A new species of the genus *Malaconothrus* (Acari, Oribatida, Malaconothridae) from Ecuador

SERGEY G. ERMILOV

Tyumen State University, Semakova str., 10, 625003 Tyumen, Russia. E-mail: ermilovacari@yandex.ru

Received: 10 October 2016  │  Accepted by V. Pešić: 8 November 2016  │  Published online: 10 November 2016.

Abstract

A new species of oribatid mites of the genus *Malaconothrus* (Oribatida, Malaconothridae) is described from forest litter in Ecuador. *Malaconothrus paraweigmanni* Ermilov *sp. nov.* differs from the most similar species, *M. weigmanni* Colloff, 2013 by the smaller body size, barbed notogastral setae and comparatively long anal setae.

Key words: oribatid mite, *Malaconothrus*, new species, systematics, morphology, Neotropical region.

Introduction

This work is a part of my continuing study of the oribatid mite fauna of Ecuador (e.g. Ermilov & Kalúz 2012; Ermilov *et al.* 2014; 2016). The present study includes data on Malaconothridae (Acari, Oribatida). This family comprises two genera and more than 170 species, which has a cosmopolitan distribution collectively (Colloff & Cameron 2013; Subías 2004, online version 2016).

During taxonomic study of the Ecuadorian malaconothrids, I found one new species belonging to the genus *Malaconothrus* Berlese, 1904. The main goal of the paper is to describe and illustrate this species under the name *M. paraweigmanni* Ermilov *sp. nov.*

Material and Methods

**Material.** The collection locality and habitat are given in the "Material examined" section.

**Methods.** Specimens were mounted in lactic acid on temporary cavity slides for measurement and illustration. Body length was measured in lateral view, from the tip of the rostrum to the posterior edge of the ventral plate. Notogastral width refers to the maximum width in dorsal aspect. All body measurements are presented in micrometers. Formulas for leg setation are given in parentheses according to the sequence trochanter–femur–genu–tibia–tarsus (famulus included). Formulas for leg solenidia are given in square brackets according to the sequence genu–tibia–tarsus.

Morphological terminology used in this paper follows that of F. Grandjean: see Travé & Vachon (1975) for references, Norton (1977) for leg setal nomenclature, and Norton & Behan-Pelletier (2009), for overview.

Drawings were made with a camera lucida using a Carl Zeiss transmission light microscope “Axioskop-2 Plus”. Images were obtained with an AxioCam Icc3 camera using a Carl Zeiss transmission light microscope “Axio Lab.A1”.

_Ecol. Mont., 9, 2016, 31-37_
A NEW SPECIES OF MALACONOTHRUS FROM ECUADOR

_Malaconothrus paraweigmanni_ Ermilov sp. nov.

(Figs 1–18)

**Diagnosis.** Body size: 381–398 × 190–207. Body surface porose, covered by granular cerotegument, opisthosoma covered by reticulate cerotegument. Prodorsal setae setiform, long, barbed, interlamellar setae considerably longer than exobothridial setae _ex_1. Lateral parts of prodorsum and notogaster with scale-like ledges. Notogastral ridges absent. Notogastral setae long, setiform, barbed; _c_1, _d_1, _e_1 longer than other setae. Epimeral, genital and anal setae thin, smooth. Four pairs of genital setae present, anal setae well-developed. Adanal setae setiform, barbed, _ad_1 longer than _ad_2; _ad_3 shortest. Legs tridactylous.

**Figures 1–4.** _Malaconothrus paraweigmanni_ sp. nov.: 1 — dorsal view; 2 — subcapitulum, ventral view; 3 — palp, right, antiaxial view; 4 — chelicera, left, paraxial view. Scale bar 50 μm (1), 20 μm (2, 4), 10 μm (3).
Figures 5–8. *Malaconythrus paraweigmanni* sp. nov.: 5 — ventral view (gnathosoma and legs except trochanters not shown); 6 — lateral view (gnathosoma and legs except basal parts not shown); 7 — posterior view; 8 — famulus, solenidia and setae *ft* on leg tarsus I. Scale bar 50 μm (5–7), 10 μm (8).
A NEW SPECIES OF MALACONOTHRUS FROM ECUADOR

Figures 9–12. Malaconothrus paraweigmanni sp. nov.: 9 — tibia and tarsus of leg I, right, antiaxial view; 10 — tibia and tarsus of leg II, right, antiaxial view; 11 — genu, tibia and tarsus of leg III, left, antiaxial view; 12 — genu, tibia and tarsus of leg IV, left, antiaxial view. Scale bar 20 μm.
Figures 13–18. *Malacnotrus paraweigmanni* sp. nov., microscope images: 13 — granulate cerotegument in median part of prodorsum; 14 — reticulate cerotegument in median part of notogaster; 15 — notogastral lateral ledge; 16 — basal part of notogastral seta *d₂*; 17 — palp and part of subcapitulum; 18 — claws of tarsi III and IV. Scale bar 10 μm (13, 16), 20 μm (14, 15, 17, 18).
A NEW SPECIES OF MALACONOTHRUS FROM ECUADOR

Description

Measurements. Body length: 398 (holotype, female), 381 (one paratype, female); notogaster width: 190 (holotype), 207 (one paratype).

Integument (Figs 1, 5–7, 13, 14). Body color light grey. Body surface finely porose (clearly visible under high magnification) and covered by granular cerotegument (granules rounded or slightly elongated, their diameter or length up to 4). Opisthosoma with reticulate cerotegument.

Prodorsum (Figs 1, 6). Rostrum rounded. Lateral carinae well developed, reach to insertions of rostral setae, transamellar ridge absent between these setae. Each carina with mediadly-directed transverse extension (located laterally to lamellar setae). Rostral (ro, 36–41), lamellar (le, 49–53), interlamellar (in, 90–94) and exobothridial (ex, 41–45) setae setiform, barbed, ro directed forwards. Exobothridial setae ex (6) represented by alveoli. Lateral parts of prodorsum (located laterally to ex) with scale-like ledges (Ld).

Notogaster (Figs 1, 5–7, 15, 16). Anterior margin slightly convex medially. Lateral parts of notogaster with scale-like ledges. Posterior part with two slightly visible concavities. Notogastral ridges absent. Notogastral setae setiform, barbed: c1, d1, e1 (90–94) longer than c2, d2, cp (73–77), c2, e2, f2, h1, h2, h3 (61–65) and p1, p2, p3 (49–57). Lyrifissures well visible, ia located posteriorly to c2, im – posteriorly to d2, ip – laterally to h1, ips and ih – on lateral parts of notogaster.

Gnathosoma (Figs 2–4, 17). Subcapitulum slightly longer than wide: 90–98 × 82–90. Subcapitular setae (h, 8; m, 16; a, 20) setiform, thin, smooth. Adoral setae (or1, or2, or3, 4) minute, smooth. Palps (41–45) with setation 0–0–1–3–9(+o). Setae cm setiform, longest on tarsi, other setae spiniform, from these, acm shortest and thinnest. Postpalpal setae (ep, 8–10) thin, erect, barbed. Solenidia (6) thickened, blunt-ended. Chelicerae (86–90) with two setae, cha (4–6) spiniform, smooth, chb (8) fusiform, barbed mediadly. Trägårdh’s organs not visible.

Epimeral and lateral podosomal regions (Figs 5, 6). Epimeral plates I separated medially, plates II and IV separated partially anteromedially, while plates III separated partially postero-medially. Epimeral setae formula: 3–1–3–3. Epimeral setae setiform, thin, smooth, 3a, 3b, 4c (20–24) longer than other setae (4–6).

Anogenital region (Figs 5–7). Four pairs of genital setae (g1–g4, 20) setiform, smooth, g1–g3 directed backwards, g4 forwards. One pair of anal setae (an, 24) well developed, thin, smooth. Three pairs of anal setae (ad1, 61–65, ad2, 49–53, ad3, 36–41) setiform, barbed. Lyrifissures ian and iad distinct.

Legs (Figs 6, 8, 9–12, 18). Tridactylous. Median claw thicker than laterals, all barbed dorsally. Formulae of leg setation and solenidia: I (1–5–3–4–11) [1–1–3], II (1–5–3–4–10) [1–1–1], III (2–3–2–2–10) [0–1–0], IV (0–2–2–2–10) [0–0–0]; homology of setae and solenidia indicated in Table 1. Setae p, u, a, s, pv and ft” (on tarsi I, II) spiniform, ft’ (on tarsi I, II), ft (on tarsi III), ft” (on tarsi IV) thickened, tc thin, very long, famuli tubercle-like, inserted near ω3, other setae setiform. All solenidia simple, blunt-ended.

<table>
<thead>
<tr>
<th>Leg</th>
<th>Trochanter</th>
<th>Femur</th>
<th>Genu</th>
<th>Tibia</th>
<th>Tarsus</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>v’</td>
<td>d, (l), bv”, v”’</td>
<td>dσ, (l)</td>
<td>dε, (l), v’</td>
<td>ft, (tc), (p), (u), (a), ε, ω1, ω2, ω3</td>
</tr>
<tr>
<td>II</td>
<td>v’</td>
<td>d, (l), bv”, v”’</td>
<td>dσ, (l)</td>
<td>dε, (l), v’</td>
<td>ft, (tc), (p), (u), (a), ε, ω1, ω2, ω3</td>
</tr>
<tr>
<td>III</td>
<td>l’, v’</td>
<td>d, l’, ev’</td>
<td>d, v’</td>
<td>dε, v’</td>
<td>ft”, (tc), (p), (u), (a), s</td>
</tr>
<tr>
<td>IV</td>
<td>-</td>
<td>d, ev’</td>
<td>d, v’</td>
<td>d, v’</td>
<td>ft”, (tc), (p), (u), (a), s</td>
</tr>
</tbody>
</table>

Roman letters refer to normal setae (ε – famulus). Greek letters refer to solenidia, dε and dσ – seta and solenidion coupled. One apostrophe (’) marks setae on anterior and double apostrophe (”) setae on posterior side of the given leg segment. Parentheses refer to a pair of setae.

Material examined. Holotype (female) and one paratype (female): Ecuador, 0°25’8.04”S, 79°0’14.04”W, Reserva de Bosque Integral Otonga, near San Francisco de las Pampas, 2000–2200 m a.s.l., sifted litter from forest, 7.XL1996 (G. Ọnore).

Type deposition. The holotype is deposited in the collection of the Senckenberg Institute, Görlitz, Germany; one paratype is deposited in the collection of the Tyumen State University Museum of Zoology, Tyumen, Russia.

Etyymology. The specific name paraweigmanni refers to the similarity between the new species and Malacothrus weigmanni Colloff, 2013.
Remarks. The new species is most similar to Malaconothrus weigmanni Colloff, 2013 from Papua New Guinea in the main morphological traits (notogaster with reticulate cerotegument; notogastral ridges absent; majority of notogastral setae long; interlamellar setae considerably longer than exobothridial setae $e_x$; adanal setae $a_d_1$ longer than $a_d_2$, $a_d_3$ shortest; tridactylous legs). However, the present new species differs from M. weigmanni by the smaller body size (381–398 × 190–207 vs. 444–450 × 246–253), notogastral setae barbed (vs. smooth) and comparatively long anal setae (vs. minute).

Acknowledgements

I cordially thank Prof. Dr. Badamdorj Bayartogtokh (National University of Mongolia, Ulaanbaatar, Mongolia) for the valuable comments; Dr. Giovanni Onore (Pontifical Catholic University, Ecuador) for his help with collecting Ecuadorian oribatid mites; and Dr. Stanislav Kalúz (Institute of Zoology, Slovak Academy of Sciences, Bratislava, Slovakia) for sending me the oribatid mite material.

References