

**A NEW FEATHER MITE OF THE GENUS *PROMEGNINIA*
GAUD ET ATYEO, 1967 (ACARIFORMES: AVENZOARIIDAE)
FROM THE GRAY-HEADED ALBATROSS *THALASSARCHE CHRYSOSTOMA*
(PROCELLARIIFORMES: DIOMEDEIDAE)**

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ABSTRACT: A new feather mite species *Promegninia thalassarche* sp. n. (Avenzoariidae: Bonnetellinae) is described from the Gray-headed Albatross *Thalassarche chrysostoma* (Forster) (Procellariiformes: Diomedidae) from South Georgia Island. The new species is morphologically close to the type species of the genus, *P. pedimana* (Trouessart, 1899), and most clearly differs from that species by having the terminal lamellae bidentate in males and the hysteronotal and humeral shields fused in females.

KEY WORDS: Feather mites, Avenzoariidae, *Promegninia*, systematics, Procellariiformes

INTRODUCTION

Feather mites of the genus *Promegninia* Gaud et Atyeo, 1967 (Analgoidea: Avenzoariidae: Bonnetellinae) are small-sized avenzoariid mites (300–400 µm long as adults) living in the wing plumage of albatrosses and petrels (Procellariiformes: Diomedidae and Procellariidae). For a long time this genus included only a single species, *Promegninia pedimana* (Trouessart, 1899), described from the Wandering Albatross *Diomedea exulans* Linnaeus (Diomedidae) (Trouessart 1899; Gaud and Atyeo 1967; Atyeo and Gaud 1981). Recently, two more species were described from the Bulwer's Petrel *Bulweria bulwerii* (Jardine and Selby) and Cory's Shearwater *Calonectris borealis* (Cory) (Procellariidae) (Mironov et al. 2015). This paper also provided a renewed diagnosis of *Promegninia*, since the authors of this genus incorrectly interpreted its main diagnostic characters. The unique feature, allowing to recognize unmistakably this genus among other analgoideans, is a large spine-shaped famulus ϵ on tarsi I, which was erroneously interpreted by Gaud and Atyeo (1967) as a seta *ba*.

Here I describe a new species of the genus *Promegninia* found on the Gray-headed Albatross *Thalassarche chrysostoma* (Forster) (Diomedidae).

MATERIAL AND METHODS

The new species described herein was found among avenzoariid mites from procellariiform birds loaned for investigation from the late Prof. W.T. Atyeo (University of Georgia, Athens, USA). The description and measuring technique of the new species follows the modern standards used for avenzoariid mites of the subfamily Bonnetel-

linae (Mironov and Stefan 2013; Negm et al. 2013; Stefan et al. 2013; Mironov et al. 2015). The distance between setae of the same pair is measured as the direct distance between their bases, and the distance between different pairs of setae is the shortest distance between the transverse levels formed by the setae of respective pairs. General morphological terms and leg chaetotaxy follow Gaud and Atyeo (1996); the idiosomal chaetotaxy also follows these authors with corrections by Norton (1998). All measurements are in micrometres (µm). Drawings were made using a Leica DM 5000B light microscope with DIC illumination and a camera lucida.

Abbreviations used for depositories of material and catalog and voucher numbers: UMMZ — Museum of Zoology, University of Michigan (Ann Arbor, USA), NU — University of Nebraska (Lincoln, USA) (in numbers provided by W.T. Atyeo), ZISP — Zoological Institute of the Russian Academy of Sciences (Saint Petersburg, Russia). Scientific names of birds and supraspecific classification follow Clements et al. (2014).

Family Avenzoariidae Oudemans, 1905

Subfamily Bonnetellinae Gaud et Atyeo, 1981

Genus *Promegninia* Gaud et Atyeo, 1967

Type species: *Megninia pedimana* Trouessart, 1899, by original designation.

Promegninia thalassarche sp. n.

Figs 1–3

Type material. Male holotype (NU 10426a) and 1 male paratype (NU 10426b) from *Thalassarche chrysostoma* (Forster) (Diomedidae), British overseas territory: Atlantic Ocean, South Georgia Island, 17 September 1963, H. B. Clagg;

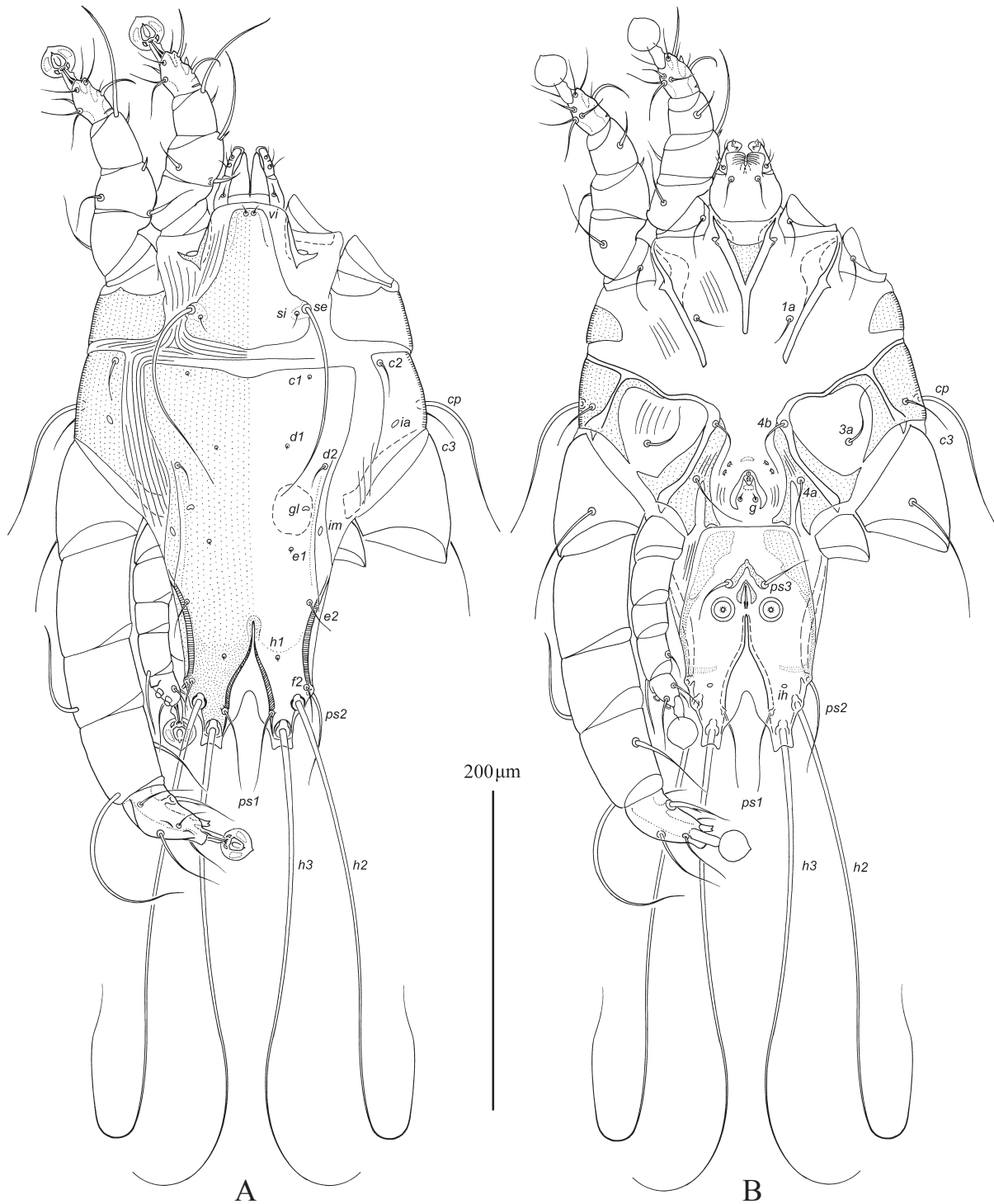


Fig. 1. *Promegninia thalassarche* sp. n., male. A — dorsal view, B — ventral view.

1 male and 1 female paratypes (NU 10428a–b), same data; 2 male and 3 female paratypes (NU 10423a–e), same data.

Depositories. Holotype, 2 male and 2 female paratypes — UMMZ, remaining paratypes — ZISP.

Male (holotype, range for 4 paratypes in parentheses) (Figs. 1, 3A–F). Length of idiosoma

from anterior end to lobar apices 335 (330–340), width at level of humeral shields 220 (210–220). Subcapitulum with convex lateral margins, length including palps 51 (48–52), greatest width 44 (40–45) (Fig. 3E). Prodorsal shield: roughly pear-shaped, without median ridges, postero-lateral angles rounded, posterior margin convex, lateral margins without extensions and incisions, length

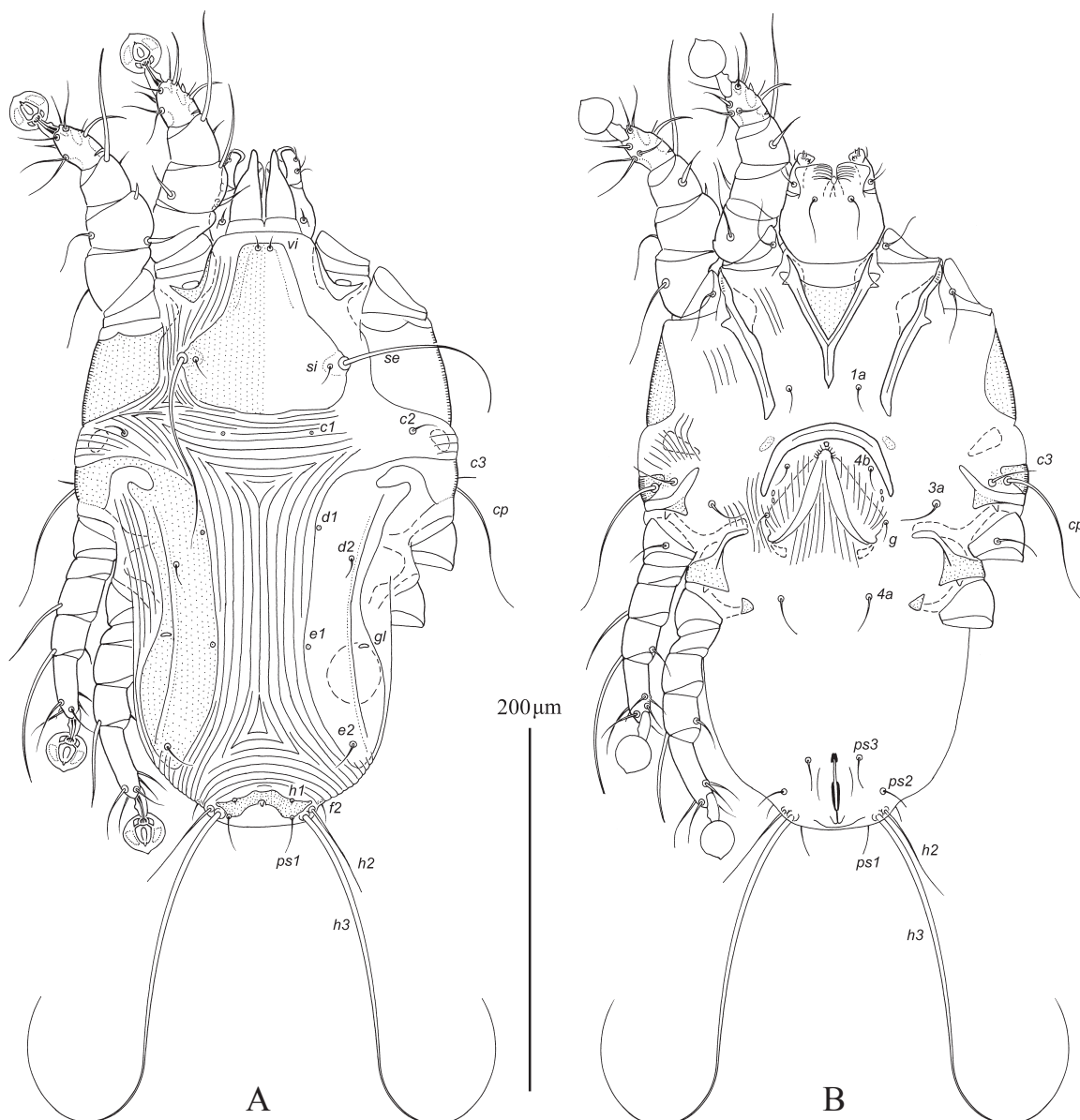


Fig. 2. *Promegninia thalassarche* sp. n., female. A — dorsal view, B — ventral view.

along midline 90 (88–95), width at level of postero-lateral angles 78 (75–84) (Fig. 1A). Scapular setae *se* situated on lateral margins of prodorsal shield, separated by 73 (72–78). Length of hysterosoma from level of sejugal furrow to lobar apices 240 (235–245). Setae *c3* filiform, about 25 long. Hysteronotal shield: anterior angles rectangular, surface uniformly, sclerotized anterior margin straight or slightly concave medially, length from anterior margin to bases of setae *h3* 230 (220–235), width at anterior margin 135 (130–150). Opisthosomal lobes subtriangular, elongate, lobar apices bearing setae *h3* with bidentate terminal lamellae about 10 long. Terminal cleft semi-ovate, anterior end extending slightly beyond the level of setae *h1*,

length including narrow supranel concavity 85 (78–88). Lateral membranes narrow. Interlobar membrane occupies anterior two thirds of terminal cleft; free margin of this membrane with deep incision rounded anteriorly; length from apices of terminal lamellae to anterior end of incision in this membrane 37 (35–40). Setae *ps1* 55 long, situated slightly posterior to level of setae *h2*, extending far beyond apices of terminal lamellae. Distance between dorsal setae *c2:d2* 66 (65–70), *d2:e2* 86 (80–95), *e2:h3* 84 (78–85), *d1:d2* 13 (10–15), *e1:e2* 31 (30–37), *h2:h2* 64 (56–65), *h3:h3* 47 (40–50), *ps1:ps1* 29 (22–30), *ps2:ps2* 75 (70–80).

Sternum about half as long as total length of epimerites I, without surrounding sclerotized area.

Coxal fields III closed. Sclerotized areas of coxal fields IV narrow and widely separated from each other (Fig. 1B). Setae *4b* anterior to level of setae *3a*. Genital apparatus with slightly curved branches, length 22 (20–22), width 20 (20–24). Genital shield(s) absent. Bases of setae *g* encircled by branches of genital arch. Paragenital apodemes enlarged posteriorly, fused at anterior ends with sclerotized areas of coxal fields IV (Fig. 3F). Anterior and lateral margins of anal field clearly outlined. Adanal shields represented by three pieces: median part shaped an inverted V and two lateral pieces of uneven form occupying antero-lateral angles of anal field. Setae *ps3* situated on posterior tips of median fragment of adanal shield. Diameter of adanal suckers 16 (16–18). Anal field posterior to adanal suckers with a pair of transverse bow-shaped sclerites. Adanal membranes absent. Distance between ventral setae: *4b:3a* 20 (10–20), *4b:4a* 33 (30–35), *4a:g* 12 (10–15), *g:ps3* 51 (48–53), *4b:4b* 42 (40–44), *g:g* 10 (9–11), *ps3:ps3* 24 (20–25).

Tarsus I without apical process, tarsus II with short apical spine-like process (Figs. 3A, B). Setae *mG* on genua I slightly thickened at base, with filiform apex, setae *mG* on genua II filiform. Setae *cG* of genua I, II narrow spine-like with filiform apex. Legs III long, with tarsi and distal half of tibiae extending beyond level of lobar apices. Tarsus III slightly thickened basally, with finely-indented apical extension and pair of short crests on paraxial surface, 53 (52–57) long excluding pretarsus; claw-like seta *s* with bidentate apex; seta *w* long, thickened in basal half, with minute additional spine at mid-length (Fig. 3C). Legs IV relatively long, with ambulacrum almost extending to level of lobar apices. Tarsus IV with dorso-basal extension, 18 (16–19) long, setae *d*, *e* barrel-shaped with discoid cap (Fig. 3D).

Female (range for 4 paratypes) (Figs. 2, 3G, H). Length of idiosoma 230–345, width 200–210. Gnathosoma shaped as in male, length of subcapitulum including palps 52–65, greatest width 49–56. Prodorsal shield: shaped as in male, length along median line 100–105, greatest width 92–98 (Fig. 2A). Setae *se* situated on lateral margins of prodorsal shield, distance between setal bases 88–94. Length of hysterosoma from sejugal furrow to posterior margin of opisthosoma 215–232. Setae *c3* filiform, about 25 long. Hysteronotal shield represented by two longitudinal pieces separated medially by wide area of striated tegument, anterior end of these shields fused by narrow bridges

with corresponding humeral shields, length of these pieces 165–180, shortest distance between their inner margins 48–58. Setae *d1*, *d2*, *e1*, *e2* and hysteronotal gland openings *gl* situated on hysteronotal shields. Setae *c1*, *c2* situated on striated tegument. Pygidial shield entire, represented by transverse, roughly bow-shaped sclerite between bases of setae *h2*. Setae *h1* and *ps1* situated on anterior and posterior margins of this shield, respectively. Copulatory opening on small nipple-like extension at posterior margin of pygidial shield. Distance between dorsal setae *c2:d2* 70–80, *d2:e2* 100–105, *e2:h3* 33–50, *h1:h3* 6–8, *h1:h1* 30–35, *h3:h3* 52–55, *d1-d2* 18–22, *e1-e2* 44–52.

Sternum approximately half as long as total length of epimerites I, without surrounding sclerotized area, bases of epimerites not thickened. Epigynum large semicircular, thin, with tips extending to level of genital papillae (Fig. 2B), length 38–44, width 72–80. Rudimentary sclerites rEpIIa present, situated lateral to epigynum. Setae *g* situated slightly posterior to level of setae *3a*. Distance between ventral setae: *4b:3a* 25–28, *4b:g* 40–45, *g:4a* 38–42.

Legs I, II as in male. Legs IV with ambulacrum extending beyond posterior end of the body. Tarsi III, IV without apical spine-like extensions, 33–38 and 40–42 long, respectively (Figs. 3G, H).

Differential diagnosis. The new species *Promegninia thalassarche* sp. n. is morphologically close to *P. pedimana* (Trouessart, 1899) from *Diomedea exulans* Linnaeus (Diomedidae) (Trouessart 1899) by having, in males, the opisthosomal lobes well-developed, the paragenital apodemes enlarged posteriorly, and genital setae *g* encircled by the branches of the genital arch. *Promegninia thalassarche* differs from *P. pedimana* as follows: in both sexes, subhumeral setae *c3* are relatively short (25–30 µm long); in males, the terminal lamellae are bidentate, tarsi III are relatively short (1.7–2 times longer than wide at base), and legs III are long, with the tip of ambulacrum extending to the level of lobar apices; in females, the additional sclerites at the postero-lateral angles of prodorsal shield are absent, the hysteronotal shields are connected with the corresponding humeral shields, and setae *e1* are situated at the level of the hysteronotal gland openings *gl*. In both sexes of *P. pedimana*, subhumeral setae *c3* are long (70–90 µm); in males, the terminal lamellae are rounded, tarsi III are 2.5–3 times longer than wide at base, and legs III are short, with ambulacrum extending to the level of setae *ps2*; in

A new feather mite of the genus *Promegnina*

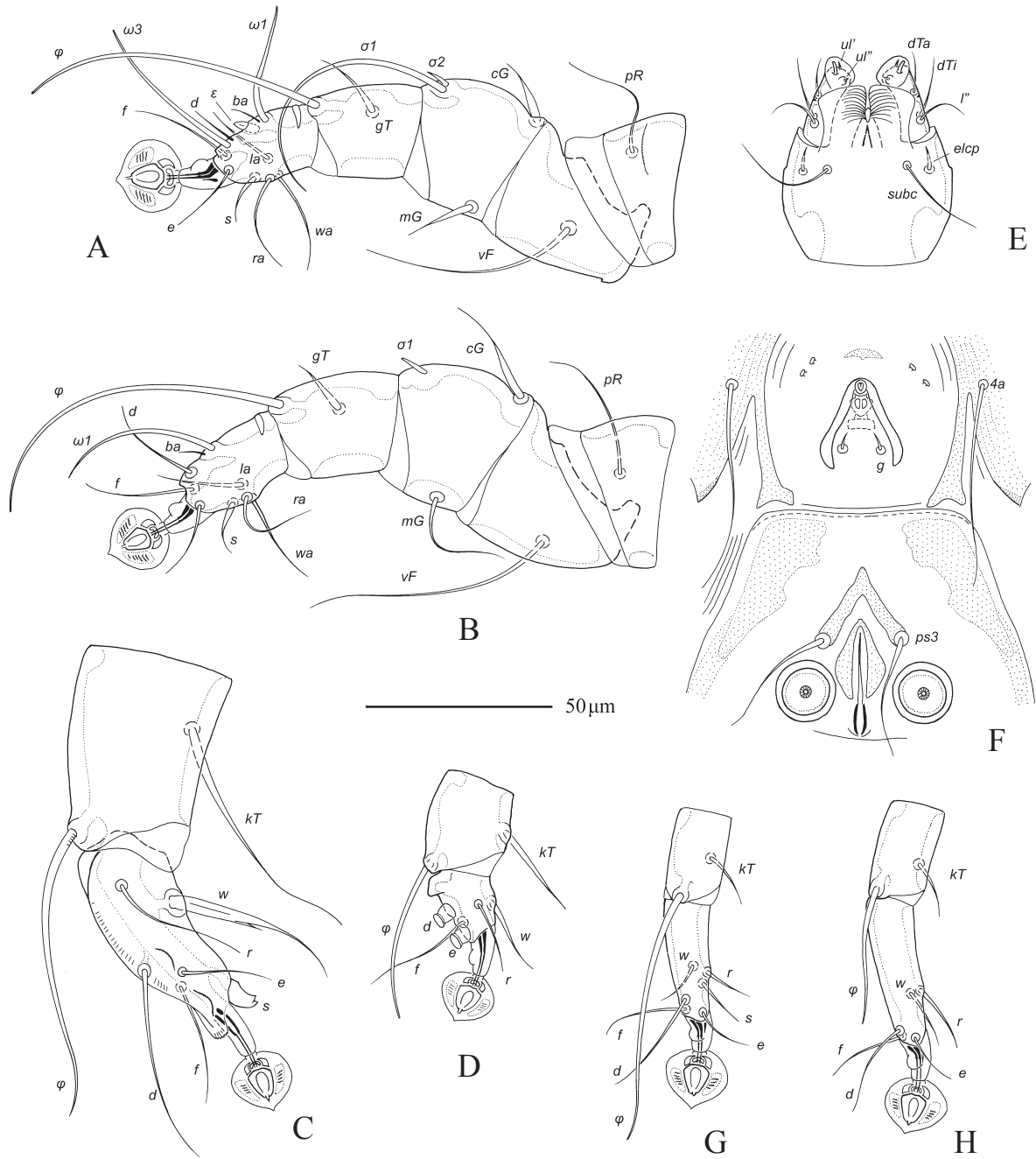


Fig. 3. *Promegnina thalassarche* sp. n., details. A — leg I of male, B — leg II of male, C — tibia and tarsus III of male, D — tibia and tarsus IV of male, E — subcapitulum of male, F — genito-anal area of male, G — tibia and tarsus III of female, H — tibia and tarsus IV of female.

females, the additional sclerites at the postero-lateral angles of prodorsal shield are present, the hysteronotal shields are separated from the humeral shields, and setae *el* are situated anterior to the level of the hysteronotal gland openings.

Etymology. The specific epithet is taken from the generic name of the host and is a noun in apposition.

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