

SPIXIANA	40	1	29–35	München, August 2017	ISSN 0341-8391
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First record of the genus *Paraxylobates* from Peru, with description of a new species

(Acari, Oribatida, Haplozetidae)

Sergey G. Ermilov & Stefan Friedrich

Ermilov, S. G. & Friedrich, S. 2017. First record of the genus *Paraxylobates* from Peru, with description of a new species (Acari, Oribatida, Haplozetidae). *Spixiana* 40(1): 29–35.

The oribatid mite genus *Paraxylobates* (Oribatida, Haplozetidae) is recorded in Peru for the first time. A revised generic diagnosis is proposed. A new species is described from upper soil and leaf litter in a primary evergreen lowland rainforest. *Paraxylobates burii* Ermilov spec. nov. differs from the single known species, *P. imitans* Balogh & Mahunka, 1969 by the short interlamellar and adanal setae and the presence of one pair of notogastral setae.

Sergey G. Ermilov (corresponding author), Tyumen State University, Tyumen, Russia; e-mail: ermilovacari@yandex.ru

Stefan Friedrich, SNSB – Zoologische Staatssammlung München, München, Germany; e-mail: stefan.friedrich@zsm.mwn.de

Introduction

The oribatid mite genus *Paraxylobates* (Acari, Oribatida, Haplozetidae) was proposed by Balogh & Mahunka (1969) with *Paraxylobates imitans* Balogh & Mahunka, 1969 as type species. At present, this genus comprises only one species, which is distributed in the Neotropical region and India (e.g. Balogh & Mahunka 1969, Sanyal & Bhattacharyya 2004, de Moraes et al. 2011). Also, the unidentified species of *Paraxylobates* are recorded from Brazil and India (Sanyal 2010, de Moraes et al. 2011).

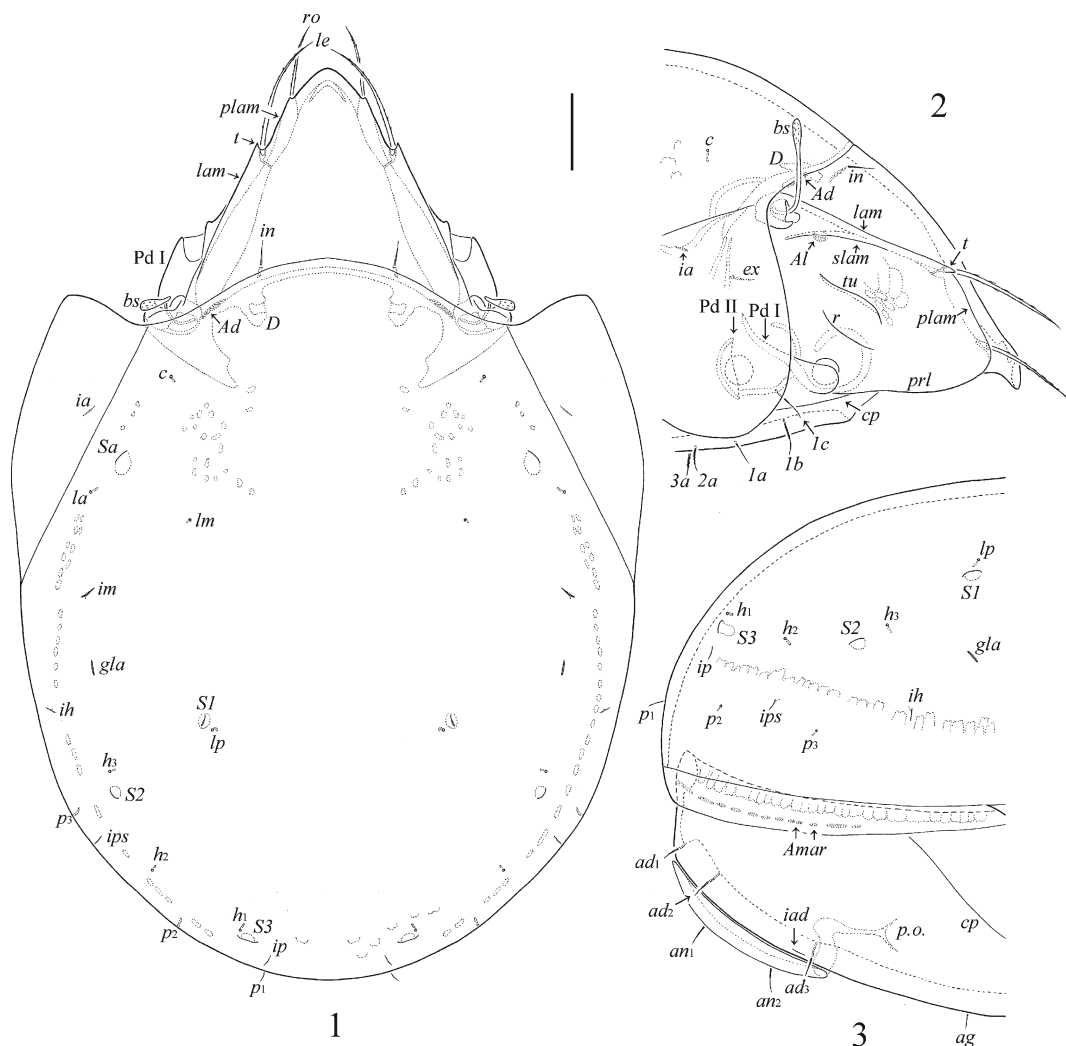
During taxonomic survey of the new material from Peru (Ermilov & Friedrich 2017), we found one new species of *Paraxylobates*. It is the first record of this genus in the Peruvian fauna. The main goal of this paper is to revise generic diagnosis and to describe and illustrate a new species.

Material and methods

Material examined. Holotype (female) and six paratypes (three females and three males) were collected

from: South America, Amazonian Peru, 09°37' S, 74°56' W, Huánuco Department, Puerto Inca Province, Yuyapichis District, Área de Conservación Privada, Panguana (biological field station), near Rio Yuyapichis (river), 230 m a.s.l., upper soil and leaf litter in a primary evergreen lowland rainforest, Winkler extraction, 1.V.2015–21.V.2015 (collected by S. Friedrich & F. Wachtel).

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 behind pteromorphs 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. 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 Leica transmission light microscope “Leica DM 2500”.



Figs 1–3. *Paraxylobates burii* Ermilov spec. nov., adult. 1. Dorsal view, legs not illustrated. 2. Anterior part of body, lateral view, legs and gnathosoma not illustrated. 3. Posterior part of hysterosoma, lateral view. Scale bar = 50 μ m.

Systematics

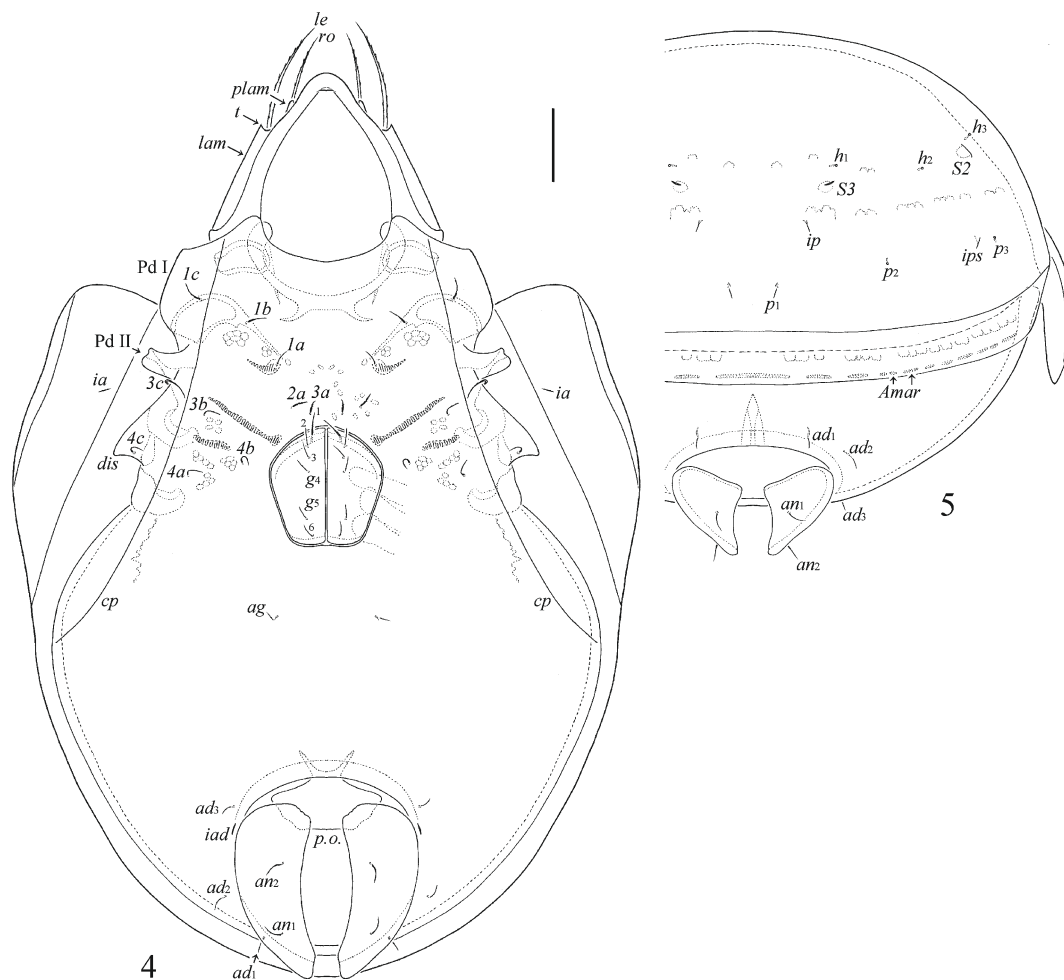
Genus *Paraxylobates* Balogh & Mahunka, 1969

Type species: *Paraxylobates imitans* Balogh & Mahunka, 1969, p. 20.

Revised generic diagnosis. Adult. Haplozetidae (Grandjean 1936, Norton & Behan-Pelletier 2009). Body of medium size (length 547–670). Integument without ornamentation. Rostrum rounded. Lamellae long, with one latero-distal tooth. Prolamellae, sublamellae, sublamellar and sejugal porose areas and tutoria present. Rostral, lamellar and interlamellar

setae setiform. Bothridial setae clavate or fusiform. Pteromorphs with distinct hinges. Notogaster with four pairs of sacculi. Ten pairs of notogastral setae minute or represented by alveoli. Discidia and circumpedal carinae well-developed. Epimeral setal formula: 3-1-3-3. Six pairs of genital, one pair of aggenital, two pairs of anal and three pairs of adanal setae. Adanal lyrifissures in paraanal position. Legs tridactylous. Porose areas on all femora, tarsi, tibiae and trochanters III and IV well visible. Sexual dimorphism absent.

Juveniles. Unknown.



Figs 4–5. *Paraxylobates burii* Ermilov spec. nov., adult. 4. Ventral view, gnathosoma and legs not illustrated. 5. Posterior view, part of left half not illustrated. Scale bar = 50 μ m.

Paraxylobates burii Ermilov spec. nov.

Figs 1–13

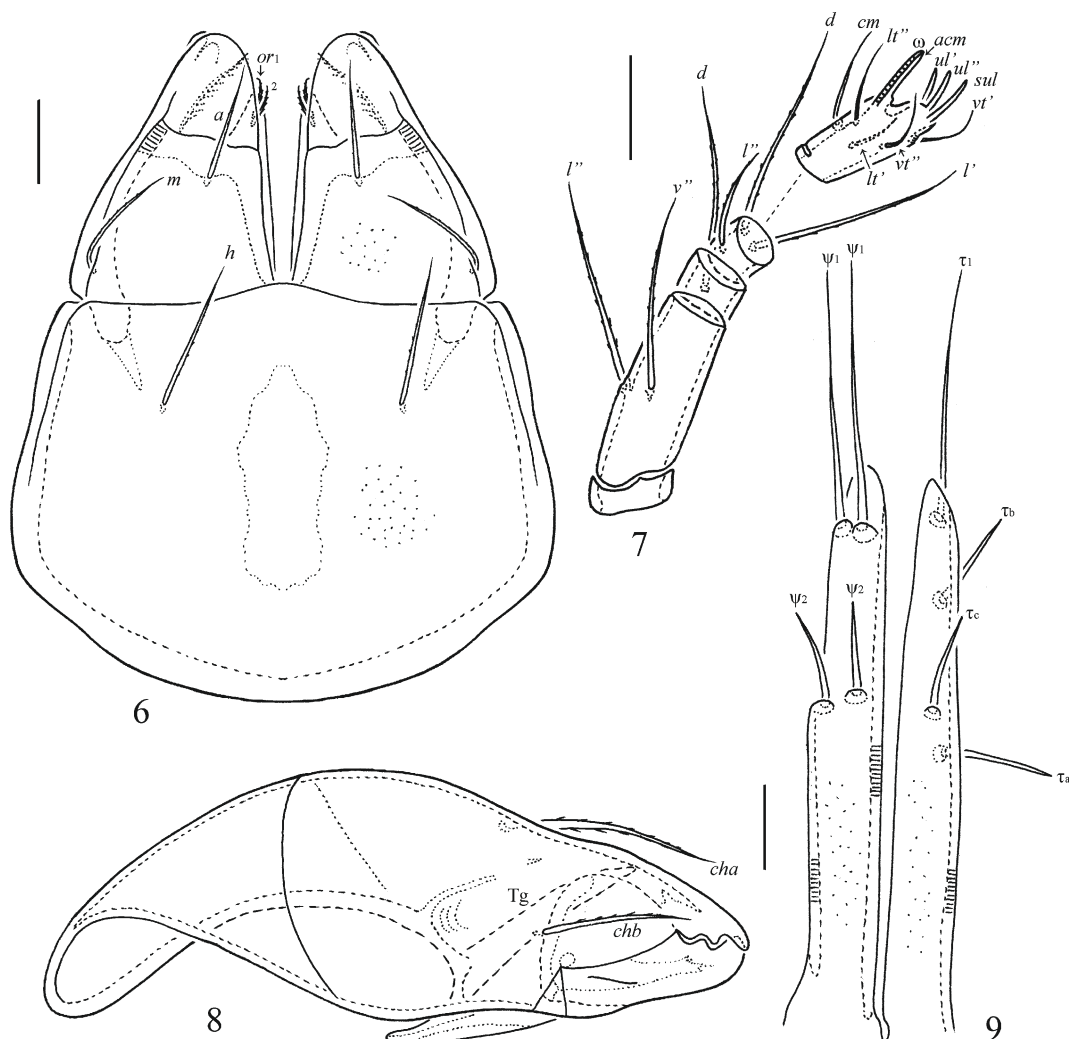
Diagnosis. Body size: 547–630 \times 332–415. Latero-distal teeth of lamellae well-developed. Prolamel-lae complete. Rostral and lamellar setae thickened, barbed. Interlamellar setae thin, slightly barbed. Bothridial setae clavate, rarely fusiform, barbed. Notogaster with one pair of minute setae (*p₁*) and nine pairs of setal alveoli. Subcapitular setae *h* longer than *a* and *m*. Circumpedal carinae reaching the anterior border of ventral plate. Epimeral and anogenital setae short, setiform, slightly barbed. Leg tarsi I with 19 setae (*l''* absent).

Description

Measurements. Body length: 630 (holotype: female), 547–597 (six paratypes: three females and three males); notogastral width: 398 (holotype), 332–398 (six paratypes). Females larger than males (597–630 \times 381–415 vs. 547–581 \times 332–381).

Integument. Body colour brown. Surface densely microporose (visible under high magnification), lateral side of body distinctly microgranulate.

Prodorsum (Figs 1, 2, 4). Rostrum with small, semi-oval protruding (visible in dorso-frontal view). Lamellae (*lam*) longer than half of prodorsum, their latero-distal teeth (*t*) well-developed. Prolamel-lae (*plam*) complete, lineate, curving backwards dis-tally and fused with lateral prodorsal ridges (*prl*).



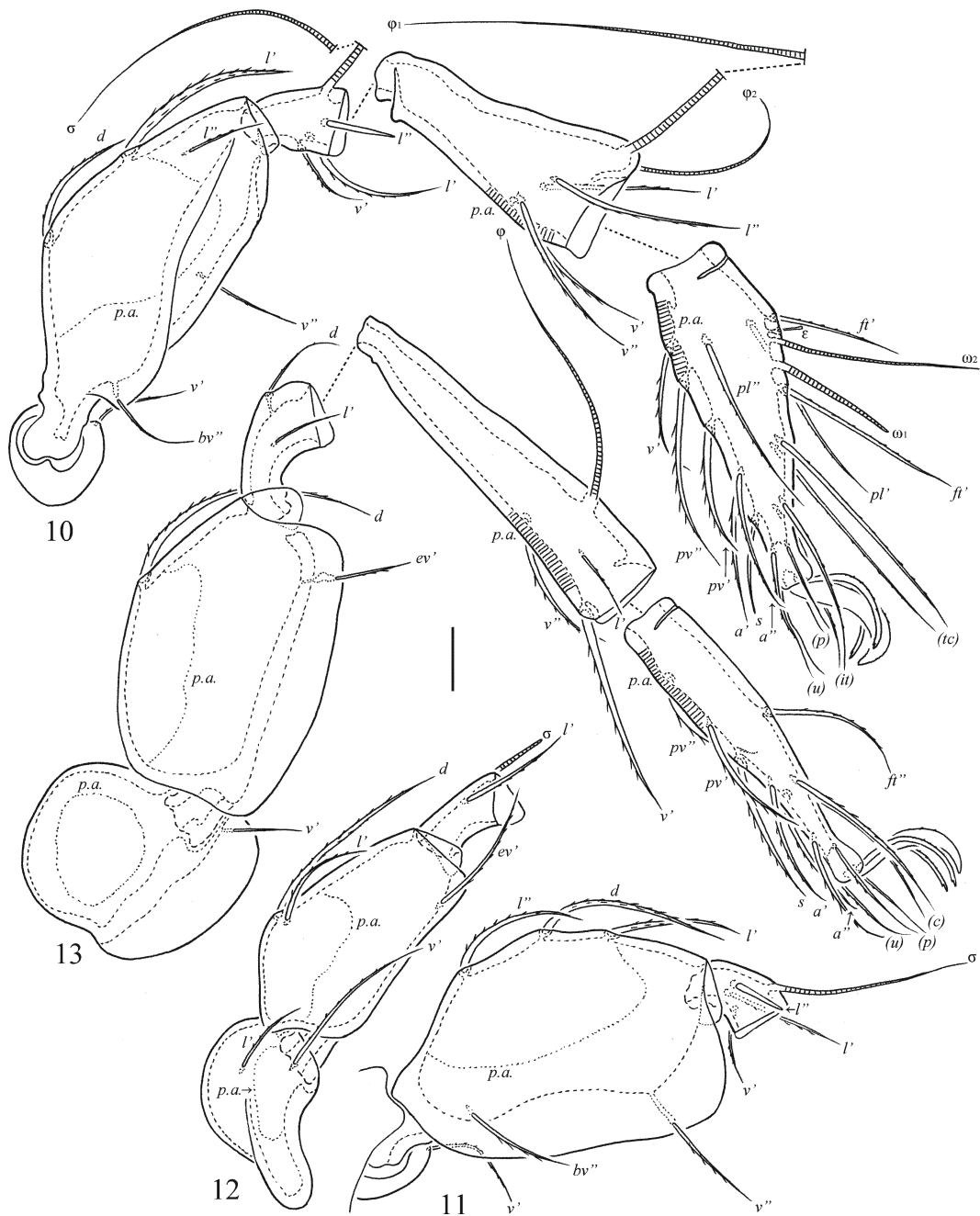
Figs 6–9. *Paraxylobates burii* Ermilov spec. nov., adult. 6. Subcapitulum, ventral view. 7. Palp, right, antiaxial view. 8. Chelicera, right, antiaxial view. 9. Two blades of ovipositor. Scale bars = 15 μ m.

Sublamellae (*slam*) thin, as long as half of lamellae. Sublamellar porose areas (*Al*) oval (20×12). Tutoria (*tu*) ridge-like. Distinct ridges (*r*) located ventral and parallel to tutoria. Rostral (*ro*, 65–69) and lamellar (*le*, 90–98) setae thickened, barbed. Interlamellar (*in*, 20–24) and exobothridial (*ex*, 12–16) setae thin, slightly barbed. Bothridial setae (*bs*, 73–82) clavate, rarely fusiform, with longer stalks and shorter, barbed heads. Sejugal porose areas (*Ad*) elongate oval ($16\text{--}20 \times 4\text{--}8$).

Notogaster (Figs 1–3, 5). Anterior notogastral margin convex medially. Dorsophragmata (*D*) slightly elongated longitudinally. One pair of noto-

gastral setae present (*p*₁, 8), other setae represented by their alveoli. Four pairs of sacculi (*Sa*, *S1*, *S2*, *S3*) with small openings and channels, mutual distance between *S1*–*S1* longer than that of *S2*–*S2*. Setae *lp* inserted close and medially to *S1*. Lyrifissures (*ia*, *im*, *ip*, *ih*, *ips*) and opisthonotal gland openings (*gla*) clearly visible.

Gnathosoma (Figs 6–8). Subcapitulum longer than wide ($127\text{--}131 \times 94\text{--}98$). Subcapitular setae setiform, barbed, *h* ($32\text{--}36$) longer than *a* and *m* ($24\text{--}28$). Adoral setae (*or*₁, *or*₂, 10–12) setiform, densely ciliate. Palps with length of 65–73. Postpalpal setae (*ep*, 6) spiniform, smooth. Chelicerae ($127\text{--}131$) with



Figs 10–13. *Paraxylobates burii* Ermilov spec. nov., adult. 10. Leg I, right, antiaxial view. 11. Trochanter (part covered by pedotectum II), femur and genu of leg II, right, antiaxial view. 12. Trochanter, femur and genu of leg III, left, antiaxial view. 13. Leg IV, left, antiaxial view. Scale bar = 15 μ m.

two barbed setae, *cha* (41–45) longer than *chb* (24–28). Trägårdh's organ (Tg) of chelicerae elongate triangular.

Epimeral and podosomal regions (Figs 2–4, 9). Pedotecta I (Pd I) and II (Pd II) represented by small laminae, Pd II slightly bifurcate distally in ventral view. Discidia (*dis*) triangular. Circumpedal carinae (*cp*) very long, reaching anterior border of ventral plate. Epimeral setae setiform, barbed, *3c* (32–36) longer than other setae (20–24), *3b* and *3c* thickest. Ovipositor elongated (220 × 49), blades (106) shorter than length of distal section (beyond middle fold; 114). Each blade with four smooth setae; $\psi_1 \approx \tau_1$ (49–53) setiform, $\psi_2 \approx \tau_2 \approx \tau_3 \approx \tau_4$ (20–24) elongate spiniform, erect. Six coronal setae minute (6).

Anogenital region (Figs 3–5). Genital (*g*₁, 20–24; *g*₂–*g*₆, 12–16), aggenital (*ag*, 12–16), anal (*an*₁, *an*₂, 16–24) and adanal (*ad*₁–*ad*₃, 12–16) setae setiform, thin, slightly barbed. Preanal organ (*p.o.*) distinct. Adanal lyrifissures (*iad*) distinct. Marginoventral porose area (*Amar*) represented by numerous oval and elongate parts.

Legs (Figs 10–13). Median claw thicker than laterals, all serrate on dorsal side, lateral claws each with one small tooth ventrodistally. All femora rounded ventroanteriorly. Dorso-paraxial porose areas (*p.a.*) on femora I–IV and trochanters III, IV and ventral porose areas in basal parts of tarsi and distal parts of tibiae well visible. Formulas of leg setation and solenidia: I (1–5–3–4–19) [1–2–2], II (1–5–3–4–15) [1–1–2], III (2–3–1–3–15) [1–1–0], IV (1–2–2–3–12) [0–1–0]; homology of setae and solenidia indicated in Table 1. Solenidia ω_1 on tarsi I, ω_1 and ω_2 on tarsi II and σ on genua III thickened, blunt-ended, other solenidia setiform. Famuli minute, slightly swollen distally, inserted posterior to ω_2 .

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 Bavarian State Collection of Zoology, Munich, Germany; one paratype is deposited in the collection of the Senckenberg Institute, Görlitz, Germany; four paratypes are deposited in

the collection of the Tyumen State University Museum of Zoology, Tyumen, Russia.

Etymology. The specific name is given in honour of Prof. Dr. Ernst-Gerhard Burmeister (called “Buri” by all colleagues and friends), former Vice Director of the Bavarian State Collection of Zoology, for his invaluable contributions to the collecting of soil arthropods in Panguana since decades.

Remarks. *Paraxylobates burii* Ermilov spec. nov. differs from the type species, *P. imitans* Balogh & Mahunka, 1969, by the interlamellar and adanal setae shorter than lamellar and anal setae, respectively (vs. longer in *P. imitans*), and the presence of one pair of notogastral setae, *p*₁ (vs. all notogastral setae developed).

Acknowledgements

We cordially thank two anonymous reviewers for valuable comments; Dr. Juliane Diller and Erich Diller for kindly inviting one of us (Stefan Friedrich) to Panguana; Franz Wachtel (Grünwald, Germany) for expertise and assistance in the field and allocation of the Winkler extractors; Dr. Gerardo Lamas Müller and Dr. Diana Silva Dávila (both Museo de Historia Natural, Universidad Nacional Mayor de San Marcos, Lima, Peru) for cooperation; and the Servicio Nacional Forestal y de Fauna Silvestre (SERFOR) for issuing a collecting permit (# 007-2014-SERFOR-DGGSPPFFS) and export permit (# 0001757-SERFOR).

This project was supported by Prof. Dr. Roland Melzer (Zoologische Staatssammlung München, München, Germany) and the “Freunde der Zoologischen Staatssammlung”.

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Table 1. Leg setation and solenidia of adult *Paraxylobates burii* Ermilov spec. nov. [Roman letters refer to normal setae, Greek letters refer to solenidia (except ϵ = famulus). Single prime (') marks setae on the anterior and double prime (") setae on the posterior side of a given leg segment. Parentheses refer to a pair of setae].

Leg	trochanter	femur	genu	tibia	tarsus
I	<i>v'</i>	<i>d</i> , (l), <i>bv''</i> , <i>v''</i>	(l), <i>v'</i> , σ	(l), (v), ϕ_1 , ϕ_2	(ft), (tc), (it), (p), (u), (a), s, (pv), <i>v'</i> , (pl), ϵ , ω_1 , ω_2
II	<i>v'</i>	<i>d</i> , (l), <i>bv''</i> , <i>v''</i>	(l), <i>v'</i> , σ	(l), (v), ϕ	(ft), (tc), (it), (p), (u), (a), s, (pv), ω_1 , ω_2
III	<i>l'</i> , <i>v'</i>	<i>d</i> , <i>l'</i> , <i>ev'</i>	<i>l'</i> , σ	<i>l'</i> , (v), ϕ	(ft), (tc), (it), (p), (u), (a), s, (pv)
IV	<i>v'</i>	<i>d</i> , <i>ev'</i>	<i>d</i> , <i>l'</i>	<i>l'</i> , (v), ϕ	<i>ft''</i> , (tc), (p), (u), (a), s, (pv)

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Jahr/Year: 2017

Band/Volume: [040](#)

Autor(en)/Author(s): Ermilov Sergey G., Friedrich Stefan

Artikel/Article: [First record of the genus Paraxylobates from Peru, with description of a new species \(Acari, Oribatida, Haplozetidae\) 29-35](#)