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TRABAJOS ORIGINALES

First record of the beetle family Throscidae (Insecta: Coleoptera), a new species of *Aulonothroscus* Horn, and new species records to the fauna of Peru

Primer registro de la familia de escarabajos Throscidae (Insecta: Coleoptera), una nueva especie de *Aulonothroscus* Horn y tres nuevos registros de especies para la fauna de Perú

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Abstract

The beetle family Throscidae is documented from Peru for the first time, based on specimens collected in the regions of Cajamarca, Junín, Loreto and Madre de Dios. *Aulonothroscus tambopata* **new species** is described from Madre de Dios. Also, three additional species of *Aulonothroscus* are reported from Peru for the first time – *A. alvarengai* Cobos **new country record**, *A. freudi* Cobos **new country record**, and *A. oculatissimus* Cobos **new country record**. A key separating these four species is given. This report is part of the "Beetles of Peru" project.

Keywords: taxonomy; Neotropical; wood-fungus feeding beetle; South American biodiversity; key to species.

Resumen

Se documenta por primera vez la familia de escarabajos Throscidae para el Perú, a partir de ejemplares recolectados en las regiones de Cajamarca, Junín, Loreto y Madre de Dios. *Aulonothroscus tambopata* sp. nov. se describe a partir de ejemplares recolectados en Madre de Dios. Igualmente, se reporta por primera vez para el Perú tres especies adicionales del género *Aulonothroscus* – *A. alvarengai* Cobos **registro nuevo del país**, *A. freudi* Cobos **registro nuevo del país**, *A. oculatissimus* Cobos **registro nuevo del país** y se presenta una clave que separa las cuatro especies. Este artículo forma parte del proyecto "Escarabajos del Perú."

Palabras clave: taxonomía; Neotropical; escarabajos micófagos de madera; biodiversidad de Sudamérica; clave de especies.

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Introduction

The beetle family Throscidae (Coleoptera) is poorly studied throughout South America, both taxonomically and ecologically. These beetles are best called throscid beetles as the old name "false metallic wood-boring beetles" was used based on only a superficial similarity to certain Buprestidae. Until now, no species in the modern taxonomic concept of the family (e.g., Johnson 2002, Muona et al. 2010) is reported from Peru. Prior published records of the family from the country are for species of *Drapetes* Megerle or *Lissomus* Dalman, but both of these genera are now consistently classified in Elateridae since Lawrence and Newton (1995). The last comprehensive catalog for throscids was by Schenkling (1928), which was followed by the checklist for Neotropical beetles in Blackwelder (1944). Cobos (1963, 1982) subsequently described *Aulonothroscus bordoni* Cobos, *A. ecuatoriensis* Cobos, *A. excavatus* Cobos, *A. paraguayensis* Cobos, *Cryptophthalma alvarengai* Cobos, *Trixagus amazonicus* Cobos, *T. chaquensis* Cobos, *T. griseopubens* Cobos, and *T. vianai* Cobos from South America. Presently, this family has 20 species from the continent arranged in *Aulonothroscus* Horn (15 spp.) including the new one presented here, *Cryptophthalma* Cobos (one sp.), and *Trixagus* Kugelann (five spp.).

Throscidae are diagnosed by a distinctive combination of characters (Johnson 2002, Muona et al. 2013). Adult specimens studied from Peru are similar to those elsewhere, being small (ca. 1.5–3.5 mm long), with an elongate subtriangular or obovate to oblong-oval silhouette in dorsal aspect, and a black (nigrous) to red-brown (castaneus) integument. They are shallowly convex dorsally, to moderately convex ventrally. The body is densely pubescent with dull yellow or grey setae, sometimes giving the appearance of a glossy pile. The head is deeply inserted in the prothorax and the 11-segmented antenna has a 2–5 segmented serrate club. Sexual dimorphism is not distinct, with females only slightly larger and with slightly more convex abdominal ventrites. Larvae are whitish, with a desclerotized or lightly sclerotized grub-like body with long pale setae, and bearing a prognathous head with mandibulate mouthparts.

Keys separating the genera *Aulonothroscus* and *Trixagus* in the Americas were given by Yensen (1975) and Johnson (2002). Yensen (1980) gave a key to the *Trixagus* of the Americas, but there was no key to the *Aulonothroscus* of tropical America. *Cryptophthalma* Cobos (1982) is monobasic. Muona et al. (2010) reviewed the morphology and relationships of the family.

Little is known about the biology of throscids beyond collecting situations (Johnson 2002). They are forest or forest ecotone adapted and associated with decaying tree portions. Ferro et al. (2012) reported proportionately high numbers of *Aulonothroscus distans* Blanchard emergent from both coarse and fine woody debris in mountain forests of eastern Tennessee. Typically, adults are usually swept or beaten from vegetation, taken at lights, in flight, or intercepted in Malaise and other traps. They generally fly in late afternoon and early evening. Adults are thought to feed on pollen and fungi. Larvae develop in highly organic soil, and blocky red-colored rotted wood in logs and large tree roots in contact with soil, where they feed on fungal mycelia. Pupae are found in small oval cells with larvae.

This is the first report for Peru of the family Throscidae, with one new species and three species records from the regions of Cajamarca, Junín, Loreto and Madre de Dios. This report is another installment in the 'Beetles of Peru' project (see Chaboo 2015). Given the known diversity of throscid beetles from elsewhere in South America, including neighboring Bolivia, Brazil, and Ecuador, there is a greater potential diversity in Peru than what is reported here. All specimens studied are presently in the Snow Entomology Museum Collection, USA (SEMC) and were collected under Peru research permits No. 506-2011-AG-DGFFS-DGEFFS and No. 0159-2010-AG-DGFFS-DGEFFS to C.S. Chaboo, and the Florida State Collection of Arthropods (FSCA), Florida Department of Agriculture and Consumer Services, Gainesville. The holotype of a new species will be repatriated to the Museo de Historia Natural, Universidad Nacional Mayor de San Marcos, Peru (MUSM) by the SEMC under the permit agreement.

Basic locality data as presented is taken verbatim from the specimen labels, except dates are converted to the dd.mm.yyyy format with the month in lower case Roman font, and supplemental information is given in squared brackets. Data from separate labels are separated by slashes (/) bracketed by spaces.

Taxonomy

Family Throscidae Laporte de Castelnau, 1840

Genus *Aulonothroscus* Horn (1890)

Aulonothroscus alvarengai Cobos

Aulonothroscus alvarengai Cobos 1963: 159

Specimens examined. PERU: [**Madre de Dios]:** Tambopata Province: 15 km NE Puerto Maldonado- Reserva Cuzco Amazónico, 12°33'S, 69°03'W, 200 m, Plot #Z2E16 / 28.vi.1989, J.S. Ashe, R.A. Leschen #312, ex flight intercept trap [1, SEMC]; CICRA Field Station, trail 6, research plot, 12.55207°S 70.10962°W, 295m, 9-11.vi.2011, Chaboo team, Malaise trap, PER-11-MAT-020 [1, SEMC]; CICRA Field Station, garden, 12.56940°S 70.10100°W, 260 m, 16-23.ix.2010, MJ Endara; Malaise trap, PER10-09-MAT-016 [2, SEMC]; Puerto Maldonado, 16.xi.2013, 267 m, 12.56104°S, 71.10645°W, T. Pérez, Malaise trap (1, FSCA); ibid, 17.xii.2013 (1, FSCA); ibid, 20.ii.2014 (1, FSCA). [**Loreto]:** 1.5 km N. Teniente Lopez, 2°35.66'S, 76°06.92'W, 20.vii.1993, 210-240 m, Richard Leschen, #135, ex flight intercept trap [1, SEMC]; nr jct Rio Maranon & Ocayali, 73.5°W, 4.8°S, 6-20.viii.1994, P. Skelley, flight trap (1, FSCA); ibid, day catch (1, FSCA).

Taxonomic notes. This species is distinctive with the adults having the frons with a marked declivity curving around the compound eye margin; an evenly convex frons lacking longitudinal carinae; the frontal margin polished and arcuate, without "nasale" extension anterad of antennal insertions; and the prosternal process with two strong carinae and sulcus each side.

Distribution. *Aulonothroscus alvarengai* was described from "S. Isabel do Morro, Bananal, Goiás, Brasil" (Cobos 1963). The specimens reported here (Fig. 3) indicate that this species may be widely distributed in the Amazon Basin.

Aulonothroscus freudi Cobos

Aulonothroscus freudi Cobos 1963: 153

Specimens examined. PERU: [**Madre de Dios**]: Tambopata Province: 15 km NE Puerto Maldonado, Reserva Cuzco Amazónico, 12°33'S, 69°03'W, 200 m, Plot #Z2E16 / 28.vi.1989, J.S. Ashe, R.A. Leschen #312, ex flight intercept trap [1, SEMC]; CICRA Field Station, garden, 12.56940°S 70.10100°W, 260 m, 22-29.vii.2010, MJ Endara, Malaise trap, PER10-07-MAT-008 [1, SEMC]; Rio Tambopata Res., 12°50'S, 69°2'W, 28-31.x.1982, R.C. Wilkerson, insect flight trap (1, FSCA). **Cajamarca:** Celendín area [6°08'S, 78°52'W], 25.v-11.vi.1936, F. Waytkowski [1, SEMC].

Taxonomic notes. With a body length of 3.1–3.3 mm, this is one of the larger species of the genus in Amazonia. This species and the new species given below are the only known species of the region with two arcuate carinae on the frons.

Distribution. Known distribution in Peru is on Figure 3. This species was originally described from the Yungas at "Coroico, 1900 m, Bolivia" (Cobos 1963), which places the likely locality on Cerro Uchimachi and possibly above the village of Carmen Pampa. The Celendín location may be questionable as it is considerably higher [c. 2600 m] in elevation than other known Andean-Amazonian throscid beetle sites, but there is nearby cloud forest.

Aulonothroscus oculatissimus Cobos

Aulonothroscus oculatissimus Cobos 1963: 151

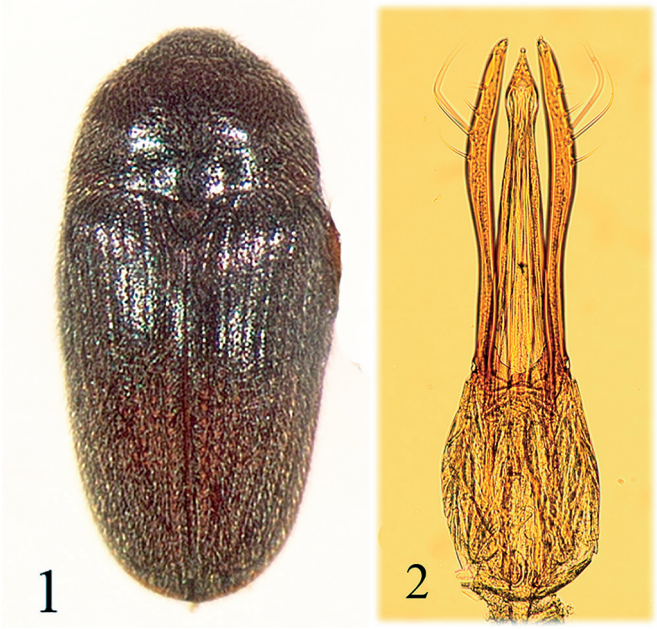
Specimens examined. PERU: **Junín**, Pampa Hermosa Lodge [10°59'S, 75°25'W] nr. San Ramon, 1220 m, 9-12.xii.2008, J. Heppner (1, FSCA). **Loreto**, nr jct Rio Maranon & Ocayali, 73.5°W, 4.8°S, 6-20.viii.1994, P. Skelley, flight trap (1, FSCA). **Madre de Dios:** CICRA Field Station, trail 6, research plot, 12.55207°S 70.10962°W, 295m, 11-13.VI.2011, Chaboo team, Malaise trap, PER-11-MAT-021 [2, SEMC]; 7-9.vi.2011, PER-11-MAT-019 [1, SEMC]; PER-11-MAT-024 [1, SEMC]; CICRA Field Station, garden, 12.56940°S 70.10100°W, 260 m, 25.x-01.xi.2010, MJ Endara, Malaise trap, PER10-10-MAT-020 [1, SEMC]; 9-16.IX.2010, MJ Endara, Malaise trap, PER10-09-MAT-015 [1, SEMC]; 16-23.x.2010, PER10-10-MAT-016 [1, SEMC]; CICRA Field Station, trail 6, research plot, 12.55207°S 70.10962°W, 295m; ibid; Puerto Maldonado, 31.xii.2013, 267 m, 12.56104°S, 71.10645°W, T. Pérez, Malaise trap (1, FSCA).

Taxonomic notes. This species is distinctive with the adults having the abdominal ventrites strongly tectiform, with the peak of the ridge carinate on ventrite 5, with ventrite 5 subacute and upturned at the apex as an extension of the carina. The dorsal silhouette is subtriangular.

Distribution. *Aulonothroscus oculatissimus* was described from "Belem, Pará, Brasil" (Cobos 1963) and remained the only published location until now. The specimens reported here from Peru (Fig. 3) indicate that this species may be widely distributed in the Amazon Basin.

Aulonothroscus tambopata Johnson, new species

Description. Male. Body (Fig. 1) 1.5–1.6 mm long, 0.8–0.9 mm wide; elongate-ovate, broadest across basal third of elytra, shallowly convex, shining, dorsum piceus, venter castaneus, and antennae, palpomeres and tarsi brunneopiceus; pubescence pale cinereus.



Figures 1–2. *Aulonothroscus tambopata* Johnson, new species. (1) Adult male habitus, dorsal aspect. (2) Aedeagus, dorsal aspect.

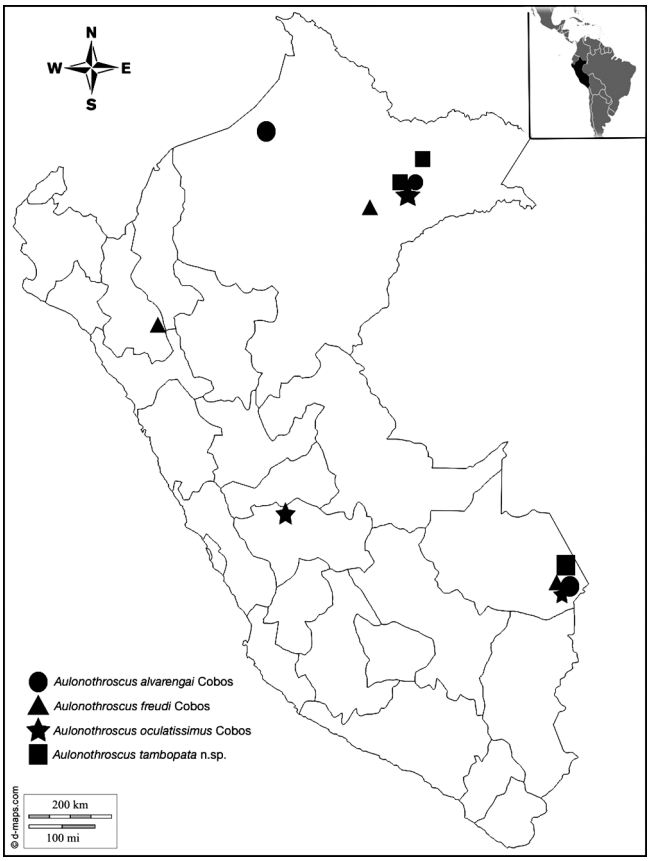


Figure 3. Map of Peru showing reported localities of four species of Aulonothroscus.

Head with larger punctures separated 0.2–0.5 times own diameter, interpunctural spaces minutely punctured; frons evenly convex, with subquadrate anterior extention around antennal insertions; supra-antennal ocular canthus short, lobate. Antenna capitate; antennomere 2 subequal in length to antennomeres 3 and 4 together, and 1.5 times as wide; antennomeres 3–8 short, subcylindrical; antennomeres 9–11 abruptly forming a serratiform club, densely setose.

Pronotum sparsely, moderately punctured, interpunctural spaces 0.8–1.0 times puncture diameter, minutely punctured; antescutellar region with fine median ridge, subfoveate paramedial impressions; hind angle dorsal carina fine, anteriorly divergent from lateral margin, reaching about 60% of distance to anterior margin. Elytral length 3.2 times mesal length of pronotum. Stria 1 shallowly, evanescently grooved; striae 2–4 of shallow grooves with fine punctures; striae 5–8 shallowly grooved with moderate punctures; striae 8–9 deeply impressed. Intervals flat minutely, irregularly punctured. Metaventrite finely, sparsely punctured on disc, larger laterally; densely pubescent; transverse tarsal sulcus shallowly arching basally, strongly arcing laterally to lateroposterior angle. Middle and hind tibiae with fringe of long setae along dorsal angle. Tarsomere 3 slightly dilated apically; tarsomere 4 with membranous ventral lobe extending about half-length of tarsomere 5.

Abdominal ventrites finely punctured on disc, moderately-coarsely punctured laterally. Aedeagus (Fig. 2) with basal piece 0.36 times total length, basal cleft 0.56 time length of basal piece; median lobe 0.6 times total length, narrow, attenuate, apex acutely sagittate, subequal in length to lateral lobe; each lateral lobe 0.6 times total length, sinuate in apical half, apex narrowly rounded, with two large and three smaller dorsolateral setae.

Female length 1.8 mm, width 0.9 mm; integument dark castaneus. Elytra distinctly narrowing from basal third.

Type Material. HOLOTYPE, male, labeled "PERU: [**Madre de Dios**]: Tambopata Province: 15 km NE Puerto Maldonado, Reserva Cuzco Amazónico, 12°33'S, 69°03'W, 200 m, Plot #Z2E16 / 28.vi.1989, J.S. Ashe, R.A. Leschen #312, ex flight intercept trap [1, MUSM via SEMC]. Paratypes: PERU, Loreto Pr.; nr jct Rio Maranon & Ocayali, 73.5°W, 4.8°S, 6-20.viii.1994, P. Skelley, flight trap (2 males, FSCA); Loreto, 80 km NE Iquitos, Explorama Lodge, 1 km up Rio Yanamono from Amazon River [3°26'S, 72°51'W]; 1-5.ix.1992, P. Skelley, at night (1 female, FSCA).

Etymology. The species epithet "*tambopata*" is treated as a noun in apposition and is after the region in which the type was collected.

Taxonomic notes. This species is distinctive with the combination of it small size, an evenly convex frons without carinae, and the unique aedeagus (Fig. 2) with a long, slender median lobe bearing a sagittate apex, and subequally long and slender parameres. At 1.5 mm in length, this may be the smallest known species of the genus in the Americas.

Distribution. The broad distribution in Peru (Fig. 3) from southeastern Madre de Dios to northeastern Loreto, and from lowland to Andean lower slopes, suggests that this species may be widespread in western Amazonia.

A Key to the Recorded Species of *Aulonothroscus* from Peru

1. Head with frons bearing two carinae between eyes 2

– Head with frons evenly convex; ecarinate 3

2. Body length c. 2.5 mm; dorsal silhouette broadest across humeri, elytra strongly convergent to subapical third, the markedly convergent to apices. Abdominal ventrite 5 tectiform, apex slightly upturned
***Aulonothroscus oculatissimus* Cobos**

– Body length 3.1 mm or longer; dorsal silhouette shallowly arcuate laterally, elytral gradually convergent to apices. Abdominal ventrite 5 shallowly convex.
***Aulonothroscus freudi* Cobos**

3. Frons shallowly declivous around eye; body length c. 2.5 mm
Aulonothroscus alvarengai Cobos

– Frons evenly contoured to eye margin; body length c. 1.5 mm
***Aulonothroscus tambopata* Johnson**

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