INTRODUCTION

This work is a final part of our study of oribatid mites (Acari, Oribatida) from Brazil (Ermilov et al. 2014a, b; Shtanchaeva et al. 2014). The primary goal of this paper is to present an annotated checklist and new records of the registered taxa. Earlier, we presented data on several new taxa of the superfamilies Oppioidea, Oripodoidea and Galumnoida (Ermilov and Tolstikov, 2015).

During taxonomic identification, we found a new species, belonging to the genus Papillacarus Kunst, 1959 (Lohmanniidae). Thus, the secondary goal of this paper is to describe this species.

Papillacarus (= Vepracarus Aoki, 1965) was proposed by Kunst (1959) with Lohmannia murcioides aciculata Berlese, 1905 as type species. Currently it comprises 32 species, which are distributed in the Pantropical and Subtropical regions (Subías 2004, updated 2014). The main generic characters for genus were summarized by Balogh (1961), Wallwork (1962), Aoki (1965), and Balogh and Balogh (1987, 1988, 1992). Identification keys for some species of Papillacarus were presented by Balogh and Balogh (1987, 1992). The tertiary goal of this paper is to present an identification key to the Papillacarus-species of the Neotropical region.

MATERIAL AND METHODS

Our results are based on collections from three sites in Brazil (unknown date and collector) deposited in the Tyumen State University Museum of Zoology:


Specimens were mounted in lactic acid on temporary cavity slides for measurement and illustration. The 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. Lengths of body setae were measured in lateral 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. General terminology used in this paper follows that of F. Grandjean (1950; summarized by Norton and Behan-Pelletier 2009). Drawings were obtained through a drawing tube mounted on a Carl Zeiss transmission light microscope “Axioskop-2 Plus”.

CHECKLIST

This annotated checklist indicates the specific localities where mites were collected, and notes new records and overall known distribution.

1Oppioid, oripodoid, galumnoid and ptyctimous mites, and also the species which remained unidentified are not included in the checklist.
Lohmanniidae

Epilohmanniidae

Malaconothridae

Trhypochthoniidae

Nothridae

Nanhermanniidae

Neoliodidae

Microzetidae

Eremulidae

Licneremaeidae

Charassobatidae

Astegistidae

Liacaridae

Suctobelbidae

Carabodidae

Tectocepheidae

Tegoribatidae

Mycobatidae

Hence, we listed 28 species, 22 genera and 18 families. Eleven species are recorded for the first time in Brazil; of these, two species are recorded for the first time in the Neotropical region (see checklist above).
**TAXONOMY**

*Papillacarus parapolysetosus*

Ermilov et Tolstikov sp. n.

Figs 1–7

**Diagnosis.** Body size: 747–780 × 315–332. Body surface with reticulate and microfoveolate pattern. Prodorsal setae long, thickened, ciliate. Bothridial setae with 12 to 13 branches. Four transverse bands developed on notogaster, interrupted medially. Notogastral c, d, e, f₁ of medium size, similar in length; f₂ longer than e, and h. More than 80 pairs of setiform, ciliate neotrichal setae present. Subcapitulum with four pairs of setae m. Epimeral setal formula: 15(16)–12(13)–5(6)–5(6); medial setae and one pair of lateral setae of epimere I setiform, smooth, other setae ciliate. Antero-lateral pair of genital setae slightly barbed, others ciliate.

**Description.** Measurements. Large species. Body length: 780 (holotype), 747–780 (two paratypes); body width: 332 (holotype), 315–332 (two paratypes).

**Integument.** Body color yellow-brownish. Surface of body and legs densely microfoveolate. Foveolae on prodorsum and notogaster forming polygonal network.

**Prodorsum.** Roughly triangular in dorsal view, occupying about 1/3 of dorsal length. Rostrum rounded. Rostral (ro, 106–110), lamellar (le, 110–123), interlamellar (in, 123–131) and both pairs of exobothridial (exa, 110–118; exp, 127–135) setae thickened, with short cilia. Bothridial setae (ss, 94–102) pectinate, with 12 to 13 branches on one side, and three bars on the opposite side. Postbothridial transverse band (S₅) present.

**Notogaster.** Anterior border of the notogaster straight. Four transverse bands (S₁, S₂, S₃, and S₅) developed, interrupted medially. Band S₅ present on right half of notogaster in one specimen. Sixteen pairs of primary notogastral setae and more than 80 pairs of additional neotrichal setae present. Notogastral setae thickened, with short cilia; hₚ (53) shorter than c, d, e, f₁ (57–65), e, f₂ (69–77), pₚ (77–82), c, d, f₁, f₂ (135–143) and h, h₂, pₚ, p₂ (159–164). Neotrichal setae (32–41) setiform, ciliate. Lyrifissures ia, im, ih and ips distinct, ip not visible.

**Gnathosoma.** Generally, morphology of subcapitulum, palps and chelicerae typical for *Papillacarus* (see Ermilov and Anichkin 2011; Ermilov et al. 2012). Subcapitulum longer than wide (192–196 × 123–135), with one pair of lateral tubercles. Subcapitular setae h, m₁, m₂, m₃ and m₄ (28–32) setiform, ciliate; a longer (45–49), simple, smooth. Three pairs of adoral setae present: or₁ (28–32) wide, lobe-formed, smooth; or₂ (32–41) thickened, with tooth in distal part, blunt-ended; or₃ (24–28) slightly lobe-formed, pointed distally, smooth. Palps (69–73) with setation 0–1–0–1–10(+o). Distal three setae fused basally. Solenidia longer than palpatarsus, thick, not fused with acm. Chelicerae (196–200) with two setae, chb (65) setiform, smooth, longer than cha (8), thorn-like.

**Epimeral region.** Apodemes III separated medially to sternal apodeme. Epimeral setal formula: 15(16)–12(13)–5(6)–5(6). Medial setae 1a, 2a, 3a, 4a and one pair of lateral setae of epimere I short (12–16), setiform, smooth. Other setae ciliate; anterior pair of epimere I (41–45) longer than three pairs of lateral setae on epimere II (32–36) and others (20–28).

**Anogenital region.** Transverse genital furrow distinct. Antero-lateral pair of genital setae slightly barbed, others ciliate. Four lateral pairs longer (53–61), than six medial pairs (28–32). Two pairs of anal (an₁, an₂, 61–73) and four pairs of anal (ad₁–ad₄, 73–82) setae thickened, ciliate. One pair of ventrolateral bands present. Lyrifissures iad distinct.

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**Table 1.**

Leg setation and solenidia of *Papillacarus parapolysetosus* Ermilov et Tolstikov sp. n.

<table>
<thead>
<tr>
<th>Leg</th>
<th>Trochanter</th>
<th>Femur</th>
<th>Genus</th>
<th>Tibia</th>
<th>Tarsus</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>–</td>
<td>d, (l), lₚ', bv', v'</td>
<td>(l), σ', da</td>
<td>f₁', (tc), (ti), (p), (a), s, (pv), m, n, v, ω₁, ω₂, p'', ω''</td>
<td></td>
</tr>
<tr>
<td>II</td>
<td>–</td>
<td>d, (l), lₚ', l₁, bv', v'</td>
<td>(l), da</td>
<td>(f₁, (tc), (ti), (p), (a), s, (pv), m, n, v, ω₁, ω₂, p'', ω''</td>
<td></td>
</tr>
<tr>
<td>III</td>
<td>t', v'</td>
<td>d, l₁, l₂, ev'</td>
<td>lₚ', da</td>
<td>d, l', v', ϕ</td>
<td>(f₁, (tc), (ti), (a), s, (pv)</td>
</tr>
<tr>
<td>IV</td>
<td>t', v'</td>
<td>d, l', ev'</td>
<td>lₚ', da</td>
<td>d, l', v', ϕ</td>
<td>(f₁, (tc), p', (a), s, (pv)</td>
</tr>
</tbody>
</table>

Roman letters refer to normal setae (ɛ — famulus), Greek letters refer to solenidia, da and p — 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.
Legs. Generally, morphology of leg segments, setae and solenidia typical for *Papillacarus* (see Ermilov and Anichkin 2011, Ermilov et al. 2012). All legs with one claw, with small tooth on ventral side. Femora with large ventral ridge. Formulas of leg setation and solenidia: leg I (0–6–3–4–18) [2–1–2], leg II (0–7–3–4–13) [1–1–2], leg III (2–4–2–3–12) [1–1–0], leg IV (2–3–2–3–11) [1–0–0]; homology of setae and solenidia indicated in Table 1. Famulus (ɛ) tubercle-like. Solenidia ō₁ on tarsi I, ō₂ on tarsi II, φ on tibiae III thickened, blunt-ended; other solenidia longer, setiform, with thinner tips.

**Material examined.** Three specimens (holotype and two paratypes): Braz-2014–1.

**Type deposition.** The holotype is deposited in the collection of the Senckenberg Institution Frankfurt, Germany; two paratypes are deposited in the collection of the Tyumen State University Museum of Zoology, Tyumen, Russia.

**Etymology.** The prefix *para* is Latin meaning “near” and refers the similarity between the new species and the species *Papillacarus polysetosus* Ermilov, Anichkin et Wu, 2012.

**Remarks.** *Papillacarus parapolysetosus* sp. n. is similar to *Papillacarus polysetosus* Ermilov, Anichkin et Wu, 2012 from Vietnam (see Ermilov et al. 2012) in having the long, thickened, ciliate prodorsal setae, reticulate body surface, large number of setiform, ciliate notogastral neotrichal setae (more than 80 pairs). However, the new species differs clearly from the latter by the larger body size (747–780 × 315–332 versus 664–680 × 298–315 in *P. polysetosus*), setae *c₁, d₁, e₁, and f₁* similar in length (versus different in *P. polysetosus*), setae *f₁* longer than *h₁* (versus shorter in *P. polysetosus*).

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*Fig. 1–2. Papillacarus parapolysetosus* Ermilov et Tolstikov sp. n.: 1 — dorsal view; 2 — ventral view (gnathosoma and legs except trochanters I not illustrated). Scale bar 200 μm.
Figs 3–7. *Papillacarus parapolysetosus* Ermilov et Tolstikov sp. n.: 3 — subcapitulum, ventral view; 4 — leg I, without trochanter, right, antiaxial view; 5 — leg II, without trochanter, right, antiaxial view; 6 — trochanter, femur and genu of leg III, right, antiaxial view; 7 — leg IV, without trochanter, right, antiaxial view. Scale bars 50 μm.
and notogastral band \( S_t \) interrupted medially (versus complete in \( P. polysetosus \)).

**KEY TO SPECIES OF PAPILLACARUS FROM THE NEOTROPICAL REGION**

1. Strong notogastral neotrichy present, more than 20 pairs of setae developed
   — Weak notogastral neotrichy present, less than 20 pairs of setae developed

2. Surface of prodorsum and notogaster densely papillate, without reticulate pattern; rostral, lamellar, interlamellar and both pairs of exobothridial setae with long ciliate branches; epimeral setal formula: 9–4–3–4; body size: 380–384 × 152–156
   — Surface of prodorsum and notogaster with reticulate pattern, without papillae; rostral, lamellar, interlamellar and both pairs of exobothridial setae with short cilia, without long ciliate branches; epimeral setal formula: 15(16)–12(13)–5(6)–5(6); body size: 747–780 × 315–332

3. Short neotrichal setae represented by 11 pairs; notogastral transverse bands \( S_s \) and \( S_t \) interrupted medially by short interval; four pairs of subcapitular setae \( m \) present; body size: 524–544 × 246–266
   — Short neotrichal setae represented by nine pairs; notogastral transverse bands \( S_s \) and \( S_t \) interrupted medially by long interval; three pairs of subcapitular setae \( m \) present; body size: 614 × 305

   — Body size: 524–544 × 246–266

**REFERENCES**


