

THREE NEW SPECIES OF PYGMEPHOROIDEA
(ACARINA: TARSONEMIDA) FROM
FRAGARIA IN FLORIDA¹

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ABSTRACT

Three new species and 1 new subspecies of the families Pygmephoridae, Microdispidae, and Scutacaridae are described and illustrated. These are: *Mahunkania secunda*, *Brennandania parasilvestris floridae*, *Scutacarus (S.) fragariae*, and *Scutacarus (S.) longipes*, all found on *Fragaria* in Florida. Males and 2 larvae of *S. fragariae* are described which constitutes only the third discovery of males in the Scutacaridae since Michael (1884). The study of the male confirms the close relationship between Pygmephoridae and Scutacaridae.

There are only few investigations on the Pygmephoroidea, especially the Scutacaridae fauna of North America. Therefore I am very thankful to have received this material through the kindness of H. A. Denmark, Florida Department of Agriculture & Consumer Services, Gainesville. If not otherwise mentioned, the material is deposited in the Florida State Collection of Arthropods (FSCA), Gainesville, Florida, U.S.A.

Anatomical nomenclature follows that of van der Hammen (1970).

FAMILY PYGMEPHORIDAE CROSS

Mahunkania secunda Rack, new species

(Fig. 1-5)

FEMALE: Length (without gnathosoma) 260 μ ; width 120 μ . DORSUM (Fig. 1). Propodosoma with 3 pairs of setae. The rostral (pr) and medio-lateral prodorsal setae (pml) subequal. Setae pr smooth, pml moderately plumose. Posterior prodorsal setae (pi) longest, slightly plumose. Sensillus (Fig. 2) "pear-like" with long, finely ringed pedicel. Stigmata long. Opisthosomatic setae slightly plumose. Length of setae pc₂ nearly twice pc₁. Setae pd₁ barely longer than pc₁. Length of setae pe₁ twice pe₂. Setae pf₁ longest setae of dorsum, pf₁ 4X as long as pf₂. VENTER (Fig. 5). Apodemes 1 and 2 complete. Apodemes 3 not reaching trochanters III. Apodemes 4 incomplete. Epimeres I and II each with 3 setae, all nearly of same length and slightly plumose. All setae of hysterosoma smooth and subequal. Opisthosomatic setae ph₁ and ph₂ close together, ph₃ is separated from ph₂. LEG I (Fig. 3). Weak claw on ventral side of tibiotarsus and 4 solenidia dorsolaterally. Femur with 2 normal setae and 2 blunt spines, one of them probably equivalent to seta c. LEG II. Small solenidium on dorsum of tibia. Tarsus dorsally with larger solenidium, and distally with 2 claws and long slender pulvillus. LEG III. Small solenidium on dorsum of tibia. Tarsus with 2 claws and long slender pulvillus (Fig. 4). LEG IV. Tibia with minute solenidium and spinelike seta. Tarsus with 2 claws and slender pulvillus.

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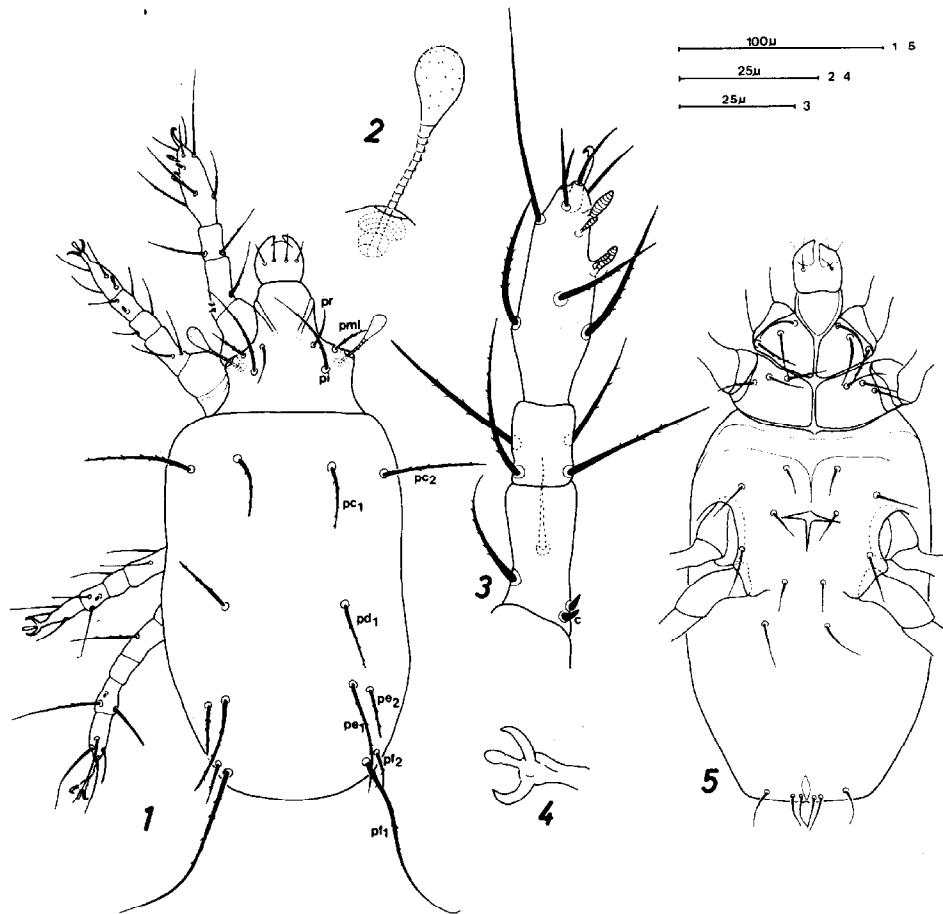


Fig. 1-5. *Mahunkania secunda* n. sp., female: 1) dorsum; 2) sensillus; 3) leg I; 4) claws and pulvillus of leg III; 5) venter.

MALE: Unknown.

MATERIAL: Holotype female, FLORIDA, Hillsborough County, Dover, 9-X-1973, (D-96-5), E. R. Fatic, on *Fragaria* sp.

DISCUSSION: This new species is the second of the genus *Mahunkania* and shows the generic characteristics distinctly: the long, finely ringed pedicel of the sensillus, the 2 blunt spines on femur I, the long, slender pulvillus on tarsus II-IV. The new species differs from the type of the genus, *M. hallensis* Rack (1972), by having setae pe, and pf, shorter, setae pf, longer, stigmata long, claw I inserted more distally, and the difference in size of the soleidia on tibiotarsus I.

FAMILY MICRODISPIDAE CROSS
Brennandania parasilvestris Rack, 1974
 (Fig. 6)

In the material from Florida a female was found which seems to be *B. parasilvestris*, although a few differences exist. The differences do not appear to be significant enough to erect a new species, but do warrant subspecies status. Hitherto *B. parasilvestris* was known only from Europe

(DDR) as opposed to *B. silvestris*, first described by Jacot (1936) from North Carolina, U. S. A. The specimen from Florida is a subspecies which is described as follows:

Brennandania parasilvestris floridae Rack, new subspecies
(Fig. 7)

FEMALE: Length (without gnathosoma) 160 μ ; width 80 μ . Specimen more slender than specimens from Europe. DORSUM. Number and point of insertion of setae identical to *B. parasilvestris*, but are smooth and more slender. VENTER. Setae identical to *B. parasilvestris*. All setae more slender. LEG I. Solenidia and setae approximate those in *B. parasilvestris* and both without claw. LEG IV. (Fig. 7). Conspicuous chitinous tooth at external edge of trochanter in both subspecies but not mentioned by Rack (1974). Leg IV from holotype of *B. parasilvestris* is shown in Fig. 6. Shape of Leg IV differs by proportionate length of trochanter to femur. *B. parasilvestris floridae* has a distinctly shorter femur.

MALE: Unknown.

MATERIAL: Holotype female, FLORIDA, Hillsborough County, Dover, 9-X-1973, (D-96-5), E. R. Fatic, on *Fragaria* sp.

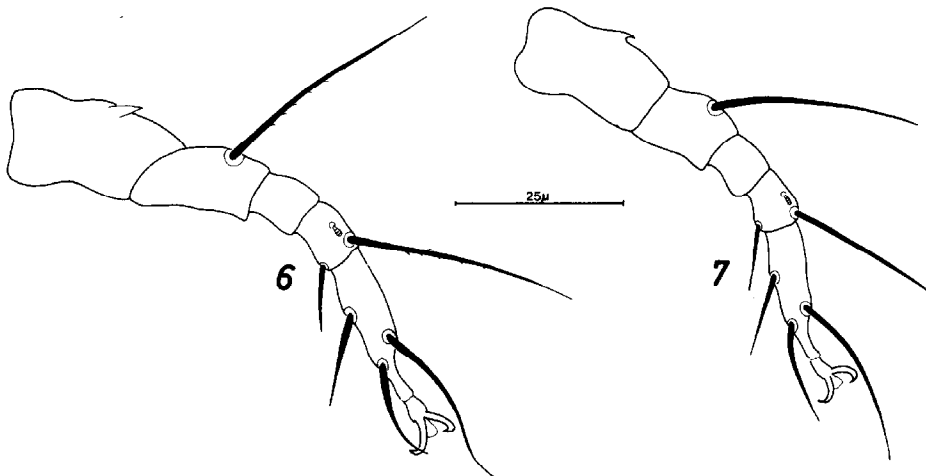


Fig. 6-7. Female, leg IV: 6) *Brennandania parasilvestris* Rack; 7) *Brennandania parasilvestris floridae* n. ssp.

FAMILY SCUTACARIDAE OUDEMANS
Scutacarus (*S.*) *fragariae* Rack, new species
(Fig. 8-18)

FEMALE: Length 140-210 μ (mean of 30 specimens 180 μ), holotype 180 μ ; width 110-150 μ (mean of 30 specimens 130 μ), holotype 120 μ . Pale yellow, dorsally and ventrally smooth. DORSUM (Fig. 8). Setae $pc_1 > pc_2$, slightly plumose. Setae pd_1 a bit thicker than pc_1 and pc_2 also slightly plumose. Setae $pe_1 > pe_2$; pe_1 slightly plumose, pe_2 smooth. Setae $pf_1 > pf_2$; pf_1 slightly plumose, pf_2 smooth. VENTER (Fig. 9). Apodemes 2 thin, weakly developed. Sejugal apodemes strong. Apodemes 3 short, not reaching trochanters III. Apodemes 4 incomplete. Epimeres I and II each with 2 setae.

Setae 1a and 1b distinctly plumose; $1a > 1b$. Setae 2a and 2b arise closely to one another; $2a > 2b$; 2a slightly plumose, 2b smooth, spinelike. Epimeres III with 3 setae, all subequal and slightly plumose. Epimeres IV with 3 nearly smooth setae; 4b nearly twice as long as 4a, surpasses the end of body, if mounted specimens are not pressed too much. Setae ph_1 and ph_2 close to one another, subequal, long, slender and plumose. Base of setae ph_3 is about twice the distance apart as ph_1 and ph_2 , short, and smooth. LEG I (Fig. 10 and 11). Tibiotarsus with a weak claw. Of the 4 solenidia, the ventrally arising solenidium 1 is the strongest one. Solenidium 4 is also strong. Solenidia 2 and 3 are long and slender. LEG II and III. Small solenidium on dorsum of tibia. Tarsus with a long solenidium, a spinelike seta, 2 claws and a pulvillus. LEG IV (Fig. 12). Tibiotarsus with 7 setae, seta 7 is longest.

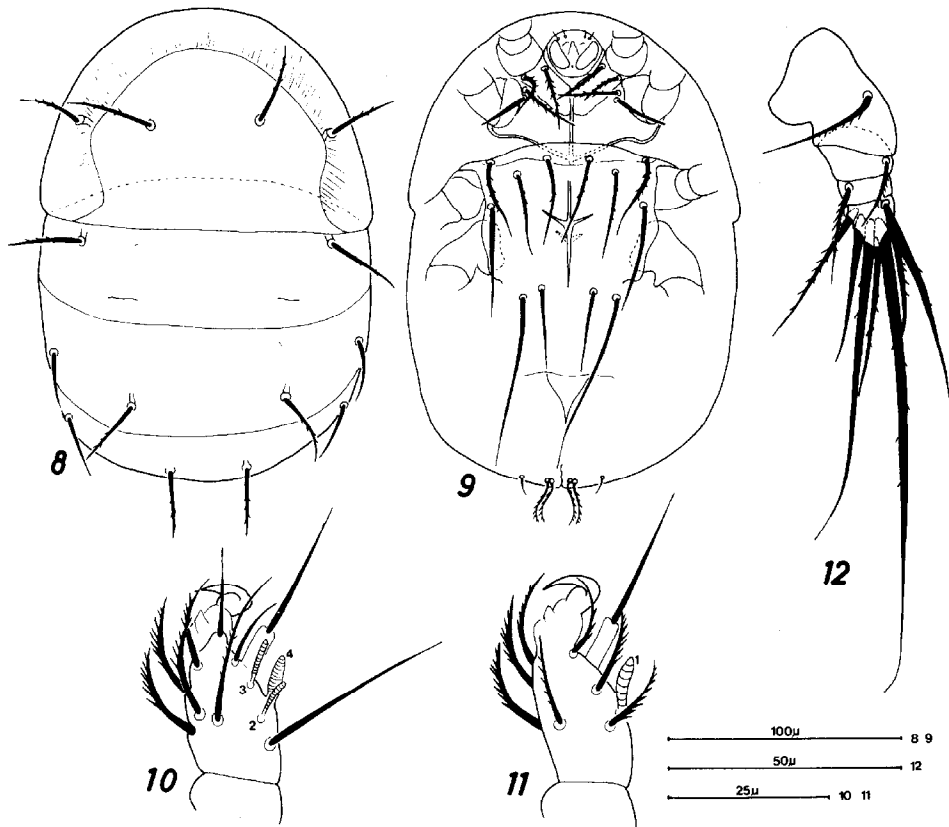


Fig. 8-12. *Scutacarus (S.) fragariae* n. sp., female: 8) dorsum; 9) venter; 10) dorsum of tibia I; 11) venter of tibia I; 12) leg IV.

MALE: Length 150-190 μ (mean of 20 specimens 170 μ); width 90-100 μ (mean of 20 specimens 95 μ). DORSUM (Fig. 13). Gnathosoma long, narrow and very reduced. Propodosoma with 3 pairs of setae. Setae pr minute, smooth, needle-like; pi are strongest, longest, and plumose. Bothridia, sensilli and stigmata absent. Opisthosomatic setae pc_1 , pc_2 and pd , on a common shield, subequal, slightly plumose. Setae $pe_1 > pe_2$, thicker and more distinctly plumose than pe_2 . Genital-capsule nearly completely covered with 2 fine transparent scales; it has 1 pair of cylindrical setae and 1 pair of minute spines. Penis long and strongly sclerotized. VENTER (Fig. 15). Apodemata 1

complete. Apodemata 2 not reaching anterior sternal apodeme. Sejugal apodeme weakly developed, complete. Posterior sternal apodeme incomplete. Anterior part of posterior sternal apodeme in center incomplete, reaching trochanters III. Apodemes 3 strong only near sternum. Apodemes 4 complete, strong, straight and form acute angle. Epimeres I and II with 2 pairs, epimeres III and IV with 3 pairs of setae; setae 2b smooth, spinelike. LEG I (Fig. 14). Tibia and tarsus separated. Tibia with 2 solenidia, solenidium 1 long and thin, solenidium 2 shorter and larger. Tarsus with 2 solenidia, solenidium 3 very long and broad, solenidium 4 much shorter and thinner. Tarsus with weak claw inserting on praetarsus. LEG II. Tibia with small tarsus, large solenidium and spinelike seta. Tarsus with 2 claws and short, broad pulvillus. LEG III. Tibia with small solenidium. Tarsus with spine-like seta, 2 claws and pulvillus. LEG IV (Fig. 16). Tibia with slender solenidium. Tarsus without claw, 2 very long setae, one inserted dorsally and one ventrally.

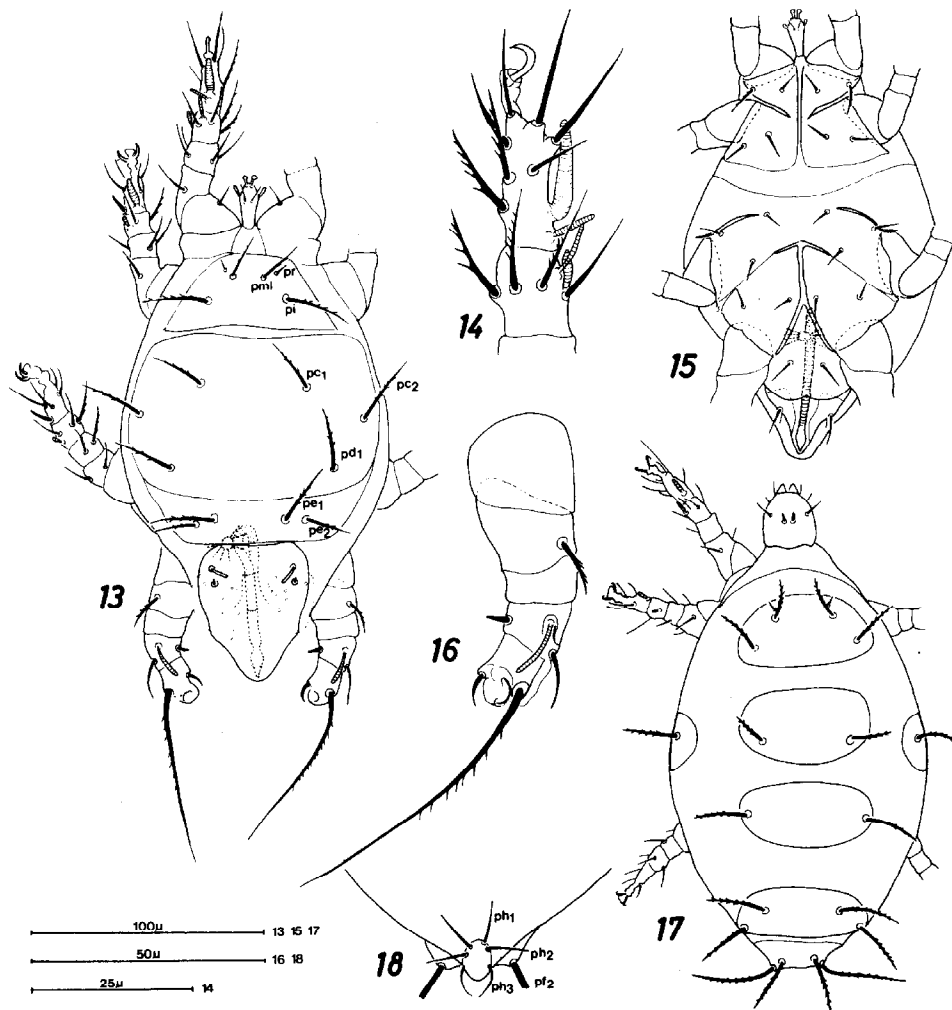


Fig. 13-18. *Scutacarus (S.) fragariae* n. sp., male: 13) dorsum; 14) tibia and tarsus I; 15) venter; 16) leg IV. Male larva: 17) dorsum; 18) venter of the end of body.

MALE LARVA: Length (without gnathosoma) 140-160 μ ; width 75-110 μ . DORSUM (Fig. 17). Gnathosoma with 2 small, strong, spinelike setae, and 2 small setae. Shield of propodosoma with 3 pairs of setae, first pair minute, 2 others 4 times as long and plumose. First shield of hysterosoma tripartite. All setae of hysterosoma subequal and plumose. Setae pf_1 are longest ones. VENTER. Sternalapodemes absent. Epimeres I-III with 2 pairs of setae, all short and smooth. End of body distinctly narrow, mostly turned ventrally (Fig. 18). Cuticula between the epimeres closely and slightly gathered. LEG I. Tibia with thin solenidium. Tarsus with slightly broader solenidium, distally with 2 claws. LEG II. Tibia dorsally with thin and short solenidium. Tarsus dorsally with slightly broader and longer solenidium, distally 2 claws and short, broad pulvillus. LEG III. Tibia dorsally with thin and short solenidium. Tarsus distally with 2 claws and pulvillus.

FEMALE LARVA: Female larva slightly larger than male larva (length 170-220 μ , width 110-185 μ) and dorsal setae of body and solenidia of legs slightly stronger and longer.

MATERIAL: Holotype female, 30 females, 10 males, 10 larvae paratypes, and alcohol material at FLORIDA, Hillsborough County, Dover, 9-X-1973, (D-96-5), E. R. Fatic, on *Fragaria* sp., deposited in the Florida State Collection of Arthropods in Gainesville, Florida; 10 females, 10 males, 10 larvae paratypes and alcohol material with the same dates as holotype in the collection of the Zoological Institute and Zoological Museum, University of Hamburg, West Germany.

DISCUSSION: The new species is closest to *S. (S.) abatus* Mahunka (1967), *S. (S.) hajeki* Mahunka (1967), both from Chile, and *S. (S.) hermosillai* Mahunka (1968) from Argentina. It differs from them especially in that *abatus* has much shorter setae 4a and 4b, *hajeki* much shorter setae ph_2 and *hermosillai* fully developed apodemes 4.

Many free females and males and several larvae with a well developed female or male inside were collected together. Therefore, all larvae, males, and females surely belong to the same species. This is only the third time that males and larvae of a scutacarid have been found. The first discovery was made by Michael (1884) for *Scutacarus (S.) acarorum* (Goeze, 1780), the second by Norton and Ide (1974). Males and larvae are seldom found in most genera of other families of Pygmephoroida, but are found more often in *Siteroptes* and *Bakerdania*. The males of *Bakerdania* (see *Bakerdania exigua* Mahunka (1969) in Rack, 1974) and *Scutacarus* are more related to each other than the males of *Bakerdania* on the one hand and *Dolichocybe*, *Pyemotes*, *Acarophenax*, etc., on the other hand (= Pyemotoidea by Mahunka, 1970). The study of the males confirms the correctness of the classification based on the study of the females into different superfamilies, Pyemotoidea and Pygmephoroida, logically erected by Mahunka (1970).

Scutacarus (S.) longipes Rack, new species
(Fig. 19-23)

FEMALE: Length 280 μ ; width 200 μ . Body well sclerotized. Color yellowish. Dorsum and venter finely and closely punctated. DORSUM (Fig. 19). Propodosoma at sides behind sensilli with distinct tip (Fig. 21). Setae $pc_1 = pc_2$, smooth. Setae pd_1 $\frac{1}{4}$ shorter than pc_1 , smooth. Setae $pe_1 = pe_2$,

smooth; pe_1 slightly larger than pe_2 . Setae $pf_1 > pf_2$, smooth; pf_1 distinctly broader than pf_2 . VENTER (Fig. 20). Sternalapodemes well developed. Apodemes 3 incomplete. Apodemes 4 strong, reaching trochanters IV. Epimeres I and II each with 2 pairs of setae. Setae $1a = 1b = 2a$, distinctly plumose. Setae 2b long and spinelike. Epimeres III and IV each with 3 pairs of setae, except for 4b all nearly the same length and weakly plumose. Setae $ph_1 > ph_2$, arising close together, plumose. Setae $ph_3 = ph_4$, distant, smooth. LEG I (Fig. 22). Tibiotarsus with medium-sized claw, arising from short pedicel. There are 4 solenidia. Solenidium 2 small and elongate. Solenidium 1 located ventrally. Solenidium 4 is strongest. LEG II. Tibia with small solenidium. Tarsus with long solenidium, 1 spinelike seta, 2 strong claws and pulvillus. LEG III. Tibia with minute solenidium. Tarsus with spine-like seta, 2 strong claws and pulvillus. LEG IV (Fig. 23). Trochanter with distinct tooth. Tibiotarsus distinctly elongate, with 7 setae as figured.

MALE: Unknown.

MATERIAL: Holotype female, FLORIDA, Hillsborough County, Dover, 9-X-1973, (D-96-5), E. R. Fatic, on *Fragaria* sp.

DISCUSSION: Only 7 of about 200 known species and subspecies of the subgenus *Scutacarus* have an elongate tibiotarsus IV; 1 of them, *S. (S.) wranoskyi* Mahunka (1970) is found in Nebraska (U.S.A.) and 5 others are

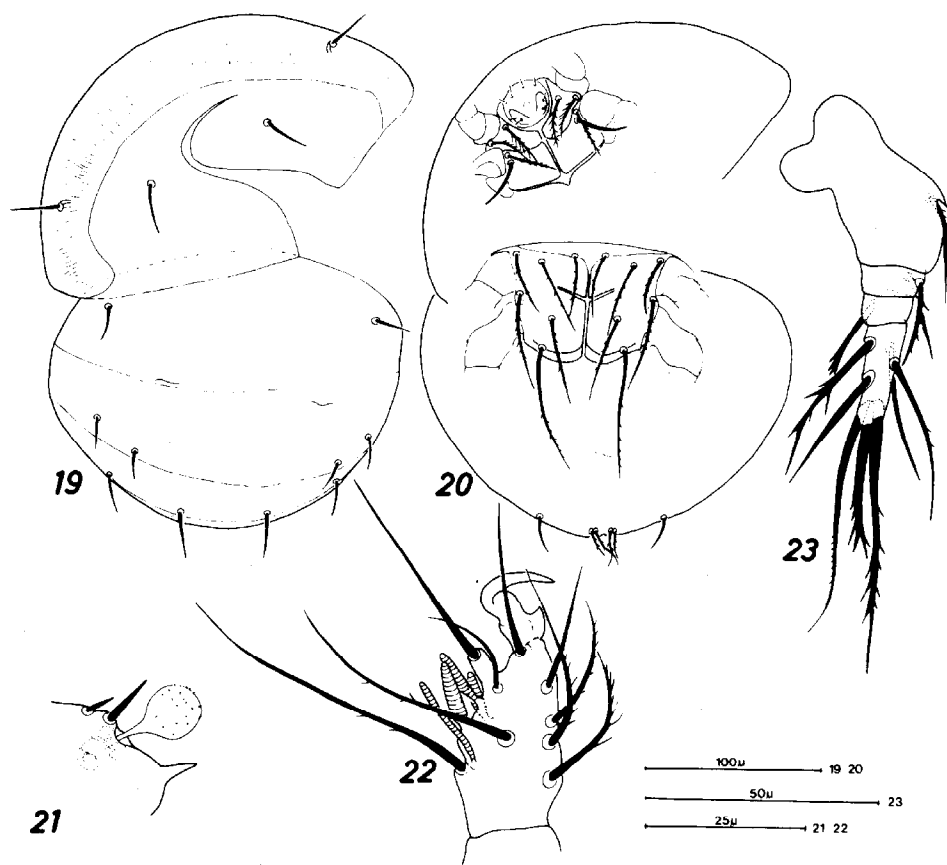


Fig. 19-23. *Scutacarus (S.) longipes* n. sp., female: 19) dorsum; 20) venter; 21) right side of propodosoma with sensillus; 22) tibiotarsus I; 23) leg IV.

found in South America. The new species is most closely related to the European *S. (S.) longitarsus* (Berlese, 1905) with 3 subspecies, 2 of them found in Africa and South America. The new species differs from *S. (S.) longitarsus* by its smaller size, the shorter tibiotarsus IV and its other setation. It differs from *S. (S.) wranoskyi* especially by the other setation of the dorsum and of the tibiotarsus IV.

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