

Linzer biol. Beitr.	41/1	343-357	30.8.2009
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Review of the Neotropical genus *Hesus* STÅL 1862 with description of a new species (Heteroptera, Aradidae)

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A b s t r a c t : The Neotropical flat bug genus *Hesus* STÅL is reviewed based on rich material from several collections. A new species, *Hesus humeralis* nov.sp., is described, and additional structural and distribution data and a key to species are provided; the parameres of all species are figured for the first time.

K e y w o r d s : Heteroptera, Aradidae, Mezirinae, *Hesus*, new species, Neotropics.

Introduction

The flat bug genus *Hesus* STÅL 1862 was erected for his species *H. annuliger*, which was later synonymised by CHAMPION 1898 with *H. cordatus* (FABRICIUS 1803). It is widely distributed in South and Central America, including the Caribbean Islands.

The following species are presently assigned to this genus, for which KORMILEV 1968, presented a key.

Hesus acuminatus (FABRICIUS 1803) from "America meridionali"

Hesus cordatus (FABRICIUS 1803) from "America meridionali"

Hesus flaviventris (BURMEISTER 1835) from Brazil

Hesus mexicanus KORMILEV 1968 from Mexico

Hesus subarmatus STÅL 1873 from Surinam

Another species, *Hesus angulicollis* BLOETE 1965 from Surinam, listed by KORMILEV & FROESCHNER 1987 under *Hesus*, has recently been synonymised with *Mezira handlirschi* (BERGROTH 1898) by the author (HEISS 2009 in print).

A detailed diagnosis of the genus was given by USINGER & MATSUDA 1959. Now additional information on structural characters is given and the unknown parameres of all species are figured. Further distribution data and a key to the treated taxa are presented and *Hesus humeralis* nov.sp. is described below.

The material upon which this study is based is held in the collection of the author (CEHI); Gérard Moragues, Marseille France (CGMM); Giovanni Onore, Quito Ecuador (CGOQ); and the Carnegie Museum, Pittsburg USA (CCMP). Lectotypes or specimens which were compared with types of all species were available for examination.

Measurements were taken with a micrometer eyepiece 20 units = 1 mm. Deltg = dorsal external laterotergite (connexivum).

Taxonomy

Hesus humeralis nov.sp. (Fig. 4, 7, 8, 19-21, 27; photo 1, 2)

D i a g n o s i s : Larger species, most resembling and confounded with *Hesus cordatus*. It is however distinguished from the latter by the angular not rounded humeri, the dark brown unicolorous antennae and legs (bicoloured in *H. cordatus*), and other characters given in the key.

D e s c r i p t i o n : Macropterous male. Colouration dark brown, body partly covered by a thin yellowish incrustation, apodemal impressions ochraceous (glabrous spots of USINGER & MATSUDA 1959) on deltg III-VII as well as the postero-interior and exterior angles of deltg III-VI and an oblique spot on membrane posterior to apex of corium; corium and membrane usually of lighter brownish to ochraceous colour with contrasting dark brown veins (photo 1, 2). Venter medially and apodemal impressions of sternites ochraceous.

H e a d : Distinctly longer than wide across eyes (37/25); genae surpassing clypeus, contiguous anteriorly but leaving a notch at apex. Antenniferous lobes subparallel with rounded apex. Antennae about 2.9 x as long as width of head, segment I longest and thicker than the following ones, II shortest, III cylindrical, about twice as long as II, IV fusiform and slightly longer than II. Relative length of antennal segments I:II:III:IV = 27/11/20/14. Eyes inserted, not protruding. Postocular lobes angular, lateral margins subparallel. Rostrum arising from a slit-like atrium, rostral groove as long as head, carinate laterally and open posteriorly.

P r o n o t u m : Distinctly wider than long (68/38); lateral margins subparallel at angulate humeri, then sinuate and roundedly converging anteriorly, anterior margin with a ring-like collar, disk with a distinct transverse impression separating the granular posterior lobe from the longitudinally rugose anterior lobe; the latter medially with 2 (1+1) smooth, oblique, anteriorly converging elevations, these delimited anteriorly by 2 (1+1) larger contiguous roundish tubercles (fig. 4).

S c u t e l l u m : Triangular, base and lateral margins carinate, disk transversely rugose and longitudinally elevated medially.

A b d o m e n : Subparallel, only slightly widening posteriorly from deltg II-VI; deltg II-V subrectangular, VI trapezoidal and laterally produced, VII rectangular, each with 2 round apodemal impressions, posteroexterior angles slightly protruding. Tergal plate covered by hemelytra, an exposed lateral carina separates it from deltg III-VI. Spiracles II-V ventral, VI lateral and visible from above, VII dorsolateral placed on reflexed rim of ventral laterotergite VII. Terminal segments as fig. 7, 8.

H e m e l y t r a : Corium with carinate lateral margin and elevated veins, membrane of lighter colour with darker reticulate veins.

L e g s : Femora and tibiae straight and cylindrical, claws with long curved pseudopulvilli and setiform parempodia.

G e n i t a l i c s t r u c t u r e s : Pygophore wider than long (19/16), surface granulate, dorsally with a conical median sclerite produced backward over the lower globose portion; paratergites VIII truncate reaching $\frac{3}{4}$ of pygophore. Parameres with a file-like structure of 12 carinae on ventral face, fig. 19-21.

Measurements: Length, 10.2 mm; width of pronotum 3.4 mm; width of abdomen across deltg IV 4.4mm.

Female: Generally as male but of larger size, deltg VII triangular, mediotergite VII with two large blunt elevations, depressed in between, posterior margin straight.

Range of size in paratypes: Length ♂♂ 9.4-10.4 mm; ♀♀ 11.3-12.4 mm.

Etymology: Referring to the conspicuous angulate humeri of pronotum.

Material examined: Holotype ♂ Ecuador. prov. Sucumbios, Shushifindi 0°11'S, 76°38'W, 200-400m, 4-8 XII 2004 P. Banañ lg. (CEHI); Paratypes: Ecuador: 23♂♂ 22♀♀ with data as holotype (CEHI); 4♂♂ 4♀♀ prov. Sucumbios, San Antonio 0°17'S, 76°39'W, 200-400m 3 XII 2004, 8♂♂ 5♀♀ prov. Sucumbios, Dureno 0°03'S, 76°40'W, 200-400m 9 XII 2004 and 3♂♂ prov. Napo, Las Palmas 0°38'S, 77°03'W 200-400m 3 XII 2004, all P. Banañ lg. (CEHI); 1♀ Napo, Cuyabene IV 1884 E. Asanza lg. (CEHI); 1♂ Napo, Yampuna 23 I 1989 Sandoval lg. (CGOQ); Colombia: 4♂♂ 1♀ Vaupes Mitú 5 VII 2003 A. Peña lg (CEHI); Peru: 1♂ Amazonia, Iquitos 11 II 1977 E. Heiss lg. (CEHI); 1♂ prov. Madre de Dios, env. puerto Maldonado II 1995 A. Pisano lg. (CEHI); 1♂ prov. Huánuco, Rio Llullapichis, Stat. Panguana 9°37'S, 74°76'W 330m, 20 XI- 14 XII 2008 F. Wachtel lg. (CEHI); Brazil: 8♂♂ 6♀♀ Amazonia, Manaus, garden of hotel Amazonia under logs of broken branches on the round, 29 VIII 2000 E. Heiss lg. (CEHI); 1♂ Amazonia, Paraque 30km east Manaus, 110ft 17 I 1981 R. Davidson lg. (CEHI); 2♂♂ 1♀ Amazonia, Mission Cauaburi, Canal Maturach 70m, 14 XII 1962 C. Lindemann lg. (CEHI); 2♂♂ 1♀ "Amazon sup.", Olivença (without date and collector) (CEHI); 1♀ Rondonia, Rio Jacundá 20 II 1962 and 1♀ V 1964 E.H. Bon lg. (CEHI); 4♂♂ 3♀♀ Amazonia, 30km east Manaus, Taruma falls 100m, 12 II-1 III 1981 G. Ekis & C. Young lg. (CCMP); 1♂ Amazonas 1943, A. Parko lg. ex.coll. Campos Seabra / Kormilev (CEHI); 1♂ Rondonia 62 km W Arquimenes nr. Faz. Rancho Grande 6-15 XII 1990, D.A. Rider & J.E. Eger lg. (CEHI). French Guyana: 1♀ Route de Cacao PK1, XI 1997, D. Rignon lg. (CGMM); 1♀ Cacao, Degrad Kwata sur crique Bagot, 18 XI 1996 J.P. Vesco lg. (CGMM); 1♀ Montagne de Kaw PK 37, 23 IX 1998 M. Berenger lg.(CEHI); 1♂ Kourou, route Sinamary, XI 1992 (unknown collector) (CEHI); 1♂ Kourou, piste Soumourrou 23 XII 2002/6 II 2003, piège malaise, lg. D. Faure (CGMM); 1♀ RN2 PK 22, Montagne des Chevaux, 22 XI 2008, piège vitre d'interception, lg. S. Brulé & P.H. Dalens (CGMM); 1♀ Régina, RN2 PK 125+3, 19 X 2008, piège vitre d'interception, lg. J.L. Giuglaris (CGMM).

Paratypes will be deposited in following institutions: Biologiezentrum Linz, Austria; Natural History Museum Vienna, Smithsonian Institution, Washington D.C. and American Museum of Natural History, New York.

Distribution: So far recorded from Venezuela, French Guyana, and the Amazon Basin of Brazil, Peru, Ecuador, and Colombia.

***Hesus acuminatus* (FABRICIUS 1803) (Fig. 1, 11, 12, 26; photo 5)**

Described as *Aradus acuminatus* from «America meridionalis» it was transferred to *Hesus* by STÅL 1868. Lectotype ♂, designation by HEISS 1997: 47.

This species is easily recognized by the large size, the generally ochraceous colouration of body, legs, and antennae and the elongate ridges between the oblique elevations on the anterior pronotal lobe (fig. 1). Darker brown to blackish are the posterior half of tergite and sternite VII and the lateral portions of pro-, meso-, and metasterna; in some cases the apex of antennal segment III and IV and the anterior and posterior margin of deltg III-VI and the entire tergite VII are also darker and a brownish median ring on fore leg tibiae is present (photo 5).

Pronotum with lateral margins of anterior lobe evenly rounded, disk of posterior lobe with coarse granulation (fig. 1). Deltg VII expanded laterally and angulate, terminal

segments fig. 11, 12. Spiracles II-VI ventral, VII dorsolateral and visible from above, VIII terminal. Parameres wide with a deep excavation on dorsal face (fig. 26), ventral face with a file-like structure of about 18 transverse carinae.

Measurements: Length ♂♂ 9.6-10.9mm, ♀♀ 11.4-11.9mm; ratio length of antennae / width of pronotum 2.30-2.37; ratio antennal segment I / segment II 1.45.

Material examined: Lectotype male (in Kiel collection, Mus. Copenhagen); Brazil: 3♂♂1♀ Rondonia, 62 km W Arquimenes nr. Faz. Rancho Grande 6-15 XII 1990 D.A. Rider & J.E. Eger leg., ♂♂♀♀ 5-17 X 1993 and 8-20 XI 1994 J.E. Eger & L.B. & C.W. O'Brien lg.(CEHI) and from same locality 3-15 XII 1996 J.E. Eger lg. (CEHI); 1♂ Pará (CCMP); 1♂ Chapada (CEHI). Ecuador: prov. Napo, 1♀ Sucumbios, Luubaqui 500m, 0°3N,77°20W 1 V 1999 C. Barabanda lg. (CGOQ); 1♂1♀, Sucumbios, Cuyabeno 230m, 23-25 VII 1992 T. Santander lg. and Cuyabeno 400m VIII 1989 M.E. Ordonez lg. (CGOQ); 1♀ Napo, Misuahalli 28 XII 1995 M. Rodriguez lg. and 1♀ 14 XII 1985 (CGOQ); 1♂ Jatun Sacha 450m, 4-7 IV 1996 M. Carrera lg. (CGOQ); 1♂2♀♀ Napo, Puerto Maldonado 1650-1900ft, 6-19 IX 1998 J.E. Eger lg. (CEHI); 2♂♂1♀ Napo, Las Palmas 0°38S,77.03W 200-400m, 3 XII 2004 and Loreto, 0°42S,77°19W 200-600m, 30 XI-3 XII 2004 P. Banař lg.(CEHI). Colombia: 1♂ Letizia 29 VIII-5 IX 1970 J.S.M. Sedlacek lg. (CEHI). Bolivia: 1♀ Bolivia tropical, region Chapare 400m, Zischka lg. (CEHI); 1♀ Cochabamba prov., Villa Tunari, Hotel los Tucanes 16°58S,65°23W 320m, 5 IX 2000 M. Hauser lg. (CEHI). Peru: 2♂♂1♀ Monson valley, Tingo Maria, 26 X and 10 XII 1954 Schlinger & Ross lg. (CEHI); 1♀ Tarma valley nr. San Ramon, 1100-1300m 18 X 1980, L. Beck & H.W. Mittmann lg. (CEHI); 1♀ Pachitea (CEHI). French Guyana: 1♂1♀ Montagne de Kaw, Fourgassié env. 5 VIII 2006 lg. Snižek (CEHI) 1♀ 4 IX 2008, piège vitre d'interception, lg. J.L. Giuglaris (CGMM); 1♂ Cacao, degrad Kwata sur crique Bagot, 23 VIII 1996, lg. J.P. Vesco (CGMM); 1♂ PK 1 route de Cacao, 4/7 III 2000, lg. D. Rignon (CGMM); 1♂ Saint-Laurent du Maroni, forêt de Saint-Jean, 23 II 2007, à vue, lg. G. Moragues (CGMM); 1♂ Régina, RN2 PK 125 + 3, 28 II 2008, 1♀ 26 VII 2008, 1♀ 19 VII 2008, 1♂ 2 IX 2008, all piège vitre d'interception, lg. J.L. Giuglaris (CGMM); 1♀ pk 27 Montagne de Kaw, layon Degrad Lalanne, 10 VIII 1996, lg. J.P. Vesco (CGMM); 1♀ same locality PK 35, 31 III 2003, piège malaise; 1♂ 9 VIII 2007, à vue, both lg. J.A. Cerda (CGMM); 1♀ same locality PK 36, 20 VII 1998, à vue, lg. G. Moragues; 1♀ 29 IV 2000, piège malaise, lg. J.A. Cerda 1♀ 20 XI 2002, à vue, lg. O. Morvan; 1♂ 1 V 2004, à vue; 1♂ 14 IX 2004, à vue; 1♀ 23 VIII 2005, à vue, all lg. J.A. Cerda (CGMM); 1♂ same locality PK 37.5 + 2, 1 VIII 2003, à vue; 1♀ 3 VIII 2003, à vue, both lg. J.A. Cerda (CGMM); 1♀ same locality PK 42, 15 V 2005, à vue, lg. J.A. Cerda (CGMM); 1♀ same locality PK 47, 9 II 1994, lg. J.A. Cerda (CGMM); 2♀♀ 25 km NW St. Laurent du Maroni, route Paul Isnard, 17 I 2007, lg. Snižek (CEHI); 1♂ Saül, layon des Eaux Claires, abattis en forêt, 3.622° N 53.208°W, 4 IV 2000, lg. J.C. Streito (CEHI); 2♀♀ Mana River, May 1897 Acc. 6008 (CCMP).

Distribution: This seems to be a species of the lowland rainforests of the Amazon Basin and adjacent areas. Recorded from French Guyana, Brazil, Colombia, Ecuador, Bolivia, to Peru.

***Hesus cordatus* (FABRICIUS 1803) (Fig. 3, 9, 10, 22; photo 3, 4)**

Described as *Aradus cordatus* from «America meridionali», later assigned to *Hesus* by STÅL 1862. CHAMPION 1898 synonymized in his great comprehensive work «Biologia Centrali-Americana» *Hesus annuliger* STÅL 1862 from Mexico, *Crimia cincticornis* WALKER 1873 from Brazil and *Hesus semiolus* BERGROTH 1894 from Brazil with *cordatus*. Lectotype ♂, designation by HEISS 1997: 45.

This species is distinguished by a combination of characters given in the key. Its colouration is variable, generally brownish with lighter parts: antennae brown, basal half of segment III ochraceous (sometimes fading), legs with two pale rings on tibiae, of which the apical one on fore tibia is partly fading or missing. Pronotum with evenly rounded lateral margins of anterior lobe, the oblique median elevations are delimited

anteriorly by round tubercles, the gap in between is depressed with only few smaller granules (fig. 3). Abdomen: anterolateral angles usually brownish, sometimes extended to basal 1/3 of deltg II-VI, their remaining parts including apodemal impressions ochraceous, posterior half of tergite VII brown. Hemelytra with a longitudinal ochraceous spot on membrane posteriorly to apex of corium (photo 3, 4). Venter ochraceous at middle, brownish elsewhere. Spiracles II-V ventral, VI lateral and visible from above, VII dorsolateral, VIII terminal. Terminal segments as fig. 9, 10. Parameres as fig. 22.

Hesus cordatus resembles strongly *H. humeralis* nov.sp., and was therefore confused with the latter; and therefore it is necessary to reexamine this taxon in collections.

M e a s u r e m e n t s : Length ♂♂ 9.3-9.8mm, ♀♀ 9.7-10.6mm; ratio length of antennae / width of head 2.6-2.7; ratio antennal segment I / segment II 1.75-1.90.

M a t e r i a l e x a m i n e d : Lectotype male (in Kiel collection, Mus. Copenhagen); Mexico: 2♂♂ Yucatan, Palenque X 1978, E. Heiss lg. (CEHI); ♂♂ ♀♀ Limon, San Luis Potosi 7 VII 1990 R. Leschen lg. (CEHI). Costa Rica: Jacó prov., Puntarenas 1-8 II 1987 E. Heiss lg. (CEHI); prov. Limon, Cahouita N.P. 1-8 II E. Heiss lg. (CEHI); 2♂♂ Golfito 8 VII 1957 Truxal & Menke lg. (CEHI); 1♂1♀ prov. Puntarenas, Corcovado N.P. 8°28N,83°26W 19-24 V 2006, Barries, Cate & Nagy lg. (CEHI); 1♂ prov. Limon, Reserva Hitoy-Cerrere 9°40N,80°01W, 31 V 2006, Barries, Cate & Nagy lg. (CEHI); 1♀ prov. Limon, La Suerta Biol. Stat, 50m, 10°26N,83°47W, Barries, Cate & Nagy lg. (CEHI); ♂♂ ♀♀ Playa Zaucudo, Tiskita Jungle Lodge, 8°21N, 83°08W, 9-11 VII 2008 E. Holzer lg. (CEHI). Nicaragua: 2♂♂ 2♀♀ Rio San Juan, Bartola Field Station 70-100m, 10°58N,84°20W, 7-11 VI 2005 R. Schuh lg., same locality 1♂1♀ 11 VI 2005 W. Suppanttschisch lg. (CEHI). French Guyana: 1♂ Montagne de Kaw, Camp Caïman, 7-12 XI 1995 lg. Snižek (CEHI); 1♀ Fourgassié near Roura, 16-30 IX 1995 lg. M. Trzna (CEHI); 1♂ PK6 Acarouany, 17 IX 1996, lg. B.Berenger (CEHI); 1♀ Vidal, III 1997, lg. J.P. Vesco . (CEHI); 1♂ 20km E of Saint Laurent du Maroni 4 VIII 2006 lg. Snižek (CEHI); 1♂ Amazon Nature Lodge 04.33.570N, 52.12.433W 300m 18-23 VI 2007 lg. Eger (CEHI); 1♀ Cacao, degrad Kwata sur crique Bagot, VIII 1995 lg. D. Rignon; 1♂ 23/30 IX 1995, lg. G. Moragues; 1♂ IV-VII 1996, lg. D. Rignon (CGMM); 1♀ PK 1 route de Cacao, 6 VIII 1999, à vue, lg. G. Moragues; 1♀ 28 larvae 1999, lg. D. Rignon (CGMM); 1♂ PK 3 piste Coralie, 13 II 1993, à vue sur tronc de nuit, lg. G. Moragues (CGMM); 1♀ Sinnamary, barrage de Petit Saut, 8/14 IX 1993, sous écorce tronc coupé, lg. G. Moragues (CGMM); 1♀ Iracoubo, Rocoucoua, 7 II 1993, sous écorce tronc coupé, lg. G. Moragues (CGMM); 1♀ Kourou, piste Soumourou, IX 2002, piège malaise, lg. D. Faure (CGMM); 1♀ Régina, RN 2 PK 125 + 3, 5 XI 2007; 1♂1♀ 24 I 2008; 1♀ 29 II 2008; 1♂ 19 III 2008; 1♀ 11 VIII 2008; 1♂ 27 VIII 2008; 1♂ 19 IX 2008; 1♀ 8 X 2008, all piège vitre d'interception and lg. J.L. Giuglaris (CGMM); 1♀ Montagne de Kaw, PK 35, 3 VIII 2007, filet cryldé; 1♀ 23 VIII 2007, à vue; 1♀ same locality PK 36, 17 II 1999, piège malaise; 1♀ 1/15 VIII 2008, à vue; 1♂ same locality PK 37.5 + 2, 25 X 2003, à vue; 1♂ 29 I 2004, à vue, all lg. J.A. Cerda (CGMM); 1♀ same locality, degrad de Kaw, 9 VIII 1996, lg. J.P. Vesco (CGMM); 2♀♀ 25km NW St. Laurent du Maroni, route Paul Isnard, 17 I 2007 lg. Snižek (CEHI). Brazil: ♂♂ ♀♀ Rondonia, 62 km W Arquiennes nr. Faz. Rancho Grande 6-15 XII 1990 D.A. Rider & J.E. Eger leg., 5-17 X 1993 and 8-20 XI 1994 J.E. Eger & L.B. & C.W. O'Brien lg.(CEHI). Ecuador: 2♂♂ 2♀♀ Puerto Maldonado 1650-1900ft, 9-19 IX 1998 J.E. Eger lg. (CEHI); ♂♂ ♀♀ Napo, Yasuni 250m, 8 VI 1997 G. Onore lg. (CGOQ); 1♀ Napo, Cuyabeno III 1983 (CGOQ); 1♀ Napo, Coca XII 1986 G. Onore lg. (CGOQ); 1♂ Esmeraldas, Rio Pizana IV 1984 G. Onore lg. (CGOQ); 1♂3♀♀ Napo, 70km SW Coca, Loreto 300m, 4-10 III 2003 M. Halada lg. (CEHI); ♂♂ ♀♀ prov. Sucumbios, Dureno 0°03N,74°40W 200-400m, 9 XII 2004; San Antonio 0°17S,76°39W 4 XII 2004 and Shushufindi 0°11S,76°38W 200-400m, 4-8 XII 2004 P. Banañ lg. (CEHI); 1♀ Esmeraldas, Quininos V 1987, Lopez lg. (CEHI). Colombia: 1♂ Darien prov., Turbo 24 XII 1995 A. Scharmann lg. (CEHI); 1♀ Rio Don Diego, Sierra Nevada de Sta. Martha, 26-29 XII 1973 D.v. Helvessen lg. (CEHI); Vaupes, Mitú 15 VII 2003 A. Peña lg. (CEHI). Peru: 1♂1♀ Amazonia, Iquitos 11 II 1977 E. Heiss lg. (CEHI); 1♀ Madre de Dios, Pambopata River, Gollpa Lodge 9-12 XI 1995, M. Klichia lg. (CEHI); ♂♂ ♀♀ prov. Huánuco, Rio Lullapichis, Station Panguana 233m, 9°37S,74°56W, 20 XI-14 XII 2008 F. Wachtel lg. (CEHI).

Distribution: This is the most common species of the genus and widely distributed from Mexico through Central America to French Guyana, Brazil, Ecuador, and Peru.

***Hesus flaviventris* (BURMEISTER 1835) (Fig. 2, 15, 16, 25; photo 6)**

Described as *Dysodius flaviventris* from Brazil, it was transferred to *Hesus* by STÅL 1862. A specimen of Burmeister's collection in the Humboldt Museum Berlin was examined to ascertain the species identity as understood in the literature, which can be confirmed.

It is – besides *H. acuminatus* – the largest species, generally of dark brown to blackish colour, the posterior half of deltg III-VI are ochraceous as are the apodemal impressions of deltg VII. Antennae brown, base of antennal segment I and apex of IV sometimes ochraceous; legs unicolorous brown without paler rings on tibiae (photo 6). Although dorsally of generally darker colouration, that of the venter is similar to that of *H. cordatus*.

Pronotum with evenly rounded lateral margins of anterior lobe, median tubercles between oblique elevations elongated backward followed by larger tubercles (fig.2). Spiracles II-V ventral, VI sublateral and not visible from above, VII lateral and visible from above, VIII terminal. Terminal segments fig. 15, 16. Parameres wide, dorsal face deeply excavated laterally (fig. 25), ventral face with a file of 25-27 transverse carinae.

Measurements: Length ♂♂ 10.5-10.8mm, ♀♀ 11.6-12.0mm; ratio length of antennae / width of head 2.4-2.5; ratio antennal segment I / segment II 1.5-1.7.

Material examined: Nicaragua: ♂♂ ♀♀ Rio San Juan, Bartola Field Station 70-100m, 10°58N, 84°20W, 7-11 VI 2005 R. Schuh lg., same locality 1♂ 1♀ 8 VI 2005 W. Suppantšitsch lg. (CEHI). Panama: 1♂ 1♀ Colón prov., Sherman Forest Reserve 130m, 9°17N, 79°58W, 6 VI-10 VII 2002 Čiček & Hauk lg. (CEHI); 1♀ Panama city, Parque Natural al Metropolitano 8°56N, 79°33W, 6 VI-11 VII 2002 Čiček & Hauk lg. (CEHI). Venezuela: 1♂ 1♀ San Juan de Marraparié T.F.A., 24 III 1958, E. Comeli-Gracia lg. (CEHI); 1♀ Gran Sabana, S. Ignacio 1000m, 8-9 IC 1977 Lindemann lg. (CEHI); ♂♂ ♀♀ Carabobo, Mun. Bejuma, Via Palmichal C.M., XII 2005 F. Wachtel lg. (CEHI). French Guyana: 1♀ 20 km E of Saint Laurent du Maroni 24 VIII 2006 lg. Snižek (CEHI); 1♂ Régina, RN2 PK 125 + 3, 9 X 2007; 1♂ 19 XI 2007, 1♀ 28 II 2008, 1♀ 10 VII 2008, 1♀ 18 VII 2008, all piège vitre d'interception, lg. J.L. Giuglaris (CGMM); 1♂ Montagne de Kaw PK 36, 5 VIII 2001, piège malaise; 1♀ 16 VIII 2003, à vue; 1♂ 24 IV 2007, à vue; 1♂ same locality PK 37.5, 9 IV 2001, à vue; 1♀ 26 XII 2004, à vue; 1♂ same locality PK 37.5 + 2, 21 IV 2004, à vue; 1♀ same locality PK 37.5 + 2.5, 3 VIII 2003, à vue; 1♀ same locality PK 42, 15 V 2005, à vue, all lg. J.A. Cerda (CGMM); ♂♂ ♀♀ 25km NW St. Laurent du Maroni, route Paul Isnard, 17 I 2007, lg. Snižek (CEHI). Brazil: 2♂♂ 2♀♀ Rondonia, 62 km W Arquimenes nr. Faz. Rancho Grande 6-15 XII 1990 D.A. Rider & J.E. Eger leg., 5-17 X 1993 and 8-20 XI 1994 J.E. Eger & L.B. & C.W. O'Brien lg. (CEHI); 1♀ Pará 22 XII 1993 ex coll. Mus. Warszawa / Kormilev (CEHI); 1♂ Santarem (CEHI). Ecuador: 1♀ Napo, Coca IV 1987 G. Onore lg. (CGOQ); 1♂ Napo, Misuahalli XII 1985 Quintana lg. (CGOQ); 1♀ Napo, Sc. Stat. Yasuni, Puce 400m, 11-23 IX 1995 E. Barquero & F. Marza lg. (CGOQ). Bolivia. Santa Cruz, 5km SSE Buena Vista, Hotel Flora & Fauna 440m, 17°30S, 63°39W 10-22 X 2004 J.E. Eger lg. (CEHI). Peru: 1♀ Madre de Dios, Tambopata River, Gollpa Lodge 9-12 XI 1995, M. Klichia lg. (CEHI).

Distribution: This species ranges from Central America to tropical Brazil.

***Hesus mexicanus* KORMILEV 1968 (Fig. 6, 17, 18, 24, 29; photo 8)**

This species is closely related to *H. subarmatus*, sharing the tuberculate lateral margins of anterior pronotal lobe. They can be separated by the characters given in the key. Single females cannot clearly be assigned due to variability in colouration and pronotal surface sculpturing. Colouration generally brown, the posterior half of deltg III-VI are ochraceous as is mostly the anterior half of tergite VII, two rings on tibiae (the apical one sometimes fading on fore leg), an elongate spot on membrane posterior to apex of corium. The base of antennal segment I and segments II-IV frequently are of lighter colour (photo 8). Venter medially ochraceous, lateral margins, sternites II and VII, pro-, meso-, and metasternum brown. Spiracles II-V ventral, VI sublateral but not visible from above, VII dorsolateral, VIII terminal. Terminal segments: fig. 17, 18.

Pygophore dorsally rather flat with a narrow, tongue-like medially split sclerite (fig. 29); parameres slender as fig. 24.

M e a s u r e m e n t s : Length ♂♂ 8.2-8.4mm, ♀♀ 9.7-9.8mm; ratio length of antennae / width of head 2.5-2.8; ratio antennal segment I / segment II 1.54-1.58; head shorter, ratio length / width 1.35-1.41.

M a t e r i a l e x a m i n e d : Mexico: 1♂ Chiapas 20 IX 1907 L. Conrad lg.; this specimen was identified and donated by Kormilev as a comparative sample for his new species (CEHI); 1♂1♀ Yucatan, Palenque X 1978 E. Heiss lg. (CEHI); ♂♂♀♀ San Luis Potosí, Limon 7 VII 1990 R. Leschen lg. (CEHI); 1♀ Chis. Las Rosas 19 V 1969 H.J. Teskey lg. (CEHI). Panama: Gatun Lake, Tres Rios Plantation 16 VIII 1991 T. Zschokke lg., ex coll. Kormilev (CEHI); 1♀ Puerto Armueles 30 VII 1982 P. Rodriguez lg. (CEHI); 1♀ Panama city, Parque Natural al Metropolitano 8°56N, 79°33W, 7 VI-11 VII 2002 Čiček & Hauk lg. (CEHI). Honduras: 1♂ Peña Blanca, Lago Yoja 17 VIII 1978 J.A. Cemsak lg., ex coll. Kormilev (CEHI); 1♂1♀ 12 km W Olanchito 21 VI 1949 E.C. Becker lg. (CEHI); 1♀ Stann Creek, Dist. Mayflower Arch. site SW Dangriga 20 VII 2001, D.G. Hall & J.E. Eger lg. (CEHI). Venezuela: 5♀♀ Suapure, El Caura IX and XI 1899 (CCMP). Jamaica: 4♂♂3♀♀ Bath 4 II 1937 A. Atinoff & N. Shoumatoff lg. (CCMP). Trinidad: 1♀ Biche 26 IV 1965 at light, D.H. Secing lg. (CEHI). Tobago: 44♀♀ Hillsborough lake area 20 VI 1996 E. Heiss lg. (CEHI).

D i s t r i b u t i o n : This species ranges from México to Venezuela and the Caribbean. It is not yet recorded further south.

***Hesus subarmatus* STÅL 1873 (Fig. 5, 13, 14, 23, 28; photo 7)**

Described from Surinam. As it is unclear from the description if it was based on a single or more females, a pinned specimen with following labels: «Surin.» / «Thorey» / «*subarmatus* Stål» / «*typus*» (may have been attached later by a curator?) in the collection of the Naturhistoriska Riksmuseet Stockholm has therefore been designated as lectotype and labelled accordingly, when studying the collection years ago. This designation was not yet published and is done herewith.

Habitus, colouration of body, antennae, and legs as well as the structures on anterior pronotal lobe of *Hesus subarmatus* are very close to those of *H. mexicanus* (photo 7). Therefore it is necessary to reexamine specimens identified as *H. subarmatus* in collections to verify their true identity. As the usually reliable distinctive character – the presence of two (1+1) converging median ridges on posterior pronotal disk--are sometimes weakly developed, male specimens can be identified by their genitalic structures; however, single females may not be clearly assigned to one of these taxa.

Spiracles II-V ventral, VI lateral and visible from above, VII dorsolateral, VIII terminal. Terminal segments as fig. 13, 14. Pygophore dorsally more sloping posteriorly, with larger tongue-like dorsal sclerite (fig. 28); parameres wider fig. 23.

M e a s u r e m e n t s : Length ♂♂ 8.9-10.0mm, ♀♀ 10.2-10.4mm; ratio length of antennae / width of head 2.85-3.1; ratio antennal segment I / segment II 1.84-2.0; head longer, ratio length / width 1.45-1.52.

M a t e r i a l e x a m i n e d : Surinam: 1♂ Paramaribo 12 XII 1960, 1♀ 8 VI 1963 P.H. v. Doesburg lg. (CEHI). Brazil: ♂♂♀♀ Rondonia, 62 km W Arquiemes nr. Faz. Rancho Grande 6-15 XII 1990 D.A. Rider & J.E. Eger leg., 5-17 X 1993 and 8-20 XI 1994 J.E. Eger & L.B. & C.W. O'Brien lg. (CEHI); 1♀ from same locality, 8-20 XI 1994 black light trap, J.E. Eger lg. (CEHI); 1♂ Chapada (CEHI); 4♂♂1♀ Macé, 70 km N Rio de Janeiro 15 X-10 XI 1999 W. Gosser lg. (CEHI). Ecuador: 4♂♂2♀♀ Napo, Coca I 1982 on *Elaeis guinensis*, G. Onore lg. (CGOQ); 1♂ Napo, Limoncocha 23 I 1988 X. Vitteri lg. (CGOQ); 1♀ Napo, Lago Agrio XII 1980 M. Ponisacho lg. (CGOQ); ♂♂♀♀ San Antonio 0°17S,76°39W 4 XII 2004, Shushifindi 0°11S,76°38W 200-400m, 4-8 XII 2004 and Napo, Las Palmas 0°38S,77.03W 200-400m, 3 XII 2004 P. Banař lg. (CEHI); ♂♂♀♀ Napo, 70km SW Coca, Loreto 300m, 4-10 III 2003 M. Halada lg. (CEHI); ♂♂♀♀ Sucumbios, Tarapoa 23 IX 1997 and Lago Agrio 25 XI 1997 M. Šebela lg. (CEHI); Bolivia: 1♂1♀ Cochabamba, Yungas de Palmar, A. Martinez lg. ex coll. Kormilev (CEHI); 1♀ Yungas de La Paz 1000m, H. Rolle lg. (CEHI); 1♀ Region Chapare 400m, Zischka lg. (CEHI); 1♂ Cochabamba prov., Villa Tunari, Hotel los Tucanes 16°58S,65°23W 320m, 5 IX 2000 M. Hauser lg. (CEHI). Peru: ♂♂♀♀ Iquitos, Amazonas 11 II 1977 E. Heiss lg. (CEHI); 1♀ Avispas 1-15 X 1962 L.E. Peña lg. (CEHI); 1♂2♀♀ Marcapata ex. coll. Staudinger & Bang Haas (CEHI).

D i s t r i b u t i o n : Recorded from Surinam, Brazil, to Peru.

Key to species of *Hesus*

- 1 (2) Colour of body legs and antennae ochraceous, antennal segment III short, as long or at most 1.15 × as long as II (fig. 1, photo5) *H. acuminatus* (FABRICIUS)
- 2 (1) colour of body generally brown to blackish with ochraceous markings on deltg II-VII; antennal segment III longer, at least 1.45 × as long as II (photo 2-8).....3
- 3 (8) lateral margins of anterior pronotal lobe evenly rounded (fig. 2-4)4
- 4 (5) disk of anterior pronotal lobe with two oblique converging elevations medially, apical tubercles elongate reaching into the gap between elevations and there followed posteriorly by tubercles decreasing in size backward (fig. 2), ratio length of antennae / width of head at most 2.4-2.5 (photo 6).....*H. flaviventris* (FABRICIUS)
- 5 (4) apical tubercles of anterior pronotal lobe round or transversely ovate, gap between elevations depressed with only few smaller tubercles (fig. 3, 4), ratio length of antennae / width of head 2.6-3.16
- 6 (7) larger species ♂♂ 9.7-10.1 mm, ♀♀ 11.6-11.8 mm, lateral margins of posterior pronotal lobe subparallel, humeri angulate (fig. 4); antennae longer 2.88-3.1× as long as width of head, antennal segment I more than twice as long as II; legs and antennae unicolourous brown (photo 1, 2)*H. humeralis* nov.sp.
- 7 (6) smaller species ♂♂ 9.3-9.8 mm, ♀♀ 9.7-10.6 m; lateral margins of posterior pronotal lobe sinuate, humeri rounded (fig. 3); antennae shorter at most 2.6-2.7× as long as width of head, antennal segment I 1.75-1.90× as long as II; legs with two ochraceous rings on middle and hind and one on fore tibiae; antennal segment III with ochraceous basal half (photo 3, 4)*H. cordatus* (FABRICIUS)
- 8 (3) lateral margins of anterior pronotal lobe angulate with a round tubercle at middle and anteriorly (fig. 5, 6)9

- 9 (10) generally larger species ♂♂ 8.9-10.0 mm, ♀♀ 10.2-10.4 mm; antennae longer 2.85-3.1 × as long as width of head; antennal segment I 1.84-2.0 × as long as II; disk of posterior pronotal lobe usually with two (1+1) distinct anteriorly converging ridges at middle (fig. 5), pygophore as fig. 28; parameres wider, fig. 23 (photo 7).....
..... *H. subarmatus* STÅL
- 10 (9) generally smaller species ♂♂ 8.0-8.4 mm, ♀♀ (holotype 7.4mm), ♀♀ 9.7-9.8 mm; antennae shorter 2.5-2.8 × as long as width of head; antennal segment I 1.54-1.58 × as long as II; disk of posterior pronotal lobe with coarse granulation (fig. 6); pygophore as fig. 29, parameres more slender, fig. 24 (photo 8).....
..... *H. mexicanus* KORMILEV

Acknowledgments

I am very grateful to the following friends and colleagues who generously donated specimens to my special collection of Aradidae or made available for study material under their care: P. Banař (Brno); P. Cate (Vienna); P.H. v. Doesburg (Rijnsburg); J.E. Eger (Tampa); M. Hauser (Stuttgart); E. Holzer (Anger/Graz); R. Leschen (Auckland); G. Moragues (Marseille); G. Onore (Quito); J.E. Rawlins (Carnegie Museum Pittsburg); D.A. Rider (Fargo); R. Schuh (Wiener Neustadt); W. Suppantšitsch (Vienna); F. Wachtel (Munich). I also thank C.W. Schaefer (Storrs) for linguistic improvement of the text and S. Heim and A. Usel (Innsbruck) for the photos. My particular thanks are due to F. Gusenleitner and Mrs. K. Traxler (Biologiezentrum, Linz) for their assistance and cooperation in all editorial matters.

References

- BERGROTH E. (1898): Aradides nouveaux. — Bull. Mus. Hist. Nat. Paris **3**: 149-151.
- BERGROTH E. (1894): Fortsatta bidrag till Aradidernas kannedom. — Entom. Tidskr. **15**: 97-118.
- CHAMPION G.C. (1898): Fam. Aradidae. — In: Biologia Centrali-Americana. Insecta. Rhynchota **2**: 65-117.
- BLOETE H.C. (1965): Catalogue of the Aradidae in the Rijksmuseum van Natuurlijke Historie. — Zool. Verhandl. **75**: 1-41.
- BURMEISTER H.C.C. (1835): Handbuch der Entomologie **2**: 1-400. — Berlin.
- FABRICIUS J.C. (1803): Systema Rhyngotorum secundum ordines, genera, species, adjectis synonymis, locis, observationibus, descriptionibus. — X+ 314pp. Brunswick.
- HEISS E. (1997): Designierung von Lectotypen der von J.Ch. FABRICIUS beschriebenen Aradidae (Heteroptera, Aradidae). — Nouv. Revue Ent. (N.S.) **14**(1): 43-52.
- HEISS E. (2009): Two synonymies in Neotropical Mezirinae (Heteroptera, Aradidae). — Z. Arb. Gem. Öst. Ent. **61** (in print).
- KORMILEV N.A. (1968): Notes on Neotropical Aradidae XVII. Aradidae in the Field Museum of Natural History, Chicago, Illinois (Hem. Heteroptera). — Ann. Soc. Ent. France (N.S.) **4**: 279-289.
- KORMILEV N.A. & R.C. FROESCHNER 1987: Flat bugs of the World. A synonymic list. (Heteroptera: Aradidae). — Entomography **5**: 1-246.
- STÅL C. (1862): Hemiptera Mexicana enumeravit speciesque novas descripsit. — Stett. Entomol. Zeitg. **23** (10-12): 437-462.
- STÅL C. (1868): Hemiptera Fabriciana, Part I. — Kongl. Svenska Vetensk.-Akad. Handl. **7** (11): 1-148.
- STÅL C. (1873): Enumeratio Aradidarum Extraeuropaeorum. — Kongl. Svenska Vetensk.-Akad. Handl. **11**(2): 135-147.

USINGER R.L. & R. MATSUDA (1959): Classification of Aradidae. — British Museum (Natural History), London, 410 pp.

WALKER F. (1873): Corticolae. Catalogue of the Specimens of Hemiptera Heteroptera in the Collection of the British Museum. Part VII: 6-44.

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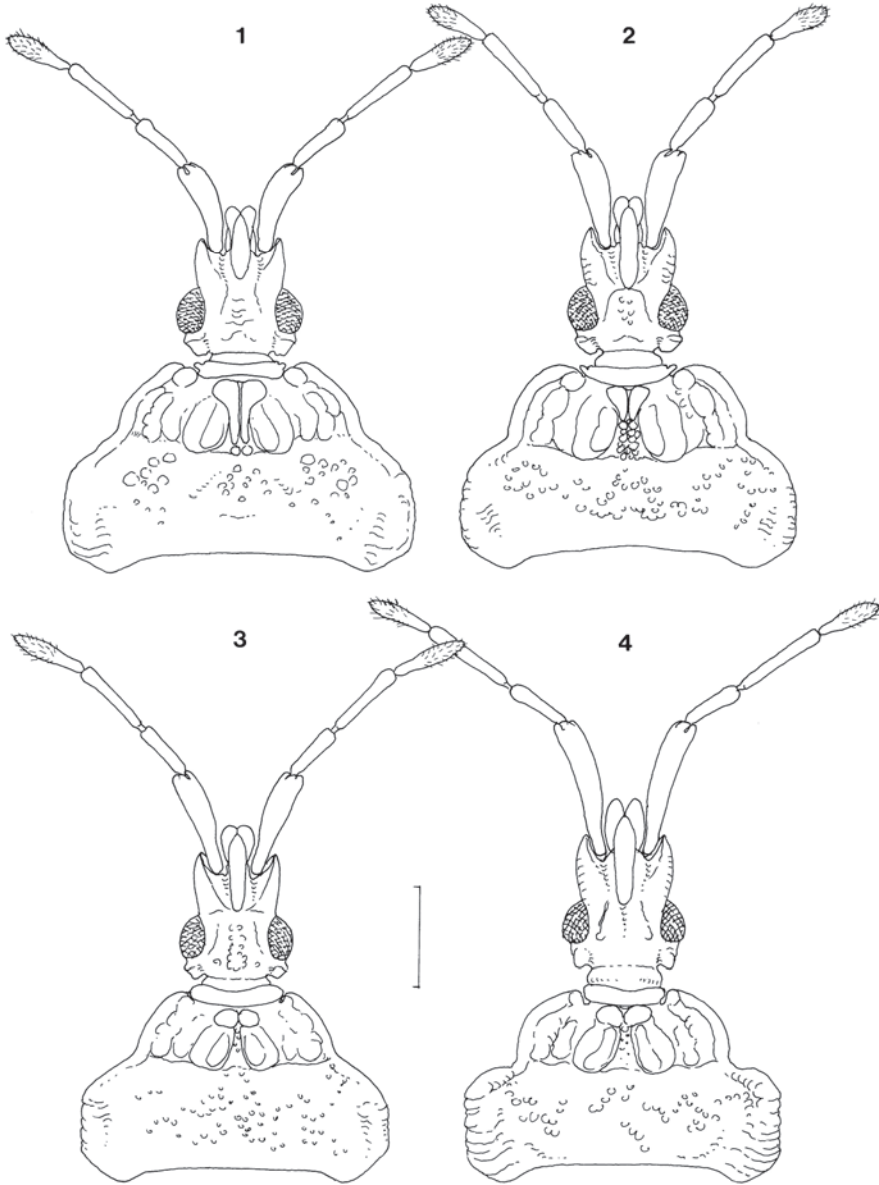


Fig. 1-4: Head and pronotum of *Hesus* spp. (1) *H. acuminatus*, (2) *H. flaviventris*; (3) *H. cordatus*; (4) *H. humeralis* nov.sp. Scale 1 mm.

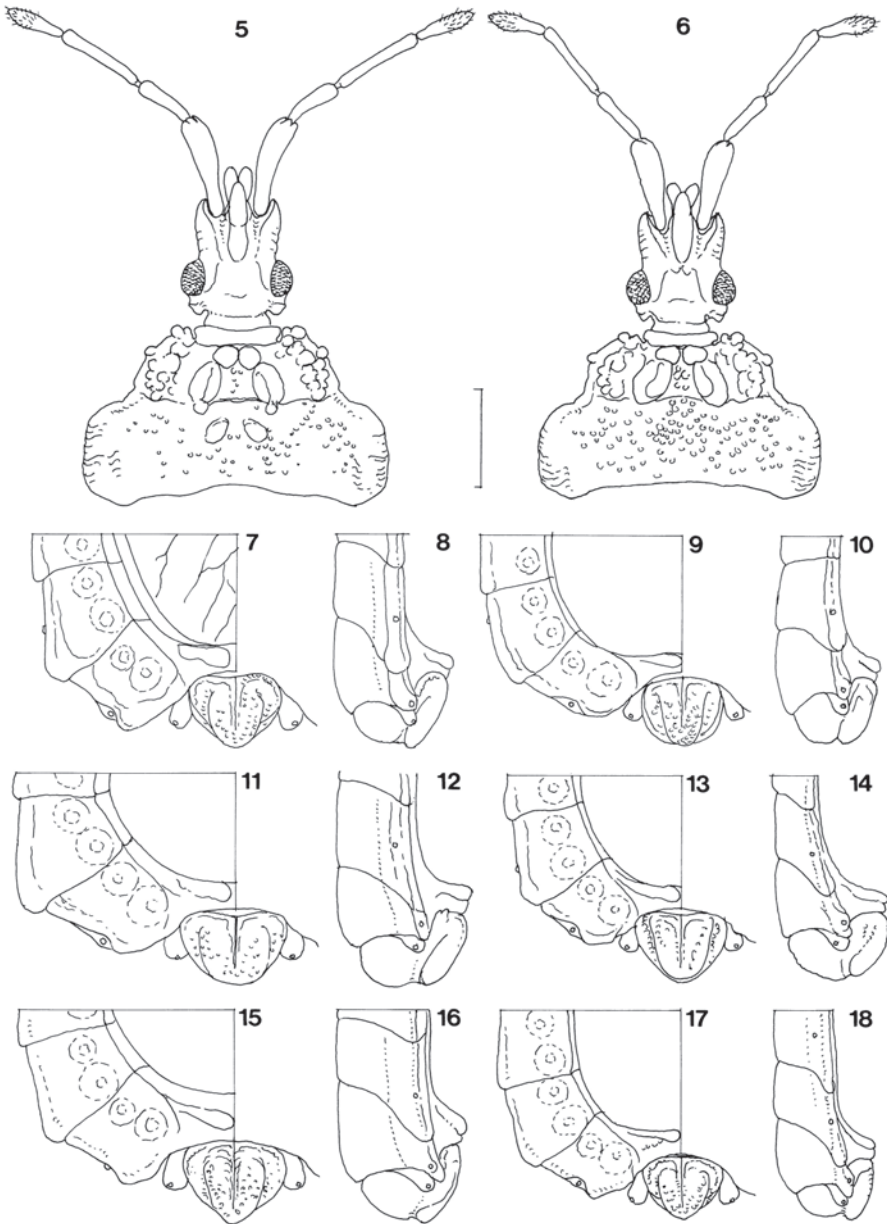


Fig. 5-18: *Hesus* spp. 5-6 head and pronotum. (5) *H. subarmatus*; (6) *H. mexicanus*; (7-18) terminal segments of male, dorsal and lateral view. (7-8) *H. humeralis* nov.sp.; (9-10) *H. cordatus*; (11-12) *H. acuminatus*; (13-14) *H. subarmatus*; (15-16) *H. flaviventris*; (17-18) *H. mexicanus*. Scale 1 mm.

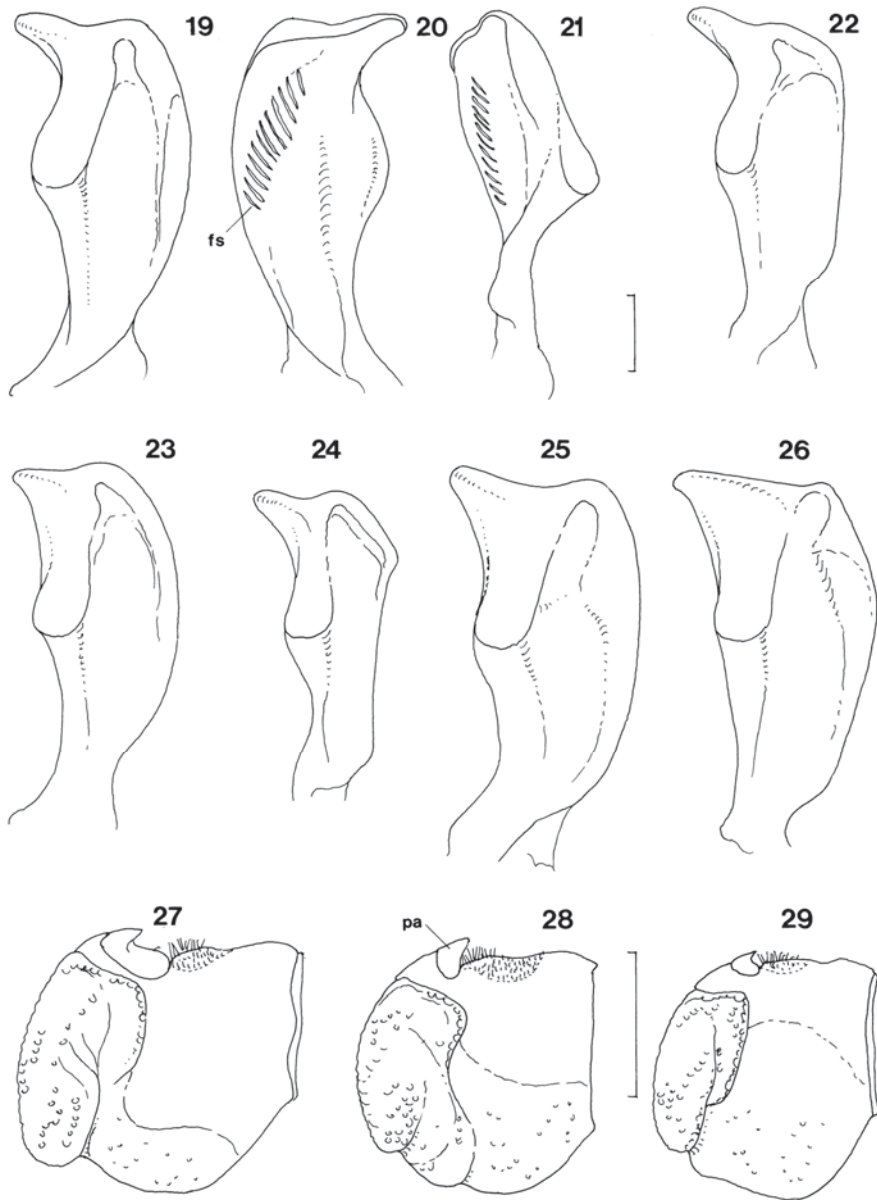


Fig. 19-29: *Hesus* spp. 19, 22-26 right paramere, dorsal face; (19-20) ditto ventral face; (27-29) pygophore lateral view. (19-21, 27) *H. humeralis* nov.sp.; (22) *H. cordatus*; (23, 28) *H. subarmatus*; (24, 29) *H. mexicanus*; (25) *H. flaviventris*; (26) *H. acuminatus*. Scale: 0.1 mm for fig. 19-26; 0.5 mm for fig. 27-29. fs = file like structure; pa = paramer.

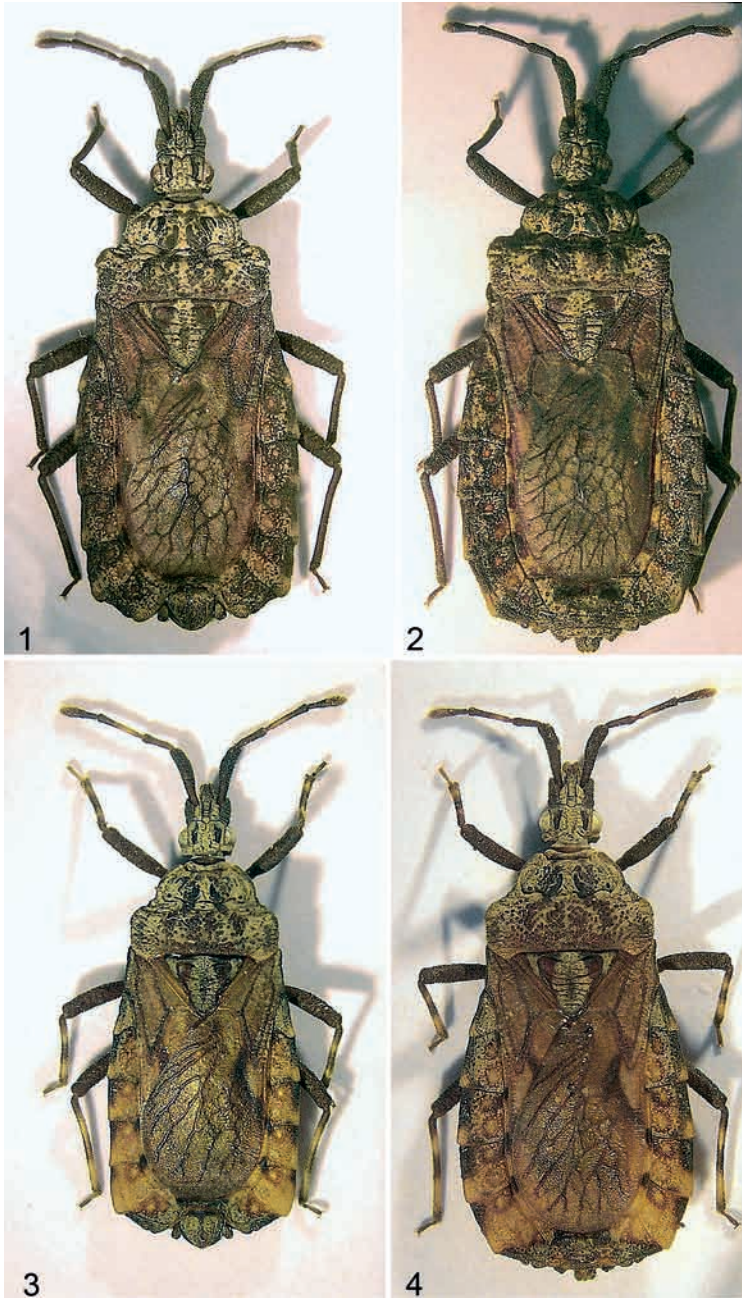


Photo 1-4: *Hesus* spp. (1) *H. humeralis* nov.sp. ♂; (2) *H. humeralis* nov.sp. ♀; (3) *H. cordatus* ♂; (4) *H. cordatus* ♀.

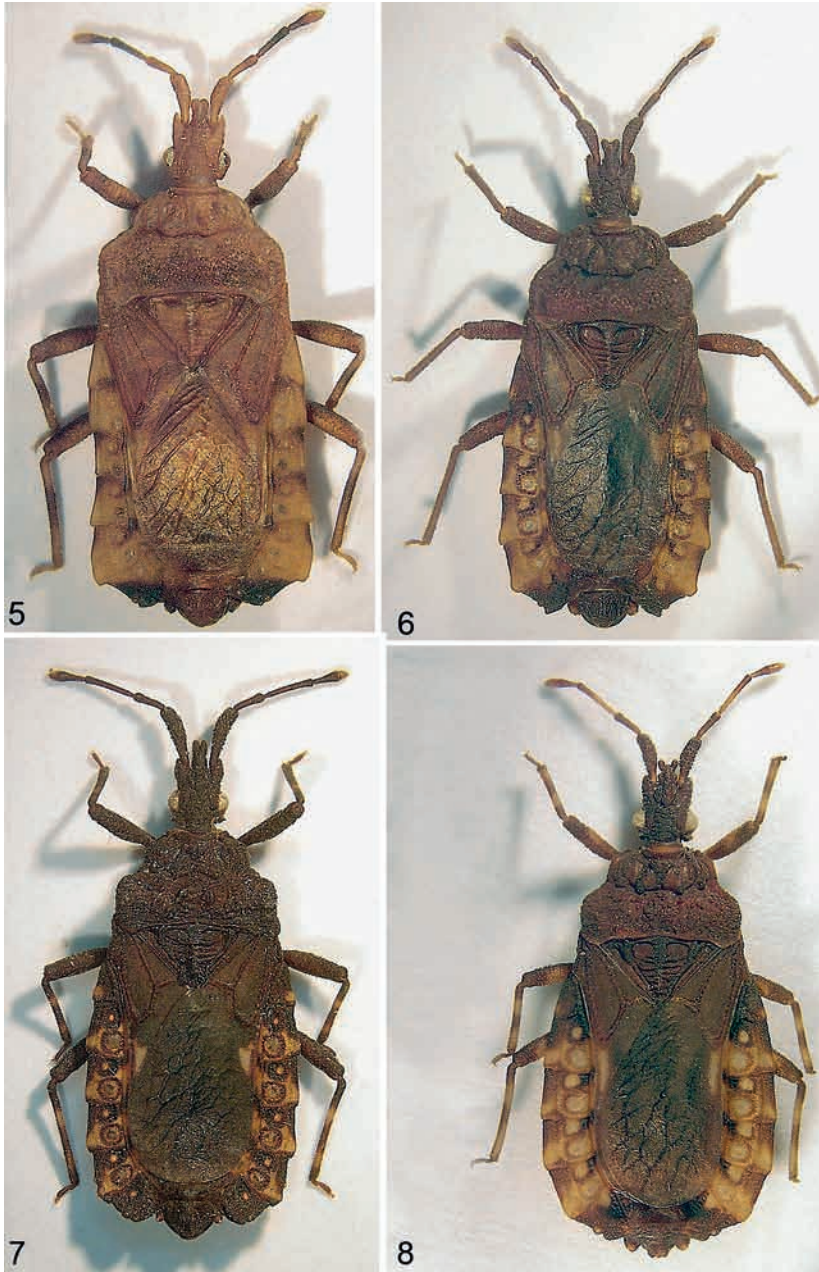


Photo 5-8: (5) *H. acuminatus* ♂; (6) *H. flaviventris* ♂; (7) *H. subarmatus* ♂; (8) *H. mexicanus* ♂.

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Autor(en)/Author(s): Heiss Ernst

Artikel/Article: [Review of the Neotropical genus Hesus STÅL 1862 with description of a new species \(Heteroptera, Aradidae\) 343-357](#)