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A new quill mite (Acari: Syringophilidae) from the Blackbird

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Abstract: This article describes a new species of quill mite, *Torotrogla merulae* sp. n., of the family Syringophilidae Lavoipierre, 1953, that lives on the Blackbird *Turdus merula* (Turdidae: Passeriformes) from Poland.

Kurzfassung: Es wird die neue Vogelfedermilbe *Torotrogla merulae* sp. n. aus der Familie Syringophilidae Lavoipierre, 1953 aus Polen beschrieben, die auf der Amsel *Turdus merula* (Turdiidae: Passeriformes) lebt. Für die bisher beschriebenen Milben der Gattung *Torotrogla* wird ein Bestimmungsschlüssel aufgestellt.

Key words: Syringophilidae, *Turdus merula*, ectoparasites, *Torotrogla*, quill mites.

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1 Introduction

Syringophilid mites live and reproduce within the quills of the remiges, restrices, coverts and body feathers of birds. They feed on soft tissue fluids of birds by piercing the quill wall with their styletiform chelicerae (Kethley 1971; Casto 1974).

The genus *Torotrogla* has hitherto included four described species: *T. villosa* (Hancock, 1895) from *Phainopepla nitens* (Bombycillidae), *T. mima* Kethley, 1970 from *Mimus polyglottos* (Sturnidae), *T. gaudi* Bochkov et Mironov, 1998 from *Fringilla coelebs* (Fringillidae) and *T. cardueli* Bochkov et Mironov, 1999 from *Carduelis spinus* (Fringillidae). All known species are parasites of passerine birds.

2 Methods and nomenclature

Mite specimens were collected from quills of secondaries of the Blackbird *Turdus merula* and stored in vials with 70% ethanol. Subsequently, they were mounted in a polyvinilol-actophenol medium in microslides and studied under microscope Olympus BH 2 with the Nomarsky interference-contrast-phase. The morphological terminology and setal designations used in descriptions follow that of Kethley (1970, 1973). All measurements are given in micrometers.

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3 Description of new species

Torotrogla merulae sp. n.

Female (Figs. 1, 2). Total length of holotype 764 (paratypes 729-893), propodosoma width 236 (229-286). Hypostomal apex with one pair of large protuberances (Fig. 5). Chelicerae dentate, each with three teeth. Peritreme M-shaped; each lateral branch with 4-5 chambers, each longitudinal branch with 6-8 chambers (Fig. 6). Stylophore (length 221-243), not extending posterior beyond propodosomal plate. Propodosomal plate with deeply concave anterior margin. Propodosomal region with six pairs of setae. Setae *vi, ve, sci* and *d1* on the plate. Pygidial plate and a pair of small plates near bases of setae *d3* present.

Setae *d3* equidistant between *l3* and *l2*. Paragenital series variable (Tab. 1 and Fig. 8). MCA1 divergent, fused to MCA2. Cuticular striation as in fig. 1, 2.

Length of setae and distances between setal bases:

vi: (70-89); *ve:* 175 (157); *sci:* 214 (180-218); *sce:* 198 (193-198); *l1:* 202 (195-201); *l2:* (155-180); *l3:* 209 (205-221); *l4:* (553); *l5:* 57 (59-71); *d1:* 218 (214-223); *d3:* 195 (182-205); *d4:* (460-550); *d5:* 63 (63-73); *a1* and *a2:* 37 (32-39); *g1:* 37 (47-66); *g2:* 36 (36-64); *ao1:* (21); *ao2:* 29 (29-32); *pmc:* (60-71); *1a:* (184); *3a:* (166); *2b:* (157-186); *3b:* 116 (121-134); *4b:* 107 (102-109); *1c:* (104); *3c:* (120-161); *4c:* (102-109); *sc1:* 30 (36-43); *sc2:* 55 (61-75); *sc3:* (71-102); *sc4:* (63-73); *vi-vi:* 107 (107-118); *ve-ve:* 118 (111-125); *sci-sci:* 121 (107-129); *sce-sce:* 214 (214-236); *l1-l1:* 164 (157-179); *d1-d1:* 53 (46-64); *l2-l2:* 153 (143-157); *d3-d3:* 78 (86-89); *l3-l3:* 146 (157-171); *d4-d4:* (96-107); *d5-d5:* (46-54); *vi-ve:* 18 (14-18); *ve-sci:* 21 (18-28); *sci-sce:* 57 (61-71); *sci-d1:* 89 (86-96); *sce-l1:* 36 (25-39); *l1-d1:* 71 (61-75); *d1-l2:* 136 (100-161); *l2-d3:* 82 (61-75); *d3-l3:* 68 (71-82); *l3-d4:* (132-154); *d4-d5:* (25); *pmc-pmc:* 36 (36-39); *1b-1b:* 54 (50-64); *1c-1c:* 129 (121-143); *2b-2b:* 178 (171-193); *1a-1a:* 36 (32-43); *3a-3a:* 50 (50-68); *3b-3b:* 143 (143-175); *3c-3c:* 121 (111-143); *4b-4b:* 146 (136-193); *4c-4c:* 114 (89-143); *pmc-1b:* 68 (64-75); *pmc-1a:* 146 (150-160); *1a-3a:* 114 (86-157); *3b-4b:* 96 (90-110); *3c-4c:* 96 (89-111); *3b-3c:* 36 (36); *4b-4c:* 32 (32-39).

Male (Figs. 3, 4). Total length 643-710, propodosoma width 243-257. Hypostomal apex with one pair of small protuberances (Fig. 9). Chelicerae edentate. Peritreme M-shaped; each lateral branch with 4-6 chambers, each longitudinal branch with 7 chambers (Fig. 10). Stylophore (length 200-207), does not extend posteriorly beyond the propodosomal plate. Propodosomal plate with deeply concave anterior margin. Margins are weakly sclerotized. Propodosomal region with six pairs of setae. Setae *vi, ve, sci* and *d1* on the plate. Hysterosomal plate present. Setae *d3* closer to *l3* than to *l2*. Paragenital series variable (Tab. 1), one pair of paragenital setae – dorsal. MCA1 divergent, fused to MCA2. Cuticular striation as in fig. 3, 4.

Length of setae and distances between setal bases:

vi: ? (broken), *ve:* 118; *sci:* 157-166; *sce:* 175; *l1:* 164; *l2:* 52-68; *l3:* 50; *l4:* 270-300; *d1:* 179; *d3:* 41-45; *d4:* 45-46; dorsal *pg:* 121-138; *a1* and *a2:* 7-9; *g1* and *g2:* 11-14; *ao1:* 16-20; *ao2:* 21-25; *pmc:* 50-61; *1a:* 132-154; *3a:* 125-134; *1b:* 68-75; *2b:* 105-130; *3b:* 80-98; *4b:* 89-96; *1c:* 90-109; *3c:* 96-121; *4c:* 125; *vi-vi:* 93-100; *ve-ve:* 93-100; *sci-sci:* 89-100; *sce-sce:* 193-196; *l1-l1:* 130-153; *d1-d1:* 40-57; *l2-l2:* 121-132; *d3-d3:* 39; *l3-l3:* 89; *d4-d4:* 90-100; *l4-l4:* 95-107; *vi-ve:* 14; *ve-sci:* 18-21; *sci-sce:* 61; *d1-l2:* 132-150; *l2-d3:* 71-79; *d3-l3:* 54-57; *l3-d4:* 71-86; *pmc-pmc:* 39; *1b-1b:* 64; *1c-1c:* 129; *2b-2b:* 186-196; *1a-1a:* 36-39; *3a-3a:* 82-89; *3b-3b:*

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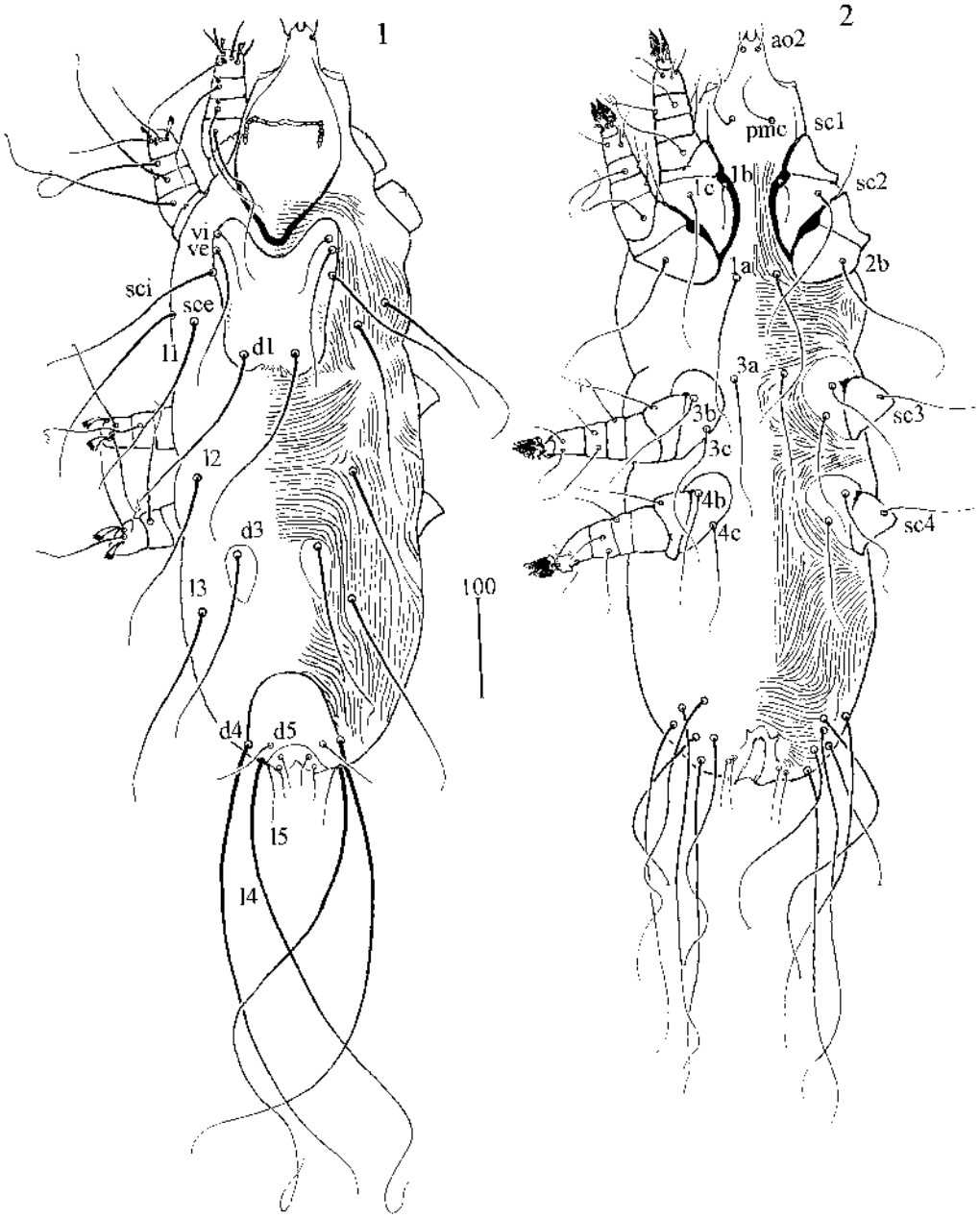


Fig. 1, 2: *Torotrogla merulae* sp. n. Female. 1- dorsal view; 2- ventral view.

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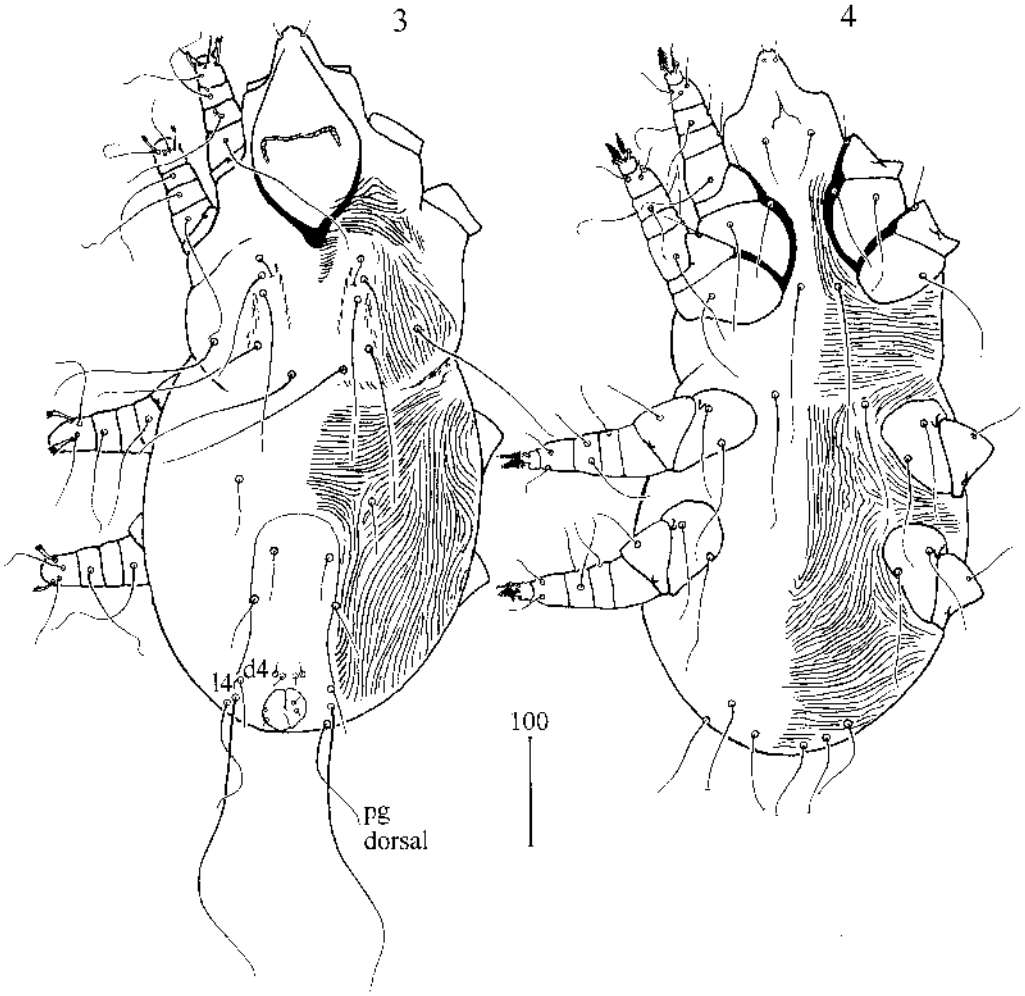


Fig. 3, 4: *Torotrogla merulae* sp. n. Male. 3- dorsal view; 4- ventral view.

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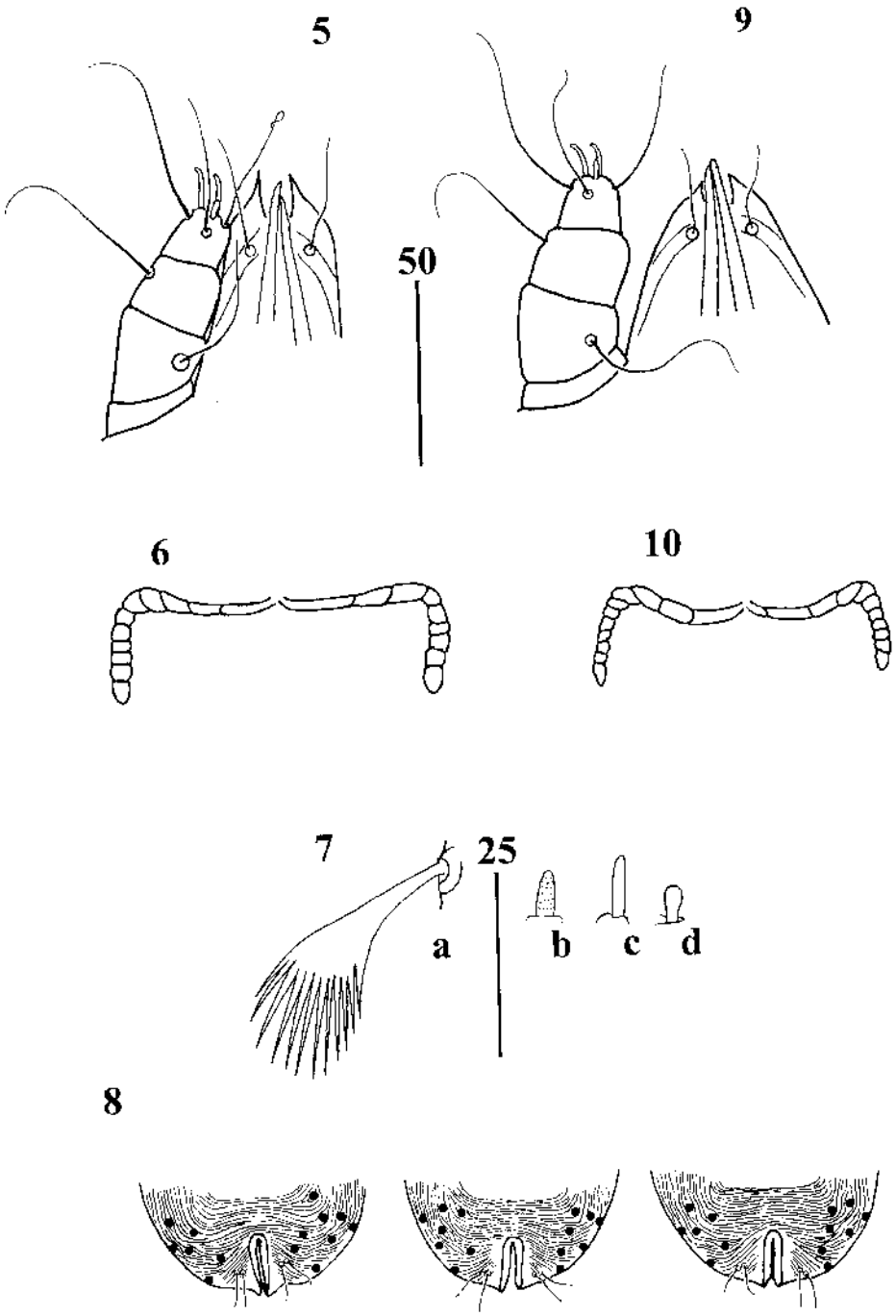


Fig. 5-10: *Torotrogla merulae* sp. n. Female: 5- gnathosoma, ventral view; 6- peritreme; 7: a – fan seta IV, b – solenidion ω on tarsus I, c – solenidion φ on tibia I, d – solenidion σ on genu I; 8 – variation of the setal bases position of the paragenital series in females. Male: 9 – gnathosoma, ventral view; 10 – peritreme.

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Tab. 1: Variation in the number of setae of paragenital series in *Torotrogla merulae* sp. n.

Female:	
	number of specimens
6 pairs of paragenital setae on both sides	34
6 pairs on the one side, 7 pairs on the second one	31
7 pairs on both sides	7
5 pairs on the one side, 6 pairs on the second one	7
6 pairs on the one side, 8 pairs on the second one	3
7 on the one side, 8 pairs on the second one	3
8 pairs on both sides	1
Total	86

Male:	
5 pairs of paragenital setae on both sides	3
4 pairs on both sides.	3
5 pairs on the one side, 6 pairs on the second	1
Total	7

193-200; *3c-3c:* 168-171; *4b-4b:* 225-232; *4c-4c:* 160-178; *pmc-1a:* 132-146; *1a-3a:* 114-121; *3b-4b:* 118-125; *3b-3c:* 36-39; *4b-4c:* 39; *sc1:* 32-39; *sc2:* 66-75; *sc3:* 66-80; *sc4:* 57-80.

4 Diagnosis

This species appears to be most similar to *T. mima* by having the following characters in females: the hypostomal apex with one pair of protuberances; setae *d5* and *l5* are subequal in length; setae *vi, ve, sci* and *d1* are situated on the propodosomal plate.

The new species may be distinguished from the latter species by characters as follows.

In female: the small sclerotized plates near bases of setae *d3* are present; ratio *vi: sce 1*: 2.8-3.0. In male: the hypostomal apex has one pair of small protuberances; ratio *g:d4* 1.0: 4.0.

5 Etymology

The name *merulae* derives from the specific host name – *Turdus merula*.

6 Type material

Female holotype, 15 female paratypes, 6 male paratypes; 31 March 1998; Kuźnica-Hel (54° 21' N, 16° 17' E); leg. M. Skoracki.

Additional material: 41 females, 1 male; 27 October 1997, Mierzeja Wiślana (54° 21' N, 19° 21' E); leg. M. Skoracki; 18 females; 27 October 1997, Mierzeja Wislana (54° 21' N, 19° 21' E) leg. M. Skoracki; 22 females, 1 male; 05 April 1997; Kuźnica-Hel (54° 21' N, 16° 17' E); leg. M. Skoracki; 7 females, 5 males; 29 March 1998; Kuźnica-Hel (54° 21' N, 16° 17' E); leg. M. Skoracki. Holotype, 10 female paratypes and 6 male paratypes are deposited in the Department of Animal Morphology, A. Mickiewicz University, Poznań, Poland; 3 female paratypes deposited in Zoologische Staatssammlung München, Germany; 2 female paratypes deposited in Zoological Institute of the Russian Academy of Sciences, Saint-Petersburg, Russia.

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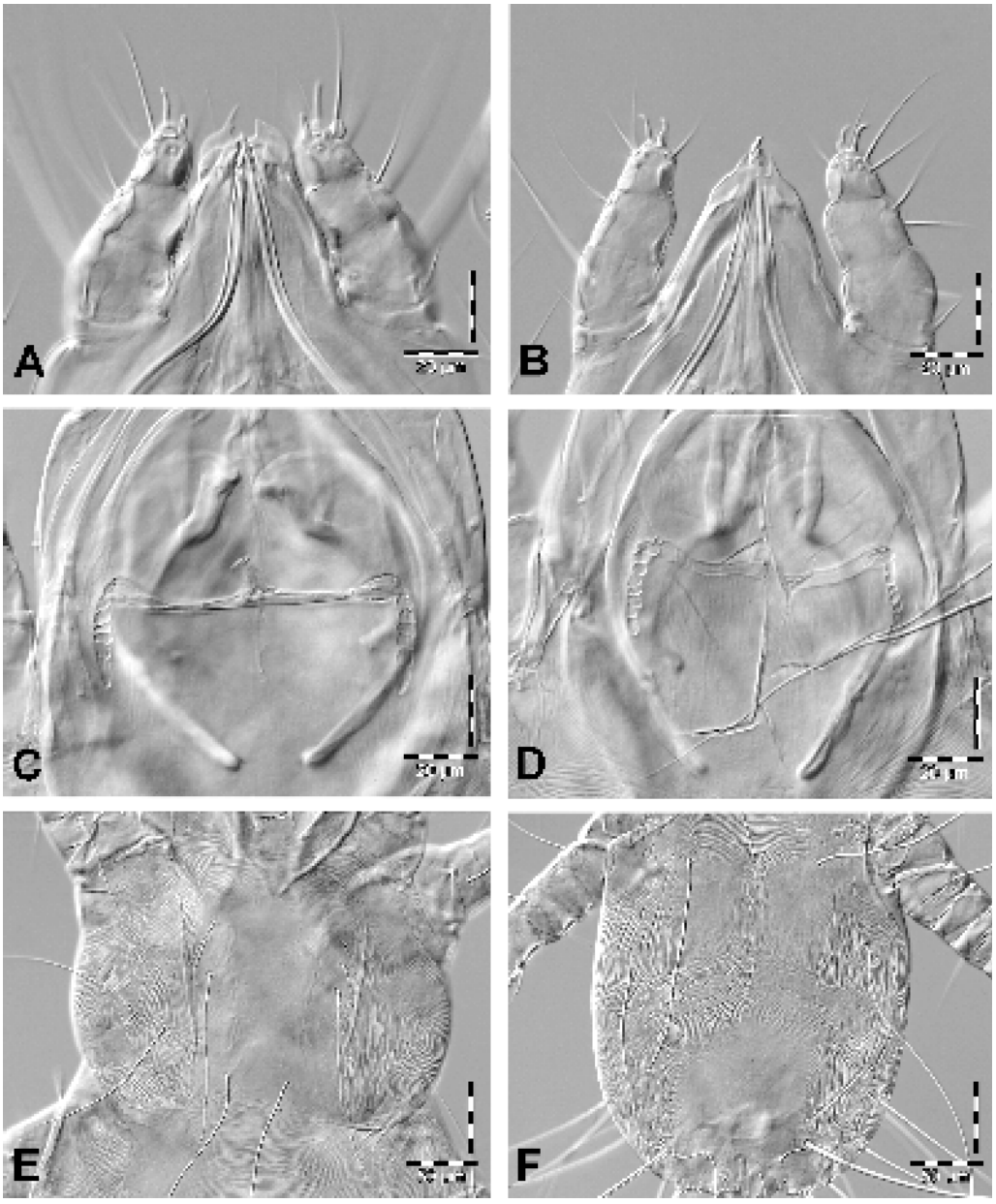


Fig. 11: *Torotrogla merulae* sp. n. Distal part of female (A) and male (B) gnathosoma; peritreme of female (C) and male (D); propodosomal plate of male (E); opisthosoma of female, dorsal view (F).

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7 Key to species of *Torotrogla* females.

1. Setae *d5* and *l5* subequal in length 2
–. Setae *d5* shorther than *l5* 4
2. Setae *ve* longer than distance between setal bases *ve-d1* ..... *T. merulae* sp. n.
–. Setae *ve* shorter than distance between setal bases *ve-d1* 3
3. Setae *sc3* and *sc4* extending beyond genu ..... *T. mima* Kethley, 1970
–. Setae *sc3* and *sc4* not extending beyond genu .... *T. cardueli* Bochkov et Mironov, 1999
4. Ratio *d5: l5* = 2.0: 1.0, chelicerae with two teeth each .... *T. gaudi* Bochkov et Mironov, 1998
–. Ratio *d5: l5* = 4.6: 1.0, chelicerae with three teeth each ... *T. villosa* (Hancock, 1895)

8 Remarks

The intraspecific variation has been examined in all collected specimens of *T. merulae;* results are listed in Table 1. Besides, the variation of the paragenital series position was also observed (Fig. 8).

Chaetotactic variation was previously examined in *Bubophilus ascalaphus* by Philips and Norton (1978) and in *Peristerophila longisoma* by Casto (1979). The latter author suggested that the high frequency of anomalies indicated that this species was genetically heterozygous at several loci concerned with the setal formation.

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