

The *E. dolichocera*-group of *Edessa* Fabricius, 1803 (Heteroptera: Pentatomidae: Edessinae)

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The *E. dolichocera*-group of *Edessa* Fabricius, 1803 (Heteroptera: Pentatomidae: Edessinae) is proposed and the species are described, including two new to science. This group includes three South American species: *Edessa dolichocera* (Lichtenstein, 1795), *E. guyanensis* spec. nov. and *E. nigromaculata* spec. nov. *E. ductor* Walker, 1868 is considered to be a junior synonym of *E. dolichocera* (Lichtenstein, 1795). The lectotypes of *Cimex dilochocerus* Lichtenstein, 1795 and of *Edessa ductor* Walker, 1868, are designated.

The habitus, metasternal and external genital characters and the distribution of the three species are described and illustrated. The drawings are from the first author, the photographs are made by the second author. Measurements are given in millimeters.

Introduction

Edessinae Amyot & Serville, 1843, is a subfamily of Pentatomidae composed of four genera: *Edessa* Fabricius, 1803 (259 described species), *Olbia* Stål, 1862 (5 species), *Pantochlora* Stål, 1870 (1 species) and *Peromatus* Amyot & Serville, 1843 (7 species). Despite the small number of genera, the classification of Edessinae remains confused mainly due to the genus *Edessa*. The large number of described and undescribed species (more than 200) and the great diversity in appearance makes a complete revision of *Edessa* impracticable. Therefore, we decided to study *Edessa* by proposing and revising groups of species, which seem to be related according to some external characters. These small revisions will improve the knowledge about the genus allowing us to point out the characters that will, or will not, support the monophyly of the genus. These characters will be used in future for a cladistic study concerning the relationship between the species-groups. The ultimate goal of this long-term study is to reevaluate the generic classification and, eventually, to propose a new generic classification of the Edessinae.

One of the most peculiar aspects of the Edessinae is the structure of the metasternum, which is raised and strongly anteriorly prolonged and bifid (not in *Pantochlora* Stål) while the lobes of this bifurcation are placed on the mesosternum. The form of this structure (metasternal shield; “Brustbeinkiel”, Burmeister, 1835: 354) shows within the Edessinae an enormous variation, the body of the sternite being normal to very heavy, the lobes long or short, pointed or rounded, swollen, more or less parallel or diverging, etc. But its aspect is fairly specific to each species. About the function of this structure nothing is known, although the second author, observing *Edessa rufomarginata* (DeGeer) in Suriname, suspects that this structure is playing a part in the

communication with fellow bugs by pressing the metasternum against the stem of the plant and producing vibrations (or sound) in one or both thoracic segments. The more or less inflated mesothorax, connected by the metasternum to the metathorax, could be essential in this mechanism in producing the sound or serving as a drum or sound box.

Sharp (1890: 400) proposed the name of 'superior lateral process' for a pair of processes on the male pygophoral diaphragma, each one located beside the proctiger and in front of the paramere. Dupuis (1959: 48) recognised Sharp as the creator of the name for these processes, but abbreviated it to 'processus supérieurs'. Here we will follow Dupuis using 'superior process' to designate these processes which are remarkably characteristic for *Edessa* and are of taxonomic value as well.

The *Edessa dolichocera* group

Diagnosis.— Large, dorsally green species. Humeral lateral corners of pronotum produced into very long, acute spines, usually darker than pronotal disc. Dorsally densely punctured, punctures shallow, concolorous or dark. Antennae and legs without punctures or dark dots. Dorsum of abdomen green, venter yellow, with transverse green stripes.

Head.— Head slightly wider than long. Jugae slightly curved ventrally, tip rounded, longer and contiguous in front of the tylus; jugal margin yellow. Second and third antennal segments somewhat flattened and furrowed medially. Bucculae slightly divergent, ventral margins straight and anterior corner right-angled. Rostrum short, reaching middle of mesosternum; first segment surpassing bucculae, second segment a little bit shorter than third and fourth together.

Thorax.— Pronotum strongly declivent; anterior corner with a small tooth; antero-lateral margin wavy due to short transverse shallow furrows; scars not punctured; humeral corners long, conical, laterally directed and a little bit dorso-ventrally flattened, tip sharp or slightly rounded. Mesosternum with a small tumescence on anterior margin ending between procoxae. Metasternum tall, anteriorly produced and deeply bifid, lobes strongly built and resting on posterior third of mesosternum, surface flat and smooth, without punctures, but sparsely set with long, fine setae. Evaporative area of metapleura dull and furrowed, ostiolar rugae narrow and extending through $\frac{3}{4}$ metapleural width. Apex of scutellum acute. Corium densely punctured, hemelytral membrane hyaline and castaneous.

Abdomen.— Connexivae well-exposed, anteriorly and posteriorly with slightly concave areas punctured; these concavities usually green, surrounded by a yellow area or totally green. Postero-lateral corners of connexival segments II-VI slightly produced, bearing a small apical black spine; in segment VII this spine strongly developed and posteriorly directed. Abdomen green, neither dorsally, nor ventrally punctate. Scars laterally on sternites in shallow grooves.

Males.— Pygophore rectangular in dorsal view, widely open dorso-posteriorly. Diaphragma with a black superior process (sp). Paramere (pa) formed by a stem with a posteriorly directed lobe. Proctiger (p) (anal tube) subcylindrical.

Females.— Gonocoxites 8 (gc8) convex. Laterotergites 8 (la8) longitudinally convex, each bearing a spiracle (s); posterior margin with a triangular caudad projection

surpassing apex of postero-lateral corner of segment VII. Gonocoxites 9 (gc9) trapezoidal.

Comments.— This group can be identified by the very long conical projections of the humeral corners, while the hemelytrae are concolorous with the scutellum and the pronotal disc; the abdomen is green dorsally.

Distribution.— **Guyana:** Barima-Waini; **Suriname:** Nickerie; **French Guyana:** Cayenne; **Brazil:** Amazonas, Pará, Maranhão, Rondônia, Mato Grosso; **Peru:** Loreto, Huánuco, Pasco, Madre de Dios; **Bolivia:** Santa Cruz.

Edessa dolichocera (Lichtenstein, 1795)
(figs 1-7, 18, 19)

Cimex dolichocerus Lichtenstein, 1795: 106, 385.

Edessa dolichocera; Burmeister, 1835: 355; Blanchard, 1840: 143; Walker, 1868: 429; Stål, 1872: 59;

Lethierry & Severin, 1893: 190; Kirkaldy, 1909: 157.

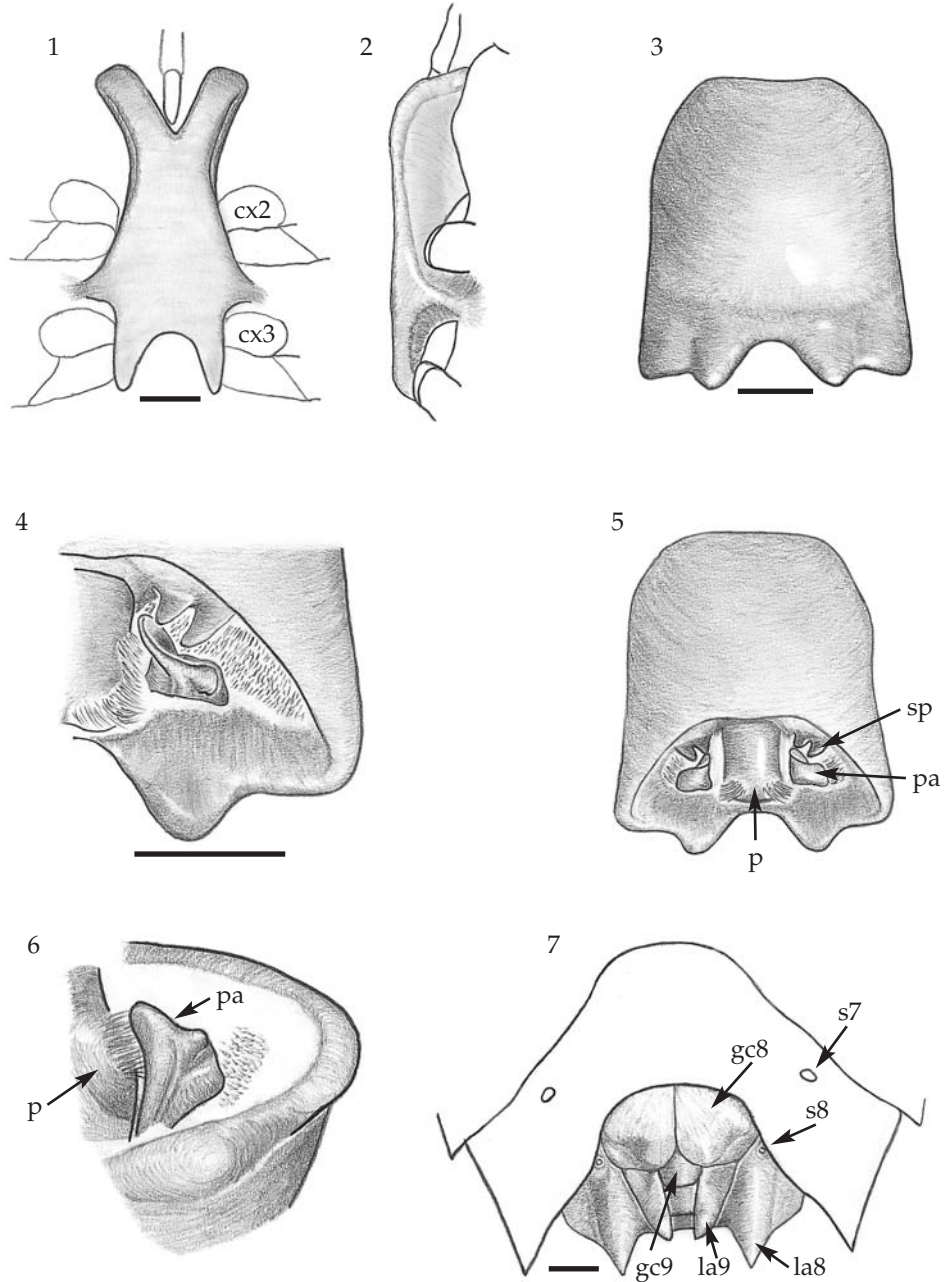
Edessa ductor Walker, 1868: 430; Lethierry & Severin, 1893: 190; Kirkaldy, 1909: 157. **Syn nov.**

Material.— Lectotype (here designated), of *Cimex dolichocerus* Lichtenstein, 1795, ♀ (MNB), “Surinam, Schn.” / “265 / Dolichocerus Holth. Stoll Cim. T.29 Fig.208 Surinam Schn”(labels of H.C.Hopffer). / “*Edessa dolichocera* Burm, Holotype P.H. v. Doesburg jr. det.”. 1 ♀ (BMNH), “Ega [Tefé, Amazonas, Brazil], 58. 6. / 94.” *Edessa ductor* Walker, 1868, (syntype) here designated lectotype of the species. 1 ♀ (BMNH), “S. Am. Ega, 51. 27. / *Edessa ductor*, Walker’s Catalogue/ (Syntype), Paralectotype. **Guyana.**— *Barima-Waini*: 1 ♀ (BMNH), Koriabo, vi.1922, coll. M.D. Haviland d. d. Collegium Newnhamense/ 18.vi.1922 Kartabo cleaning/ Brit. Mus. 1954-631; **Suriname.**— 2 ♀♀ (MNHN); 1 ♀ (RMNH), 28.ii.1970; 1 ♂ (RMNH), Kamp 8 [Mapana Cr., Commewijne Distr.], ii.1961, J.P. Schulz; 2 ♀♀ (RMNH); *Nickerie*: Nickerie River, Blanche Marie-Falls, Meteocamp, 9-16.ii.1971, West Suriname Exp., D.C. Geijskes; **French Guyana.**— 2 ♀♀ (MNHN), 1899, Bar, R.O. Buthür; *Cayenne*: 1 ♀ (MNHN), Charverein, Bas Moroni, September, Le Moulit; 2 ♂♂, 1 ♀ (DARC), Montagne des Singes nr. Kourou, 3.vi.1986, E.G. Riley & D.A. Rider; 1 ♀ (AMNH), Hwy D6 to Kaw 34 Km SE Roura, 5-6.vi.1986, E.G. Riley & D.A. Rider; **Brasil.**— *Amazonas*: 1 ♂ (JBC), Benjamin Constant, viii.1979, A.C. Domingos; 1 ♂ (RMNH), Rio Madeira, Manicoré, E. le Moulit; *Pará*: 1 ? (without abdomen) (MNB), “266/ Juvenus, n. Cametá [Pará, Brazil] Sieber. / *Edessa dolichocera* Burm., P.H. v. Doesburg jr. det. 1979”; 1 ♀ (CMNH), Tocantins (?), Amazon River, vii.1923, S. Klages; 1 ♂, 1 ♀ (FURG), Belém, 20 m, i.1984, V.O. Becker; 1 ♂ (JBC), Bojorú, sitio Guajaramirin, vii.1966, L. Gomes; *Mato Grosso*: 2 ♀♀ (JBC), Sinop, BR 163 Km 496, 10.x.1976, M. Alvarenga; 1 ♀ (JBC), Sinop, BR 163 Km 496, x.1975, O. Roppa; **Peru.**— *Loreto*: 2 ♂♂ (JEC), 1 ♂ (FURG), Exploronapo, Camp on R. Sucusari, near R. Napo, 12-19.iii.1988, J. Eger; 1 ♀ (JEC), Explorama Lodge, 50 Mi NE Iquito, on Amazon River, 12-19.iii.1988, J.E. Eger; 1 ♀ (JBC), confluencia rios Zumun e Yahuaryacu, ii. 1980, J. Becker; *Huánuco*: 1 ♂ (CAS), 15 Mi NE Tingo Maria, 23.ix.1954, E.I. Schlinger & E.S. Ross; 1 ♂ (CAS), Tingo Maria, Monzon Valley, 29.xi.1954, E.I. Schlinger & E.S. Ross; 2 ♀♀ (CAS), Tingo Maria, Monzon Valley, 21.xi.1954, E.I. Schlinger & E.S. Ross; *Pasco*: 1 ♀ (RMNH), Rio Pichis, E. le Moulit; *Madre de Dios*: 1 ♂ (JEC), Rio Tambopata Reserve, 30 Km SW Puerto Maldonado, 290 m, 1-14.xi.1982, R. Wilkerson; **Bolivia.**— *Santa Cruz*: 1 ♀ (MNHN), Pucara a Marta, 1914, Mailles & Vincent.

Punctuation of dorsal surface concolorous.

Head.— Head with some transverse furrows on jugae, without punctures. Antennae red; first antennal segment shortest, second segment subequal to third, fifth segment slightly longer than fourth.

Thorax.— Pronotum without a transverse yellow band; pronotal width at humeral corner ranging from 1.3 to 1.6 times abdominal width at third abdominal segment



Figs 1-7, *Edessa dolichocera* (Lichtenstein, 1795). 1-2, metasternal shield, ventral and lateral view, respectively; 3-6, pygophore; 3, ventral view; 4-5, dorsal view; 6, posterior view; 7, female, genital plates, ventral view. cx2- mesocoxa; cx3- metacoxa; gc8- gonocoxite 8; gc9- gonocoxite 9; la8- laterotergite 8; la9- laterotergite 9; p- proctiger; pa- paramere; s- spiracle; sp- superior process. Bars: 1 mm.

and shorter or as long as the body. Humeral corner conical with sharp apex, distal part dark. Pro and mesopleura with a band of dark punctures each. Metasternal anterior lobes (figs 1-2) extended over $\frac{5}{6}$ of mesosternum; excavation between lobes shallow, not reaching level of anterior margin of mesocoxae, receiving only fourth rostral segment (fig. 1). Each lobe of bifurcation as long as the distance between meso and metacoxae, tips obtusely rounded and strongly bent anteriorly (fig. 2). Evaporative area concolorous. Legs red.

Abdomen.— Each sternite with a green area between scar and anterior margin. Trichobothria laterad to line of spiracles. Postero-lateral corners of pygophore (figs 3-6) rounded, not produced. Ventral rim forming a pair of submesal caudad swellings separated by a mesal concavity (figs 3, 5). Paramere with anterior part and posterior lobe flattened (figs 4, 6). Superior process bifid just in front of each paramere (figs 4-5), the lateral part bigger and less flattened than the medial one. Diaphragma with a small area densely covered by short setae laterally of each paramere (figs 4-6). Proctiger with a dense row of setae on each side (figs 4-6). In female (fig. 7), posterior margins of gonocoxites 8 convex. Mesal borders of gonocoxites 8 contiguous except divergent distal $\frac{1}{5}$; posterior apices of laterotergites 9 surpassing posterior margin of tergite 8.

Measurements.— Body length: 20-24; pronotal width: 19-23; abdominal length: 11-13; head length: 2.4-2.9; head width: 3.3-3.6.

This species can be identified by the pronotal width which is shorter or as long as the body length. Anterior excavation of the metasternal shield less deep, not reaching the mesocoxae. Pygophore with a pair of submesal swellings in the ventral rim. Superior process bifid. Proctiger with a dense row of setae on each side. Posterior margin of the gonocoxites 8 convex.

Distribution (fig. 18).— **Guyana:** Barima-Waini; **Suriname;** **French Guyana:** Cayenne; **Brazil:** Amazonas, Pará, Mato Grosso; **Peru:** Loreto, Huánuco, Pasco, Madre de Dios; **Bolivia:** Santa Cruz.

Comments.— This species has been named by Ant. Aug. Henr. Lichtenstein (1795: 106): “385 *Cimex dolichocerus*; nobis. Stoll. Cim. t. 29. f 208.” and not by Holthuisen, as was suggested by Burmeister, 1835: 355: “4. Ed. *dolichocera* Holth.” As Lichtenstein wrote the catalogue and compared the specimen(s) with the illustration by Stoll (fig. 22), it constitutes as an indication (Code 12b(7)) which makes the name available. Because originally two of Holthuisen’s specimens came in the Berlin Museum under entry number 265, but only one still exists (Dr J. Deckert, 1999, in litteris), the specimen examined is considered as a syntype and is designated **lectotype** of *Cimex dolichocerus* Lichtenstein, 1795. Originally the specimen came from the collection of Holthuisen which was sold by auction in Hamburg on February 3rd, 1796. As Lichtenstein put his signature under his preface of the sales catalogue in November 1795, it is very likely that the catalogue was despatched that very same year, especially in view of the means of transport in those days. That is why we consider arbitrarily the date of publication in 1795.

Edessa guyanensis spec. nov.
(figs 8-14, 18, 20)

Material.— Holotype, ♂ (RMNH), **Suriname.** *Nickerie:* Bakhuis Gebergte [Mts], Kamp V D5,

14.iv.1963, v. Aerde. 11 Paratypes: **Suriname**.— 1 ♀ (RMNH), Calkoen; **French Guyana**.— *Cayenne*: 1 ♂ (FURG), Piton Rocheuse, Crique Armontabo, ii.1984; **Brazil**.— 1 ♀ (MNHN), Elampharum Amyot, Ms. Paris, Brasília?, *Dolichocera* Burmeister; 1 ♂ (IRSN), R. I. Sc. N. B. I. G. 23993; *Pará*: 1 ♀ (RMNH), Rio Trombetas, E. le Moul; *Maranhão*: 1 ♀ (FURG), São Luis, v.1975; *Rondônia*: 1 ♂, 1 ♀ (DARC), 62 Km SE Ariquemes, nr. Fazenda Rancho Grande, 6-15.xii.1990, D.A. Rider & J.E. Eger; 1 ♂, 1 ♀ (MNR), Ouro Preto d'Oeste, viii.1980, A. Domingos; *Mato Grosso*: 1 ♀ (DTC), 50 Mi W Cuiabá, 4.ii.1988, D.B. Thomas.

Punctuation of dorsal surface concolorous.

Head.— Head with some transverse furrows on jugae, without punctures. Antennae red; first antennal segment shortest; second segment slightly longer than third, fourth segment slightly longer than fifth.

Thorax.— Pronotum without a transverse yellow band; pronotal width at humeral corner almost twice abdominal width at third abdominal segment and longer than length of body; humeral corners conical with sharp apex, distal part dark. Pro and mesopleura with a band of dark punctures each. Metasternum (figs 8-9) anteriorly extended over $\frac{5}{6}$ of mesosternum and deeply forked, excavation reaching at least level of anterior margin of mesocoxae, receiving third and fourth rostral segments (fig. 8). Each lobe of bifurcation almost twice as long as the distance between meso and metacoxae; apex obtusely rounded, slightly broadened and weakly bent (fig. 9). Legs green. Evaporative area concolourous with mesosternum.

Abdomen.— Each abdominal segment with a green area between scar and anterior margin; internal trichobothria in line with spiracles, the others laterad to this line.

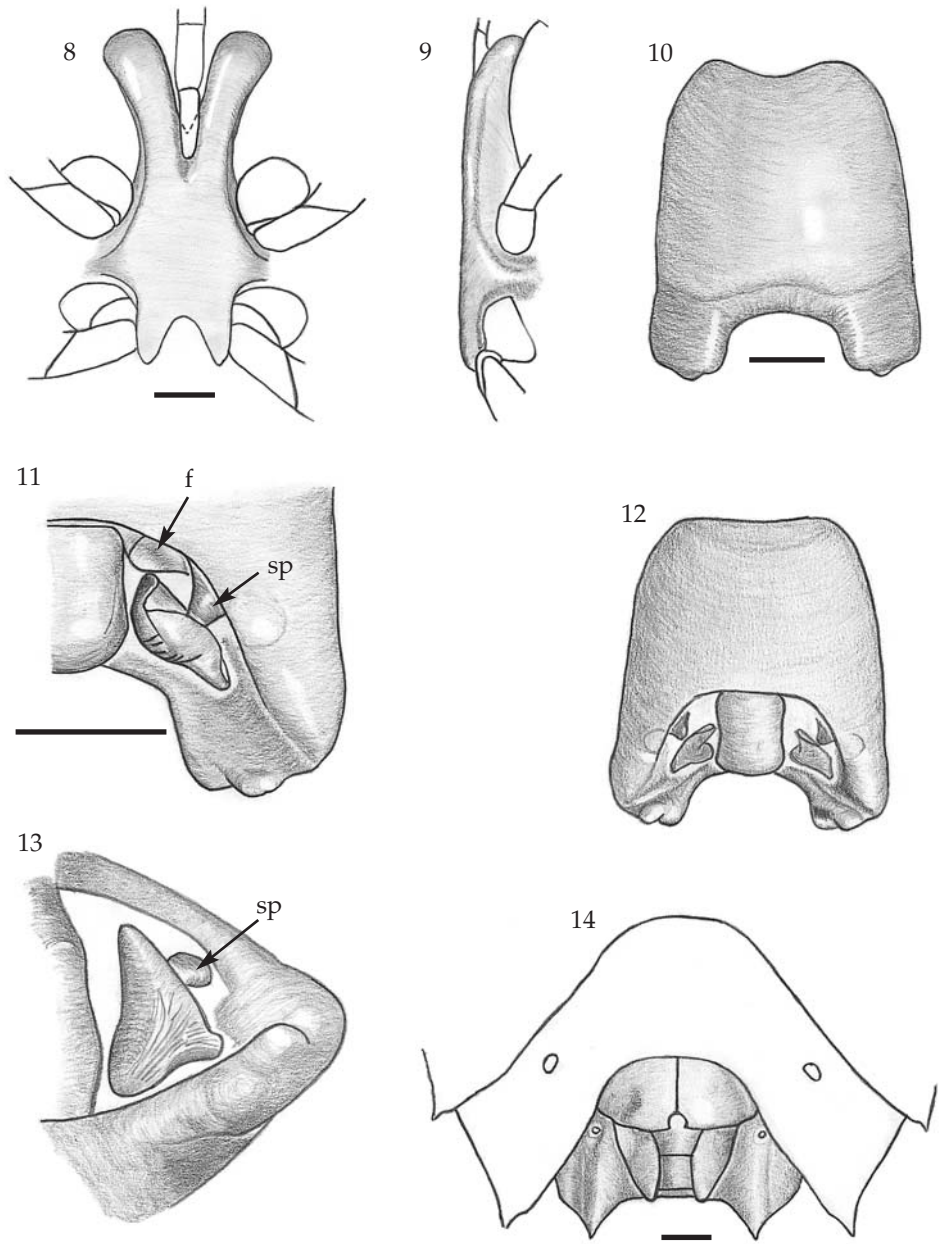
Male.— Pygophore (figs 10-13): postero-lateral corners with dorsal swellings forming subsquared areas broadly separated by a medial concavity of the posterior margin (figs 10, 12); superior process (sp) subtriangular, slightly convex, situated near dorsal rim of genital chamber (figs 11-13); diaphragma with a transverse fold (f) below superior process (fig. 11). Parameres bent antero-dorsally, narrowed toward apex, bearing a posteriorly directed small rounded lobe (figs 11, 13). Proctiger bearing some sparse setae. Female (fig. 14).— Posterior margins of gonocoxites 8 slightly curved. Mesal borders of gonocoxites 8 contiguous, but distal $\frac{1}{5}$ concave. Laterotergites 9 (la9) posteriorly less elongated, hardly surpassing posterior margin of tergite 8.

Measurements.— Total length: 23-27; pronotal width: 25-29; abdominal length: 12-15; head length: 2.6-2.9; head width: 3.6-4.0.

Comments.— This species can be identified by the pronotal width which is greater than the length of the body, second and fourth antennal segments slightly longer than the third and fifth segments, respectively, anterior bifurcation of metasternal shield deep, excavation reaching at least level of anterior margins of mesocoxae, receiving third and fourth rostral segments; lobes weakly bent anteriorly, almost twice longer than the distance between meso- and metacoxae. Postero-lateral corners of pygophore subsquare with a stubby process dorsally. Superior process simple. Proctiger without a row of setae. Gonocoxite 8 with a concavity on the mesal free border.

Etymology.—The name *guyanensis* refers to the Guyana region in which the species was found.

Distribution (fig. 18).— **Suriname**; **French Guyana**: Cayenne; **Brazil**: Pará, Maranhão, Rondônia, Mato Grosso.



Figs 8-14, *Edessa guyanensis* spec. nov. 8-9, metasternal shield, ventral and lateral view, respectively; 10-13, pygophore; 10, ventral view; 11-12, dorsal view; 13, posterior view; 14, female, genital plates, ventral view. f- transverse fold of diaphragma; sp- superior process. Bars: 1 mm.

Edessa nigromaculata spec. nov.
(figs 15-18, 21)

Material.— Holotype, ♀ (MNR), **Brazil**. Pará: Belém, Utinga, 5.ii.1972, J. Becker. Paratype, ♀ (MNHN), Brazil / *Pomphilix* Amyot, Ms. Paris, Brasília/.

Head.— Punctuation of dorsal surface dark. Head with four rows and a clump of black punctures. Antennae dark-castaneous. First antennal segment shortest. second segment subequal to third, fifth segment slightly longer than fourth.

Thorax.— Pronotal width at humeral corner almost twice abdominal width at third abdominal segment and longer than body; anterior half with a transverse yellow band; humeral corners conical, slightly flattened dorso-ventrally, grooved ventrally, distal part dark, apex obtuse. Pro- and mesopleura with a band of deep dark punctures concentrated near coxae. Metasternal lobes produced onto $\frac{3}{4}$ of mesosternum. Anterior bifurcation of metasternum (figs 15-16) shallow, excavation reaching level of anterior margins of mesocoxae, receiving only fourth rostral segment (fig. 15). Each lobe of the bifurcation as long as distance between meso and metacoxae, tips obtusely rounded and slightly curved (fig. 16). Legs dark-castaneous. Ventral part of the evaporative area black.

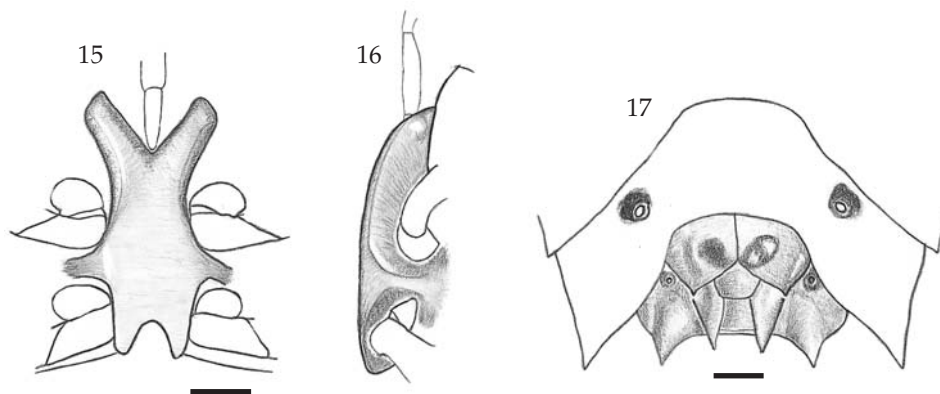
Abdomen.— Concavities of connexivum almost inconspicuous. Each sternite with a black ring surrounding spiracles (fig. 17). Trichobothria laterad to row of spiracles.

Female (fig. 17).— Gonocoxites 8 each with big dark macula; posterior margins acuminate; mesal borders for $\frac{3}{5}$ contiguous, distal $\frac{2}{5}$ divergent. Laterotergites 9 (la9) posteriorly sharply elongated, surpassing posterior margin of tergite 8.

Male unknown.

Measurements.— Holotype, body length: 21; pronotal width: 23; abdominal length: 12; head length: 2.2; head width: 3.5.

Comments.— This species is characterised by the width of the pronotum which is greater than the length of the body. Anterior part of pronotum with a transverse yellow band. Head punctate. Antennae and legs dark-castaneous. Most of humeral cor-



Figs 15-17. *Edessa nigromaculata* spec. nov., female; 15-16, metasternal shield, ventral and lateral view, respectively; 17, genital plates, ventral view. Bars: 1 mm.

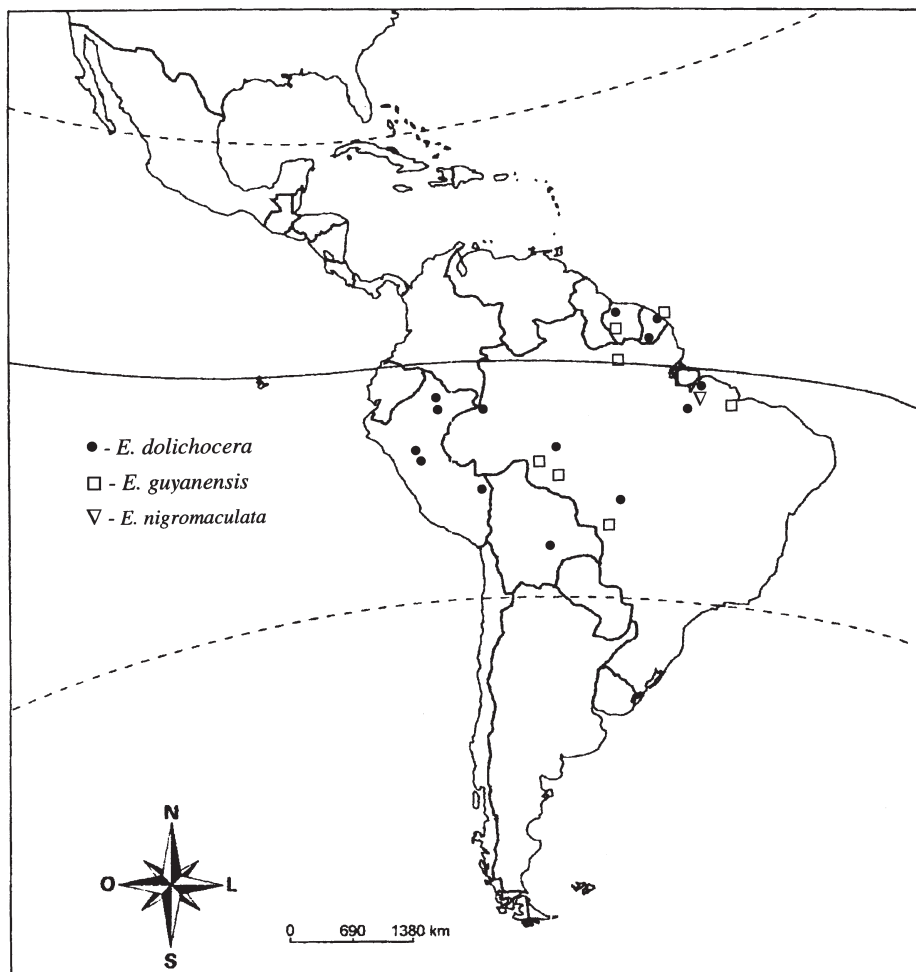


Fig. 18. Distribution map of the species belonging to *E. dolichocera* group.

- *Edessa dolichocera* (Lichtenstein, 1795).
- *Edessa guyanensis* spec. nov.
- ▽ *Edessa nigromaculata* spec. nov.

ners dark. Ventral part of the evaporative area black. Each spiracle surrounded by a black ring. Punctuation of pronotum and scutellum dark. Gonocoxites 8 black-spotted, posterior margin acuminate.

Etymology.— The name *nigromaculata* refers to the black spots found on the gonocoxites.

Distribution (fig. 18).— **Brazil:** Pará.

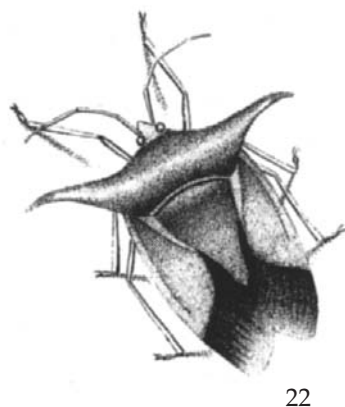
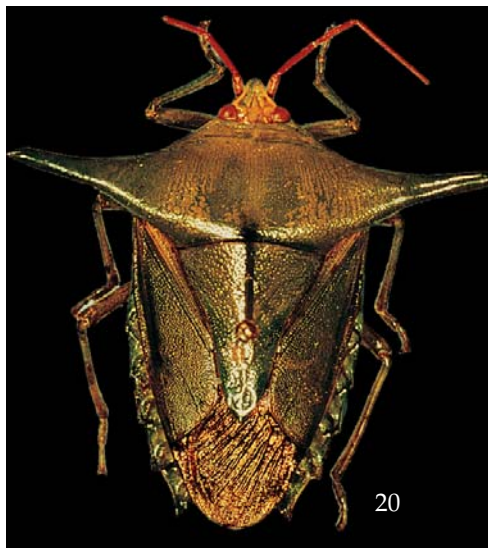


Fig 19, *Edessa dolichocera* (Lichtenstein, 1795), ♀ lectotype (MNB) of *Cimex dolichocerus* Lichtenstein, 1795, from Suriname, habitus.

Fig. 20, *Edessa guyanensis* spec. nov., ♂ paratype from Ouro Preto d'Oeste, Brazil, habitus.

Fig. 21, *Edessa nigromaculata* spec. nov., ♀ holotype from Belém, Utinga, Brazil, habitus.

Fig 22, Facsimile of Caspar Stoll's figure 208 (uncoloured edition) De Gehoornde Wantz / La Punaise Cornue, on p. 119 of his Wantzen/Punaies, 1788, with which Lichtenstein in 1795 compared his *Cimex dolichocerus*.

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Abbreviations of depositories

This study is based on material belonging to the following collections:

- (AMNH) American Museum of Natural History, New York, U.S.A.
- (BMNH) Natural History Museum, London, U.K.
- (CAS) California Academy of Sciences, San Francisco, Calif., U.S.A.
- (CMNH) Carnegie Museum of Natural History, Pittsburg, U.S.A.
- (DARC) D.A. Rider collection, North Dakota State University, Fargo, N. Dakota, U.S.A.
- (DTC) D.B. Thomas collection, USDA Subtrop. Agric. Research Center, Weslaco, TX, U.S.A.
- (FURG) Department of Zoology, Federal University of Rio Grande do Sul, Porto Alegre, Brazil.
- (IRSN) Institut Royal des Sciences Naturelles de Belgique, Bruxelles, Belgium.
- (JBC) J. Becker collection, Rio de Janeiro, Brazil.
- (JEC) J.E. Eger collection, Dow Elanco, Tampa, Fla., U.S.A.
- (MNB) Museum für Naturkunde, Berlin, Germany.
- (MNHN) Muséum National d' Histoire Naturelle, Paris, France.
- (MNR) National Museum, Rio de Janeiro, Brazil.
- (RMNH) National Museum of Natural History, Leiden, The Netherlands.

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