A new species of *Lasiobelba* (Acari, Oribatida, Oppiidae) from Vietnam

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**Abstract**

A new species of oribatid mites of the genus *Lasiobelba* (Oribatida, Oppiidae) is described from decomposing logs in the polydominant forest of Cat Tien National Park (Southern Vietnam). *Lasiobelba longisensilla* **sp. nov.** differs from most similar species, *L. sculpta* Wang, 1993 and *L. yunnanensis* Wen, 1999, by the smaller body size, notogaster without sculpturing, and lamellar setae shorter than rostral and interlamellar setae.

**Key words:** oppiid mites, *Lasiobelba*, systematics, morphology, new species, Oriental region.

**Introduction**

During taxonomic study of the small oribatid mite material collected from Dong Nai Province in Cat Tien National Park of Southern Vietnam, I found one new species belonging to the genus *Lasiobelba* Aoki, 1959, the nominative subgenus (Acari, Oribatida, Oppiidae). The main goal of the paper is to describe and illustrate a new species under the name *Lasiobelba longisensilla* **sp. nov.**

*Lasiobelba* was proposed by Aoki (1959) with *Lasiobelba remotula* Aoki, 1959 as type species. The genus comprises two subgenera (*Lasiobelba* Aoki, 1959, *Antennoppia* Mahunka, 1983) and 34 species, which collectively have a cosmopolitan distribution except the Antarctic region (Subías 2004, updated 2017). The generic characters and an identification key to known species of *Lasiobelba* are provided by Ermilov et al. (2014). At present, three species (all from the nominative subgenus) of this genus were known from Vietnam (Ermilov 2015a): *L. kuehnelti* (Csiszár, 1961), *L. remotula* Aoki, 1959 and *L. vietnamica* (Balogh, 1983).

This work is part of the study on the oribatid fauna of Southern Vietnam (e.g. Ermilov 2015b, 2016, 2017).

**Material and Methods**

Material: Holotype (male) and three paratypes (one female and two males): Vietnam, Dong Nai Province, Cat Tien National Park, 11°26'48''N, 107°26'26''E, 145 m a.s.l., polydominant forest, sample from the large
decomposing logs, 12.XI.2015 (collected by A.V. Tiunov).

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 of notogaster in dorsal view. 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–femur.

Drawings were made with a camera lucida using a Leica transmission light microscope “Leica DM 2500”.

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.

The following abbreviations are used on the figures: ro, le, in, bs, ex – rostral, lamellar, interlamellar, bothridial and exobothridial setae, respectively; la, lm, lp, h, p – notogastral setae; ia, im, ih, ips – notogastral lyrifissures; gla – opisthontal gland opening; cs – circumgastric scissure; csb – circumgastric sigillar band; h, m, a – subcapitular setae; or – adoral seta; cm, acm, ul, sul, v, l, vt, lt – palp setae; cha, chb – cheliceral setae; Tg – Trägårdh’s organ; r – ridge; t – tooth; 1a, 1b, 1c, 2a, 2b, 3a, 3b, 3c, 4a, 4b, 4c – epimeral setae; Pd I – pedotectum I; dis – discidium; g, ag, an, ad – genital, aggenital, anal and adanal setae, respectively; iad – adanal lyrifissure; p.o. – preanal organ; Tr, Fe, Ge, Ti, Ta – leg trochanter, femur, genu, tibia, tarsus, respectively; o, σ, φ – solenidia; v – leg famulus; v, ev, bv, l, d, ft, tc, it, p, u, a, s, pv, pl – leg setae.

The following abbreviations of collections are used: SMNH – Senckenberg Museum of Natural History, Görlitz, Germany; TSUMZ – Tyumen State University Museum of Zoology, Tyumen, Russia.

Systematics

Family Oppiidae

Subfamily Oppiinae

Genus Lasiobelba Aoki, 1959

Lasiobelba longisensilla sp. nov.
(Figs 1–11)

Diagnosis. Body size: 237–246 × 135–143. Body surface without sculpturing. Rostrum rounded. Interbothridial region with three pairs of muscle sigillae. Prodorsal setae well developed, setiform, slightly barbed; ro and in longer and thicker than le and ex. Bothridial setae very long, spindle-form, with well developed setiform apex, barbed. Nine pairs of notogastral setae (c absent) setiform, barbed; lm, lp longest, p₂, p₃ shortest. Subcapitular setae smooth, a shorter than m and h. Epimeral, aggenital, anal and adanal setae setiform, slightly barbed, genital setae thin, smooth. Discidia present. Leg trochanters III with one posterior tooth.

Description. Measurements. Body length: 246 (holotype), 237–246 (three paratypes); notogaster width: 135 (holotype), 135–143 (three paratypes).

Integument (Figs 1, 6). Body color light brown. Body surface microfoveolate (visible only under high magnification in dissected specimens, × 1000). Lateral parts of body between bothridia and leg acetabula I–III microgranulate (diameter of granules up to 1).

Prodorsum (Figs 1, 6). Rostrum rounded. Longitudinal rows comprising several muscle sigillae, present in front of the bothridia. Interbothridial region with three pairs of muscle sigillae. Interbothridial tubercles absent, postbothridial tubercles developed. Rostral (22–24), lamellar (16), interlamellar (24–26) and exobothridial (10–12) setae setiform, slightly barbed, inserted on small tubercles; ro and in thicker than le and ex. Bothridial setae very long (102–110), as long as length of prodorsum, spindle-form, with well developed setiform apex, barbed.
**Figure 1-4. Lasiobelba longisensilla** sp. nov., adult: 1 – dorsal view (legs not illustrated); 2 – subcapitulum, ventral view; 3 – palp, right, paraxial view; 4 – chelicera, right, antiaxial view. Scale bars 45 μm (1), 17 μm (2–4).

**Notogaster** (Figs 1, 5, 7). Anterior border convex medially. Nine pairs of notogastral setae setiform, barbed, \( lm, lp \) (49–53) longer than \( la, h_1-h_3 \) (36–41), \( p_1 \) (16) and \( p_2, p_3 \) (10–12); setae \( c \), even their alveoli absent. Setae \( lm \) inserted anteromedial to \( la \). Notogastral lyrifissures (except \( ip \) not found) and opisthonomal gland openings well visible, \( im \) located anterior to \( h_3, gla \) lateral and close to \( h_3 \). Circumgastric scissure and circumgastric sigillar band distinct.
Figure 5–7. Lasiobelba longisensilla sp. nov., adult: 5 – ventral view (gnathosoma and legs not illustrated); 6 – anterior part of body, lateral view (legs, gnathosoma not illustrated); 7 – posterior part of body, lateral view (legs not illustrated). Scale bar 45 μm.

Gnathosoma (Figs 2–4). Subcapitulum size: 61–65 × 49. Subcapitular setae setiform, smooth, a (12–14) shorter than m and h (18–20). Adoral setae (4–6) setiform, thin, smooth. Length of palps: 41–45. Palpal setal formula: 0–2–1–3–8(+1 solenidion). Solenidion of palptarsi short, bacilliform, connected to one distal seta. Postpalpal setae (2–4) spiniform, smooth. Length of chelicerae: 57–61. Chelicerae with antiaxial ridge and several dorsoparaxial teeth. Cheliceral setae setiform, cha (14–16) shortly ciliate, chb (10) barbed. Trägårdh’s organ of chelicerae elongate triangular.
Figures 8–11. Lasiobelba longisensilla sp. nov., adult: 8 – leg I, right, antiaxial view; 9 – trochanter, femur and genu of leg II, right, antiaxial view; 10 – trochanter, femur and genu of leg III, left, antiaxial view; 11 – leg IV, left, antiaxial view. Scale bar 17 μm.

Epimeral and lateral podosomal regions (Figs 5–7). Sejugal apodeme with one pair of tubercles. Epimeral setal formula: 3–1–3–3. Epimeral setae setiform, slightly barbed, 3c, 4c (22–24) longer than 1b, 3b,
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4a (14–16) and 1a, 1c, 2a, 3a, 4b (10–12). Discidia triangularly pointed.

Anogenital region (Figs 5, 7). Five pairs of genital setae (6–8) setiform, thin, smooth. Anterior pair of genital papillae smallest, posterior pair largest. One pair of aggenital (10–12), two pairs of anal (10–12) and three pairs of anal (16–18) setae setiform, slightly barbed. Adanal setae \( ad_1 \) posterior, \( ad_2 \) lateral, \( ad_3 \) anterolateral to anal aperture. Adanal lyrifissures located close and parallel to anal plates.

Legs (Figs 8–11). Claw of each leg smooth. Trochanters III with one posterior tooth. Formulas of leg setation and solenidia: I (1–5–2–4–20) [1–2–2], II (1–5–2–4–16) [1–1–2], III (2–3–1–3–15) [1–1–0], IV (1–2–1–3–12) [0–1–0]; homology of setae and solenidia indicated in Table 1. Setae \( p \) setiform on tarsi I, and very short, conical on tarsi II–IV. Femurus of tarsi I short, erect, slightly dilated distally, inserted posterior to solenidion \( \omega_1 \).

Table 1. Leg setation and solenidia of *Lasiobelba longisensilla* sp. nov.

| Leg | Tr | Fe | Ge | Ti | Ta |
|-----|----|----|----|----|----|
| I   | \( v' \) | \( d, (l), bv'' \) | (l), \( \sigma \) | (l), \( \nu, \phi_1, \phi_2 \) | (\( ft \), (tc), (it), (p), (u), (a), s, \( pv \), (pl), (l), \( v' \), \( v'' \), \( ev'' \), \( \nu, \phi_1, \phi_2 \) |
| II  | \( v' \) | \( d, (l), bv'' \) | (l), \( \sigma \) | (l), \( \nu, \phi \) | (\( ft \), (tc), (it), (p), (u), (a), s, (pv), (pl), \( l'' \), \( \omega_1, \omega_2 \) |
| III | \( l', v' \) | \( d, l', ev' \) | \( l', \sigma \) | \( l', \nu, \phi \) | (\( ft \), (tc), (it), (p), (u), (a), s, (pv) |
| IV  | \( v' \) | \( d, ev' \) | \( d \) | \( l', \nu, \phi \) | \( ft', (tc), (p), (u), (a), s, (pv) |

Roman letters refer to normal setae, Greek letters refer to solenidia (except \( \varepsilon \) – famulus). 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.

**Type deposition.** The holotype (in ethanol with drop of glycerol) is deposited in SMNH. Three paratypes (in ethanol with drop of glycerol) are deposited in TSUMZ.

**Etymology.** The specific name “*longisensilla*” refers to the very long bothridial setae (sensilla).

**Remarks.** *Lasiobelba longisensilla* sp. nov. is morphologically most similar to *Lasiobelba sculpta* Wang, 1993 and *L. yunnanensis* Wen, 1999 known from Southern China in having very long, spine-like bothridial setae with well developed setiform apex, and long dorsal notogastral setae. However, the new species differs from both species by the smaller body size (237–246 \( \times \) 135–143 versus 685–699 \( \times \) 439–472 in *L. sculpta* and 610–644 \( \times \) 386–402 in *L. yunnanensis*), notogaster without sculpturing (versus notogaster striate in *L. sculpta* and granulate in *L. yunnanensis*), and lamellar setae shorter than rostral and interlamellar setae (versus lamellar setae not shorter than rostral and interlamellar setae in both *L. sculpta* and *L. yunnanensis*).

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