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Article

Two new species of oribatid mites (Acari: Oribatida) from Ethiopia, including a key to species of *Pilobatella*

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Abstract

Two new oribatid mite species, *Austrocarabodes* (*Uluguroides*) *kluttzi* Ermilov, Winchester, Lowman & Wassie **sp. nov.** (Carabodidae) and *Pilobatella lowmanae* Ermilov, Winchester & Wassie **sp. nov.** (Haplozetidae), are described from the Afro-montane forests, in the northern highlands of Ethiopia. An identification key to all known species of *Pilobatella* is given. An annotated checklist of identified oribatid mite taxa sampled in this study is presented. Fourteen species, six genera and three families are recorded for the first time from Ethiopia.

Key words: oribatid mites, *Austrocarabodes* (*Uluguroides*), *Pilobatella*, new species, key, checklist, Ethiopia

Introduction

The oribatid mite fauna of Ethiopia is poorly known and until recently, only 39 species had been recorded (Berlese 1916; Aoki 1971; Mahunka 1982, 1983, 1984; Bernini 1988; Niedbała 2008). During the last three years oribatid mites have been more intensively studied (Ermilov *et al.* 2010a–c, 2011a–c) and, at present, 128 species have been documented (Ermilov *et al.* 2012). They are often the dominant microarthropod group in forest soil-litter habitats and it is expected that continued research on the Ethiopian oribatid mite fauna will significantly augment the recorded species diversity for the country.

In the course of taxonomic identification of oribatid mites (see *Checklist of identified oribatid mites*), collected in Afro-montane forests in the northern highlands of Ethiopia, we found representatives of two new species, one belonging to the genus *Austrocarabodes* Hammer, 1966 (subgenus *Uluguroides* Mahunka, 1983) (Carabodidae) and the other to *Pilobatella* Balogh and Mahunka, 1967 (Haplozetidae).

Austrocarabodes (*Uluguroides*) is a small subgenus that was proposed by Mahunka (1983) as a genus with *Uluguroides trichosus* Mahunka, 1983 as the type species. Currently, the subgenus comprises seven species and one subspecies, which are distributed in the Ethiopian region (Subías 2004, online version 2011). Earlier, two species were recorded from Ethiopia (see Ermilov *et al.*

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2010a): *A.* (*U.*) *aethiopicus* Ermilov, Sidorchuk & Rybalov, 2010 and *A.* (*U.*) *arboreus* Ermilov, Sidorchuk & Rybalov, 2010. The main generic characters of *Austrocarabodes* (*Uluguroides*) are presented by Mahunka (1983) and summarized by Mahunka (1986a) and Balogh and Balogh (1992). An identification key to all known species of the subgenus is presented by Ermilov *et al*. (2010a).

Pilobatella is a small genus that was proposed by Balogh and Mahunka (1967) with *Pilobatella punctulata* Balogh and Mahunka, 1967 as the type species. Currently, the genus comprises nine species, which have a pantropical distribution (Subías 2004, online version 2011; Mahunka 2011). Representatives of *Pilobatella* have not been recorded from Ethiopia before. The main generic characters of the genus *Pilobatella* are presented by Balogh and Mahunka (1967) and summarized by Balogh and Balogh (1984, 1992); see also subsection *Remarks*. An identification key to some species of this genus is presented by Balogh and Balogh (2002).

The main purpose of this paper is to describe and illustrate two new species of oribatid mites from the genera *Austrocarabodes* and *Pilobatella* that were discovered from soil-litter in the northern highland Afro-montane forests of Ethiopia. In addition, an identification key to all known species of *Pilobatella* and a checklist of identified oribatid mites from these Afro-montane forests is presented.

Materials and methods

Oribatid mites associated with suspended soils/epiphytes and ground debris in Ethiopian Church Forests were collected in August, 2010. We sampled two fragments of forest—Debresena and Zahar. Debresna (11°51' N, 37°59' E) is a 11.5 hectare fragment containing 34 tree species at an elevation of 2690 metres. Zahar (11°48' N, 37°34' E) is lower (1950 m) in elevation and has less tree species (29). Although both fragments are small, they differ markedly in the degree of human impact within and outside of the forest fragment: Debresna represents a fragment that is significantly more intact with reduced human impacts when compared to Zahar.

We used single rope techniques to access the canopy and samples were collected with a soil corer, 3 cm diameter x 5 cm deep. Contents of each sample core were extracted in the field. Oribatid mites were extracted into 75% EtOH using Berlese funnels which were run for 48 hours. Since power was unavailable, samples were extracted using moth balls, a variation on the standard extraction technique but one that is proving to be valuable for areas where a power source is unavailable.
Specimens were mounted in lactic acid on temporary cavity slides for measurement and illustration. All body measurements are presented in micrometers (μm). Body length was measured in lateral view, from the tip of the rostrum to the posterior edge of the ventral plate, to avoid discrepancies caused by different degrees of notogastral distortion. Notogastral width refers to the maximum width in dorsal aspect. Lengths of body setae were measured in lateral aspect.

Formulae for leg setation are given in parentheses according to the sequence trochanter–femur–genu–tibia–tarsus (famulus included). Formulae for leg solenidia are given in square brackets according to the sequence genu–tibia–tarsus.

General terminology used in this paper follows that of Norton and Behan-Pelletier (2009).

List of collecting sites

Et-N-1. Afro-montane forest, northern highlands of Ethiopia, 11°51' N, 37°59' E, 2690 m above sea level, *Debresena*, (Church forest) soil, 19 August 2010, coll. N.N. Winchester.

Et-N-2. Afro-montane forest, northern highlands of Ethiopia, 11°48' N, 37°34' E, 1950 m above sea level, *Zahar* (Church forest) soil, 14 August 2010, coll. N.N. Winchester.

Checklist of identified oribatid mites

Malaconothridae
Malaconothrus ensifer Mahunka
Distribution: Et-N-1, Et-N-2

Camisiidae
Camisia tryphosa Colloff—The genus and species are recorded for the first time from Ethiopia
Distribution: Et-N-1, Et-N-2
Heminothrus hooki (Piffl)—The species is recorded for the first time from Ethiopia
Distribution: Et-N-2

Nothridae
Nothrus crassisetus Mahunka
Distribution: Et-N-1, Et-N-2

Aleurodamaeidae
Aleurodamaeus africanus Mahunka
Distribution: Et-N-2

Damaeidae
Metabelba glabriseta Mahunka
Distribution: Et-N-1, Et-N-2

Astegistidae—The family is recorded for the first time from Ethiopia
Cultroribula bicuspidata Mahunka—The genus and species are recorded for the first time from Ethiopia
Distribution: Et-N-2

Gustaviidae
Gustavia aethiopica Mahunka
Distribution: Et-N-2

Damaeolidae
Fosseremus laciniatus (Berlese)—The species is recorded for the first time from Ethiopia
Distribution: Et-N-1

Eremulidae—The family is recorded for the first time for Ethiopia
Eremulus csuzdii Mahunka & Mahunka-Papp—The genus and species are recorded for the first time from Ethiopia
Distribution: Et-N-2

Oppiidae
Arcoppia arborea Ermilov, Sidorchuk & Rybalov

Distribution: Et-N-1

Neoamerioppia polygonata (Mahunka)
Distribution: Et-N-1, Et-N-2

Teratoppiidae

Teratoppia pectinata Balogh
Distribution: Et-N-1

Carabodidae

Austrocarabodes (*Uluguroides*) *kluttzi* Ermilov, Winchester, Lowman & Wassie **sp. nov.**
Distribution: Et-N-1, Et-N-2

Congocepheus taurus Balogh —The species is recorded for the first time from Ethiopia
Distribution: Et-N-2

Microtegeidae

Microtegeus rugosus Mahunka
Distribution: Et-N-1, Et-N-2

Phenopelopidae

Eupelops pocsi Mahunka—The species is recorded for the first time from Ethiopia
Distribution: Et-N-1, Et-N-2

Mycobatidae—The family is recorded for the first time from Ethiopia

Allozetes africanus Balogh—The genus and species are recorded for the first time from Ethiopia
Distribution: Et-N-2

Mochlozetidae

Unguizetes atypicus (Mahunka)
Distribution: Et-N-1, Et-N-2

Caloppiidae

Zetorchella pedestris Berlese—The species is recorded for the first time from Ethiopia
Distribution: Et-N-2

Haplozetidae

Pilobatella lowmanae Ermilov, Winchester & Wassie **sp. nov.**—The genus is recorded for the first time from Ethiopia
Distribution: Et-N-1

Hemileiidae

Hemileius tropicus Balogh—The genus and species are recorded for the first time for Ethiopia
Distribution: Et-N-1

Scheloribatidae

(?) *Perscheloribates luminosus* Hammer (a problem of identification of this species was discussed earlier—Ermilov, Rybalov & Franke, 2011).
Distribution: Et-N-1, Et-N-2

Perscheloribates minutus (Pletzen)

Distribution: Et-N-2

Scheloribates aethiopicus Mahunka

Distribution: Et-N-1, Et-N-2

Scheloribates fimbriatus Thor—The species is recorded for the first time from Ethiopia

Distribution: Et-N-1, Et-N-2

Scheloribates praeincisus (Berlese)—The species is recorded for the first time from Ethiopia

Distribution: Et-N-1, Et-N-2

Galumnidae

Galumna incisa Mahunka

Distribution: Et-N-2

Galumna lanceosensilla Ermilov, Sidorchuk, Rybalov

Distribution: Et-N-1

Galumna flabellifera Hammer—The species is recorded for the first time from Ethiopia

Distribution: Et-N-1, Et-N-2

Galumnella areolata Balogh—The species is recorded for the first time from Ethiopia

Distribution: Et-N-2

Pilizetes anufrievi Ermilov, Sidorchuk & Rybalov

Distribution: Et-N-2

Descriptions of new species

Austrocarabodes (Uluguroides) kluttzi Ermilov, Winchester, Lowman and Wassie sp. nov.

(Figs 1–19)

Diagnosis

Body length 481–498 by 265–282; surface of notogaster foveolate, surface of anogenital region wrinkled; prodorsal and notogastral setae well developed, phylliform, serrated; sensilli long, setiform, pilose; five pairs smooth genital setae present; adanal setae phylliform, serrated.

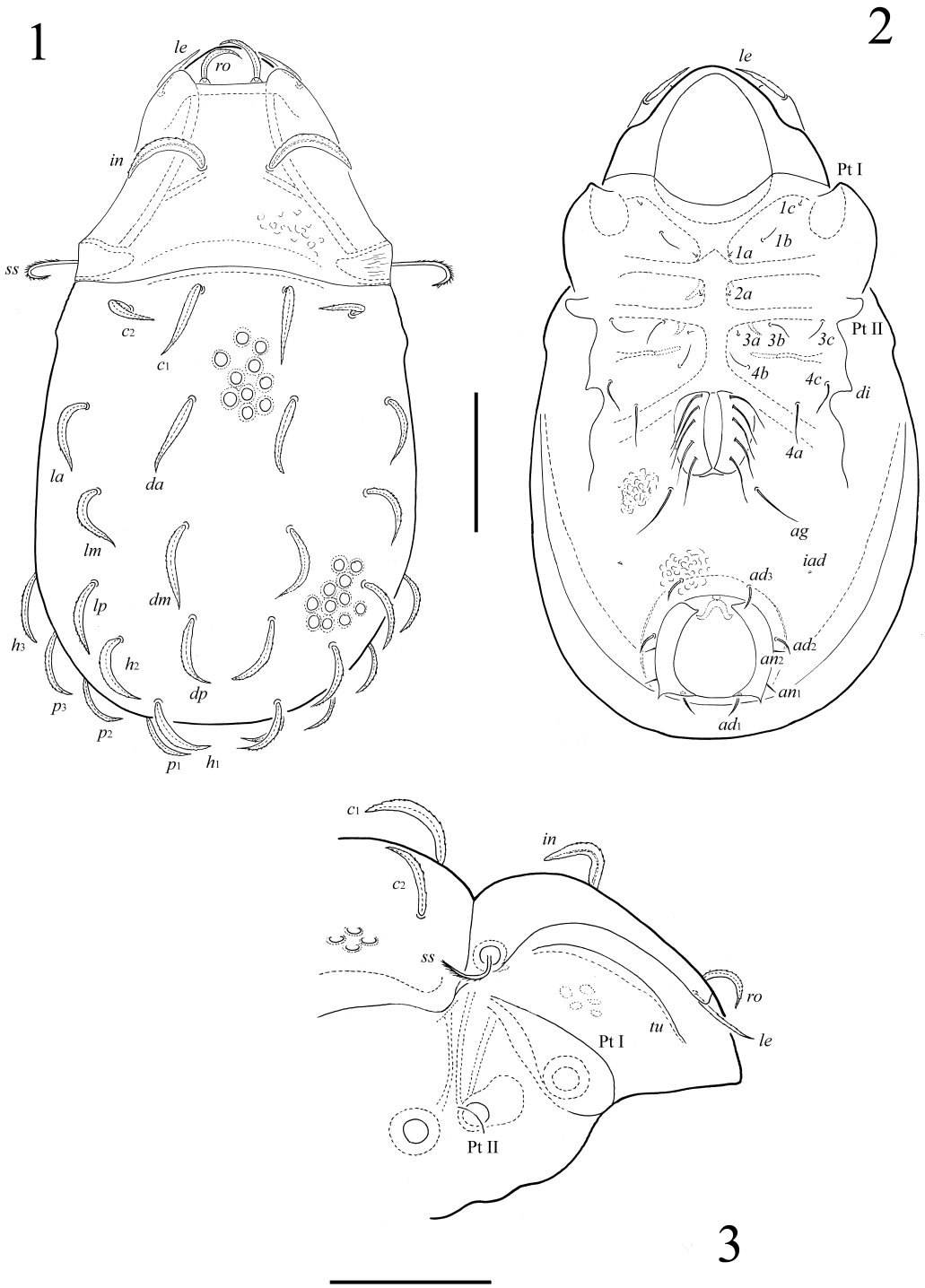
Description

Measurements. Adult body length 481 (holotype), 481–498 (two paratypes); body width 265 (holotype), 265–282 (two paratypes).

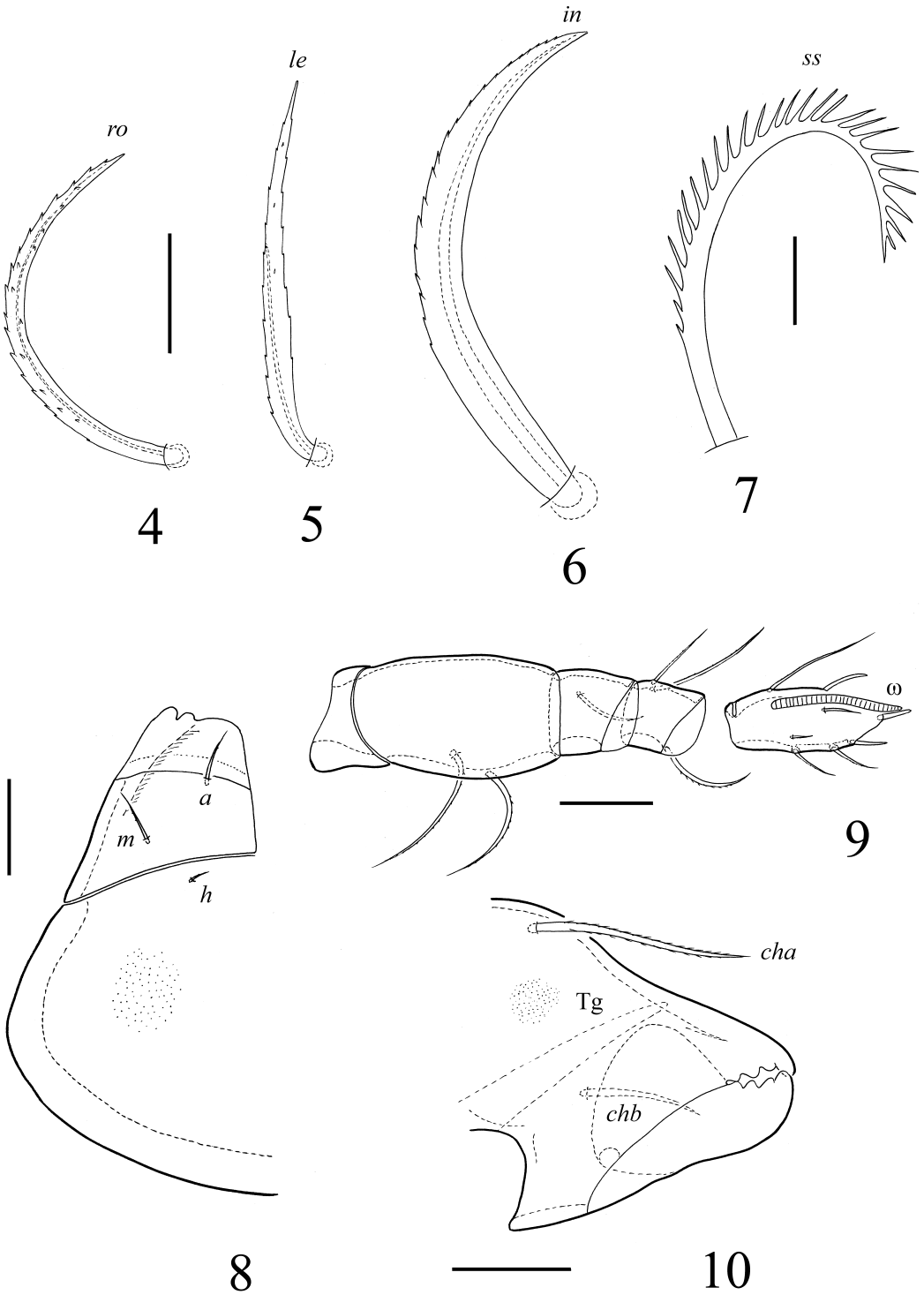
Integument. Body color yellow-brown. Body surface microfoveolate, but visible only under high magnification (× 1500). Surface of anogenital region with short wrinkles. Surface of notogaster foveolate (diameter of foveolae up to 16). Margins of foveolae thickened. Distance between foveolae more or less than their diameter.

Prodorsum (Figs 1, 3–7). Rostrum widely rounded in dorsal view. Two prodorsal transverse ridges present between lamellae: first ridge well developed on anterior part of prodorsum; second ridge interrupted medially, poorly visible in central part of prodorsum. Rostral seta (*ro*, 41–53) phylliform, with serrated outer margin, set on apophyses. Lamellar seta (*le*, 49–61) phylliform, with serrated margins, situated latero-ventrally on lamellae. Interlamellar seta (*in*, 69–73) phylliform, with serrated outer margin. Sensillus (53–61) setiform, thickened, hook-like, pilose unilaterally.

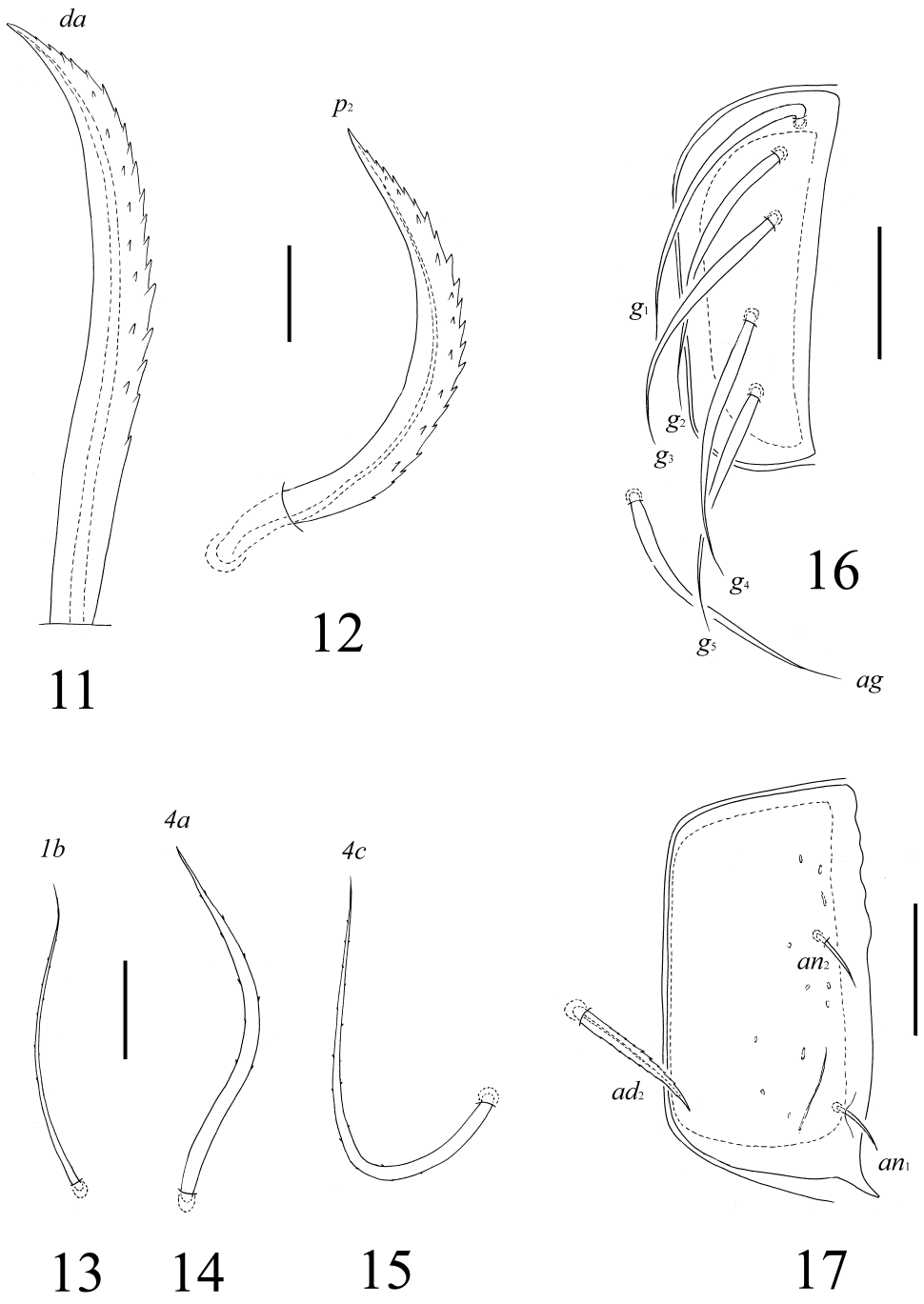
Notogaster (Figs 1, 3, 11, 12). Fourteen pairs of notogastral setae phylliform, with serrated margins or outer margin. Posterior setae p_1–p_3, h_3 (49–57) shorter than others (61–73). Lyrifissures *ia*, *im*, and opisthonotal gland opening not observable.



FIGURES 1–3. *Austrocarabodes* (*Uluguroides*) *kluttzi* Ermilov, Winchester, Lowman & Wassie **sp. nov.**, adult: 1 — dorsal view; 2 — ventral view, legs not shown; 3 — lateral view of prodorsum, epimeral setae and borders, gnathosoma and legs not shown. Scale bar 100 μm.



FIGURES 4–10. *Austrocarabodes* (*Uluguroides*) *kluttzi* Ermilov, Winchester, Lowman & Wassie **sp. nov.**, adult: 4 — rostral seta; 5 — lamellar seta; 6 — interlamellar seta; 7 — sensillus; 8 — right half of subcapitulum; 9 — palp; 10 — anterior part of chelicera. Scale bars (4–6, 8, 10) 20 μm, (7, 9) 10 μm.



FIGURES 11–17. *Austrocarabodes* (*Uluguroides*) *kluttzi* Ermilov, Winchester, Lowman & Wassie **sp. nov.**, adult: 11 — notogastral seta *da*; 12 — notogastral seta p_2; 13 — epimeral seta *1b*; 14 — epimeral seta *4a*; 15 — epimeral seta *4c*; 16 — genital plate, right and aggenital seta; 17 — anal plate, right and adanal seta ad_2. Scale bars (11–15) 10 μm, (16, 17) 20 μm.

Lateral part of body (Figs 2, 3). Tutorium long, thin, convex. Exobothridial seta not evident. Pedotectae I (Pt I), II (Pt II) and triangular discidium (*di*) well developed. Lyrifissures *ih*, *ips*, and *ip* visible, short, thin.

Gnathosoma (Figs 8–10). Subcapitulum longer than wide: 98–102 by 82–90. Hypostomal setae setiform, with poorly visible sparse barbs; *h* (4–6) shorter than *m* and *a* (both 12–16). Adoral setae and their alveoli absent. Palp 45, with setation 0–2–1–3–8(+1ω). Solenidion long, little shorter than palptarsus, thickened, blunt-ended, not attached with eupathidium. Chelicera 118–127, both cheliceral setae setiform, weakly thickened, barbed; *cha* (36–41) longer than *chb* (20–24). Trägårdh's organ (Tg) distinct.

Epimeral region (Figs 2, 13–15). Epimeral setal formula 3–1–3–3. Setae *1a*, *1c*, *2a*, and *3a* shortest (4–8), setiform, thin, smooth. Setae *4a* and *4c* longest (36–41), thickened, barbed; other setae little shorter (28–36) and thinner, also barbed.

Anogenital region (Figs 2, 16, 17). Five pairs genital (g_1–g_5, 36–49) and one pair aggenital (*ag*, 41–53) setae setiform, weakly thickened in proximal half, smooth. Two pairs anal setae (an_1, an_2) short (8), setiform, smooth. Three pairs adanal setae (ad_1–ad_3, 16–24) phylliform, with serrated margins. Lyrifissure *iad* clearly visible.

Legs (Figs 18, 19). Claw of each leg with tooth ventrally and several poorly visible tubercles dorsally. Formulae of leg setation and solenidia: I (1–4–3–4–16) [1–2–2], II (1–4–3–3–15) [1–1–2], III (2–3–1–2–15) [1–1–0], IV (1–2–2–2–11) [0–1–0]; homology of setae and solenidia indicated in Table 1. Setae setiform, usually barbed, but some setae thorn-like (*u*) or dilated in median part (on genua and femora). Famulus (*e*) short, straight, blunt-ended, inserted posterior to solenidion ω_2. All solenidia setiform; φ_1 on tibiae I longest.

TABLE 1. Leg setation and solenidia of adult *Austrocarabodes* (*Uluguroides*) *kluttzi* **sp. nov.**

Leg	Trochanter	Femur	Genu	Tibia	Tarsus
I	*v′*	*d, (l), bv″*	*(l), v′*, σ	*(l), (v)*, φ_1, φ_2	*(ft), (tc), (it), (p), (u), (a), s, (pv), e*, ω_1, ω_2
II	*v′*	*d, (l), bv″*	*(l), v′*, σ	*l′, (v)*, φ	*(ft), (tc), (it), (p), (u), (a), s, (pv)*, ω_1, ω_2
III	*l′, v′*	*d, l′, ev′*	*l′*, σ	*(v)*, φ	*(ft), (tc), (it), (p), (u), (a), s, (pv)*
IV	*v′*	*d, ev′*	*d, l′*	*(v)*, φ	*ft″, (tc), (p), (u), (a), s, pv′*

Roman letters refer to normal setae (*e* to famulus), Greek letters to solenidia. Single prime (′) marks setae on anterior and double prime (″) setae on posterior side of the given leg segment. Parentheses refer to a pair of setae.

Type material

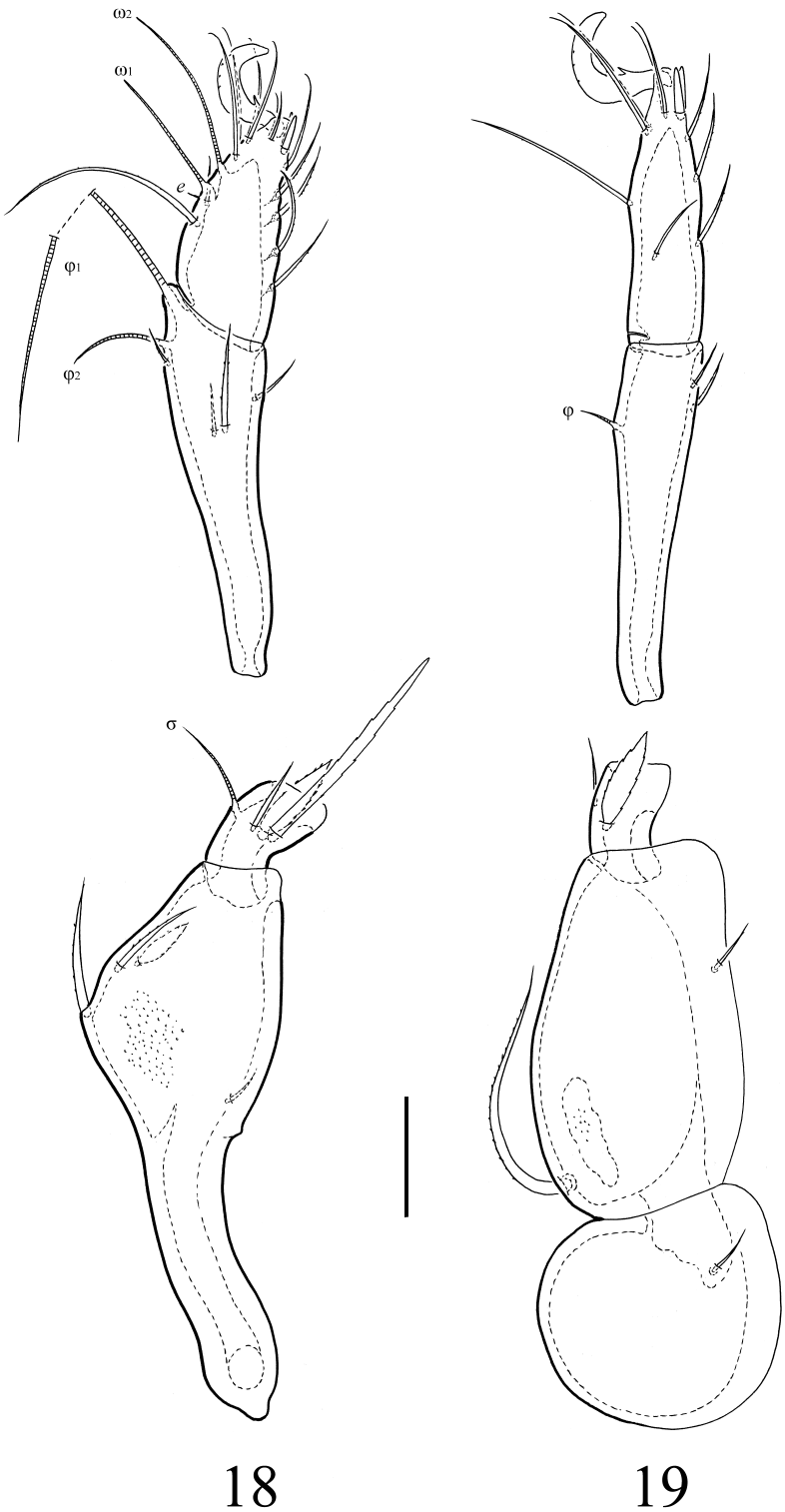
The holotype (female) has the following collection data: Et-N-1. The two paratypes (females) have the following collection data: Et-N-2.

Type deposition

The holotype (alcohol) is deposited in the collection of the Zoological Institute of the Russian Academy of Sciences, St. Petersburg, Russia; one paratype (alcohol) is deposited in the collection of the Siberian Zoological Museum, Novosibirsk, Russia; one paratype is in the personal collection of the first author.

Etymology

This species is named after Bob Kluttz, who helped collect the type material and has contributed extensively to the sampling and funding associated with the arthropod biodiversity research project conducted in the Church Forests of Ethiopia. Mr. Kluttz is a consummate research assistant whose diligence and perseverance under all field conditions ensured that quality samples were collected.



FIGURES 18–19. *Austrocarabodes* (*Uluguroides*) *kluttzi* Ermilov, Winchester, Lowman & Wassie **sp. nov.**, adult: 18 — leg I, without trochanter, left, paraxial view; 19 — leg IV, left, antiaxial view. Scale bar 20 μm.

Remarks

In having the combination of five pairs of genital setae, medium body size, wrinkled anogenital region, and phylliform, well-developed and serrate prodorsal and notogastral setae, *Austrocarabodes* (*Uluguroides*) *kluttzi* sp. nov. is very similar to *Austrocarabodes* (*Uluguroides*) *pentatrichus pentatrichus* Balogh, 1962 from Tanzania. However, it clearly differs from the latter by the long setiform sensilli, having a curved distal half (versus short, weakly dilated apically in *A.* (*U.*) *pentatrichus pentatrichus*), foveolate notogaster (versus not foveolate in *A.* (*U.*) *pentatrichus pentatrichus*), shorter aggenital setae and epimeral setae *1b* (longer in *A.* (*U.*) *pentatrichus pentatrichus*). See Ermilov *et al*. (2010a) for a key to the other species.

***Pilobatella lowmanae* Ermilov, Winchester and Wassie sp. nov.**
(Figs 20–34)

Diagnosis

Adult body length 531–564 by 298–332; surface of body microfoveolate, pteromorphs striate; prodorsal setae long, setiform, barbed; interlamellar setae longer than rostral and lamellar setae; sensillus setiform, bilaterally ciliate; notogastral setae short; genital plate with six pairs of genital setae; one pair of aggenital setae present; leg tarsi with one claw.

Description

Measurements. Body length 564 (holotype), 531 (paratype); body width 332 (holotype), 298 (paratype).

Integument. Body color brown. Body surface microfoveolate, only visible under high magnification in dissected specimen. Dorsolateral parts of notogaster with specific ornamentation. Pteromorphs weakly striate. Anogenital region with poorly visible light ornamentation.

Prodorsum (Figs 20, 22–26). Rostrum rounded. Lamella located dorsolaterally, longer than half of prodorsum. Rostral (53), lamellar (65–69), and interlamellar (86–90) setae setiform, barbed. Rostral setae inserted laterally. Lamellar setae inserted near the lamella tip. Sensillus (110–118) setiform, bilaterally ciliate.

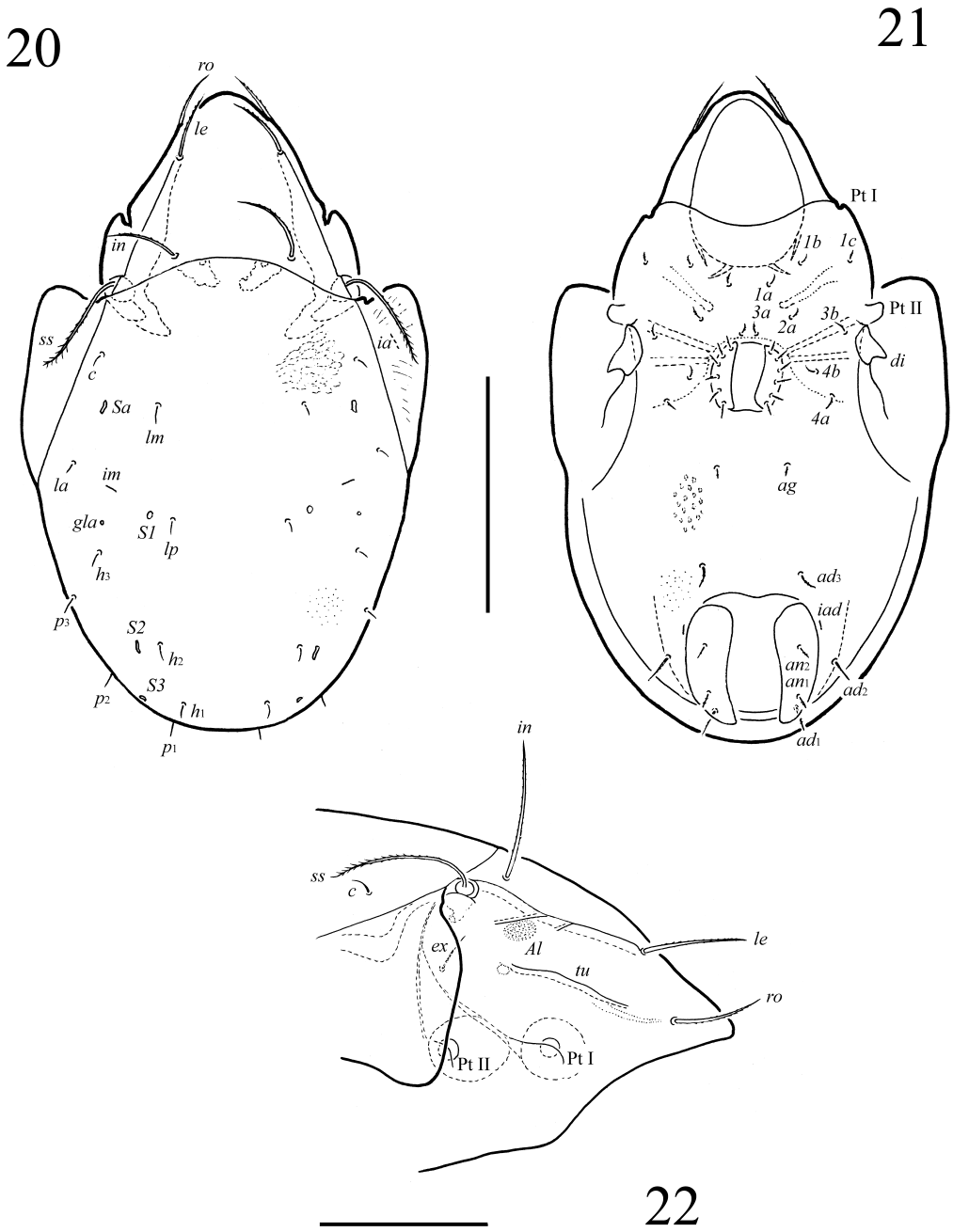
Notogaster (Figs 20, 22). Ten pairs of notogastral setae short (20), thin, smooth or with poorly visible sparse setulae. Four pairs of small sacculi present: *Sa* and *S2* oblong, *S1* and *S3* oval. Lyrifissures *ia*, *im*, *ip*, and opisthonotal gland opening (*gla*) developed typically for the genus.

Lateral part of body (Fig. 22). Tutorium long, almost straight. Sublamellar line present. Sublamellar porose area oval (*Al*, 20). Exobothridial seta (24–28) setiform, slightly barbed. Pedotectae I, II, discidium, and circumpedal carina developed typically for the genus. Lyrifissures *ih* and *ips* short, thin.

Gnathosoma (Figs 27–29). Subcapitulum longer than wide: 118 × 86–94. Hypostomal setae (all 20–24) setiform, with short cilia in distal half, except smooth *m*. Two pairs of adoral setae (or_1, or_2, 16–20) straight, bilaterally ciliate. Palp 86, with setation 0–2–1–3–9(+1ω). All setae on femur, genu, tibia, and ventral setae on tarsus with short cilia. Solenidion long, thickened, blunt-ended, attached with eupathidium. Chelicera (143), both cheliceral setae setiform, with short cilia; *cha* (45) longer than *chb* (24). Trägårdh's organ distinct.

Epimeral region (Figs 21, 30). Apodemes normally developed. Epimeral setal formula 3–1–3–3. Setae short (16), setiform, with short cilia. Setae *3c* and *4c* visible in lateral view.

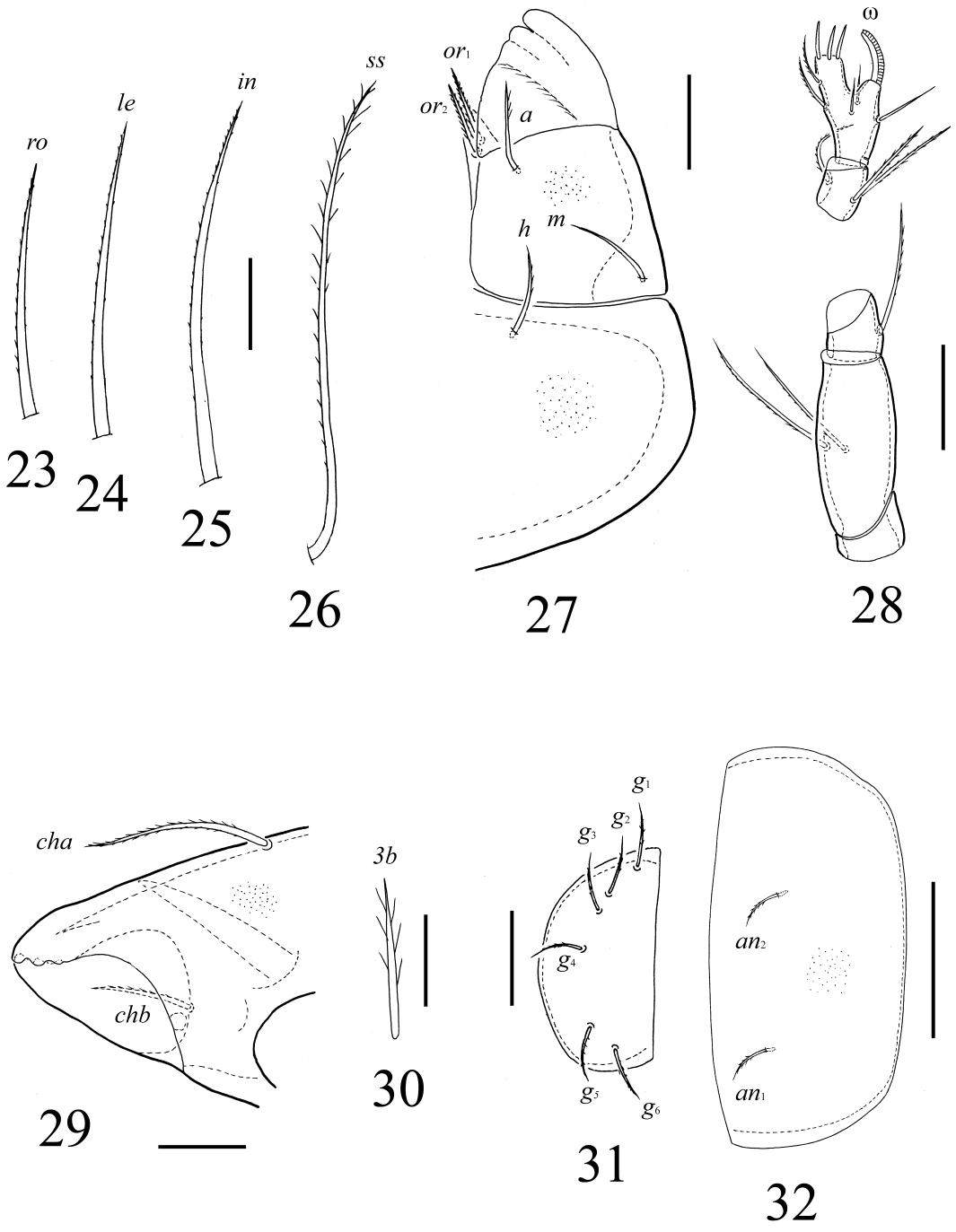
Anogenital region (Figs 21, 31, 32). Six pairs of genital (16–20), one pair of aggenital (12), two pairs of anal (20), and three pairs of adanal (ad_1, ad_2 24, ad_3 20) setae setiform, with short cilia. Lyrifissure *iad* in paranal position.



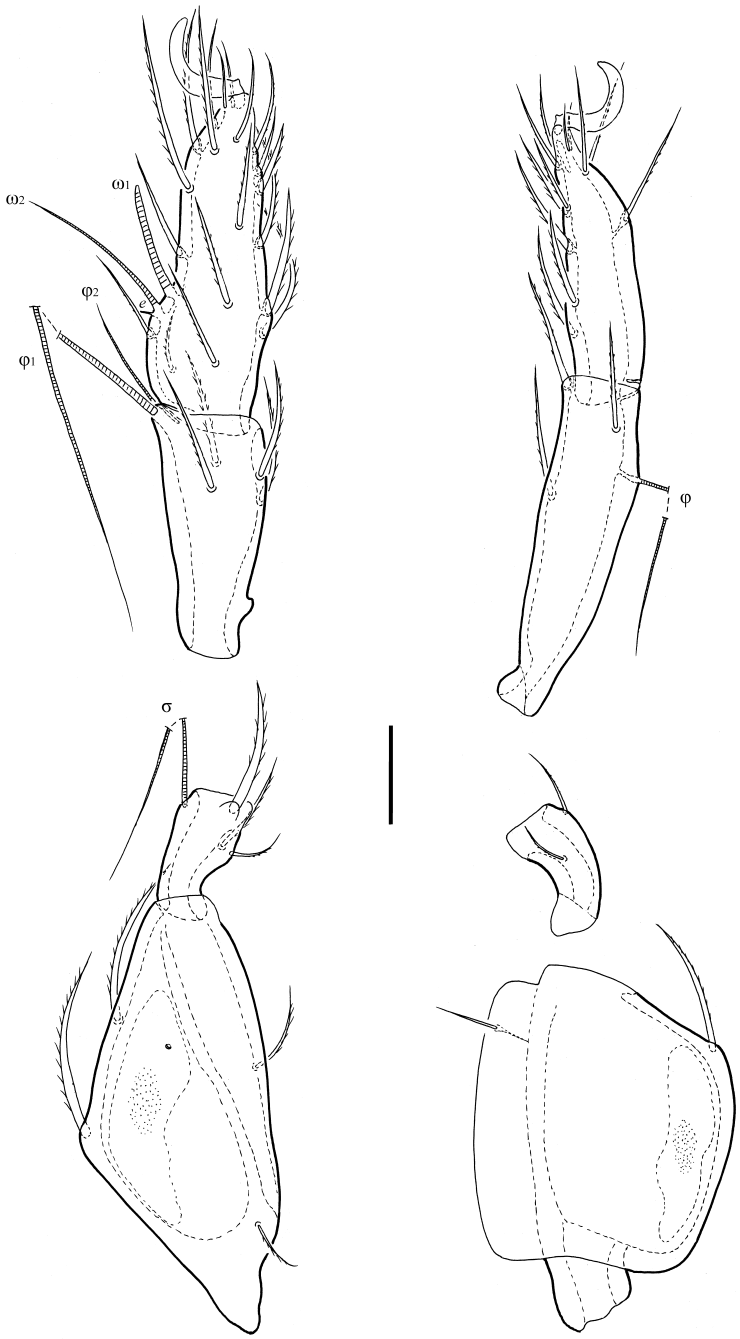
FIGURES 20–22. *Pilobatella lowmanae* Ermilov, Winchester & Wassie **sp. nov.**, adult: 20 — dorsal view; 21 — ventral view, legs not shown; 22 — lateral view of prodorsum, epimeral setae and borders, gnathosoma and legs not shown. Scale bars (20, 21) 200 μm, (22) 100 μm.

Legs (Figs 33, 34). Monodactylous. Claw of each leg with tubercle in ventro-basal part. Formulae of leg setation and solenidia: I (1–5–3–4–20) [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 2. All setae setiform, many are barbed or with short cilia. Famulus short, straight, blunt-ended.

Solenidia ω_1 on tarsi I, ω_1 and ω_2 on tarsi II, σ on genu III thickened, blunt-ended; the other solenidia setiform.



FIGURES 23–32. *Pilobatella lowmanae* Ermilov, Winchester & Wassie **sp. nov.**, adult: 23 — rostral seta; 24 — lamellar seta; 25 — interlamellar seta; 26 — sensillus; 27 — left half of subcapitulum; 28 — palp; 29 — anterior part of chelicera; 30 — epimeral seta *3b*; 31 — genital plate, right; 32 — anal plate, left. Scale bars (23–29, 31) 20 μm, (30) 10 μm, (32) 50 μm.



FIGURES 33–34. *Pilobatella lowmanae* Ermilov, Winchester & Wassie **sp. nov.**, adult: 33 — leg I, without trochanter, left, antiaxial view; 34 — leg IV, without trochanter, right, antiaxial view. Scale bar 20 μm.

Type material

The holotype (female) and paratype have the following collection data: Et-N-1

TABLE 2. Leg setation and solenidia of adult *Pilobatella lowmanae* **sp. nov.**

Leg	Trochanter	Femur	Genu	Tibia	Tarsus
I	*v′*	*d, (l), v″, bv″*	*(l), v′*, σ	*(l), (v)*, φ_1, φ_2	*(ft), (tc), (it), (p), (u), (a), s, (pv), v′, (pl), l″, e*, ω_1, ω_2
II	*v′*	*d*, l'_1, l'_2, *v″, bv″*	*(l), v′*, σ	*(l), (v)*, φ	*(ft), (tc), (it), (p), (u), (a), s, (pv)*, ω_1, ω_2
III	*l′, v′*	*d, l′, ev′*	*l′*, σ	*l′, (v)*, φ	*(ft), (tc), (it), (p), (u), (a), s, (pv)*
IV	*v′*	*d, ev′*	*d, l′*	*l′, (v)*, φ	*ft″, (tc), (p), (u), (a), s, (pv)*

See Table 1 for explanations.

Type deposition

The holotype (alcohol) is deposited in the collection of the Zoological Institute of the Russian Academy of Sciences, St. Petersburg, Russia; paratype (alcohol) is in the personal collection of the first author.

Etymology

This species is named after Dr. Meg Lowman, who is instrumental in promoting the ongoing research mission to study the arthropod biodiversity associated with Ethiopian Church Forests and who has worked tirelessly on promoting these global "hotspots" as critical conservation areas. Her passion for science and international leadership have led to establishing partnerships with the Christian Orthodox clergy, implementing sustainability initiatives and involving local communities to adopt best practices to solve the environmental challenges faced by these forests.

Remarks

Balogh and Mahunka (1967) proposed the generic characters to the genus *Pilobatella*, two of which are: three pairs of aggenital setae and legs with one claw. However, Corpuz-Raros (1979) and Scull (1985) describe *Pilobatella pseudovermiseta* Corpuz-Raros, 1979 and *Pilobatella maurensis* Scull, 1985, respectively, with only one pair of aggenital setae. Also Mahunka (2003) described *Pilobatella baloghi* Mahunka, 2003 with tridactylous legs. Hence, these additions should be indicated in any future diagnosis of the genus.

Distinctive characters of the new species with the other species of the genus *Pilobatella* can be found in the identification key below.

Key to species of *Pilobatella*

1. One pair of aggenital setae present 2
- Three pairs of aggenital setae present 4
2. Sensilli bacilliform, with weakly dilated head; rostral, lamellar interlamellar, and notogastral setae subequal in length. Distribution: Cuba . . . . . *P. maurensis* Scull, 1985
- Sensilli setiform; rostral, lamellar, and interlamellar setae several times longer than notogastral setae . . 3
3. Sensilli ciliate unilaterally; lamellar setae longer than interlamellar setae; smaller species (418 × 242). Distribution: Philippines . . . . . *P. pseudovermiseta* Corpuz-Raros, 1979
- Sensilli ciliate bilaterally; lamellar setae shorter than interlamellar setae; larger species (531–564 × 298–332). Distribution: Ethiopia . . . . . *P. lowmanae* sp. nov.
4. Leg tarsi with three claws; larger species (520–556 × 277–297). Distribution: Kenya . . . . . .

. . . . . *P. baloghi* Mahunka, 2003
- Leg tarsi with one claw; smaller species (body length less than 500, notogaster width less than 250) . . . 5
5. Sensilli setiform; sacculi *Sa* slit-shaped. Distribution: Oriental region . . . . . .*P. schauenbergi* Mahunka, 1977 (see Mahunka 1977a)
- Sensilli bacilliform or with dilated head; sacculi *Sa* not slit-shaped 6
6. Sensilli bacilliform, without developed head 7
- Sensilli with well developed head; smaller species 8
7. Lamellar setae inserted between lamellae; larger species (432–472 × 236–240). Distribution: India . . . . . *P. berlesei* Bhattacharya and Banerjee, 1980
- Lamellar setae inserted on tip of the lamellae; smaller species (330 × 198). Distribution: Madagascar . . . . . *P. brevipila* Mahunka, 2011
8. Sejugal apodeme and apodeme 3 form transversal apodemes in front of genital aperture. Distribution: Kenya . . . . . *P. xena* Mahunka, 1977 (see Mahunka 1977b)
- No transversal apodeme in front of genital aperture 9
9. A semicircular formation is presented between sejugal apodeme and apodeme 3; five pairs of genital setae. Distribution: Kenya . . . . . *P. monstruosa* Mahunka, 1986 (see Mahunka 1986b)
- No semicircular formation between sejugal apodeme and apodeme 3; six pairs of genital setae. Distribution: Congo . . . . . *P. punctulata* Balogh and Mahunka, 1967

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