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New species and new records of *Tropicus* PACHECO, 1964 from Paraguay (Coleoptera: Heteroceridae)

S. SKALICKÝ

Abstract

Four new species of *Tropicus* PACHECO, 1964 (Coleoptera: Heteroceridae) are described from Paraguay: *Tropicus hajeki* sp.n., *T. tadeasi* sp.n., *T. tinterae* sp.n. and *T. ulfdrechseli* sp.n. *Tropicus manni* SKALICKÝ, 2008 and *T. tuberculatus* PACHECO, 1964 are reported from Paraguay for the first time.

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

Introduction

SKALICKÝ (2002, 2004, 2008a) described eight new species of *Tropicus* PACHECO, 1964, and two new species of *Heterocerus* FABRICIUS, 1792 from Paraguay based on the examination of 7388 specimens collected in eleven Paraguayan departments (30 localities), and provided seven new records of Heteroceridae species from Paraguay. All these specimens were collected by Ulf Drechsel and are now stored in CSU and NMW.

The second part of Heteroceridae collected by Ulf Drechsel in Paraguay comprises 1987 specimens from five departments (eleven localities, seven studied for the first time) and includes 16 species. Four of these species are new to science (*Tropicus hajeki* sp.n., *T. tadeasi* sp.n., *T. tinterae* sp.n. and *T. ulfdrechseli* sp.n.), and two are recorded from Paraguay for the first time (*Tropicus manni* SKALICKÝ, 2008, *T. tuberculatus* PACHECO, 1964). A total of 25 species of Heteroceridae is now known from Paraguay (PACHECO 1964, SKALICKÝ 2002, 2004, 2008a).

Material and methods

All four new species described below were collected in a single location (department San Pedro, Puerto Rosario, S24°22'W57°06') at light traps with a 250W mixed light bulb. This location is surrounded by typical Chaco vegetation (e.g. *Copernicia* palms and thornbush), and temporary puddles, which are forming after heavy rainfalls on impermeable soils (see Fig. 34).

Locality data are cited between quotation marks, separate labels are indicated by double slashes, comments are added between square brackets. Specimens were studied using a Meiji techno RZ stereomicroscope with coaxial vertical illuminator. Photographs of habitus, spiculum gastrale and aedeagus were taken with a 1.9 and 3.3 magnification objective lens with a Canon EOS 70D camera attached to the microscope. Images were assembled using Helicon Focus 5.3 software, then traced and repainted in Corel draft 9 software. Genitalia of the holotypes were embedded in Canada balsam.

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

CSU	Coll. S. Skalický, Ústí nad Orlicí, Czechia
NMW	Naturhistorisches Museum Wien, Vienna, Austria

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Taxonomy

Tropicus hajeki sp.n.
(Figs. 1–8)

TYPE LOCALITY: Paraguay, department San Pedro, Puerto Rosario.

TYPE MATERIAL: **Holotype** ♂: "Paraguay Dep. San Pedro, Puerto Rosario S24°22'W57°06' 24.vii. – 02.viii. 2006 leg. U. Drechsel" // "Holotype *Tropicus hajeki* Skalický Det. Skalický 2015" [red label] (CSU). **Paratypes**: 2 ♀♀ (one of them designated as allotype), same data as holotype (CSU). All paratypes are provided with red paratype labels.

DESCRIPTION: Holotype ♂: Total length 2.75 mm (to apex of labrum); elytra 1.50 mm long, 0.90 mm wide across shoulders. Ground colour pale brown, elytra and pronotum with darker rusty-red diffuse pattern as in Fig. 1, head and eyes black. Ventral surface brown. Labrum oblong, 1.35 times as long as wide (length measured without spines at basal edge), shape as in Fig. 2; surface finely granulate, setae short, semierect, yellowish. Mandibles (Fig. 3) straight with two sharp teeth on lateral surface, dorsal subapical tooth relatively large, pointed; process of the dorsal ridge short. Prostheca with notch, with a series of 22 teeth on mesal margin. Clypeus without pair of anterior horns, anterior margin pointed; surface roughly granulate; setae dense, erect. Antennae 9-segmented, with 6-segmented club; antennomere I with a bulge approximately half as large as a diameter of an eye facet; antennomeres I and II without long setae; antennomeres I and II without long setae. Pronotum (partially destroyed) 1.55 times as wide as long, slightly narrower than base of elytra; pronotal base completely rimmed; lateral margins almost parallel; surface regularly granulate, granules approximately as large as 0.7 times eye facets; setation sparse, semierect, short, yellowish, becoming longer and erect laterally. Scutellum triangular, anterior angles rounded. Elytra oblong; without scutellar depressions; with shallow humeral depressions extending obliquely almost to quarter of elytra; without longitudinal furrows; punctures approximately as large as 1.5 times eye facets, without intermixed larger punctures; setae of elytra short, semierect, yellowish. Epipleura without ridges. Mesoventrite neither spinose nor tuberculate in front of each mesocoxa. Prosternal spine short, rounded. Metaventrite without post-mesocoxal ridge; abdomen without post-metacoxal ridge. Stridulatory arch marked with striae. Ventral surface finely and sparsely granulate, with sparse erect setae. Protibia and mesotibia with nine stout spines, metatibia with uncertain number of thin spines. Spiculum gastrale (Figs. 4–5) 0.55 mm long; Y-shaped, well sclerotized, arms curved, without anterior membrane. Aedeagus (Figs. 6–7) 0.60 mm long.

Paratype (allotype) ♀: Total length 2.30 mm (to apex of labrum); elytra 1.50 mm long, 0.80 mm wide across shoulders. Mandibles without dorsal process, only with small spine (Fig. 8), dorsal subapical tooth well developed. Externally similar to male.

DIFFERENTIAL DIAGNOSIS: Due to the shape of the aedeagus and the spiculum gastrale, the new species belongs to the *T. imperator* group sensu PACHECO (1964). The shape of the aedeagus of *T. hajeki* sp.n. differs from all other known species of the genus. The morphology of the spiculum gastrale and the colour pattern place it near *T. cordilleraensis* SKALICKÝ, 2008 from Paraguay (department Cordillera) and Ecuador (SKALICKÝ 2008a, 2009). *Tropicus hajeki* n.sp. differs from the latter in the ground colour (ochreous with darker diffuse spots in *T. cordilleraensis*), total length (2.25 mm in *T. cordilleraensis*), elytral pattern, absence of process of dorsal ridge on male mandibles in *T. cordilleraensis* (this ridge is reduced to a spine as in female of *T. hajeki*), and in the morphology of the male genitalia and spiculum gastrale (Figs. 1–8; see also SKALICKÝ 2009: figs. 1–5).

ETYMOLOGY: Dedicated to Mgr. Jiří Hájek, Department of Entomology, National Museum, Prague, Czechia.

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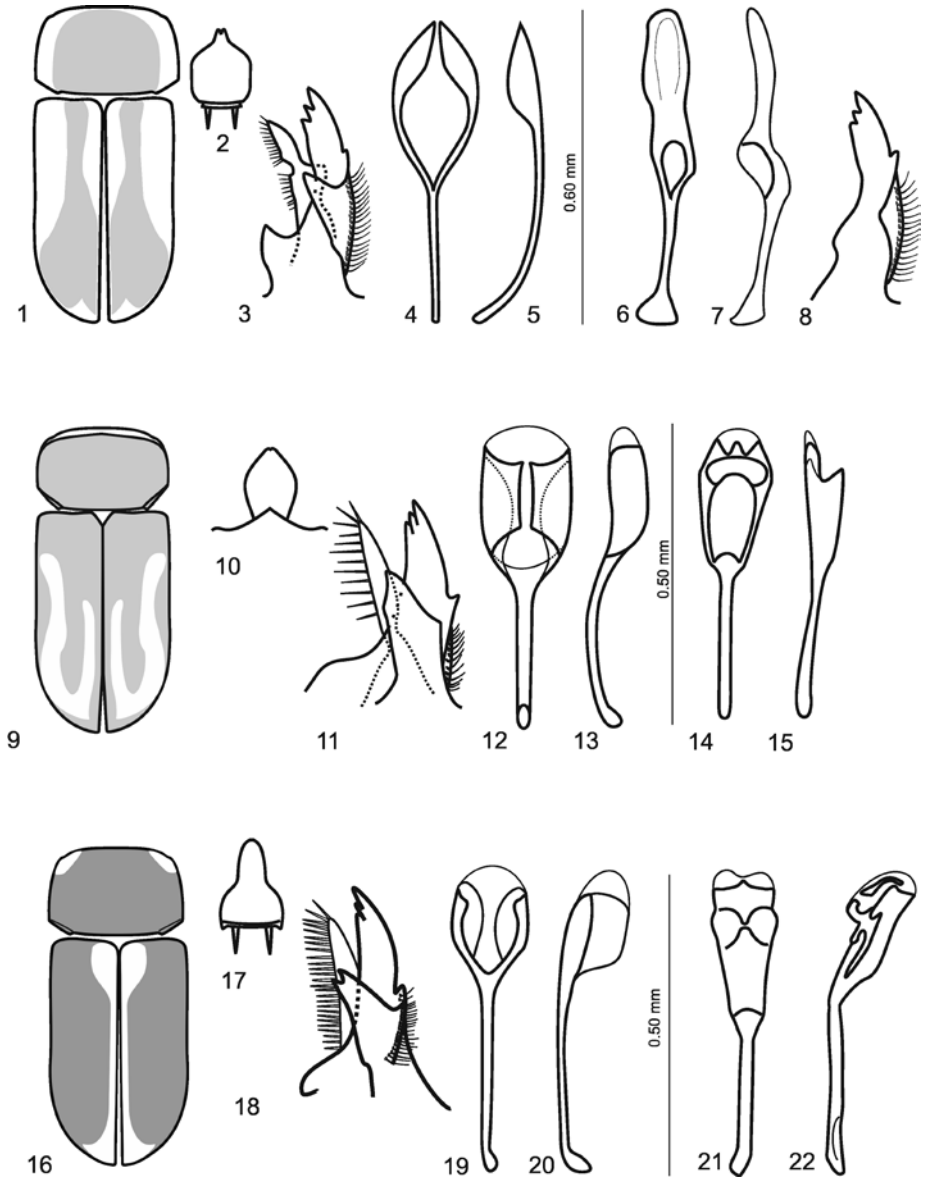

Figs. 1–8: *Tropicus hajeki*, 1–7: holotype, 8: allotype; 1) pronotum and elytra, dorsal view; 2) labrum, dorsal view; 3) left mandible and prostheca, dorsal view; 4) spiculum gastrale, dorsal view; 5) same, lateral view; 6) aedeagus, dorsal view, 7) lateral view, 8) left mandible, dorsal view. Figs. 1–3, 8 are not to scale.

Figs. 9–15: *Tropicus tadeasi*, holotype; 9) pronotum and elytra, dorsal view; 10) labrum, dorsal view; 11) left mandible and prostheca, dorsal view; 12) spiculum gastrale, dorsal view; 13) same, lateral view, 14) aedeagus, dorsal view; 15) same, ventral view. Figs. 9–11 are not to scale.

Figs. 16–22: *Tropicus tinterae*, holotype; 16) pronotum and elytra, dorsal view; 17) labrum, dorsal view; 18) left mandible and prostheca, dorsal view; 19) spiculum gastrale, dorsal view; 20) same, lateral view; 21) aedeagus, dorsal view; 22) same, lateral view. Figs. 16–18 are not to scale.

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***Tropicus tadeasi* sp.n.**
(Figs. 9–15)

TYPE LOCALITY: Paraguay, department San Pedro, Puerto Rosario.

TYPE MATERIAL: **Holotype** ♂: "Paraguay Dep. San Pedro, Puerto Rosario S24°22'W57°06' 24.vii. – 02.viii. 2006 leg. U. Drechsel" // "Holotype *Tropicus tadeasi* Skalický Det. Skalický 2015" [red label] (CSU).

DESCRIPTION: Holotype ♂: Total length 2.30 mm (to apex of labrum); elytra 1.30 mm long, 0.80 mm wide across shoulders. Ground colour brown to black, elytra with brown to red diffuse pattern as in Fig. 9. Antennomeres I and II pale brown, club dark brown; legs pale brown, ventral side dark brown. Body including legs shiny. Labrum oblong (Fig. 10), visible parts 1.20 times as wide as long; surface finely granulate, setae short, semierect. Mandibles (Fig. 11) short, dentate, dorsal subapical tooth well developed, short, pointed; process of the dorsal ridge long and narrow; comb of spines on lateral surface short and rounded. Prostheca (Fig. 11) without notch, with only twelve prosthecal teeth on mesal margin. Clypeus without pair of anterior horns, anterior margin pointed; surface roughly granulate; setae dense, erect. Antennae 9-segmented, with 6-segmented club; with dense short setae, antennomeres I and II without long setae. Pronotum 1.6 times as wide as long, slightly narrower than base of elytra; pronotal base rimmed; lateral margins almost parallel; posterolateral angles of pronotum large, extending approximately to basal third of pronotum (Fig. 9); surface regularly microgranulate; setation sparse, with semierect short yellowish setae, without longer setae. Scutellum pointed, triangular. Elytra oblong; without scutellar depressions; with shallow humeral depressions extending obliquely almost to quarter of elytra; without longitudinal furrows, each elytron only with two shallow furrows near suture; surface finely microgranulate, furrows with larger punctures approximately as large as an eye facet; epipleura without ridges. Setation of elytra sparse, semierect, yellowish. Mesoventrite tuberculate in front of each mesocoxa. Prosternal spine short, rounded. Metaventrite 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 uncertain number of thin spines (partially lost). Spiculum gastrale (Figs. 12–13) 0.50 mm long, Y-shaped, except posterior membrane well sclerotized, arms curved, without anterior membrane. Aedeagus (Figs. 14–15) 0.45 mm long.

Female: Unknown.

DIFFERENTIAL DIAGNOSIS: Due to the shapes of aedeagus and spiculum gastrale the new species belongs to the *T. pusillus* group sensu PACHECO (1964). Morphology of aedeagus and spiculum gastrale place it near *T. triangulus* SKALICKÝ, 2002 from Paraguay (department Alto Paraguay) and *T. sanisidroensis* SKALICKÝ, 2002 from Paraguay (departments Presidente Hayes and Asunción) (SKALICKÝ 2002, MASCAGNI & MONTE 2010). *Tropicus tadeasi* n.sp. differs from them in the shape of the elytral pattern; absence of long setae in antennomeres I and II; number of prosthecal teeth (18 teeth in *T. triangulus* and *T. sanisidroensis*); shape of pronotum (posterolateral angles of pronotum not modified in *T. triangulus* and *T. sanisidroensis*); mesoventrite not tuberculate in front of each mesocoxa in *T. triangulus* and *T. sanisidroensis*, and in the morphology of the male genitalia and the spiculum gastrale (Figs. 9–15; see also SKALICKÝ 2002: figs. 42–53).

ETYMOLOGY: Dedicated to my nephew Tadeáš Svojanovský.

***Tropicus tinterae* sp.n.**
(Figs. 16–22)

TYPE LOCALITY: Paraguay, department San Pedro, Puerto Rosario.

TYPE MATERIAL: **Holotype** ♂: "PARAGUAY Dep. San Pedro, Puerto Rosario, S24°22' W57°06' 24.vii.-02.viii 2006 leg. U. Drechsel" // "Holotype *Tropicus tinterae* Skalický Det. Skalický 2015" [red label] (CSU). **Paratypes**:

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3 ♂♂, 5 ♀♀ (one of them designated as allotype), same locality data as holotype (CSU, 1 ♀ NMW). All paratypes are provided with red paratype labels.

DESCRIPTION: Holotype ♂: Total length 2.60 mm (to apex of labrum); elytra 1.40 mm long, 0.90 mm wide across shoulders. Ground colour dark brown; pronotum and head brown to black. Elytra with light brown, well defined pattern, pronotum with brown diffuse pattern as in Fig. 16. Antennomeres I and II pale brown, club dark brown. Legs and ventral side pale brown. Body including legs shiny. Labrum (Fig. 17) elongate, rounded, visible parts 1.25 times as long as wide; surface finely granulate, setae yellowish, long, erect. Mandibles (Fig. 18) dentate, with acute apex, dorsal subapical tooth short, process of the dorsal ridge well developed, comb of spines on the lateral surface thin. Prostheca (Fig. 18) without notch, with series of prosthecal teeth on mesal margin. Clypeus without pair of anterior horns, surface roughly granulate; setation sparse, setae semierect, yellowish (shiny). Antennae 9-segmented, with 6-segmented club; antennomeres I and II with long setae. Pronotum 1.7 times as wide as long, wider than base of elytra; pronotal base rimmed; lateral margins almost parallel; surface regularly granulate; setae semierect, yellowish and quite long. Scutellum pointed, triangular. Elytra oblong; with humeral depressions extending obliquely to almost third of elytra; without longitudinal furrows; surface finely granulate with intermixed punctures approximately as large as 0.5 times eye facet; epipleura without ridges. Setation of elytra sparse, semierect, yellowish. Mesoventrite neither spinose nor tuberculate in front of each mesocoxa. Metaventrite without post-mesocoxal ridge; abdomen without post-metacoxal ridge. Stridulatory arch marked with striae. Ventral surface finely granulate. Protibia with nine, mesotibia with eight stout spines, metatibia with uncertain number of thin spines. Spiculum gastrale (Figs. 19–20) 0.65 mm long. Aedeagus (Figs. 21–22) 0.50 mm long.

Allotype ♀: Total length 2.45 mm (to apex of labrum); elytra 1.40 mm long, 0.80 mm wide across shoulders. Mandibles without dorsal process, dorsal subapical tooth well developed. Externally similar to male.

DIFFERENTIAL DIAGNOSIS: Due to the shape of the aedeagus and the spiculum gastrale, the new species belongs to the *T. pusillus* group sensu PACHECO (1964), where it is placed near *T. sanisidroensis* (SKALICKÝ 2002, MASCAGNI & MONTE 2010). It differs from the latter mainly in the shape of the labrum and the mandible, the elytral and pronotal patterns, the total length (2.25 mm in *T. sanisidroensis*) and in the morphology of the male genitalia (Figs. 16–22; see also SKALICKÝ 2002: figs. 42–47).

ETYMOLOGY: The new species is named after my lovely cat Tintěra.

***Tropicus ulfdrechseli* sp.n.**
(Figs. 23–29)

TYPE LOCALITY: Paraguay, department San Pedro, Puerto Rosario.

TYPE MATERIAL: **Holotype** ♂: "PARAGUAY Dep. San Pedro, Puerto Rosario, S24°22' W57°06' 24.vii.-02.viii 2006 leg. U. Drechsel" // "Holotype *Tropicus ulfdrechseli* Skalický Det. Skalický 2015" [red label] (CSU). **Paratypes**: 3 ♂♂, 6 ♀♀ (one of them designated as allotype), same locality data as holotype (CSU, 1 ♂ NMW). All paratypes are provided with red paratype labels.

DESCRIPTION: Holotype ♂: Total length 2.75 mm (to apex of labrum); elytra 1.60 mm long, 1.00 mm wide across shoulders. Ground colour light brown; head brown to black. Elytra with darker pattern (Fig. 23), antennomeres, legs and ventral surface pale brown. Body including legs shiny. Labrum (Fig. 24) elongate, rounded, visible parts 1.35 times as long as wide; surface finely granulate, setae yellowish, long, erect. Mandibles (Fig. 25) dentate, with acute apex, dorsal subapical tooth rounded, process of dorsal ridge well developed. Prostheca (Fig. 25) without notch, with series of prosthecal teeth on mesal margin. Clypeus without pair of anterior

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horns, surface roughly granulate; setation sparse, setae semierect, yellowish (shiny). Antennae 9-segmented, with 6-segmented club; antennomeres I and II with long setae. Pronotum 1.6 times as wide as long, slightly wider than base of elytra; pronotal base rimmed; lateral margins almost parallel; surface regularly granulate; setae semierect, yellowish and quite long. Scutellum pointed, triangular. Elytra oblong; humeral depressions extending obliquely to almost one third of elytra; without longitudinal furrows; surface finely granulate with intermixed punctures approximately as large as an eye facet; epipleura without ridges. Setation of elytra sparse, semierect, yellowish. Mesoventrite neither spinose nor tuberculate in front of each mesocoxa. Metaventrite without post-mesocoxal ridge; abdomen without post-metacoxal ridge. Stridulatory arch marked with striae. Ventral surface finely granulate. Protibia with nine, meso- and metatibia with uncertain number of thin spines. Spiculum gastrale (Figs. 26–27) 0.60 mm long; Y-shaped. Aedeagus (Figs. 28–29) 0.55 mm long.

Allotype ♀: Total length 2.85 mm (to apex of labrum); elytra 1.75 mm long, 1.00 mm wide across shoulders. Mandibles without dorsal process, dorsal subapical tooth well developed. Pronotum slightly narrower than base of elytra. Externally similar to male.

DIFFERENTIAL DIAGNOSIS: Due to the shape of the aedeagus and the spiculum gastrale, the new species belongs to the *T. pusillus* group sensu PACHECO (1964), where it is placed near *T. pusillus* (SAY, 1823), which is widely distributed (Costa Rica, Cuba, Honduras, Jamaica, Mexico, Panama, USA). The new species differs from the latter in the pronotal and elytral pattern, the shapes of labrum and mandible, and in the morphology of the spiculum gastrale and the male genitalia (Figs. 23–29; see also PACHECO 1964: figs. 368–375).

ETYMOLOGY: Dedicated to Dipl. Biol. Ulf Drechsel (Asunción, Paraguay), who collected the type series.

Additional records from Paraguay

If not otherwise stated, all specimens are deposited in CSU.

Heterocerus ciliaticollis STEINHEIL, 1869

MATERIAL EXAMINED: 2 exs.: "PARAGUAY Dep. Alto Paraguay, Laguna Jacare, S21°30' W57°58' 30.viii.-03.ix 2012 leg. U. Drechsel"; 16 exs.: "PARAGUAY Dep. Pte. Hayes, Estancia Salazar S23°04' W59°15' 3.ix. 2012 leg. U. Drechsel"; 28 exs.: "PARAGUAY Dep. Pte. Hayes, Lolita, Yaragui S23°06' W59°38' 23.-.27.xi. 2007 leg. U. Drechsel"; 3 exs.: "PARAGUAY Dep. Pte. Hayes, Puerto Galileo S25°04' W57°52' 16.-20.iii 2006 leg. U. Drechsel"; 9 exs.: "PARAGUAY Dep. Pte. Hayes, Puerto Galileo S25°04' W57°52' 29. ix.-02.x. 2007 leg. U. Drechsel"; 1 ex.: "PARAGUAY Dep. San Pedro, Puerto Rosario, S24°22' W57°06' 24.vii.-02.viii 2006 leg. U. Drechsel".

DISTRIBUTION: Argentina, Bolivia, Brazil, Paraguay (departments Alto Paraguay, Boquerón, Presidente Hayes, San Pedro) (PACHECO 1964, SKALICKÝ 2002, 2008a).

Heterocerus drechseli SKALICKÝ, 2002

MATERIAL EXAMINED: 13 exs.: "PARAGUAY Dep. Alto Paraguay, Laguna Jacare, S21°30' W57°58' 30.viii.-03.ix 2012 leg. U. Drechsel"; 6 exs.: "PARAGUAY Dep. Pte. Hayes, Estancia Salazar S23°04' W59°15' 3.ix. 2012 leg. U. Drechsel".

DISTRIBUTION: Paraguay (department Boquerón, and departments listed above) (SKALICKÝ 2002).

Heterocerus similis GROUVELLE, 1892

MATERIAL EXAMINED: 2 exs.: "PARAGUAY Dep. Alto Paraguay, Laguna Jacare, S21°30' W57°58' 30.viii.-03.ix 2012 leg. U. Drechsel"; 7 exs.: "PARAGUAY Dep. Pte. Hayes, Costa Esmeralda S23°40' W58°29' 18.-

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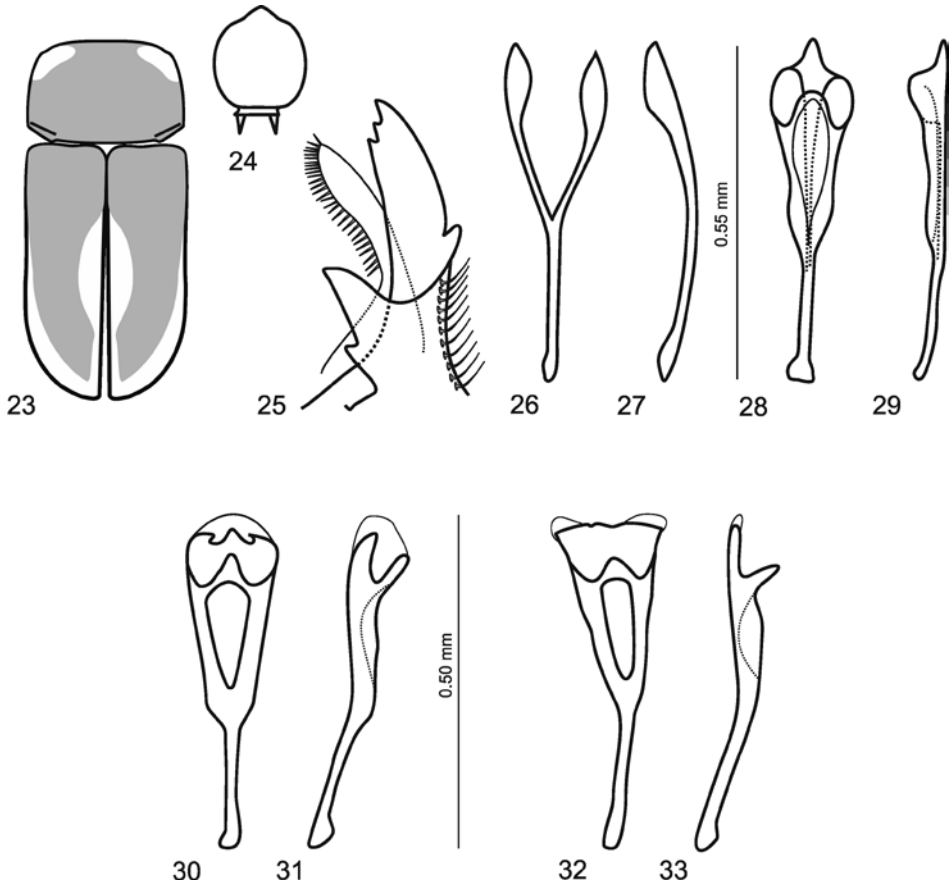
23.i. 2011 leg. U. Drechsel"; 141 exs.: "PARAGUAY Dep. Pte. Hayes, Estancia Salazar S23°04' W59°15' 3.ix. 2012 leg. U. Drechsel"; 1 ex.: "PARAGUAY Dep. Pte. Hayes Estancia Tendota S25°00' W58°06' 30.iv.-2.v. 2010 leg. U. Drechsel"; 3 exs.: "PARAGUAY Dep. Pte. Hayes, Lolita, Yaragui S23°06' W59°38' 23.-.27.xi. 2007 leg. U. Drechsel"; 1 ex.: "PARAGUAY Dep. Pte. Hayes, Puerto Galileo S25°04' W57°52' 16.-20.iii 2006 leg. U. Drechsel"; 1 ex.: "PARAGUAY Dep. Pte. Hayes, Puerto Galileo S25°04' W57°52' 29. ix.-02.x. 2007 leg. U. Drechsel".

DISTRIBUTION: Argentina, Bolivia, Brazil, Chile, Paraguay (departments Alto Paraguay, Alto Paraná, Boquerón, Presidente Hayes), Uruguay, Venezuela (MASCAGNI & MONTE 2010, PACHECO 1964, SKALICKÝ 2002, 2008a).



Figs. 23–29: *Tropicus ulfdrechseli*, holotype; 23) pronotum and elytra, dorsal view; 24) labrum, dorsal view; 25) left mandible and prostheca, dorsal view; 26) spiculum gastrale, dorsal view; 27) same, lateral view; 28) aedeagus, dorsal view; 29) same, lateral view. Figs. 23–25 are not to scale.

Figs. 30–33: Aedeagus of *Tropicus alcicornis*, 30–31) specimen from department San Pedro, 30) dorsal view, 31) lateral view; 32–33) specimen from Alto Paraguay, Laguna Jacare, 32) dorsal view, 33) lateral view.

Tropicus alcicornis MASCAGNI, 1989

MATERIAL EXAMINED: 9 exs.: "PARAGUAY Dep. Alto Paraguay, Laguna Jacare, S21°30' W57°58' 30.viii.-03.ix 2012 leg. U. Drechsel"; 5 exs.: "PARAGUAY Dep. Alto Parana, Estancia Dimas S25°33' W55°13' 4.-10.ix. 2011 leg. U. Drechsel"; 1 ex.: "PARAGUAY Dep. Caazapa, Tava Est. Olmedo S26°13' W55°36' 26.ix-

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05.x 2008 leg. U. Drechsel"; 23 exs.: "PARAGUAY Dep. Pte. Hayes, Costa Esmeralda S23°40' W58°29' 18.-23.i. 2011 leg. U. Drechsel"; 9 exs.: "PARAGUAY Dep. Pte. Hayes, Estancia Salazar S23°04' W59°15' 3.ix. 2012 leg. U. Drechsel"; 45 exs.: "PARAGUAY Dep. Pte. Hayes, Puerto Galileo S25°04' W57°52' 16.-20.iii 2006 leg. U. Drechsel"; 2 exs.: "PARAGUAY Dep. Pte. Hayes, Puerto Galileo S25°04' W57°52' 29. ix.-02.x. 2007 leg. U. Drechsel"; 51 exs.: "PARAGUAY Dep. San Pedro, Puerto Rosario, S24°22' W57°06' 24.vii.-02.viii 2006 leg. U. Drechsel" (6 exs. NMW).

DISTRIBUTION: Bolivia, Paraguay (departments Alto Paraguay, Alto Paraná, Asunción Capital District, Boquerón, Caaguazú, Caazapá, Canindeyú, Cordillera, Guairá, Presidente Hayes, San Pedro), Venezuela (MASCAGNI 1989, MASCAGNI & MONTE 2010, SKALICKÝ 2002, 2004, 2006, 2008a, b).

Note: One male labelled "Paraguay Dep. San Pedro, Puerto Rosario S24°22'W57°06' 24.vii. – 02.viii. 2006 leg. U. Drechsel" deviates slightly in the shape of the anterior margin of the genitalia (see Figs. 30–33). Externally, this specimen does not differ from other specimens of *T. alcicornis*.

Tropicus bartolozzii MASCAGNI, 1994

MATERIAL EXAMINED: 1 ex.: "PARAGUAY Dep. Alto Paraguay, Laguna Jacare, S21°30' W57°58' 30.viii.-03.ix 2012 leg. U. Drechsel"; 7 exs.: "PARAGUAY Dep. Pte. Hayes, Costa Esmeralda S23°40' W58°29' 18.-23.i. 2011 leg. U. Drechsel"; 1 ex.: "PARAGUAY Dep. Pte. Hayes, Estancia Salazar S23°04' W59°15' 3.ix. 2012 leg. U. Drechsel"; 8 exs.: "PARAGUAY Dep. Pte. Hayes, Puerto Galileo S25°04' W57°52' 16.-20.iii 2006 leg. U. Drechsel"; 1 ex.: "PARAGUAY Dep. San Pedro, Puerto Rosario, S24°22' W57°06' 24.vii.-02.viii 2006 leg. U. Drechsel".

DISTRIBUTION: Ecuador, Paraguay (departments Alto Paraguay, Boquerón, Presidente Hayes, San Pedro) (MASCAGNI 1994, SKALICKÝ 2002).

Tropicus boukali SKALICKÝ, 2002

MATERIAL EXAMINED: 533 exs.: "PARAGUAY Dep. Alto Paraguay, Laguna Jacare, S21°30' W57°58' 30.viii.-03.ix 2012 leg. U. Drechsel"; 5 exs.: "PARAGUAY Dep. Alto Parana, Estancia Dimas S25°33' W55°13' 4.-10.ix. 2011 leg. U. Drechsel"; 27 exs.: "PARAGUAY Dep. Pte. Hayes, Costa Esmeralda S23°40' W58°29' 18.-23.i. 2011 leg. U. Drechsel"; 97 exs.: "PARAGUAY Dep. Pte. Hayes, Estancia Salazar S23°04' W59°15' 3.ix. 2012 leg. U. Drechsel"; 421 exs.: "PARAGUAY Dep. Pte. Hayes, Puerto Galileo S25°04' W57°52' 16.-20.iii 2006 leg. U. Drechsel"; 23 exs.: "PARAGUAY Dep. Pte. Hayes, Puerto Galileo S25°04' W57°52' 29. ix.-02.x. 2007 leg. U. Drechsel"; 371 exs.: "PARAGUAY Dep. San Pedro, Puerto Rosario, S24°22' W57°06' 24.vii.-02.viii 2006 leg. U. Drechsel" (10 exs. NMW); 2 exs.: "PARAGUAY Dep. San Pedro, Puerto Rosario, S24°22' W57°06' 16.-21.x. 2006 leg. U. Drechsel".

DISTRIBUTION: Bolivia, Paraguay (departments Alto Paraguay, Boquerón, Guairá, Presidente Hayes, San Pedro) (SKALICKÝ 2002, 2004, 2008a, b).

Tropicus hanae SKALICKÝ, 2002

MATERIAL EXAMINED: 1 ex.: "PARAGUAY Dep. Alto Paraguay, Laguna Jacare, S21°30' W57°58' 30.viii.-03.ix 2012 leg. U. Drechsel".

DISTRIBUTION: Paraguay (departments Alto Paraguay, Boquerón).

Tropicus manni SKALICKÝ, 2008

MATERIAL EXAMINED: 4 exs.: "PARAGUAY Dep. Pte. Hayes, Costa Esmeralda S23°40' W58°29' 18.-23.i. 2011 leg. U. Drechsel".

DISTRIBUTION: Bolivia (SKALICKÝ 2008b), Paraguay (first record).

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Fig. 34: Type locality of *Tropicus hajeki*, *T. tadeasi*, *T. tinterae* and *T. ulfdrechseli*; Paraguay, department San Pedro, Puerto Rosario. Photograph by Ulf Drechsel.

Tropicus migueli SKALICKÝ, 2004

MATERIAL EXAMINED: 7 exs.: "PARAGUAY Dep. Pte. Hayes, Costa Esmeralda S23°40' W58°29' 18.-23.i. 2011 leg. U. Drechsel"; 1 ex.: "PARAGUAY Dep. Pte. Hayes, Estancia Salazar S23°04' W59°15' 3.ix. 2012 leg. U. Drechsel".

DISTRIBUTION: Paraguay (departments Boquerón, Presidente Hayes).

Tropicus paraguayensis SKALICKÝ, 2002

MATERIAL EXAMINED: 1 ex.: "PARAGUAY Dep. San Pedro, Puerto Rosario, S24°22' W57°06' 24.vii.-02.viii 2006 leg. U. Drechsel".

DISTRIBUTION: Paraguay (departments Alto Paraguay, San Pedro).

Tropicus sanisidroensis SKALICKÝ, 2002

MATERIAL EXAMINED: 1 ex.: "PARAGUAY Dep. Alto Paraguay, Laguna Jacare, S21°30' W57°58' 30.viii.-03.ix 2012 leg. U. Drechsel".

DISTRIBUTION: Paraguay (departments Alto Paraguay, Presidente Hayes, Asunción).

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Tropicus tuberculatus PACHECO, 1964

MATERIAL EXAMINED: 1 male: "PARAGUAY Dep. Pte. Hayes, Puerto Galileo S25°04' W57°52' 29. ix.-02.x. 2007 leg. U. Drechsel".

DISTRIBUTION: Brazil (PACHECO 1964), Paraguay (first record).

Tropicus sp. females

MATERIAL EXAMINED: 54 exs.: "PARAGUAY Dep. Pte. Hayes, Costa Esmeralda S23°40' W58°29' 18.-23.i. 2011 leg. U. Drechsel"; 6 exs.: "PARAGUAY Dep. Pte. Hayes, Estancia Salazar S23°04' W59°15' 3.ix. 2012 leg. U. Drechsel"; 1 ex.: "PARAGUAY Dep. Pte. Hayes Estancia Tendota S25°00' W58°06' 30.iv.-2.v. 2010 leg. U. Drechsel"; 1 ex.: "PARAGUAY Dep. Pte. Hayes, Lolita, Yaragui S23°06' W59°38' 23.-.27.xi. 2007 leg. U. Drechsel"; 11 exs.: "PARAGUAY Dep. Pte. Hayes, Puerto Galileo S25°04' W57°52' 29. ix.-02.x. 2007 leg. U. Drechsel"; 2 exs.: "PARAGUAY Dep. San Pedro, Puerto Rosario, S24°22' W57°06' 24.vii.-02.viii 2006 leg. U. Drechsel".

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