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New species of Heteroceridae from the New World (Coleoptera: Heteroceridae)

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Abstract

Six new species of Heteroceridae: *Heterocerus coheni* sp.n. (Ecuador), *H. virginiensis* sp.n. (USA: Virginia), *Tropicus hevelorum* sp.n. (Mexico), *T. niger* sp.n. (USA: Mississippi), *T. riosensis* sp.n. and *T. trifidus* sp.n. (Ecuador, Peru) are described, illustrated and compared with similar species.

Key words: Coleoptera, Heteroceridae, taxonomy, new species, new record, Ecuador, Mexico, Mississippi, Peru, Virginia.

Introduction

On studying the Heteroceridae deposited in the US National Museum I identified six new species, which are described and compared with similar species in the present paper.

All specimens were identified by prominent American Heteroceridae specialist Dr. W.V. Miller and bear his identification labels. However, after Dr. Miller ceased to work on this family several years ago, he provided me with his notes and his permission to publish them.

The following acronyms are used in the text to indicate the depository of the material examined:

CSU	Coll. S. Skalický, Ústí nad Orlicí, Czech Republic
USNM	Smithsonian Institution, National Museum of Natural History, Washington, D.C., U.S.A.

Separate labels are indicated by double slashes.

Heterocerus coheni sp.n.

TYPE LOCALITY: ECUADOR, Los Rios, Quevedo.

TYPE MATERIAL: **Holotype** ♂: "ECUADOR Los Rios Prov. Quevedo (56 km N) 28-29 July 1976 Jeffrey Cohen" // "Rio Palenque Biological Station, 250 m Blacklight at riverbed" // "Ecuador-Peace Corps - Smithsonian Institution Aquatic Insect Survey" // "Holotype *Heterocerus piqra* W. V. Miller" [red label] (USNM); **Allotype** ♀: the same date as holotype, only: "Paratype *Heterocerus piqra* W. V. Miller" [yellow label] (USNM); **Paratypes:** 5 exs. (♀♀): the same data as allotype (USNM, 1 ex. CSU).

DESCRIPTION: Holotype ♂. Total length 5.00 mm (to apex of labrum); elytra 3.00 mm long, 1.85 mm wide across shoulders. Ground colour dark brown, pronotum with reddish anterior margin, elytra without pattern. Apex of mandibles, antennomeres I–II, and legs pale brown. Ventral surface brown, abdomen pale brown. Labrum very short, leaving maxillae uncovered, triangular, serrate, with dense short setae. Mandibles developed as usual, dorsal subapical tooth rounded. Prostheca with teeth on dental lobe, without prosthecal notch. Antennae 11-segmented, with 7-segmented club, antennomeres 1–2 with sparse long erect setae. Clypeus without pair of anterior horns, anterior margin shallowly emarginate, with dense, short, pale setae intermixed with long erect ones. Head finely granular, setae sparse, short, intermixed with long erect setae

above eyes. Pronotum as wide as the base of elytra, oval, pronotal base completely rimmed; surface densely regularly granular, setae sparse, long, erect. Scutellum pointed, triangular, about 1.5 x as long as wide, anterior margin convex. Elytra without longitudinal furrows and without scutellar depressions, humeral depressions shallow and short. Surface of elytra granular, punctures approximately as large as eye facets, twice as large as on head and pronotum, without larger intermixed punctures. Epipleural ridges absent. Setae on elytra yellowish, as on pronotum. Ventral surface sparsely setose. Metaventrite with post-mesocoxal ridge. Mesoventrite without spines in front of each mesocoxa, margin only tuberculate. Post-metacoxal line present. Stridulatory arch marked, with striae. Tibiae with dense long setae. Protibia with 13 stout spines, mesotibia with 11 and metatibia with 10 weak spines. Spiculum gastrale V-shaped as in Fig. 1, arms connected by membrane apically. Aedeagus (Figs. 2–4) 1.15 mm long, well sclerotized, parameres short, separated by shallow incision, completely fused with basal piece, median lobe without processus accessorius.

Allotype ♀: Total length 4.30 mm (to apex of labrum); elytra 2.80 mm long, 1.65 mm wide across shoulders. Externally similar to male.

DIFFERENTIAL DIAGNOSIS: *H. coheni* sp.n. is similar to *H. kerleyi* SKALICKÝ, 2003 from Chile (SKALICKÝ 2003). The two species differ in the structure of male genitalia (Figs. 2–4; see also SKALICKÝ 2003: Figs. 10–11), size of body (3.50–4.00 mm long, 1.45–1.60 mm wide in *H. kerleyi*), number of tibial spines (9 – 9 – ? in *H. kerleyi*) and in the elytral pattern present in *H. kerleyi*.

ETYMOLOGY: Named after Mr. Jeffrey Cohen, who collected the type series.

***Heterocerus virginiensis* sp.n.**

TYPE LOCALITY: USA: road from North Virginia to central West Virginia.

TYPE MATERIAL: **Holotype** ♂: "Route 48 # 13…."…. 71" [238km (148 mils) along road from North Virginia to central West Virginia, without other data] // "Paratype *Heterocerus abitus* n. sp. W. V. Miller" [yellow label] (USNM); **Allotype** ♀: the same date as holotype. **Paratypes:** 15 exs. (3 ♂♂, 12 ♀♀): the same data as holotype (USNM, 1 ♂ CSU).

DESCRIPTION: Holotype ♂: Total length 4.75 mm (to apex of labrum); elytra 2.90 mm long, 1.80 mm wide across shoulders. Ground colour dark brown, pronotum brown to black with reddish anterior margin, elytra with pale brown pattern as in Fig. 5. Apex of mandibles, legs, abdomen and ventral surface pale brown. Labrum triangular, lateral margins deflected, apex denticulate. Mandibles developed as usual, acute. Prostheca sparsely serrate, without notch. Antennae 11-segmented, with 7-segmented club, antennomeres 1–2 with sparse long erect setae. Clypeus without pair of anterior horns, anterior margin shallowly emarginate, dense, short, pale setae intermixed with long erect ones. Head finely granular, setae sparse, short, intermixed with long erect setae above eyes. Pronotum slightly wider than base of elytra, oval, pronotal base completely rimmed; surface densely regularly granular, setae sparse, long, erect. Scutellum pointed, triangular, about 1.5 x as long as wide, anterior margin convex. Elytra without longitudinal furrows and without scutellar depressions, humeral depressions shallow and short; surface softly granular, without larger intermixed punctures. Epipleural ridges absent. Setae on elytra yellowish, as on pronotum. Ventral surface sparsely setose. Metaventrite with post-mesocoxal ridge. Mesoventrite with prominent spines in front of each mesocoxa. Post-metacoxal line absent. Stridulatory arch marked, with striae. Protibia with 11 stout spines, meso- and metatibia with nine long thin spines. Tibiae bearing dense long setae. Spiculum gastrale V-shaped, arms connected by membrane apically. Aedeagus (Figs. 6–8) 0.85 mm long, well sclerotized, parameres short, completely fused with basal piece, supporting sheath without border posteriorly, median lobe oval, without processus accessorius.

Allotype ♀: Total length 5.25 mm (to apex of labrum); elytra 3.40 mm long, 2.05 mm wide across shoulders. Elytral longitudinal furrows are indicated in basal part of elytra. Externally similar to male.

DIFFERENTIAL DIAGNOSIS: Due to the shape of aedeagus and other characters, such as 11-segmented antennae, clypeus without front horns and the presence of post-mesocoxal ridge on metaventrite, *H. virginiensis* sp.n. is similar to *H. brunneus* MELSHEIMER, 1844 occurring in Canada (British Columbia, Manitoba and Northwest Territories) and in the Unites States (Arizona, Califormia, Illinois, Montana, Oregon, Pennsylvania). It differs from the latter in the elytral pattern and in the absence of the epipleural ridge (present in *H. brunneus*) and in the structure of the male genitalia (Figs. 5–8; see also PACHECO 1964: Figs. 140–145).

ETYMOLOGY: This species is named after the country of its origin.

Tropicus hevelorum sp.n.

TYPE LOCALITY: MEXICO: Oaxaca, Tehuantepec.

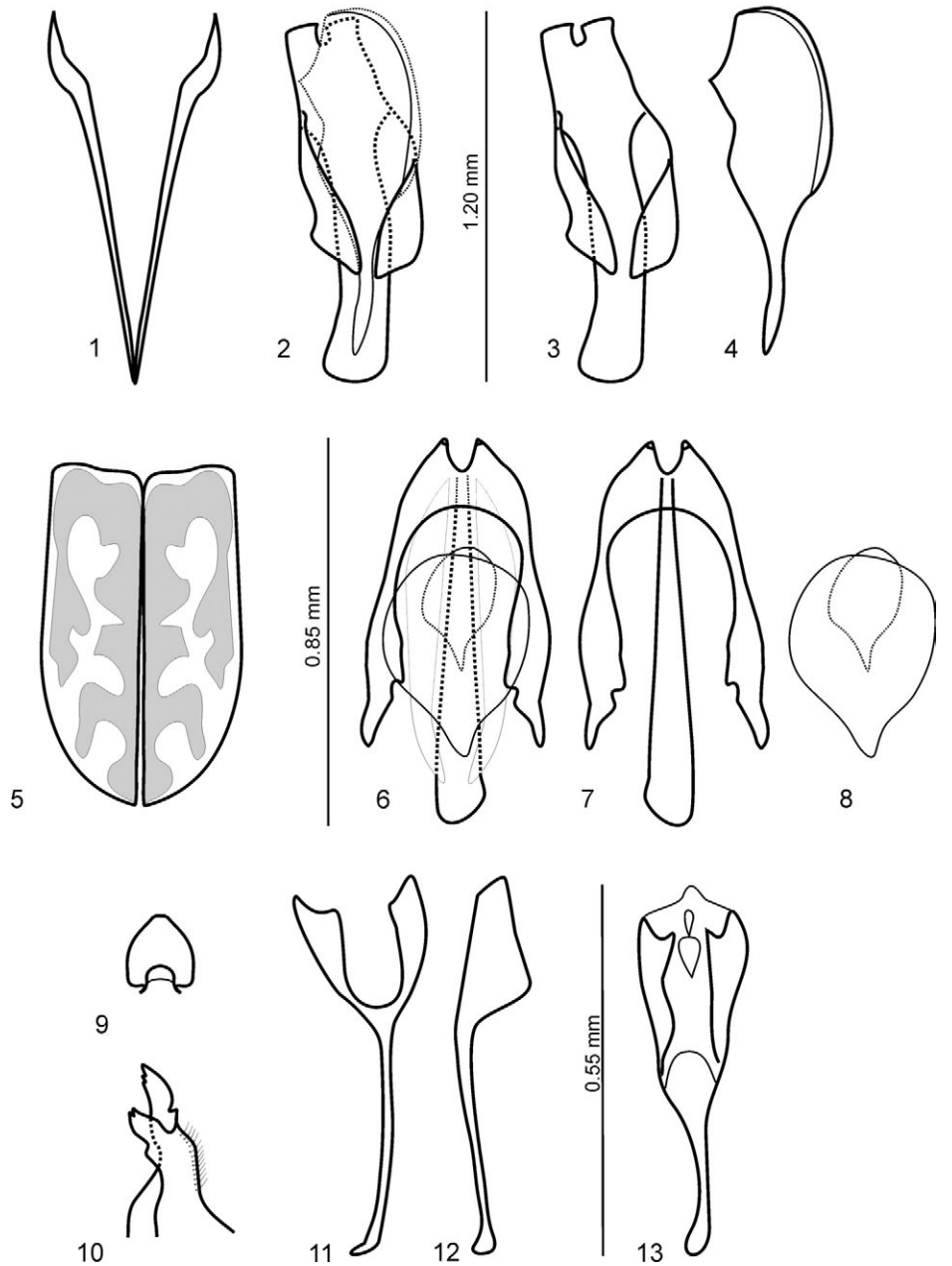
TYPE MATERIAL: **Holotype** ♂: "MEXICO: Oaxaca; Tehuantepec 15 August 1972 at black light G. F. & S. Hevel" // "Holotype *Tropicus blatta* n. sp. W. V. Miller" [red label] (USNM); **Allotype** ♀: the same data as holotype, only: "Paratype *Tropicus blatta* n. sp. W. V. Miller" [yellow label] (USNM); **Paratypes:** 2 ♀♀ the same data as allotype (USNM, CSU), 1 ♀: "MEXICO: Tamps.; Ciduad Victoria 10 August 1972 at black light G. F. & S. Hevel" // "Paratype *Tropicus blatta* n. sp. W. V. Miller" [yellow label] (USNM), 1 ♀: "MEXICO: Sonora Rio Cuchujaqui, 7mi SE Almos, black trap 25-X-1972, EM Fisher" // "Paratype *Tropicus blatta* n. sp. W. V. Miller" [yellow label] (USNM).

DESCRIPTION: Holotype ♂: Total length 2.30 mm (to apex of labrum); elytra 1.30 mm long, 0.85 mm wide across shoulders. Ground colour pale brown, labrum, head, clypeus and pronotum brown, eyes brown to black. Elytra without pattern. Labrum as in Fig. 9, with dense, erect, long setae. Mandibles (Fig. 10) short, process of dorsal ridge small, dorsal subapical tooth small, rounded. Prostheca without prosthecal notch. Antennae 9-segmented, with 6-segmented club. Clypeus without pair of anterior horns, anterior margin shallowly emarginate with dense and short setae. Head finely granular, setae as on clypeus. Pronotum slightly wider than base of elytra, oblong, pronotal base completely rimmed, surface microscopically granular; setae sparse, short semi-erect, intermixed with longer setae. Elytra without longitudinal furrows, without scutellar and humeral depressions. Surface of elytra finely micropunctate with intermixed dense punctures approximately as large as 0.5 eye facets. Setae on elytra sparse, semi-erect, short. Epipleural ridges absent. Ventral surface sparsely setose. Metaventrite without post-mesocoxal ridge. Mesoventrite neither spinose nor tuberculate in front of each mesocoxa. Post-metacoxal line absent. Stridulatory arch marked, with striae. Pro-, meso- and metatibia with numerous spines. Spiculum gastrale (Figs. 11–12) Y-shaped. Aedeagus 0.55 mm long, shape as in Fig. 13.

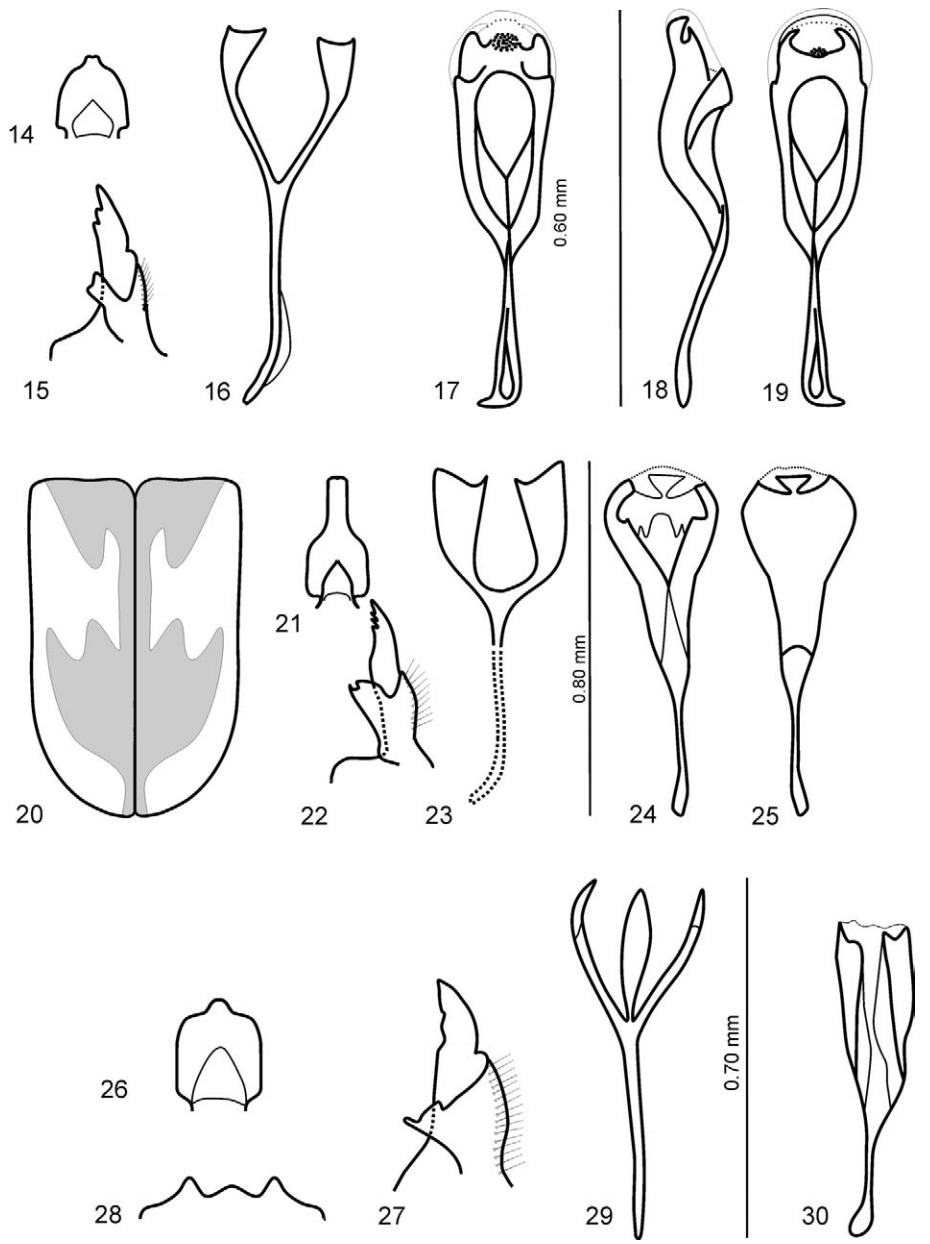
Allotype ♀: Total length 2.15 mm (to apex of labrum); elytra 1.40 mm long, 0.75 mm wide across shoulders. Mandibles without process on dorsal ridge. Externally similar to male.

DIFFERENTIAL DIAGNOSIS: Due to the shape of the aedeagus and spiculum gastrale, *T. hevelorum* sp.n. belongs to the *T. pusillus* group sensu PACHECO (1964). Morphology of male genitalia of *T. hevelorum* differs from that of all known species of the genus *Tropicus*.

ETYMOLOGY: Dedicated to G.F. & S. Hevel, who collected the holotype.



Figs. 1–4: *Heterocerus coheni* sp.n., holotype. 1) spiculum gastrale, dorsal view; 2) aedeagus, dorsal view; 3) tegmen, dorsal view; 4) penis, dorsal view.
Figs. 5–8: *Heterocerus virginiensis* sp.n., holotype. 5) elytra, dorsal view; 6) aedeagus, dorsal view; 7) tegmen, dorsal view; 8) penis, dorsal view. Fig. 5 not to scale.
Figs. 9–13: *Tropicus hevelorum* sp.n., holotype. 9) labrum, dorsal view; 10) left mandible, dorsal view; 11) spiculum gastrale, dorsal; 12) same, lateral view; 13) aedeagus, dorsal view. Figs. 9–10 not to scale.



Figs. 14–19: *Tropicus niger* sp.n., holotype. 14) labrum, dorsal view; 15) left mandible, dorsal view; 16) spiculum gastrale, dorsal view; 17) aedeagus, dorsal view; 18) aedeagus, lateral view; 19) aedeagus, ventral view. Figs. 14–15 not to scale.
Figs. 20–25: *T. riosensis* sp.n., holotype. 20) elytra, dorsal view; 21) labrum, dorsal view; 22) left mandible, dorsal view; 23) spiculum gastrale, dorsal view; 24) aedeagus, dorsal view; 25) aedeagus, ventral view. Figs. 20–22 not to scale.
Figs. 26–30: *T. trifidus* sp.n., holotype. 26) labrum, dorsal view; 27) left mandible, dorsal view; 28) clypeus, dorsal view; 29) spiculum gastrale, dorsal view; 30) aedeagus, dorsal view. Figs. 26–28 not to scale.

Tropicus niger sp.n.

TYPE LOCALITY: USA, Mississippi, Hinds Co.

TYPE MATERIAL: **Holotype** ♂: "MISSISSIPPI Hinds Co. 1964 VIII-19 VHOWens" // "Paratype *Tropicus nigrellus* n. sp. W. V. Miller" [yellow label] (USNM); **Allotype** ♀: the same as holotype (USNM); **Paratypes:** 10 exs. (4 ♂♂, 6 ♀♀) the same data as allotype (USNM, 1 ♂ CSU); 1 ♂: the same as holotype, only: "Holotype *Tropicus nigrellus* n. sp. ♂ W. V. Miller" [red label] (USNM).

DESCRIPTION: Holotype ♂: Total length 2.90 mm (to apex of labrum); elytra 1.65 mm long, 0.95 mm wide across shoulders. Ground colour black to brown, abdomen brown, elytra without pattern. Labrum as in Fig. 14, about 1.25 x as long as wide; surface finely granular setae erect, longer than usual. Mandibles (Fig. 15) dentate, process of the dorsal ridge well developed, dorsal subapical tooth rounded. Prostheca with teeth on dental lobe, without prosthecal notch. Clypeus without pair of anterior horns, convex, surface roughly granular; setae sparse, semi-erect, yellowish. Antennae 9-segmented, with 6-segmented club. Pronotum 1.65 times wider than long, as wide as base of elytra; pronotal base completely rimmed; lateral margins almost parallel; surface finely granular without intermixed larger punctures; setae sparse semi-erect, longer setae absent. Scutellum triangular. Elytra without longitudinal striae, without scutellar and humeral depressions. Surface of elytra finely granular with intermixed punctures equal in size to eye facets. Epipleural ridge absent. Setae of elytra semi-erect, short, longer setae absent. Meta-ventrite without post-mesocoxal ridge; abdomen without post-metacoxal ridge. Stridulatory arch marked with striae. Ventral surface finely granulate. Protibia with nine stout spines, meso- and metatibia with nine long thin spines. Spiculum gastrale Y-shaped as in Fig 16. Aedeagus 0.60 mm long, shape as in Figs. 17–19.

Allotype ♀: The same measurements as in holotype. Mandibles without process on the dorsal ridge. Externally similar to male.

DIFFERENTIAL DIAGNOSIS: Due to the shape of aedeagus and spiculum gastrale, *T. niger* sp.n. belongs to the *T. pusillus* group sensu PACHECO (1964). Morphology of male genitalia and other characters, such as colour (dark chestnut to nearly black in *T. aratus*), the absence of elytral pattern, similar shape of mandibles and prostheca and the punctures of body in *T. niger* are similar to those in *T. aratus* MILLER, 1992 from Brazil (Pará and Amazonas). In contrast to *T. niger*, *T. aratus* differs in the length (2.5 mm), shape of spiculum gastrale and male genitalia (Figs. 14–19; see also MILLER 1992: Figs. 15, 16, 19, 30).

VARIABILITY: Colour in some paratypes is brown. Elytral longitudinal furrows are partly present in basal half of elytra in some paratypes. No other substantial morphological variability was observed in the type series.

ETYMOLOGY: The specific epithet is the Latin adjective "niger" (black). It refers to the body colour of the new species.

Tropicus riosensis sp.n.

TYPE LOCALITY: ECUADOR, Los Rios, Babahoyo.

TYPE MATERIAL: **Holotype** ♂: "ECUADOR, Los Rios, Babahoyo 21 June 1975 at black lite Cohen, Langley, Monnig" // "Ecuador-Peace Corps - Smithsonian Institution Aquatic Insect Survey" // "Holotype *Tropicus uniformis* W. V. Miller" [red label] (USNM); **Allotype** ♀: "ECUADOR, Man. Bahia de Caraquez (35 Km E) 9 May 1975" // "Collected by Spangler, Gurney Langley, & Cohen" // "Collected at Blacklight" // "Ecuador-Peace Corps - Smithsonian Institution Aquatic Insect Survey" // "Paratype *Tropicus uniformis* W. V. Miller" [yellow label] (USNM); **Paratypes:** 5 ♀♀: the same data as holotype, only: "Paratype *Tropicus uniformis* W. V. Miller" [yellow label] (USNM, 1 ex. CSU), 1 ♀: "ECUADOR Los Rios Prov. Quevedo (56 km N) 28-29 July 1976 Jeffrey Cohen" // "Rio Palenque Biological Station, 250 m Blacklight at riverbed" // "Ecuador-Peace Corps - Smithsonian

Institution Aquatic Insect Survey" // "Allotype *Tropicus uniformis* W. V. Miller" [red label] (USNM), 4 ♀♀: the same, only: // "Paratype *Tropicus uniformis* W. V. Miller" [yellow label] (USNM), 1 ♀: "ECUADOR, Los Rios, Babahoyo (5 Km N) 22 June 1975 black light Cohen Langley & Monnig" // "Collected at black light // "Ecuador-Peace Corps - Smithsonian Institution Aquatic Insect Survey" // "Paratype *Tropicus uniformis* W. V. Miller" [yellow label] (USNM), 1 ♀: "ECUADOR, Los Rios, Quevedo, 11 May 1975 at black light" // "Collected by Spangler, Gurney Langley, & Cohen" // "Ecuador-Peace Corps - Smithsonian Institution Aquatic Insect Survey" // "Paratype *Tropicus uniformis* W. V. Miller" [yellow label] (USNM).

DESCRIPTION: Holotype ♂: Total length 3.15 mm (to apex of labrum); elytra 1.60 mm long, 1.00 mm wide across shoulders. Ground colour pale brown; head and pronotum dark brown, pronotum with pale brown anterior margin, elytra with darker brown pattern as in Fig. 20. Body shiny. Labrum long, shape as in Fig. 21, about 1.7 x as long as wide; surface finely granulate, setae fine, adjacent, with longer erect setae. Mandibles (Fig. 22) dentate, process of dorsal ridge well developed, dorsal subapical tooth rounded. Prostheca with teeth on the dental lobe, without prosthecal notch. Clypeus without pair of anterior horns, deeply emarginate; surface roughly granular; setae sparse, semi-erect, yellowish. Antennae 9-segmented, with 6-segmented club. Pronotum 1.45 times wider than long, as wide as base of elytra; pronotal base completely rimmed; lateral margins almost parallel; surface very finely granular without intermixed larger punctures; setae semi-erect, yellowish and quite long. Scutellum triangular. Elytra without longitudinal striae and without scutellar depressions, humeral depressions shallow, short. Surface of elytra finely granular; epipleura without epipleural ridges. Setae of elytra semi-erect, short, without longer setae. Metaventrite without post-mesocoxal ridge; abdomen without post-metacoxal ridge. Stridulatory arch marked with striae. Ventral surface finely granular. Protibia with 10 stout spines, meso- and metatibia with uncertain number of thin spines. Spiculum gastrale Y-shaped as in Fig. 23, strut broken and lost. Aedeagus 0.80 mm long, shape as in Figs. 24–25.

Allotype ♀: Total length 2.50 mm (to apex of labrum); elytra 1.55 mm long, 0.90 mm wide across shoulders. Mandibles without dorsal process. Externally similar to male.

Variability: Colour in one specimen light brown, without elytral pattern. Total length 2.40 to 3.25 mm (both sexes). No substantial morphological variability observed in the type series.

DIFFERENTIAL DIAGNOSIS: Due to the shape of aedeagus and spiculum gastrale, *T. riosensis* sp.n. belongs to the *T. pusillus* group sensu PACHECO (1964). Morphology of aedeagus and spiculum gastrale of *T. riosensis* is similar to that of *T. triangulus* SKALICKÝ, 2002 from Paraguay. In contrast to *T. triangulus*, *T. riosensis* has different shape of labrum, elytral markings and the morphology of male genitalia (Figs. 20–25, see also SKALICKÝ 2002: Figs. 48–53.

ETYMOLOGY: Named after the province Los Rios of Ecuador.

***Tropicus trifidus* sp.n.**

TYPE LOCALITY: ECUADOR, Napo, Puerto Nuevo.

TYPE MATERIAL: **Holotype** ♂: "ECUADOR, Napo Puerto Nuevo (3 Km. SW) 9 July 1976 Jeffery Cohen" // "Ecuador-Peace Corps - Smithsonian Institution Aquatic Insect Survey" // "Holotype *Tropicus beatus* n. sp. W. V. Miller" [red label] (USNM); **Allotype** ♀: the same, only: "Paratype *Tropicus beatus* n. sp. W. V. Miller" [yellow] (USNM); **Paratype:** 1 ♀: the same data as allotype (USNM); 1 ♂: "Peru: dpt. Ayacucho La Mar, Santa Rosa 640m 19-25-IX 1976 Robert Gordon" // "Holotype *Tropicus mina* n. sp. ♂ W. V. Miller" [red label] (USNM) [dissected in a vial]; 1 ♂: "Peru: dpt. Ayacucho La Mar, Santa Rosa 640m 19-25-IX 1976 Robert Gordon" // "Paratype *Tropicus mina* n. sp. ♂ W. V. Miller" [yellow label] (CSU).

DESCRIPTION: Holotype ♂: Total length 2.80 mm (to apex of labrum); elytra 1.75 mm long, 1.00 mm wide across shoulders. Ground colour brown, mandibles, antennae, legs and abdomen

pale brown. Elytra without pattern. Labrum as in Fig. 26 with dense, adjacent setae. Mandibles (Fig. 27) short, process of dorsal ridge small, dorsal subapical tooth small, rounded. Prostheca with teeth on the dental lobe, without prosthecal notch. Antennae 9-segmented, with 6-segmented club, antennomeres 1–2 with sparse long erect setae. Clypeus without pair of anterior horns, anterior margin as in Fig. 28, finely granular, with dense, short, pale setae. Head finely granular, setae as on clypeus. Pronotum slightly wider than base of elytra, oblong, pronotal base without border; surface densely regularly granular, setae sparse, short, semi-erect, longer setae absent. Elytra without longitudinal furrows and without scutellar and humeral depressions. Surface of elytra finely micropunctate with intermixed dense punctures approximately twice the size of eye facets. Setae on elytra sparse, semi-erect, short. Epipleural ridges absent. Ventral surface sparsely setose. Metaventrite without post-mesocoxal ridge. Mesoventrite neither spinose nor tuberculate in front of each mesocoxa. Post-metacoxal line absent. Stridulatory arch marked, with striae. Protibia, meso- and metatibia with numerous spines. Spiculum gastrale (Fig. 29) Y-shaped with long median process. Aedeagus 0.70 mm long, shape as in Fig. 30.

Allotype ♀: Total length 3.25 mm (to apex of labrum); elytra 1.90 mm long, 1.10 mm wide across shoulders. Mandibles without process on the dorsal ridge. Externally similar to male.

DIFFERENTIAL DIAGNOSIS: Due to the shape of the aedeagus and spiculum gastrale, *T. trifidus* sp.n. belongs to the *T. minutus* group sensu PACHECO (1964). Morphology of spiculum gastrale in *T. trifidus* differs from that in all known species of the genus *Tropicus*.

ETYMOLOGY: The specific epithet is Latin adjective "trifidus" (trifid, split into three). It refers to the peculiar shape of spiculum gastrale.

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