

A NEW SPECIES OF *ANDEREMAEUS* (ACARI: ORIBATIDA: ANDEREMAEIDAE) FROM PERU

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ABSTRACT: One new species of the oribatid mite genus *Anderemaeus* (Oribatida, Anderemaeidae)—*A. umaluisorum* sp.n.—is described, based on materials collected from soil-litter in an Andean primary mountain forest.

KEY WORDS: taxonomy, morphology, *Anderemaeus*, Neotropical region.

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INTRODUCTION

Anderemaeus (Acari, Oribatida, Anderemaeidae) was proposed by Hammer (1958), with *Anderemaeus monticola* Hammer 1958 as type species. At present, the genus comprises 14 species, which are distributed in the Neotropical region and Australia (Subías 2022; Ermilov *et al.* 2023). The taxonomic revision and the identification key to the known species of *Anderemaeus* have been presented by Norton and Ermilov (2019).

The main goal of this paper is to describe and illustrate a new species of *Anderemaeus*, which was collected from Peru.

MATERIALS AND METHODS

Observation and documentation. For measurement and illustration, specimens were mounted in lactic acid on temporary cavity slides. All measurements are in micrometers (µm). Body length was measured in lateral view, from the tip of the rostrum to the posterior edge of the notogaster; other structures were oriented to avoid parallax errors. Notogastral width refers to the maximum width in dorsal aspect. Setal lengths were measured perpendicular to their long axes, accounting for curvature. Formulas for leg solenidia are given in square brackets according to the sequence genu–tibia–tarsus. Drawings were made with a camera lucida using a Leica DM 2500 light microscope.

Terminology. General morphological terminology used in this paper mostly follows that of Norton and Ermilov (2019).

Abbreviations. *Prodorsum:* Setae: *ro*, *le*, *in*, *bs*, *ex*—rostral, lamellar, interlamellar, bothridial, and exobothridial seta, respectively. Other structures: *ea*—prodorsal enantiophysis; *lam*—lamella;

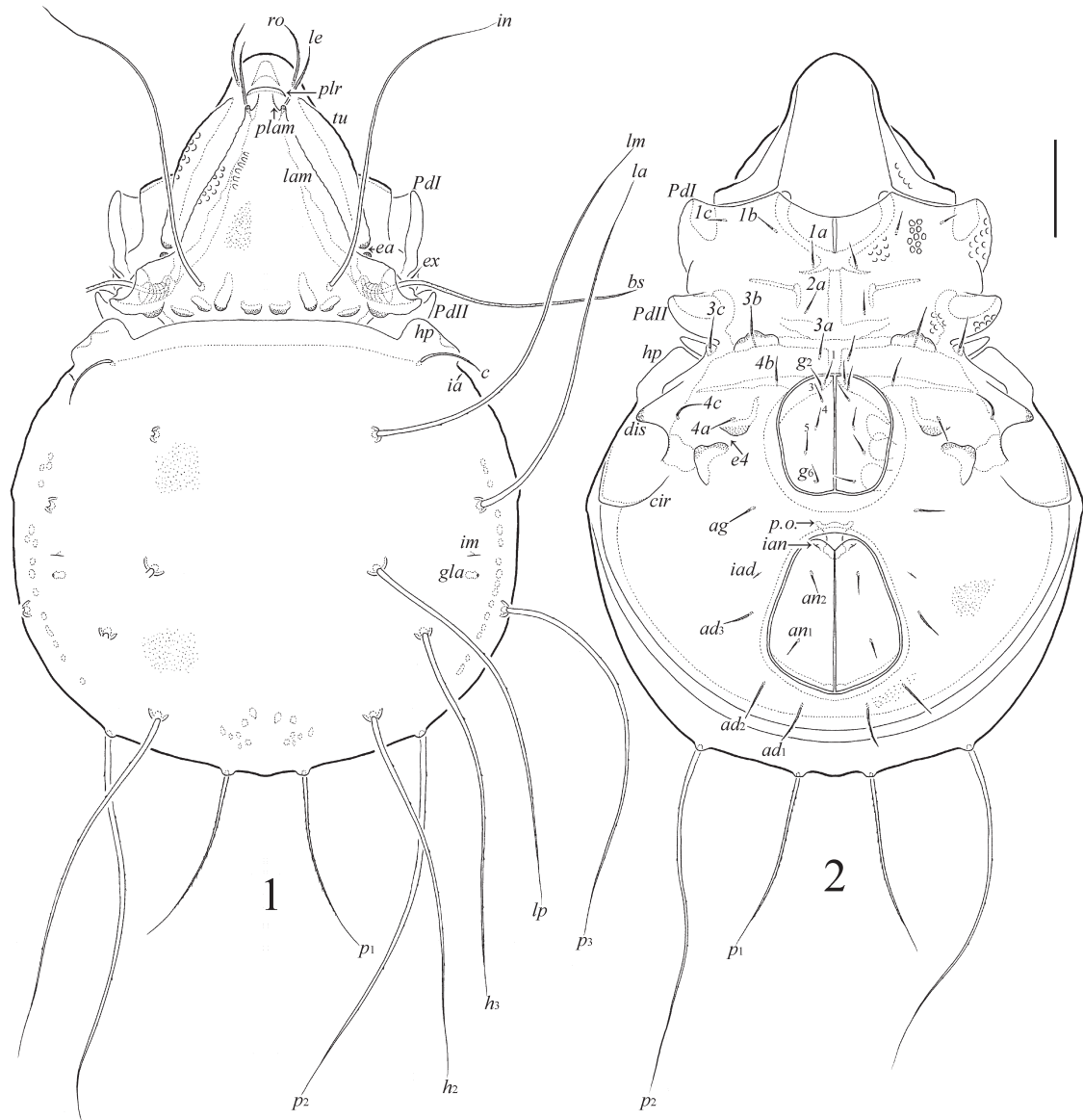
plr—prelamellar ridge; *plam*—prolamella; *tu*—tutorium. *Notogaster:* Setae: *c*, *la*, *lm*, *lp*, *h*-row (*h*₂, *h*₃), *p*-row (*p*₁, *p*₂, *p*₃). Other structures: *hp*—humeral process; *ia*, *im*—anterior and middle lyrifissure, respectively; *gla*—opening of opisthonotal gland. *Gnathosoma:* Setae: *a*, *m*—anterior, middle seta of gena; *h*—hypostomal seta of mentum; *or*—adoral seta; *v*, *l*, *d*, *cm*, *acm*, *ul*, *su*, *vt*, *lt*, *sup*, *inf*—palp setae; ω —palp tarsal solenidium; *cha*, *chb*—cheliceral setae. Structures: *Tg*—Trägårdh's organ. *Epimeral and lateral podosomal regions:* Setae: *1a*, *1b*, *1c*, *2a*, *3a*, *3b*, *3c*, *4a*, *4b*, *4c*—setae of epimeres I–IV. Structures: *cir*—circumpedial carina; *dis*—discidium; *e4*—aggenital enantiophysis, across epimeral border 4; *PdI*, *PdII*—pedotectum I, II respectively. *Anogenital region:* Setae: *g*—genital seta; *ag*—aggenital seta; *an*—anal seta; *ad*—adanal seta. Structures: *iad*, *ian*—adanal and anal lyrifissure, respectively. *Legs:* Setae: σ , ϕ , ω —solenidia of genu, tibia and tarsus, respectively; *e*—famulus of tarsus I; *d*, *l*, *v*—dorsal, lateral, ventral seta, respectively; *ev*, *bv*—basal trochanteral setae; *ft*, *tc*, *it*, *p*, *u*, *a*, *s*, *pv*, *pl*—tarsal setae. Structures: *trt*—trochanteral tooth; *p.a.*—porose area.

DESCRIPTION

Anderemaeus umaluisorum sp.n.

(Figs. 1–9)

Diagnosis. Body length: 765–795. Cerotegument mostly amorphous and granular. Rostrum rounded. Lamella with cusp. Prolamella and prelamellar ridge present. Prodorsal enantiophysis developed. Rostral and lamellar setae medium-sized, setiform, barbed; interlamellar seta very long, subflagellate, slightly roughened; bothridial seta



Figs. 1–2. *Anderemaeus umaluisorum* sp.n., adult: 1—dorsal view (not shown: legs); 2—ventral view (not shown: gnathosoma and legs). Scale bar—100 μ m.

long, setiform, slightly roughened. Interbothridial region with four pairs of slight tubercles. Postbothridial tubercle present. Nine pairs of notogastral setae (h_1 absent); seta c medium-sized, setiform, slightly barbed, p_1 long, setiform, barbed, others very long, subflagellate, slightly roughened. Enantiophysis e_3 absent, e_4 well developed. Epimeral setae $3b$ and $3c$ inserted on tubercles. Anogenital setae comparatively short, setiform, slightly roughened.

Description. *Measurements.* Body length: 795 (holotype, female), 765 (paratype, female); body width: 555 (holotype), 525 (paratype).

Integument. Body color brown. Cuticle slightly microtuberculate sculpturing; lamella, tutorium, pedotecta I, II, podosomal region, and lateral part of prodorsum and epimeres I, II partially foveate; region between bothridium and acetabula II, III densely tuberculate. Cerotegument with excrescences amorphous to granular.

Prodorsum. Rostrum broadly rounded, with medial bulge in rostral limb between rostral setae. Lamella about two-thirds length of prodorsum, with distinct tubular cusp; pair slightly convergent. Prolamella narrow; pair convergent but separated anteriorly. Transverse prelamellar ridge



Figs. 3–9. *Anderemaeus umaluisorum* sp.n., adult: 3—subcapitulum, ventral view; 4—chelicera, left, paraxial view; 5—palp, right, antiaxial view; 6—leg I, right, antiaxial view; 7—leg II, without tarsus, right, antiaxial view; 8—leg III, without tarsus, right, antiaxial view; 9—leg IV, left, antiaxial view. Scale bars—50 μ m (3, 4; 5; 6–9).

present. Tutorium blade-like, with abrupt posterior end, opposing separate tubercle to form prodorsal enantiophysis. Rostral (67–71) and lamellar (82–86) setae setiform, barbed. Interlamel-

lar seta (345–360) subflagellate, slightly roughened. Bothridial seta (266–281) setiform, slightly roughened. Exobothridial seta (37) setiform, thin, smooth. Interbothridial region with four pairs of

simple, slightly visible tubercles. Postbothridial tubercle present.

Notogaster. Humeral process rectangular. Crista well visible in lateral aspect. Nine pairs of notogastral setae developed (h_1 absent); seta c (75–79) setiform, slightly barbed, p_1 (191–195) setiform, barbed, others (191–195) subflagellate, slightly roughened. Opisthonotal gland opening and all lyrifissures distinct.

Gnathosoma. Subcapitulum size: 180–184 × 124–127; subcapitular setae (a : 22–26; m : 26–30; h : 34–37) setiform, slightly roughened; adoral seta (13) setiform, smooth. Palp length: 124–127; setation: 0–2–1–3–9(+ ω); postpalpal seta (9) spiniform, smooth. Chelicera length: 180–184; cheliceral setae (cha : 60; chb : 37) setiform, barbed.

Epimeral and lateral podosomal regions. Epimeral setal formula: 3–1–3–3; setae ($1c$: 17–22; others: 30–41) setiform, roughened. Enantiophysis $e3$ absent; aggenital enantiophysis ($e4$) well developed across epimeral border 4, its posterior tubercle about two times as large as anterior; seta $3b$ inserted on large, broad tubercle, $3c$ on small, simple tubercle. Circumpedal carina and discidium well developed.

Anogenital region. Genital (17–22), aggenital (28–34), anal (17–22), and adanal (ad_1 : 47–56; ad_2 : 41–49; ad_3 : 30–37) setae setiform, slightly roughened. Anal and adanal lyrifissures well visible.

Legs. Tridactylous; median claw thicker than lateral claws, all slightly barbed on dorsal side. Porose area on leg femora I–IV and on trochanters III, IV distinct. Trochanters III and IV with two teeth (dorsodistally and posteriorly). Formulas of leg setation and solenidia: I (1–5–3–4–20) [1–2–2], II (1–4–3–4–16) [1–1–2], III (2–3–2–3–15) [1–1–0], IV (1–2–3–3–12) [0–1–0]; homology of setae and solenidia indicated in Table 1.

Material examined. Holotype (female) and one paratype (female): South America, Central Peru, Andes, 09°42'58" S, 75°05'33" W, Huánuco Department, Huánuco Province, Chinchao District, NW Tunel de Carpish, 2,770 m a.s.l., upper soil and leaf litter in primary mountain forest, Winkler extraction, 14.IV.2016 (S. Friedrich, F. Wachtel and D. Hauth).

Type deposition. The holotype is deposited in the collection of the Museo de Historia Natural, Universidad Nacional Mayor de San Marcos, Lima, Peru; one paratype is deposited in the collection of the Tyumen State University Museum of Zoology, Tyumen, Russia. All specimens are

preserved in 70% solution of ethanol with a drop of glycerol.

Etymology. The species name is derived from the names of our colleagues, Dr. Umukusum (Uma) Ya. Shtanchaeva and Dr. Luis S. Subías, acarologists from the Universidad Complutense de Madrid, Madrid.

Remarks. In having long, subflagellate notogastral setae, *Anderemaeus umaluisorum* sp.n. is morphologically similar to *Anderemaeus hidassii* P. Balogh, 1995 from Brazil (see Balogh 1995). However, the new species differs from *A. hidassii* in larger body size (length: 765–795 vs. 652–689), the morphology of bothridial seta (setiform vs. with distal dilatation), the presence of four pairs of slight interlamellar tubercles (vs. one pair of strong interlamellar tubercles), the morphology and length of interlamellar and notogastral setae la , lm , lp , h_2 , h_3 , p_2 , p_3 (slightly roughened, very long, longer than prodorsum vs. distinctly barbed, not so long, shorter than prodorsum), the length of notogastral seta p_1 (distinctly longer than seta c vs. similar to seta c in length), the number of notogastral setae (9 pairs, h_1 absent vs. 10 pairs, h_1 present) and the length of adanal setae (longer in *A. umaluisorum*).

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Table 1
Leg setation and solenidia of *Anderemaeus umalisorum* sp.n.

| Leg | <i>Tr</i> | <i>Fe</i> | <i>Ge</i> | <i>Ti</i> | <i>Ta</i> |
|-----|---------------|--------------------------|-------------------|---|---|
| I | <i>v'</i> | <i>d, (l), bv'', v''</i> | <i>(l), v', σ</i> | <i>(l), (v), φ₁, φ₂</i> | <i>(ft), (tc), (it), (p), (u), (a), s, (pv), v', (pl), l'', ε, ω₁, ω₂</i> |
| II | <i>v'</i> | <i>d, (l), bv''</i> | <i>(l), v', σ</i> | <i>(l), (v), φ</i> | <i>(ft), (tc), (it), (p), (u), (a), s, (pv), l'', ω₁, ω₂</i> |
| III | <i>l', v'</i> | <i>d, l', ev'</i> | <i>l', v', σ</i> | <i>l', (v), φ</i> | <i>(ft), (tc), (it), (p), (u), (a), s, (pv)</i> |
| IV | <i>v'</i> | <i>d, ev'</i> | <i>d, l', v'</i> | <i>l', (v), φ</i> | <i>ft'', (tc), (p), (u), (a), s, (pv)</i> |

Note: Roman letters refer to normal setae, Greek letters—to solenidia (except ϵ —famulus); single quotation mark (') designates setae on the anterior and double quotation mark (")—setae on the posterior side of a given leg segment; parentheses refer to a pair of setae.