

TWO NEW SPECIES OF MITES OF THE FAMILY CANESTRINIIDAE (ACARI: ASTIGMATA) ASSOCIATED WITH BEETLES OF THE SUBFAMILY CETONIINAE (COLEOPTERA, SCARABAEIDAE) FROM ETHIOPIA

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ABSTRACT: Two new species of mites of the family Canestriniidae (Acari, Astigmata): *Barbiangia elongata* sp. n. and *Tamarangia ethiopica* sp. n., collected from the Ethiopian beetles of the subfamily Cetoniinae (Coleoptera, Scarabaeidae), *Diplognatha gagates* (Forster, 1771) and *Pachnoda abysinica* Reiche, 1847, respectively, are described.

Key words: Canestriniidae, *Tamarangia*, *Barbiangia*, new species, Scarabaeidae, Cetoniinae, Africa

During examination of beetles collected in Ethiopia two new species of mites of the family Canestriniidae (Acari, Astigmata) from the genera *Tamarangia* Haitlinger, 1991 and *Barbiangia* Haitlinger, 1993 were discovered. Both species were found under the elytra of beetles of the subfamily Cetoniinae (Coleoptera, Scarabaeidae). The purpose of this paper is to describe the two new mite species.

The terminology follows that of Griffiths et al. (1990). All measurements are given in micrometers (μm) for holotype and, if available, for 5 paratypes (in parenthesis). Type material is deposited in the collection of the department of Acarology, Shmalgausen Institute of Zoology, Kiev, Ukraine.

Genus *Tamarangia* Haitlinger, 1991

Type species: *Tamarangia nimfae* Haitlinger, 1991.

Emendation of diagnosis (adults). Setae *vi* situated on or outside well sclerotized propodosomal plate, setae *ve* vestigial. Setal formula: leg I: Tr 1–Fe 1–Ge 2(1)–Ti (1)–Ta 9 (3) (number of solenidia in parenthesis), leg II: Tr 1–Fe 1–Ge 2(1)–Ti (1)–Ta 6 (1), leg III: Tr 1–Fe 0–Ge 1–Ti (1)–Ta 4, leg IV: Tr 1–Fe 0–Ge 0–Ti (1)–Ta 5. Subunguinal setae on tarsi I–IV straight, spine-like.

Mites of this genus are associated (probably parasites) of African beetles of the genus *Pachnoda* (Scarabaeidae: Cetoniinae). There are 3 described species: *T. nimfae* Haitlinger, 1991 from *Pachnoda thoracica* Sch. from Ethiopia and South Africa (Haitlinger and Chmielewski 2004), *T. fabiolae* Haitlinger, 1991 from *Pachnoda marginata* Fabr. and *T. flawiani* Haitlinger, 1991 from *Pachnoda marginata* from Sierra Leone.

***Tamarangia ethiopica* sp. n.**

Figs 1–10.

Female. Idiosomal length 444 (427–483), maximal width 366 (350–416).

Gnathosoma slightly longer than its width.

Idiosomal dorsum (Fig. 1). Propodosoma distinctly separated from hysterosoma by sejugal furrow. Setae *vi* situated on well sclerotized propodosomal plate. Dorsal cuticle weakly striated. Setae *f*₂ and *h*₂ very long, flagellate distally. Length of dorsal setae: *vi* 51 (48–55), *si* 49 (45–51), *se* 188 (178–197), *c*₁ 114 (105–119), *c*₂ 78 (59–79), *c*_p 150 (142–167), *c*₃ 48 (41–52), *d*₁ 113 (105–114), *d*₂ 143 (124–148), *e*₁ 61 (53–63), *e*₂ 65 (59–66), *h*₁ 50 (30–55).

Idiosomal venter (Fig. 2). Apodemes 1 and 2 joined together. All ventral setae thin and filiform. Ventral surface with very delicate striae. Bursa copulatrix (fig. 2) large, almost rectangular.

Legs (Figs. 4–7). Leg I (Fig. 4). Solenidia ω_1 5 (4–5) < ω_2 24 (23–27) < ω_3 41 (36–42) < ϕ 97 (78–98) > σ 31 (27–32). Leg II (Fig. 5). Solenidia ω 33 (29–34) < ϕ 97 (90–98) > σ 28 (24–29). Leg III (Fig. 6). Solenidion ϕ 83 (79–85). Leg IV (Fig. 7). Solenidion ϕ 61 (58–62).

Male. Idiosomal length 396–450, maximal width 305–372.

Idiosomal dorsum (Fig. 8). Dorsal setae distinctly shorter than in female. Length of dorsal setae: *vi* 48–56, *si* 28–34, *se* 159–187, *c*₁ 42–53, *c*₂ 31–34, *c*_p 117–132, *c*₃ 36–39, *d*₁ 53–64, *d*₂ 40–45, *e*₁ 23–25, *e*₂ 18–21, *h*₁ 22–31.

Idiosomal venter (Fig. 9). Adanal suckers well developed. Aedeagus as on fig. 10. Setae *h*₃ and *e*₂ short, spherical. Setae *ps*₂ and *ps*₃ short, stiff.

Legs. Similar with those of female.

Type material. Holotype: female, ETHIOPIA, Addis Ababa, under elytra of *Pachnoda abysinica* Reiche, 1847, 1982, coll. A.F. Evminenko; paratypes: 17 females, 13 males, 8 TN, 7 PN, 2 larvae, same data as holotype.

Differential diagnosis. The new species differs from *T. nimfae* Haitlinger, 1991 by longer dorsal setae of the female, especially setae *c*₁ 105–



Fig. 1-3. *Tamarangia ethiopica* sp. n., female: 1 — dorsum of body, 2 — venter, 3 — bursa copulatrix and spermatheca.

119 (72–102 in *T. nimfae*), c_2 59–78 (44–54 in *T. nimfae*), d_1 105–114 (66–98 in *T. nimfae*), and d_2 124–148 (74–106 in *T. nimfae*). Male and female also differ by the position of setae *vi* on the propodosomal plate (setae *vi* situated outside the propodosomal plate in *T. nimfae*); from *T. flawiani* Haitlinger, 1991 the new species differs by the absence of scale-like ornamentation at the posterior part of the hysterosoma of the female (present in *T. flawiani*); females of the new species differs from *T. fabiolae* Haitlinger, 1991 by distinctly longer setae c_1 105–119 (76–82 in *T. fabiolae*), d_1 105–114 (64–74 in *T. fabiolae*), while setae c_2 and d_2 subequal with that of *T. fabiolae*.

Etymology. The specific epithet, *ethiopica*, refers to the geographical distribution of the new species.

Genus *Barbiangia* Haitlinger, 1993

Type species: *Barbiangia alvari* Haitlinger, 1993.

Emendation of diagnosis (adults). Setae *vi* situated outside well sclerotized elongated propodosomal plate, setae *ve* vestigial. Setal formula as in

the genus *Tamarangia*. Subunguinal setae on tarsi I–IV straight, thin, spine-like.

Mites of this genus are associated with African beetles of the subfamily Cetoniinae (Scarabaeidae). There are 2 described species: *B. alvari* Haitlinger, 1993 from undetermined Cetoniinae from Tanzania (Haitlinger 1993) and *B. ethiopica* (Haitlinger, 1990) from undetermined Cetoniinae from Ethiopia (Haitlinger 1990).

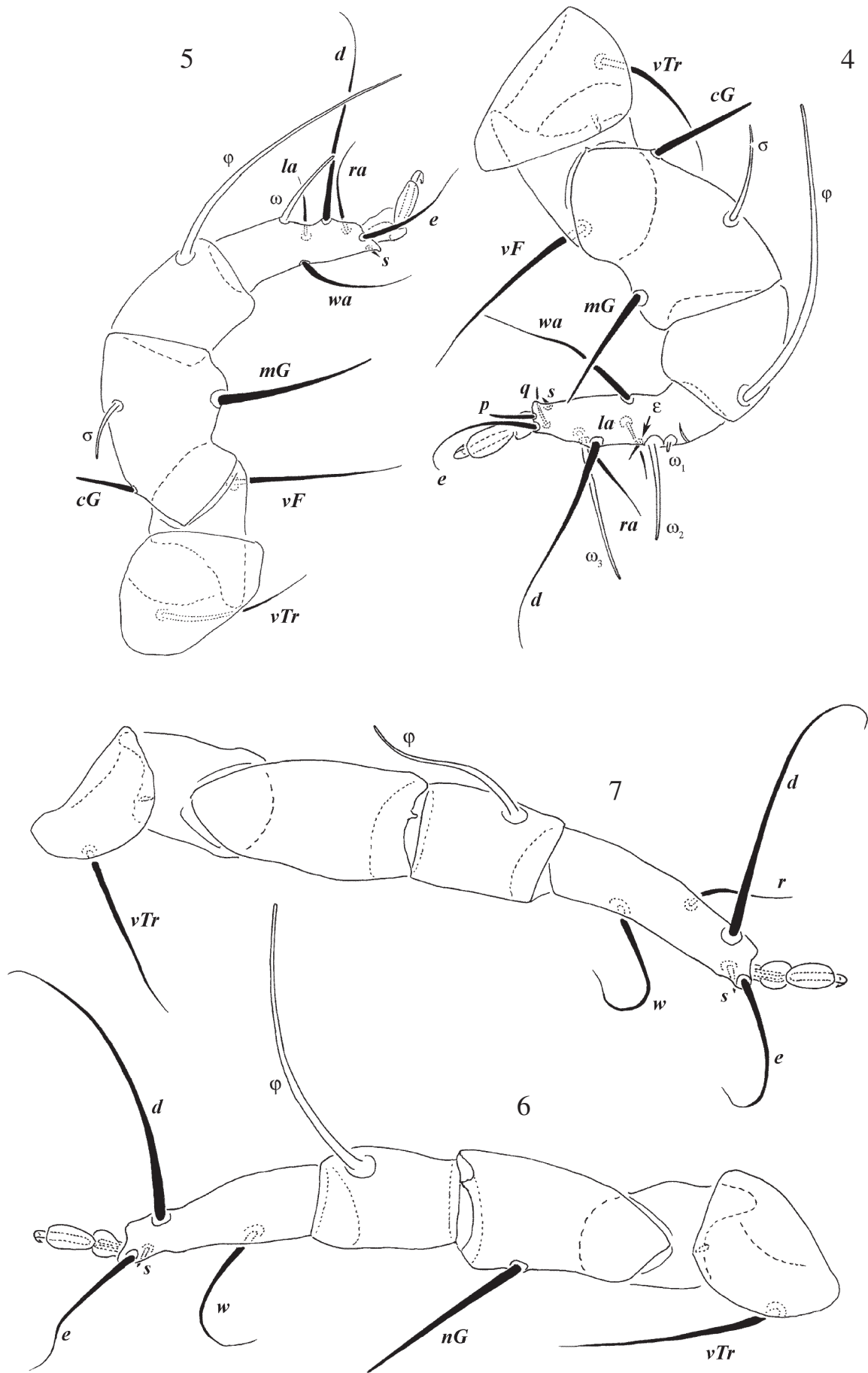
Barbiangia elongata sp. n.

Figs 11–18.

Female. Idiosomal length 377, max width 255. Gnathosoma slightly longer than its width.

Idiosomal dorsum (Fig. 11). Propodosoma distinctly separated from hysterosoma by sejugal furrow. Setae *vi* anterior to well sclerotized and elongate propodosomal plate. Dorsal cuticle weakly striated. Setae f_2 and h_2 very long, flagellate distally. Setae f_2 distinctly lanceolate basally. Length of dorsal setae: *vi* 27, *si* 9, *se* 167, c_1 16, c_2 22, c_p 61, d_1 18, d_2 76, e_1 11, e_2 9, h_1 11.

Idiosomal venter (Fig. 12). Apodemes 1 and 2 joined together. All ventral setae thin filiform.



Figs. 4-7. *Tamarangia ethiopica* sp. n., female: 4-7 — legs I-IV, respectively.

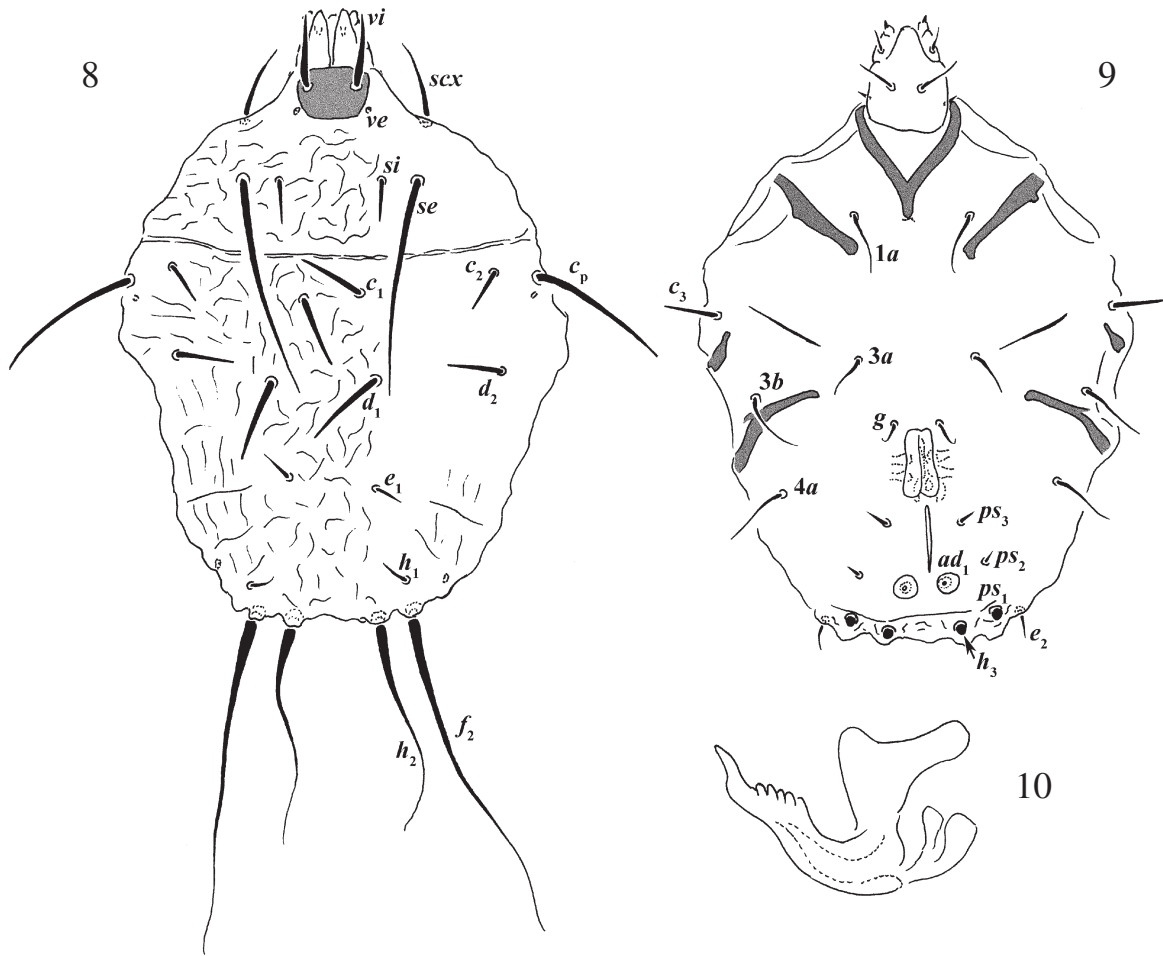


Fig. 8–10. *Tamarangia ethiopica* sp. n., male: 8 — dorsum of body, 9 — venter of body, 10 — aedeagus.

Ventral surface with very delicate striae. Bursa copulatrix large, oval.

Legs (Figs. 13–16). Leg I (Fig. 13). Solenidia $\omega_1 6 < \omega_2 20 < \omega_3 37 < \phi 83 > \sigma 39$. Leg II (Fig. 14). Solenidia $\omega 24 < \phi 83 > \sigma 18$. Leg III (Fig. 15). Solenidium $\phi 70$. Leg IV (Fig. 16). Solenidium $\phi 48$.

Male. Idiosomal length 350, max width 219.

Idiosomal dorsum (Fig. 17). Dorsal setae slightly shorter than in female. Length of dorsal setae: *vi* 21, *si* 7, *se* 194, *c*₁ 14, *c*₂ 18, *c*_p 45, *d*₁ 14, *d*₂ 53, *e*₁ 9, *e*₂ 10, *h*₁ 11.

Idiosomal venter (Fig. 18). Adanal suckers well developed. Aedeagus long. All ventral setae flagellate.

Legs. Similar with those of female.

Type material. Holotype: female, ETHIOPIA, under elytra of *Diplognatha gagates* (Forster, 1771), 1982, coll. A.F. Evminenko; paratypes: 1 male, 7 TNs, with same data as holotype.

Differential diagnosis. The new species is similar to *B. alvari* Haitlinger, 1993 and *B. ethiopica* (Haitlinger, 1990), but differs from both species by distinctly shorter dorsal setae *d*₂ and *e*₁ of female which about 2

times shorter than distances between their bases (in *B. alvari* and *B. ethiopica* setae *d*₂ about as long as distance *d*₂–*d*₂, *e*₁ distinctly longer than *e*₁–*e*₁).

Etymology. The specific epithet *elongata* refers to the unusually elongated propodosomal plate.

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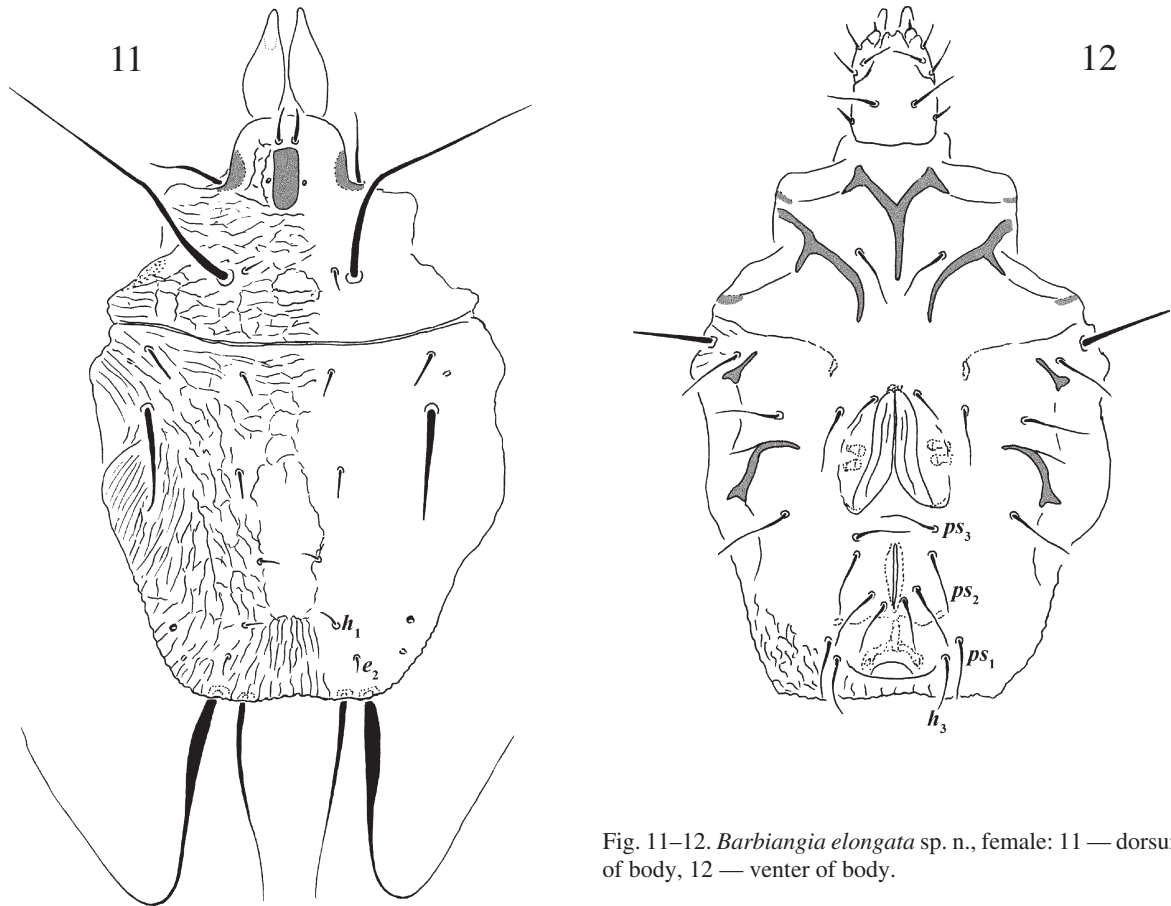
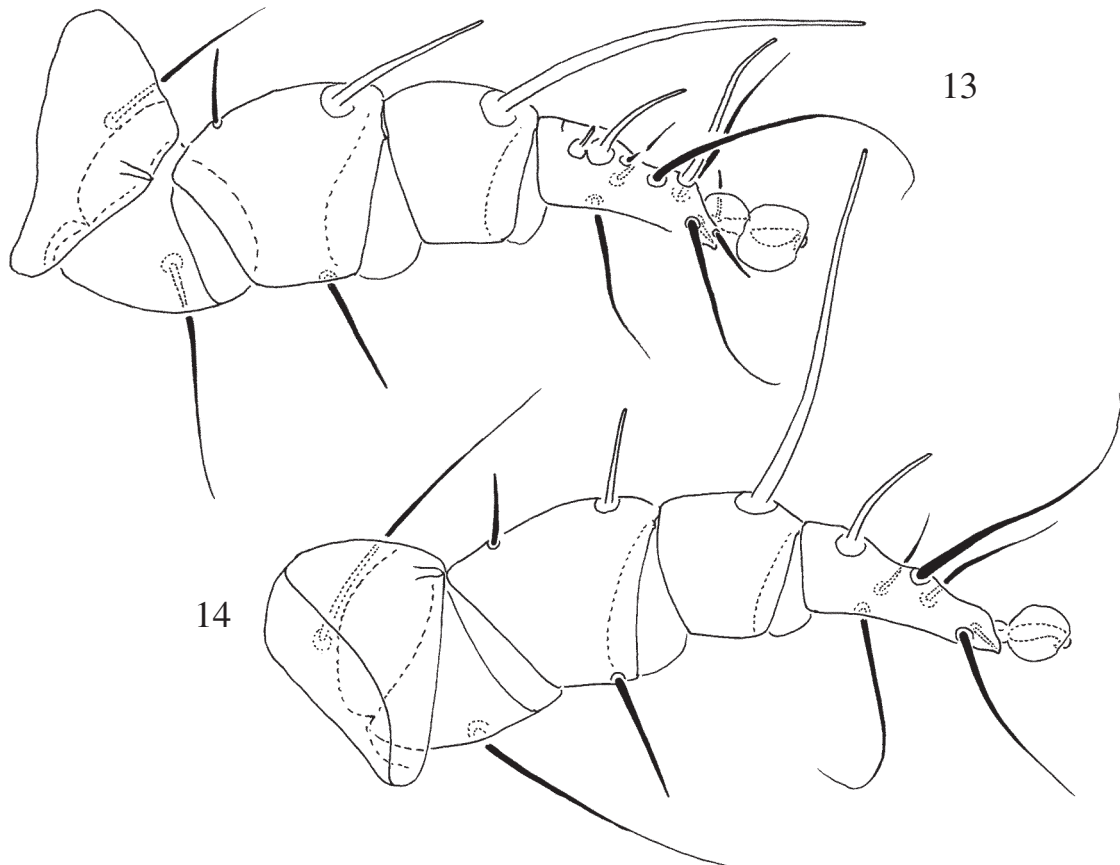
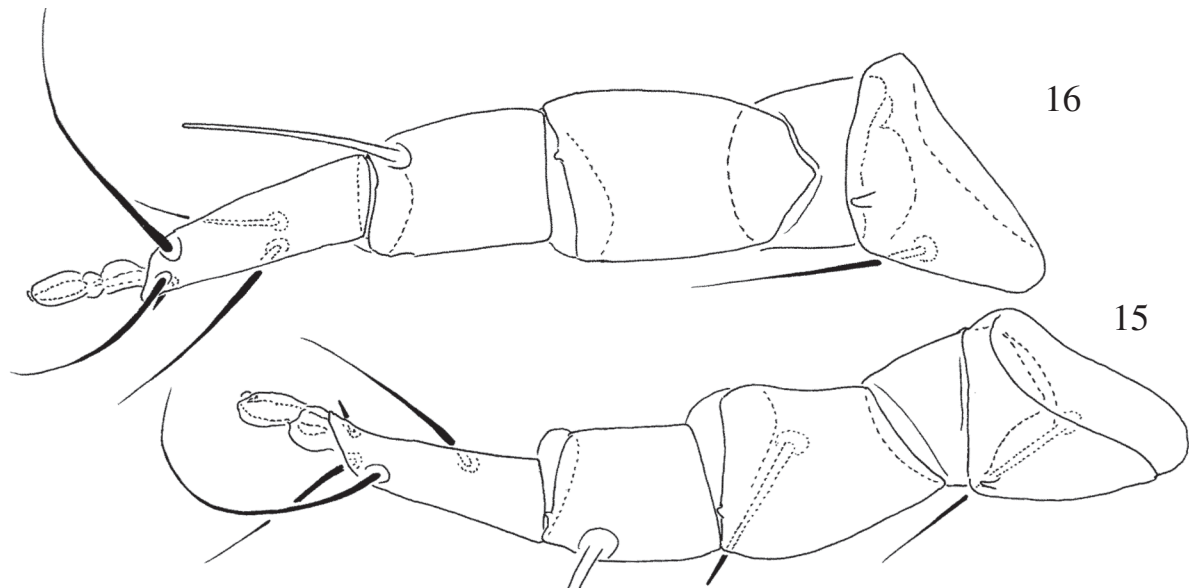


Fig. 11–12. *Barbiangia elongata* sp. n., female: 11 — dorsum of body, 12 — venter of body.



Figs. 13–14. *Barbiangia elongata* sp. n., female: 13–14 — legs I–II, respectively.



Figs. 15–16. *Barbiangia elongata* sp. n., female: 15–16 — legs III–IV, respectively.

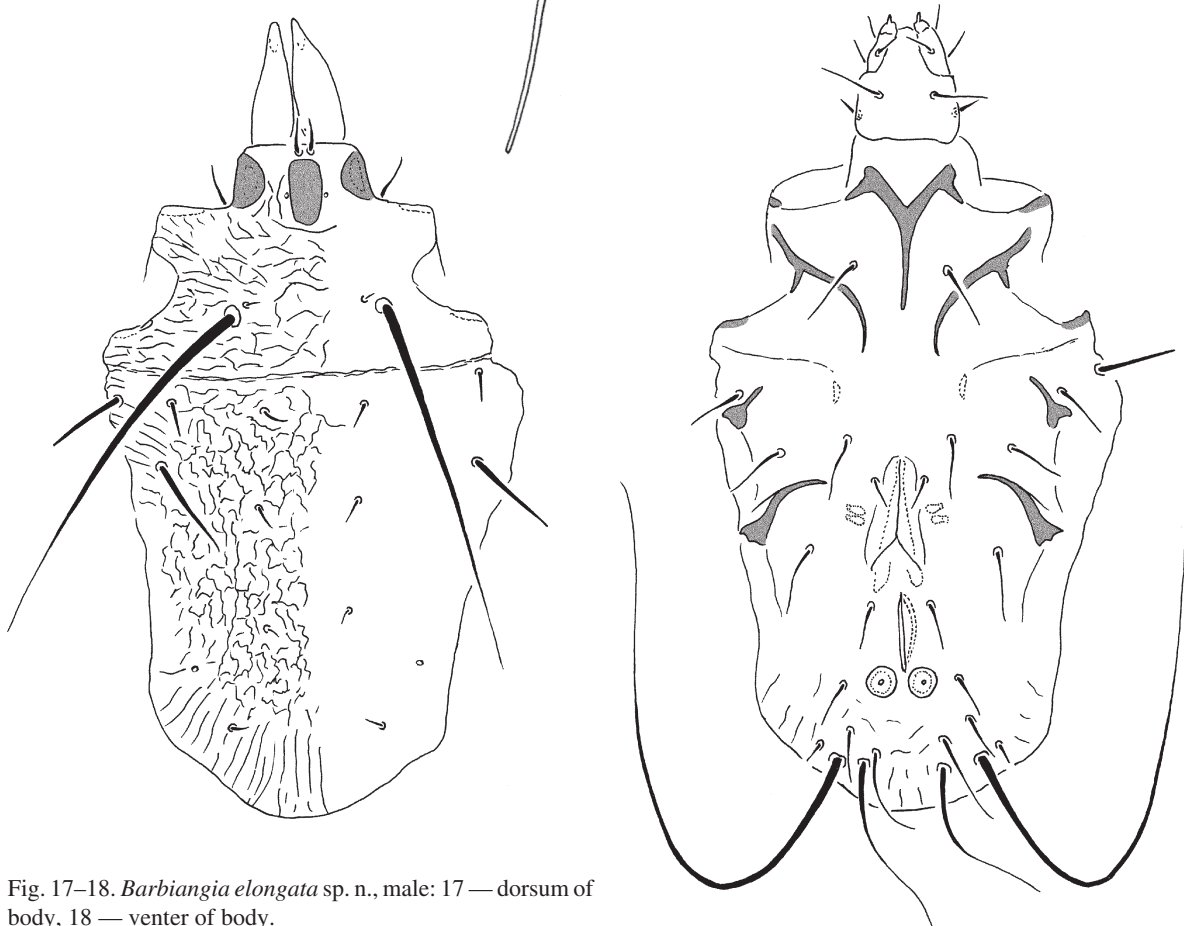


Fig. 17–18. *Barbiangia elongata* sp. n., male: 17 — dorsum of body, 18 — venter of body.

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