate (fig. 166); vertex with numerous long, strong hairs (as in fig. 59) ..... *H. angulicollis* (Roman)

Colo with 10 or more transverse carinae on each side, from weakly indicated to (rarely) strong,

never apically bent 90° (fig. 125); T4 centrally distinctly microreticulate, individual cells hexagon-shaped; Ov/Ptl = 2.89-3.44; Pnl/cw = 3.00-4.35; io/oo = 3.67-5.50; spiracular groove reaching mid length of propodeum or little more, strongly curved internally, its surface polished smooth (figs. 152, 165); pilosity on vertex conspicuous, but hairs short and scarce ..... *H. tener* (Schletterer)

17(15). Interfoveolar area with conspicuous granular microsculpturing; propodeum alutaceous between foveolae, usually distinctly so (figs. 161, 163); Pnl/cw = 3.75-4.49 (fig. 124); post-vertex with a few short, fine, and usually sublongitudinal rugulosities (fig. 79); northern Brazil, Guyana, Peru. *H. carinatus* Elliott

Interfoveolar area very weakly microsculptured, shining; also subcrenulate, sometimes strongly so; sculpturing of propodeum between foveolae varying from sparsely corrugated to widely and distinctly corrugate-alutaceous with corrugations usually aligned medially longitudinally (fig. 162); Pnl/cw normally 2.81-3.60, very rarely between 3.61-3.82 (fig. 123); post-vertex with several oblique rugulosities (fig. 78); Colombia, Costa Rica, Panama . *H. erythrocephalus* (Westwood)

18(14). Occipital carina ventrally strongly convergent, its sides almost meeting at base of hypostomal carina, thus forming a "V" when observed ventrally; hypostomal area with a deep fissure instead of post-genal bridge (fig. 116); vertex sculpturing fine to very fine, generating a dense, concentrically arcuate pattern (figs. 76, 77); vertex glabrous, not clearly differentiated from post-vertex (figs. 102, 103); io/oo = 2.87-4.75; Ac/Cc = 0.00-0.08 19

Occipital carina ventrally normal, its sides parallel or almost so, ending widely separated, and distant from base of hypostomal carina; hypostomal area with a normal post-genal bridge (similar to fig. 115); vertex sculpturing very coarse, more or less transversely undulate (fig. 75); vertex with strong pilosity (fig. 59), clearly differentiated from post-vertex, which is flat, smooth, glabrous (fig. 101); io/oo = 1.98-2.60; Ac/Cc = 0.07-0.20 .... *H. erugatus* Aguiar

19(18). Colo laterally with conspicuous carinae (fig. 121); pronotum not microreticulate; spiracular groove, parapetiolar depression, area within foveolae of propodeum, and between macrosculpturing of metapleuron polished smooth or weakly alutaceous; interfoveolar area without granular sculpturing; vertex sculpturing distinctly longitudinal (as in figs. 78-79), more rarely concentrically arcuate (fig. 77); Ov/Ptl = 2.95-3.61; io/ol = 2.36-3.54; bt3c/l = 1.94-3.56; propodeum distinctly transverse-alutaceous between foveolae (fig. 164) 20

Colo without carinae, smooth (fig. 122); pronotum entirely conspicuously microreticulate (individual cells hexagon-shaped), including within subfoveolae; spiracular groove, parapetiolar depression, area within foveolae of propodeum, and between macrosculptuting on entire metapleuron, with conspicuous, sometimes coarse diamond-shaped microreticulate; interfoveolar area with no trace of subcrenulations, its surface, metapleural fovea, and post-foveolar area with strong granular microsculpturing; vertex sculpturing distinctly concentrically arcuate (fig. 76); Ov/Ptl = 3.63-3.86; io/ol = 1.74-1.92; bt3c/l = 3.67-4.29; propodeum tranverse-alutaceous, with some punctures, punctules, or corrugation between foveolae (fig. 160) ..... *H. elimatus* Aguiar

20(19). Interfoveolar area, metapleural fovea, and post-foveolar area densely microreticulate between macrosculpturing (similar to Fig. 40); interfoveolar area with faint subcrenulations; apical margin of colo weakly concave (fig. 121); head uniformly reddish; vertex distinctly granular between rugae (similar to Fig. 56); colo with 4-7 weak carinae (fig. 121) ..... *H. orfilanus* Fritz and Scaramozzino

Interfoveolar area, metapleural fovea, and post-foveolar area polished smooth or weakly alutaceous between macrosculpturing; interfoveolar area also subcrenulate, usually with 2-3 carinae (rarely absent) (Fig. 39); apical margin of colo strongly concave (Fig. 37); head blackened dorsally; vertex polished smooth between rugae; colo with 6-8 carinae (Fig. 37) ..... *H. costaricensis* sp. n.

21(13). Vein 2r meeting 2+3Rs beyond apex of pterostigma; vein 4Rs only moderately longer than 2r; vein 2Cua hooklike, in distinctly acute angle with 1Cu (figs. 68, 69); setae on M+Cu more numerous and distant from apex (nS = 5-8; pS/Mc = 0.17-0.28); Pnl/cw = 2.13-2.87; io/oo = 7.14-11.50; Tt = 17.5-26.8 mm ... 22

Vein 2r meeting 2+3Rs basad of apex of pterostigma; vein 4Rs several times longer than 2r; 2Cua not hooklike, in weakly acute or right angle with 1Cu (fig. 70); setae on M+Cu less numerous and close to apex (nS = 5; pS/Mc = 0.10-0.18); Pnl/cw = 2.89-3.62; io/oo = 5.80-7.00; Tt = 8.8-13.9 mm 23

22(21). Ov/Ptl = 6.19-7.03; bt3c/l = 5.82-6.58; T4, T5, and T6 with a small to medium-sized area dorsally of very fine, dense strigulation; head always reddish, rest of body black; strigae on frons uniform, straight, transverse, parallel and equidistant ..... *H. macrurus* (Schletterer)

Ov/Ptl = 2.95-4.13; bt3c/l = 3.40-5.00; T4 dorsally mostly covered by longitudinal strigulation, which is very fine, dense, and precisely parallel, generating a convincing velvet texture; T5 and T6 transversely alutaceous, without strigulation; body, including head, uniformly dark-brown; strigae on frons somewhat irregular, with frequent microramifications ..... *H. velutinus* Aguiar

23(21). Hypostomal area normal, post-genal bridge normal and distinct (as in fig. 115); anterior margin of colo weakly concave (fig. 117); interfoveolar area distinctly subcrenulate .... *H. adustus* Aguiar

Hypostomal area with a deep fissure instead of the post-genal bridge (as in fig. 116); anterior margin of colo deeply concave (Fig. 48); interfoveolar area polished smooth ..... *H. stenogulatus* sp. n.

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RESUMO

Quatro espécies adicionais são incluídas no gênero Hemistephanus: H. villosus *(Kieffer) comb. n. e* H. colombiensis *(Ceballos) comb. n., transferidas de* Megischus *e redescritas, e* H. costaricensis *sp. n. e* H. stenogulatus *sp. n., descritas como novas;* H. artiosulcatus *Aguiar é interpretada como sinônimo júnior de* H. villosus *Kieffer. Os machos de* H. arctatus, H. colombiensis, H. submaculatus *e* H. villosus *são descritos pela primeira vez. Numerosos dados morfométricos novos ou complementares são incorporados e discutidos para as espécies mencionadas e para* H. carinatus, H. erugatus, H. erythrocephalus, H. limpidipennis, H. orfilanus, H. ruficeps *e* H. velutinus. *Novos registros geográficos são apresentados para todas as espécies mencionadas e para* H. cylindricus. *Errata em publicações sobre Stephanidae são apresentadas e corrigidas. Machos descritos na literatura como* H. macrurus *por Brullé são examinados e identificados como* Megischus furcatus. *Uma chave de identificação e um sumário dos dados morfométricos, ambos revisados e atualizados, são apresentados para todas as espécies de* Hemistephanus. *Ilustrações fotográficas são fornecidas para todos os táxons novos ou transferidos e para* H. carinatus, H. collarifer, H. ruficeps *e* H. submaculatus.

PALAVRAS-CHAVE: biometria, identificação, *Megischus*, Neotropical, América Central.

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