

**NEW SPECIES OF *HYPOASPIS* (ACARI: MESOSTIGMATA: LAELAPIDAE) FROM THE NEST OF A STINGLESS BEE IN MALAYSIA (HYMENOPTERA: MELIPONINAE, APIDAE)**

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**RESUMEN**

Se describe e ilustra la hembra y macho de una nueva especie de ácaro del género *Hypoaspis* Canestrini, 1884 (Mesostigmata: Laelapidae) colectada en Malasia sobre la abeja *Trigona iridipennis* Smith (Hymenoptera: Meliponinae, Apidae).

Palabras clave: Acari, Laelapidae, Malasia, Mesostigmata, Apidae.

**ABSTRACT**

A new species of *Hypoaspis* Canestrini, 1884 (Mesostigmata: Laelapidae), collected from the stingless bee *Trigona iridipennis* Smith in Malaysia, is described. Descriptions and illustrations are given for the female, and male.

Key words: Acari, Laelapidae, Malaysia, Mesostigmata, stingless bee.

**INTRODUCTION**

The genus *Hypoaspis* Canestrini, 1884, now contains four species associated with stingless bees belonging to the genera *Trigona* and *Melipona*. These are *Hypoaspis meliponarum* Vitzthum, 1930 from *Melipona interrupta* Latreille in Panama, *H. favosus* Turk, 1948 from *M. favosa* (Fabricius) in Trinidad, *H. brasiliensis* Defi-

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nado-Baker, Baker & Flechtmann, 1984 from *Melipona compressipes fasciculata* Fabricius in Brazil; and the new species described here which was collected from *Trigona iridipennis* Smith in Malaysia. Only a few laelapid mites have been reported from stingless bees. Baker *et al.* (1984) reported five species of *Bisternalis* Hunter from the nests of stingless bees found in Brazil. Delfinado-Baker *et al.* (1983) described the new genus *Neohypoaspis* whose members inhabit the nests of *Trigona fulviventris* Gyerin and *T. hypogea* Silvestri in Panama, where they preyed on astigmatic mites. Delfinado-Baker *et al.* (1984) described and established two new genera, *Melittiphisoides* and *Hunteria* in the family Laelapidae, collected from nests of meliponine stingless bees in Brazil.

Later, Delfinado-Baker & Baker (1988) described two new species of the genus *Eumellitiphis* Turk found in *Trigona* nests from Sumatra, Malaysia and the Philippines. They also provided a list of known laelapid commensals inhabiting the nests of meliponine stingless bees along with their geographic distributions and host relationships.

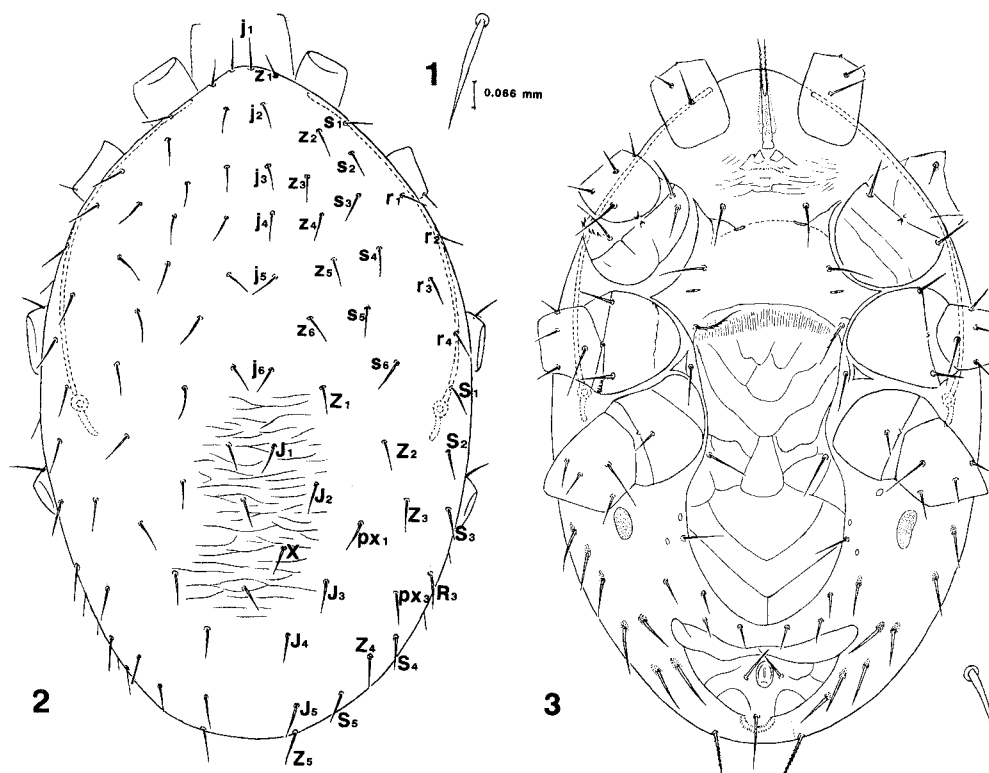
This is only a brief review of laelapid mites found in association with stingless bees. We anticipate that others will be found when additional geographic sites are more thoroughly investigated.

Setal signatures follow Evans & Till (1966). Measurements are given in micrometers.

*Hypoaspis hoffmannae* sp. nov.  
(Figs. 1-10)

**Diagnosis.** Both sexes of this new species are most similar to *Hypoaspis meliponarum* Vitzthum, 1930. The male of *H. hoffmannae* (Fig. 9) may be separated from the male of *H. meliponarum* by having one instead of two strong ventral spinelike setae on tarsus II (Figs. 8-9). The females of the two species are separated by setae St<sub>3</sub> being finely spiculate in *H. hoffmannae* and smooth in *H. meliponarum*. The female of *H. favosus* (Fabr.) is readily distinguished from *H. brasiliensis*, *H. hoffmannae* and *H. meliponarum* by its smaller body size. The female dorsum of *H. hoffmannae* has the setation characteristic of the genus, i.e. dorsum with 39 pairs of setae (Fig. 2). According to Evans & Till (1965) deviations from the normal setal complement (holotrichous condition) are relatively common in the specialized facultative and obligatory parasites and may be the result of hypo- or hypertrichy. The holotrichous condition is noted by setae X, PX, and PX<sub>3</sub> (Fig. 2).

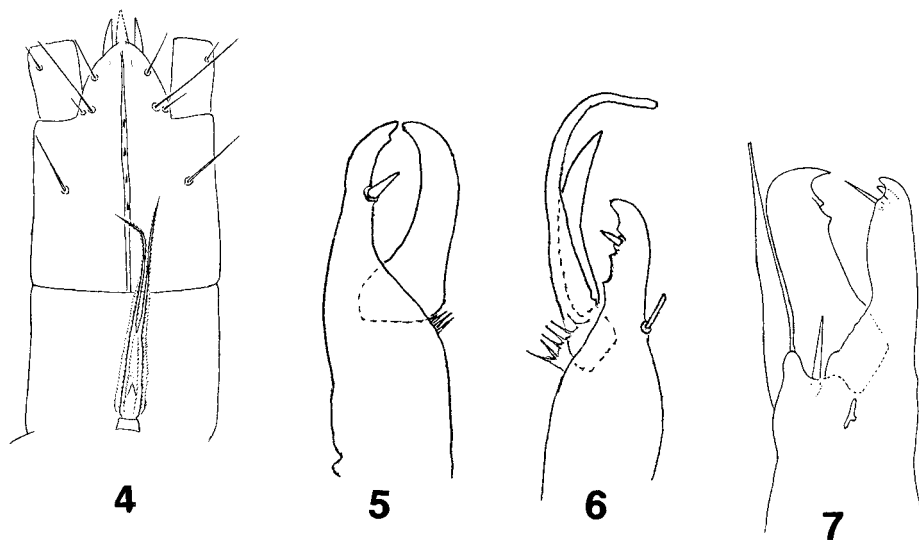
Female (holotype): Dorsal shield about 529 µm long, 342 µm wide, ovate, gently tapering posteriorly, covering entire dorsum of idiosoma; surface as in other laelapid mites, with weak scalelike pattern on entire dorsum; anterior pores smaller than posterior pores; dorsal setae j<sub>1</sub> larger than other dorsal setae, z<sub>1</sub> smallest, other setae same size in podonotal region on lateral margins and in opisthonotal region. Gnathosoma (Fig. 4) small, ventrally located, not visible from above. Corniculi (Fig. 4) hornlike, parallel, widely separated. Deutosternal groove with 4-5 single small pointed denticles. Chelicera (Fig. 5) dentate, with setiform pi-



Figs. 1-3. *Hypoaspis hoffmannae* sp. nov., female. 1, dorsal seta  $j_1$  (enlarged); 2, female, dorsum; 3, female, ventral view of idiosoma.

lus dentilis, arthrodial process as figured. Palpal apotele two-tined. Tritosternum bipartite with laciniae, from fork subequal to base and minutely spiculate. Venter (Fig. 3): Sternal shield distinct bearing sternal setae  $St_1$ ,  $St_2$  and  $St_3$ ;  $St_3$  lightly spiculate as figured, with 2 pairs of pores. Genital shield inflated posterior to coxae IV; posteriorly flask-shaped. Number of leg setae on coxa to tarsus: I, 2-5-12-13-13-26; II, 2-5-12-11-11-14; III, 2-5-6-9-9-15; IV, 1-6-6-9-9-14. Legs I markedly longer than others, legs II and III about equal in length, legs IV slightly longer than II and III. Ambulacra of all legs ending with subequal paired claws and empodia.

Male (allotype): Dorsal shield about 444  $\mu\text{m}$  long, 330  $\mu\text{m}$  wide. Dorsal setae as in female, integument scale-like. Chelicera (Fig. 6) chelate with fixed digit edentate, movable digit bidentate; spermatodactyl partially fused to movable digit, grooved and curved distally. Deutosternum and other gnathosomal structures as in female. Venter (Fig. 10): Holoventral shield broadly expanded posterior to coxae IV, fused with metapodal plates; with 9 pairs of setae in addition to the 2 adanals and 1 postanal; surface of shield with scalelike pattern posteriorly from



Figs. 4-7. 4-6: *Hypoaspis hoffmannae* sp. nov. 4, female, gnathosoma in ventral view; 5, female, chelicera; 6, male, chelicera. 7, *H. brasiliensis* Delfinado-Baker, Baker & Flechtmann, female, chelicera.

level of coxae IV to anal opening. Peritreme and surrounding shield as in Figure 3. Number of leg setae from coxa to tarsus: I, 2-6-14-13-13-24; II, 2-5-11-11-9-12; III, 2-5-6-9-9-11; IV, 1-5-5-8-9-15. Legs I markedly longer than others, legs II and III about equal in length, legs IV slightly longer than II and III, tarsus II with strong setae. Ambulacra of all legs ending with subequal paried claws and empodia.

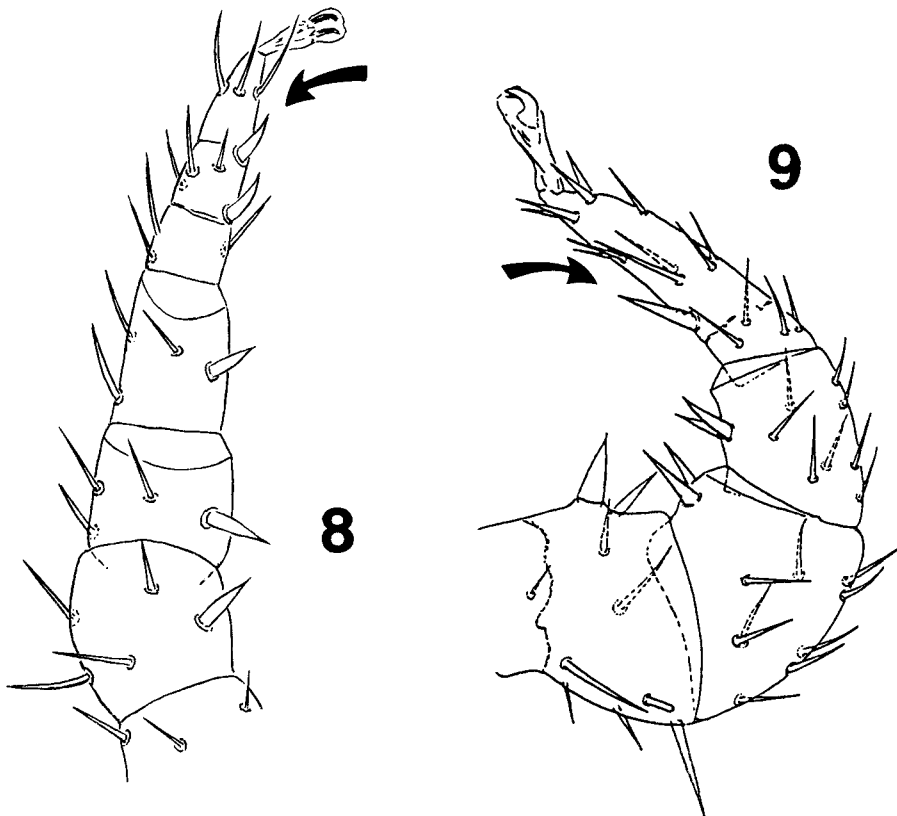
**Specimens examined.** Holotype female, ex nest of *Trigona iridipennis* Smith, Puchong, Selangor, Malaysia, 31 October 1988 by A. C. Phoon. Five female paratypes, and male allotype, with the above data are deposited in the U.S. National Museum Collection. Five female paratypes measurement variations: Dorsal shield 526-529  $\mu\text{m}$  long, 340-342  $\mu\text{m}$  wide.

**Etymology.** The species epithet honors our dear friend and colleague, Dr. Anita Hoffmann, Laboratory of Acarology, University of Mexico for her outstanding work and dedicaton to Acarology.

#### KEY TO FEMALES OF *HYPOASPIS* ASSOCIATED WITH STINGLESS BEES

1. Cheliceral arthrodial process normal, forming small "coronet" (Fig. 5).....2

- Cheliceral arthrodistal process unusually developed, large setiform (Fig. 7).....  
 .....*brasiliensis* Delfinado-Baker, Baker & Flechtmann
2. Ventrianal plate wider than long, without distinct jugular shield located adjacent to tritosternum.....3  
 Ventrianal plate longer than wide, with a crescentic shape juglar shield located adjacent to tritosternum.....*favosus* Turk
3. Peritreme extending from middle of coxae IV to middle of femur I, seta  $j_1$  not longer than distance between setae  $z_1$ ; idiosoma lightly sclerotized (Fig. 8) .....*hoffmannae* sp. nov.  
 Peritreme extending from between coxae IV and III anteriorly beyond femur I, seta  $j_1$  robust, spinelike, longer than distance between setae  $z_1$  idiosoma strongly sclerotized (Fig. 9) .....*meliponarum* Vitzthum



Figs. 8-9. 8, *Hypoaspis hoffmannae* sp. nov. male, leg II. 9, *Hypoaspis meliponarum* Vitzthum, male, leg II.

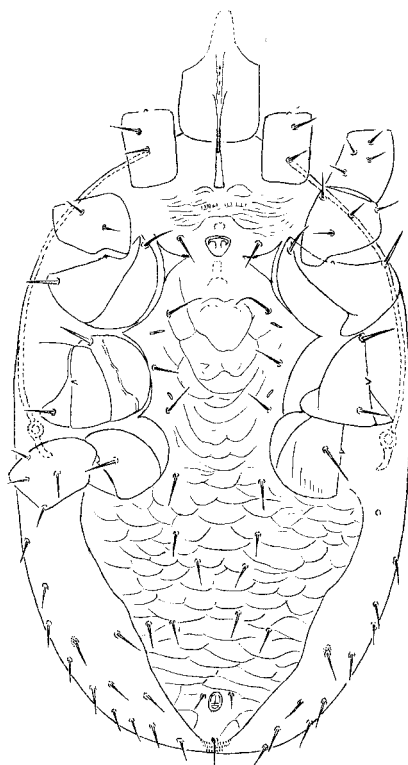


Fig. 10. *Hypoaspis hoffmannae* sp. nov. male, holovertebral shield.

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