STIGMACARUS LUKOSCHUSI, NEW GENUS AND NEW SPECIES (ACARINA, PODAPOLIPIDAE) FROM BEETLES IN ITALY

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RÉSUMÉ

Un nouveau genre, *Stigmacarus*, est établi dans la famille des *Podapolipidae*. La femelle adulte, le mâle et la femelle larviforme de *Stigmacarus lukoschusi* n. sp. sont décrits.

Les acariens ont été recueillis à l'intérieur des stigmates de *Hylobius abietis* (Coleoptera, Curculionidae) en Italie.

ABSTRACT

A new genus *Stigmacarus* is erected within the family *Podapolipidae*. Adult female, male and larviform female of *Stigmacarus lukoschusi* n. sp. are described. Mites were collected from the stigmata of *Hylobius abietis* (Coleoptera, Curculionidae) in Italy.

Tarsonemid mites belonging to the family *Podapolipidae* are easily recognized, but there are no clear-cut definitions of the eleven hitherto erected genera. One of the reasons for the difficulties in defining genera is the relatively small number of known species in this family. With the increasing knowledge of acarological fauna, interrelations between specific characters will appear more clearly and it will probably become necessary to revise the generic structure of the family, including the status of the genus established here.

MATERIAL EXAMINED :

Mites were collected from the three anterior pairs of stigmata beneath elytrae of *Hylobius abietis* (Coleoptera, Curculionidae). All females were within the stigmata, while some larvae and males were around them. The beetles were collected at Loe, Pescasseroli, Italy, on July 27, 1973, mounted and sent to us by Dr. F. S. LUKOSCHUS, from the Zoological Laboratory, Catholic University, Nijmegen, the Netherlands.

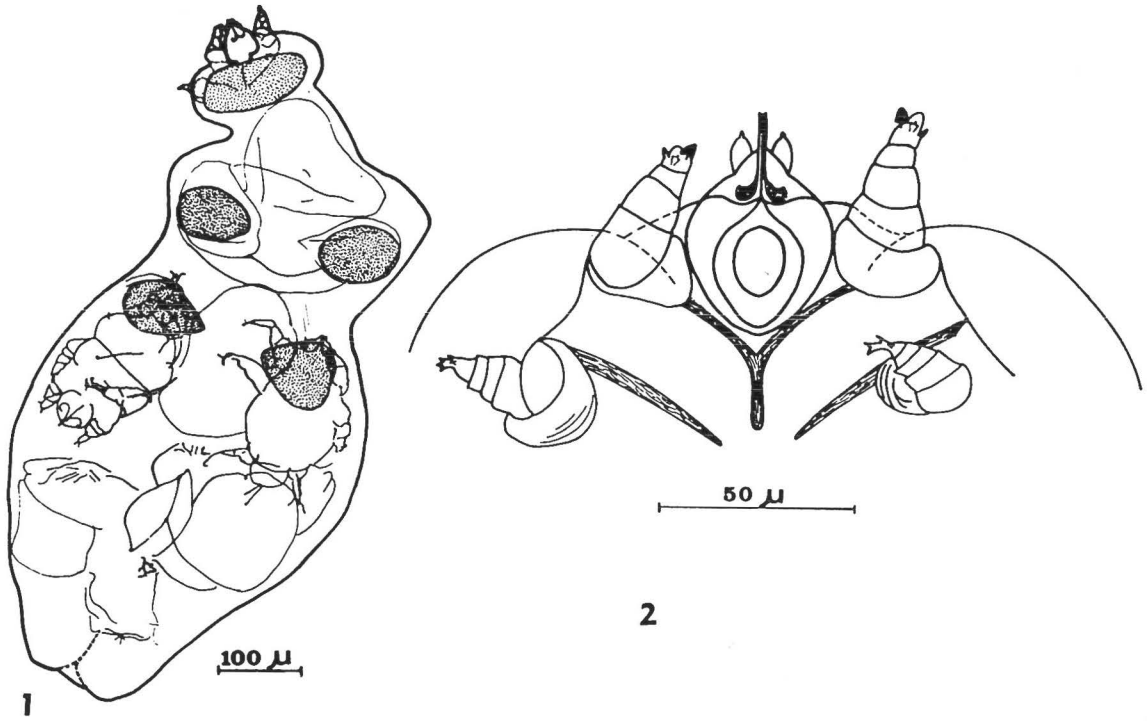
There were 14 adult females, 16 males, and 30 larvae.

The species is named for Dr. LUKOSCHUS as a tribute to his kind cooperation.

Female holotype, male and larviform female allotypes deposited in the collection of the Laboratory of Medical Entomology, The Hebrew University-Hadassah Medical School, Jerusalem. Paratypes : in Istituto Sperimentale per la Zoologia Agraria, Florence, Italy ; at the U. S. National Museum, Washington ; at the British Museum (Natural History), London, as well as in the collection of Dr. F. S. LUKOSCHUS.

ADULT FEMALE :

Idiosoma long-oval with two lateral constrictions ; one behind the legs and one more to the posterior, forming six large lateral lobes, three on each side. Length of mounted female (idiosoma + gnathosoma) 824-990 μ. Width of idiosoma at its widest point behind second constriction 310-450 μ. Length and width change according to the physiological conditions of the female.



FIGS. 1-2. — **Stigmacarus lukoschusi** n. sp., adult female.
1) Dorsal aspect ; 2) Ventral aspect of anterior part only.

There are five slightly chitinized dorsal plates : one large plate behind gnathosoma, anterior to first constriction, two smaller ones placed laterally between first and second constriction, and two behind the second constriction. Posterior end of body with two ventral lobes (Fig. 1). Spiraculae and tracheae present, as in other *Podapolipidae*. Two pairs of five-segmented legs bare of setae. First pair larger than second. Apotele of first pair terminated in three projections, one of which is a hook-shaped claw, one spur-like and one three-pointed. Leg II terminates in a triple-pronged claw ; apotele bears also a tooth-like projection and a wider, slightly pronged, seta. Apodemes I connected to sternum ; apodemes II free (Fig. 2).

Idiosoma is full of embryos and empty egg shells, the female being viviparous.

Gnathosoma sclerotized, yellowish, long-oval, longer than wide, 47-62 μ × 40-47 μ. Cheliceral cone protruding ventrally. Sclerotized chelicerae apically smooth. Palps well developed, as figured.

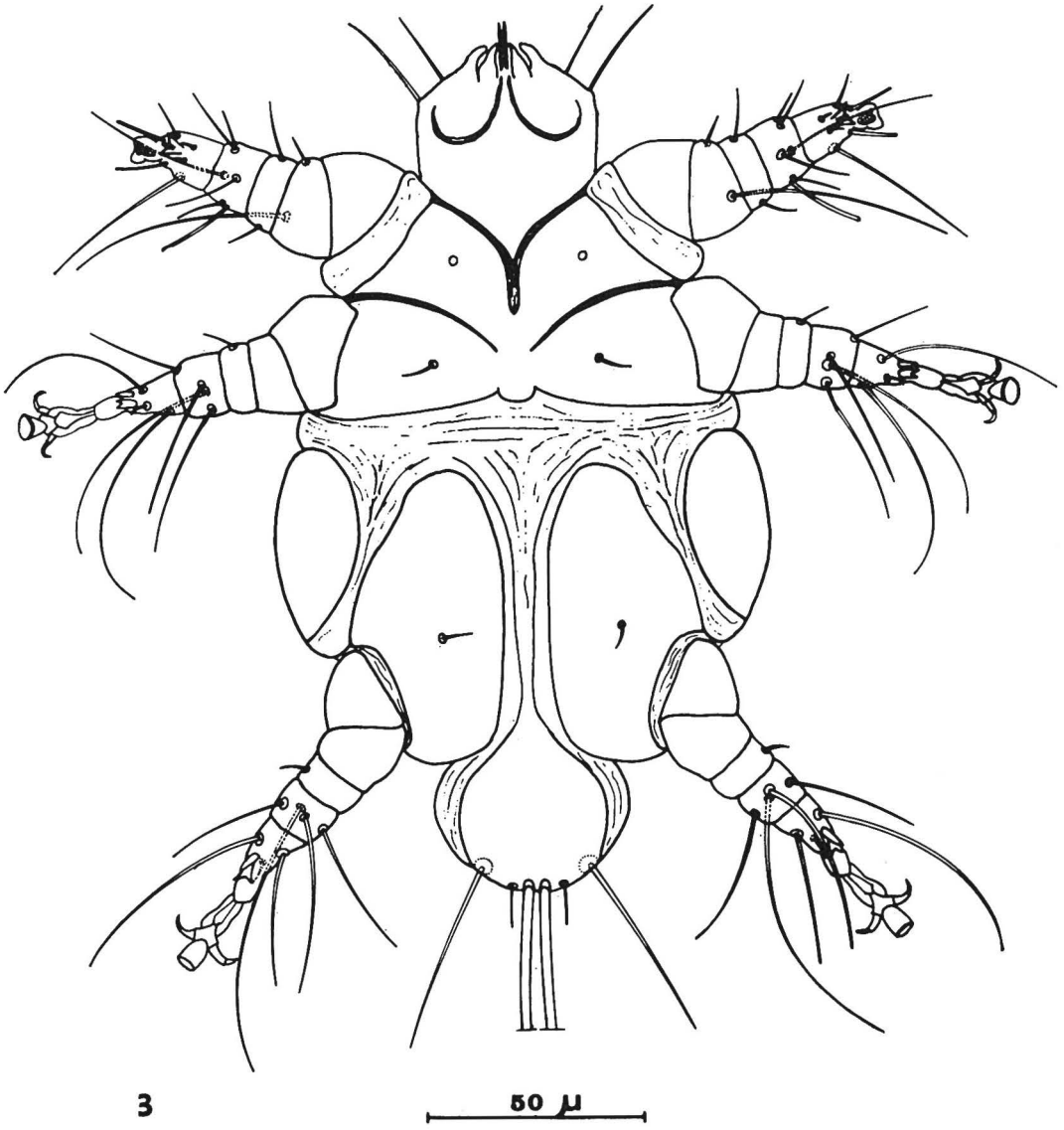


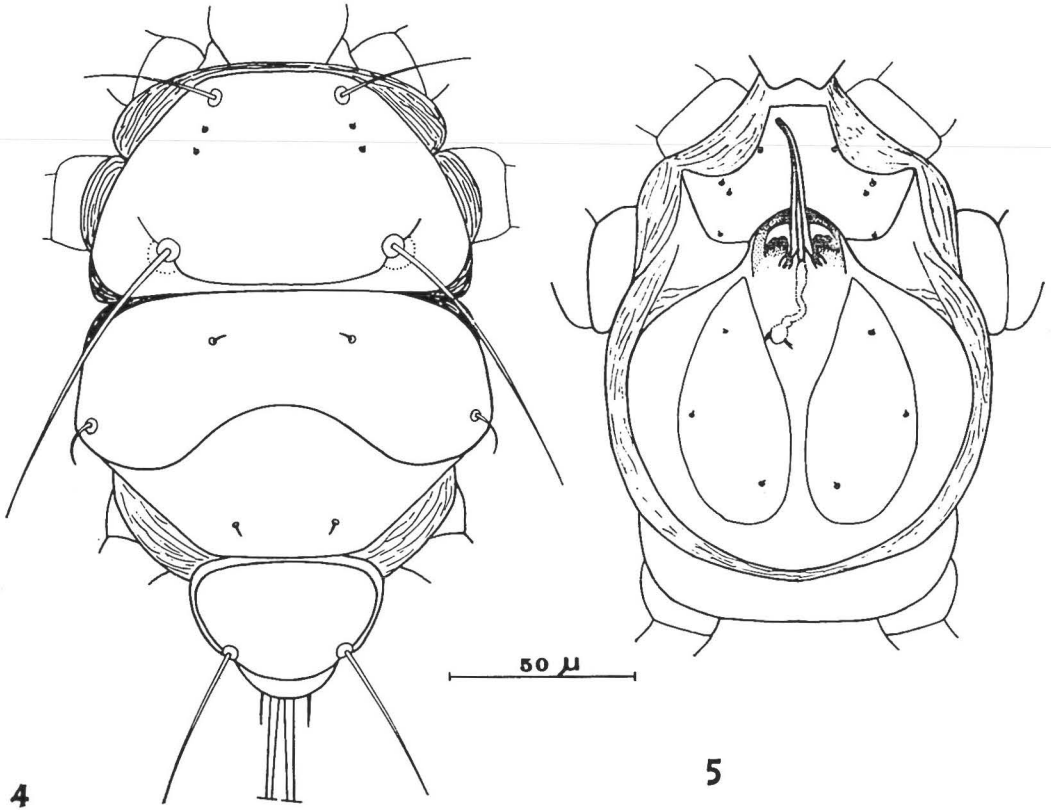
FIG. 3. — **Stigmacarus lukoschusi.** Larviform female ; ventral aspect.

LARVIFORM FEMALE :

Idiosoma long-oval, 220-300 μ long, 120-190 μ wide.

Dorsum : Propodosomal plate a high trapezoid, with a distinct line reinforcing the posterior edge. Setae verticales internae (v.i.) long (ca. 35 μ), setae verticales externae (v.e.), scapulares internae (sc.i.) minute (shorter than 2 μ), and scapulares externae (sc.e.) very long (61-68 μ).

Sejugal furrow straight. Tergites I an II entirely separated. Setae humerales internae (h.i.) very short (4.5 μ), humerales externae (h.e.) longer (9 μ). Setae dorsales (do.) very short (4.5 μ). Tergite III well separated, wide elyptic ; setae lumbales very long (45 μ). Caudal plate protrudes dorsally and bears four setae : setae caudales — very long (165-193 μ), accessory setae caudales — relatively short (9 μ) (Fig. 4).

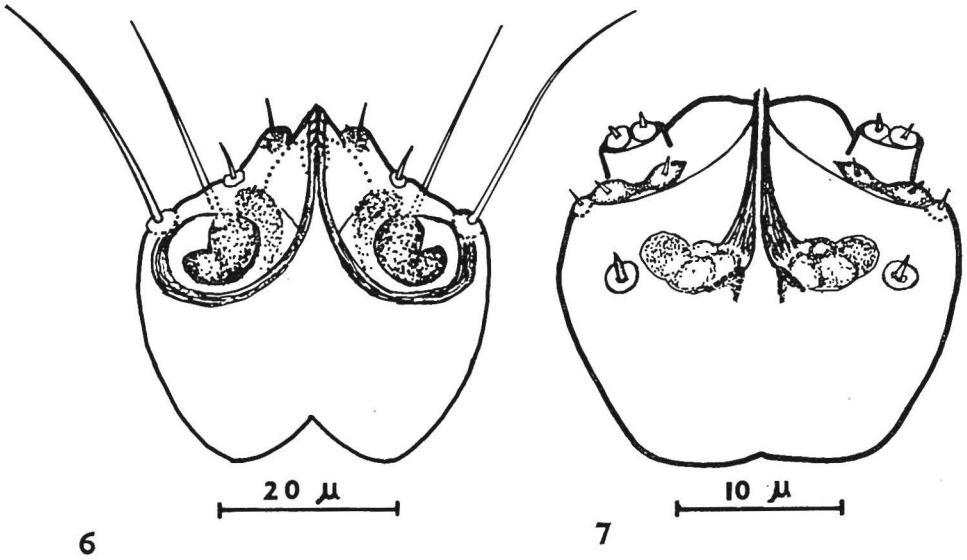


FIGS. 4-5. — **Stigmacarus lukoschusi,** dorsal aspect of 4) larviform female ; 5) male.

Venter : Apodemes I unites with sternum, apodemes II free. Coxae III elongated and well separated. Coxal setae (c.s.) I vestigial, c.s. II and III short (7 μ). Opisthosoma distinct (Fig. 3).

Gnathosoma : anteriorly larger than posteriorly, 32-38 μ at its widest point, 30-39 μ long. Antero-lateral and ventral setae long (24-33 and 20-24 μ respectively). Palps unsegmented with two short setae (ca. 5 μ), one dorsal and one ventral. Apically three setules rise from a thinly sclerotized triple base, on the ventral side of the palps (Fig. 6) ; this is probably a sense organ, resembling the one present in *Podapolipus tribolii* Feldman-Muhsam & Havivi, 1972. The sclerotized, hook-shaped, thin chelicerae with a very wide base, almost reaching lateral walls of gnathosomal capsule, the stylets screw-like at their apical end.

Legs : Leg I terminated in two small claws. Chaetotaxy is presented in Table I.



FIGS. 6-7. — **Stigmacarus lukoschusi.** Gnathosoma, dorsal aspect.
6) Larviform female ; 7) male.

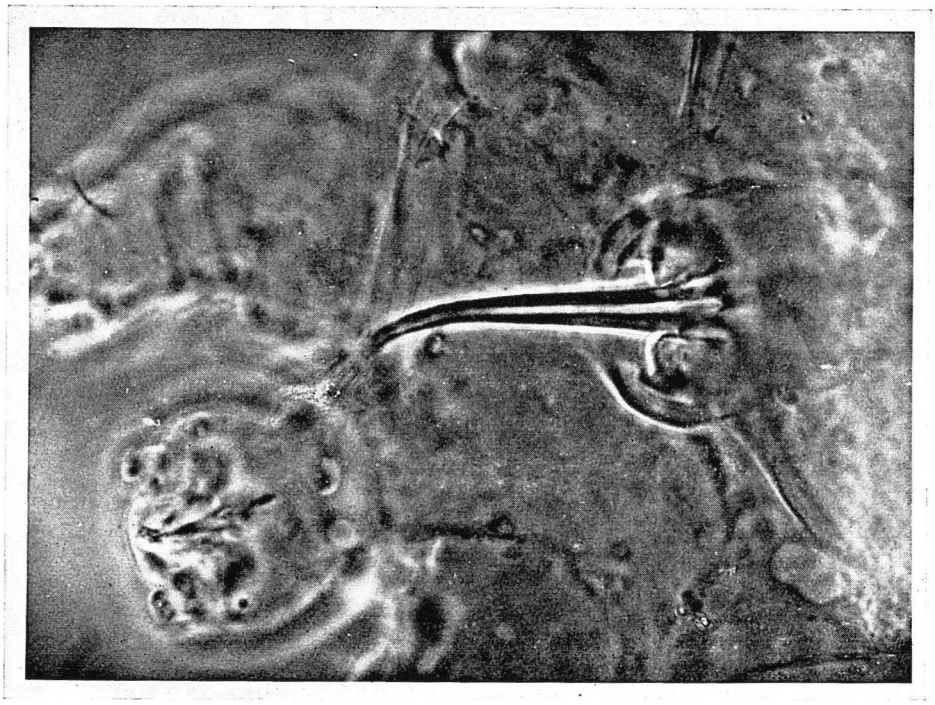


FIG. 8. — **Stigmacarus lukoschusi.** Copulating apparatus. Phase, × 1 125.

Note that due to mounting, the capsule including the chitinized tube is turned by about 23° to the right side of the mite, and that the gnathosoma are of the left side of the picture.

TABLE I. — Number of setae on legs of larviform female.

	Trochanter	Femur	Genu	Tibia	Tarsus
Leg I	0	2	2	5 setae, 1 solenidium	4 setae, 3 solenidia, 1 fish-tail seta
Leg II	0	0	1	4 setae	3 setae, 1 spur, 1 fish-tail seta
Leg III	0	0	1	4 setae	3 setae, 1 spur, 1 fish-tail seta

MALE.

Idiosoma : short-oval ; 182-220 μ long, 104-148 μ wide.

Dorsum : Propodosomal plate of a battle-axe shape. All propodosomal setae (v.i., v.e., sc.i. and sc.e.) — minute. Hysterosoma pear-shaped. Tergites I & II fused, but divided mesially. Setae h.i., h.e. and do. — minute (Fig. 5).

The genital capsule is situated at the apex of the pear-shaped hysterosoma. A long (42-44 μ) sclerotized tube curved at its end (Figs. 5 & 8) extrudes anteriorly from the center of the genital capsule. It is interesting to note that in 12 out of 13 males the tube was bent to the left, and in only one of them to the right. This tube presents the main differentiating character of the genus.

Venter : Apodemes I unite with sternum, apodemes II free. Coxae III well separated from each other. All coxal setae minute (Fig. 9).

Gnathosoma : anteriorly wider than posteriorly, 25-29 μ at its widest point, 23-29 μ long. There are two pairs of minute setae on gnathosomal capsule ; one pair dorsal and the other antero-lateral. Cheliceral cone and palps protrude dorsally. Chelicerae small ; palps well developed, carrying each four minute dorsal setae : two apical and two at the root of the palp in a spectacle-shaped scrélotized base (Fig. 7).

Legs : Leg I terminated in two small claws. Chaetotaxy is presented in Table II. On leg III, there is the same sense organ as that described in *Podapoliptus grassii* Berlese, 1897 (FELDMAN-MUHSAM & HAVIVI, 1972).

TABLE II. — Number of setae on legs of male.

	Trochanter	Femur	Genu	Tibia	Tarsus
Leg I	0	2	2	5 setae, 1 spur	5 setae, 1 spur, 2 solenidia
Leg II	0	0	1	3 setae, 1 spur	3 setae, 1 spur, 1 fish-tail seta
Leg III	0	0	1	3 setae, 1 spur	3 setae, 1 spur, 1 fish-tail seta

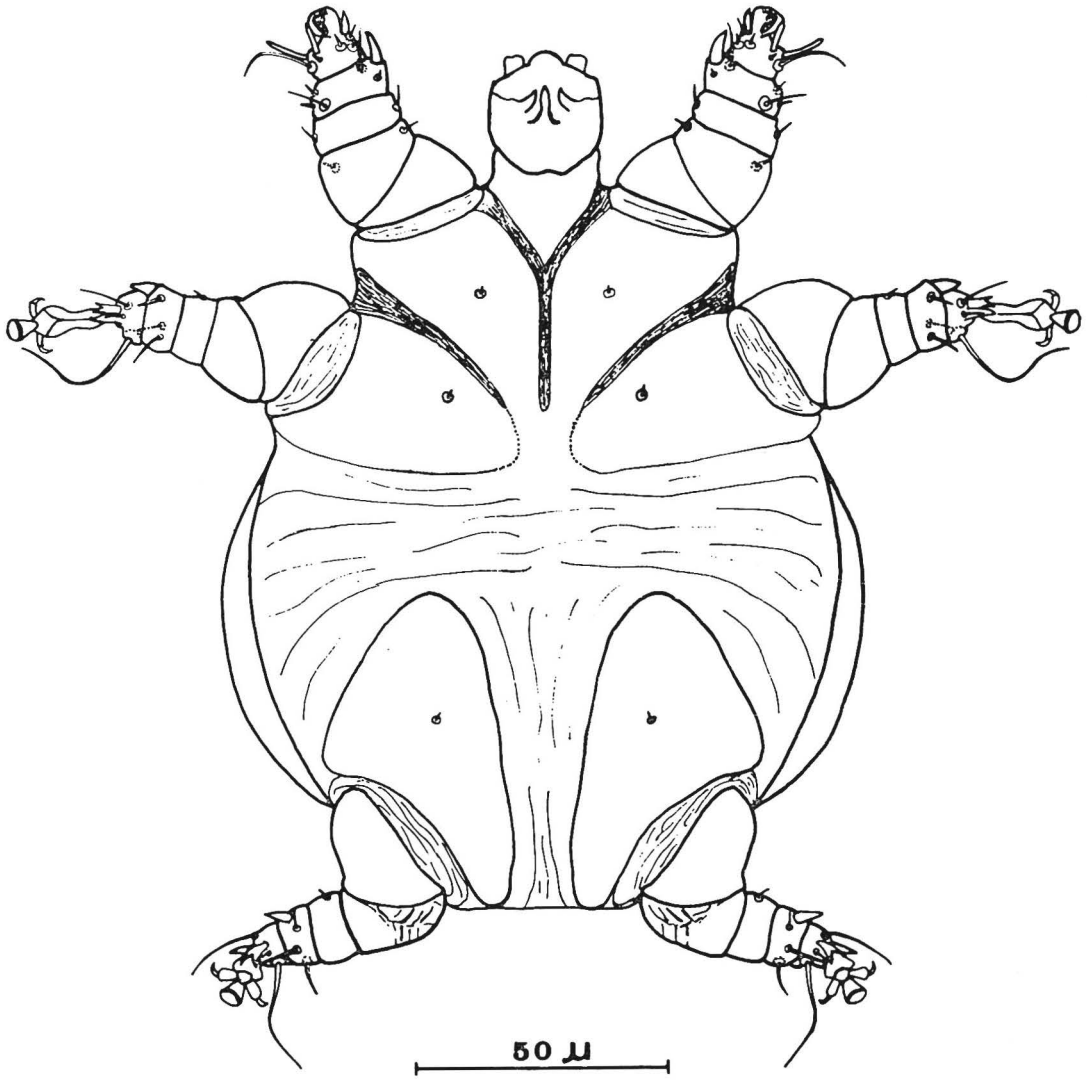


FIG. 9. — **Stigmacarus lukoschusi.** Male, ventral aspect.

Relationship of *Stigmacarus* to other genera.

The new species *S. lukoschusi* could have been placed in the genus *Tetrapolipus* Berlese. The adult female has indeed two pairs of legs, and the larviform female and male resemble other species of *Tetrapolipus* in many aspects ; however, because of the peculiar structure of the copulating apparatus we consider that this species deserves a separate generic status.

It should be remembered that among the species described as belonging to the genus *Tetrapolipus*, the size and shape of the copulating apparatus varies considerably. This being the fact, Husband and Flechtmann (1972) considered the length of the copulating apparatus of *T. rhynchophori* Ewing, 1924 to justify the creation of a new genus *Rhynchopolipus*. It might be noted that, despite the above mentioned considerable variations in the shape and size of the copulating apparatus, the differentiation between the three types of positions as shown in Regenfuss's (1973) cladogramme may be questioned, because in all species of *Tetrapolipus* the genital capsule is located on the anterior edge of the hysterosoma or of an anteriorly directed extension of it. Variations in the length of this extension create the different aspects shown in the cladogramme. In *T. hunteri* Husband, 1973 the extension does not protrude over the propodosoma, in *T. batocerae* (Berlese), 1910 it protrudes slightly, and in *T. hippodamiae* McDaniel and Morrill, 1969 it reaches up to one third of the propodosoma. In *S. lukoschusi*, n. g. and n. sp. the copulating capsule, while located at the same place, on the anterior edge of the hysterosoma, differs from the species of *Tetrapolipus* not merely by size and shape but in its basic structure.

Acknowledgements

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