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New species and new records of Heteroceridae from Argentina and Paraguay (Coleoptera: Heteroceridae)

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Abstract

Nine new species of Heteroceridae (Coleoptera) are described from South America: *Heterocerus drechseli* [Paraguay], *H. pachecoi* [Paraguay], *Tropicus alpacinchensis* [Argentina], *T. boqueronensis* [Paraguay], *T. boukali* [Paraguay], *T. hanae* [Paraguay], *T. paraguayensis* [Paraguay], *T. sanisidroensis* [Paraguay] and *T. triangulus* [Paraguay]. *Heterocerus similis* GROUVELLE, 1892, *H. ciliaticollis* STEINHEIL, 1869, *H. woodruffi* PACHECO, 1975, *Tropicus bartolozzii* MASCAGNI, 1994 and *T. imperator* PACHECO, 1964 are reported from Paraguay for the first time.

Key words: Coleoptera, Heteroceridae, *Tropicus*, taxonomy, new species, new record, Paraguay, Argentina.

Introduction

Material of Heteroceridae collected by U. Drechsel at eleven localites in seven departments of Paraguay yielded 17 species. The material was partly identified by W.V. Miller and contains six species of *Tropicus* PACHECO, 1964 (*Tropicus boqueronensis* sp.n., *T. boukali* sp.n., *T. hanae* sp.n., *T. paraguayensis* sp.n., *T. sanisidroensis* sp.n., *T. triangulus* sp.n.) and two species of *Heterocerus* FABRICIUS, 1792 (*Heterocerus drechseli* sp.n. and *H. pachecoi* sp.n.) new to science. All the new species are described below, together with faunistic notes on other species collected in Paraguay. *Heterocerus similis* GROUVELLE, 1892, *H. ciliaticollis* STEINHEIL, 1869, *H. woodruffi* PACHECO, 1975, *Tropicus bartolozzii* MASCAGNI, 1994 and *T. imperator* PACHECO, 1964 are reported from Paraguay for the first time. Another new species of the genus *Tropicus* (*T. alpacinchensis* sp.n.) from Argentina is described together with them.

The genus *Tropicus* was erected for some New World species and was subdivided into three groups (*Pusillus, Imperator and Minutus*), based mainly on the structures of spiculum gastrale and aedeagus (PACHECO 1964). Many species were originally described after single male specimens. The genus is easily distinguishable from others by its 9-segmented antennae, absence of post-metacoxal and post-mesocoxal ridges and the shape of mandibles in the male (usually presence of the process on the dorsal ridge of mandibles).

Acronyms: CSU (Coll. S. Skalický, Ústí nad Orlicí), NMW (Natural History Museum, Wien).

Acknowledgements

I wish to thank Dr. Manfred A. Jäch (NMW) for the kind loan of the material. Dr. Josef Jelínek (Prague, Czech Republic) for comments on the manuscript and Terry Kenly (Haifa, Israel) for reading the English text. I am very obliged to Dr. W.V. Miller (Modesto, USA), for his advice and confirmation of the validity of the new species.

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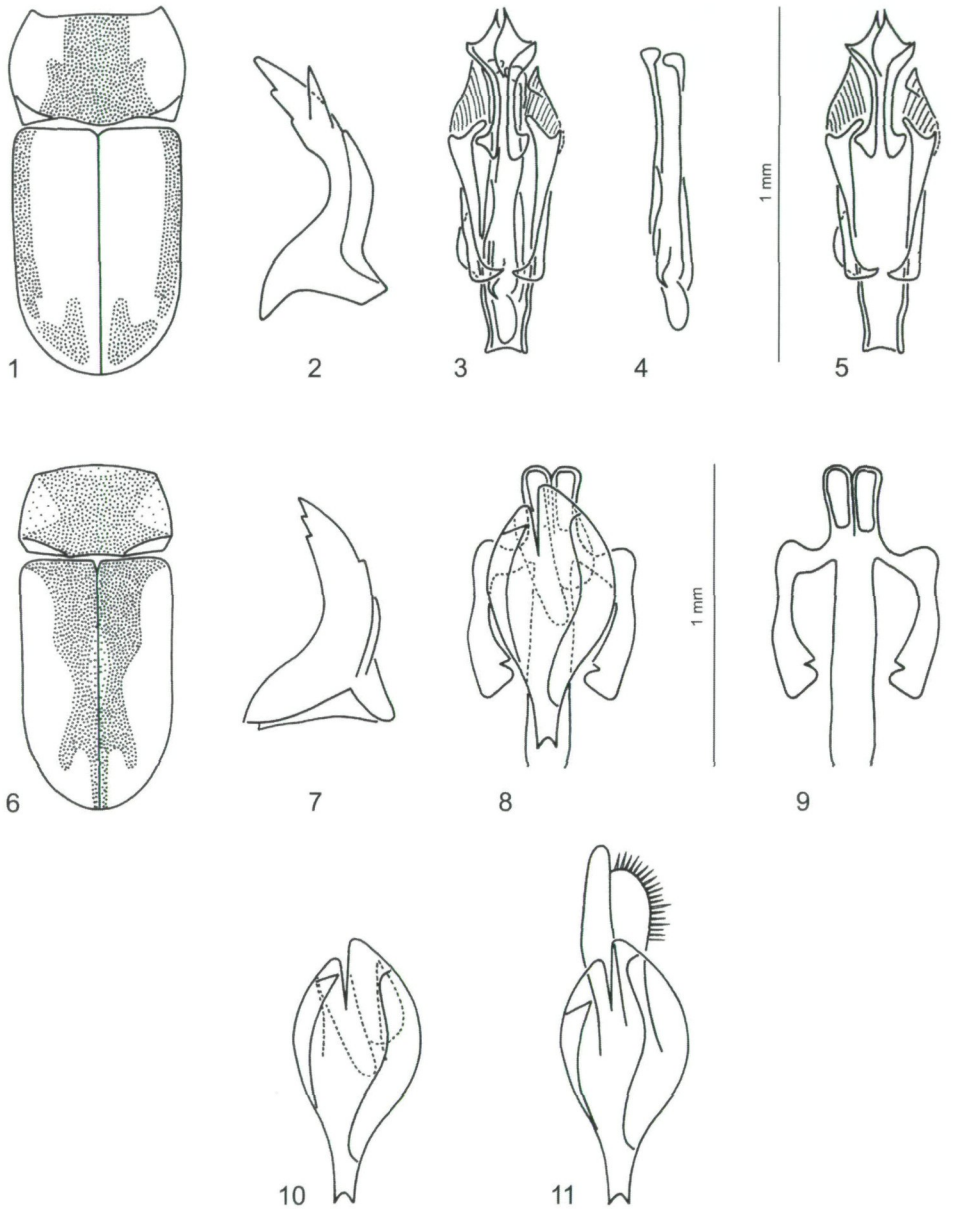

Figs. 1 - 5: *Heterocerus drechseli* sp.n., holotype: 1) pronotum and elytra, dorsal view; 2) right mandible, dorsal view; 3) aedeagus, dorsal view; 4) penis, dorsal view; 5) tegmen, dorsal view.
Figs. 6 - 11: *Heterocerus pachecoi* sp.n., holotype: 6) pronotum and elytra, dorsal view; 7) right mandible, dorsal view; 8) aedeagus, dorsal view; 9) tegmen, dorsal view; 10) penis with bent processus accessorius, dorsal view; 11) penis with erected processus accessorius, dorsal view.
Figs. 1, 2, 6 and 7 are not to scale.

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Descriptions of New Species

Heterocerus drechseli sp.n.

TYPE LOCALITY: Paraguay, Department Boqueron, Mistolar.

TYPE MATERIAL: **Holotype** ♂ (NMW): "Paraguay Dep. Boqueron Mistolar 3/8.x.97","leg. U. Drechsel". **Allotype** ♀ (NMW): same data as holotype. **Paratypes**: 50 (15 ♂♂, 35 ♀♀) specimens, 42 (14 ♂♂, 28 ♀♀) specimens, same data as holotype, only 29 (8 ♂♂, 21 ♀♀) specimens "18.vii.97"; 40 specimens (NMW), 2 (♂, ♀, "18.vii.97") specimens (CSU), 8 (1 ♂, 7 ♀♀) specimens "PARAGUAY Agropil S.A. Oc. 1990".

DESCRIPTION: Holotype ♂: Total length 5.1 mm; elytra 2.9 mm long, 1.8 mm wide across shoulders. Ground colour brown; labrum and head brown to black, antennomeres I and II brown with black spot in distal position, club black-brown. Clypeus with darker spot in the middle. Elytra and pronotum with indistinct darker marking as in Fig. 1. Legs light brown; tibiae with darker lateral margin. Abdomen light brown laterally. Mandibles (Fig. 2) dentate with acute apex and with dorsal process of the dental lobe. Prostheca with teeth of the dental lobe. Labrum softly granulate; yellowish setose. Antennae 11-segmented, with 7-segmented club; antennomere II oblong; antennomeres II and III with dense, short, pale setae intermixed with long setae. Clypeus without pair of anterior horns; with dense, short, pale setae. Head finely punctate; setae dense, short apart from long erect setae above eyes. Pronotum wider than long, slightly wider than base of elytra; pronotal base rimmed only in the middle; softly granulate; setae of pronotum yellowish, short and recumbent, becoming longer and erect laterally. Scutellum pointed, triangular. Elytra without longitudinal ridges; with scutellar and humeral depressions. Humeral depression fairly distinct, extending obliquely towards suture at one third of elytron. Surface of elytra densely and roughly granulate; setae as on pronotum; epipleura without epipleural ridges. Ventral surface sparsely and finely granulated; sparse setae laterally. Metasternum with a post-mesocoxal ridge; mesosternum neither spinose nor tuberculate in front of each mesocoxa. Post-metacoxal line absent. Stridulatory arch marked with striae. Protibia with 10 stout spines, mesotibia with 9 and metatibia with 8 longer and weak spines. Spiculum gastrale V-shaped, arms connected by membrane apically. Aedeagus (Figs. 3 - 5) elongate, 1 mm long, well sclerotized; parameres converging towards apex, connected with phallobasis by membrane; aedeagus without processus accessorius.

Allotype ♀: Total length 4.8 mm (to apex of labrum); elytra 3.2 mm long, 1.8 mm wide across shoulders. Mandibles without dorsal process of dental lobe. Externally similar to male.

Variability: Size: ♂♂ length 4.1 - 5.2 mm; ♀♀ length 4.4 - 4.9 mm. Elytral markings partly variable with the pattern very faint in some specimens. Eight males without dorsal process of dental lobe of mandibles, two males with this process only indicated. Elytral longitudinal ridges in first third of elytra indicated in some paratypes (both sexes). Post-mesocoxal ridge either indicated or missing in some paratypes (both sexes).

DIFFERENTIAL DIAGNOSIS: *H. drechseli* is related to *H. woodruffi* PACHECO, 1975 occurring in Bolivia (PACHECO 1975). It differs from the latter in the structure of male genitalia (cf. Figs. 4 - 6 in PACHECO (1975) and Figs. 3 - 5), size of body (3.5 - 5.0 mm long, 1.2 - 1.6 mm wide in *H. woodruffi*) and in the elytral pattern (cf. Figs. 1 - 2 in PACHECO (1975) and Fig. 1).

DISTRIBUTION: *H. drechseli* is known only from Mistolar and Agropil (Paraguay).

ETYMOLOGY: Named after Dipl. Biol. Ulf Drechsel (Asuncion, Paraguay), who collected the type series.

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Heterocerus pachecoi sp.n.

TYPE LOCALITY: Paraguay, Department Boqueron, Mistolar.

TYPE MATERIAL: **Holotype** ♂ (NMW): "Paraguay: Dep. Boqueron Mistolar 18.vii.97","leg. U. Drechsel". **Allotype** ♀ (NMW): same data as holotype. **Paratypes**: 11 (6 ♂♂, 5 ♀♀) specimens, same data as holotype, only 2 ♀♀ specimens "3/8.x.97". 9 specimens (NMW), 2 (1 ♂, 1 ♀,"18.vii.97") specimens (CSU).

DESCRIPTION: Holotype ♂: Total length 4.2 mm; elytra 2.5 mm long, 1.5 mm wide across shoulders. Ground colour light brown; elytra and pronotum with brown to black pattern as in Fig. 6. Head brown to black. Mandibles (Fig. 7) relatively small, dentate with acute apex; dorsal subapical tooth barely developed. Labrum short, as long as wide; softly granulated; yellowish short dense setae. Antennae 11-segmented, with 7-segmented club. Clypeus without pair of anterior horns; with dense short yellowish setae. Head finely granulate; setae as on clypeus. Pronotum wider than long, as wide as base of elytra; pronotal base completely rimmed; sides converging anteriorly all along their length; surface softly granulate. Setae of pronotum thin, erect. Scutellum 1.5 times as long as wide, triangular, pointed. Elytra without longitudinal ridges; scutellar depressions well developed; punctures as coarse as on pronotum; setae as on pronotum. Epipleura without epipleural ridges. Metasternum with post-mesocoxal ridge; mesosternum neither spinose nor tuberculate in front of each mesocoxa. Post-metacoxal line absent. Stridulatory arch marked with striae. Protibia with 10 stout spines, meso- and metatibia with 8 weak spines each. Spiculum gastrale V-shaped; 1 mm long; arms connected by membrane apically. Aedeagus (Figs. 8 - 11) 0.8 mm long, well sclerotized. Parameres partly fused together, with transparent "window". Penis with processus accessorius and internal sac. Sac and processus bent and hidden in the penis bend (Fig. 10), eventually erected. Sac connected with processus accessorius by its left side, right side long with erect setae (Fig. 11).

Allotype ♀: Total length 4.5 mm (to apex of labrum); elytra 2.7 mm long, 1.7 mm wide across shoulders. Externally similar to male.

Variability: Some paratypes are very pale (teneral ?) with elytral pattern indistinct to absent.

DIFFERENTIAL DIAGNOSIS: *H. pachecoi* is related to *H. meridianus* PACHECO, 1975 occurring in Brazil and Bolivia (PACHECO 1975). It differs from the latter in the structure of male genitalia (cf. Figs. 13 - 15 in PACHECO (1975) and Figs. 8 - 11) and shape of elytral and pronotal pattern (cf. Figs. 7, 10 in PACHECO (1975) and Fig. 6).

DISTRIBUTION: So far known only from the type locality.

ETYMOLOGY: Dedicated to Dr. Francisco Pacheco (Obregón, Mexico), prominent "Heteroceridae" specialist.

Tropicus alpacinchensis sp.n.

TYPE LOCALITY: Argentina, Alpacinche, La Rioja.

TYPE MATERIAL: **Holotype** ♂ (NMW): "ARGENTINA: Alpacinche La Rioja 9.-10.2.1993". **Allotype** ♀ (NMW): same data as holotype. **Paratypes**: 66 (28 ♂♂, 38 ♀♀), 18 (12 ♂♂, 6 ♀♀) specimens, same data as holotype, only 19 (5 ♂♂, 14 ♀♀) specimens "9./10.II.1993"; 17 specimens (NMW), 1 ♂ specimen (CSU), 5 specimens (3 ♂♂, 2 ♀♀) "ARGENTINA: Catamarca Punta Balasto, 2100m 13./14.III.1993" (NMW), 20 specimens (6 ♂♂, 14 ♀♀) "ARGENTINA: Pta. Balasto Catamarca, 2100m 13.II.1993" 19 specimens (NMW), 1 ♂ specimen (CSU), 4 specimens (2 ♂♂, 2 ♀♀) "ARGENTINA: San Juan Calinquesa 19./20.I.1995" (NMW).

DESCRIPTION: Holotype ♂: Total length 3.2 mm (to apex of labrum); elytra 1.8 mm long, 1 mm wide across shoulders. Ground colour light brown; head and eyes dark brown; pronotum in the middle and the basal fourth of elytra darker. Labrum elongate, shape as in Fig. 12, with dense

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setae. Mandibles (Fig. 12) straight; process of the dorsal ridge and dorsal subapical tooth large. Prostheca without notch, only with series of teeth. Front angle of clypeus as in Fig. 12. Antennae 9-segmented, with 6-segmented club. Pronotum wider than long, as wide as base of elytra, sides nearly parallel; pronotal base not rimmed; surface softly and regularly granulate; yellowish setae recumbent, dense, becoming long and thin laterally. Scutellum pointed, 1.5 times longer than wide. Elytra oblong, without longitudinal ridges; with humeral depressions extending obliquely to midlength of elytra; surface finely granulate; epipleura without epipleural ridges. Setae on elytra yellowish, dense and recumbent. Ventral surface sparsely setose. Metasternum without post-mesocoxal ridge. Metasternum without post-metacoxal ridge. Abdomen without post-metacoxal ridge. Protibia with 10 stout spines, mesotibia with 7 and metatibia with 6 spines. Spiculum gastrale 0.6 mm long; Y-shaped as in Figs. 13, 14; arms separated at apex. Aedeagus 0.6 mm long; elongate, shape as in Fig. 15.

Allotype ♀: Total length 2.9 mm (to apex of labrum); elytra 1.8 mm long, 1 mm wide across shoulders. Mandibles without dorsal process. Externally similar to male.

Variability: Variability: Size: ♂♂ length 4.1 - 5.2 mm; ♀♀ length 4.4 - 4.9 mm. No substantial morphological variability observed in the type series.

DIFFERENTIAL DIAGNOSIS: Due to the shape of the aedeagus and spiculum gastrale, *T. alpacinchensis* belongs to the *Imperator* group sensu PACHECO (1964). Body shape and morphology of aedeagus place it near *Tropicus tucumanensis* PACHECO, 1964 described from Argentina (Tucumán) (PACHECO 1964). *Tropicus alpacinchensis*, in contrast to *T. tucumanensis*, has a different spiculum gastrale (cf. Figs. 441, 442 in PACHECO (1964) and Figs. 13, 14).

DISTRIBUTION: So far known only from the type locality (Alpacinche, La Rioja) from Catamarca, Punta Blasto and San Juan Calinquesa.

ETYMOLOGY: The name of the new species refers to its type locality.

Tropicus boqueronensis sp.n.

TYPE LOCALITY: Paraguay, Department Boqueron, 150 km north of Filadelfia.

TYPE MATERIAL: **Holotype** ♂ (NMW): "Paraguay Dep. Boqueron 150 km N. Filadelfia 8-v-'95","leg. U. Drechsel". **Allotype** ♀ (NMW): same data as holotype. **Paratypes** 4 ♀♀ specimens, 2 specimens same data as holotype, 2 specimens " Paraguay Dep. Boqueron 160 km N. Filadelpfia [sic! The correct spelling of the locality is Filadelfia]10 v '95","leg. U. Drechsel". 3 specimens (NMW), 1 specimen (CSU).

DESCRIPTION: Holotype ♂: Total length 2.35 mm (to apex of labrum); elytra 1.4 mm long, 0.8 mm wide across shoulders. Ground colour light brown; pronotum, scutellum and elytra with brown pattern as in Fig. 16; head black to brown. Body shiny. Labrum elongate, shape as in Fig. 17, 1.6 times as long as wide. Mandibles (Fig. 17) dentate, with acute apex and with process of the dorsal ridge. Prostheca with prosthecal teeth, without notch. Front angle of clypeus as in Fig. 17. Antennae 9-segmented, with 6-segmented club. Pronotum 1.9 times wider than long, as wide as base of elytra; pronotal base not rimmed; surface softly granulate; setae semi-erect, yellowish and quite long. Scutellum pointed, triangular. Elytra oblong, without longitudinal ridges; with humeral depressions extending obliquely to almost midlength of elytra; surface finely granulate; epipleura without epipleural ridges. Setae of elytra as on pronotum. Metasternum without post-mesocoxal ridge; abdomen without post-metacoxal ridge. Protibia and mesotibia with 9 spines, metatibia with uncertain number of thin spines. Spiculum gastrale 0.45 mm long; Y-shaped as in Figs. 18, 19. Aedeagus 0.3 mm long, shape as in Fig. 20. Spiculum gastrale and abdomen broken.

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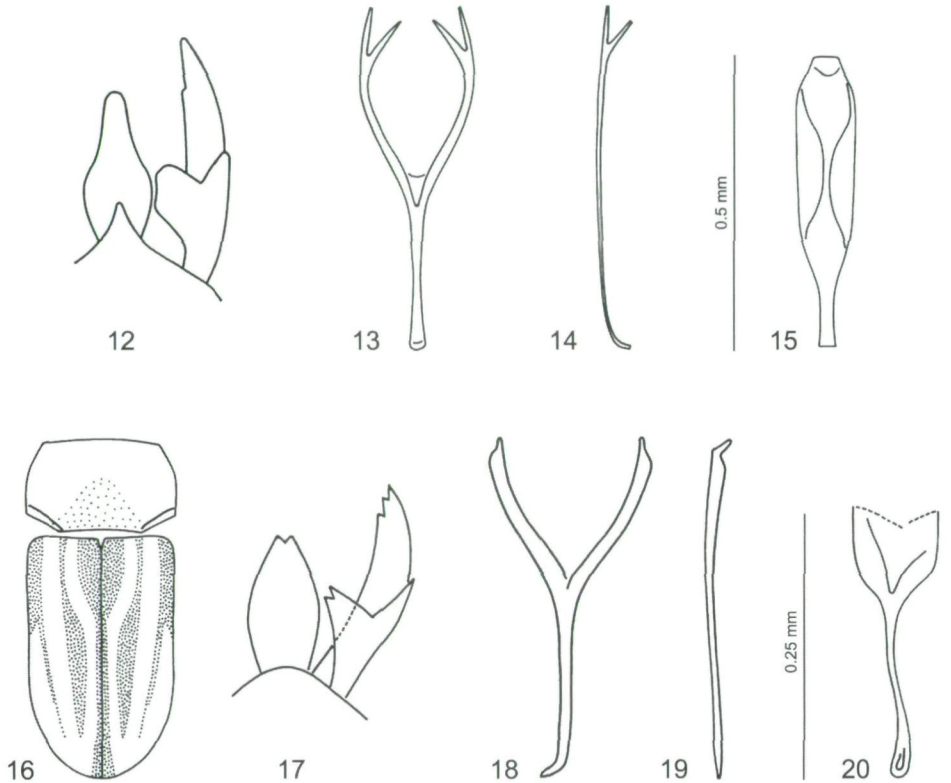

Figs. 12 - 15: *Tropicus alpacinchensis* sp.n., holotype: 12) front angle of clypeus, left mandible and visible part of labrum, dorsal view; 13) spiculum gastrale, dorsal view; 14) spiculum gastrale, lateral view; 15) aedeagus, dorsal view.
Figs. 16 - 20: *Tropicus boqueronensis* sp.n., holotype: 16) pronotum and elytra, dorsal view; 17) front angle of clypeus, left mandible and visible part of labrum, dorsal view; 18) spiculum gastrale, dorsal view; 19) spiculum gastrale, lateral view; 20) aedeagus, dorsal view.
Figs. 12, 16 and 17 are not to scale.

Allotype ♀: Total length: 2.4 mm (to apex of labrum); elytra 1.45 mm long, 0.85 mm wide across shoulders. Mandibles without dorsal process. Externally similar to male.

Variability: Total length (female): 2.35 - 2.40 mm. No substantial morphological variability observed in the type series.

DIFFERENTIAL DIAGNOSIS: Due to the shape of the aedeagus and spiculum gastrale, the new species belongs to the *Minutus* group sensu PACHECO (1964). Aedeagus and spiculum gastrale in *Tropicus boqueronensis* similar to those in *Tropicus minutus* (FALL, 1920) from the United States (Texas) (PACHECO 1964). *Tropicus boqueronensis* differs from the latter in the elytral pattern (absent in *T. minutus*), in the colour of the body (yellowish red in *T. minutus*), in size (length of *T. minutus* 1.7 - 2.0 mm) and structure of both spiculum gastrale and abdomen (cf. Figs. 454 - 461 in PACHECO (1964) and Figs. 16 - 20).

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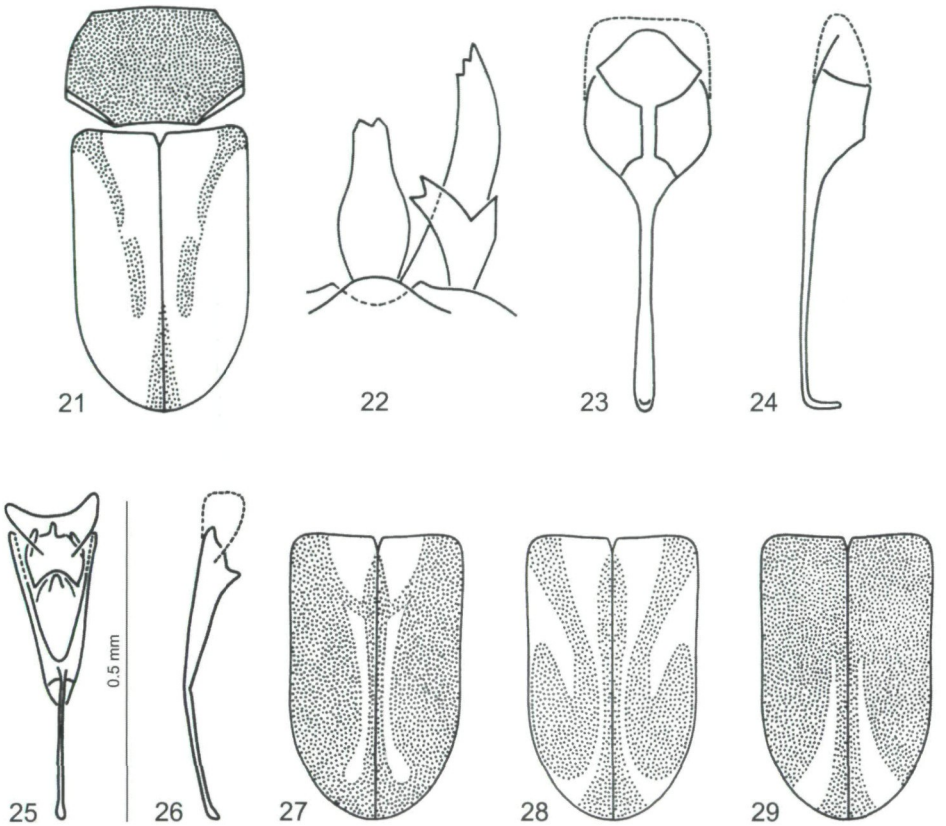

Figs. 21 - 26: *Tropicus boukali* sp.n. holotype: 21) pronotum and elytra, dorsal view; 22) front angle of clypeus, left mandible and visible part of labrum, dorsal view; 23) spiculum gastrale, dorsal view; 24) spiculum gastrale, lateral view; 25) aedeagus, dorsal view; 26) aedeagus, lateral view.
Fig. 27: *Tropicus boukali* sp.n. allotype: elytra, dorsal view.
Figs. 28 - 29: *Tropicus boukali* sp.n. paratypes: variability of elytral pattern.
Figs. 21 - 22, 27 - 29 are not to scale.

DISTRIBUTION: So far known only from the type locality.

ETYMOLOGY: Named after the province Boqueron of Paraguay.

Tropicus boukali sp.n.

TYPE LOCALITY: Paraguay, Department Boqueron, Mistolar.

TYPE MATERIAL: **Holotype** ♂ (NMW): "Paraguay Dep. Boqueron Mistolar 18.vii.97","leg. U. Drechsel". **Allotype** ♀ (NMW): same data as holotype. **Paratypes**: 70 (44 ♂♂, 26 ♀♀) specimens, same data as holotype, only 12 (8 ♂♂, 4 ♀♀) specimens "3/8.x.97"; 66 specimens (NMW), 4 (3 ♂♂, 1 ♀, all "18.vii.97") specimens (CSU).

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DESCRIPTION: Holotype ♂: Total length 2.7 mm (to apex of labrum); elytra 1.6 mm long, 0.9 mm wide across shoulders. Ground colour brown; elytra and pronotum with light brown pattern as in Fig. 21; labrum dark, light brown anteriorly; mandibles and legs light brown. Labrum 1.9 times as long as wide; shape as in Fig. 22. Setae of labrum double: short, dense, recumbent setae intermixed with very long, erect ones. Mandibles (Fig. 22) dentate, with acute apex, process of dorsal ridge well developed. Front angle of clypeus as in Fig. 22. Antennae 9-segmented, with 6-segmented club; basal antennomeres with long and separate setae. Pronotum 1.6 times wider than long, slightly wider than base of elytra; pronotal base apparently rimmed laterally; surface finely granulate; setae yellowish, short and rare. Scutellum triangular, pointed. Elytra oblong, without longitudinal ridges; with few distinct humeral depressions; surface granulate; setae as on pronotum; epipleura without epipleural ridges. Metasternum without post-mesocoxal ridge. Abdomen without post-metacoxal ridge. Stridulatory arch marked. Protibia with 8, meso- and metatibia with undetected number of spines. Spiculum gastrale 0.6 mm long; Y-shaped as in Figs. 23 - 24. Aedeagus 0.5 mm long, shape as in Figs. 25 - 26.

Allotype ♀: Total length 2.4 mm (to apex of labrum); elytra 1.55 mm long, 0.85 mm wide across shoulders. Mandibles without dorsal process. Elytra with marking as in Fig. 27. Externally similar to male.

Variability: Total length 2.25 - 2.80 mm (both sexes). Mean length about 2.6 mm. Ground colour, elytral pattern and its colour very variable, in some specimens pattern not observed. Colour of elytra and pronotum black to brown. Most frequent patterns illustrated in Figs. 28 - 29. Humeral depressions more distinctly marked in some specimens. Elytral longitudinal ridges partly present in some specimens.

DIFFERENTIAL DIAGNOSIS: Due to the shape of the aedeagus and spiculum gastrale, *T. boukali* belongs to the *Pusillus* group sensu PACHECO (1964). Morphology of aedeagus of *Tropicus boukali* similar to that of *T. tuberculatus* PACHECO, 1964, from which the new species can be distinguished in particular by the shape of mandible (different process of the dorsal ridge), and by the shape of labrum, front angle of clypeus, aedeagus and by the shape of spiculum gastrale, which is more similar to that of *T. tuberculatus* (cf. Figs. 400 - 406 in PACHECO (1964) and Figs. 21 - 26).

DISTRIBUTION: So far known only from the type locality.

ETYMOLOGY: Dedicated to my friend Ing. David S. Boukal (České Budějovice, Czech Republic).

Tropicus hanae sp.n.

TYPE LOCALITY: Paraguay, Department Boqueron, Mistolar.

TYPE MATERIAL: **Holotype** ♂ (NMW): "Paraguay Dep. Boqueron Mistolar 18.vii.97","leg. U. Drechsel". **Allotype** ♀ (NMW): same data as holotype. **Paratypes**: 6 (1 ♂, 5 ♀♀) specimens, same data as holotype, 4 ♀♀ specimens (NMW), 2 (♂♀) specimens (CSU).

DESCRIPTION: Holotype ♂: Total length 2.2 mm (to apex of labrum); elytra 1.2 mm long, 0.8 mm wide across shoulders. Ground colour dark brown; pronotum and elytra with paler, diffuse pattern as in Fig. 30; mandibles and legs light brown; abdomen paler laterally. Labrum elongate, shape as in Fig. 31, setae dense. Mandibles as in Fig. 31; dentate, with acute apex, dorsal subapical tooth well developed; process of the dorsal ridge very short, pointed and not incised. Front angle of the clypeus as in Fig. 31; setae dense. Antennae 9-segmented, with 6-segmented club. Pronotum wider than long, as wide as base of elytra; sides slightly converging apically all along their length; pronotal base apparently rimmed laterally; surface finely granulate; setae short

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yellowish, longer setae missing. Scutellum pointed. Elytra oblong, without longitudinal ridges; with few distinct humeral depressions; surface finely granulate; setae as on pronotum, semi-erect. Metasternum without post-mesocoxal ridge; abdomen without post-metacoxal ridge. Stridulatory arch marked. Protibia with 8 stout spines, meso- and metatibia with indeterminate number of spines. Spiculum gastrale 0.55 mm long; Y-shaped as in Figs. 32 - 33. Aedeagus 0.5 mm long, shape as in Figs. 34 - 35.

Allotype ♀: Total length 2.15 mm (to apex of labrum); elytra 1.3 mm long, 0.8 mm wide across shoulders. Mandible without dorsal process. Externally similar to male.

Variability: Colour in some specimens black to brown, without elytral markings.

DIFFERENTIAL DIAGNOSIS: Due to the shape of the aedeagus and spiculum gastrale, *T. hanae* belongs to the *Pusillus* group sensu PACHECO (1964). Morphology of spiculum gastrale in *T. hanae* similar to that of *T. triangulus* Both species differ in the elytral pattern, shape of labrum, front angle of clypeus and process of dorsal ridge of mandible, as well as in morphology of male genitalia (cf. 30 - 35 and 48 - 53).

DISTRIBUTION: So far known only from the type locality.

ETYMOLOGY: Dedicated to my daughter, Hana Skalická.

Tropicus paraguayensis sp.n.

TYPE LOCALITY: Paraguay, Department Alto Paraguay, 90 km northwest of Bahia Negra.

TYPE MATERIAL: **Holotype** ♂ (NMW): "PARAGUAY: Dep. Alto Paraguay 90km NW Bahia Negra 25. 7. 1996 leg. Drechsel ". **Allotype** ♀ (NMW): same data as holotype. **Paratype** 1 ♂ (involved, without head and pronotum) specimen, same data as holotype (CSU).

DESCRIPTION: Holotype ♂: Total length 2.5 mm (to apex of labrum); elytra 1.40 mm long, 0.85 mm wide across shoulders. Colour light brown, only elytra with very diffuse darker margin as in Fig. 36 and eyes dark brown. Labrum elongate, shape as in Fig. 37, with dense short setae; roughly granulate. Mandibles (Fig. 37) dentate, tooth at latero-ventral ridge normal; process of dorsal ridge small, pointed. Prostheca with series of blunt teeth. Front angle of clypeus as in Fig. 37. Antennae 9-segmented with 6-segmented club; antennomeres II with several long erect setae. Pronotum 1.5 times as wide as long, as wide as base of elytra; pronotal base not rimmed; surface softly granulate; setae yellowish, short, becoming longer and erect laterally. Elytra oblong, without longitudinal ridges; with humeral depressions extending almost parallel to lateral margins of elytra. Surface of elytra roughly granulate; with yellowish, short, semierect setae. Metasternum without post-mesocoxal ridge; epipleura without epipleural ridges. Abdomen without post-metacoxal ridge. Stridulatory arch marked. Protibia with 8 spines, meso- and metatibia with 7 spines each. Spiculum gastrale (broken) 0.5 mm long; Y-shaped as in Figs. 38 - 39. Aedeagus 0.5 mm long, shape as in Figs. 40 - 41.

Allotype ♀: Total length: 2.1 mm (to apex of labrum); elytra 1.25 mm long, 0.8 mm wide across shoulders. Mandibles without dorsal process. Externally similar to male.

DIFFERENTIAL DIAGNOSIS: Due to the shape of the aedeagus and spiculum gastrale, the new species belongs to the *Pusillus* group sensu PACHECO (1964). Morphology of the aedeagus of *Tropicus paraguayensis* is similar to that of *T. alcicornis* MASCAGNI, 1989, from which it differs mainly in the colour (only *T. paraguayensis* is light brown with diffuse darker elytral markings), shape of mandible (process of dorsal ridge small in *T. paraguayensis*, large in *T. alcicornis*) and in shape of aedeagus. (cf. Figs. 1 - 4 in MASCAGNI (1989) and 36 - 41).

DISTRIBUTION: So far known only from the type locality.

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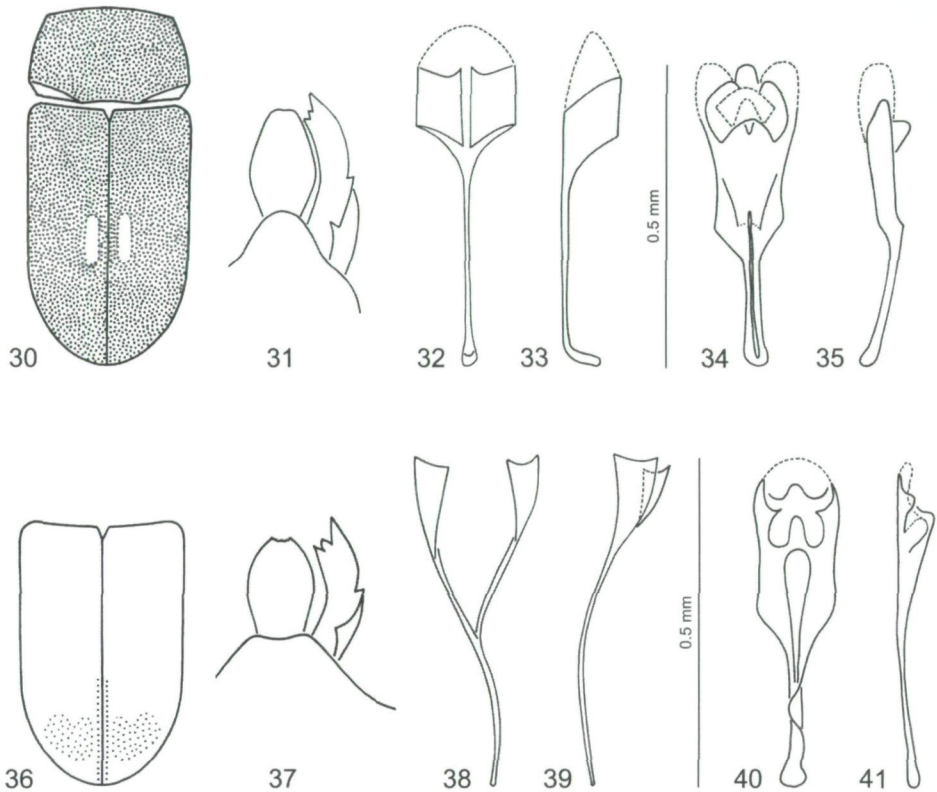

Figs. 30 - 35: *Tropicus hanae* sp.n. holotype: 30) pronotum and elytra, dorsal view; 31) front angle of clypeus, left mandible and visible part of labrum, dorsal view; 32) spiculum gastrale, dorsal view; 33) spiculum gastrale, lateral view; 34) aedeagus, dorsal view; 35) aedeagus, lateral view.
Figs. 36 - 41: *Tropicus paraguayensis* sp.n. holotype: 36) elytra, dorsal view; 37) front angle of clypeus, left mandible and visible part of labrum, dorsal view; 38) spiculum gastrale, dorsal view; 39) spiculum gastrale, lateral view; 40) aedeagus, dorsal view; 41) aedeagus, lateral view.
Figs. 30 - 31, 36 - 37 are not to scale.

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

Tropicus sanisidroensis sp.n.

TYPE LOCALITY: Paraguay, Department Presidente Hayes, Transchaco Highway km 283, Estancia San Isidro.

TYPE MATERIAL: **Holotype** (by monotypy) ♂ (NMW): "PARAGUAY: Dep. Pte.[sic! The correct spelling is Pre. as Presidente] Hayes Transchaco Hwy. km 283 Estancia San Isidro 23.8.1995 leg. Drechsel".

DESCRIPTION: Holotype ♂: Total length 2.25 mm (to apex of labrum); elytra 1.3 mm long, 0.8 mm wide across shoulders. Ground colour brown; elytra and pronotum with paler pattern as in Fig. 42; mandibles and antennae light brown; legs brown to orange. Labrum elongate, shape as in

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Fig. 43, with dense setae. Mandible shape as in Fig. 43; dentate with acute apex, dorsal subapical tooth well developed, pointed; process of the dorsal ridge short. Clypeus with very dense and relatively long setae, front angle of clypeus as in Fig. 43. Antennae 9-segmented, with 6-segmented club (left antenna lost); basal antennomeres with relatively dense setae. Pronotum wider than long, as wide as base of elytra; sides nearly parallel, slightly converging apically; pronotal base apparently rimmed laterally; surface dense, finely granulate; setae yellowish, short, semi-erect. Scutellum pointed, 1.7 times longer than wide, rugose laterally. Elytra oblong, without longitudinal ridges, with few distinct humeral depressions; surface finely and densely granulate. Setae of elytra as on pronotum. Metasternum without post-metacoxal ridge. Abdomen without post-metacoxal line. Stridulatory arch marked. Protibia and mesotibia with 8 spines each, metatibia with 7 longer and weak spines. Spiculum gastrale 0.5 mm long; Y-shaped as in Figs. 44 - 45. Aedeagus 0.45 mm long; shape as in Figs. 46 - 47.

Female unknown.

DIFFERENTIAL DIAGNOSIS: Due to the shape of the aedeagus and spiculum gastrale, *T. sanisidroensis* belongs to the *Pusillus* group sensu PACHECO (1964). Morphology of aedeagus of *T. sanisidroensis* similar to that of *T. hanae* from which it differs mainly in shape of mandible, elytral and pronotal pattern and in morphology of male genitalia and spiculum gastrale (cf. Figs. 30 - 35 and Figs. 42 - 47).

DISTRIBUTION: So far known only from the type locality.

ETYMOLOGY: Named after the type locality.

Tropicus triangulus sp.n.

TYPE LOCALITY: Paraguay, Department Alto Paraguay, 90 km northwest Bahia Negra.

TYPE MATERIAL: **Holotype** ♂ (NMW): "PARAGUAY: Dep. Alto Paraguay 90 km NW Bahia Negra 25.7.1996 leg. Drechsel". **Allotype** ♀ (NMW): same data as holotype. **Paratype**: 1 (♂) specimen, same data as holotype (CSU).

DESCRIPTION: Holotype ♂: Total length 2.4 mm (to apex of labrum); elytra 1.4 mm long, 0.8 mm wide across shoulders. Ground colour light brown; pronotum and elytra with darker pattern as in Fig. 48. Labrum brown, paler anteriorly. Head and process of dorsal ridge of mandible brown. Body shiny. Labrum 1.2 times as long as wide, visible part as in Fig. 49; finely granulate with dense setae. Mandibles (Fig. 49) dentate with acute apex; process of the dorsal ridge rather deeply excised apically. Prosthecal teeth hard. Clypeus with dense, long, yellowish setae; front angle of clypeus as in Fig. 49. Antennae 9-segmented, with 6-segmented club. Basal antennomeres bearing very long yellowish setae. Pronotum wider than long, slightly wider than base of elytra; sides nearly parallel, slightly converging apically; pronotal base apparently rimmed laterally; surface finely sculptured; setae relatively rare and short, intermixed with longer setae laterally. Scutellum 1.5 times longer than as wide, triangular, sides curved. Elytra oblong, with indicated longitudinal ridges; humeral depressions only indicated, flat; surface densely sculptured with individual punctures hardly apparent. Setae of elytra as on pronotum, without longer setae laterally. Metasternum without post-metacoxal ridge. Abdomen without post-metacoxal ridge. Stridulatory arch marked. Protibia and mesotibia with 10 spines each, metatibia with 9 spines. Spiculum gastrale 0.3 mm long; Y-shaped as in Figs. 50 - 51. Aedeagus 0.25 mm long, shape as in Figs. 52 - 53, with triangular sclerotized process at apex.

Allotype ♀: Total length: 2.6 mm (to apex of labrum); elytra 1.4 mm long, 0.8 mm wide across shoulders. Darker elytral markings less apparent; less shiny. Mandibles smaller without dorsal process. Pronotum as wide as base of elytra.

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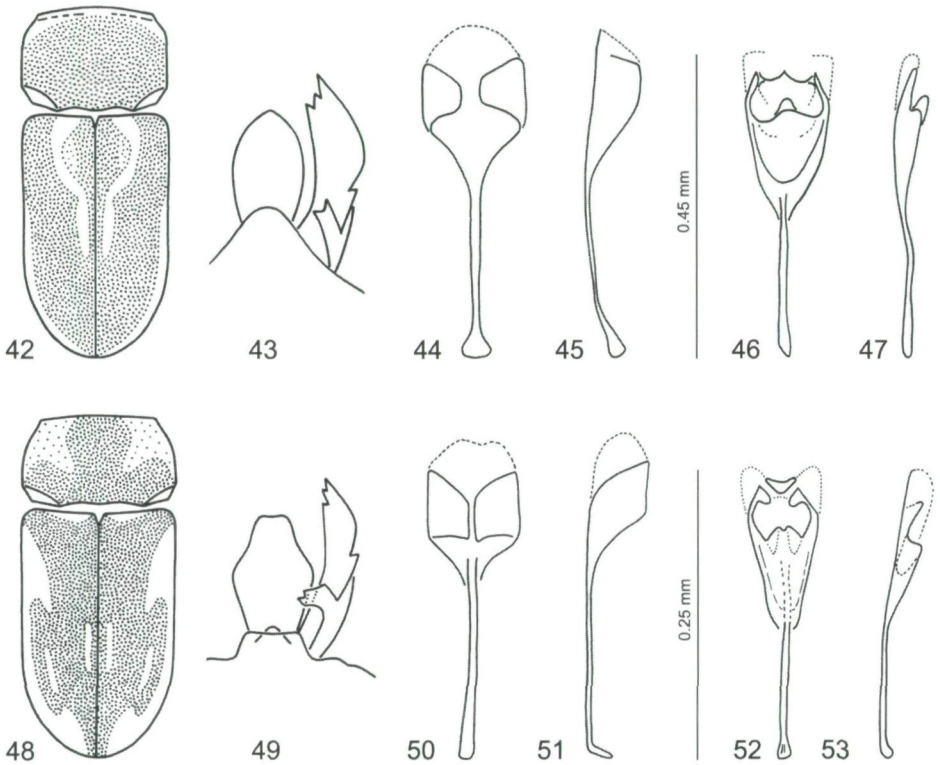

Figs. 42 - 47: *Tropicus sanisidroensis* sp.n. holotype: 42) pronotum and elytra, dorsal view; 43) front angle of clypeus, left mandible and visible part of labrum, dorsal view; 44) spiculum gastrale, dorsal view; 45) spiculum gastrale, lateral view; 46) aedeagus, dorsal view; 47) aedeagus, lateral view.
Figs. 48 - 53: *Tropicus triangulus* sp.n. holotype: 48) pronotum and elytra, dorsal view; 49) front angle of clypeus, left mandible and visible part of labrum, dorsal view; 50) spiculum gastrale, dorsal view; 51) spiculum gastrale, lateral view; 52) aedeagus, dorsal view; 53) aedeagus, lateral view.
Figs. 42 - 43, 48 - 49 are not to scale.

DIFFERENTIAL DIAGNOSIS: Due to the shape of the aedeagus and spiculum gastrale, *T. triangulus* belongs to the *Pusillus* group sensu PACHECO (1964). By the shape of the spiculum gastrale and male genitalia, *T. triangulus* is similar to *T. boukali* from which it differs mainly in the elytral and pronotal pattern, shiny body surface, (dull in *T. boukali*) (cf. Figs. 21, 48) and in morphology of male genitalia (cf. Figs. 25 – 26, 52 - 53).

DISTRIBUTION: So far known only from the type locality.

ETYMOLOGY: Named after the sclerotized triangular process at the apex of aedeagus.

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Distributional Notes

If not otherwise stated, all specimens listed below are deposited in the NMW.

Heterocerus ciliaticollis STEINHEIL, 1869

MATERIAL EXAMINED: 39 exs., (therefrom 1 ex. in CSU) "Paraguay Dep. Boqueron Mistolar 18.vii.97", "leg. U. Drechsel"; 6 exs., "Paraguay Dep. Boqueron Mistolar 3/8.x.97", "leg. U. Drechsel"; 2 exs., "Paraguay Dep. Boqueron 150 km N. Filadelfia 8-v-'95", "leg. U. Drechsel".

DISTRIBUTION: Argentina, Brazil (PACHECO 1964). First record for Paraguay.

Heterocerus similis GROUVELLE, 1892

MATERIAL EXAMINED: 3 exs., "Paraguay Dep. Boqueron Quenjaclo 29-v-'97", "leg. U. Drechsel"; 33 exs., (therefrom 1 ex. in CSU) "Paraguay Dep. Boqueron Mistolar 18.vii.97", "leg. U. Drechsel"; 16 exs., "Paraguay Dep. Boqueron Mistolar 3/8.x.97", "leg. U. Drechsel"; 1 ex., "Paraguay Dep. Boqueron 160 km N. Filadelpfia [! sic. The correct spelling of the locality is Filadelfia] 8-v-'95", "leg. U. Drechsel"; 1 ex., "Paraguay Dep. Boqueron 150 km N. Filadelfia 8-v-'95", "leg. U. Drechsel".

DISTRIBUTION: Argentina, Brazil, Chile, Uruguay (PACHECO 1964). First record for Paraguay.

Heterocerus woodruffi PACHECO, 1975

MATERIAL EXAMINED: 15 exs., (therefrom 2 ex. in CSU) "Paraguay Dep. Boqueron Mistolar 18.vii.97", "leg. U. Drechsel".

DISTRIBUTION: Bolivia (PACHECO 1975). First record for Paraguay.

Heterocerus sp. ♀♀

MATERIAL EXAMINED: 1 ex., "Paraguay Dep. Boqueron Mistolar 18.vii.97", leg. U. Drechsel"; 1 ex., "Paraguay Dep. Boqueron Mistolar 3/8.x.97", "leg. U. Drechsel".

Tropicus alcicornis MASCAGNI, 1989

MATERIAL EXAMINED:1 ex., "Paraguay Dep. Boqueron Mistolar 3/8.x.97", "leg. U. Drechsel"; 1 ex., "Paraguay Dep. Boqueron 150 km N. Filadelfia 8-v-'95", "leg. U. Drechsel"; 3 exs., (therefrom 1 ex. in CSU) "Paraguay Dep. Boqueron 160 km N. Filadelpfia [sic! The correct spelling of the locality is Filadelfia] 10 v '95", "leg. U. Drechsel".

DISTRIBUTION: Paraguay, Venezuela (MASCAGNI 1989).

Tropicus bartolozzii MASCAGNI, 1994

MATERIAL EXAMINED: 4 exs., (therefrom 1 ex. in CSU) "Paraguay Dep. Boqueron Mistolar 3/8.x.97", "leg. U. Drechsel"; 1 ex., "Paraguay. Dep. Boqueron 160 km N. Filadelpfia [sic! The correct spelling of the locality is Filadelfia] 10 v '95", "leg. U. Drechsel".

DISTRIBUTION: Ecuador (MASCAGNI 1994). First record for Paraguay.

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Tropicus imperator PACHECO, 1964

MATERIAL EXAMINED: 21 exs., (therefrom 1 ex. in CSU) "Paraguay Dep. Boqueron Mistolar 3/8.x.97", "leg. U. Drechsel"; 4 exs., "Paraguay Dep. Boqueron Mistolar 18.vii.97", "leg. U. Drechsel"; 1 ex., "Paraguay Dep. Boqueron 160 km N. Filadelpfia [sic! The correct spelling of the locality is Filadelfia] 10 v '95" , "leg. U. Drechsel".

DISTRIBUTION: Argentina, Bolivia, Brazil (BAMEUL 1995). First record for Paraguay.

Tropicus milleri MASCAGNI, 1993

MATERIAL EXAMINED: 16 exs., (therefrom 2 exs. in CSU) "Paraguay Dep. Boqueron Mistolar 18.vii.97", "leg. U. Drechsel".

DISTRIBUTION: Paraguay (MASCAGNI 1993).

Tropicus sp. ♀♀

MATERIAL EXAMINED: 6 exs., (therefrom 1 ex. in CSU) "Paraguay. Dep. Concepcion Est. San Luis 8–ix-'97", "leg. U. Drechsel"; 6 exs., "PARAGUAY. 19.-22.11.1991 Dep. San Pedro, Nueva Germania leg. U. Drechsel"; 2 exs., "PARAGUAY 26.8.1993 Dep. Guaira Calle Florida leg. Drechsel"; 1 ex., "PARAGUAY. 24.2.1992 Dep. Boqueron M. Estigarribia leg. U. Drechsel"; 1 ex., "PARAGUAY: 24.-30.1.1995 Dep. Canindey Maracana leg. Drechsel"; 1 ex. (without head and pronotum), "Paraguay Dep. Boqueron 150 km N. Filadelfia 8-v-'95", "leg. U. Drechsel".

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