

**A NEW FEATHER MITE SPECIES OF THE GENUS *TROUESSARTIA*
CANESTRINI, 1899 (ACARIFORMES: TROUESSARTIIDAE) FROM THE WHITE-
CRESTED ELAENIA *ELAENIA ALBICEPS* (ORBIGNEY ET LAFRESNAYE)
(PASSERIFORMES: TYRANNIDAE) IN CHILE**

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ABSTRACT: A new feather mite species *Trouessartia elaeniae* sp.n. (Astigmata: Analgoidea: Trouessartiidae) is described from the White-crested Elaenia *Elaenia albiceps* (Passeriformes: Tyrannidae). This is only the second record of *Trouessartia* species from hosts of the family Tyrannidae and the third finding of this genus on suboscine passerines. A brief review of taxonomic papers on the genus *Trouessartia* published in the past thirty years and a summary of the current state of systematics of this genus are provided. The male of recently described *T. phylloscopi* Burdejnaja et Kivganov, 2011 syn. n. from *Phylloscopus trochilus* is declared as a junior synonym of *T. microcaudata* Mironov, 1983 and the female of that species as a junior synonym of *T. appendiculata* (Berlese, 1886).

KEY WORDS: Acariformes, feather mites, Trouessartiidae, *Trouessartia*, systematics, Tyrannidae

INTRODUCTION

Feather mites of the genus *Trouessartia* Canestrini, 1899 (Astigmata: Trouessartiidae) are medium or large-sized astigmatan mites (400–550 micrometers in length) associated almost entirely with passerine hosts (Orwig 1968; Santana 1976; Gaud and Atyeo 1996). These mites, having as for most trouessartiids a heavily sclerotized and strongly flattened body, are typical inhabitants of feathers with large and firm vanes, like the flight feathers of the wing and tail feathers (Mironov 1987; Dabert and Mironov 1999). A unique peculiarity in location of these mites on feathers is that adults of many *Trouessartia* species, in contrast to all other families of feather mites also living on feathers with large and firm vanes, occupy the dorsal surface of vane of secondaries, tertiaries and retrices, rather than the ventral side. On feathers of these types, adults tend to be arranged in a rather dense group touching each other, while preimaginal stages of these mites are mainly located on the wing and body covert feathers (Mironov 1987; pers. obs. SVM) (Fig. 1A).

The only taxonomic revision of the genus *Trouessartia* was carried out by Santana (1976), who provided a key and uniform redescription of 71 valid species that encompassed almost all species of this genus named in that time. Santana (1976) also arranged about 1/3 of considered species into 5 supposedly natural species groups; each of them was associated with a particular family or several related families of birds. According to estimation of this author, the redescribed species constituted at most 10–15% of the species that

could be expected in the extant world fauna. This author also noted that he was not able to re-examine only one certainly valid species, *Trouessartia chaquensis* Mauri et De Alzuet, 1968, described before his work.

Since the publication of this revision, 30 new *Trouessartia* species have been described by different authors (Černý and Lukoschus 1975; Gaud 1977; Černý 1979; Mironov 1983; Gaud and Atyeo 1986, 1987; Mironov and Kopij 1996, 2000; OConnor et al. 2005; Carleton and Proctor 2010; Burdejnaja and Kivganov 2011, Constantinescu et al. 2013). Among the most significant of these publications are the two papers by Gaud and Atyeo (1986, 1987) that contain a review of *Trouessartia* species of the *appendiculata* and *minutipes* species groups associated with Euroafrican swallows (Hirundinidae). Additionally, Mironov and Kopij (2000), describing new species from Africa, established within the genus two more species-groups, *africana* and *viduae*.

Among the recently described species, *T. phylloscopi* Burdejnaja et Kivganov, 2011 does not truly represent a new species; the description makes it clear that its male and female correspond to two different previously known species, *T. microcaudata* Mironov, 1983 and *T. appendiculata* (Berlese, 1886). Both these species are common for *Hirundo rustica* Linnaeus (Hirundinidae), and the finding of “*T. phylloscopi*” on *Phylloscopus trochilus* Linnaeus (Phylloscopidae) is obviously the result of accidental contamination. Therefore, we declare here the male of *T. phylloscopi* Burde-

jnaja et Kivganov, 2011 syn. n. as a junior synonym of *T. microcaudata* Mironov, 1983 and the female as a junior synonym of *T. appendiculata* (Berlese, 1886).

Thus, to date, the genus *Trouessartia* has included 101 valid species and is the most species-rich genus within the family Trouessartiidae (Orwig 1968; Santana 1976; Gaud and Atyeo 1996; Constantinescu et al. 2013). In geographical aspect the world fauna of this genus has been explored quite unequally. The overwhelming majority of currently known species (88) have been described from birds of the Old World, mainly from Europe and Africa (for major references see: Santana 1976; Mironov 1983), and only 14 species, including one species inquerenda, are known from birds restricted to the New World (Berla 1959a, 1959b, 1960, 1962; Mauri and De Alzuet 1968; Černý and Lukoschus 1975; OConnor et al. 2005; Carleton and Proctor 2010).

As mentioned above, mites of the genus *Trouessartia* are associated with Passeriformes; the two findings on non-passerine hosts, each mite species from a single host of the orders Charadriiformes and Psittaciformes, are very likely to be the results of contamination, because they have never been re-collected from corresponding hosts (Santana 1976). *Trouessartia* species associated with passeriforms have been recorded from representatives of 28 families as classified by Clements et al. (2013). Among the species associated with Passeriformes, only two species have been recorded so far from suboscine passerines, *T. fissispina* Černý et Lukoschus, 1975 from *Elaenia flavogaster* (Thunberg) (Tyrannidae) and *T. chaquensis* Mauri et De Alzuet, 1968 from *Scytalopus speluncae* (Ménétrières) (Rhinocryptidae), while all remaining species were found on oscine passerines. In the present paper we describe one more *Trouessartia* species from a host of the family Tyrannidae.

MATERIAL AND METHODS

The material used in the present work was collected by the junior coauthor (DGA) in the course of parasitological survey of birds in the Los Lagos region of Chile in 2008. Examined bird specimens represented individuals that died of a disease or were road-killed. Feather mites were removed from the plumage of birds using a dissecting needle or fine forceps and placed in tubes with 70% ethanol. Then, mite specimens were mounted on microslides in Faure medium according to the standard technique used for small-sized mites

(Krantz and Walter 2009). Mites were studied using a Leica DMLS microscope (Leica Microsystems Inc.) with differential interference contrast (DIC) and camera lucida.

The description is given according to the standard format proposed for mite species of the family Trouessartiidae (Orwig 1968; Santana 1976; Mironov and Kopij 2000). General morphological terms and leg chaetotaxy follow Gaud and Atyeo (1996), idiosomal chaetotaxy also follows these authors with subsequent minor corrections by Norton (1998). All measurements are in micrometers (μm). Distance between setae of the same pair is the direct distance between their bases, and distance between different pairs of setae is the shortest distance between the transverse levels formed by the setae of respective pairs. The measuring techniques for some other particular structures are noted directly in the text of description.

Type materials are deposited in the following institutions: FCV — Facultad de Ciencias Veterinarias, Universidad de Concepción, Chillán, Chile; MZUM — Museum of Zoology of the University of Michigan (Ann Arbor, USA); ZISP — Zoological Institute of the Russian Academy of Sciences (Saint Petersburg, Russia)

SYSTEMATICS

Family Trouessartiidae Gaud, 1957
Genus *Trouessartia* Canestrini, 1899
Trouessartia elaeeniae Mironov et
 González-Acuña, sp. n.

(Figs 1B–D, 3–6)

Type material. Male holotype (ZISP 5064), 6 male and 11 female paratypes from *Elaenia albiceps* (Orbigny et Lafresnaye, 1837) (Tyrannidae), CHILE, Los Lagos, Palena Province, Huinay, S 42°22' W 72°24', 3 December 2008, coll. D.A. González-Acuña.

Depositories. Holotype, 3 male and 8 female paratypes — ZISP, 1 male and 1 female paratypes — ZMUM, 2 male and 2 female paratypes — FCV.

Description. Male (holotype, range for 5 paratypes in parentheses). Length of idiosoma from anterior end to bases of setae *h3* 478, greatest width of idiosoma at level of humeral shields 219 (idiosomal size of 5 paratypes 470–480 × 205–215). Length of hysterosoma from sejugal furrow to bases of setae *h3* 310 (300–310). Prodorsal shield: length along midline 150 (145–150), greatest width of posterior part 146 (145–155), anterior part at level of trochanters II not narrowed, lateral

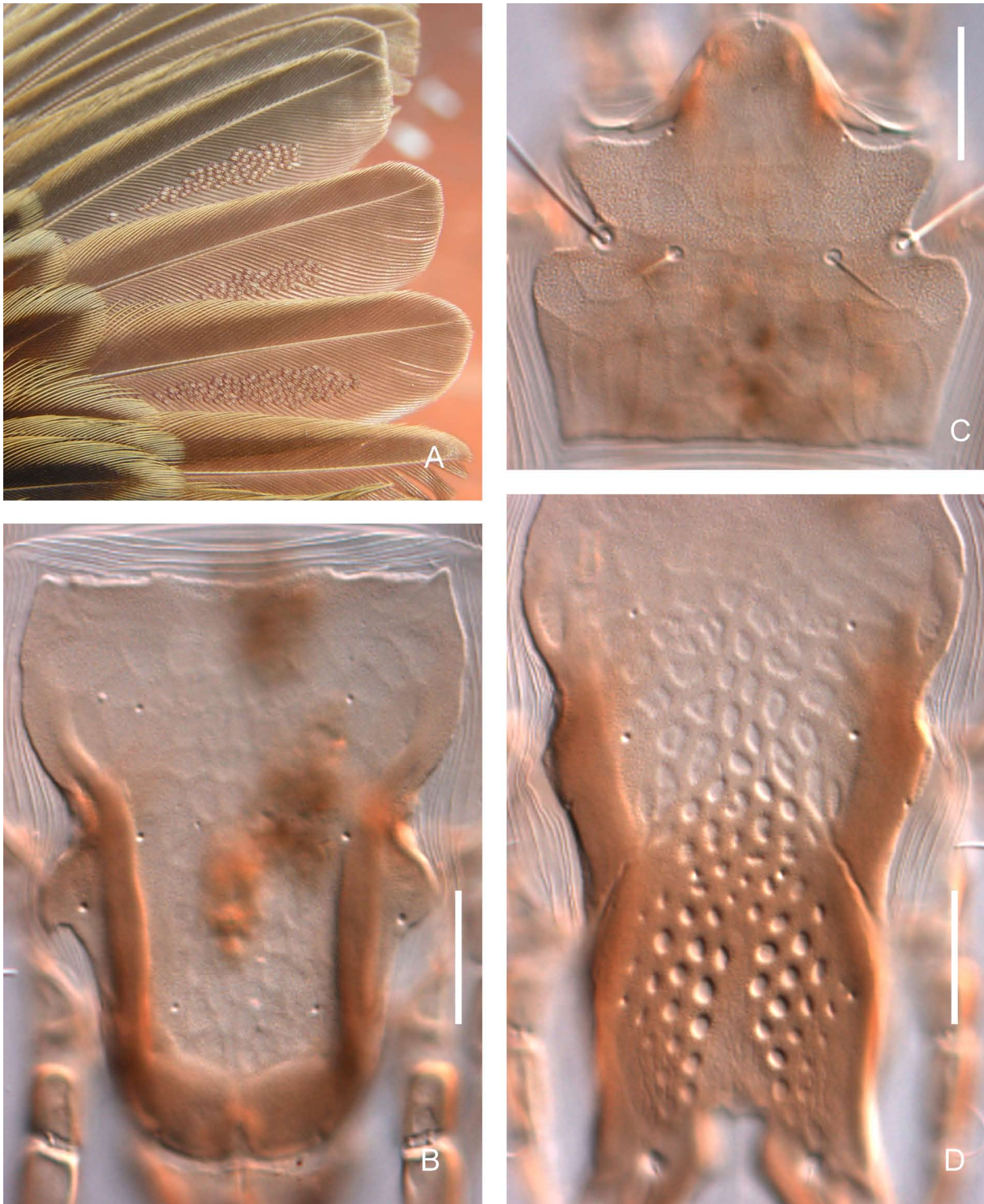


Fig. 1. Mites of the genus *Trouessartia*. A — adults of *Trouessartia kratochvili* Černý, 1979 on secondaries of *Locustella naevia* (Boddaert), B — *T. elaeinae* sp. n., prohysteronotal shield of male, C — same, prodorsal shield of female, D — same, hysteronotal shield of female. Scale bar = 50 μ m. (Photos by SVM).

margins not fused with scapular shields, anterolateral extensions almost extending to bases of epimerites Ia between legs I and II, posterior margin almost straight, surface with faint network pattern (Fig. 2). Internal scapular setae *si* thin needle-like, 33 (32–35) long, separated by 60 (58–62); external scapular setae *se* separated by 104 (100–

106). Humeral shield with setae *c2* needle-like, 22 (20–22) long. Setae *c3* narrowly lanceolate, with acute apex, 15 (15–16) long. Dorsal hysterosoma with broadly connected prohysteronotal shield and lobar shield. Prohysteronotal shield: length 210 (204–215), width at anterior margin 155 (150–158), lateral margins broadly incised at level of

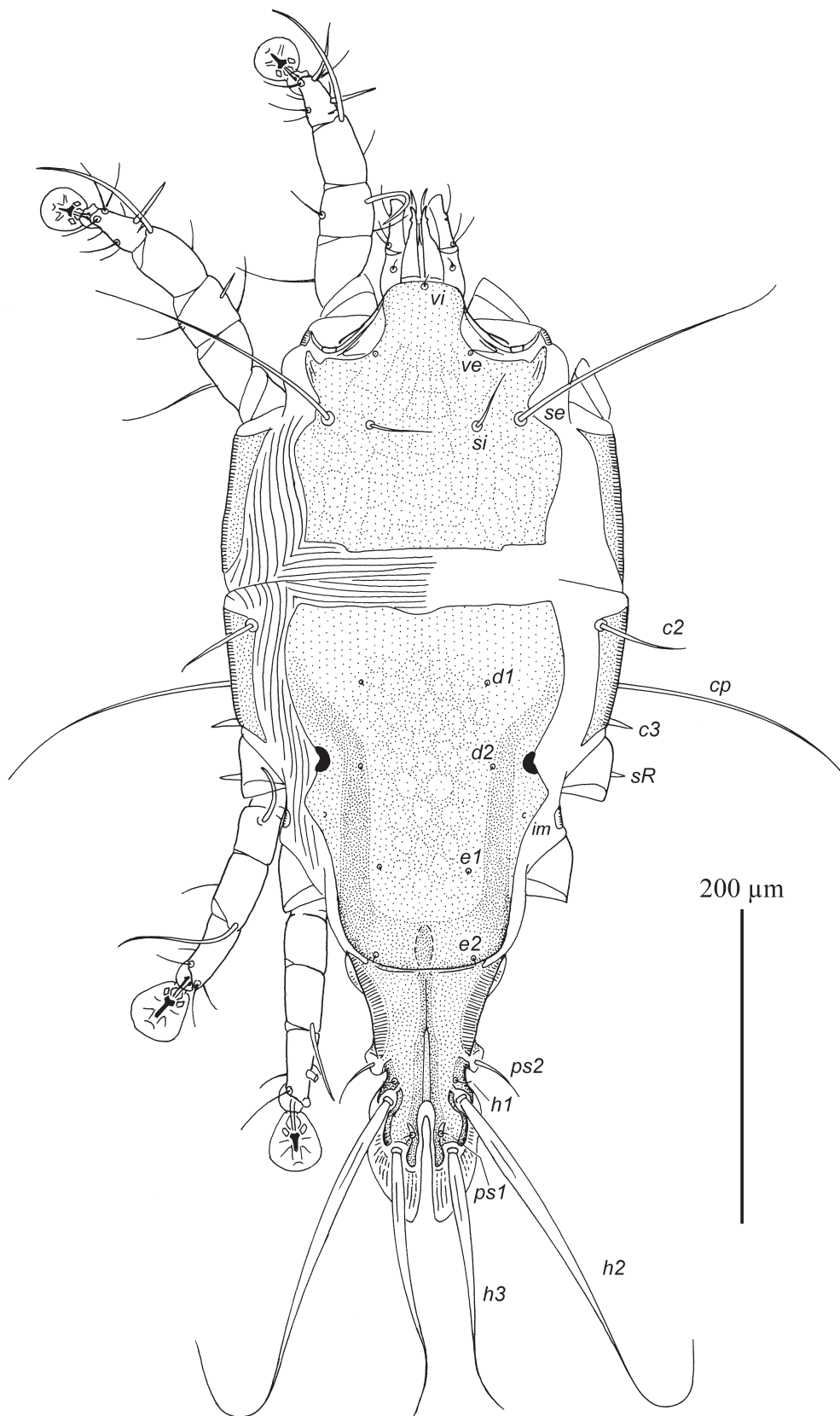


Fig. 2. *Trouessartia elaeniae* sp. n., dorsal view of male.

trochanters III, dorsal hysterosomal apertures (DHA) absent, central area with a faint network pattern (Fig. 1B). Dorsal setae *d1* present, minute.

Length of lobar shield excluding lamellae 100 (100–105). Apical parts of opisthosomal lobes approximate, separated by narrow parallel-sided ter-

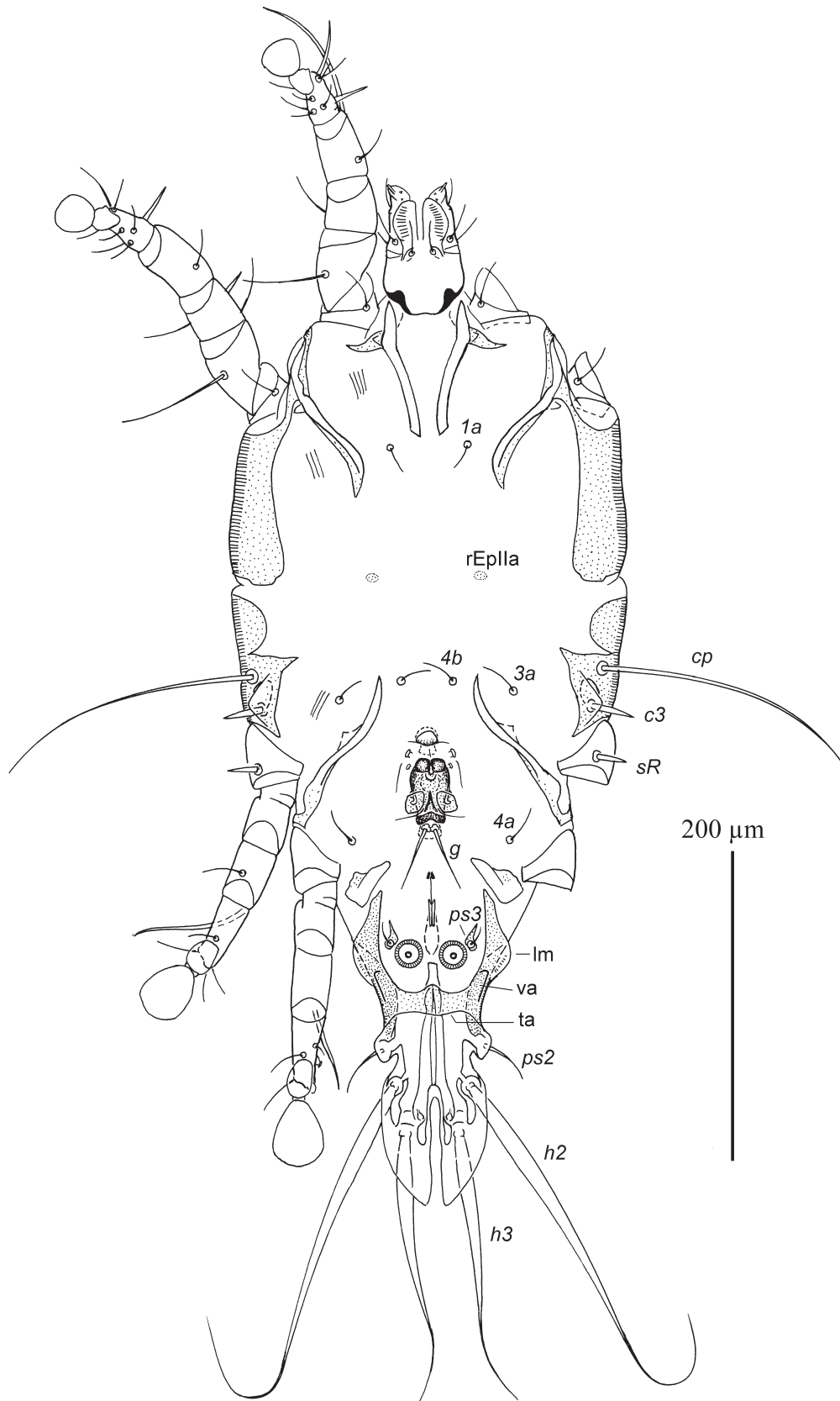


Fig. 3. *Trouessartia elaeinae* sp. n., ventral view of male. lm — lateral membrane, rEpIIa — rudimentary sclerite of epimerites IIa, ta — translobar apodeme, va — ventral apophysis of adanal apodeme.

minal cleft, length of cleft from anterior end to apices of lamellae 55 (55–58), width in anterior part 4.5 (4.5–5). Lamellae semi-ovate, slightly at-

tenuate apically, margins smooth, length from bases of setae *h3* to lamellar apices 37 (35–40). Distance between dorsal setae: *c2:d2* 84 (80–88),

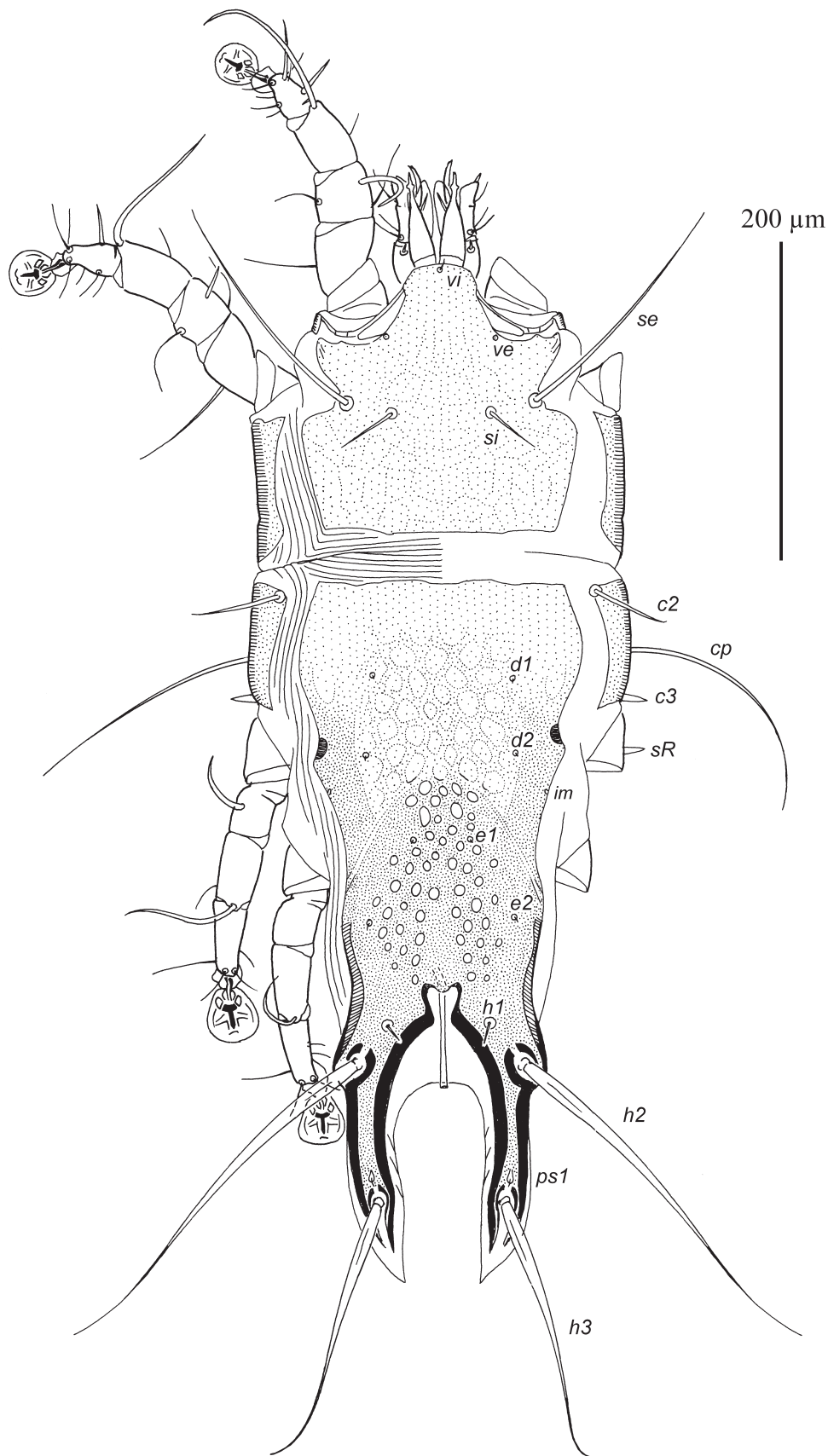


Fig. 4. *Trouessartia elaeniae* sp. n., dorsal view of female.

d2:e2 102 (100–106), *e2:h2* 80 (75–80), *h2:h3* 27 (25–28), *h2:h2* 42 (42–46), *h3:h3* 29 (29–33), *d1:d2* 44 (44–50), *e1:e2* 47 (44–50).

Epimerites I free. Rudimentary sclerites rE-pIIa small, ovate. Genital apparatus situated between levels of trochanters III, IV, length exclud-

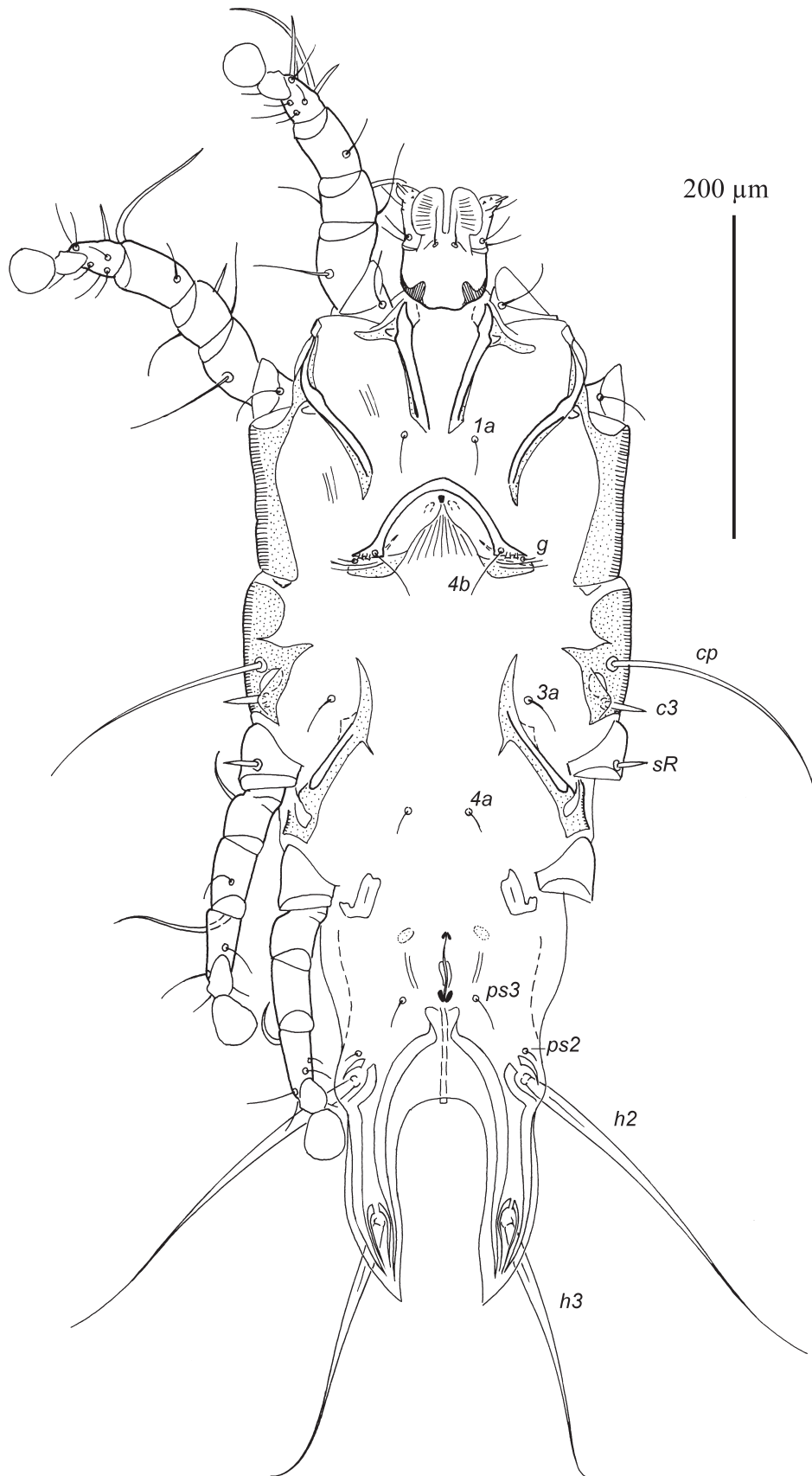


Fig. 5. *Trouessartia elaeniae* sp. n., ventral view of female.

ing basal sclerite 38 (35–38), greatest width 22 (22–24) (Figs 3, 6E). Epiandrum present. Anterior genital papillae slightly larger and more distant

from midline than posterior genital papillae. Setae *g* long, thickened in basal half, contiguous at bases. Adanal apodemes heavily sclerotized, with

narrow lateral membrane, with single pair of apophyses. Translobar apodeme present. Adanal shields small, shaped as inverted commas, bearing setae *ps3*. Anal suckers 13 (13–15) in diameter. Epimerites IVa wide and short, anterior ends not reaching level of setae *4a*. Setae *4b* situated slightly anterior to level of setae *3a*, setae *g* and *4a* situated approximately at same transverse level. Distance between ventral setae *4b:3a* 7 (5–8), *4b:g* 82 (82–90), *g:ps3* 64 (62–65), *ps3:h3* 110 (104–110).

Legs IV extending by ambulacral disc slightly beyond level of setae *h3*. Setae *sR* of trochanters III short, narrowly lanceolate, 15 (15–16) long. Tarsus IV 40 (39–40) long; modified setae *d* barrel-shaped, with discoid cap, situated at midlevel of segment; modified setae *e* hemispheroid, without cap, situated apically (Fig. 6D).

Female (range for 9 paratypes). Length of idiosoma from anterior end to apices of lamellar lobar processes 553–580, greatest width 205–235. Length of hysterosoma from sejugal furrow to apices of lamellar lobar processes 385–400. Prodorsal shield: shaped as in male, 148–155 in length, 155–158 in width, surface with faint network pattern (Fig. 1C). Setae *si* thin spiculiform, 33–40 long, separated by 58–64; setae *se* separated by 106–115. Humeral shields with setae *c2* needle-like, 45–48 long. Setae *c3* narrowly lanceolate, with acute apex, 22–24 in length. Hysteronotal shield: length from anterior margin to bases of setae *h3* 335–340, width at anterior margin 155–160, lateral margins broadly incised at level of trochanters III, DHA absent, anterior part with cell-like ornamentation, posterior part with small circular and ovate lacunae (Figs 1D, 4). Dorsal setae *d1* present. Setae *h1* short spiculiform, about 10 long, situated antero-mesal to bases of setae *h2*, 22–24 from each lateral margin of hysteronotal shield. Width of opisthosoma at level of setae *h2* 115–120. Setae *ps1* positioned dorsally on opisthosomal lobes, equidistant from outer and inner margins of lobe. Distance from bases of setae *h3* to membranous apices of lobes 44–50. Setae *f2* absent. Supranal concavity open posteriorly into terminal cleft. Length of terminal cleft together with supranal concavity 159–166, width of cleft at level of setae *h3* 50–55. Interlobar membrane occupying anterior 1/4 of terminal cleft, distance from free margin of membrane to membranous lobar apices 110–115. External copulatory tube present, very short, about 5 long, protruding from free margin of interlobar membrane. Spermatheca with short

non-dentate collar as in Fig. 6F, length of secondary spermaducts 22–25. Distance between dorsal setae: *c2:d2* 84–90, *d2:e2* 90–95, *e2:h2* 75–85, *h2:h3* 75–82, *h2:h2* 90–95, *h3:h3* 70–75, *d1:d2* 38–45, *e1:e2* 42–45, *h1:h2* 20–22, *h1:h1* 52–55, *ps1:h3* 10:12.

Epimerites I free. Epigynum 40–42 in length, 90–96 in width (Fig. 5). Epimerites IVa present, wide and short. Anal opening with pair of small ovate sclerites situated at level of its anterior end. Setae *sR* of trochanters III narrowly lanceolate, acute apically, 15–20 long. Legs IV extending by ambulacral disc to midlevel between setae *h2* and *h3*.

Differential diagnosis. *Trouessartia elaeinae* sp. n. is most similar in appearance to *T. carpi* Till, 1954, described from *Erythropogon leucophrys* (Vieillot) (Muscicapidae) in Africa (Till 1954), in having the prohysteronotal and lobar parts of the hysteronotal shield widely connected in males and by the presence of ovate lacunae in the posterior half of hysteronotal shield and the primary spermaduct extending to the free margin of interlobar membrane in females. The new species differs from *T. carpi* by the following characters. In both sexes of *T. elaeinae*, the prodorsal shield has distinct antero-lateral extensions almost touching the bases of epimerites Ia; in males, the terminal lamellae are attenuate apically, the terminal cleft is narrow but lobes do not touch at their inner margins, setae *g* are situated slightly anterior to or at the level of setae *4a*; in females, the anterior half of the hysteronotal shield has a distinct network ornamentation, and the short external copulatory tube is present on the free margin of the interlobar membrane. In both sexes of *T. carpi*, the prodorsal shield has no antero-lateral projections; in males, the terminal lamellae are widely rounded, the inner margins of terminal cleft touch each other, setae *g* are situated posterior to the level of setae *4a*; in females, the anterior half of the hysteronotal shield has no ornamentation, and the external copulatory tube is absent.

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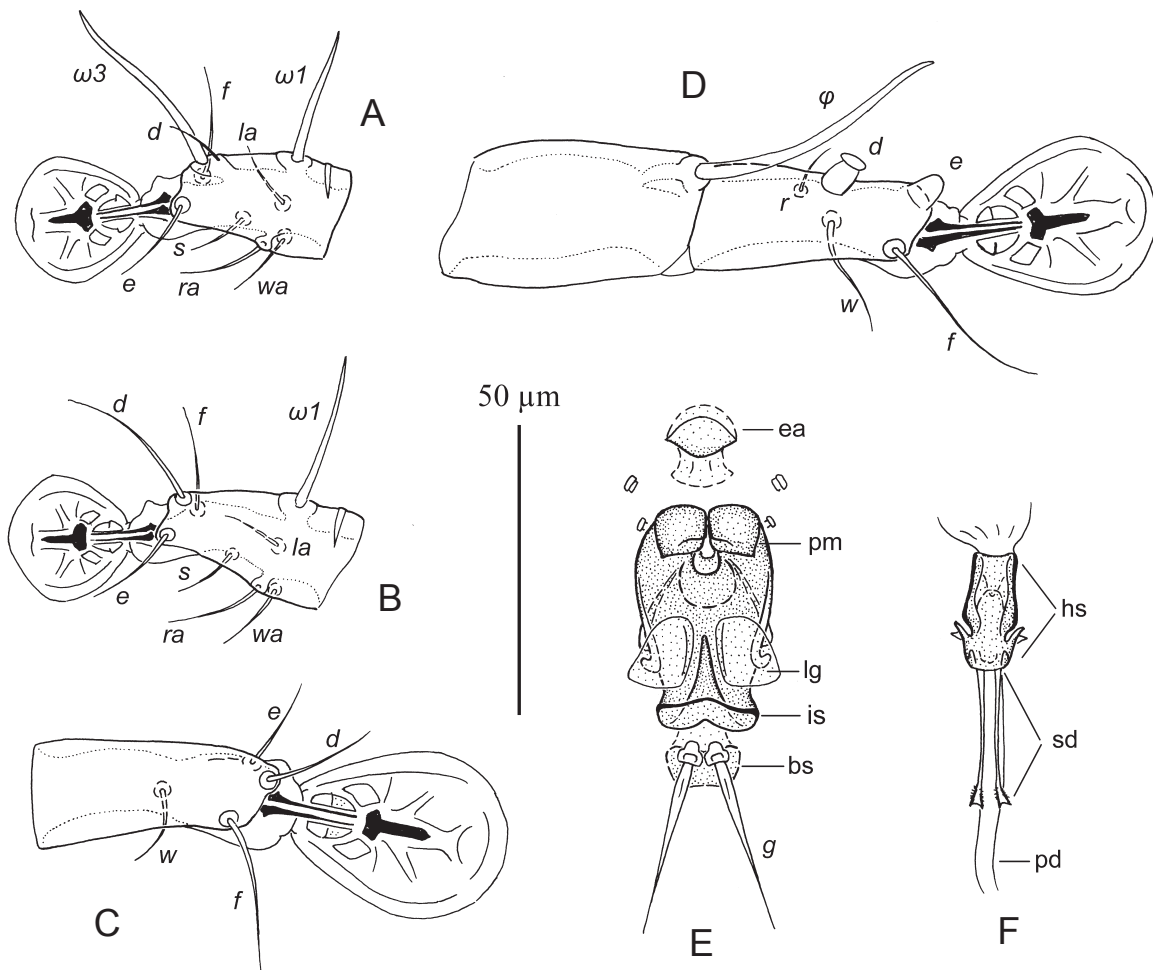


Fig. 6. *Trouessartia elaeinae* sp. n., details. A — tarsus I of male, B — tarsus II of male, C — tarsus III of male, D — tibia and tarsus IV of male, E — genital apparatus of male, F — spermatheca and spermaducts. bs — basal sclerite, ea — epiandrium, is — intermedial sclerite, lg — latigenital sclerite, hs — head of spermatheca, pd — primary spermaduct, pm — parameres, sd — secondary spermaduct.

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