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Review of the neotropical Mezirinae genus *Delnocoris* KORMILEV, 1982 with description of a new genus and species (Hemiptera, Heteroptera, Aradidae)

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Abstract: From the monotypic apterous genus *Delnocoris* KORMILEV, 1982 (Aradidae, subfamily Mezirinae) described from Costa Rica, a new species *D. caribicus* nov.sp. collected in Costa Rica and Panama and *D. ecuadorianus* nov.sp. from Ecuador are described and illustrated. From Colombia a new micropterous genus and species *Haszprunaria raupachi* nov.gen. et sp. are recognized and described herein. A key to species of *Delnocoris* is presented.

Key words: Heteroptera, Aradidae, Mezirinae, Neotropics, apterous, micropterous new genus, new species, Costa Rica, Panama, Ecuador, Colombia.

Introduction

COSCARON & CONTRERAS (2012) published the most recent comprehensive list of the flat bug family Aradidae from the Neotropical Region. The subfamily Mezirinae OSHANIN, 1908 comprises 42 genera and later described genera: *Osellaptera* HEISS, 2013; *Bahiamezira* HEISS 2014; *Urucuca* HEISS, 2014 increased the number to 45 genera (HEISS 2013, 2014).

Most of them are macropterous, however 14 are apterous and have a very limited distribution range: *Allelocoris* DRAKE & HARRIS, 1944 (1 sp., Brazil); *Aparilocoris* KORMILEV, 1982 (2 sp., Mexico, Venezuela); *Asterocoris* DRAKE & HARRIS, 1944 (2 sp., Brazil); *Bergrothiessa* USINGER & MATSUDA, 1959 (7 sp., Brazil); *Emydocoris* USINGER, 1941 (3 sp., Brazil); *Delnocoris* KORMILEV, 1982 (1 sp., Costa Rica); *Eunotoplocris* KORMILEV, 1957 (1 sp., Peru); *Mystilocoris* USINGER & MATSUDA, 1959 (1 sp., Colombia); *Neormenocoris* HEISS, 1999 (1 sp., Costa Rica); *Notoplocoris* USINGER, 1941 (10 sp., Brazil); *Ormenocoris* USINGER & MATSUDA, 1959 (1 sp., Ecuador); *Pseudopictinus* KORMILEV, 1966 (1 sp., Brazil); *Urucuca* HEISS, 2014 (1 sp., Brazil); *Bahiamezira* HEISS, 2014 (1 sp., Brazil). (DRAKE & HARRIS, 1944; KORMILEV, 1957, 1966, 1982; USINGER, 1941; USINGER & MATSUDA, 1959; HEISS, 1999, 2014).

The genus *Delnocoris* was described upon a single specimen from Costa Rica and was never recorded since. Specimens available for study show clear differences to the species *D. micropterous* KORMILEV, 1982 which are recognized as distinct taxa and described and illustrated herein. A key to the congeners is presented. From Colombia a single male macropterous specimen cannot be placed in any of the Neotropical Mezirinae genera, for which a new genus *Haszprunaria* nov. gen. is proposed for the species *C. raupachi* nov.sp.

Material and methods

The material upon which this study is based will be deposited in the collection of the author (CEHI) at the Bavarian State Collection of Zoology in Munich (Germany). As apterous and micropterous *Aradid* specimens collected from litter are usually covered by incrustation obscuring the body structures, they were cleaned and remounted for examination.

Photos were taken through a Nikon Coolpix 300 digital camera and processed with paintnet software.

Measurements were taken with a micrometer eyepiece and are given in millimetres.

When citing the text on the labels of a pin attached to the specimens / separates the lines and // different labels.

A b b r e v i a t i o n s

deltg.....dorsal external laterotergite (connexivum)

mtg.....mediotergite

ptg.....paratergite

vltg.....ventral laterotergite.

Taxonomy

Subfamily *M e z i r i n a e* OSHANIN, 1908

Genus *Delnocoris* KORMILEV, 1982, Holotype ♀ from Costa Rica.

KORMILEV & FROESCHNER, 1987 (listed); COSCARON & CONTRERAS, 2012 (listed).

Type species: *Delnocoris micropterus* KORMILEV, 1982

R e d e s c r i p t i o n of *Delnocoris*

Apterous of 6.8-9.5 mm size, body elongate oval, abdominal segments VI +VII laterally expanded forming conical projections, surface glabrous or mat, elevated structures and carinae, lateral margins of head, thorax and abdomen beset with yellowish pilosity; coloration brownish, legs and antennae of lighter colour.

Head: Longer than wide, genae produced over clypeus; antennae long and slender, more than 2.5 times as long as width of head; eyes inserted in head, postocular lobes roundly converging posteriorly without tubercles; rostrum arising from a slit like atrium.

Thorax: Strongly transverse, collar distinct and ring – like; anterolateral expansions forming subrectangular wing like lobes, disk flat with coarse granulation.

Scutellum subtriangular with a longitudinal median carina; apex widely rounded; lateral flap like expansions dorsally reflexed. Metanotum consisting of two oval sclerites, meeting at middle; surface with a transverse callosity, lateral margins thickened, posteriorly fused to mtgI; mtg I+II fused, delimited posteriorly by a convex suture from tergal plate.

Abdomen: Deltg II thickened and fused to deltg III; deltg VI+VII laterally expanded in both sexes; spiracles II-IV ventral, V sublateral and partly visible, VI+VII lateral on anterior side of finger like expansions, VIII terminal on ptg VIII.; male sternite VII with two knob like shiny glandular structures.

Legs: unarmed claws with setiform parempodia.

Comparative notes: The holotype specimen of *D. micropterus* is a female from Costa Rica, La Selva and was compared by Kormilev with the micropterous genus *Kormilevia* USINGER & MATSUDA, 1959. *Delnocoris* differs from *Kormilevia* and all other micropterous Neotropical genera (*Kelaino* KORMILEV, 1963; *Limonocoris* KORMILEV, 1971; *Osellaptera* HEISS, 2013) by a set of characters eg. habitus, pilosity, structure of head, thorax and posterolaterally expanded delg VI+VII not shared by any of them.

Kormilev's statement of microptery is misleading, as the wing- or flap like lateral expansions of mesonotum are not considered remnants of wing pads but produced lobes similar to those of pronotum. The genus is apterous.

Key to species of *Delnocoris*

- 1(3) deltg VI+VII laterally with long conical finger like expansions in ♂, ♀
- 2(1) deltg VI+VII laterally only triangularly expanded in female, male unknown, holotype ♀, Costa Rica (Figs 9, 14)..... *micropterus* KORMILEV, 1982
- 3(4) anterolateral expansions of pronotum large and wing like, of subrectangular outline, antennae shorter, at most 2.75 times as long as width of head, ♂ + ♀, Costa Rica, Panama (Figs 1-8)..... *caribicus* nov.sp.
- 4(3) anterolateral expansions of pronotum smaller and of oval outline, antennae longer 2.95 times as long as width of head, ♂, Ecuador (Figs 10-12) *ecuadorianus* nov.sp.

***Delnocoris micropterus* KORMILEV, 1982 (Figs 9,14)**

H o l o t y p e (pinned) labelled: Costa Rica: Heredia / Prov. La Selva Res. / Sta. VII-17-1973 / J. Doyen & P.A. Opler // Holotype (red label) // *Delnocoris / micropterus / Kormilev 81* // (CAS).

The redescription is mainly based on the ♀ holotype (except the male characters) and is therefore not repeated here.

M e a s u r e m e n t s : Length 9.28 mm; length / width of head 1.60 / 1.52; w / l pronotum 2.40 / 0.72, width of across anterolateral lobes 2.56; length of antennal segments I / II / III / IV = 1.60 / 0.79 / 1.30 / 0.50; ratio length of antennae / width of head 2.80; w / l of scutellum 2.20 / 1.08; w / l of abdomen 4.72 / 5.60; width of tergum VIII 1.44.

D i s t r i b u t i o n : Costa Rica, La Selva Nature Reserve

C o m p a r a t i v e n o t e s : The species is recognized and distinguished from congeners by the triangular not finger like posterolateral expansions of deltg VI+VII of female (Fig. 14 from original description vs. Fig. 15 of *C. caribicus*).

***Delnocoris caribicus* nov.sp. (Figs 1-8, 13, 15)**

H o l o t y p e labelled: Costa Rica / Puntarenas, Golfito env. / Esquinas Rainforest / 18-22 VI 2001, E. Heiss //; Paratypes: 1♂, 1♀ collected with holotype (CEHI). They are designated and provided with type labels.

D e s c r i p t i o n : Head: longer than wide (1.60 / 1.32); antennae 2.75 times as long as width of head, length of antennal segments I / II / III / IV = 1.35 / 0.80 / 1.10 / 0.40; postocular lobes behind stylate eyes roundly converging to constricted neck.

Thorax: Pronotum about 5 times as wide as long (2.05 / 0.40); anterolateral expansions subrectangular and raised, margins beset with stiff erect setae; Scutellum triangular, more than twice as wide as long (2.15 / 1.00), apex rounded, surface with a smooth median

carina, laterally punctured; lateral margins delimited by an oval projection directed upward, margins beset with setae; Metanotum consisting of two sclerites with oval callosities and punctate surface, lateral margins thickened and raised, posteriorly fused to exposed mtg I+II.

Abdomen: Tergal plate medially raised, lateral apodemal impressions punctate; deltg II+III fused, inner margin of deltg II thickened and carinate; lateral margins of deltg III – IV straight, V with small lateral expansion, VI – VII with long conical lateral projections bearing spiracles; tergite VII medially raised for the reception of the pygophore, sternite VII of male with two round glandular tubercles.

M e a s u r e m e n t s : Length 7.5, length of antennae 3.65; width of abdomen across tergite IV 2.85, VI 4.25, VII 3.20. Paratype ♀ from Costa Rica: Length 8.6; head length / width 1.85 / 1.40; pronotum l / w 1.75 / 2.30; scutellum l / w 1.00 / 2.05; antennal segments I / II / III / IV = 1.45 / 0.80 / 1.15 / 0.40; width of abdomen across tergite IV 3.75, VI 4.45, VII 3.10. Paratypes ♂, ♀ from Panama: Length 7.50 / 8.50; head l / w 1.65 / 1.35, 1.85 / 1.45; pronotum l / w 0.70 / 2.00, 0.70 / 2.20; scutellum l / w 1.10 / 2.20, 1.15 / 2.40; antennal segments I / II / III / IV = 1.40 / 0.80 / 1.10 / 0.40, 1.55 / 0.80 / 1.20 / 0.45; width of abdomen across tergite IV 2.75 / 3.95, VI 4.25 / 4.65, VII 3.25 / 3.15.

E t y m o l o g y : The name reflects the Caribbean area, where it occurred.

D i s t r i b u t i o n : These apterous specimens from Costa Rica and those collected from a locality in Panama (areal distance about 250 km) are usually expected to belong to different species due to their limited range of distribution. As no discriminating characters could be verified between the specimens from both localities it is hypothesized that they belong to the same taxon, unless future genetic studies might prove the contrary.

C o m p a r a t i v e n o t e s : *D. caribicus* nov.sp. differs from *ecuadorianus* nov.sp. by larger size and larger and more expanded anterolateral lobes of pronotum and mesonotum; in male by larger glandular tubercles on sternite VII and from the ♀ of *micropterus* by finger like lateral projections of deltg VI + VII (vs. triangular expansions).

***Delnecoris ecuadorianus* nov.sp.** (Figs 10-12)

H o l o t y p e ♂ labelled: Ecuador 55m / 17 km E of San Lorenzo / N 01°10,98, W 078°45,16 / leg. F. Wachtel 10.11.14 // (CEHI). The specimen is designated and provided with a type label.

D e s c r i p t i o n : Head: longer than wide (1.45 / 1.15); antennae 2.95 times as long as width of head (3.40 / 1.15), length of antennal segments I / II / III / IV = 2.30 / 0.70 / 1.05 / 0.35; eyes stylate, postocular lobes converging posteriorly.

Thorax: Pronotum more than twice as wide as long (1.75 / 0.75), anterolateral expansions roundly produced not reaching anterior margin of ring like collar. Scutellum with rugose, surface lateral of median carina and a bisinuate elevation at base, lateral angles with a small semicircular expansion; structure of mesonotum and fused mtg I + II as of congeners.

Abdomen: Tergal plate flat, the smooth median elevation extends on mtg IV – V, lateral parts deeply punctured; deltg II + III fused and raised anteriorly, deltg VI + VII with finger like projections.

M e a s u r e m e n t s : Length 6.8, length of antennae 3.40; width of abdomen across tergite IV 2.50, VI 3.45, VII 2.95.

E t y m o l o g y : The specific epithet refers to Ecuador, where it was detected.

D i s t r i b u t i o n : To date only known from Ecuador.

C o m p a r a t i v e n o t e s : This species is recognized and differing from congeners by smaller size of 6.8 mm (vs. 7.4 – 8.7 mm); smaller, shorter and more rounded anterolateral expansions of pronotum (vs. longer, subrectangular); scutellum with small round lateral expansions, surface lateral of median carina rugose (vs. larger expansions, surface punctured) and longer antennae of 2.95 mm (vs. at most 2.80).

Genus *Haszprunaria* nov.gen.

T y p e s p e c i e s : *Haszprunaria raupachi* nov.sp.

D i a g n o s i s : Recognized by a set of characters not shared by any other Neotropical Mezirinae genus: micropterous, eyes stalked, genae longer than antennal segment I, wide anterolateral lobes of pronotum produced anteriorly, posterolateral angles of deltg II – VII roundly produced, deltg VII truncate posteriorly. Only the structure of head resembles *Asterocoris* DRAKE & HARRIS, 1944, which differs however by apterous condition, shorter genae and finger like lateral expansions of deltg III-VII.

D e s c r i p t i o n : Abdomen of rectangular outline, truncate posteriorly, surface granulate; lateral margins of head, thorax, abdomen and appendages beset with fine long hairs; colouration dark brown, legs and antennae yellowish.

Head: Longer than wide, genae anteriorly produced over antennal segment I, antenniferous lobes stout with anterolateral conical lobes; antennae about 1.5 times as long as width of head, segments I – III of about equal length; eyes stalked, postocular lobes diverging to constricted neck; rostrum arising from a slit like atrium, shorter than head.

Thorax: Pronotum transverse, lateral margins bisinuate, anterolateral lobes widely rounded and produced; surface with flat callosities. Scutellum about twice as wide as long, rounded posteriorly; wing pads lateral of scutellum pentagonal; fused mtg I + II narrowly exposed posterior of wing pads.

Abdomen: Wider than long, widest across deltg IV, deltg II – VII roundly produced posterolaterally, deltg VII truncate posteriorly; tergal plate with distinct apodemal impressions of common Mezirinae pattern; venter of male with glabrous shiny median elevation on sternite VII; spiracles II-VII ventral far from lateral margin, VIII lateral on pte VIII; pygophore of triangular outline with a conical longitudinal ridge.

Legs: Unarmed, claws with setiform parempodia.

E t y m o l o g y : This interesting new genus is dedicated to Prof. Dr. Gerhard Haszprunar, ZSM Munich recognizing his successful efforts to acquire authors special Aradid collection for the Zoologische Staatssammlung Munich.

***Haszprunaria raupachi* nov.sp.** (Figs 16, 17)

H o l o t y p e ♂ labelled: Colombia, Valle / Summit W of Cali / 2000m, IX-17-76 / Bell, Bread & Michener // (CEHI). The specimen is designated and provided with a type label.

D e s c r i p t i o n : Head: Longer than wide (2.30 / 2.15); genae anteriorly produced over clypeus, contiguous at base then diverging and leaving a cleft between the apices, surpassing base of antennal segment I; antennae slender. 1.53 times as long as width of head, length of antennal segments I / II / III / IV = 0.90 / 0.85 / 0.90 / 0.65; eyes stylate directed anterolaterally; postocular lobes straightly converging to constricted neck; vertex flat with two oval impressions.

Thorax: Pronotum transverse (3.30 / 1.10); anterolateral rounded lobes produced, surface flat, laterally slightly reflexed, lateral margins sinuate; disk with two flat oblique callosities. Scutellum twice as wide as long (2.10 / 1.00) rounded posteriorly, disk without carinae; wing pads of pentagonal shape without of a trace of membrane, surface flat; remnants of fused mtg I + II exposed as transverse smooth sclerites posterior to wing pads.

Abdomen: Wider than long, surface flat with deeply punctured apodemal impressions of usual pattern; posterolateral angles of deltg II – VI rounded and slightly expanded laterally, apex of deltg VI produced over posteriorly truncate tergite VII. Venter with spiracles II – VII placed far from lateral margin, male sternite VII medially raised and smooth.

M e a s u r e m e n t s : Length 9.8, length of antennae 3.30; width of abdomen across tergite II 5.20, III 5.40, IV 5.35, V 5.23, VI 5.20, VII 3.60. Pygophore length / width 0.85 / 1.25.

E t y m o l o g y : This new species is dedicated to my friend Dr. Michael Raupach (Munich) recognizing his increasing interest in Aradidae and his efforts and support for the future conservation of authors collection.

D i s t r i b u t i o n : Recorded only from the Cordillera Occidental of the Andean mountain range at 2000m altitude, west of the City of Cali in Colombia.

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Zusammenfassung

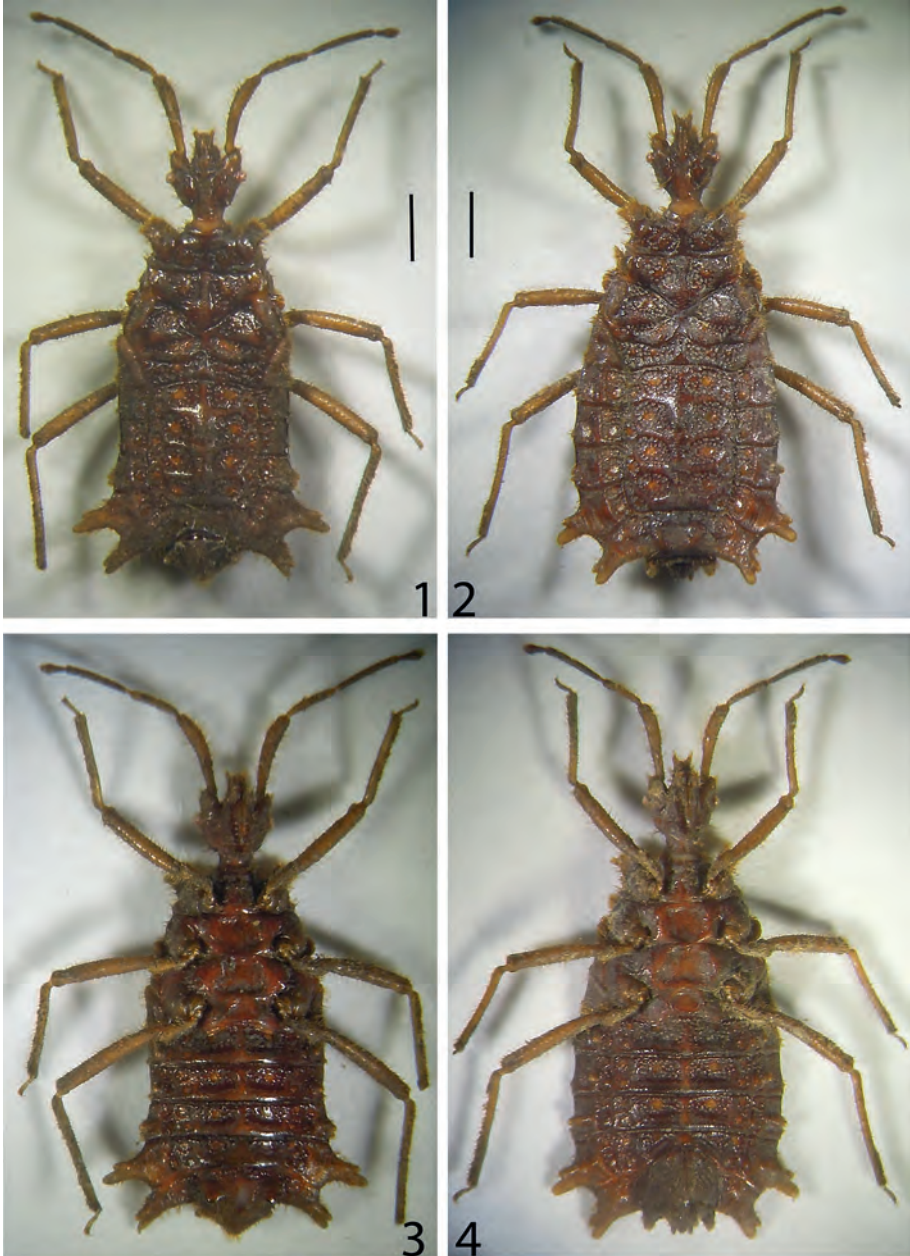
Von der monotypischen apteren Gattung *Delnocoris* KORMILEV, 1982 (Familie Aradidae (Rindenwanzen), Unterfamilie Mezirinae), welche von Costa Rica beschrieben wurde, wird eine neue Art *D. caribicus* nov.sp. nach Belegen von Costa Rica und Panama und eine weitere *D. ecuadorianus* nov.sp. von Ecuador beschrieben und abgebildet. Für ein auffälliges mikropteres Exemplar von Columbien, das zu keiner Neotropischen Gattung gestellt werden kann, wird eine neue Gattung und Art *Haszprunaria raupachi* nov.gen. et sp. vorgeschlagen. Ein Bestimmungsschlüssel für die Arten von *Delnocoris* wird vorgelegt.

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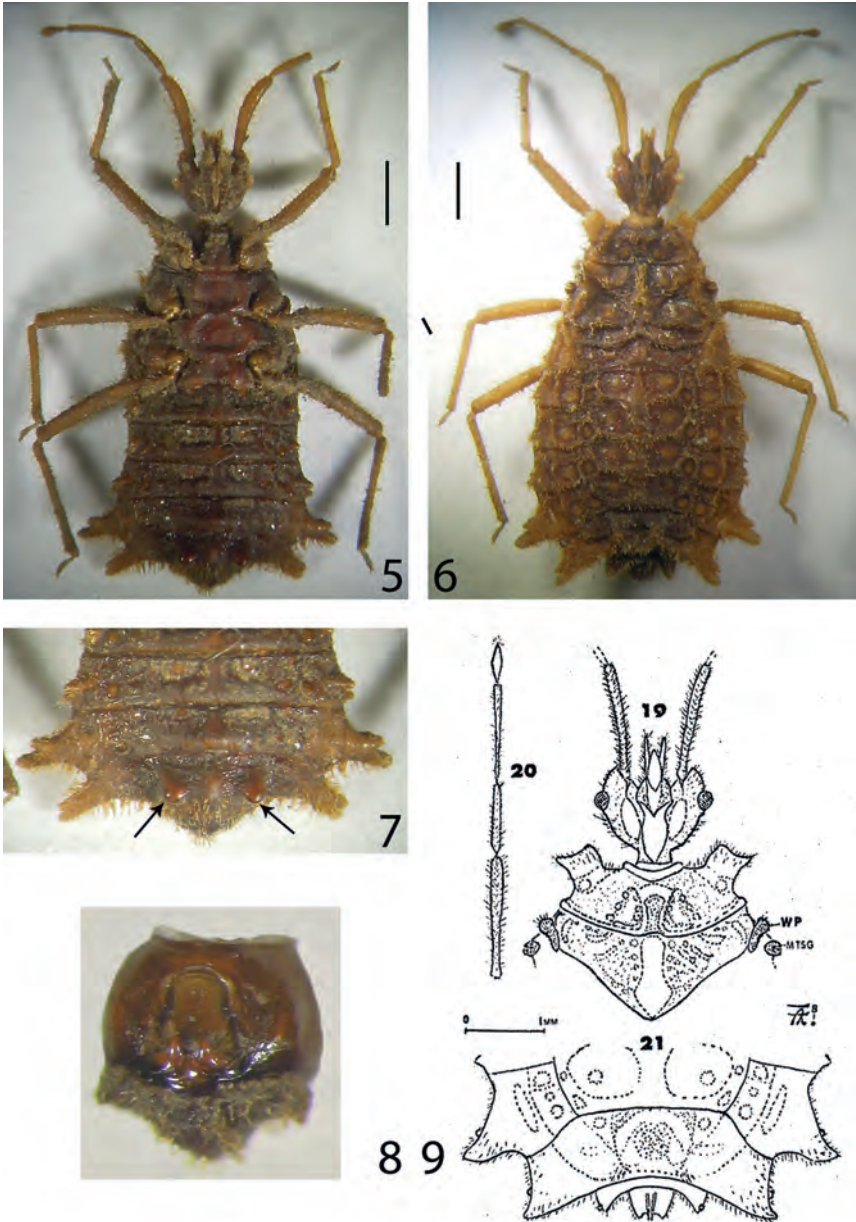
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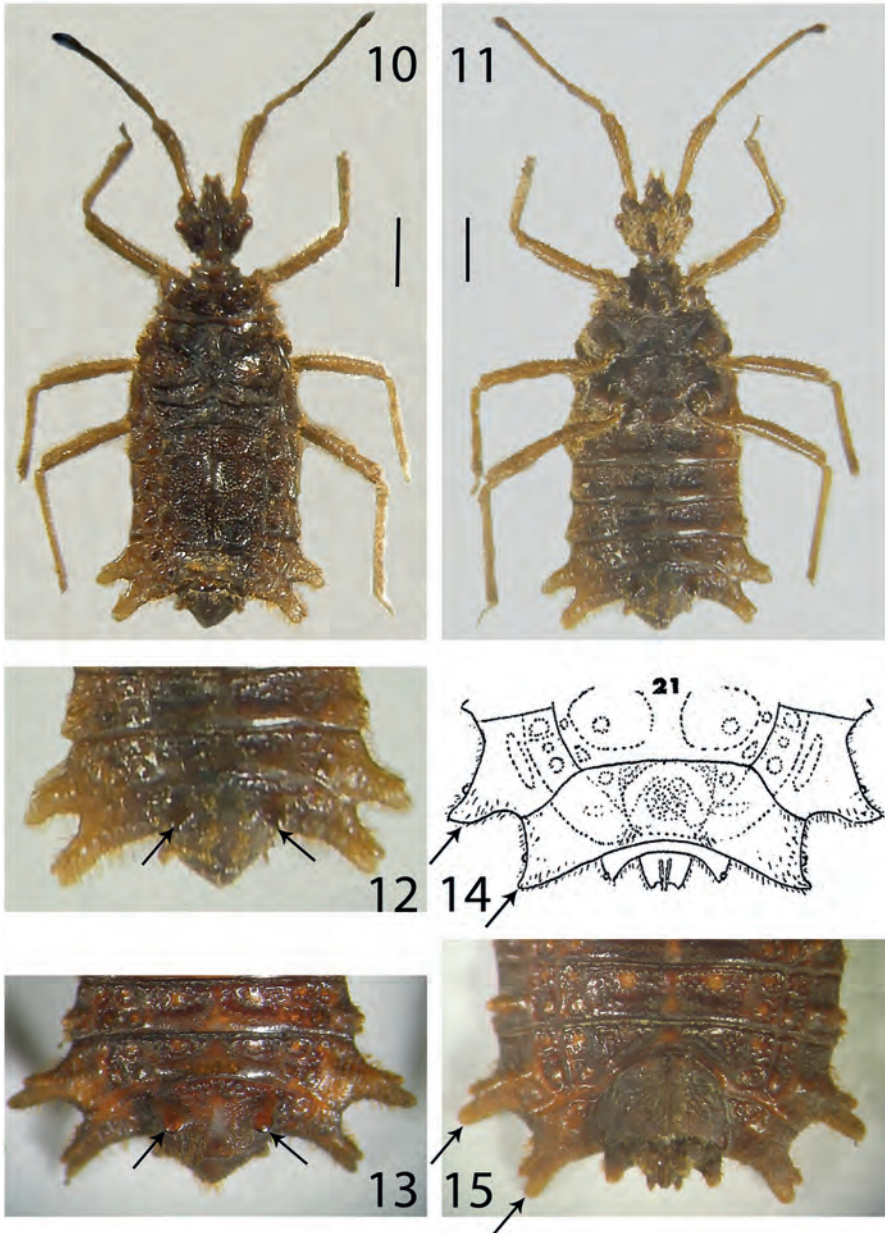
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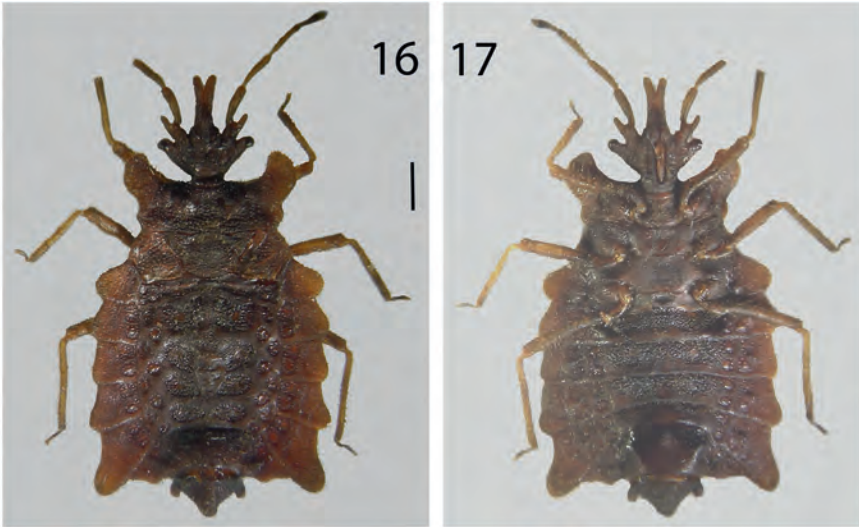
Figs 1-4: *Delnocoris caribicus* nov.sp. (1, 3) holotype ♂ dorsal and ventral; (2, 4) paratype ♀ from Costa Rica, dorsal and ventral. Scale 1 mm.



Figs 5-9: *Delnocoris caribicus* nov.sp. (5) paratype ♂ from Panama, ventral; (6) paratype ♀ from Panama, dorsal; (7) paratype ♂ from Panama, terminal segments ventral. Arrows indicate the glandular tubercles; (8) pygophore; (9) *Delnocoris micropterus* KORMILEV, 1982, illustration from the original description of ♀ holotype of head, pronotum and scutellum and terminal segments, dorsal. Scale 1mm.



Figs 10-15: *Delnocoris ecuadorianus* nov.sp. (10, 11) holotype ♂ dorsal and ventral; (12) holotype ♂, terminal segments ventral; (13) *Delnocoris caribicus*, holotype ♂, terminal segments ventral. Arrows indicate the glandular tubercles; (14) *Delnocoris micropterus*, illustration of terminal segments, dorsal; (15) *Delnocoris caribicus* paratype ♀, terminal segments ventral. Arrows indicate differences between 14,15. Scale 1 mm.



Figs 16-17: *Haszprunaria raupachi* nov.gen et sp. (16, 17) holotype ♂ dorsal and ventral. Scale 1 mm.

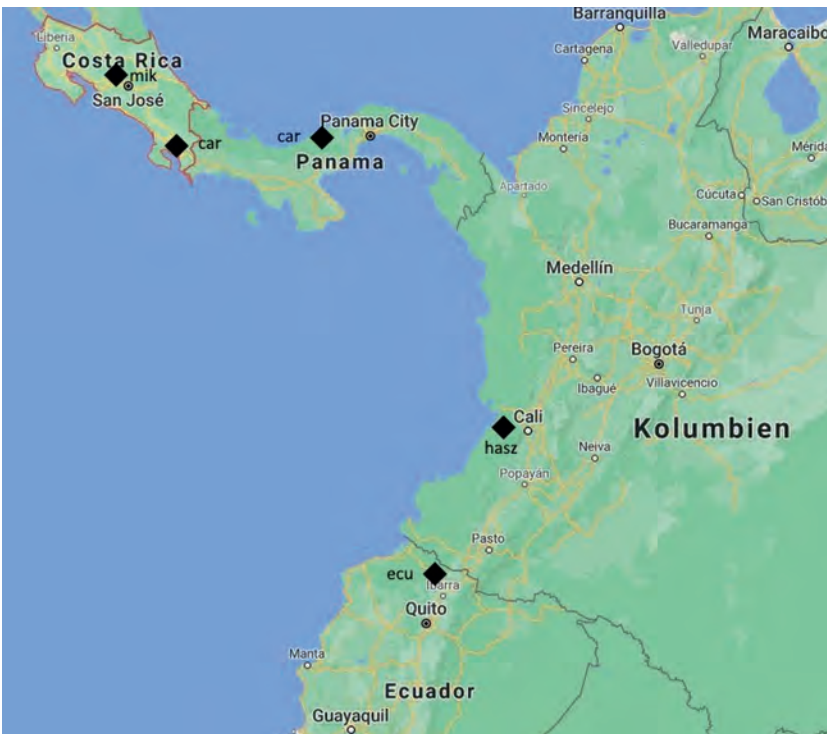


Fig. 18: Map with records of *Delnocois* species and *Haszprunaria* nov.gen. Abbreviations: mik = *D. micropterus*; car = *D. caribicus* nov.sp.; ecu = *D. ecuadorianus* nov.sp.; hasz = *H. raupachi* nov.sp. © Google Maps.

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