

Short scientific noteSubmitted: September 18th, 2015 - Accepted: May 6th, 2016 - Published: June 30th, 2016**A new species of *Trechisibus* from Peruvian Andes (Coleoptera: Carabidae, Trechinae)**Pedro DELGADO ^{1,*}, Ildefonso RUIZ-TAPIADOR ²¹ Instituto Nacional de Innovación Agraria, Dirección de Desarrollo Tecnológico Agrario, Estación Experimental Agraria Illpa - Rinconada de Salcedo s/n Puno, Perú - delgadopedro4@hotmail.com² Universidad Politécnica de Madrid, Escuela Universitaria de Ingeniería Técnica Agrícola, Departamento de Ciencia y Tecnología Aplicada - Avda. Puerta de Hierro 4, E-28040 Madrid, España - ildefonso.ruiztapiador@upm.es

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AbstractIn this work the new species *Trechisibus* (s. str.) *delestali* sp. n., is described from the southern Peruvian Andes. The morphological differences with the geographically closest species of the subgenus are also presented and discussed.**Key words:** *Trechisibus*, new species, Neotropical, Peru, Puno, Ground beetles.**Introduction**

Trechisibus Motschulsky, 1863 is a genus with more than 113 species known to date (Lorenz 2005), widespread through a vast part of South America. Twenty-five species have been recorded in the Andean region of the south of Peru and adjacent regions of Bolivia (Casale 1978; Etonti 2003; Etonti & Mateu 1992, 1996; Guzzetti 2012; Jeannel 1927, 1930, 1958; Mateu & Etonti 2002; Mateu & Negre 1972; Schweiger 1958, 1959; Trezzi 2005, 2007, 2011; Uéno 1971; Delgado & Ruiz-Tapiador 2014). The current known data indicates that most species probably exhibit a very restricted distribution.

The internal systematics of the genus is still far from being definitely solved. Despite being approached by several authors (Jeannel 1958, 1962; Bonniard de Saludo 1970; Uéno 1971, 1972; Mateu & Negre 1972; Etonti & Mateu 1992, 1996, 1998; Deuve 2002; Lorenz 2005; Avon 2007; Allegro et al. 2008), there is no consensus on the validity of the traditionally used subgenera and some author would favor a complete restructuration of the genus based in species groups (Mateu & Negre 1972; Allegro et al. 2008; Trezzi 2011).

Following the traditional division of subgenera, the studied area includes: eight species of subgenus *Trechisibus* s. str., fourteen species of subgenus *Trechisibiodes* Uéno, 1972; two species of *Trechisibiellus* Jeannel, 1962; and one species of *Trechisibiorites* Jeannel, 1962.

In this work, a new species of the subgenus *Trechisibus* (s. str.) from the Andean region of the south of Peru is described, and the main morphological differences that

distinguish the new species from the rest of the geographically closest species of the subgenus are discussed.

Materials and Methods

The studied material was collected under different sized stones, in the surroundings of Warawarani lake, near to the top of Apu Khapia mountain, in the Department of Puno (Peru).

Thirteen individuals (six males and seven females) were characterized and measured. The obtained measurements were: TBL = total body length, from clypeus to elytral apex; WH = width of head, to the level of the first orbital seta; HL = head length, WP = maximum width of pronotum; LP = length of pronotum, from basis to apex; WE = width of elytra, in the middle region; LE = length of elytra, from apex of scutellum to apex of elytra. The following ratios were also calculated: WE/TBL, WH/HL, WH/WP, WP/LP and WE/LE.

The illustrations (habitus and male and female genitalia) were done with a drawing system attached to an OLYMPUS SZX 12 stereomicroscope and a Kyowa UNILUX-12 light microscope.

***Trechisibus* (s. str.) *delestali* sp. n. (Figs 1–3)**

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Holotype. Male, labeled "Peru: Puno, mountain Apu Khapia, 69°08'57''W 16°20'41''S, 4462 m, 19-IX-2012,

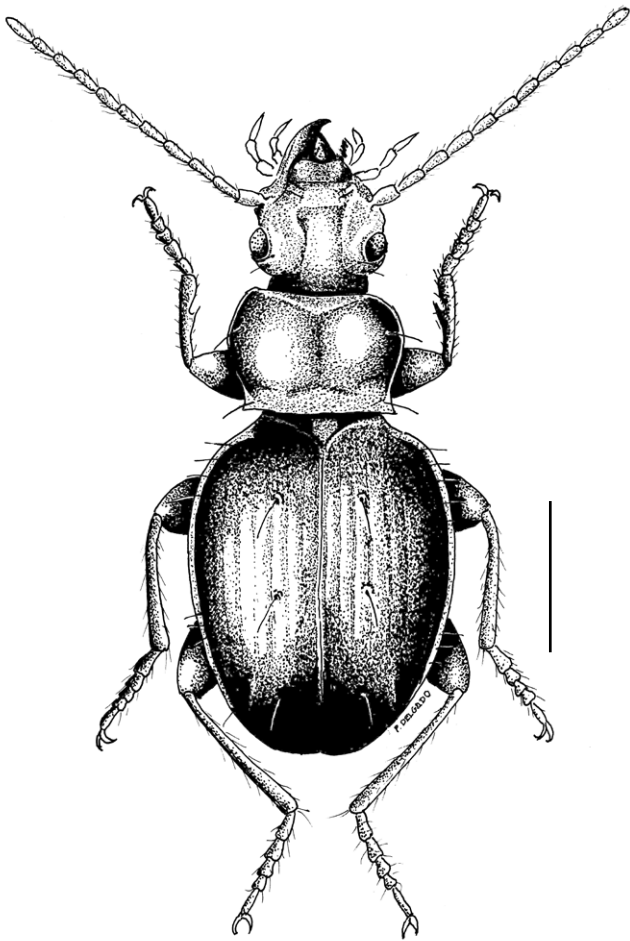


Fig. 1 – *Trechisibus* (s. str.) *delestali* n. sp.: male habitus (Holotype) (scale bar: 1 mm.)

P. Delgado leg.”, deposited in the Museo Nacional de Historia Natural de Lima, Peru (MNHNL).

Type locality: Peru. Puno Department, Chucuito Province, Pomata District, mountain Apu Khapia, 69°08'57''W 16°20'41''S, 4462 m.

Paratypes (12). Three males, same date as Holotype, deposited in coll. P. Delgado (1), coll. I. Ruiz-Tapiador (1) and Museum National d’Histoire Naturelle, Paris, France (MNHP) (1); seven females, same data as Holotype, deposited in coll. P. Delgado (3), coll. I. Ruiz-Tapiador (2) and coll. MNHP (2); one male, same locality as Holotype, 06 Sep 2012, P. Delgado leg., deposited in coll. P. del Estal (1); one male, same locality as Holotype, 20 Dec 2013, P. Delgado leg., deposited in coll. MNHNL (1).

Description. Mid-sized (TBL= 3.9-4.2 mm) apterous species, with small differences in size between males and females (TBL males = 4.0-4.2 mm; TBL females = 3.9-3.95 mm). General shape is oval (WE/TBL = 0.45) and strongly convex. Coloration is mainly brownish, with margins,

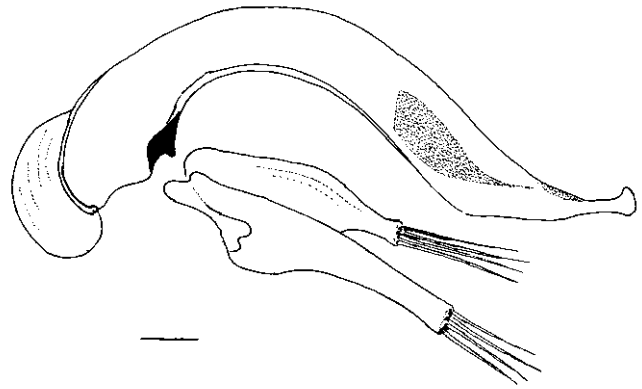


Fig. 2 – *Trechisibus* (s. str.) *delestali* n. sp.: male genitalia in lateral view (scale bar: 0.1 mm.)

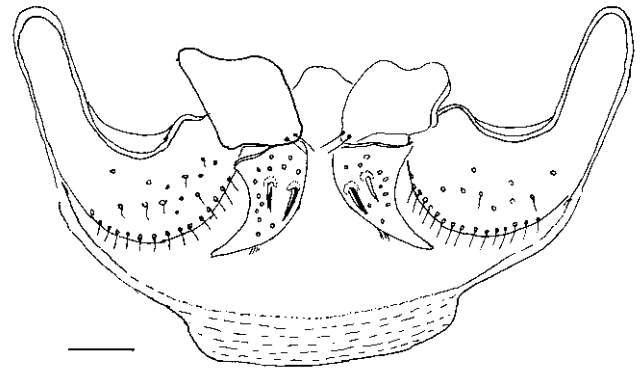


Fig. 3 – *Trechisibus* (s. str.) *delestali* n. sp.: female genitalia in dorsal view (scale bar: 0.1 mm.)

sutural intervals and testaceous appendices, reddish or yellowish. The microsculpture of the integument is well marked, generally isodiametric, the cells slightly more transversal in the disc of pronotum.

Head: as long as wide (WH/LH = 1.01), narrower than pronotum (WH/WP = 0.82); mandibles, labial palps and maxillae adjust to the typical pattern of the genus. The frontal sulci extend to the clypeus, the eyes are prominent and the temples are approximately as long as the eyes. They have two supraocular setae, the anterior one is located about half the length of the eye and the second one is located slightly under the base of the eye. They have also long antennae, with strongly pubescent apical antennomeres and a less dense pubescence in the basal antennomeres.

Pronotum: cordiform, slightly transverse (WP/LP = 1.32) and markedly convex. The base is almost straight, with right posterior angles, pointy and slightly protruded. Lateral groove well developed and broadened in the basal region. Basal foveae well marked and extended towards the center, where they merge in a single sunken area, with a strong microsculpture.

Elytra: slightly elongated (WE/LE = 0.78) and strongly

convex. The shoulders are rounded but still clearly visible, and the lateral groove is wide. Very shallow striae, the inner ones are more marked, the outer ones are almost completely faded.

Apical recurrent striole is short, almost straight, resembling a carina in the final region. Basal seta is well developed and visible. Anterior discal seta over the third stria, approximately located in the basal fifth. The second discal seta is located over the third stria, approximately in the central region of the elytron. The preapical seta is also located over the third stria.

Legs: typical for the genus, and with the first two tarsomeres of protarsi dilated in males.

Male genitalia (Fig. 2): median lobe elongated and sinuous, with the basal bulb thickened and slightly curved ventrally, showing a large sagittal aileron in the basis.

Apex, in lateral view, narrowed and curved dorsally, more or less “hook-shaped”. Parameres of similar length, with two to five setae in the distal end. Internal sac armature composed by a triangle-shaped piece partially rolled up and totally covered in scales.

Female genitalia: (Fig. 3): The external genitalia is formed by gonopodes IX (gonocoxites and gonosubcoxites) and latero tergites IX. The gonocoxite is unguiform, slightly longer than wide, it has two large setae. The ones closer to the external margin are larger. Besides, a group of smaller setae irregularly distributed all over the surface of this piece can be observed. The gonosubcoxite, slightly transverse, presents two setae near the lower internal angle. The laterotergite IX has two groups of about twenty setae in its surface, one of them in a marginal position and the other one in the interior of the piece, the size of the setae can be variable.

Diagnosis

T. delestali n. sp., regarding the elytral chaetotaxy conforms to subgenus *Trechisibus* str. (according to the traditional classification), that, as stated before, groups eight species within the studied area.

The aedeagus in the majority of these species shows the apex strongly bent ventrally (*T. ayrtoni* Trezzi, 2005; *T. dimaioi* Casale, 1978; *T. forsteri* Schweiger, 1958; *T. macrocephalus* Jeannel, 1930; *T. maucauensis* Mateu & Etonti, 2002), which clearly differentiate them from *T. delestali* sp. n.

In the case of *T. bolivarianus* Trezzi, 2011 and *T. chucurensis* Trezzi, 2007, the apex is slightly elevated, but besides, in *T. delestali* n. sp. the apex ends in a dorsally curved tip, more or less “hook-shaped”, which is not seen in any other known species.

Another character that clearly differentiates *T. delestali* sp. n. from the related species with described aedeagus is the large sagittal aileron that occupies the end of the basal bulb. The relative volume of the aileron is significantly larger than in the case of all the other considered species.

The comparison with *T. ayrtoni* Guzzetti, 2012 can't be supported by the morphology of the aedeagus, because this species was described from a single female, while the male genitalia remains unknown. However, it is well differentiated from *T. delestali* sp. n. by several other characteristics. *T. ayrtoni* is a micropterous species much larger than *T. delestali* sp. n., which is apterous and fairly smaller (7.0 mm versus 4.1 mm respectively). As well, the shape of elytra in *T. delestali* sp. n. is more oval than in *T. ayrtoni*, which have more elongated elytra.

Regarding the female genitalia, the original description (Guzzetti 2012), offers little information due to its shortness and the low quality of the picture that represents the microscopy slide. However, in the case of *T. delestali* sp. n., two well developed setae can be clearly observed in the gonocoxite, while in *T. ayrtoni* they seem to be absent, according to Guzzetti (2012).

Etymology. We dedicate this new species to Dr. Pedro del Estal Padillo, professor of the Escuela Técnica de Ingenieros Agrónomos, Universidad Politécnica de Madrid-España.

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