

THE LIFE-CYCLE OF
CONGOVIDIA BRASILIENSIS sp.n.,
 A SAPROGLYPHID MITE ASSOCIATED
 WITH A WASP*

(ACARINA : ASTIGMATA)

by A. FAIN** and A.M. CAMERIK (O.S.U.)***

INTRODUCTION

Solitary wasps are frequently found parasitized by saprogllyphid mites. It seems that each wasp is associated by its own species of mite (COOREMAN, 1942 and 1954 ; BAKER and CUNLIFFE, 1960). The adult mites live in the nest of the wasp, while the hypopi are found attached to the wasp. The life-cycle has been observed only for a few number of species, and most of them are known only from the hypopi. The separation of the genera in the Saprogllyphidae based on the hypopi is difficult and needs the use of minute characters such as the leg chaetotaxy and solenidiotaxy, the structure of the palposoma and the shape of the claws. A new definition of all the described genera based on hypopi has been given by FAIN (1972).

In April 1975, the junior author collected in National Park Itatiaia (P.N.I.), State Rio de Janeiro, Brazil, a collection of mites from the nest of a Wasp. This nest was attached to the wall of a bungalow, it was approximately 5 cm long and was built up into several pipes. Only one of these pipes was inhabited by a wasp of about 3 cm long. This pipe and the wasp were collected in alcohol and examined for mites.

* Déposé le 5 octobre 1976.

** Institute of Tropical Medicine, 2000 Antwerp, Belgium.

*** Department of Zoology, Catholic University of Nijmegen, Nederland.
 This research was supported in part by a grant of Ordo Sanctae Unionis Romanae to the junior author.

In the alcohol we found numerous adults and immatures, including hypopi. They belong to a new species of the genus *Congovidia* FAIN and ELSSEN, 1971.

Genus *Congovidia* FAIN & ELSSEN, 1971

The genus *Congovidia* was known so far, only from the hypopi. They are characterized by the following characters : epimera IV fused in the midline to a long longitudinal median sclerite prolonging forwards and backwards. Epimera III free. Eyes with a large lens and strongly sclerotized retina. Palposoma poorly developed or absent ; solenidia alpha present, palposomal setae absent. Tarsi I-III with subequal claws ; tarsi IV without a claw but with one very long apical and one shorter subapical setae.

Chaetotaxy (of the hypopus) : The *ve* are absent. Legs I-IV : tarsi with 6-6-3-4 setae ; tibiae 1-1-1-0 ; genua 2-2-0-0. Tarsi I-II with only one foliate seta (spoonlike), other tarsi without foliate setae. Tarsi III with a sclerotized apicoventral spinelike prolongation. *Solenidia* : tarsi I with ω 1 and ω 2 basal and ω 3 apical ; tarsi II with ω 1 basal ; genuals I and II are present.

Types species : *Congovidia glossinae* FAIN and ELSSEN, 1971.

The discovery of adult mites whose hypopi present the same characters as given for the genus *Congovidia* allows us to give a definition of the adult stage in this genus.

The cuticle in adults is poorly sclerotized. A small propodosomal shield is present. In the female the epimera I are Y-shaped and the other epimera are free. In the male the epimera II are connected by a narrow bridge with the sternum. Sejugal furrow very poor and incomplete. All tarsi ending into two strong apical curved spines (one anterior, the other posterior) and a very transparent pedunculate sucker, without a claw. A third preapicoventral spine is present on all tarsi but it is small on tarsus I and II and much larger on tarsi III-IV. In both sexes the legs II are a little larger than legs I. In male there is one rounded median sucker (25 μ diameter) situated on ventral surface of idiosoma at level of epimera IV ; aedeagus situated at level of coxa IV ; genital suckers small ; adanal and tarsal suckers absent ; the apical spines of tarsi II are much stronger than those of legs I. In the female the vulva is situated at level of coxae IV ; the bursa opens at

the posterior border of body, spermatheca large. Chaetotaxy of legs I-IV: tarsi 8-8-6-6; tibiae 1-1-1-0; genua 2-2-0-0; femora 1-1-0-1; trochanters 1-1-1-0. *Solenidia*: tarsi 3-1-0-0; tibiae 1-1-1-0; genua 2-1-0-0. The epsilon is a small spine.

Congovidia brasiliensis sp. n.

The hypopus of this species is distinguished from the other three species of the genus by the much greater length of the tibiotarsus IV and the different pattern of the dorsal shields.

FEMALE (fig. 1-6): Holotype 534 μ long and 288 μ wide (idiosoma). In 6 paratypes these measurements are 562 μ long (average) (504-648 μ) and 256 μ wide. Propodosomatal shield 100 μ long, 66 μ wide. Ventrally: epimera II with sclerotized prolongations directed inwards and forwards but not reaching the sternum. Legs relatively short. Chelicerae well developed.

Chaetotaxy: dorsal setae setiform, most of them are shorter than half of the length of the body width. Setae *l5* very long. Setae *d1* to *d5*, *l1* to *l3*, *l5*, *b*, *sb*, *ai* and *ae* are present. The *l4* are absent.

MALE (fig. 7, 16): Allotype 420 μ long and 225 μ wide. Cuticle as in the female. With characters given in definition of genus. Tarsi as in female except tarsus II larger and with very strong apical spines. Between legs IV is an organ looking as a big median sucker. Penis S-shaped.

Tritonymph: resembling female. Length 398 μ , width 170 μ .

Protonymph: close to tritonymph. Length 295 μ , width 142 μ . The trochanters lack setae and the tarsi I bear only the $\omega 1$ and $\omega 2$.

Larva: resembling protonymph. Length 193 μ , width 114 μ . Claparede organ lacking.

Heteromorphic deutonymph (hypopus) (fig. 8-15): Length 245 μ (= average of 5 specimens) (maximum 266 μ , minimum 231 μ); width 159 μ . The dorsum is covered by two shields separated by the sejugal furrow. Posterior border of propodosomatal shield sinuous. The shields bear a pattern of short longitudinal grooves; these grooves are lacking in the lateral parts of propodosomatal shield. Eyes strongly pigmented with large lenses. Ventral surface as in the other species of *Congovidia*. Suctorial

plate with anterior pair of suckers (*va*) placed on long peduncles and posterior pair (*vp*) sessile and approximately of the same diameter as anterior ones. The paramedian conoids (*cp*) are more posterior than the lateral conoids (*cl*) (see Fain, 1973). Legs I-II relatively very long, legs III-IV much shorter. Tarsi I-II and

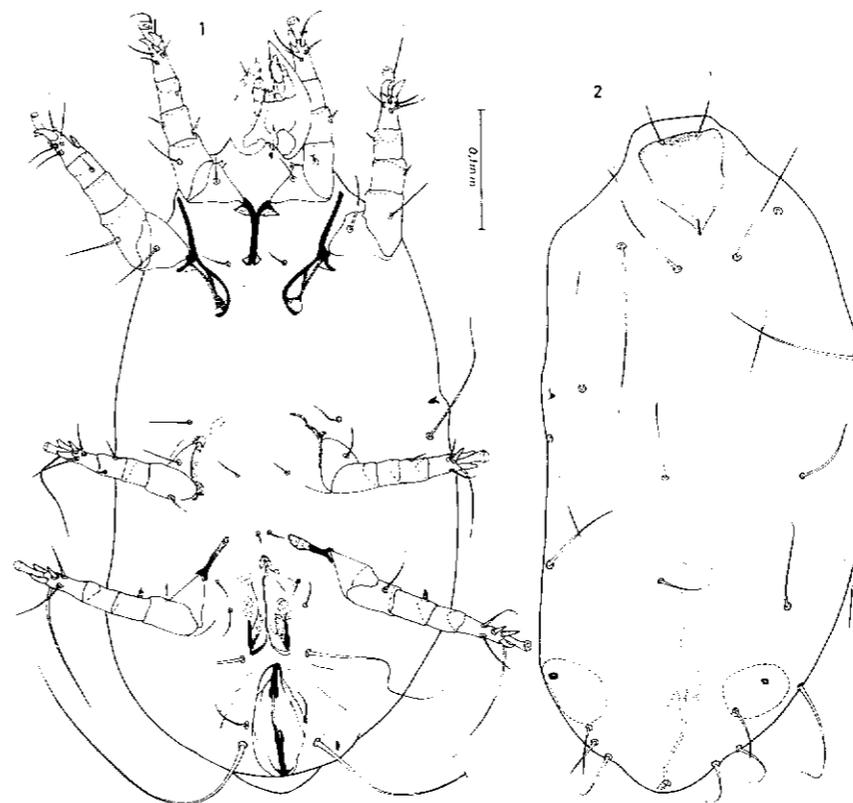


FIG. 1-2. — *Congovidia brasiliensis* sp. n.
Female venter (1) and dorsum (2).

tibiotarsus IV unusually long. Chaetotaxy of legs is given in definition of genus. One of these hypopi is in the molting stage and contains a tritonymph which is identical with the tritonymphs found free in the nest.

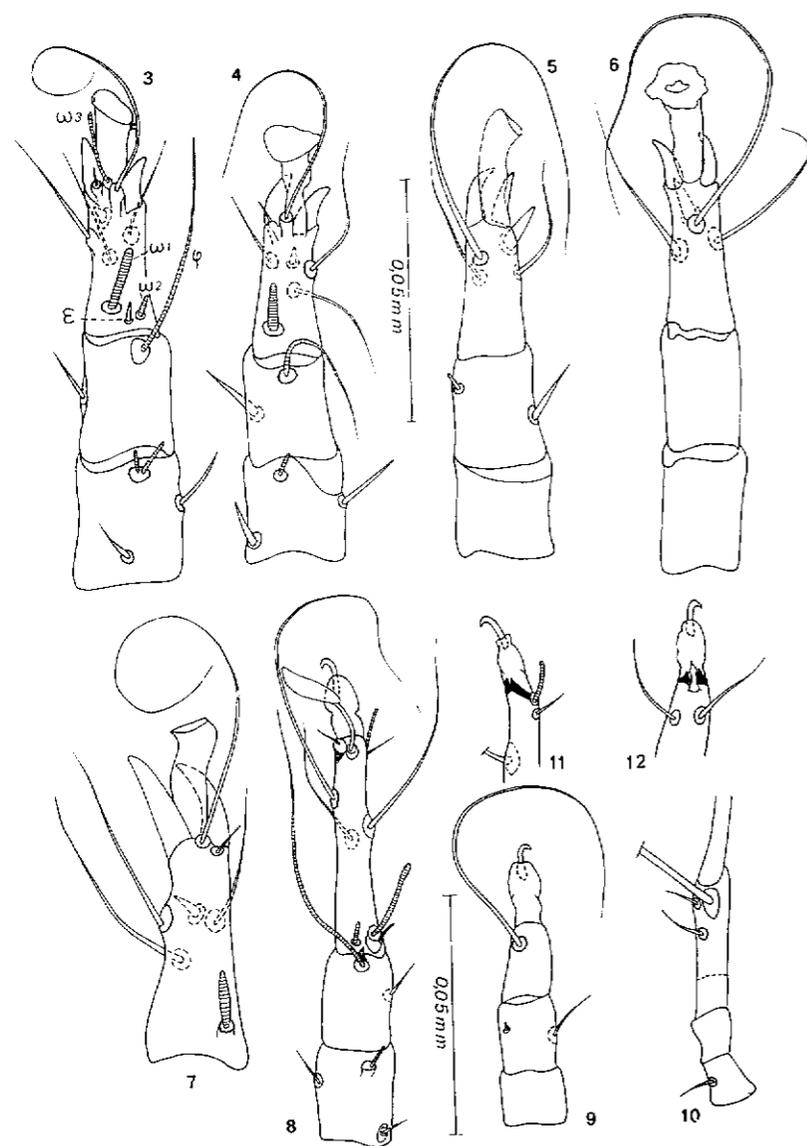


FIG. 3 à 12. — *Congovidia brasiliensis* sp. n. Female (holotype): tarsus, tibia and genu I (3), II (4), III (5) and IV (6). Male: tarsus II (7). Hypopus: tarsus, tibia, genu I (8), III (9); tibiotarsus, genu and femur IV (10); apical extremity of tarsus I (11) and III (12) in ventral view.

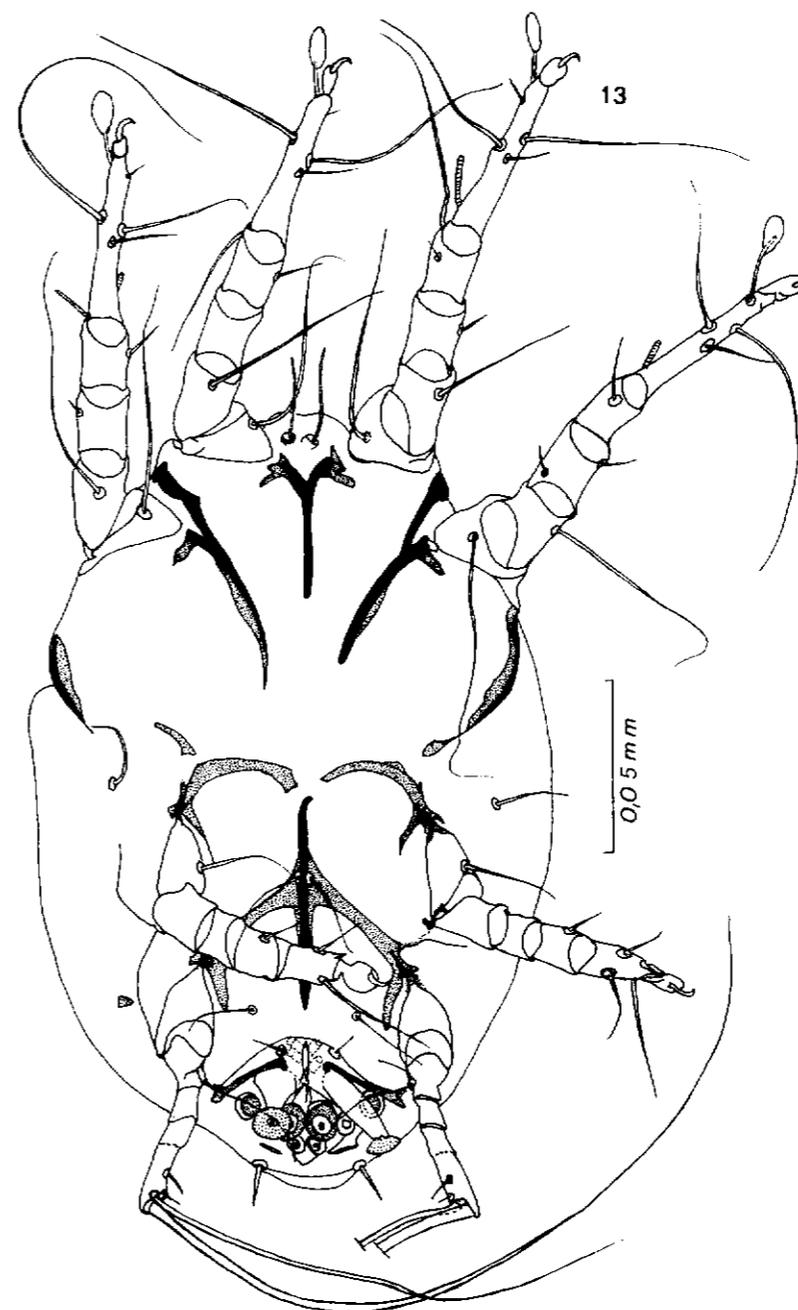


FIG 13. — *Congovidia brasiliensis* sp. n. Hypopus, venter.

Host and locality :

In the nest of a Wasp *Trypoxylon* (*Trypargilum*) *aestivale* RICHARDS, 1934 (Sphegidae) from Itatiaia, State of Rio de Janeiro, Brazil, April 1975. Holotype and 7 paratypes females, allotype and 5 paratypes males. Numerous tritonymphs, protonymphs and larvae and 5 hypopi, all paratypes.

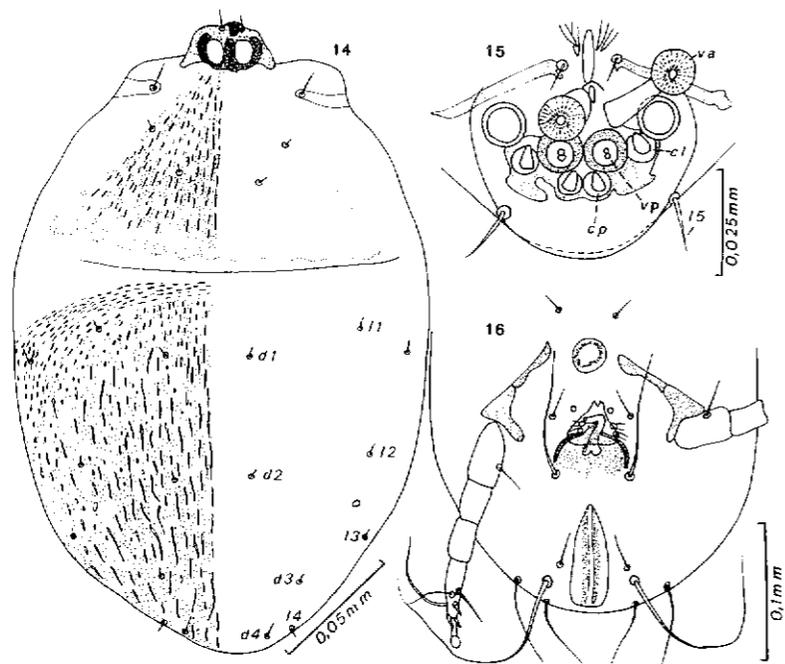


FIG. 14 à 16. — *Congovidia brasiliensis* sp. n.
Hypopus dorsum (14), suctorial plate (15). Male : genito-anal region (16).

Holotype, allotype and 1 hypopus in the Institut royal des Sciences naturelles, Belgium. Paratypes in the Department of Medicas and Biociencias of the University of Sao Paulo, Brazil (Dr Biaggio), in the Department of Biociencias of University Sta Ursula, Rio de Janeiro-Cap. (Sr. M. de Fatima Ramoz), in the Catholic University of Nijmegen, and in the collections of the authors.

SUMMARY

The authors describe a new species of *Congovidia* (*C. brasiliensis*) (Acarina : Astigmata) found in the nest of a wasp from Brasil. All the stages have been observed in the nest, including adults and heteromorphic deutonymphs (hypopi). It is the first time that the life-cycle of the genus *Congovidia* is observed.

ACKNOWLEDGEMENTS

We thank Dr. P. DESSART, Institut royal des Sciences Naturelles de Belgique, who identified the wasp, host of the new mite which is described here.

REFERENCES

- BAKER E.W. and CUNLIFFE F., 1960. — Notes on Saprogllyphid Mites associated with Solitary Wasps. *Proc. Entom. Soc. Wash.*, 62 : 209-231.
- COOREMAN J., 1942. — Notes et observations sur les Acariens I. *Bull. Mus. r. Hist. nat. Belg.*, 18 (33) : 1-7.
- COOREMAN J., 1954. — Notes et observations sur les Acariens. VI. Sur le genre *Kennetbiella* n. g. parasite des Odyneres du genre *Ancistrocerus*. *Bull. Inst. r. Sci. Belg.*, 30 (37) : 1-10.
- FAIN A., 1971. — Notes sur les Hypopes des Saprogllyphidae (Acarina : Sarcopitiformes). I. Diagnoses de Taxa nouveaux. *Rev. Zool. Bot. Afr.*, LXXXIV (3-4) : 281-284.
- FAIN A., 1972. — Notes sur les hypopes des Saprogllyphidae (Acarina : Sarcopitiformes). II. Redéfinition des genres. *Acarologia*, XIV (2) : 225-249.
- FAIN A., 1973. — Notes sur les hypopes des Saprogllyphidae (Acarina : Sarcopitiformes). III. Le genre *Crabrovidia* ZACHVATKIN, 1941. Description de 8 espèces nouvelles symphorétiques sur les Sphecidae (Hyménoptères). *Bull. Ann. Soc. r. Belg. Ent.*, 109 : 153-189.
- FAIN A. and ELSÉN P., 1972. — Notes sur les Acariens parasites ou commensaux des mouches Tsé-Tsés. I. Familles Saprogllyphidae et Anoetidae (Sarcopitiformes). *Acta Zool. Path. Antwerp.*, 55 : 71-90.