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Two new species of feather mites (Acarina: Psoroptidia) from Old World flycatchers (Passeriformes: Muscicapidae) in India

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Original research

ABSTRACT

The paper describes two new species of feather mites collected from some flycatchers (Passeriformes: Muscicapidae) in Meghalaya, India: *Trouessartia thalassina* **sp. n.** (Trouessartiidae) from the Verditer Flycatcher, *Eumyias thalassinus* (Swainson), and *Proterothrix sibillae* **sp. n.** (Proctophyllodidae: Pterodectinae) from the Small Niltava, *Niltava macgrigoriae* (Burton). The new species *T. thalassina* **sp. n.** is most similar to *T. cyanoptilae* Mironov, 2023 in having, in both sexes, setae *d1* absent and lateral margins of the hysteronotal shield shallowly concave. In males of the new species the terminal lamellae are semi-ovate (vs. the terminal lamellae roughly rectangular with posterior margin obliquely cut in *T. cyanoptilae*). In females of the new species the setae *h1* are lanceolate and are situated in non-sclerotized lacunae with uneven margins (vs. the setae *h1* are thin spiculiform and are situated in non-sclerotized lacunae with round margins in *T. cyanoptilae*). *Proterothrix sibillae* **sp. n.** belongs to the *wolffi* species group, and is most similar to *P. cyornissimilis* Constantinescu, 2017. The new species is larger than *P. cyornissimilis*, and in the males, the prodorsal shield has small circular lacunae, the rudimentary sclerites rEpIIa are present, the genital papillae are situated distinctly anterior to the genital arch and the aedeagus is 92–104 long (vs. the prodorsal shield is without ornamentation, the genital papillae are situated at midlevel of genital arch, the rudimentary sclerites rEpIIa are present, and the aedeagus is 72–76 long in *P. cyornissimilis*). In females of the new species, the prodorsal shield has acute antero-lateral extension (vs. the prodorsal shield has antero-lateral extensions with ledge, in *P. cyornissimilis*).

Keywords feather mites; Psoroptidia; taxonomy; new species
Zoobank http://zoobank.org/E7897556-C815-47B6-BB7D-30C776FB4941

Introduction

This work is a continuation of a long-term study of feather mites associated with passerines and other birds in the Meghalaya, one of most eastern states of India (Constantinescu at al. 2014, 2016a, 2016b, 2017a, 2017b, 2018b). The present report provides descriptions of two new species of the genera *Trouessartia* and *Proterothrix* found on some Old World flycatchers of the genera *Eumyias* and *Niltava* (Muscicapidae).

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The feather mite genus *Trouessartia* Canestrini, 1899 comprises 155 species associated predominantly with birds from the order Passeriformes. A world revision of this genus including 71 species was made by Santana (1976); other species were described in subsequent forty years by various authors (Mauri and De Alzuet 1968; Jablonska 1968; Černý and Lukoschus 1975; Gaud 1977; Černý 1979; Mironov 1983, 2021a, 2021b, 2022, 2023; Gaud and Atyeo 1986, 1987; Mironov and Kopij 1996, 2000; Mironov and Galloway 2002, 2019; Mironov and Chandler 2020; Mironov and Zabashta 2022; Mironov *et al.* 2021; OConnor *et al.* 2005; Carleton and Proctor 2010; Constantinescu *et al.* 2013, 2016a, 2016b, 2017a, 2018a, 2023; Mironov and González-Acuña 2013; Hernandes 2014, 2017, 2022, 2023; Hernandes and OConnor 2017; Hernandes and Valim 2015; Hernandes *et al.* 2022; Dmitryukov and Mironov 2023). Mironov (2022) provided an updated world checklist of *Trouessartia* and uniform diagnoses of 11 species groups currently recognized in the genus. The new species of *Trouessartia* described herein cannot be referred to any of the 11 species groups previously established in the genus, because of having a specific combination of characters, but it is close in some features to formally undetermined grouping of *Trouessartia* associated with Muscicapidae.

The genus *Proterothrix* Gaud, 1968 (Proctophyllodidae: Pterodectinae) includes 40 species of which 36 were arranged in four species groups: *megacaula* (3 species), *schizothyra* (5 species) *wolffi* (19 species) and *paradoxornis* (9 species) (Gaud 1952, 1962, 1968, 1979; Park and Atyeo 1971; Mironov 2009; Mironov and Proctor 2009, 2023; Mironov *et al.* 2008a, 2010, 2012; Mironov and Tolstenkov 2013; Constantinescu *et al.* 2014, 2017a, 2017b, 2018b, 2019, 2021, 2024; Han *et al.* 2019; Mironov and Galloway 2021, He *et al.* 2024). A new species of the genus *Proterothrix* described herein belongs to the *wolffi* species group in having almost closed coxal fields III in males and parallel-sided terminal cleft in females.

The bird genus *Eumyias* (Passeriformes: Muscicapidae) currently included 11 valid species (Gill *et al.* 2024). Among these species, feather mites were previously found only on two of them: *Proctophyllodes pennifer* Trouessart and Neumann 1888, *Analges* sp., *Proterothrix* sp. and *Trouessartia* sp. from *Eumyias indigo* (Horsfield); *Proctophyllodes cotyledon* Trouessart, 1899 and *Trouessartia* sp. from *E. thalassinus* (Swainson) (Atyeo 1973). The unidentified *Trouessartia* species, reported by Atyeo (1973) from *E. thalassinus*, which is a potentially new species, has never been re-examined.

The bird genus *Niltava* Hodgson currently includes only seven valid species (Gill *et al.* 2024). Feather mites were previously recorded only on two of the seven bird species: *Analges* sp., *Anisodiscus* sp., *Mesalgoides* sp., *Bicentralges distinctus* Orwig, 1968, *Proctophyllodes cotyledon* Trouessart, 1899, *Proterothrix chachulae* Constantinescu, 2017 and *Trouessartia niltavae* Constantinescu, 2018 from *Niltava grandis* (Blyth); *Analges* sp., *Proctophyllodes elegans* Atyeo and Braasch, 1966, *Proterothrix* sp., *Therisalges* sp., *Trouessartia* sp. and *Xolalges* sp. from *N. sundara* Hodgson (Atyeo 1973; Atyeo and Braasch 1966; Orwig 1968, Constantinescu *et al.* 2017b, 2018a).

Material and methods

The material used in the present paper was collected in Meghalaya (India). The birds captured using mist-nets were identified and visually checked for the presence of mites. After collecting of mites, avian hosts were released back to the wild. Mite specimens were taken from birds manually with a needle and placed in tubes with 95% ethanol. Later, in laboratory conditions, mite specimens were cleared in lactic acid 90% for 24 hours, and mounted on microscope slides in Hoyer's medium. Drawings were made using an Olympus CX21 microscope, with a camera lucida drawing device.

For scanning electron microscope (SEM) study, some feather mite specimens were cleaned in an ultrasonic cleaner (Evo Sonic) for 10–30 seconds to remove debris and then fixed in 2.5% glutaraldehyde in sodium cacodylate buffer (0.1M, pH 7.4), in a refrigerator at 4° for

4h. The specimens were dehydrated in an ascending alcohol series (30%, 50%, 70%, 80%, 95%, and 100% ethanol; 10 min. each) and then in hexamethyldisilazane (HMDS) for 1h (Han and Min 2019, Han *et al.* 2019). After being air-dried, samples were mounted on aluminum stubs covered with conductive double-sided adhesive carbon tabs. The samples were sputter-coated with gold for 30 seconds using SEM coating unit E5100 (Polaron Equipment Limited). The feather mites were analysed and photographed using a Phenom Pro scanning electron microscope (Phenom-Pro Desktop SEM, Thermo Fisher Scientific, The Netherlands), at 10kV acceleration voltage.

The nomenclature of body setation follows that of Griffiths *et al.* (1990) with modifications for the coxal setae made by Norton (1998), and that of the legs follows Grandjean (1939). Descriptions of the new species of *Trouessartia* is given according to the standards proposed for mites of this genus in the recent taxonomic works (Mironov and González-Acuña 2013; Hernandes 2014, 2017, 2022; Mironov and Galloway 2019; Mironov and Chandler 2020; Mironov *et al.* 2021), and the measuring techniques of particular structures follow Mironov and González-Acuña (2013). The description of the new species of *Proterothrix* is given according to current format used for species of pterodectine mites (Mironov and Fain 2003; Mironov 2006; Valim and Hernandes 2006; Mironov *et al.* 2008b) and the measuring techniques of particular structures used were described by Mironov and Proctor (2009).

The bird specimens were identified according to Rasmussen and Anderton (2012) and Grimmett *et al.* (2011), and the taxonomy of the birds follows Gill *et al.* (2024). We give the full set of measurements for a holotype (male) and a range of measurements for all corresponding paratypes. All measurements are in micrometers (μm).

The type material of the new species is deposited in the Acarological Collection of the "Grigore Antipa" National Museum of Natural History, Bucharest, Romania (MGAB); inventory numbers are given in brackets for all type specimens of each species.

Results

Trouessartiidae Gaud, 1957

Genus *Trouessartia* Canestrini, 1899

Trouessartia thalassina Constantinescu sp. n.

Zoobank: D54F418D-39AC-485C-970B-D7CDB74C0A3E

(Figures 1–6)

Type material

From *Eumyias thalassinus* (Swainson) (Passeriformes, Muscicapidae): male holotype (ANA2087), 9 male paratypes (ANA2088–ANA2096) and 10 female paratypes (ANA2077–ANA2086), **India**: Meghalaya, Kharang, East Khasi Hills, 25°28′4.74″ N, 92°0′57.86″ E, subtropical forest, 19 October 2019, collector D. Khlur B. Mukhim.

Description

Male — (holotype, range for 9 paratypes in parentheses) (Figs 1–3). Length of idiosoma from anterior end to bases of setae *h3* 455 (450–475), greatest width at level of humeral shields 190 (185–200). Length of hysterosoma from sejugal furrow to the lamellar apices 335 (340–350). Prodorsal shield: length along midline 143 (135–140), greatest width in posterior part 143 (138–143), lateral margins not fused with scapular shields, anterolateral extensions almost reaching bases of epimerites Ia between legs I and II, surface with reticulate ornamentation (Fig. 1A). Internal scapular setae *si* spiculiform, 30 (23–33) long, separated by 48 (45–50); external scapular setae *se* situated on prodorsal shield, separated by 93 (90–93). Vertical setae *ve* present, minute. Humeral shield with setae *c2* spiculiform, 45 (45–55) long. Setae *c3* narrowly

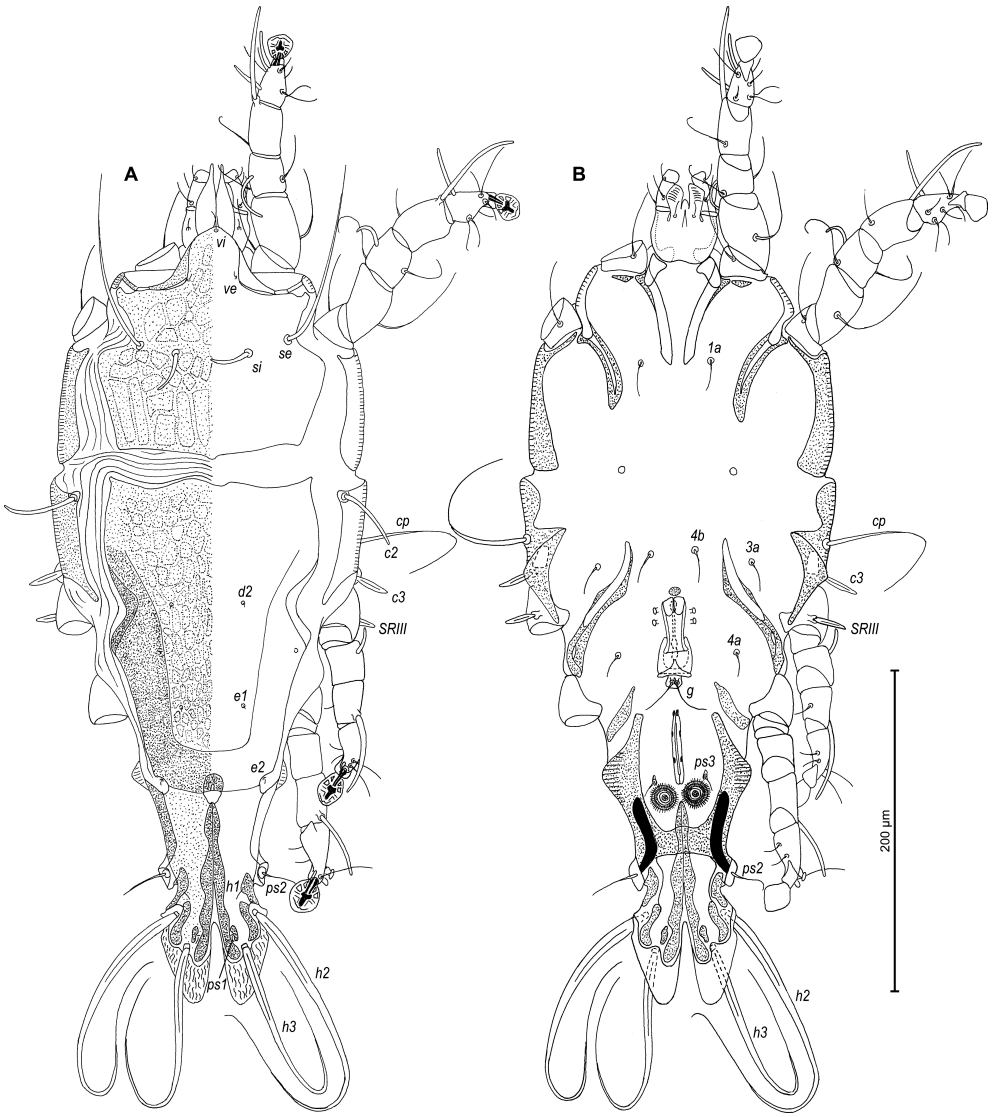


Figure 1 *Trouessartia thalassina* **sp. n.**, male. A – dorsal view, B – ventral view.

lanceolate with acute apex, 23 (23–33) long. Hysteronotal shield entire, prohysteronotal shield and lobar shield, delimited from each other by lateral incisions immediately posterior to setae *e2* and small desclerotized median patch. Prohysteronotal shield length 195 (190–193), width at anterior margin 130 (128–135), lateral margins with wide shallow concavities at level of trochanters III, bottom of these incisions with dark bow-shaped sclerotization, median and anterior part with reticulate ornamentation. Dorsal setae *d2*, *e2* present, *d1, f2* absent. Length of lobar shield excluding lamellae 105 (103–110). Opisthosoma strongly attenuate posteriorly, lobes fused to each other along midline up to level of setae *ps2*, only distal parts of lobes separated by narrow parallel-sided terminal cleft; length of this cleft from anterior end to apices of terminal lamellae 53 (50–53), width in anterior part 10 (9–13). Terminal lamellae semi-ovate, their outer margins at level of setae *h2* shallowly concave, length from bases of setae *h3* to lamellar apices 30 (23–35). Setae *h1* anterior to setae *h2*. Distance between dorsal setae: *c2-d2* 90 (85–93), *d2-e2* 95 (98–103), *e2-h2* 93 (83–85), *h2-h3* 25 (23–24), *h2-h2* 50 (43–45), *h3-h3* 35 (33–38), *e1-e2* 43 (43–53).

Epimerites I free. Rudimentary sclerites rEpIIa present, roughly rounded. Genital apparatus

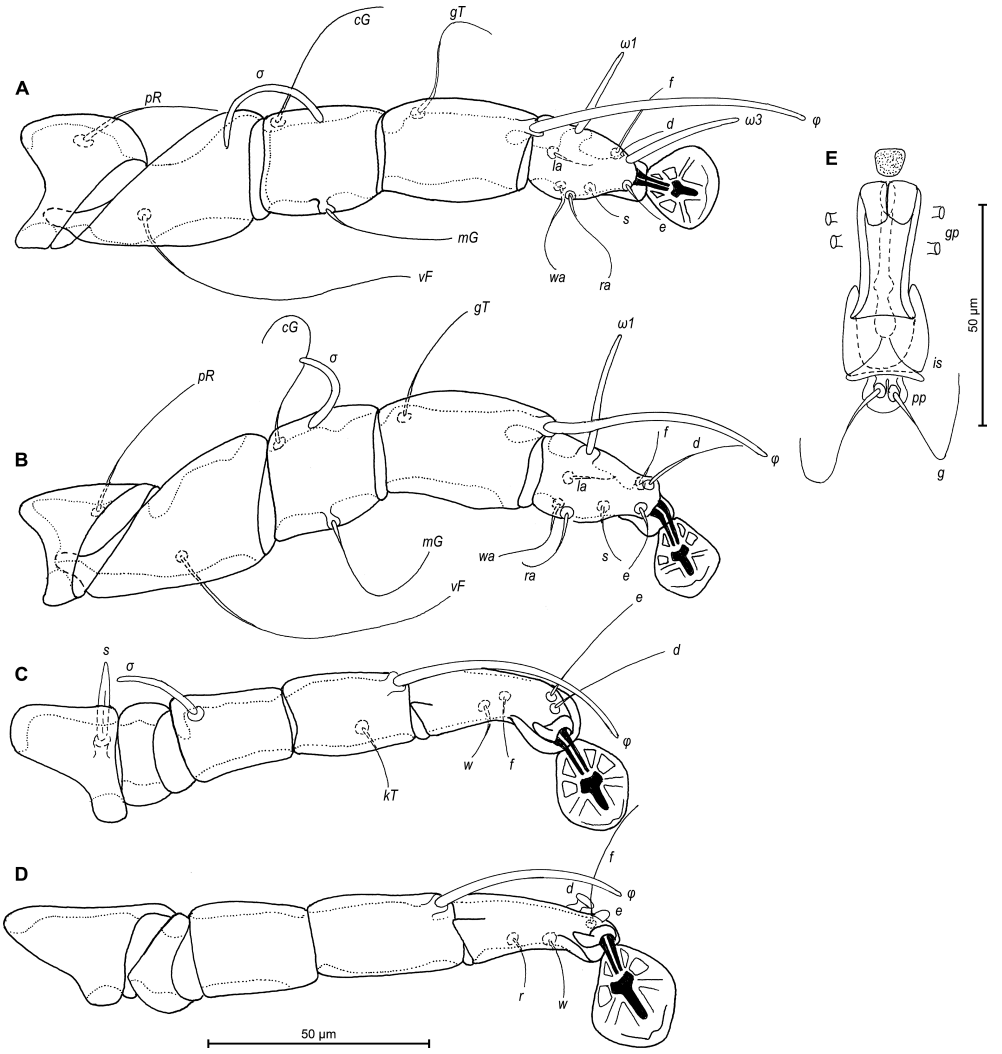


Figure 2 *Trouessartia thalassina* **sp. n.**, A–D details of male legs dorsal view: A – leg I, B – leg II, C – leg III, D – leg IV; E – ventral view of male genital apparatus; Abbreviations: gp: genital papillae; is: intermediar sclerite; pp: postgenital plaque.

situated between levels of trochanters III and IV, length 55 (53–55), greatest width 20 (20–23) (Fig. 1B). Epiandrum present, small; setae *g* long and filiform close to each other, postgenital plaque small semicircular. Adanal apodemes heavily sclerotized, with narrow lateral membrane and a pair of apophysis, like uniformly sclerotized ridge. Translobar apodeme present. Adanal shields very small, teardrop-shaped, bearing setae *ps3*. Anal suckers 15 (13–17) in diameter. Anterior ends of epimerites IV extending beyond level of setae *4b*; epimerites IVa present, wide, anterior ends acute and extending to level of setae *g*. Setae *4b* situated slightly anterior to level of setae *3a*, setae *g* situated posterior to level of setae *4a*. Distance between ventral setae: *4b-3a* 35 (35–38), *4b-g* 78 (80–83), *g-ps3* 65 (65–68), *ps3-h3* 105 (99–105).

Setae *sR* of trochanters III narrowly lanceolate, with acute apex 22 (22–25) long, setae *cG* and *mG* of genua I, II are filiform. Tarsus IV 35 (28–35) long; seta *d* barrel-shaped, with discoid cap; seta *e* hemispheroid, without cap, situated subapically (Fig. 2D). Lengths of solenidia: *σ1I* 53 (42–53), *σII* 22 (22–25), *σIII* 18 (18–23), *φIV* 32 (30–45). Legs IV with ambulacral disc extending to level of setae *h2*.

Female — (range for 10 paratypes) (Figs 4–6): Length of idiosoma from anterior end to apices of lamellar lobar processes 500–525, greatest width 180–200. Length of hysterosoma

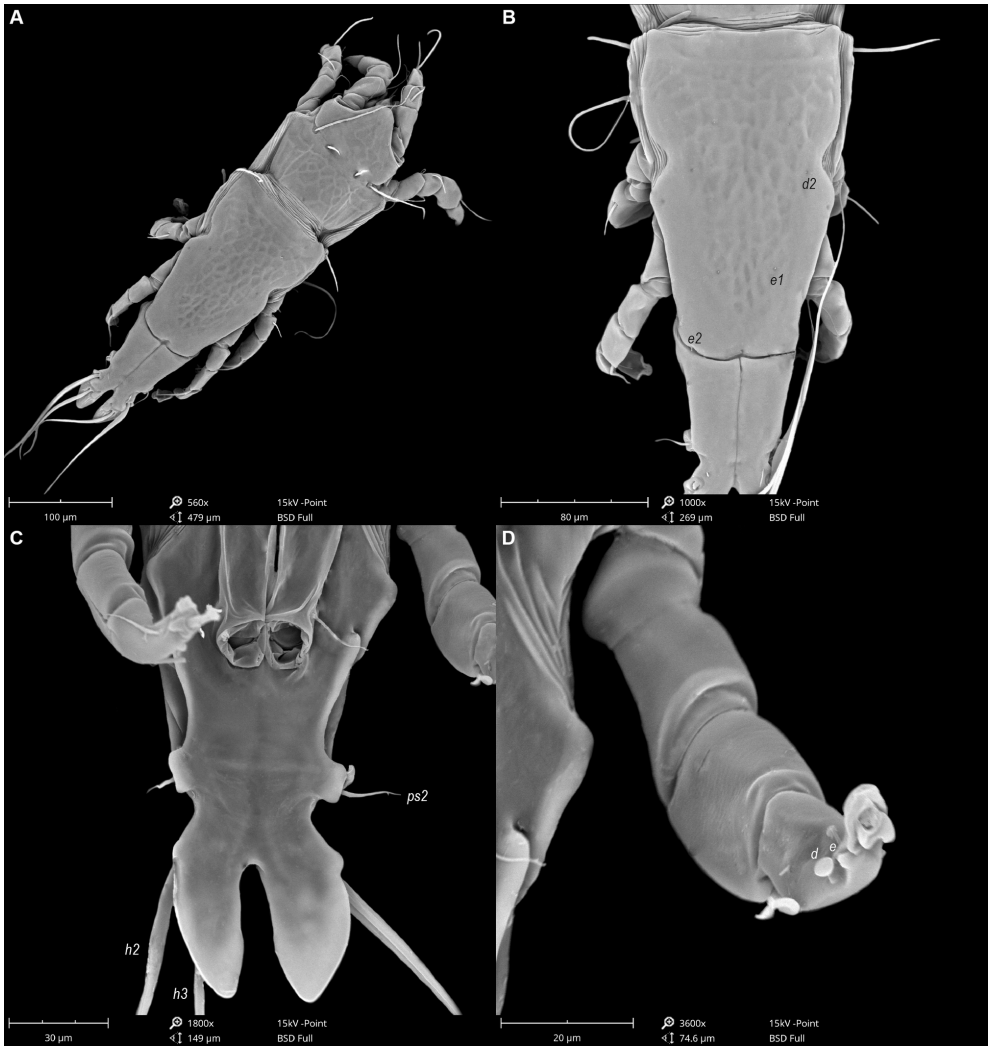


Figure 3 *Trouessartia thalassina* **sp. n.**, SEM images of male. A – dorsal view, B – details of prohysteronotal and lobar shields, C – details of lobar region, ventral view, D – leg IV, ventral view.

from sejugal furrow to apices of lamellar lobar processes 350–375. Prodorsal shield shaped as in male, 130–145 in length, 140–155 in width, surface with reticulate ornamentation. Setae *si* spiculiform, 25–43 long, separated by 43–53; external scapular setae *se* situated on prodorsal shield, separated by 88–108. Humeral shields with setae *c2* spiculiform, 43–53 long. Setae *c3* narrowly lanceolate with acute apex, 28–30 in length. Hysteronotal shield: length from anterior margin to bases of setae *h3* 350–375, width at anterior margin 120–132, lateral margins with wide shallow concavity at level of trochanters III, anterior half with poorly pronounced ovate and cell-shaped lacunae, area posterior to level of setae *e1* with two longitudinal rows of big ovate lacunae (Fig. 4A). Dorsal setae *d2*, *e2* present, *d1* absent. Setae *h1* lanceolate, situated in non-sclerotized lacunae with uneven margins, 17–20 long, situated antero-mesal to bases of setae *h2*, 25–33 from each lateral margin of hysteronotal shield. Setae *ps1* positioned dorsally on opisthosomal lobes, equidistant from outer and inner margins of lobes, close to bases of setae *h3*. Distance from bases of setae *h3* to membranous apices of lobes 33–37. Setae *f2* present, minute. Supranal concavity open posteriorly into terminal cleft. Length of terminal cleft together with supranal concavity 109–117, width of cleft at level of setae *h3* 30–45. Interlobar membrane occupying anterior 1/3 of terminal cleft, distance from free margin of interlobar

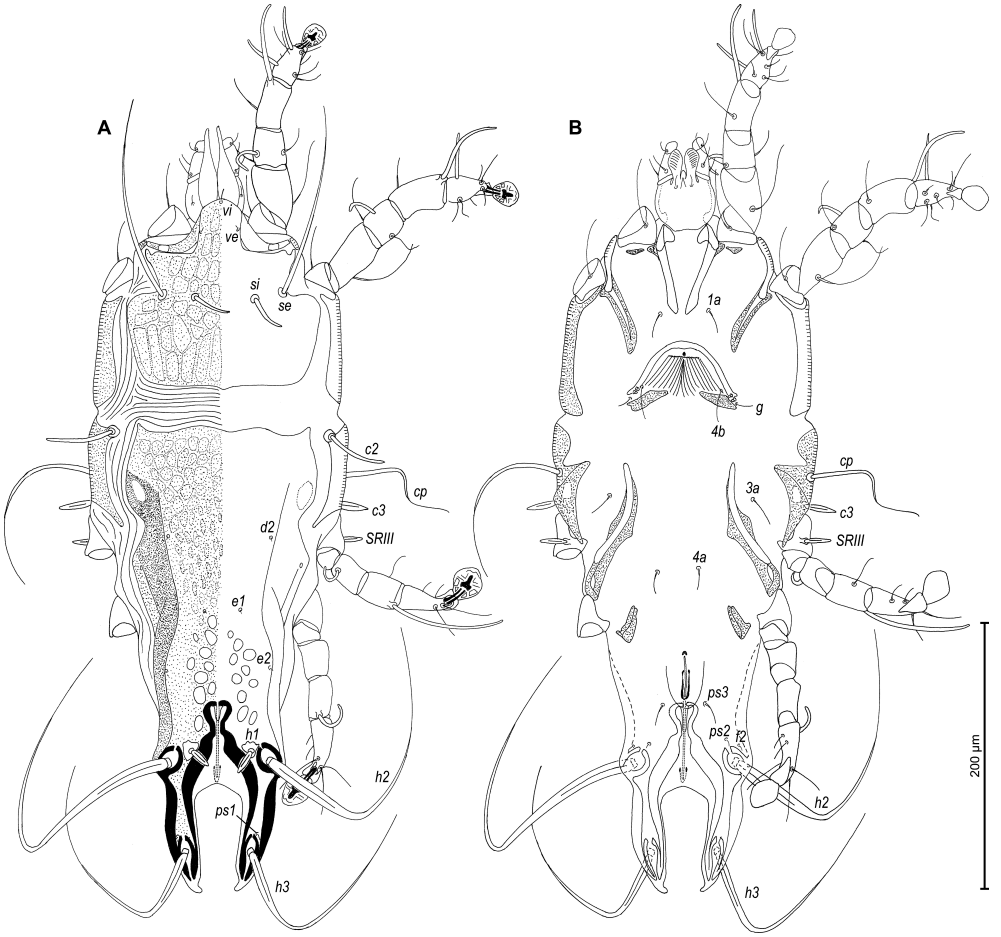


Figure 4 *Trouessartia thalassina* **sp. n.**, female. A – dorsal view, B – ventral view.

membrane to membranous lobar apices 75–85. External copulatory tube absent, copulatory opening situated ventrally on minute nipple-like projection near margin of interlobar membrane (Fig. 6D), guides of external copulatory tube rudimentary, guide of primary spermaduct present. Distance between dorsal setae: *c2-d2* 73–88, *d2-e2* 100–128, *e2-h2* 63–70, *h2-h3* 60–70, *h2-h2* 75–83, *h3-h3* 50–63, *e1-e2* 53–58, *h1-h2* 18–20, *h1-h1* 45–50, *ps1-h3* 13–18.

Epimerites I free. Epigynum 38–43 in length, 78–90 in width (Fig. 4B). Epimerites IVa present, short. Adanal sclerites absent. Spermatheca with a pair of sclerotized lateral extensions; collar of spermathecal head smooth; length of secondary spermaducts 25–30 (Fig. 5E).

Setae *sR* of trochanters III narrowly lanceolate, with acute apex, 23–25 long, setae *cG* and *mG* of genua I, II are filiform. Legs IV with ambulacral disc extending to midlevel between setae *h2* and *h3*.

Etymology

The specific name *thalassina* (L., sea-green), adjective, feminine gender, is derived from the species name of the type host, the adult males of which have azure or light-blue plumage.

Differential diagnosis

The new species *Trouessartia thalassina* Constantinescu **sp. n.** is most similar to *T. cyanoptilae* Mironov, 2023 described from *Cyanoptila cyanomelana* Temminck (Passeriformes,

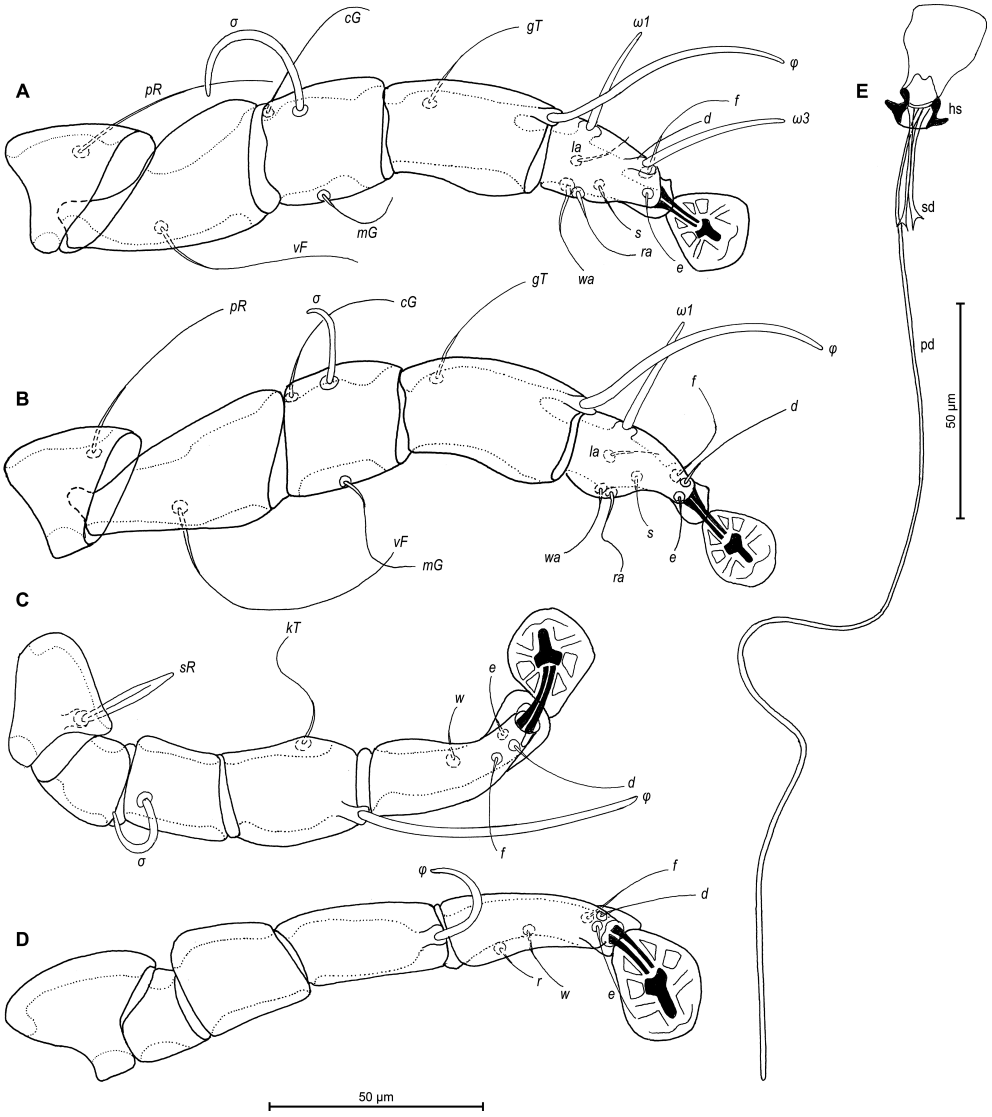


Figure 5 *Trouessartia thalassina* **sp. n.**, A–D details of female legs, dorsal view: A – leg I, B – leg II, C – leg III, D – leg IV; E – spermatheca of female; Abbreviations: hs: head of spermatheca; pd: primary spermaduct; sd:secondary spermaduct.

Muscicapidae) (Mironov 2023), in having, in both sexes, setae *d1* absent, and lateral margins of the hysteronotal shield shallowly concave. In males, the dorsal shields have reticulated oranamentation, the genital apparatus is narrow, the prohysteronotal and lobar part of the hysteronotal shields are demarked by lateral incisions and the postgenital plaque is small and semi-rounded. The females lacking the external copulatory tube, the copulatory opening are situated ventrally and distant from the interlobar membrane margin and setae *h1* are situated in desclerotized lacunae. Both sexes of *Trouessartia thalassina* differ from *T. cyanoptilae* by having the anterolateral extensions of prodorsal shield almost reaching bases of epimerites Ia between legs I and II (vs. the anterolateral extensions of prodorsal shield rounded, not extending to bases of epimerites Ia between legs I and II). In males of the new species the terminal lamellae are semi-ovate, the adanal apodemes have a pair of apophysis like uniformly sclerotized ridge, the epimerites IVa are wide (vs. terminal lamellae roughly rectangular with posterior margin obliquely cut, the adanal apodemes have apophyses represented by long submarginal membranes with convex lateral margins, the epimerites IVa are as plates of roughly ovate form

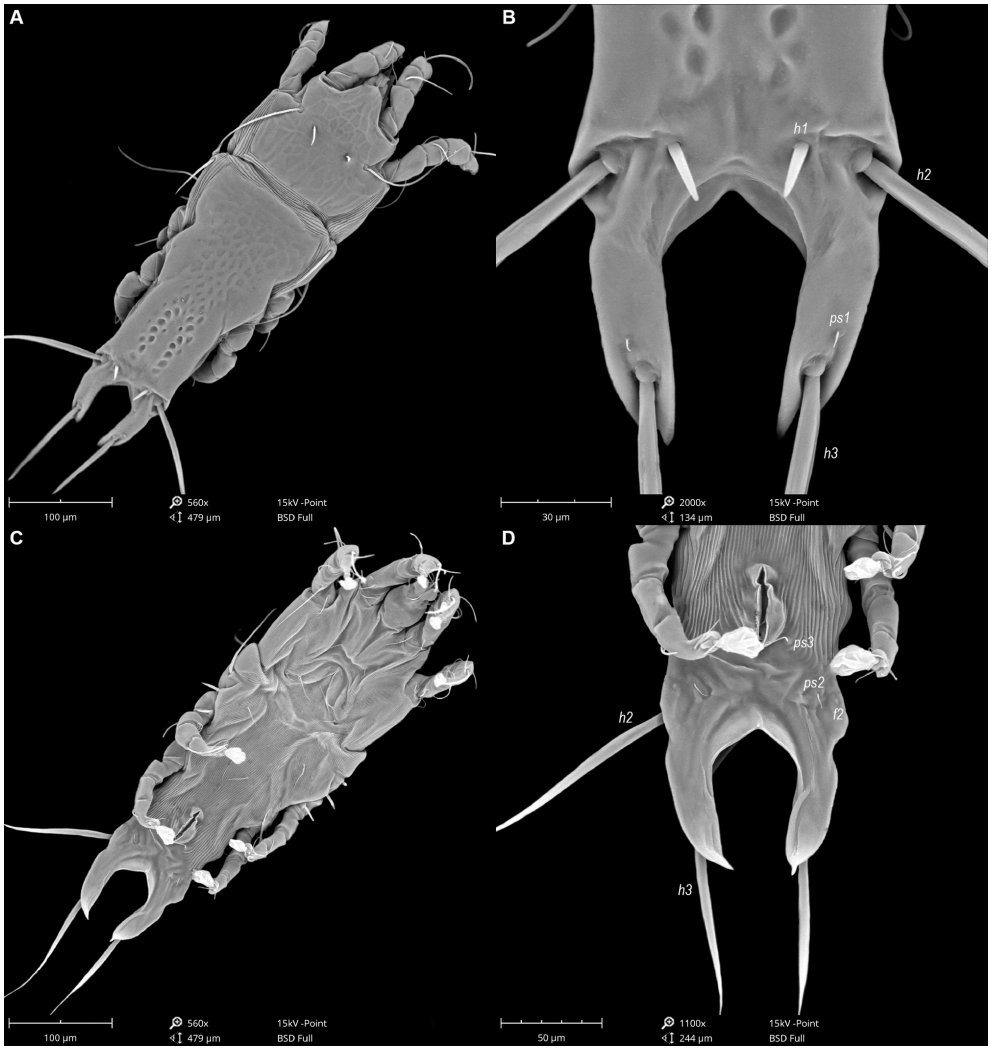


Figure 6 *Trouessartia thalassina* **sp. n.**, SEM images of female. A – dorsal view of idiosoma, B – details of lobar shield, dorsal view, C – ventral view of idiosoma, D – details of lobar shield, ventral view.

in *T. cyanoptilae*). In females of the new species the hysteronotal shield has, posterior to level of setae *e1,* an ornamentation with two longitudinal rows of big ovate lacunae, the setae *h1* are lanceolate and are situated in non-sclerotized lacunae with uneven margins (vs. hysteronotal shield has, posterior to level of setae *e1,* an ornamentation with many rows of lacunae, larger along midline and smaller in lateral areas, the setae *h1* are thin spiculiform and are situated in non-sclerotized lacunae with round margins in *T. cyanoptilae*).

Family *Proctophyllodidae* Trouessart et Mégnin, 1884

Subfamily *Pterodectinae* Park et Atyeo, 1971

Genus *Proterothrix* Gaud, 1968

Proterothrix sibillae Constantinescu sp. n.

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(Figures 7–12)

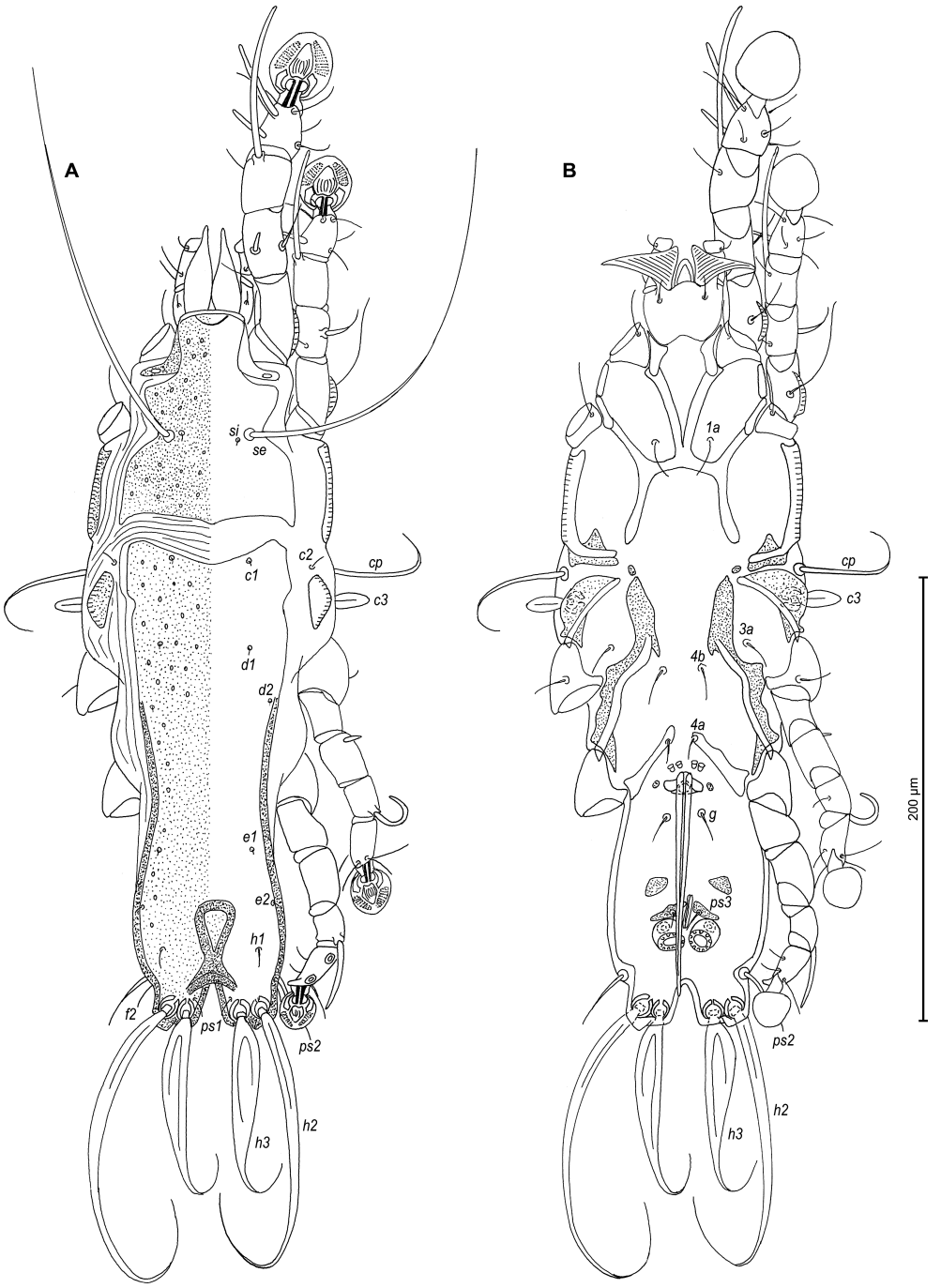


Figure 7 *Proterothrix sibillae* **sp. n.**, male. A – dorsal view, B – ventral view.

Type material

From *Niltava macgrigoriae* (Burton) (Passeriformes, Muscicapidae): male holotype (ANA2102), 9 male paratypes (ANA2097-2101, ANA2103-2106) and 10 female paratypes (ANA2107-2116), **India**: Meghalaya, Kharang, East Khasi Hills, 25°28′4.74″ N, 92°0′57.86″ E, subtropical forest, 20 October 2019, collector D. Khlur B. Mukhim.

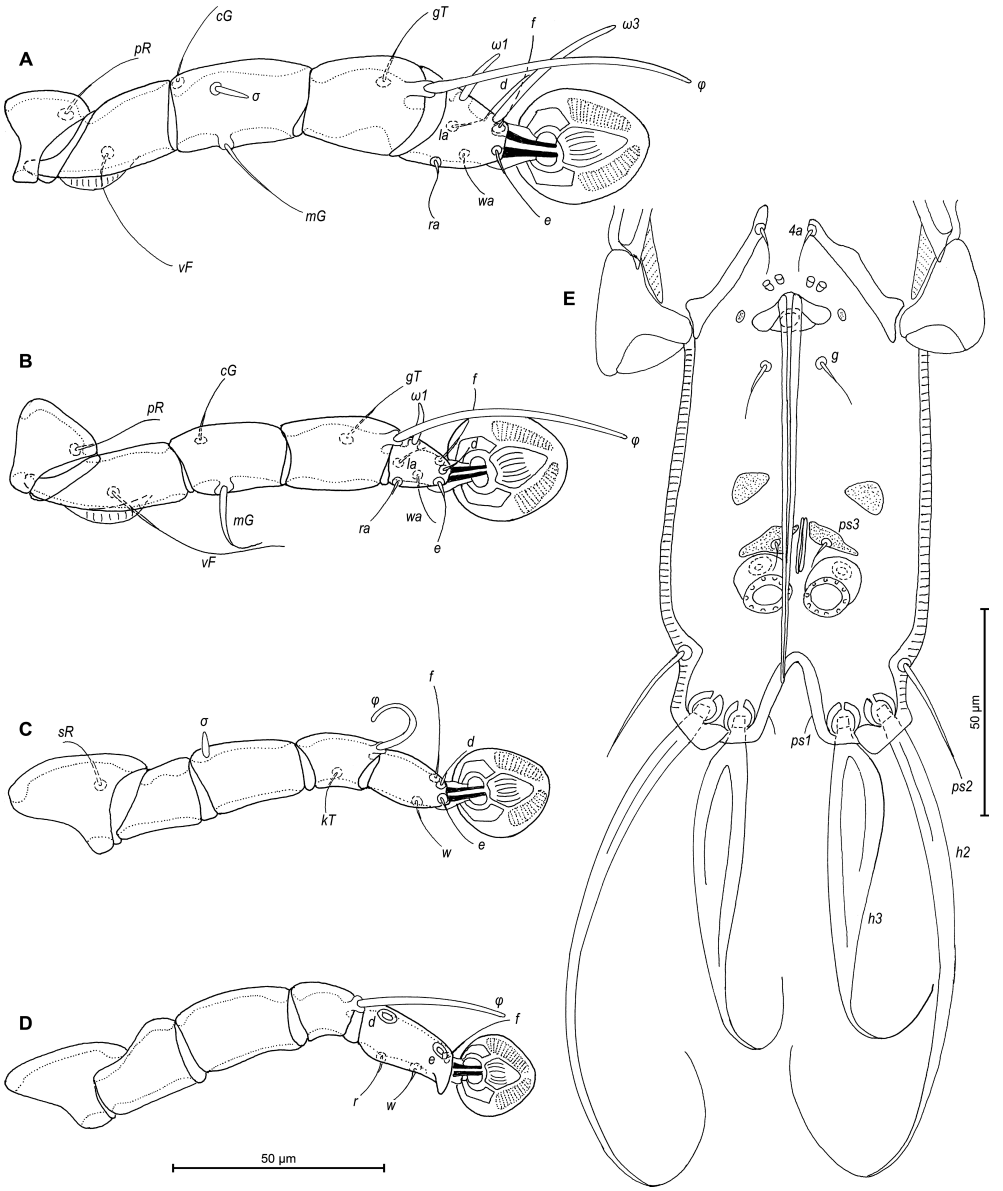


Figure 8 *Proterorthrix sibillae* **sp. n.**, A–D details of male legs dorsal view: A – leg I, B – leg II, C – leg III, D – leg IV; E – ventral view of male opisthosoma.

Description

Male — (Figs 7–9; holotype, range for 9 paratypes in parentheses): Pseudorutellar lobes with long and acute lateral extensions (Fig. 9C). Length of idiosoma 325 (320–325), width 103 (103–110), length of hysterosoma 225 (213–225). Prodorsal shield entire, antero-lateral extensions short and rounded, lateral margins without incisions around scapular setae, posterior margin with median blunt-angular extension, posterior angles acute, length 100 (94–100), width 77 (73–82), surface with small circular lacunae (Fig. 7A). Scapular setae *se* separated by 35 (33–40). Scapular shields narrow. Humeral shields narrow, separated from outer sclerotization of epimerites III, setae *c2* filiform, situated on striated tegument anterior to humeral shield. Subhumeral setae *c3* lanceolate, 20 (18–20) × 8 (7–8). Hysteronotal shield with anterior margin concave, lateral margins with a small concavity at level of *c3* setae, anterior angles truncated, length from anterior margin to bases of setae *h3* 203 (195–210), greatest width in anterior

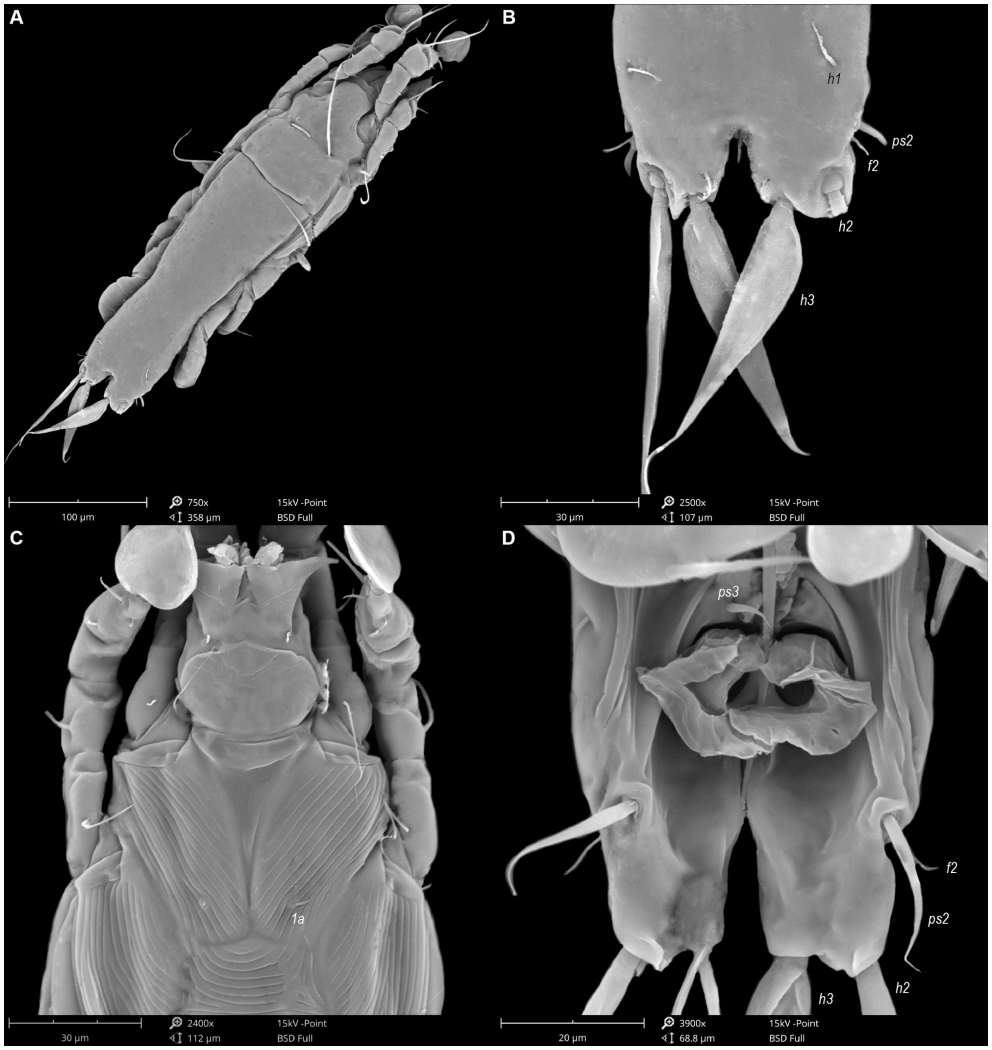


Figure 9 *Proterothrix sibillae* **sp. n.**, SEM images of male. A – dorsal view of idiosoma, B – details of lobar region, dorsal view, C – hypostome, ventral view, D – details of lobar region, ventral view.

part 75 (70–75), surface with small circular lacunae in anterior part and along lateral margins of posterior part. Opisthosomal lobes roughly trapezoidal, slightly wider at base than long, posterolateral margins at bases of setae *h2* with wide truncate extensions; setae *h3* situated slightly posterior to setae *h2* (Fig. 9B). Terminal cleft V-shaped, 18 (18–23) long; margins of terminal cleft without membranes. Supranal concavity clearly outlined, shaped as inverted teardrop. Setae *c1* present. Setae *f2* slightly posterior to bases of setae *ps2*. Setae *h1* at posterior end of supranal concavity, closer to lateral margins of opisthosoma. Setae *ps1* filiform, length 7 (7–8), situated near inner margins of opisthosomal lobes, anterior to bases of setae *h3*. Dorsal measurements: *c2-d2* 85 (73–78), *d2-e2* 80 (75–84), *e2-h3* 50 (45–53), *d1-d2* 33 (30–38), *e1-e2* 27 (25–33), *h1-ps2* 15 (17–18), *h2-h2* 42 (38–45), *h3-h3* 25 (22–27), *ps2-ps2* 53 (45–53).

Epimerites I fused into a V, posterior end connected with epimerites II by transverse sclerotized bands. Epimerites II long, their posterior ends free. Rudimentary sclerires rEpIIa present. Coxal field I closed, coxal field II open, coxal fields III almost closed, coxal fields IV with narrow sclerotized areas at bases of trochanters IV. Epimerites IVa present, well developed, their anterior tips bearing bases of setae *4a* (Fig. 7B). Genital arch 12 (8–12) long, 18 (17–18) wide, aedeagus 95 (92–104) long, extending to anterior end of terminal cleft. Genital papillae

situated anterior to genital arch. Two pairs of adanal shields (median and antero-lateral) represented by small triangular plates, setae *ps3* situated on median pairs. A pair of small ovoid sclerites (rudimentary paragenital apodemes) located at tips of genital arch. Adanal suckers 13 (12–13) in diameter, corolla indented, with 9–10 small teeth. Ventral measurements: *3a-4b* 23 (23–30), *4b-4a* 32 (30–33), *4a-g* 35 (33–35), *g-ps3* 43 (37–45), *ps3-ps3* 15 (13–17), *ps3-h3* 45 (42–45).

Legs I longer than legs II, femora I and II with ventral crest (Fig. 8A, B). Seta *e* of tarsus I filiform. Setae *mG*II thickened basally, with filiform apex. Setae *d* of tarsi II, III much shorter than corresponding setae *f*. Tarsus IV 25 (20–27) long, with apical claw; setae *d, e* button-like, subequal in diameter, situated in basal and apical parts of segment, respectively (Fig. 8D). Length of solenidia: *ω1*I 12 (10–12), *ω1*II 12 (12–15), *φ*I 57 (55–65), *φ*II 40 (35–45), *φ*III 25 (18–25), *φ*IV 28 (22–25), *σI* 8 (8–10), *σIII* 5 (5–7).

Female — (range for 10 paratypes) (Figs. 10–12): Pseudorutellar lobes with long and acute lateral extensions as in the male. Length of idiosoma 445–465, width 125–150, and length of hysterosoma 310–325. Prodorsal shield entire, anterolateral extensions with rounded tips, lateral margins without incisions around scapular setae, posterior margin slightly concave, posterior angles acute, length 125–128, width 98–120, surface with small circular lacunae (Fig. 10A). Scapular setae *se* separated by 48–55. Scapular shields narrow. Humeral shields narrow, separated from epimerites III. Setae *c2* filiform situated on striated tegument. Subhumeral setae *c3* lanceolate, 20–28 × 10–12. Hysteronotal shield dorsally separated into anterior and lobar shields, which connected ventrolaterally. Anterior hysteronotal shield roughly rectangular, anterior and posterior margins concave, greatest length 208–218, greatest width in anterior part 103–115, surface with sparsely disposed small circular lacunae. Length of lobar region 78–85, width at level of setae *h2* 75–80. Terminal cleft parallel-sided, narrow, with almost touching margins, length 53–60. Supranal concavity circular, without strong sclerotization. Setae *h1* on lobar shield, at midlevel of supranal concavity; surface of lobar shield without ornamentation. Setae *h2* spindle-shaped, with short terminal filament, 73–88 × 8–10. Setae *ps1* closer to inner margin of opisthosomal lobes, setae *h3* 18–28 long. Dorsal measurements: *c2-d2* 100–120, *d2-e2* 113–120, *e2-h2* 45–55, *h2-h3* 33–40, *d1-d2* 43–58, *e1-e2* 50–55, *h1-h2* 30–38, *h2-ps1* 28–38, *h1-h1* 35–45, *h2-h2* 60–65.

Epimerites I fused as a V, fused part with short lateral extensions. Coxal fields I, II without heavily sclerotized areas, epimerites IVa absent (Fig. 10B). Translobar apodemes of opisthosomal lobes present, fused to each other anterior to terminal cleft. Epigynum horseshoe-shaped, greatest width 65–70. Secondary spermaducts short, 10-12 length (Fig. 11E). Distances between pseudanal setae: *ps2-ps2* 25–32, *ps3-ps3* 15–20, *ps2-ps3* 13–18.

Legs I slightly longer than legs II; femora II with wide ventral crest; setae *mG*II thickened basally, with filiform apex. Length of solenidia: *ω1*I 13–15, *ω1*II 10–15, *φ*I 55–63, *φ*II 43–60, *φ*III 25–33, *φ*IV 8–10, *σI* 5 (5–7), *σIII* 8 (8–10). (Fig. 11A–D).

Etymology

The species is named in honor of the German naturalist Maria Sibylla Merian (1647–1717), one of the pioneer women in taxonomy.

Differential diagnosis

Proterothrix sibillae Constantinescu sp. n. belongs to the *wolffi* species group, in having almost closed coxal fields III in males and parallel-sided terminal cleft in females. Among species of this group, *P. sibillae* is closely related to *P. cyornissimilis* Constantinescu, 2017 from *Cyornis rubeculoides* (Vigors) (Passeriformes: Muscicapidae) (Constantinescu *et al.* 2017a) in having the following complex of common features: in males, the prodorsal shields are similar shape; the opisthosomal lobes are trapezoidal, at base slightly wider than long and with slightly extending posterolateral angles; two pairs of adanal shields are present, and a pair of small ovoid sclerites are located at tips of genital arch. In females, the hysteronotal shields have similar

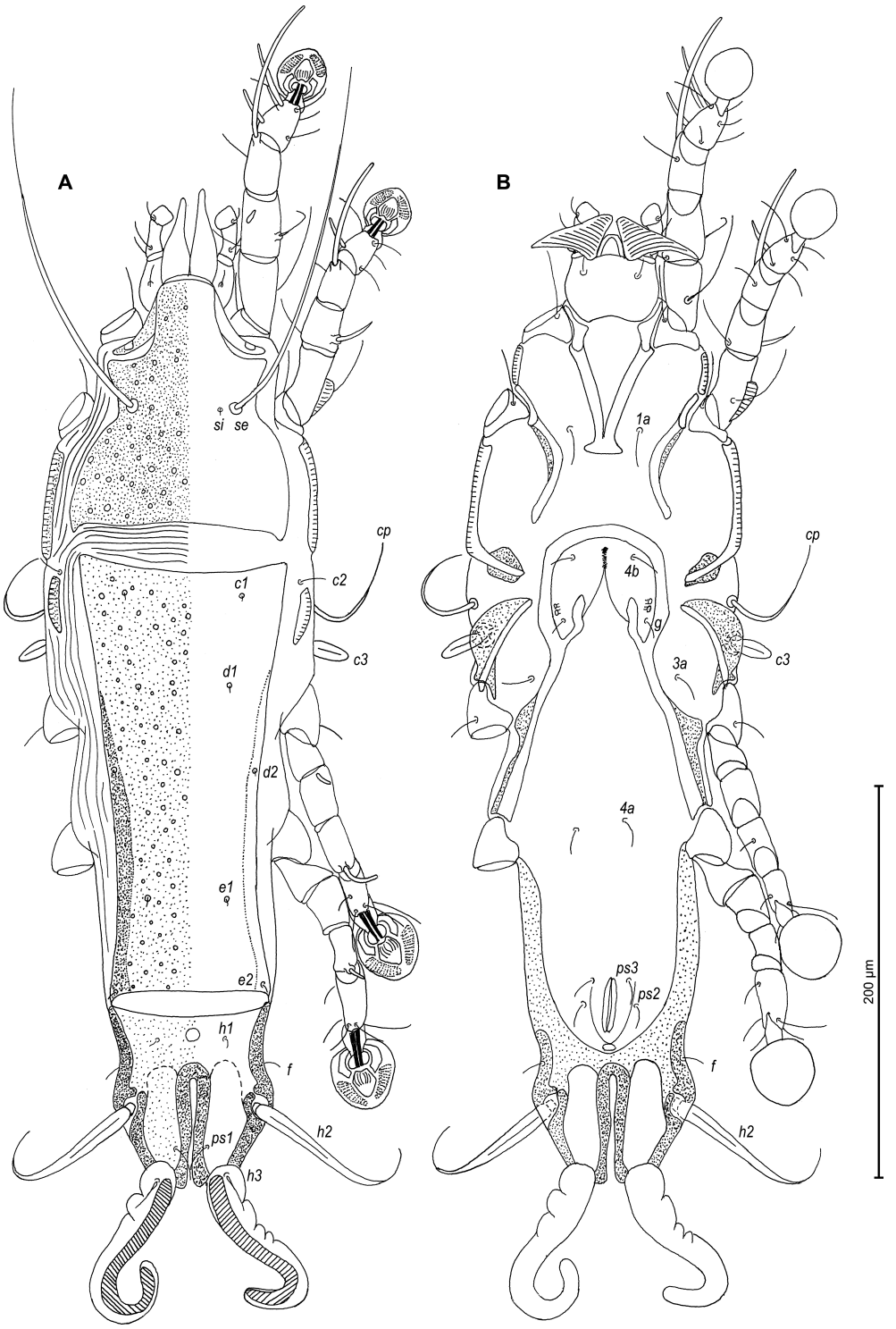


Figure 10 *Proterothrix sibillae* **sp. n.**, female. A – dorsal view, B – ventral view.

shape and ornamentation, and the terminal cleft has almost touching margins. *Proterothrix sibillae* is larger than *P. cyornissimilis*, the length of idiosoma in males 320–325, and in females 445–465 (vs. 260–262 in males and 368–392 in females of *T. cyornissimilis*). In males of the new species, the prodorsal shield has an ornamentation in the form of small circular lacunae,

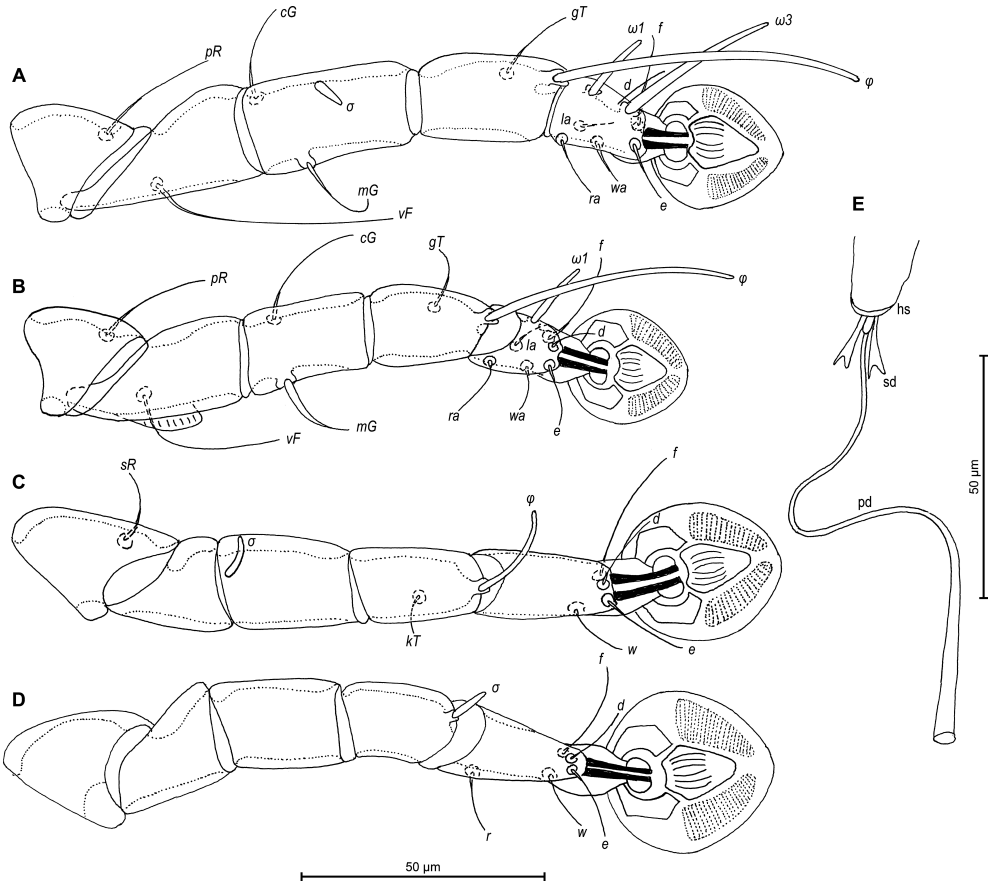


Figure 11 *Proterothrix sibillae* **sp. n.**, A–D details of female legs, dorsal view: A – leg I, B – leg II, C – leg III, D – leg IV; E – spermatheca of female; Abbreviations: hs: head of spermatheca; pd: primary spermaduct; sd: secondary spermaduct.

the aedeagus is 92–104 long and extends to the anterior end of terminal cleft, and the genital papillae are situated anterior to genital arch (vs. the prodorsal shield lacks ornamentation, the aedeagus is 72–76 long and barely extends to the level of setae *ps2,* and the genital papillae are situated at the midlevel of the genital arch in *T. cyornissimilis*). In females of the new species, the antero-lateral extensions of prodorsal shield are angular, femora I are without ventral crest and the supranal concavity is circular and without strong sclerotization (vs. the antero-lateral extensions of prodorsal shiel are with a subapical ledge, femora I are with ventral crest and the supranal concavity is ovoid and with strongly sclerotized margin).

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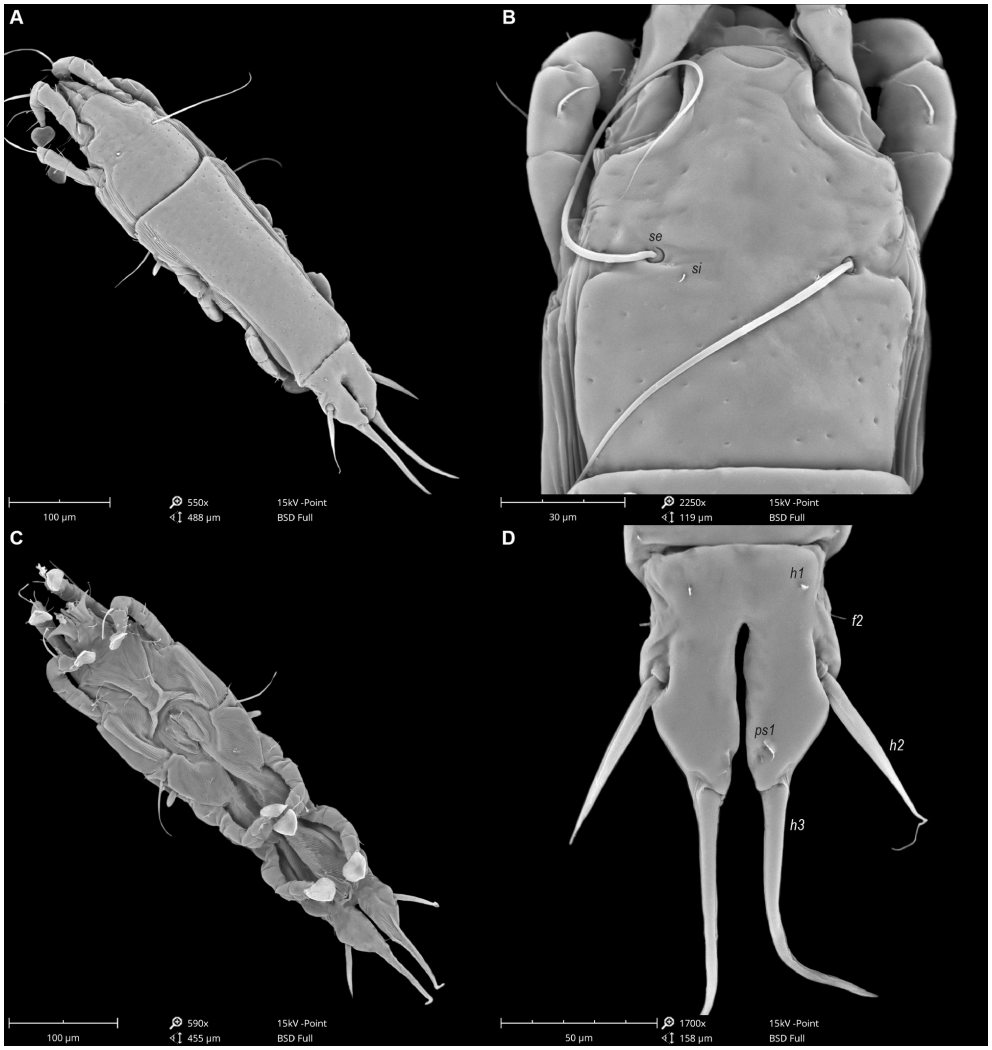


Figure 12 *Proterothrix sibillae* **sp. n.**, SEM images of female. A – dorsal view of idiosoma, B – details of prodorsal shield, C – ventral view of idiosoma, D – details of lobar region, dorsal view.

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