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A REVIEW OF THE GENUS *DYSODIUS* LEPELETIER & SERVILLE, 1828, WITH DESCRIPTIONS OF TWO NEW SPECIES (HETEROPTERA; ARADIDAE)

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ABSTRACT

The neotropical genus *Dysodius* Lepeletier & Serville is reviewed based on recent collections and type material. Two new species one from tropical South America and other from Mexico, are described; distribution notes are given and a key to all species is provived, accompanied by figures of the male parameres, which are studied here for the first time. *Dysodius lunatus vandoesburgi* Blöte, 1965, is reduced to a synonym of *Dysodius lunatus* (Fabricius).

Key words: Taxonomy, Heteroptera, Aradidae, *Dysodius*, Neotropical Region, new species.

RESUMEN

Se revisa el género *Dysodius* Lepeletier & Serville, de origen neotropical y dos nuevas especies recolectadas en México, Guyana Británica, Surinam, Guyana Francesa, Brasil, Ecuador, Perú y Bolivia son descritas; se incluyen nuevos registros de distribución y una clave para separar las especies conocidas; los parámeros de cada una de las especies son estudiados por primera vez. *Dysodius lunatus vandoesburgi* Blöte, 1965, se considera sinónimo de *Dysodius lunatus* (Fabricius).

Palabras clave: Taxonomía, Heteroptera, Aradidae, *Dysodius*, Región Neotropical, especies nuevas

The genus *Dysodius* is widely distributed in the Neotropical Region and, as stated by Usinger & Matsuda (1959:375), is one of the oldest and best known genera of Aradidae. Further more, its species are among the largest of the family and therefore represented in most insect collections.

According to Kormilev and Froeschner (1987), the following five species are presently included in the genus: *D. ampliventris* Bergroth, 1894, from Brazil; *D. brevipes* Bergroth, 1898, from Mexico; *D. crenulatus* (Stål, 1862), from Mexico; *D. equatorianus* Kormilev, 1975, from Ecuador; *D. lunatus* (Fabricius, 1794); *D. lunatus* ssp. *lunatus lunatus* (Fabricius, 1794), from "Indiis" and *D. lunatus* ssp. *lunatus vandoesburgi* Blöte, 1965, from Surinam.

In spite of the above mentioned statements, a comparative study of material co-

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llected by the author including the as yet uninvestigated male parameres, revealed that another distinctive species was mixed among "lunatus" and "brevipes".

They are describe herein, and the only existing key by Champion (1898) is updated and the male parameres of all species illustrated.

A detailed diagnosis of the genus has already been given by Usinger & Matsuda (1959). There is nothing to add, but remarks on the male genitalic structures will be given later for each species. Their statement "claws without arolia" is however, incorrect, as bristle-like parempodia and long lamellate pulvilli arising from the base of the ventral claw surface (terminology following Schuh, 1976) occur in all species (Fig. 3i, k).

Material cited in this paper is held in the collections of the author (**EH**), British Museum N.H. (**BM**); Zoologisches, Museum Hamburg (**ZMH**), Rijksmuseum van Natuurlijke Historie Leiden (**ML**), Naturhistorisches Museum, Viena (**NHV**), Staatliches Museum fur Tierkunde, Dresden (**SMD**), Zoological Museum, Copenhagen (**ZMC**), Instituto de Biología, Universidad Nacional Autónoma de México, D.F. (**IBUNAM**), U.S. National Museum, Smithsonian Institution (**USNM**), D. Engleman, Panamá (**DE**), University of Quito, Ecuador (**OQ**).

Dysodius lunatus (Fabricius, 1775)
(Fig. 1c, d, 3a, b, e, f)

1775 *Acanthia lunata*, Fabricius, Syst. Ent. p. 694. 6
1780 La Punaise Araignée, Stoll, Punaises, p. 53, t. 13, fig. 84 (french ed.)
1781 Die Scorpionsspinnenartige Wanze, Stoll, Cimic. 2, tab. 13, fig. 84 (german edition)
1787 *Acanthia lunata*. Fabricius, Mantissa Insectorum 2:279 (key)
1794 *Acanthia lunata*, Fabricius, Ent. Syst. 4. 72.20 (common citation)
1803 *Aradus lunatus*, Fabricius, Syst. Rhyng. p. 117. 2
1811 *Aradus lunatus*, Wolff, Icon. Cim. V, p. 166, t. XVII, fig. 162
1828 *Dysodius lunatus*, Lepeletier & Serville, Encycl. Mèth. 10:654
1835 *Dysodius lunatus*, Burmeister, Handb. Ent. II (I):255
1898 *Dysodius lunatus*, Champion, Biol. Centr. Am.II:86 (key)
1959 *Dysodius lunatus*, Usinger & Matsuda, Classif. Arad.: 375 (catalogue)
1965 *Dysodius lunatus* ssp. vandoesburgi, Bloete, Cat. Arad.:31, nov. syn.
1987 *Dysodius lunatus*, Kormilev and Froeschner, Entomogr. 5:137

The first description by Fabricius was already published in 1775. Although he did not refer to this in his important paper of 1794, he repeated the first description without alteration. This seems to be the reason why subsequent literature always reported 1794 as the date of description. This is to be corrected.

The works of Stoll, giving the first illustration of *Dysodius lunatus*, published in a Dutch edition (between 1780 and 1788) and a German translation (between 1781 and 1792) are of no importance for nomenclatorial questions as no binominal names were used.

Fabricius indicated in 1775 and 1794 that the species have their "Habitat in Indiis". In 1803 he referred to material from "America meridionali" collected by "Dom.

Smidt". As in the nineteenth century (Insulis) "Indiis" was commonly used for the West-India or Caribbean region (still in the sense of Columbus) and original material is still in the Fabricius Collection, there is no doubt that Fabricius *Acanthia lunata* was based on neotropical and not oriental material.

Dysodius lunatus auct. is the most common species of the genus. Its distribution is reported to range from South and Central America to Mexico. The species varies considerably in size but Champion (1898:17) already indicated that there were two forms. He wrote: "The larger form with longer and more curved apical lobes to the pronotum is confined to tropical South America" and figured the smaller "normal Central-American form". This fact remained unnoticed until 1965 when Bloete described the smaller form as ssp. vandoesburgi following P.H. van Doesburg's information that he collected both forms in Surinam under different ecological conditions. The larger form was only found in primary forests while ssp. *vandoesburgi* lived under the bark of the cultivated tree *Erythrina glauca* Willd. Although Fabricius' description is insufficient for an interpretation of the nominal form, Bloete regarded the larger form as typical without examination of Fabricius'type material.

This has now been done, and comparison with specimens of ssp. *vandoesburgi* has shown that the latter is conspecific with the nominal taxon and hence a junior synonym. The larger form belongs to a distinct species and is described later as *Dysodius magnus* sp. n.

Redescription. **Lectotype male.** Macropterous. General coloration cinnamomeous with darker scutellum and pygophore. Body surface mat, partly granulate with short, curled, yellowish tomentum. Lateral margins of pronotum and abdomen roughly crenulate. Membrane shining with brownish veins.

Head slightly longer than width across eyes. *Juga* produced beyond *clypeus*, reaching 1/2 of antennal segment I, its lateral margins with acute tubercles. Antenniferous tubercles straight, apices acute. Postocular expansion of head with lateral tubercles, projecting slightly beyond outer margins of eyes. Antennae slender, their length/width of head across eyes = 2.17. Distal 2/3 of first segment with large tubercles, segments II to IV with weaker granulation and short pubescens. *Rostrum* as long as head, arising from a slit-like atrium. Rostral groove deep, open posteriorly.

Pronotum with subparallel sides at base and broad plate-like projecting anterolateral lobes. Distance between inner margins of these lobes smaller than basal width of *pronotum*. Surface granulate. Anterior disk with 4(2 + 2) longitudinal carinae formed by fused tubercles, the inner ones medially interrupted by a depression. Basal humeri carinate. Transverse impression of disk distinct, not extending to lateral margins.

Scutellum triangular, wider than long. Its lateral margins carinate, disk transversely rugose with weak median carina, basal angles raised into rounded tubercles.

Hemelytra reaching posterior margin of tergite VI; corium extending to middle of connexivum III.

Abdomen broadly rounded, connexiva with prominent rounded lateral lobes and granulate margins. Lateral portion of tergal disk exposed, with carinate inner margin, forming a closed or semiclosed ring-shaped elevation around the posterior apodemal impression of tergite IV. Posterior margin of connexivum VI with a distinct

row of tubercles basally. Posterior margin of tergite VII raised with 2(1 + 1) large rounded tubercles medially. Spiracles II to VIII ventral, remote from lateral margins.

Legs slender. Femora strongly tuberculate, tibiae less so. Claws with two bristle-like parempodia and long ribbon-like pulvilli.

Pygophore globular, with a smaller globular expansion posteriorly, dorsally flattened with an elevated ridge on lateral margins. Parameres spatulate with a longitudinal row of file-like carinae on inner face resembling a stridulatory comb (Figs. 3a,b).

Measurements. Length 13.6 mm, width across tergite V 8.4 mm. Pronotum length medial/width at base = 2.4/4.45 mm; length incl. lobes/width across lobes = 4.0/6.4 mm. Head length/width across eyes = 2.2/2.0 mm. Antennae total length 4.35 mm, I:II:III:IV = 1.65:0.9:1.15:0.65 mm; ratio length of I:II = 1.83.

Female larger and wider, tubercles on posterior margin of tergite VI smaller but always present. Tergite VII depressed medially, elevated laterally, posterior margin raised with 4-6 small tubercles. Paratergites VIII shorter or reaching tip of tergite IX.

Variability. The coloration varies from cinnamomeous to dark brown, the lighter specimens showing mostly some darker parts. Variability of length in the material examined ♂♂, 13.0-14.5 mm, ♀♀, 14.5-16.7 mm. Width of abdomen across tergite V, ♂♂, 8.1-8.6 mm, ♀♀, 8.4-9.7 mm. Width of pronotum at base/width across lobes ♂♀, 4.8-6.6/5.2-7.2 mm. Shape and length of antenniferous tubercles are variable as well, with a tendency to longer acute apices which then are divariacating.

Material examined: From the **ZMC** Fabricius collections one pinned male specimen deposited in the older "Kiel Collection", labelled "lunata" in Fabricius handwriting was available and has been designated as lectotype. The parameres have been mounted on a label attached to the specimen. Further 1♂, 1♀, 2 nimphs from the younger "Copenhagen Collection", labelled "Smidth" (sic!) and "Aradus lunatus, ex. Am. mer. Schmidth" on which Fabricius citation of 1803 was obviously based. This corresponds to the type-material indicated by Zimsen (1964).*

MEXICO: VERACRUZ (**IBUNAM, BM, DE, EH**), CHIAPAS (**IBUNAM, EH**), YUCATAN (**EH**), QUINTANA ROO (**IBUNAM**), OAXACA (**BM, EH**), CAMPECHE (**BM**), without locality (**NHV, coll. Signoret**); **GUATEMALA**: TIKAL (**EH**), without locality (**NHV**); **HONDURAS**: RIO GRANDE (**BM**), San Pedro Sula (**NHV**); **BELIZE** (**BM**); **COSTA RICA**: Puntarenas (**EH**); Limon (**EH**), San José (**NHV**), Río Barbilla (**NHV**), without locality (**SMD, NHV**); **PANAMA**: Coiba (**BM**), Chiriqui (**BM, SMD, NHV, EH**), Colon, La Guaira (**EH**) PANAMA PROV. (**EH, DE**), Chepo (**DE**), Portobelo (**DE**), BARRO COLORADO ISLAND (**DE**), CANAL ZONE (**DE, EH**), CONTADORA IS. Perlas (**DE**), without locality (**BM, EH**); **COLOMBIA**: 1 ♂ without locality, paratype of ssp. *vandoesburgi* (**ML**), Sierra Nevada de Santa Martha (**EH**), Chiriguana Dist. (**BM**), without locality (**SMD**); **VENEZUELA**: Haut Savare (**EH**), CARACAS (**BM**), without locality (**BM, SMD**); Surinam: 2♂♂ Zanderij (paratypes of ssp. *vandoesburgi*) (**ML**), Bokopondo (**ML**), Tonka (**ML**), Coppename Riv. (**ML**), Kabalebo (**ML**), without locality (**ML, BM**); **BRITISH GUYANA**: N.W. District (**BM**); **FRENCH GUIANA**: Charvein (**EH**); **TRINIDAD**: ARIMA Dist. (**BM**), Conva Valley (**BM**); **BRAZIL**: Manaus (**EH**), SANTA CATARINA (**BM**); SANTAREM (**NHV**), MATO GROSSO (**DE, EH**); **ECUADOR**: Sucula Masca, Amaz. (**SMD**), Limoncocha (**EH**), Pichincha, Pto. Quito (**UQ, EH**), Napo (**UQ**); **PERÚ**: CUZCO (**ML**), MADRE DE DIOS, Pto. Maldonado (**BM**), Panguana Station, Rio Pachitea, Amaz. (col. Rietschel), Altamarani (**EH**), Chutihuara Beni (**EH**), Iquitos Amaz. (**EH**), Marcapata (**SMD**), Tarapato (**EH**), without locality (**SMD, NHV, BM**); **BOLIVIA**:1♂1♀ BUENAVISTA, STA. CRUZ, (paratypes of ssp. vandoesburgi) (**ML**), STA. CRUZ, Ichillo (**EH**), Chapare (**EH, BM**); Yungas de Coroico (**SMD, NHV**).

* All specimens of other collections reported as "lunatus" should be revised to determine whether they belong to this or the following species.

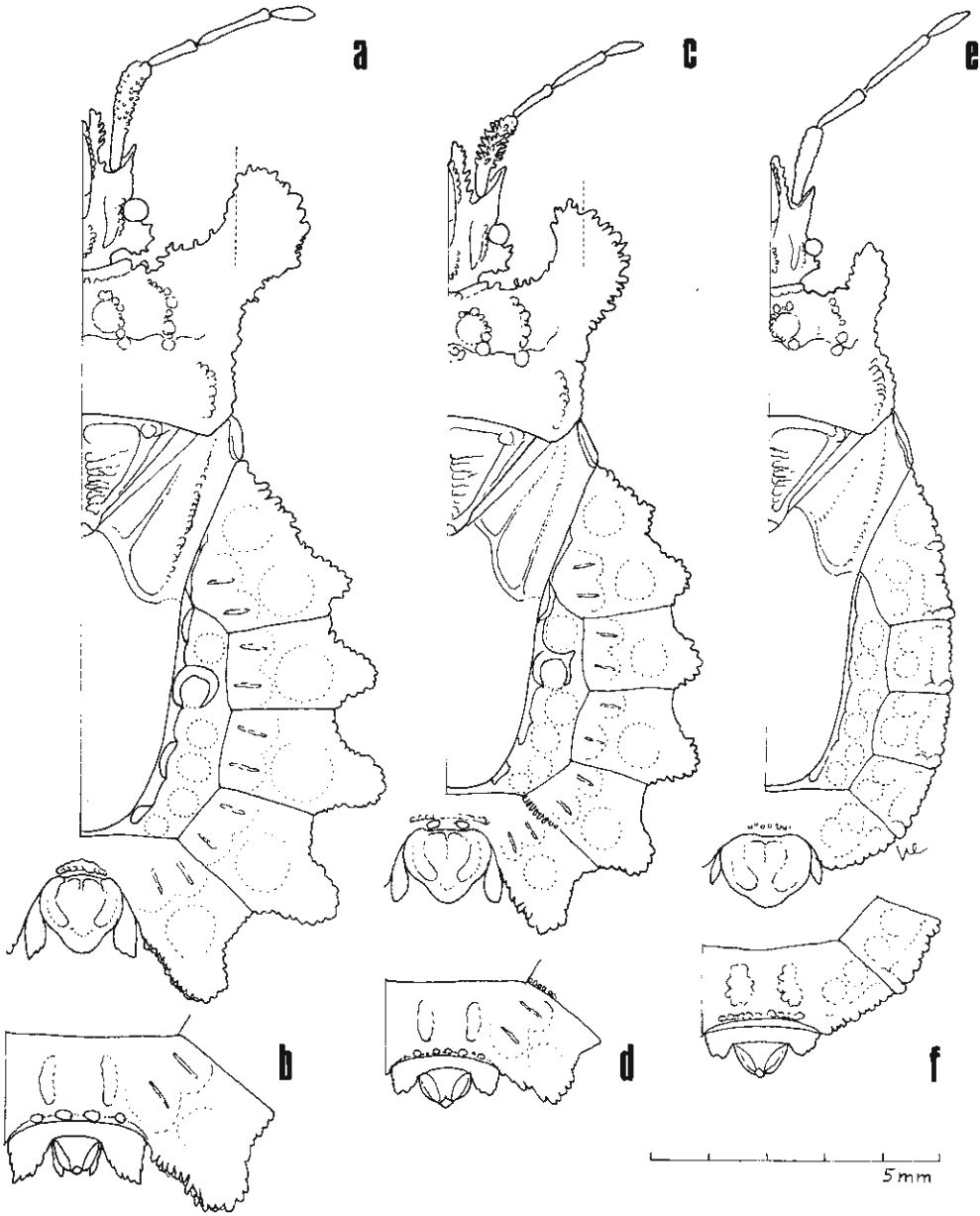

Fig. 1.a, b *Dysodius magnus* sp. nov. (Paratype, Iquitos); c, d *Dysodius lunatus* (F.) (Mexico, Uxmal); e, f *Dysodius crenulatus* (Stål) (Panama); a, c, e male, dorsal view; b, d, f female terminal segments, dorsal view.

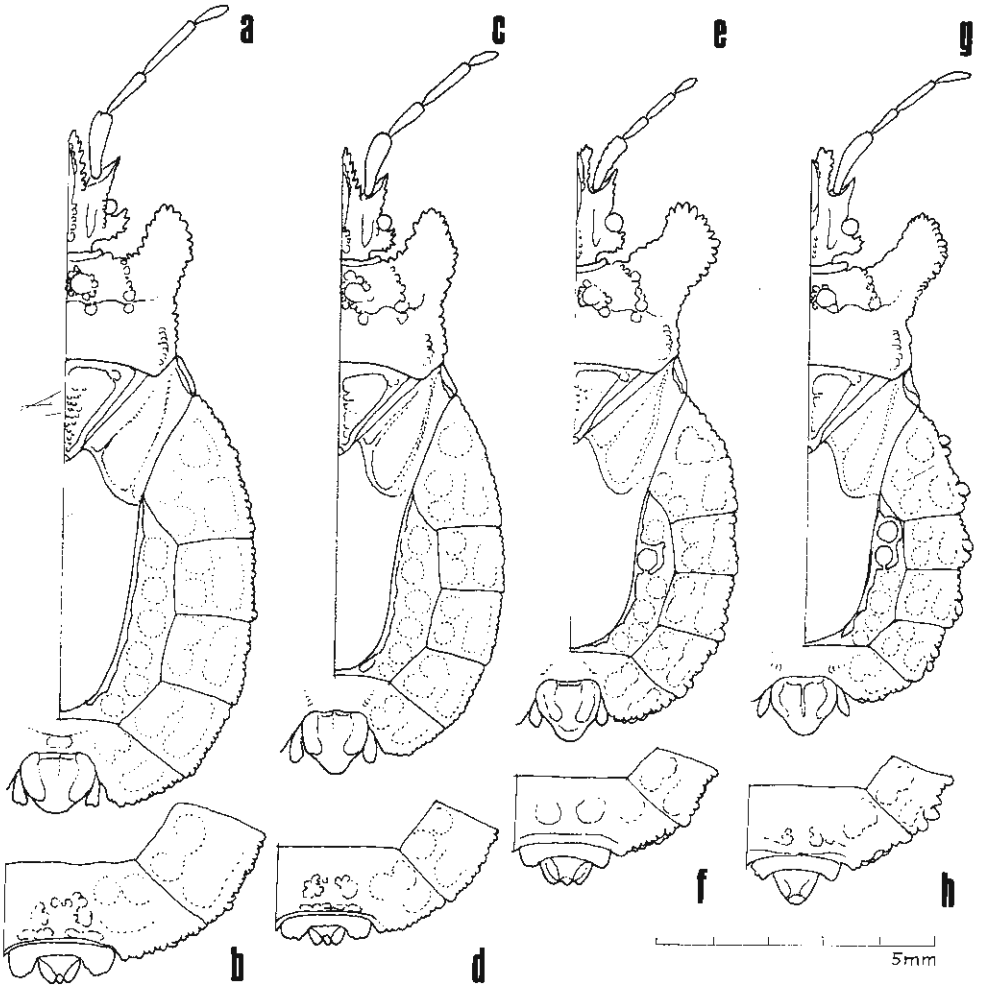

Fig. 2.a, b *Dysodius brevipes* Bergr. (Mexico, Chiapas); c, d *Dysodius brailovskyi* sp. nov (Paratype, Mexico, Pt. Vallarta); e, f *Dysodius ampliventris* Bergr. (Surinam); g, h *Dysodius equatorianus* Korm. (Surinam). a, c, e, g male, dorsal view; b, d, f, h female, terminal segments, dorsal view.

Dysodius magnus sp. nov.
(Figs. 1a, b, 3c, d, i, k)

Dysodius lunatus auct. part. nec (Fabricius, 1775, 1794, 1803)
Dysodius lunatus lunatus Bloete, 1965 (misinterpretation)

Description. **Holotype male** macropterous. General coloration reddish-brown, lighter brown are the anterior portion of the pronotum, medial area of connexiva, meso-and metasternum and venter medially. Shape, surface structures and general characters are as of *Dysodius lunatus*. Therefore only differing characters are described below.

Head. Antennae longer, 2.31 times as long as width of head across eyes, relative length of segments different (see measurements). Segment I more slender, less tuberculate; segments II-IV with strongly reduced granulation and adherent pubescence.

Pronotum. Anterolateral lobes longer and more expanded laterally. Distance between inner margins of lobes larger or equal to basal width of pronotum. Longitudinal carinae more prominent, particularly the lateral ones, transverse impression deeper.

Abdomen. Lateral lobes of connexiva more prominent, connexivum VII expanded posteriorly and upturned. Posterior margin of connexivum VI smooth, without tubercles. Tergite VII raised distally, its margin with a medial carina formed by fused tubercles.

Parameres larger and broadly rounded anteriorly (Figs. 3c,d).

Measurements. Length 17.2 mm; width across tergite v 11.1 mm. Pronotum length medial/width at base = 2.75/5.9 mm; length incl. lobes/width across lobes = 5.3/8.8 mm. Head length/width across eyes = 3.0/2.4 mm. Antennae total length 5.55 mm, I:II:III:IV = 2.15:1.05:1.50:0.85 mm, ratio length of I:II = 2.04.

Female. Generally as male but mostly larger. Posterior margin of connexivum VI without a row of granules. Tergite VII with less elevated lateral portions but tubercles on posterior margin are more prominent, particularly the inner two. Length of antennal segments I:II:III:IV = 2.25:1.0:1.35:0.85 (of specimen with a length of 18.0 mm).

Variability. Coloration varies from cinnamomeous to dark brown. Average size is larger than in *D. lunatus*, ♂♂15.8-17.2 mm, ♀♀16.8-18.2 mm; width of abdomen across tergite V = ♂♂ 10.4-11.2 mm, ♂♂ 11.2-12.5 mm. Width of pronotum at base/across lobes = 5.5-7.9/6.6-9.8 mm.

***Material examined*: Holotype ♂ PERU:** AMAZONIA, Iquitos, 11-II-77 1g. Heiss **(EH)**; **Paratypes** 7♂♂ 2♀♀ collected with holotype **(USNM, IBUNAM, EH)**, 1♀ **PERU:** TINGO MARIA, Monzon Valley, 11-X-54 1g. Schlinger & Ross **(EH)**, 1♂ **PERU:** TINGO MARIA, K.G. Preston-Mafham, XI-1980, BM 1984-440 **(BM)**, 3♂♂ **PERU:** MADRE DE DIOS, Río Tambopata, 30 km SW Pto. Maldonado, N.E. Stork (together with D.lunatus) **(BM, EH)**, 1♂ PERU: Coll. Signoret **(NHV)**, 1♂ **(PERU)**: Loreto (PROV. AMAZON Safari Camp, Rio Mamon NNW Iquitos, 3°42'S, 73°14'W 1g. Engleman **(DE)**, 1♂ **PERU:** RIO YUYAPICHIS/Pachitea 9°37'S, 74°56'W, ca. 260 m, 22×84 1g. et coll. Rietschell (together with D. lunatus), 1♂ **BRAZIL:** STA. CATARINA XI. 61 1g. Walz **(EH)**, 2♂♂ **BRAZIL:** São Paolo de Oliveiga, VII-25 E. le Moult **(ML)**, 1♂1♀ **BRAZIL:** Manicore, Rio Madera, E.le Moult **(ML, EH)**, 1♂ 5♀♀ **BRAZIL:** MATO GROSSO, 10°25'S, 59°28'W, 17-22-III 77,300 m, D. Engleman (Together with D. lunatus) **(DE, ZMC, USNM)**, 1♀ **BOLIVIA:** Yungas de Corioco, Fassel **(NHV)**, 1♀ **BOLIVIA:** J. Steinbach, 1904-311 **(BM)**, 1♀ **ECUADOR:** Rio Puyo, 700 m **(ML)**, 2♂♂ **ECUADOR:** NAPO, Cuyabeno, IV-84 E. Asanza **(EH)**, 1♀

ECUADOR: Napo Coca, 19-II-82 G. Onore (**UQ**), 10 **ECUADOR**: Napo Limoncocha, 0°26'S, 76°38'W, 900 m, 23-31 III 1974 D. Engleman (together with D. lunatus) (**EH**), 1♂1♀ same locality, 9-VI-77 Spangler & Givens (**EH**), 1♂ "Neugranada" (old name for Colombia), coll. Signoret (**NHV**) 1♂ **SURINAM**: "391" P.H. v. Doesburg (**ML**), further from Surinam 1♂ "P45", 1♀ Haudery 6-I-63 Bolwerk, 1♂ 2♀♀ Sipaliwini, 7-VI-63 P.H. v. Doesburg, 1♂ "P193" P.H.v. Doesburg, 1♀ "P2134" P.H.v. Doesburg, 1♀ "P69" P.H.v. Doesburg, 1♂ Brownsberg 26-VIII-72, G.F. Mees, 1♀ Kabalebogebied VII-25 E. le Moult, 1♀ Van Brussel, Verz. Fokker, 1♀ PARAMARIBO, v. Hasselt, 1♀ "SURINAME" v. Voll. (all **ML, EH**), 1♀ "Suriname" 1932, G. Bunzli (**BM**) 1♀ "Surinam" Ehrhardt vend. (**ZMH**), 1♂ **BRITISH GUYANA**: BARTICA triangle X 48-III 49 D.J.Atkinson (**BM**), 1♂2♀♀ **BRITISH GUYANA**: N.W. District V 1957, E. A. J. Duffy, BM 1957-394 (**BM,EH**) 2♀♀ **BRIT. GUYANA**: Esseqwuibo R., Moaballi Creek, 19-X-1929, Oxf. Univ. Exp. BM 1929-485 (**BM**), 1♂ **BRT. GUYANA**: BLAIRMONT 4-VII-23 (**BM**), 2♂♂5♀♀ **FRENCH GUIANA**: Maroni, E. le Moult (**ML, EH**), 300200 "Fr. Guyana" E. le Moult (**ML**), 1♂3♀♀ **CAYENNE**, Coll. Signoret (**NHV, EH**), 1♂ "Guyane Francaise" M. Guitton (**EH**), 1♀ "Südamerika" coll. A. Sallé (**EH**).

Distribution. The above-mentioned localities are confined to tropical South America. *D. magnus* is partly sympatric with *D. lunatus*, most probably under different ecological circumstances in the same habitat.

Etymology. The name *magnus* (lat. big, large) refers to the size.

Discussion. Within the genus, *D. magnus* sp. nov. is closely related to *D. lunatus* but can be separated from it by a set of characters as follows (in brackets for *D. lunatus*): On the average, larger size ♂♂ 15.8-17.2 mm, ♀♀ 16.8-18.2 mm (♂♂ 13.0-14.5, ♀♀ 14.0-16.7 mm); apical pronotal lobes very expanded, distance between inner margins of lobes larger than or equal to basal width of pronotum at base (less expanded, distance smaller than width); antennae longer, ratio segment I:II = 2.04-2.25 (shorter, I:II = 1.80-1.90); lateral lobes of connexiva strongly projecting, connexivum VII upturned (less projecting, connexivum VII straight); posterior margin of connexivum without tubercles or granules (with tubercles in male and granules in female); posterior margin of male tergite VII raised, carinate, without single tubercles (with 2(1 + 1) prominent tubercles medially); tergite VII of female with prominent tuberces (only 4-6 smaller tubercles); paratergites VIII of female acute, longer than tergite IX (blunt and shorter than tergite IX); parameres larger, wider and broadly rounded (smaller and more slender).

Dysodius crenulatus (Stål, 1862)
(Figs. 1e, f, 3g, h)

Dysodius crenulatus Stål, 1862, Stett. Ent. Zeitg. 23:437
Dysodius crenulatus Stål, 1873, Kongl. Svenska Vet.-Akad. Handl. 11 (2):143

This is also a large species, described from Mexico, and may be recognized by the anterolateral lobes of the pronotum, which are smaller and produced forwards, the width across lobes not exceeding the basal width of pronotum as in all other species, the reduced postocular tubercles of head, the very long antennae and its general coloration, which is dark brown to black with scattered yellowish areas on head, pronotum and abdomen. The male paramere (Figs. 3g,h) is very distinctive in shape and the row of file-like carinae on the inn face is very large. *D. crenulatus* is also variable in size: in the material examined it ranged between 11.8-14.4 mm in males and 13.8-15.7 in females. It is widely distributed from Southern Mexico to Central America, reaching Colombia.

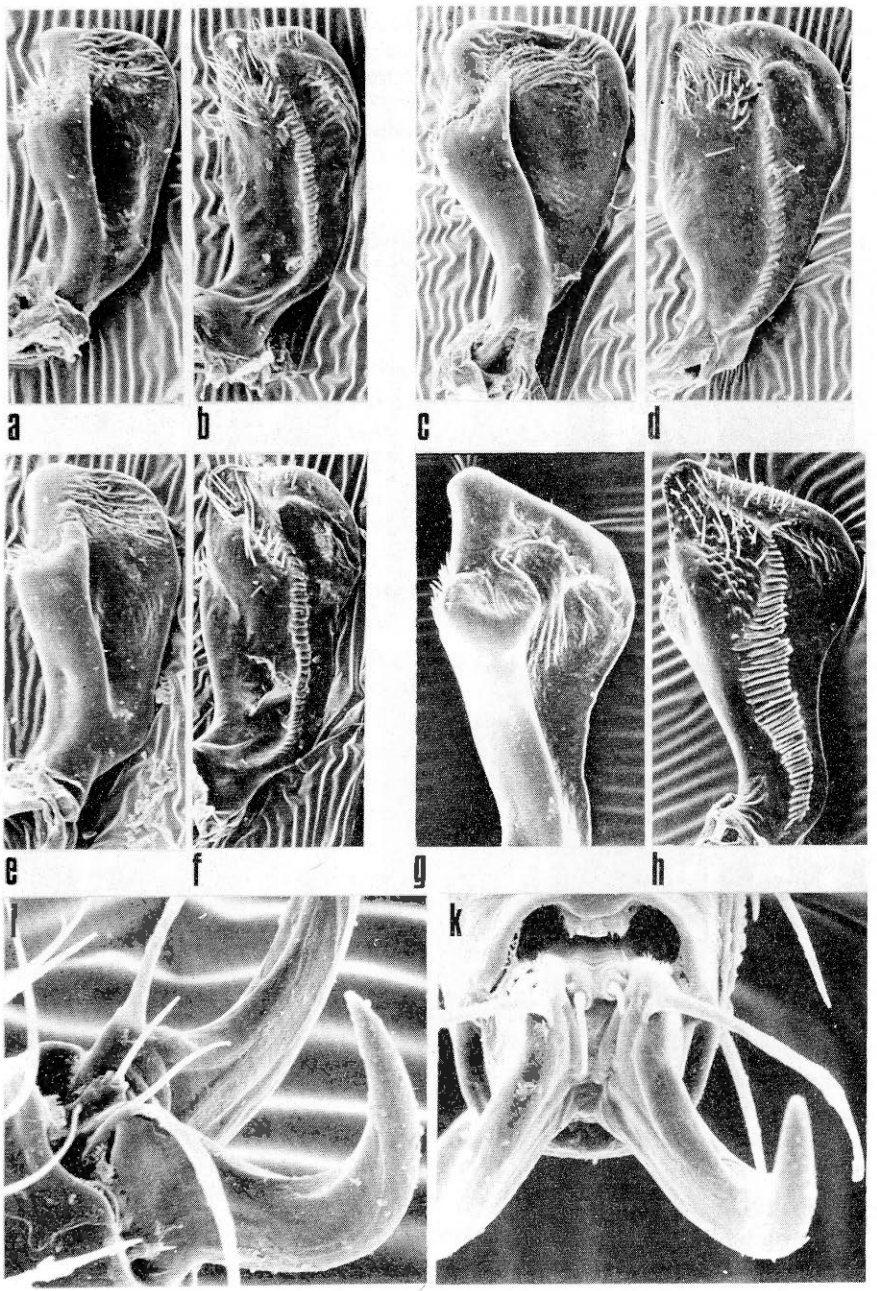

Fig. 3.a, b *Dysodius lunatus* (F.) (Bolivia); c, d, i, k *Dysodius magnus* sp. nov. (Paratype, Iquitos); e *Dysodius lunatus vandoesburgi* Bloete (Surinam); f *Dysodius lunatus* (F.) (Mexico, Tuxtepec); g, h *Dysodius crenulatus* (Stål). a, c, e, g paramere external face; b, d, f, h paramere inner face with file-like structure; i, k pretarsal structures.

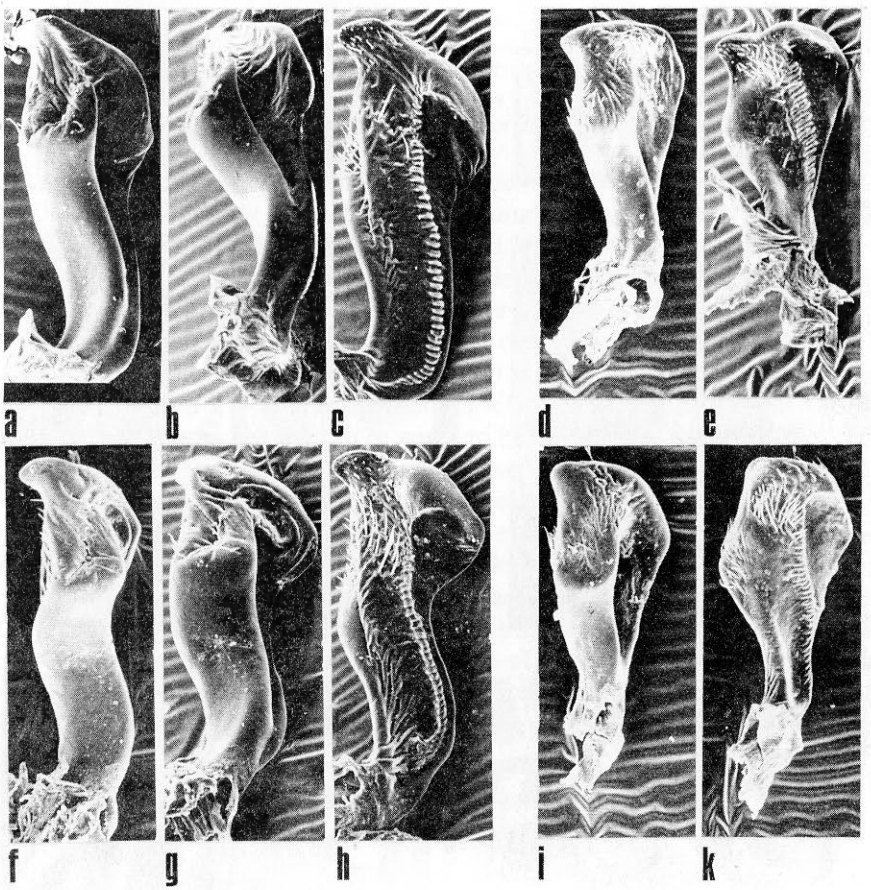

Fig. 4.a, b, c *Dysodius brevipes* Bergr. (Mexico, Guerrero); d, e *Dysodius equatorianus* Korm. (Surinam); f, g, h *Dysodius brailovskyi* sp. nov. (Paratype, Mexico); i, k *Dysodius ampliventris* Bergr. (Brazil). a, b, d, f, g, i paramere external face; c, e, h, k paramere inner face with file-like structure.

Material examined: **MEXICO**: CHIAPAS, Acahuacan (**IBUNAM, EH**), Chiapas Huixtla (**EH**), **CHIAPAS**, Cacaohatan (**IBUNAM**), Mexico, Coll. Signoret (**NHV**); **GUATEMALA**: TIKAL (**EH**), Escuintla (**NHV**); **EL SALVADOR**: Mt. S. Salvador (**EH**); **COSTA RICA**: Guanacaste, Tilecan (**EH**), Río Barbilla (**EH**), S. Isidro near S. José (**NHV**), PUNTARENAS, Jacó (**EH**), PUNTARENAS, Carrara Nat. Reserve (**EH**); **PANAMA**: COLON, Portobelo (**EH**), CHIRIQUI, Sta. Clara, 400 ft (**DE, EH**), VOLCAN DE CHIRIQUI 2-3000 ft (ex. coll. Champion) (**NHV, SMD, EH**), El Zumbador (ex. coll. Champion) (**NHV**), Mirandilla (ex. coll. Champion) (**NHV**).

Dysodius brailovskyi sp. nov.
(Figs. 2c, d, 4f, g, h)

Description. **Holotype male.** Macropterous, of moderate size, ovate. General coloration cinnamomeous to dark brown with yellowish areas on anterior portion of connexiva, with sparce short, yellowish tomentum. Lateral margins of pronotum and abdomen crenulate, body surface with coarse granulation.

Head distictly longer than width across eyes. Juga produced beyond clypeus, reaching 2/3 of antennal segment I, its lateral margins and clypeus with rounded tubercles. Antenniferous tubercles acute, divaricating. Postocular expansion of head large, its lateral margin dentate, produced beyond outer margins of eyes by 1/2 eye diameter. Antennae relatively short, ratio length/width of head across eyes = 2.13. Distal 2/3 of first and the following antennal segments granulate. Vertex with four rows of longitudinal granules. Rostrum arising from a slit-like atrium, not exceeding rostral groove, which is open posteriorly.

Pronotum with subparallel sides at base, anterolateral lobes rounded, produced, reaching beyond eyes. Distance between inner margins of lobes distinctly smaller than width of pronotum at base. Anterior portion with 2(1 + 1) longitudinal lateral carinae, formed by a row of tubercles, between them two smooth depressions which are flanked anteriorly and on their inner margin by a row of granules, meeting medially. Basal humeri carinate. Transverse impression deep, reaching lateral margins.

Scutellum triangular, lateral margins carinate, tip notched. Disk granulate with a median carina.

Hemelytra reaching nearly posterior margin of tergite VI; corium reaching middle of connexivum III.

Abdomen broadly rounded, constricted anteriorly, connexiva nearly straight, without lateral lobes. Lateral portion of tergal disk exposed, its inner margin carinate. Tergite VII raised medially. Spiracles II to VIII ventral as in all species of the genus.

Legs rather short, as in D.brevipes, granulate. Claws with two bristle-like parempodia and long slender pulvilli.

Genital capsule globular, as in *D. lunatus*. Male paramere with a short rounded anterior lobe which is sharply constricted at base, the deep longitudinal groove on external face not reaching the tip, file-like structure on inner face present (Fig. 4 f,g,h).

Measurements. Length 11.9 mm, width across tergite V 6.35 mm. Pronotum length medial/width at base = 1.85/4.15 mm, length incl. lobes/ width across lobes 2.175/1.825 mm. Antennae total length 3.9 mm. I:II:III:IV = 1.275:0.8:1.15:0.575 mm, ratio length of antennae/width of head across eyes 2.13, ratio length III:I = 0.9, III:IV = 2.0.

Female larger, general characters as male.

Variability of material examined. Lenght ♂♂ 11.0-12.1 mm, ♀♀ 12.5-13.8 mm, ratio length of antennae/width of head across eyes ♂♂ 2.01- 2.17, ♀♀ 2.0-2.10, ratio antennal segment III/I = ♂♂ 0.89-0.96, ♀♀ 0.85-0.92; III: IV ♂♂ 1.86-2.0, ♀♀ 1.84-1.92.

***Material examined*: Holotype male, MEXICO**: JALISCO, Puerto Vallarta, X 78 lg. Heiss (**EH**); **Paratypes** 3♂♂ 5♀♀ from the same locality (**EH, USNM, IBUNAM**) 1♂1♀ **MEXICO**: NAYARIT, Sayulita N Pto. Vallarta, X 78 lg. Heiss (**EH**); 1♂1♀ **MEXICO**: SINALOA, Concordia 23-VIII-69 J. Doyen (**EH**); 1♀ labelled "Mex. Behrens" "coll. Uhler" "lunatus F det. Mayr" (**NHV**); 1♀ **MEXICO**: NAYARIT, km. 14 San Blas Tepic 31-VII-84 M. García (**IBUNAM**).

Etymology. This species is dedicated to my friend H. Brailovsky in recognition of his important studies on neotropical Hemiptera and his continued friendly assistance.

Discussion. Among the species of the genus, *D. brailovskyi* sp. nov. is closest to D. brevipes Bergr. and has been confounded with the latter. It can, however, be separated by a combination of characters as follows (in brackets for *D. brevipes*): Size generally smaller ♂♂ 11.0-12.1 mm. ♀♀ 12.5-13.8 mm (♂♂ 12.45-14.0, ♀♀ 13.7-15.4 mm); abdomen more constricted anteriorly (Fig. 2c) (connexiva II-III broadly rounded, Fig. 2d.);antennae shorter ♂♂ 2.01-2.17, ♀♀ 2.0-2.10 times as long as width across head (♂♂ 2.19-2.37, ♀♀ 2.10-2.48); antennal segment III shorter than I, ratio ♂♀ 0.85-0.96 (III equal or longer than I ♂♀ 1.0-1.12); antennal segment III equal or less than 2× IV, ratio ♂♀ 1.84-2.0 (longer, more than twice IV, ratio ♂♀ 2.07-2.25); shape of parameres and extension of groove Figs. 4f, g, h (Figs. 4a, b, c).

Distribution. The few records known are all from the subtropical Pacific coast region of Mexico and it is necessary to revise the material which was recorded as *D. brevipes* to date.

Dysodius brevipes, Bergroth, 1898
(Figs. 2a, b, 4a, b, c)

Dysodius brevipes Bergroth, 1898, Wiener Ent. Zeitg. 17:26

This species of a larger size has also been described from Mexico, based on a single male with broken right and abnormally fused left antenna, so that antennal characters have not been mentioned. This specimen from "Cuernavaca" (Porv. Morelos), deposited at NHV could be examined and has been designated as holotype.

D. brevipes belongs to the group of species with laterally expanded anterior pronotal lobes, lacking conspicuous connexival projections (*ampliventris, equatorianus, brailosvkyi* sp. nov.). It differs from them by its large size and wide abdomen, the proportions of antennae and the parameres. The latter are characterized by the rounded anterior lobe not sharply but continuously constricting towards base, the deep longitudinal groove on external face reaching almost the tip. File-like structure on inner face is present. Figs. 4a, b, c.

Holotype male with original label "Bilinek, Cuernavaca" (NHV); parameres are mounted on a separate label attached to the specimen. Measurements: Length 13.4 mm, width across tergite V 7.15 m, length of head/width across eyes 2.2/1.9 mm, antennae damaged; pronotum length at middle/width at base 2.1/4.6 mm, length incl. lobes/width across lobes 3.6/5.1 mm.

Female larger, general characters as male.

Variability of material examined. Length ♂♂ 12.45-14.0 mm, ♀♀ 13.7-15.4 mm, width of abdomen across tergite V ♂♂ 6.6-7.1 mm, ♀♀ 7.6-8.7 mm; antennae ratio length/width across eyes ♂♂ 2.19-2.37, ♀♀ 2.10-2.48; ratio antennal segment III: I ♂♂ 1.0-1.12, ♀♀ 1.0-1.07; ratio antennal segment III: IV ♂♂ 2.07-2.25, ♀♀ 2.07-2.23.

Material examined all from **MEXICO:** 5♂♂ 5♀♀ GUERRERO, Arcelia 22-X-83 Brailovsky (**IBUNAM, EH**); 1 ♀ GUERRERO, Acahuizotla 5-VI-84 Delfin (**EH**): 2♂♂ 1♀ GUERRERO, Río Balsas, Wickham (**EH**); 2♂♂ 10 GUERRERO, Zihuatanejo 8-VI-84 Brailovsky (**IBUNAM**); 1♂ OAXACA, La Ventosa, 48 mi, E,21-VI-63 J. Doyen (**EH**); 1♀ CHIAPAS, 9 mi **N** Arriaga, 27-VI-65 A. Raske (**EH**).

The geographical distribution seems to be confined to the southern states of Mexico and is not yet clear.

Dysodius ampliventris, Bergroth, 1894
(Figs. 2e, f, 4i, k)

Dysodius ampliventris Bergroth, 1894, Ent. Tidskr. 15:103.

This and *D. equatorianus* are the smallest species of the genus and seem to be less common. *D. ampliventris* has been described from Brazil, Itaituba (Amazonia). It can be recognized by its oblique, flat anterolateral lobes of the pronotum, which project laterally over the base of pronotum and reach far beyond the eyes; by short antennae, ratio length of antennae/width of head across eyes 1.65-1.75; short and yellow tomentum covering the body; roughly crenulate lateral margins of connexiva without producing granules; the shape of the male paramere (Figs. 4i, k).

Measurements of material examined. Length ♂♂10.9-11.3 mm, ♀♀ 11.9-12.7 mm. A male from Brazil, Manaus, has the following dimensions: length 11.2 mm, width across tergite V 6.3 mm, head length/width across eyes 1.215/1.825 mm, antennae length 3.2 mm, length of I: II, III: IV = 2.0: 0.6: 0.775: 0.625 mm, ratio length of antennae/width of head across eyes 1.75, pronotum medial length/width at base 1.9/3.15 mm, length incl. lobes/width across lobes 3.95/5.25 mm.

Material examined: 1♂ **BRAZIL:** Manaus, Reserva Ducke, 25 km N, 23-III-64, C.E. & E.S. Ross (**EH**); 1♀ **PANAMA:** BARRO COLORADO Island, 14-VI-39, Zetek (**EH**); 1♀ **PANAMA:** Gatun Lake, 27-VIII-31 Zschokke (**EH**); 5♂♂ 4♀♀ **PANAMA:** CANAL ZONE, BARRO COLORADO Is 9-VII-74, H.A. Hespenheide (**DE, EH**); 1♀ **PANAMA:** COLON PROV. Sta Rita Ridge, at ligths 2-VI-77 D. Engleman (**DE**); 1♂ **SURINAM** "321" P.H.v. Doesburg jr. (**EH**).

The geographical distribution is not sufficiently known due to the scarcity of material available. The record from Surinam indicates a sympatric occurrence with *D. equatorianus*, from which specimens from Surinam, determined by the author of the species, N.A. Kormilev, were able to be examined.

Dysodius equatorianus, Kormilev, 1975
(Figs. 2g, h, 4d, e)

Dysodius equatorianus Kormilev, 1975, Occas. Papers Calif. Acad. Sci. 122:9

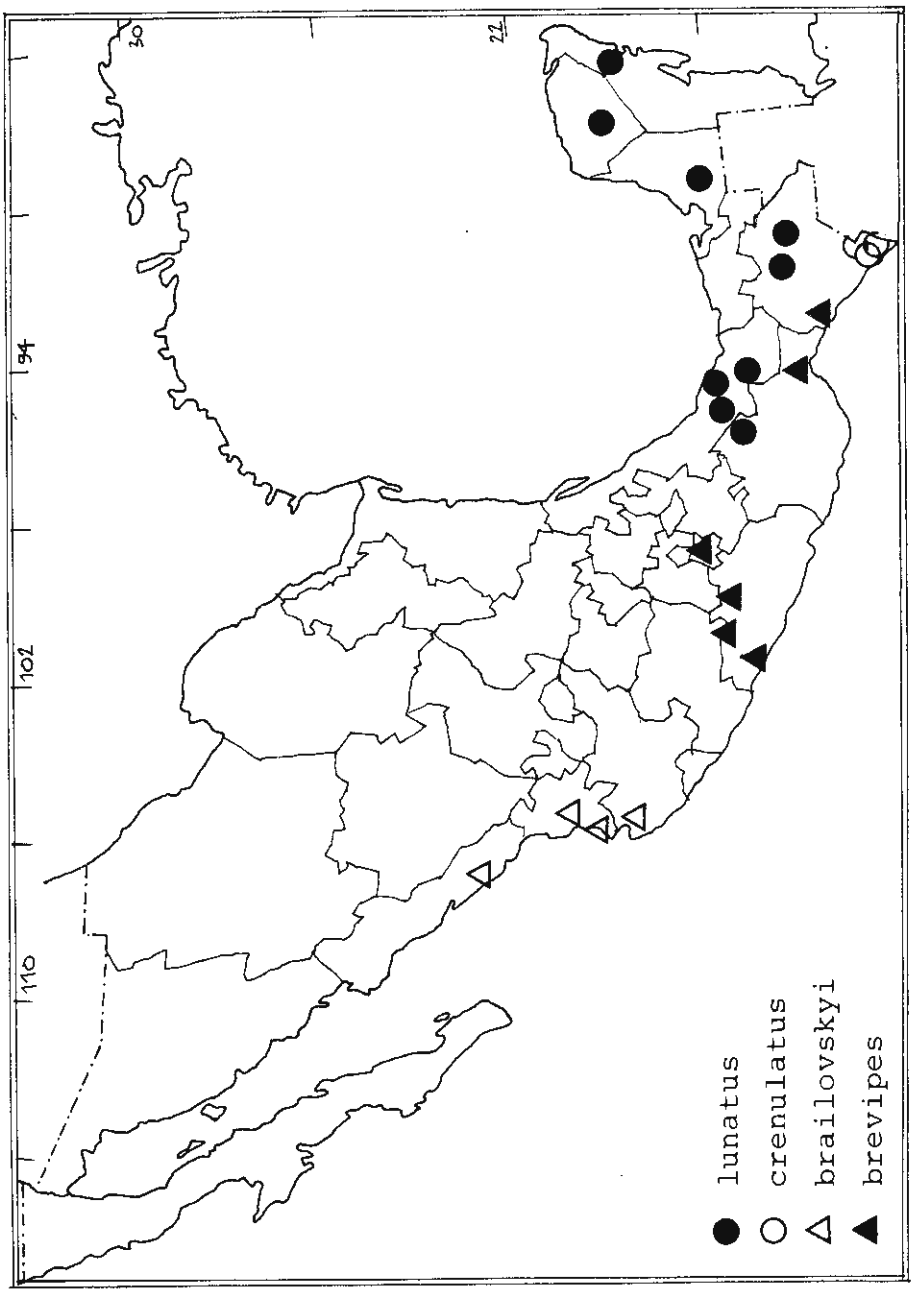

Fig. 5. Distribution of *Dysodius* in Mexico

Small species, described from Napo in the equatorian Amazon Region. It is very close to *D. ampliventris* and has been confounded with it. This species may be recognized and differentiated from *D. ampliventris* by margins of connexiva with angularly producing granules (of the ventral row); more slender and upturned (not flat) anterolateral pronotal lobes; longer antennae, 1.95-2.0 times as long as width across head; shape of paramere, with a more angularly rounded anterior lobe (Fig. 4d, e).

Measurements of material examined. Length ♂♂ 10.8-11.4 mm, ♀♀ 11.3-13.4 mm.

Material examined: 1♂1♀ **SURINAM:** BROKOP. DISTR., Brownsberg, 20-VII-75, P.H.v. Doesburg (det. Kormilev) **(EH)**; 2♂♂5♀♀ **SURINAM:** BROWNSBERG NAT. PARK 19-22-VII-75, D. Engleman **(DE,EH)**; 1♀"Cayenne" Coll Signoret (as *ampliventris* det. R. Usinger) **(NHV)**.

The geographical distribution is also not yet sufficiently known due to the small number of specimens recorded.

Catalogue of the genus ***Dysodius*** Lepeletier et. Serville

D. ampliventris Bergroth, 1894
D. brailovskyi **sp. nov.**
D. brevipes Bergroth, 1898
D. crenulatus (Stål, 1862)
D. equatorianus Kormilev, 1975
D. lunatus (Fabricius, 1775)
D. lunatus vandoesburgi Bloete, 1965, **syn. nov.**
D. lunatus lunatus Bloete, 1965, **syn. nov.**
D. magnus **sp. nov.**

KEY TO SPECIES OF THE GENUS ***DYSODIUS***

1(2) Lateral margins of connexiva II to VII each dilated into rounded lobes with crenulate margin (Figs. 1ac) (LUNATUS group) 3

2(1) Lateral margins of connexiva II to VII without dilated lobes 5

3(4) Large species, ♂♂ 15.8-17.2 mm, ♀♀ 16.8-18.2 mm; anterolateral lobes of pronotum strongly dilated laterally, distance between inner angles equal or larger than basal width of pronotum (Fig. 1a); antennae about 2.3 times as long as width of head across eyes, ratio of antennal segment I:II = 2.04-2.25; posterior margin of connexivum VI without tubercles in male and female; raised posterior margin of male tergite VII with median carina; paratergites VIII of female acute, longer than tergite IX: paramere as Fig. 3c, d Tropical South America ***D. magnus* sp. nov.**

4(3) Length ♂♂ 13.0-14.5 mm, ♀♀ 14.0-16.7 mm; distance between inner angles of anterolateral lobes of pronotum smaller than basal width; antennae about 2.17 times as long as width of head across eyes; ratio of antennal segment I:II = 1.8-1.9; posterior margin of connexivum VI with distinct tubercles in male and some granules in female; raised posterior margin of tergite VII of male with two large tubercles at middle; paratergites VIII of female blunt, shorter than tergite IX; paramere as Fig. 3a, b México to South Brazil ..... ***D. lunatus*** (Fabricius)

5(6) Anterolateral lobes of pronotum broad and dilated, laterally expanding over base of pronotum; postocular tubercles prominent, reaching beyond outer margin of eyes 7

6(5) Anterolateral lobes of pronotum more slender, not dilated laterally over base of pronotum; postocular tubercles small, not reaching outer margins of eyes; parameres as Figs. 3g, h; length

♂♂ 11.8-14.4 mm, ♀♀, 13.8-15.7 mm Southern Mexico to Colombia ..... ***D. crenulatus*** (Stål)

7(10) Pronotal lobes directed anteriorly and only slightly wider than base of pronotum Figs. 2a, d; ring-like elevations around apodemal impressions of tergite IV not developed 8

8(9) Larger species, ♂♂ 12.45-14.0 mm, ♀♀ 13.7-15.4 mm; connexiva II and III broadly rounded; ratio length of antennae/width of head across eyes ♂♂ 2.19-2.37, ♀♀ 2.10-2.48; antennal segment III equal to or longer than segment I and more than twice as long as segment IV; parameres as Figs 4a, b, c. Southern Mexico ..... ***D. brevipes*** Bergroth

9(8) Smaller, ♂♂ 11.0-12.1 mm. ♀♀ 12.5-13.8 mm; connexiva II and III converging anteriorly; ratio length of antennae/width of head across eyes ♂♂ 2.01-2.17, ♀♀ 2.0-2.10; antennal segment III shorter than I and equal to or less than twice the length of segment IV. paremeres as Figs. 4f, g, h. Mexico (Jalisco, Nayarit, Sinaloa) ..... ***D. brailovskyi*** **sp. nov.**

10(7) Pronotal lobes produced anteriorly and laterally, distinctly wider than base of pronotum Figs. 2e, g; ring-like elevations around apodemal impressions of tergite IV well developed 11

11(12) Lateral margins of connexiva II to VII each with angularly produced granules at middle Fig. 2g; anterolateral pronotal lobes subparallel, upturned; ratio length of antennae/width of head across eyes 1.95-2.0; ring-like elevations around the two apodemal impressions of tergite IV developed; parameres as Figs. 4d, e; length ♂♂ 10.8-11.4 mm, ♀♀ 11.3-13.4 mm. Ecuador, Surinam, French Guiana..... ***D. equatorianus*** Kormilev

12(11) Lateral margins of connexiva II to VII crenulate but without projections Fig. 2e; anterolateral pronotal lobes oblique, flat; ratio length of antennae/width of head across eyes 1.65-1.70; ring-like elevations around apodemal impressions of tergite IV developed only on posterior one; parameres as Figs. 4i, k; length ♂♂ 10.9-11.3 mm, ♀♀ 11.9-12.7 mm. Brazil, Surinam, Panama ..... ***D. ampliventris*** Bergroth

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LITERATURE CITED

BERGROTH, E., 1894: Fortsatta bidrag till Aradidernasa kannedom. *Ent. Tidskr.* 15:97-118 (*Dysodius ampliventris*).

_____ 1898: Aradidae americanae novae vel minus cognitae. *Wien. Ent. Zeitg. XVII* (I): 26 (*Dysodius brevipes*).

BLOETE, H.C., 1965: Catalogue of the Aradidae in the Rijksmuseum van Natuurlijke Historie. *Zool. Verh.* 75:1-41 (*D. lunatus* ssp. *vandoesburgi*).

CHAMPION, G.C., 1898: *Biologia Centrali Americana*, Rhynchota, Vol. II: 65-117.

FABRICIUS, J.CH., 1775: *Syst. Ent.* p. 694.6 (*Acanthia lunata*).

_____ 1787: *Mantissa Insectorum 2:* 279 (*Acanthia* keyed).

_____ 1794: *Ent. Syst. Tom.* IV: 72, sp. 20 (*Acanthia lunata*).

_____ 1803: *Syst. Rhyng.* p. 117, sp. 2 (*Aradus lunatus*).

KORMILEV, N.A., 1975: Neotropical Aradidae in the Collection of the California Academy of Sciences, San Francisco (Hemiptera: Heteroptera). *Occ. Papers Calif. Acad. Sci.*, 122: 1-28 (D. equatorianus).

KORMILEV, N.A. & Froeschner, R.C., 1987: Flat bugs of the world, A synonymic list (Heteroptera, Aradidae). *Entomography* 5: 1-246.

LEPELETIER de Saint-Fargeau, A.L.M. & Serville, A. 1828: *Encycl. Méth. 10:* 654 (Dysodius).

SCHUH, R.T., 1976: Pretarsal structure in the Miridae (Hemiptera) with cladistic analysis of relationship within the family. *Am. Mus. Nov.* 2601: 1-39.

STÅL, C., 1862: Hemiptera mexicana enumeravit speciesque novas descripsit. *Stett. Ent. Zeitg. 23*: 437-462 *(Dysodius crenulatus)*.

_____ 1873: Enumeratio Aradidarum Extraeuropaearum. *Kongl. Svenska Vetensk. Akad. Handl. 11*(2): 135-147 (*Dysodius crenulatus*).

USINGER R.L. & MATSUDA R., 1959: *Classification of the Aradidae (Hemiptera: Heteroptera),* London, 410 p.

WOLFF J.F., 1811: Icon. Cim. V: 166, tab. XVII, fig. 162 (*lunatus* figured).

ZIMSEN, E., 1964: *The Type Material of I.C. Fabricius,* Copenhagen, pp. 306-446.