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Ceroglyphus malaysiensis n.sp. (Acaridae) from the nest of a carpenter bee in Malaysia

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Abstract. *Ceroglyphus malaysiensis* n. sp. (Acaridae) is described from the nest of *Xylocopa (Platynopoda) latipes* in Malaysia. This species is represented by females, heteromorphic males and immatures. Hypopial nymphs have not been observed.

INTRODUCTION

The new species of mite that we describe hereunder has been found in the nest of a Carpenter bee *Xylocopa (Platynopoda) latipes* in Malaysia.

Numerous species of mites, belonging to different families of Astigmata, have so far been described from bees or nests of bees in various parts of the world. The adult mites live in the nests of the bees. Some species (e.g. *Chaetodactylus* spp.) are harmful and feed upon the larvae of the bees. These mites produce heteromorphic deutonymphs (hypopi) which attach to the bees and ensure the transport and dissemination of the species.

In the genus *Ceroglyphus* Vitzthum 1919, which is studied here, all the developmental stages have been observed except phoretic deutonymphs. We think however, that they exist but have not yet been collected. It is possible that *Ceroglyphus* is a synonym of the older genus *Cerophagus* Oudemans, 1902 which is known only from the hypopial stages collected on *Bombus* sp. (Apidae). New investigations in bee nests could perhaps solve this problem.

The new species of *Ceroglyphus* that we describe here was mixed with a number of other mites, of all stages, belonging to several species of *Sennertia*. The genus *Ceroglyphus* Vitzthum, 1919 was represented so far only by the type species *Ceroglyphus monstruosus* Vitzthum, 1919 (and 1921).

Only the heteromorphic male was known. It had been found in the nest of *Xylocopa nigrita* at Amani, East Africa. We describe here a new species of this genus based on females, males and immature stages, and we give a new definition of the genus. Hypopi have not been observed.

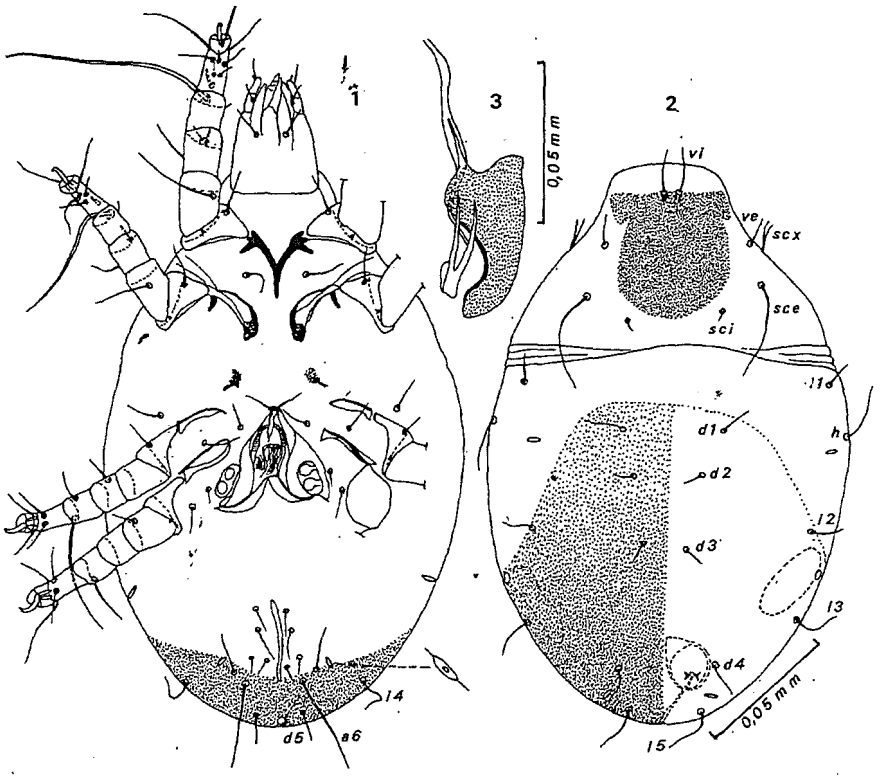
Genus *Ceroglyphus* Vitzthum, 1919

Definition. Body ovoid. Cuticle smooth not striated but with, in both sexes, a well developed propodonotal punctate plate and in the female an opisthosomal punctate plate covering a large part of dorsum and a smaller part of venter. Sejugal furrow weakly developed. Epimeres I fused in a sternum. Other epimeres free. Legs rather short, thin in females, thicker in male, especially leg I distinctly thicker than leg II. All setae of body very thin and short or very short except *a 6* in female and *l 5* in male which are distinctly longer. Are present: *v i, v e, sc e, sc i, d l* to *d 5, l 1 to l 5, h, sh, a 1* to *a 6, g 1, g 2, g 3*. The *sc x* are rather long and bifid. Setae *v e* are situated a little in front of the middle of the lateral margin of propodonotal plate. Setae *sc i* very short. Claws well developed with a short membranous pretarsus enveloping only the basal half of the claw.

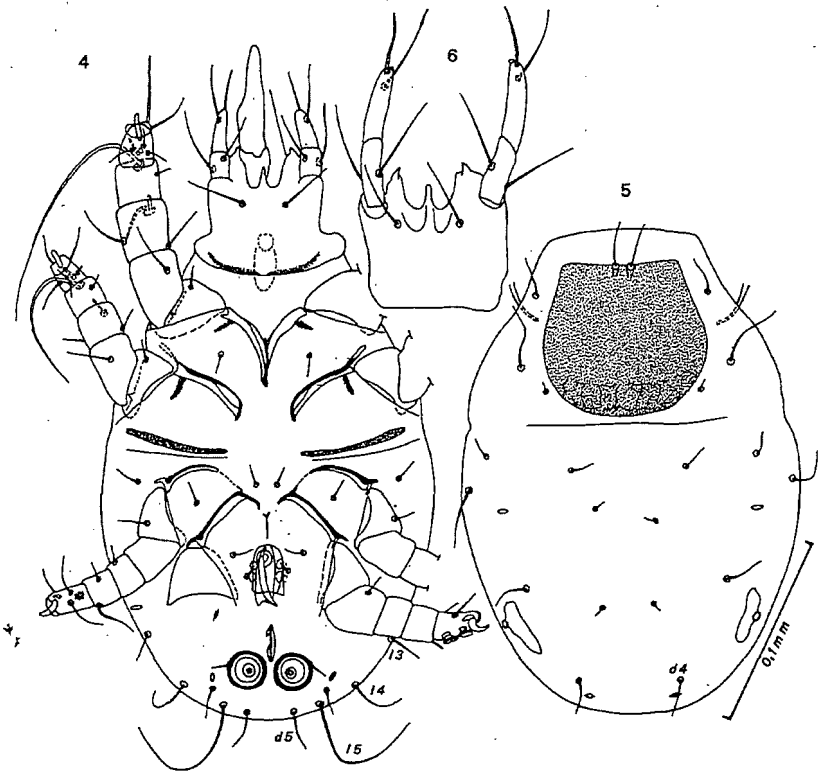
Chaetotaxy of legs I-IV in the female: Tarsi 9-9-4-4; tibiae 1-1-1-0; genua 2-2-1-0; femora 1-1-0-1; trochanters 1-1-1-0. On tarsi I-II the following setae are lacking; *p,q,f* and *ba;* these tarsi bear 6 thin moderately long setae and 3 very short ventro-apical setae (*v, s* and *u*) or spinelets, these microsetae are separated from each other by two paramedian triangular sclerotized processes. On tarsi III-IV these ventro-apical setae are lacking. Leg chaetotaxy in male as in female except for tarsi IV which bear only 3 simple thin setae and 2 rounded copulatory suckers. *Solenidiotaxy:* tarsi (I-IV) 2-1-0-0; tibiae 1-1-1-1; genua 2-1-1-1. There is a very small famulus in front of *w1*. The *w2* is lacking. The *sigma 1* is about 2.2 times as long as *sigma 2*. All the males are heteromorphic: leg I is larger than leg II and the gnathosoma and chelicerae much larger than in the female. The degree of heteromorphism varies according to the specimens and one can distinguish three types. In type 1 these heteromorphic characters are the less marked and the cheliceral digits bear 2 well-formed teeth. In type II these characters are more marked and the body is larger, the teeth on the cheliceral digits are still present. In the type III these characters are strongly marked, the gnathosoma and the chelicerae are enormous and there is only one tooth left on the movable digit. All these males present a pair of large copulatory suckers, the male organ is situated at the level of coxae IV and the chaetotaxy is similar to that of the female.

Type species. *Ceroglyphus monstruosus* Vitzthum 1919

Remark. This genus differs from the other genera of the tribe Tyrophagini



Figures 1–3: *Ceroglyphus malaysiensis* n. sp. Female: 1, ventral view; 2, dorsal view; 3, Organ of Grandjean, supracoxal seta and podocephalic canal.



Figures 4–6: *Ceroglyphus malaysiensis* n. sp. 4, ventral view of slightly heteromorphic male (type 1); 5, dorsal view of type 1; 6, gnathosome of strongly heteromorphic male (type III).

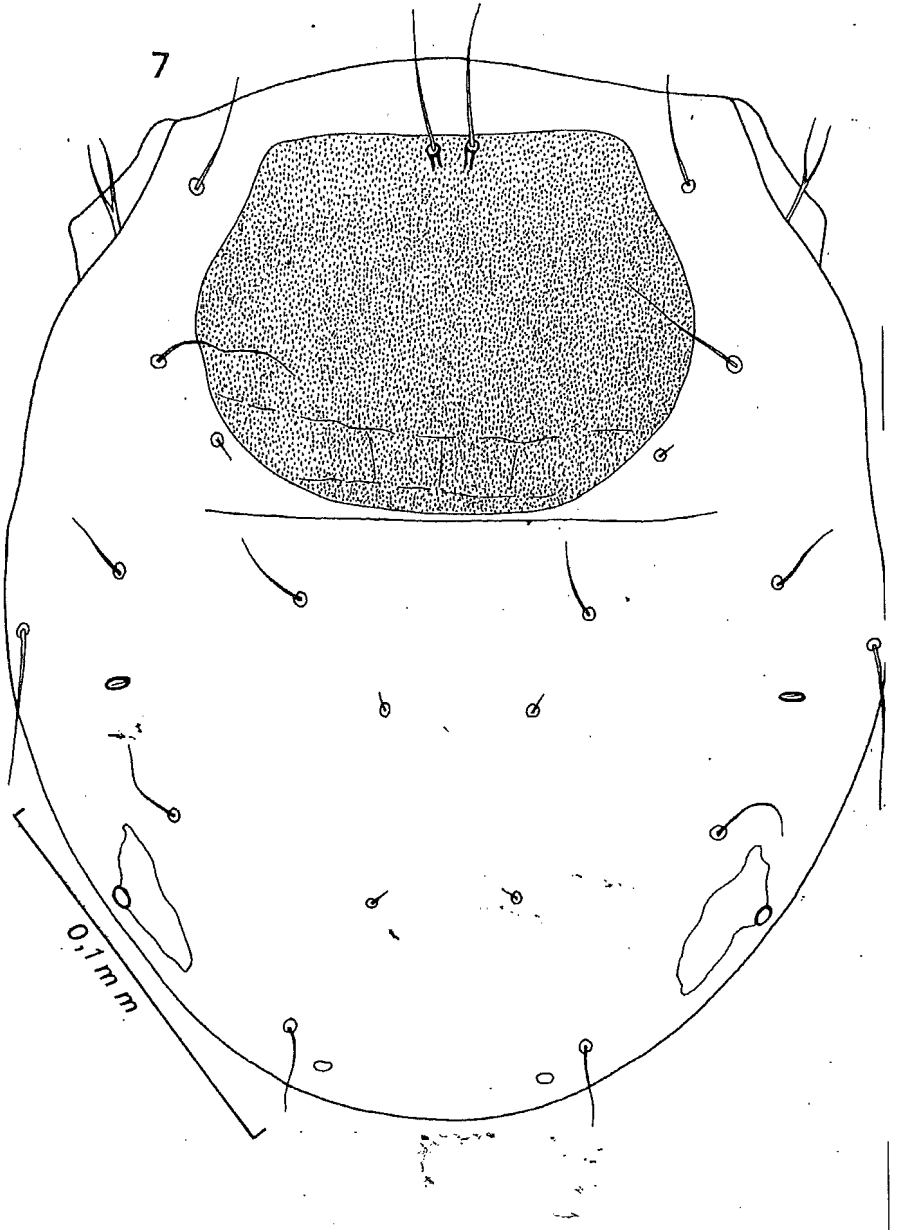
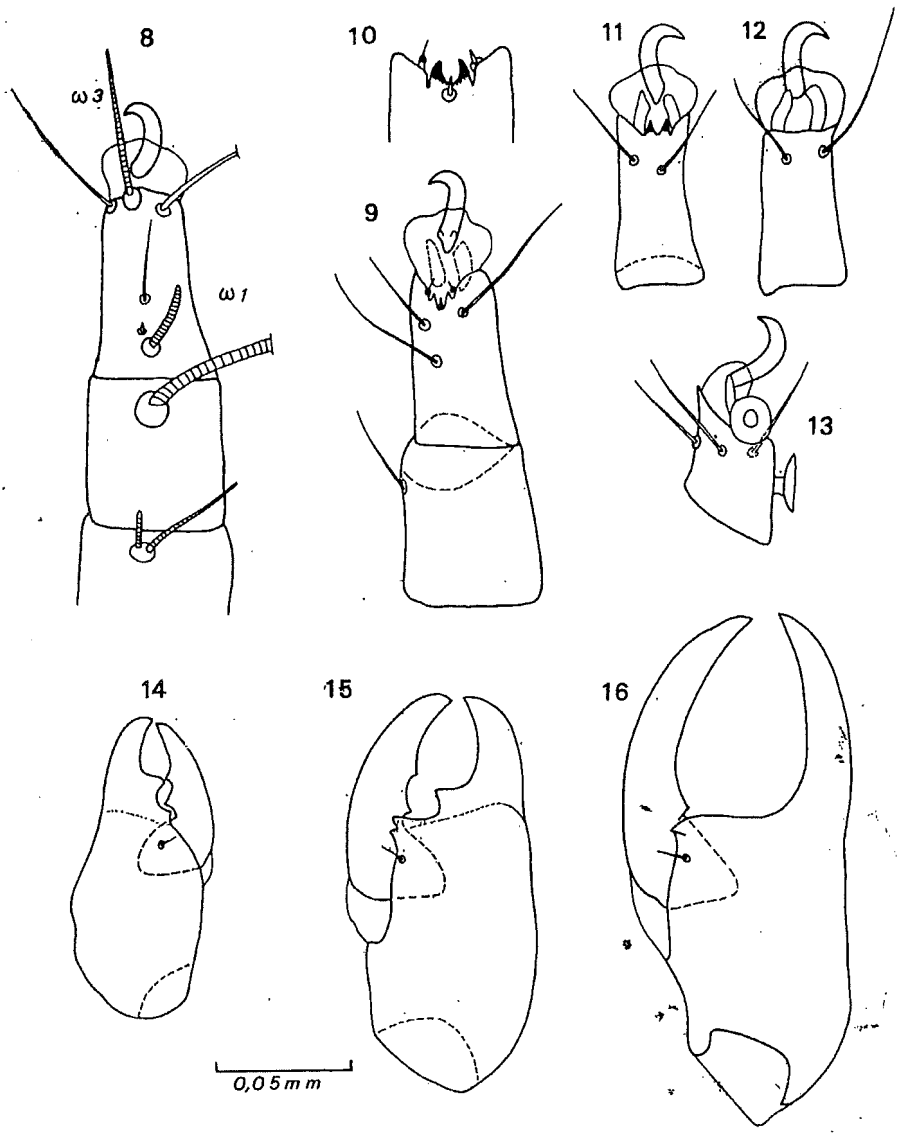


Figure 7: *Ceroglyphus malaysiensis* n. sp., dorsal view of strongly heteromorphic male (type III).



Figures 8–16: *Ceroglyphus malaysiensis* n. sp. 8, apical segments of leg 1 of female; 9, ventral view, female; 10, apico-ventral field of tarsus I, female; 11 and 12, ventral and dorsal view of tarsus IV of female; 13, tarsus IV of male; 14, 15 and 16, chelicerae slightly heteromorphic, fairly heteromorphic an and strongly heteromorphic.

(Acaridae, Acarina), as defined by Zachvatkin (1941), in both sexes by the following characters: strong reduction of the chaetotaxy of the tarsi and tibiae combined with a normal development of the idiosomal setae with a presence of well-developed *ve* setae, the relatively great development and the bifid aspect of the *s cx* setae. The male differs from all the other known species by the heteromorphism of the anterior part of the body (chelicerae, gnathosoma, leg I).

Ceroglyphus malaysiensis n. sp.

Female (fig. 1-3, 8-12). Holotype 375 µm long and 230 µm wide (idiosoma). In 6 paratypes 340 x 220 µm; 375 x 245 µm; 390 x 250 µm; 420 x 300 µm, 480 x 320 µm and 495 x 330 µm. There are 4 pairs of lyriform fissures (2 dorsal and 2 ventral).

Dorsum. Propodonotal plate 105 µm long, 75 µm wide. Hysterosoma distinctly punctate in its posterior half or third. *Venter:* epigynium very small. Genital suckers moderately developed. Copulatory orifice subterminal ventral. Legs I slightly thicker than leg II. Length of some setae: *v i* 40 µm, *v e* 16-20 µm, *sc e* 60-75 µm, *sc i* 12 µm, *h* 42 µm, *a 6* 80 µm. Length of solenidia of tibiae: tibia I 150 µm, tibia II 105 µm, tibia III 60-70 µm, tibia IV 25 µm. Other characters as described for the genus.

Males. All are heteromorphic, but they vary from slightly to very strongly heteromorphic with all the intermediate forms. The smallest specimen (type I) is 255 µm long and 165 µm wide (idiosoma). The propodonotal plate is 78 µm long and 84 µm wide. Chelicerae 110 µm long with 2 teeth on each digit (figs. 4, 5, 13, 14). The largest specimen (type III) is 300 µm long (idiosoma) with a dorsal plate 100 µm long and 120 µm wide; chelicera with only one small tooth on movable digit, its total length is 186 µm (figs. 6, 7, 16). Other males are intermediate between types I and III (figs. 15).

Tritonymph. Length 245 µm, width 130 µm (idiosoma). General characters as in the female but without vulva.

Protonymph. Length 220 µm, width 120 µm. Aspect as in tritonymph except that some setae are missing, that there is only one pair of genital suckers, and that setae *d 1* and *l 1* are very long (more than 100 µm).

Larva. A specimen still enclosed in its ovular skin presents well-developed Claparede's organs.

Eggs. The eggs contain

structure) as it is the case for many other Astigmata, especially the free-living ones. (see Fain et Herin, 1979).

Remark. We have compared our male specimens with the holotype of *Ceroglyphus monstruosus* Vitzthum, 1919 described from the nest of *Xylocopa nigrita* in Amani, East Africa. This holotype is an heteromorphic male intermediate between our types II and III. The dorsal plate is 100 µm wide and the chelicerae 150 µm long. Our specimens of type II or III differ from this holotype by the following characters:

1. Tarsi I only slightly longer than wide. In *C. monstruosus* tarsus I is more than twice as long (48 µm) as wide (18 µm).
2. Solenidion sigma I of genu I is shorter (9 µm), thicker and more cylindrical and sigma 2 is much thinner.
3. Tibia III is wider than long. In *C. monstruosus* tibia III is longer (22 µm) than wide (18 µm).
4. Solenidion of tibia IV shorter (20 µm) than in *C. monstruosus* (30 µm).
5. Adanal suckers smaller: diameter 20-21 µm in *C. malaysiensis* and 26-27 µm in *C. monstruosus*.

The other characters (chaetotaxy etc.) are difficult to study in the holotype of *C. monstruosus* owing of the rather poor condition of this specimen. It is to be noted that tarsi IV bear 2 suckers, which had been overlooked by Vitzthum.

Besides the holotype, Vitzthum's collection contains several other specimens (1 female and several males) in poor condition and without collection data.

Type data. Holotype female and 86 paratypes (60 females, 12 males, 3 tritonymphs, 10 protonymphs, 1 larva) collected from nest of Carpenter bee, *Xylocopa (Platynopoda) latipes* Drury, 1773 in rotten wooden beam of neglected house in Kuala Pilah, Negri Sembilan, Malaysia, 9. V. 1979 by F.S. Luckoschus. Deposition of type material as follows: Holotype, 3 females, 2 males and 2 nymphs in British Museum (Nat. Hist), London; Paratypes (1 female each) in the following institutions: U.S. National Museum, Washington D.C.; Museum National d'Histoire Naturelle, Paris; Field Museum, Chicago; Zoologisches Institut und Zoologisches Museum, Hamburg; Institute for Medical Research, Kuala Lumpur; Rijksmuseum voor Naturlyke Historie, Leiden; Institut royal des Sciences naturelles, Bruxelles. Other paratypes in the collection of the authors.

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