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Previous volumes (2010-2020): 250 € / year (4 issues)
Acarologia, CBGP, CS 30016, 34988 MONTFERRIER-sur-LEZ Cedex, France
ISSN 0044-586X (print), ISSN 2107-7207 (electronic)

The digitalization of Acarologia papers prior to 2000 was supported by Agropolis Fondation under the reference ID 1500-024 through the « Investissements d’avenir » programme (Labex Agro: ANR-10-LABX-0001-01)

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NEW AND LITTLE KNOWN SPECIES OF TRICHONYSSUS DOMROW
(ACARI : DERMANYSSIDAE)

BY R. DOMROW *

The species of *Trichonyssus* Domrow are parasites of Australian bats. I propose here to raise two new species to hand since MICHERDZINSKI & DOMROW'S account (1985) of three Western Australian congeners, and to redescribe the two early species to modern standards. The seven known species will be keyed in an annotated checklist of dermanyssid parasites of Australian vertebrates (DOMROW, in preparation).

For the setation of the dorsal shield the system of LINDQUIST & EVANS (1965) is used; the leg setation follows EVANS & TILL (1965) and EVANS (1969). The term "holotrichous" refers to the condition in typical free-living dermanyssids (EVANS & TILL, 1965). All measurements are in micrometres. Hosts are given after RIDE (1970).

Genus Trichonyssus Domrow


*Trichonyssus australicus* (Womersley)
(Figs 1-8, 11, 16)


Material examined : Three series from Warbla Cave (near Eucla across state border in West-

* Queensland Institute of Medical Research, Bramston Terrace, Herston, Australia 4006.

Acarologia, t. XXVII, fasc. 1, 1986.

**Female**: Base of capitulum with setae *c* falling short of its sides, *h3 > c > h1 > h2*, the differences in length only slight. Deutosternum with about six denticles in single file. Cornicles and hypostomatal processes hyaline, of unclear structure. Epistome not seen. Palpal trochanter-genu holotrichous (2.5.6, *a/l* on genu pale, its tip blunt), setation of tibia-tarsus not clear but claw two-tined; trochanter ventrally with inner distal angle extended into rounded hyaline lobe as in *Ornithonyssus bursa* (Berlese) (Micherdzinski, 1980). Chelicerae slender, 150-155 long overall, basal segment 13-14 long; digits 42 long (occupying 28% of overall length), edentate, fixed one preceded by setule and palely flared at mid-length rather in manner of *Ornithonyssus* Sambon (Evans & Till, 1965, Fig. 1 D, female; Micherdzinski, 1980, Fig. 1 E, drawing on extreme right).

Dorsal shield (Fig. 1) 500-525 long, 240-250 wide (maximum); sides subparallel at mid-length, then evenly tapering to rounded termen; surface reticulate, with paired pores of which six pairs are especially prominent (one podonotal pair between setae *j6* and *z6*, and five opisthonotal pairs arranged 4.2 across broadest part and 2.2 posteriorly); podonotal portion hypotrichous, with 15 pairs of setae *cf.* usual 22 (six in *j* series, four in
z, five in s); opisthonal portion hypertrichous, with about 29 pairs of setae (range 26-31 per side) cf. usual 15, those on termen only half as strong as remainder; setae on shield generally of moderate size, e.g. j5 and J1 33-37 long, almost reaching bases of z5 and J2. Dorsal cuticle with about 84 pairs of setae, the caudals somewhat shorter, stiffer and only 20-21 long.

Tritosternal base (Fig. 2) with denticate hyaline lobe on each side. Presternal striae present. Sternal shield 37-38 long (in midline), 80-83 wide (between setae st2); margins retracted, without cornua; surface weakly reticulate in front of, and shield denser behind an arc stretching between st2; with two pairs of pores, and two or three pairs of setae (st1-2 or st1-3, depending on whether st3 are actually on shield — in at least one unfed specimen they are taken in by the pale pos­terolateral extremities of the shield, if the adjacent cuticular striae are any guide). Metasternal setae free in cuticle but pores not seen. Genital shield 130-135 long (behind setae), 61-66 wide (between setae); V-shaped, with an inverted-V marking; with one pair of setae but pores free in cuticle; operculum rayed, probably with rounded margin. Anal shield 95-100 long (including cribrum), 59-65 wide (maximum, ratio 1.6); broadly rounded anteriorly; anus centrally placed, flanked at mid-length by anal setae subequal to postanal seta. Tiny metapodal shields present. Ventral cuticle with about 64 pairs of setae resembling those on dorsum. Peritremes reaching to level of mid-coxae II; peritrematal shields fused anteriorly to dorsal shield not far behind vertex and posteriorly into crescentic exopodal shields IV.

Legs short and stout, IV hardly exceeding end of idiosoma in unengorged specimens (435-455 long, including coxa and ambulacrum); unarmed except for strong spine on anterodorsal margin of coxa II; each with stalked ambulacrum and two claws; tarsus I 90-93 long (excluding ambulacrum), 31-33 high (at midlength, ratio 2.8), sensory islet occupying 28% of length of segment (excluding ambulacrum); tarsus IV 115-120 long, 36-39 wide (at basitarsus, ratio 3.1); holotrichous except for three additions commonly seen in Ornithonyssus: pl2 on genu-tibia III and pv on genu IV.

- **Male**: As in female except palpal trochanter ventrally with heavily sclerotised line in place of rounded lobe. Chelicerae (Fig. 6) stout, 130-140 long, basal segment 18-20 long; fixed digit apparently broad and truncate; movable digit dense and sharply hooked at tip, spermatodactyl similarly curved but blunt, combined length 40-42 (occupying 31% of length).

Dorsal shield (Figs 3, 5) 515 long, 305 wide in somewhat flattened allotype (485-495 x 295-315 in less compressed specimens); fuller and more rounded from humeri to termen, the latter distinctly lobed; podonotal portion hypotrichous, with 17 pairs of setae (two r added); opisthonal portion hypertrichous, with about 24 pairs of setae (range 23-26 per side), all elongate and trailing except two terminal pairs. Dorsal cuticle with about six pairs of elongate setae.

Holoventral shield (Fig. 4) 400-420 long, 97-105 wide (behind coxae IV); with weak sternal cornua; narrow emarginate ventral portion with about 16-18 setae; metasternal setae and pores on shield. Ventral cuticle with about 32 pairs of setae, all elongate except about 12 pairs beside holoventral shield. Peritremes slightly shorter; peritrematal shields fused to dorsal shield at humeri.

Tarsi I 87-93 long, 28-32 high (ratio 3.0); IV 98 long, 34 wide (ratio 2.9). Femur II (Fig. 16) without ventral apophysis or modified setae; tarsi II-IV with setae av1-2 and pv1-2 (but not av3) inflated basally and set on slight prominences.

- **Protonymph**: Stereotyped, but as in female except palpal trochanter-genu holotrichous (1.4.5); trochanter as in male. Chelicerae 105 long, basal segment 12 long; digits 27 long (occupying 26% of length).

Podonotal shield (Fig. 7) 175-185 long, 130-135 wide in engorged specimens; broadest in posterior third and with midposterior margin lobed; surface reticulate but no pores seen; holotrichous, with 11 pairs of setae (J1 very short, remainder subequal, j5 27 long). Four mesonotal shieldlets seen. Pygidial shield (Fig. 11) 35-38 long, 82-93 wide; transverse, with shallow lobe ante-
FIGS 3-6: *Trichonyssus australicus* males.

Idiosoma, dorsal (3) and ventral (4) (allotype). Idiosoma, dorsal (5) (AITKEN & MINCHAM leg.). Chelicera, lateral (paratype) (6).
FIGS 7-12: *Trichonyssus* spp. protonymphs.

*T. australicus*, idiosoma, dorsal (7) and ventral (8) (original series). *T. womersleyi*, idiosoma, dorsal (9) and ventral (10) (Maria Is., Tas.). *T. australicus* (11) and *T. womersleyi* (12), pygidial shields (same specimens).
rion and rounded posteriorly; hypotrichous, with five pairs of setae cf. usual eight (J5 a microseta, 10 long; Z5 strong, slightly barbed, 25-28 long; Z4 and S4-5 intermediate; second specimen with Z4 missing on one side and S5 on other). Podonotal cuticle showing incipient hypertrichy, with six pairs of setae cf. usual five; opisthonal cuticle hypertrichous, with about 26 pairs of setae cf. usual six, of decreasing length posteriorly.

Sternal shield (Fig. 8) 105-110 long, 70-72 wide; transversely reticulate. Anal shield 40 long, 48 wide (ratio 0.83). Ventral cuticle with about 26 pairs of setae, pregenital pair weak. Peritremes short, above coxae III, without peritrematalia except for anterodorsal precursors.

Legs holotrichous, with no suggestion of additions in adult.

Trichonyssus womersleyi Domrow
(Figs 9-10, 12-13, 17-19)


*Material examined*: Ten series: holotype male from the bent-winged bat, Miniopterus schreibersii (Kuhl) (Vespertilionidae), Joanna (near Naracoorte), S.E. South Australia, 10.xii.1932, J. Hood (in SAM); two females from M. schreibersii, Naracoorte, 1893, R. Fleming (in SAM); one male from bat, Naracoorte, October 1956, E. H. Smith (in SAM); two females and five males from Chalinolobus gouldii, on ship from Japan in Port Adelaide, S. Aust., 26.i.1960 (in SAM); seven females and one male from C. gouldii, Eltham, Victoria, 26.viii.1963, R. M. Warneke (in Queensland Institute of Medical Research, Brisbane, QIMR); eight females, one male and two protonymphs from C. gouldii, Mount Waverley, Vic., 22.vi.1964, Warneke (in QIMR); two females from C. gouldii, Bairnsdale, Vic., July 1980, N. J. Barton (in QIMR); three males from C. gouldii, Maydena, Tasmania, January 1961, B. C. Mollison (in QIMR); four females and one protonymph from C. gouldii, Maria Island, Tas., 22.iv.1962, Mollison (in QIMR and SAM); two females and two males from the ghost bat, Macroderma gigas (Dobson) (Chiroptera: Megadermatidae), Johansens Cave (near Rockhampton), Queensland, 8.viii.1964, J. L. Kean (in QIMR).

*Female*: As in T. australicus except as follows. Base of capitulum with setae c falling well short of its sides, h3 = c = h1 > h2. Chelicerae 135 long, basal segment 13 long; digits 36-40 long (occupying 28% of length).

Dorsal shield (Fig. 13) 515-540 long, 240-265 wide; lateral and posterolateral margins very slightly concave; podonotal portion hypotrichous, with 15 pairs of setae (six in j series, four in z, five in s); opisthonal portion hypertrichous, with about 29 pairs of setae (range 26-31 per side); setae on shield generally of small size, e.g. j5 and J1 18-20 long, reaching almost halfway to z5 and j2. Dorsal cuticle with about 70 pairs of setae, the caudals only 18-20 long.

Sternal shield (Fig. 17) 44-50 long, 82-87 wide. Genital shield 125-135 long, 63-66 wide; operculum broken off in specimen figured but as in T. australicus. Anal shield 100-105 long, 57-62 wide (ratio 1.7). Ventral cuticle with about 90-100 pairs of setae. Peritrematal shields carried away in specimen figured but normally barely, if at all fused to dorsal shield at “x” in Fig. 13.

Leg IV 420-445 long. Tarsus I 82-86 long, 32-36 high (ratio 2.4), sensory islet occupying 29% of length; tarsus IV 100-110 long, 35-39 wide (ratio 2.8).

*Male*: As in T. australicus except as follows. Chelicerae 120-125 long, basal segment 16-17 long; combined length of movable digit and spermatodactyl 41-45 (occupying 35% of length).

Dorsal shield (Fig. 18) 470 long, 290 wide in somewhat flattened holotype (430-460 × 275-290 in less compressed specimens); podonotal portion hypotrichous, with 19 pairs of setae (four r added); opisthonal portion hypertrichous, with 30-32 setae in holotype, all short. Dorsal cuticle with one pair of short setae above peritremes, and
FIGS 13-16: *Trichonyssus* spp.

sometimes one or two similar pairs at level of "x" in Fig. 18.

Holoventral shield (Fig. 19) 370-395 long, 97-105 wide; ventral portion with about 30-36 setae. Ventral cuticle with about 28 pairs of short setae and about eight pairs (usual range six to 10 per side, extremes 7.5, 8.11 once each) of elongate caudals. Peritremes about as long as in female.

Tarsi I 72 long, 28-32 high (ratio 2.4); IV 80 long, 32-34 wide (ratio 2.4). Ventral setae on tarsi II-IV barely distinguishable from remainder.

- Protonymph: As in *T. australicus* except as follows. Chelicerae 97-110 long, basal segment 11 long; digits 26-27 long (occupying 26% of length).
Podonotal shield (Fig. 9) 175-185 long, 130-140 wide in unengorged specimens; with at least one pair of pores; seta j5 19-20 long. Pygidial shield (Fig. 12) 38-47 long, 80-93 wide (j5 4-7 long, Z5 23-29). Opisthonotal cuticle with about 30 pairs of setae.

Sternal shield (Fig. 10) 100-105 long, 65-75 wide. Anal shield 41-43 long, 38 wide (ratio 1.1). Ventral cuticle with about 26 pairs of setae.

Legs holotrichous.

Notes: One protonymph in SAM seems all that is left of WOMERSLEY'S series (1957) from the lesser long-eared bat, Nyctophilus geoffroyi Leach (Vespertilionidae), Sutherlands, near Eu­dunda, S. E. S. Aust., 23.viii.1955, E. F. BOEHM. Its squat sternal shield (130 × 115, cf. WOMER­SLEY'S Fig. 21), clearly deeper (though not measu­rable) pygidial shield and general "spikiness" (e.g. setae j6 and z5 26 long, Z5 44), argue against its being conspecific with the original male from

Joanna, and the males and females later recorded from Port Adelaide by WOMERSLEY (1961). It is therefore now regarded as *species inquirenda*; the three nymphs figured and described above from Mt Waverley and Maria Is. appear more likely to represent the species.

**Trichonyssus caputmedusae** sp. nov.  
(Figs 14, 20-23)

- **Material examined**: Four series of which only the first comprises types: holotype female, six paratype females and allotype male from the Tasmanian pipistrelle, *Pipistrellus tasmaniensis* (Gould) (Vespertilionidae), Launceston, Tasmania, 11.v.1972, R. H. GREEN (holotype and allotype in SAM; three paratypes each in QIMR and Queen Victoria Museum, Launceston, QVM); four females from *P. tasmaniensis*, General Post Office, Hobart, Tas., 27.iv.1962, B. C. MOLLISON (in QIMR); four females and nine males from *P. tasmaniensis*, Nettle and Arch, Jenolan Caves, Blue Mountains, New South Wales, 6.vii.1963, BARBARA DEW (in QIMR, QVM); two males from the large forest bat, *Eptesicus sagittula* McKeen, Richards & Price (Vespertilionidae), Whiteford, Tas., 22.i.1980, GREEN (in QIMR, QVM).

- **Female**: As in *T. australicus* except as follows. Base of capitulum with setae *c* almost reaching its sides, *h3 > c = h1 > h2*. Epistome a denticate V reaching a little beyond apex of palpal femur. Chelicerae 170-175 long, basal segment 16-17 long; digits 40-42 long (occupying 24% of length). Dorsal shield (Fig. 14) 535-565 long, 255-280 wide; sides parallel over a greater distance, and tapered posterior portion accordingly shorter and more rounded; podonotal portion hypotrichous, with 15 pairs of setae (six in *j* series, four in *z*, five in *s*); opisthonal portion hypotrichous, with about 21 pairs of setae (range 17-25 per side); setae on shield generally of small size, e.g. *j5* and *J1* 23-28 long, falling well short of *z5* and *J2*. Dorsal cuticle with about 70 pairs of setae, the caudals 20-21 long.

- **Male**: As in *T. australicus* except as follows. Chelicerae 145-150 long, basal segment 19-21 long; combined length of movable digit and spermatodactyl 46-51 (occupying 32% of length). Dorsal shield 500-545 long, 285-330 wide; podonotal portion hypotrichous, with 16 pairs of setae (one *r* added); opisthonal portion hypotrichous, with 43 and 38 setae in two specimens illustrated to show approximate extremes in posterdiscal hypertrophy (Figs 20, 22, with 10 and 15 thickened, blunted setae respectively). Dorsal cuticle with about 12-16 pairs of setae (depending on degree of compression), elongate posteriorly.

- **Trichonyssus solivagus** sp. nov.  
(Figs 15, 24-27)

- **Material examined**: Two series from Nullarbor Plain, Western Australia, per M. R. GRAY: holotype female (with dorsal shield unbroken and one chelicera extruded), four paratype females and allotype male from Abrakurrie Cave, 1.i.1972 (in SAM); one paratype female from Mullumullang Cave, 10.1.1972 (in QIMR).

- **Female**: As in *T. australicus* except as follows. Hypostome with setae *h3 > h1 > h2 = c*. Sternal shield 39-42 long, 85-87 wide. Genital shield 135-145 long, 65-74 wide. Anal shield 93-100 long, 63-66 wide (ratio 1.5); anterior margin somewhat flattened and anus forward of centre. Ventral cuticle with about 75 pairs of setae. Peritrematal shields clear of dorsal shield by a few cuticular striae at "x" in Fig. 14. Leg IV 500-520 long. Tarsus I 110 long, 32 high (ratio 3.4), sensory islet occupying 23% of length; tarsus IV 130-135 long, 34-36 wide (ratio 3.8).
Epistome as in *T. caputmedusae*. Chelicerae 240 long, basal segment 40 long; digits 66 long (occupying 28% of length); fixed digit at mid-length with forwardly directed denticle rather than flared.

Dorsal shield (Fig. 24) 780-885 long, 300-320 wide; tapering unevenly from humeri to ter-men; pores not especially prominent; podonotal portion hypotrichous, with 12 pairs of setae (six in *j* series, four in *z*, two in *s*, including *z*6 which is occasionally absent as on left-hand side of Fig. 24 or even once free of shield because of emargination; excluding first member of *s* series usually off shield at "x" in Fig. 24, and *s*3 immediately behind lateral pores and always off shield); opisthonomal portion hypotrichous, with about 26 setae (range 23-28), of which six latero-terminals and especially two terminals are shorter than remainder. Dorsal cuticle with about 90 pairs of setae, uniformly fine and 44-49 long caudally.

Tritosternum (Fig. 25) with basal lobes hyaline, but narrow and almost smooth. Sternal shield 58-65 long, 125-140 wide. Metasternal pores seen. Genital shield 165-190 long, 110-125 wide; operculum with slight median extension. Anal shield 200-235 long, 97-110 wide (ratio 2.1, excluding one slightly misshapen specimen only 92 wide); anus forward of centre, adanal setae usually nearer midlength of anus than in specimen figured. Ventral cuticle with about 54 pairs of setae. Peritrematal shields well clear of vertex.

Legs long and slender, IV well exceeding end of idiosoma in unengorged specimens (940-995 long); tarsus I 260-275 long, 29 high (ratio 9.3), sensory islet occupying 14% of length; tarsus IV 270-280 long, 40-42 wide (ratio 6.7).

![Images](24-25: Trichonyssus solivagus. Idiosoma female, dorsal (24) and ventral (25) (holotype).
Male: As in *T. australicus* except as follows. Chelicerae 165 long, basal segment 25 long; fixed digit unclear, combined length of movable digit and spermatodactyl 45 (occupying 27% of length).

Dorsal shield (Fig. 26) 670 long, 425 wide in slightly flattened allotype; podonotal portion almost holotrichous (21.20 setae, but not necessarily the standard pairs since arrangement is clear only medially); opisthonotal portion hypertrichous, with 42.43 setae, the two terminals a little longer. Dorsal cuticle with about 16 pairs of setae, all elongate except about five laterals.

Holoventral shield (Fig. 27) 580 long, 155 wide; ventral portion with 16 setae. Ventral cuticle with about nine pairs of short setae and about nine pairs of elongate caudals. Peritremes short, reaching only to anterior margins of coxae III; peritrematal shields fused to dorsal shield at humeri.

Tarsi I 195 long, 24 high (ratio 8.1); IV 165 long, 34 wide (ratio 4.9). Femur II (Fig. 15) with ventral apophysis and seta *pv1* slightly inflated basally, genu-tibia II with *av* and *pv* inflated basally, tarsi II (and to a lesser extent III-IV) with *av1*-3 and *pv1*-2 basally inflated and set on slight prominences.

ACKNOWLEDGEMENTS

I thank the late Dr Wiktor Micherdzinski, Jagiellonian University, Cracow, for Figs 3-4, 16; Misses Susan Gaskill and Cobie Rudd for the other drawings; and the Australian Biological Resources Study for financial support.

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Paru en janvier 1986.