

# Description of a new genus and three new species of Tetrathrombiinae (Acari: Johnstonianidae) from their larval stages

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## Summary

A new genus and three new species of Tetrathrombiinae (Acari: Johnstonianidae) are described from their larval stages. Two of these species belong to the genus *Tetrathrombium* FEIDER, 1955, i.e. *Tetrathrombium grootaerti* sp. n., from *Diaphorus* sp. (Diptera), from Thailand and *T. brasiliense* sp. n. from a megarhine (Culicidae), from Brasil. The third species becomes the type of a new genus *Mbandakania congoense* g.n. and sp. n., from an unknown host, from Congo-Kinshasa.

**Key-words:** Systematics. Acari. Johnstonianidae: Tetrathrombiinae. Asia. Africa. South America.

## Résumé

Un nouveau genre et trois espèces nouvelles de Tetrathrombiinae (Acari: Johnstonianidae) sont décrites. Deux de ces espèces font partie du genre *Tetrathrombium* FEIDER, 1955: *Tetrathrombium grootaerti* sp. n., ex *Diaphorus* sp. (Diptera) de Thaïlande et *T. brasiliense* sp. n. ex une megarhine (Culicidae), du Brésil. La troisième espèce nouvelle devient le type d'un nouveau genre *Mbandakania congoense* g.n., sp. n., d'un hôte inconnu, de Mbandaka, Congo-Kinshasa.

**Mots-clé:** Taxinomie. Acari. Johnstonianidae: Tetrathrombiinae. Asie. Afrique, Amérique du Sud.

## Introduction

If we include the new taxa described here, the subfamily Tetrathrombiinae comprises at present three genera and seven species:

1. *Tetrathrombium*: FEIDER, 1955:  
*T. zachvatkini* FEIDER, 1955. (type species). Host: Plecoptera. Locality: Rumania.  
*T. macronychus* FEIDER & SUCIU, 1956. Host: Tipulidae. Locality: Rumania.  
*T. gabasense* Fain & D'AMICO, 1997. Habitat: moss. Locality: Pyrenees, France.  
*T. grootaerti* sp. n. Host *Diaphorus* sp. (Diptera). Locality: Thailand.

*T. brasiliense* sp. n. Host: a Megarhine (Culicidae).  
Locality: Ihla de Maracas (Brasil)

2. *Bonithrombium* HAITLINGER, 1993  
*B. eryfilae* HAITLINGER, 1993 (type species): From plants, from Poland.
3. *Mbandakania* g.n.  
*M. congoense* sp. n. (type species): Habitat unknow. Locality: Congo-Kinshasa.

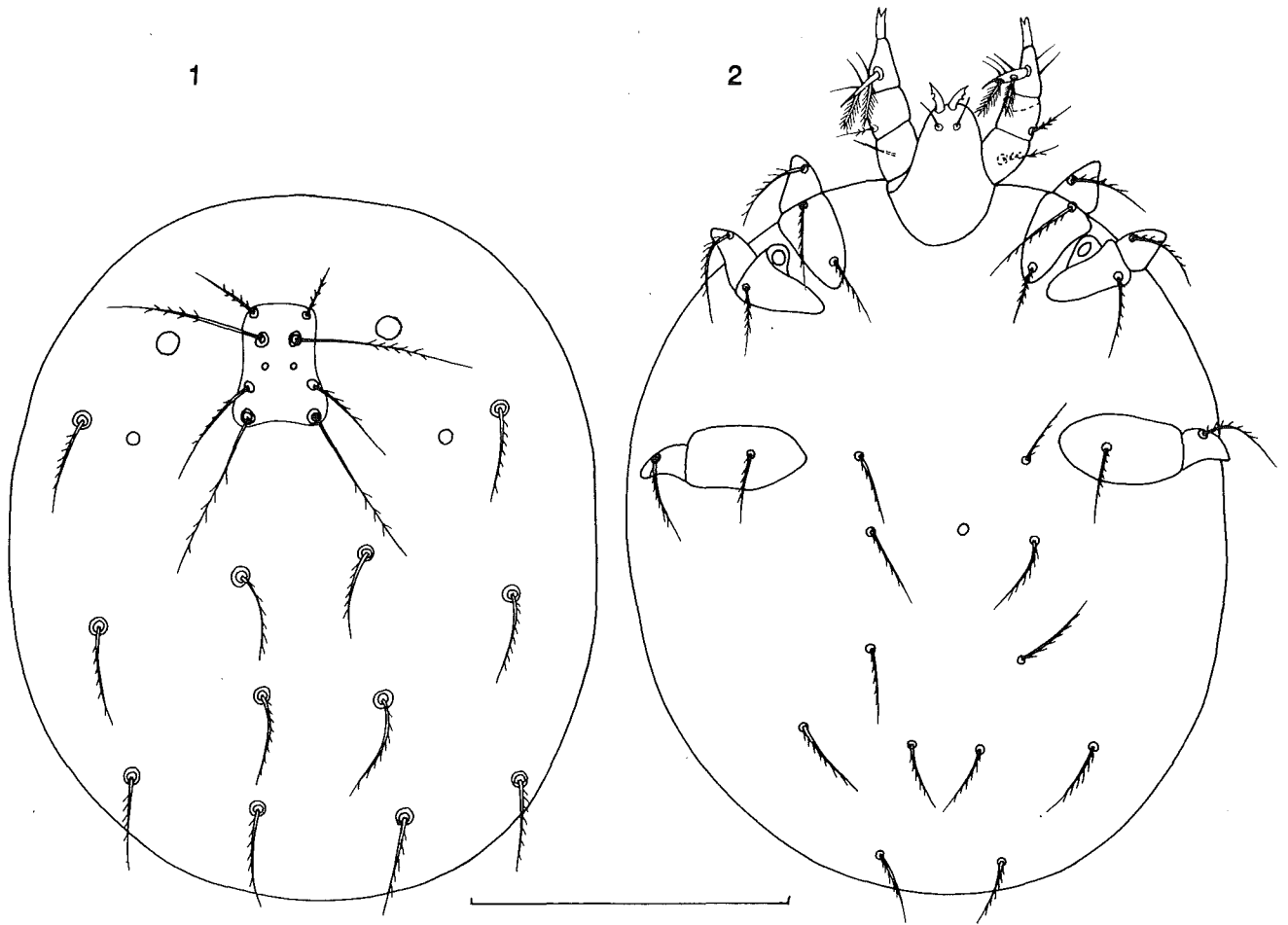
These new taxa are described in this paper.

All the measurements are in micrometers.

*Abbreviation:* IRSNB: Institut royal des Sciences Naturelles de Belgique.

## Key to the genera and species of *Tetrathrombiinae* (larvae)

1. Coxae I-III with 2-2-1 setae .....  
..... Genus *Bonithrombium* HAITLINGER, 1993  
..... One species: *D. eryfilae* HAITLINGER, 1993
- Coxae I-III with 2-1-1 setae ..... 2
2. Palptarsus with 2 bipectinate setae and one long and thick pectinate seta; palptibia with 2 apical strongly curved claws; medial seta of coxa I thicker than lateral seta and bipectinate in its median two-thirds; anterior pair of eyes much larger than posterior one and surrounded by abundant retinal pigment ..... Genus *Mbandakania* g.n.  
..... One species: *M. congoense* sp. n.
- Palptarsus with 2 bipectinate setae and without a thick and long pectinate seta; palptibia with one claw divided at apex; medial seta of coxa I not modified and similar to lateral seta; anterior pair of eyes much smaller and without retinal pigment. ... Genus *Tetrathrombium* FEIDER, 1955  
..... 3

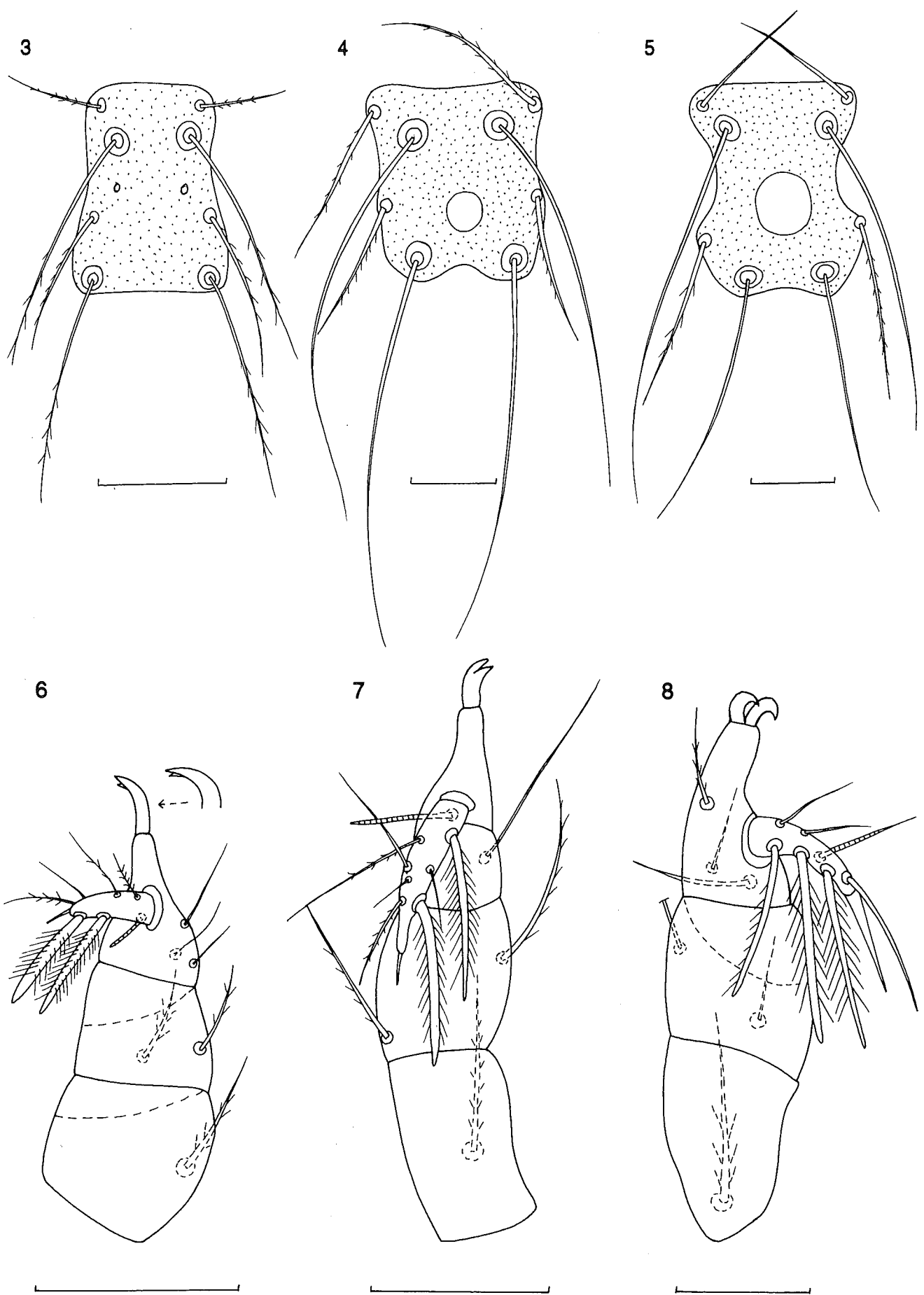


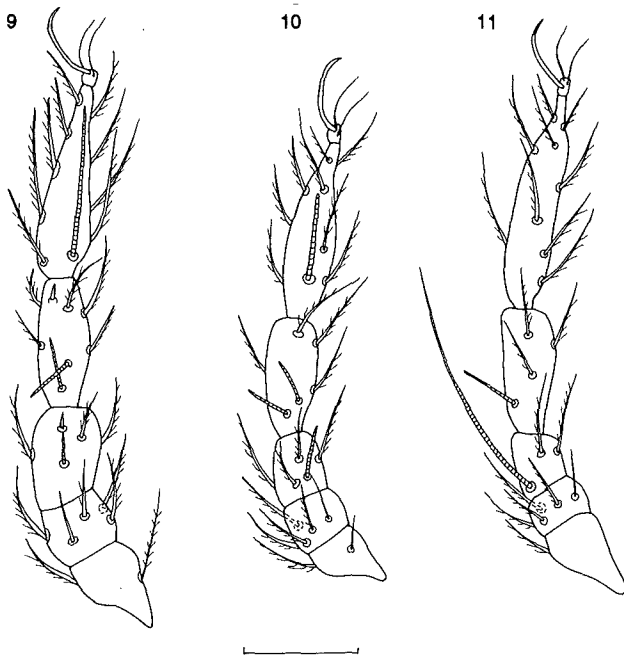
Figs 1-2. - *Tetrathrombium grootaerti* sp. n. Larva in dorsal (1) and ventral (2) view. Scale line 100 µm.

- 3. Very small species: AL 16-18; PL 24-26; AW 18-19; PW 20-22, TaI 41-43; TiI 27-29; GeI 18-21 ..... *T. grootaerti* sp. n.
- Larger species: AL30-74; PL 33-74; AW 36-56; PW 36-50; TaI 85-129; TiI 45-78; GeI 27-45 .. 4
- 4. - Empodium of legs I-III abruptly curved in its middle part; anterior and posterior claws very short; scutum longer than wide; soft cuticle of dorsum with 16 setae, of venter with 10 setae ..... *T. macronychus* FEIDER & SUCIU, 1956
- Empodium of legs I-III moderately and regularly curved; anterior and posterior claws not very short; scutum approximately as long as wide or wider than long ..... 5
- 5. Soft cuticle of dorsum with 13 setae 40-60 long, that of venter with 12 setae; scutum distinctly wider (50-55) than long (43-45); AL 48-51; apical solenidion of tibia I much longer (70-75) than corresponding tibia (51-53) ..... *T. gabasense* Fain & d'AMICO, 1997
- Soft cuticle of dorsum with 18 or 22 setae 23-45 long, venter with 10 or 8 setae; scutum about as long as wide; AL 20-36; apical solenidion of tibia I shorter than corresponding tibia ..... 6
- 6. ASE 76; PSE 63, only slightly longer than L (60); W 68; AW 56; A-P 34; TaI 116; TiI 67; GeI 42. Dorsum with 22 setae behind scutum; venter with 10 setae ..... *T. zachvatkini* FEIDER, 1955
- ASE 78-90 and PSE 72-89, about twice as long as L (39); W 39; AW 36-37, A-P 18-20, TaI 85-86; TiI 45-46, Ge 27; Dorsum behind scutum with 18 setae, venter with 8 setae. .... *T. brasiliense* sp. n.

→  
Figs 3-5. - Scutum of the larvae of *Tetrathrombium grootaerti* sp. n. (3), *T. brasiliense* sp. n. (4) and *Mbandakania congoense* sp. n. (5). Scale line 25 µm.

Figs 6-8. - Palp of the larvae of *Tetrathrombium grootaerti* sp. n. (6), *T. brasiliense* sp. n. (7) and *Mbandakania congoense* (8). Scale line 25 µm.





Subfamily *Tetrathrombiinae* SOUTHCOTT, 1987

Genus *Tetrathrombium* FEIDER, 1955

This genus included so far three species (see above). We add here two new species.

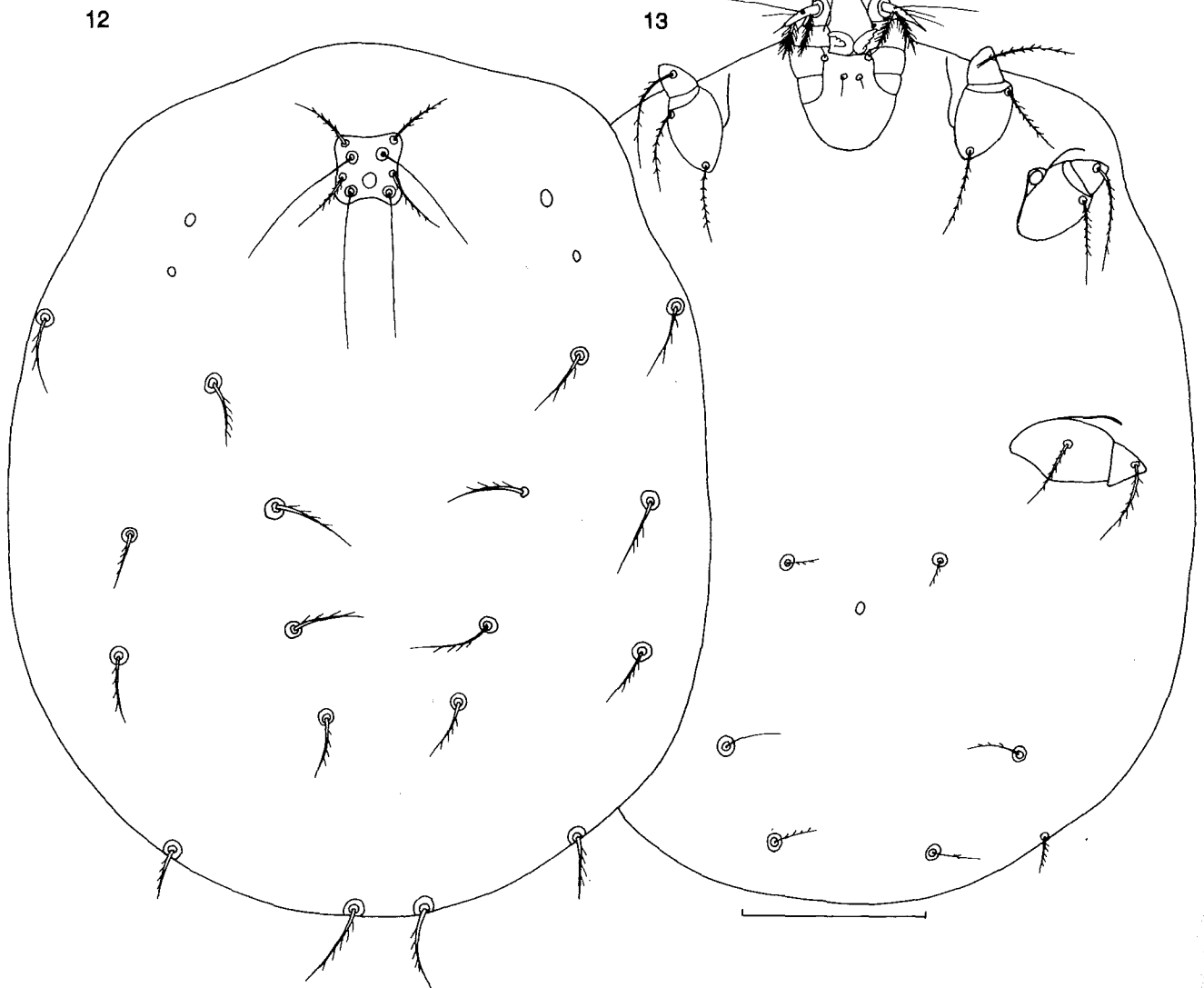
*Tetrathrombium grootaerti* spec. nov.

This species is named for Dr. P. Grootaert, IRSNB, who collected the mites.

*Larva*, holotype (figs 1-3; 6; 9-11): This species is represented by 7 larvae.



Figs 9-11. — *Tetrathrombium grootaerti* sp. n. Larva: Leg I (9) and II (10) in dorsal view; leg III (11) in dorso-lateral view. Scale line 25  $\mu$ m.



Figs 12-13. — *Tetrathrombium brasiliense* sp. n. Larva: Dorsal surface (12) and ventral surface (13). Scale line 100  $\mu$ m.

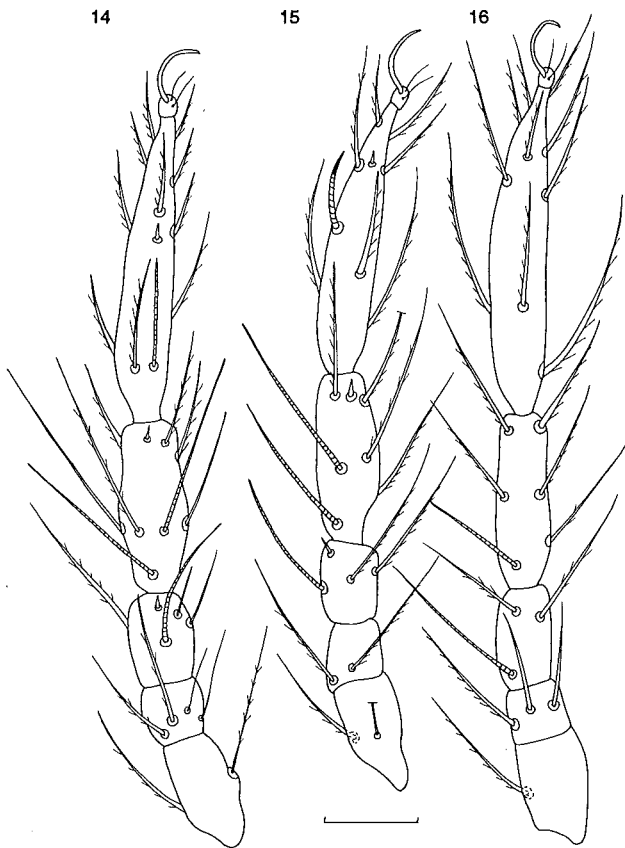
Metric data: see Table 1. Very small species, the idiosoma in the holotype is 195 long and 175 wide. *Dorsum*: Scutum distinctly longer than wide. setae AL and PL with short setules. ASE and PSE with longer setules in their apical half. A pair of small dark ringlets present between ASE and PL. Diameter of anterior eyes 9, of posterior eyes 4. Soft cuticle of dorsum with 12 setulose setae 18-25 long. *Venter*: Opisthogaster with a small uropore and 12 setulose setae 15-20 long. *Gnathosoma*: Chelicerae with a bidentate movable digit. Palps 54 long; palptarsus 16 (including the apical spiniform prolongation) bearing two strong bipectinate setae, two thinner setulose setae, 1 bare seta and a dorsal solenidion. *Legs*: Empodium of tarsi I-III moderately curved and 15 long (in straight line): anterior and posterior claws very thin, slightly curved and shorter than empodium; coxae II close to coxa I; urstigma attached to coxa II; leg segments 7-7-7. Number of setae (excluding the solenidia and other sensory setae): Trochanter 1-1-1; Basifemur 2-2-1; Telofemur 5-5-5; Genu 5-5-4; Tibiae 11-11-11; Tarsus 20-20-20. Lengths of solenidia  $\omega I$  34;  $\omega II$  22;  $\phi Ia$  and  $\phi Ib$  12;  $\phi IIa$  and  $\phi IIb$  12;  $\phi III$  15;  $\sigma I$  12;  $\sigma II$  12;  $\sigma III$  45.

*Host and locality*

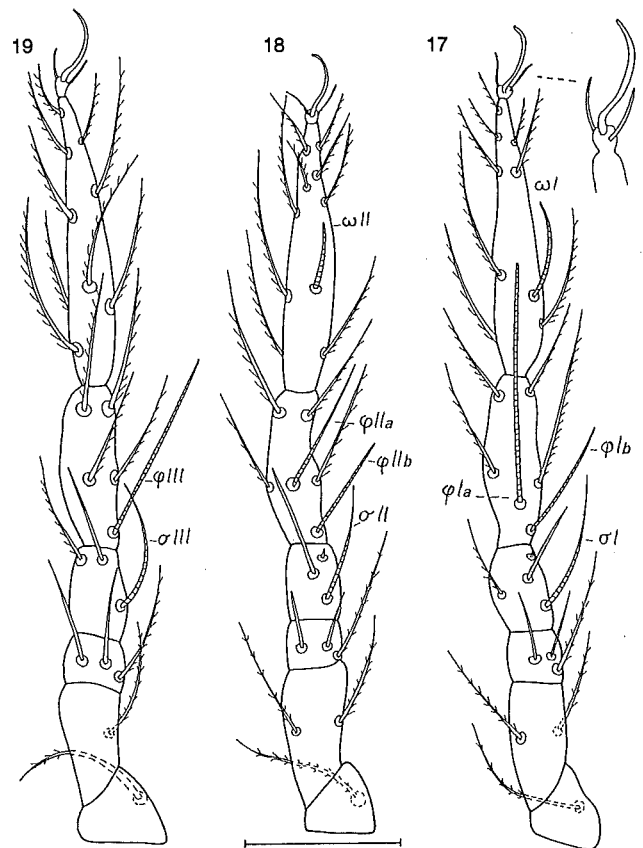
Holotype and 6 paratypes larvae from *Diaphorus* sp. (Dolichopodidae: Diptera). The mites were attached on the venter, in the anterior part of the abdomen of the fly. Locality: Thailand, Phang-nga province, Sa Naugmanora Park. (coll. P.G. 12 april 1996). Holotype and paratypes in the IRSNB.

*Tetrathrombium brasiliense* spec. nov.

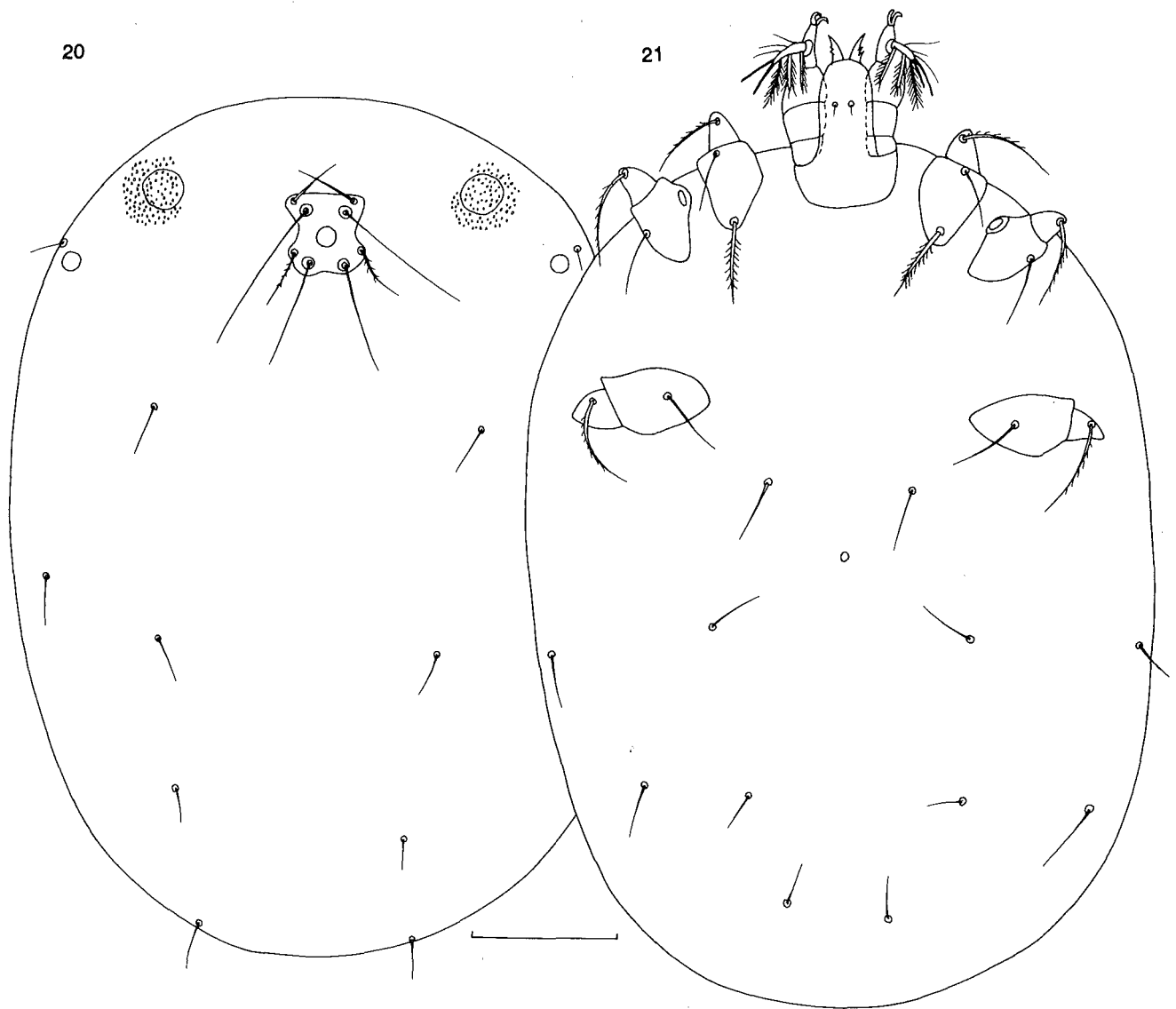
*Larva*, holotype (figs 4; 7; 12-16): Metric data, see Table 1. Length and width of idiosoma: in holotype 580 x 495, in the paratype 610 x 510 (both specimens are mounted on the same slide). *Dorsum*: Scutum poorly sclerotized, approximately as wide as long. ASE and PSE smooth, about as long as the length of the scutum; AL and PL setulose. anterior eyes slightly oval, 6 wide and 9 long, diameter of posterior eye 6. Soft cuticle of dorsum with 18 setulose setae 24 to 45 long. *Venter*: with 8 thin, shortly setulose setae. Uropore very small. Coxal setae with short setules. *Gnathosoma*: Movable digit of chelicerae with 2 teeth. Palps 80 long, palptarsus 21 long



Figs 14-16. — *Tetrathrombium brasiliense* sp. n. Larva: Leg I in dorsal view (14); legs II (15) and III (16) in dorso-lateral view. Scale line 25  $\mu$ m.



Figs 17-19. — New corrected figures of the legs of the larva of *Tetrathrombium gabasense* Fain & D'Amico, 1997: Leg I (17) and II (18) in dorsal view; leg III in dorso-lateral view (19). Scale line 50  $\mu$ m.



Figs 20-21. – *Mbandakania congoense* sp. n. Larva: Dorsal surface (20) and ventral surface (21). Scale line 100  $\mu$ m.

bearing 2 thick and long bipectinate setae 21 and 27 long, 2 setulose and 2 smooth setae and a dorso-basal solenidion. Palptibial claw with bifid apex. *Legs*: Tarsi I-III with an empodium regularly curved and about 15 long and two claws (an anterior and a posterior) much thinner and shorter. Coxae I and II widely separated. All legs with 7 segments. Number of setae on legs (excluding solenidia and other sensory setae): Trochanter 1-1-1; Basifemur 2-2-1; Telfemur 5-5-5; Genu 4-4-4; Tibia 11-10-10; Tarsus 20-19-19. Length of solenidia:  $\omega I$  36;  $\omega II$  24;  $\phi Ia$  55;  $\phi Ib$  36;  $\phi IIa$  38;  $\phi IIb$  32;  $\phi III$  42;  $\sigma I$  36;  $\sigma II$  40;  $\sigma III$  45.

*Host and locality*

Holotype and one paratype larvae, from a megarhine, from Ihla de Maracas, Brasil (Coll. Dr. P. Jolivet,

20.V.1987). Holotype and one paratype in the IRSNB.

***Tetrathrombium gabasense* Fain & d'AMICO, 1997**

The following corrections should be made in the description and the figures of that species.

The original figures and description mention the presence of two solenidia on genu I ( $\sigma Ia$  and  $\sigma Ib$ ) and genu II ( $\sigma IIa$  and  $\sigma IIb$ ). Actually these genera bear only one solenidion each, i.e.  $\sigma I$  and  $\sigma II$ ; they are represented in the original drawings by  $\sigma Ib$  and  $\sigma IIb$ . The  $\sigma Ia$  and  $\sigma IIa$  are not solenidia but smooth setae resembling superficially solenidia. I give here new corrected figures of the legs I-III (figs 17-19) of that species. Scale line 50  $\mu$ m.

Table 1. – Metric data for *Tetrathrombium grootaerti* sp. n., *T. brasiliense* sp. n. and *Mbandakania congoense* sp. n. larvae.

Characters	<i>T. grootaerti</i>					<i>T. brasiliense</i>		<i>M. congoense</i>
	Holo-type	Parat. 1	Parat. 2	Parat. 3	Mean	Holo-type	Para-type	Holotype
AW	18	18	19	18	18,2	37	36	46
PW	22	20	21	21	21	36	36	48
SBa	15	13	15	15	14,5	21	20	30
SBp	24	22	22	23	22,7	21	21	24
ISD	24	24	26	27	25,2	27	27	39
L	36	36	37	38	36,7	39	39	58
W	30	29	32	32	30,7	39	39	51
L/W	1,2	1,2	1,15	1,18	1,19	1	1	1,13
AAS	5	6	7	7	6,2	9	10	11
A-P	20	20	19	21	20	20	18	34-35
AL	18	16	17	–	17	30	32	36
PL	25	24	26	24	24,7	33	33	39
ASE	42	44	42	39	41,7	90	78	102
PSE	36	35	39	36	35,5	89	72	78
DS	15-30	20-29	23-27	24-27	–	27-45	24-35	30-40
TaI	41	42	42	43	42	85	86	120
TaII	39	40	39	40	39,5	84	86	108
TaIII	40	42	40	42	41	90	88	110
TiI	28	27	29	27	27,7	46	45	78
TiII	26	26	24	24	25	40	45	63
TiIII	27	27	24	27	26,3	48	47	63
GeI	21	21	20	18	20	27	27	45
GeII	15	15	15	15	15	24	24	34
GeIII	15	15	16	16	15,5	25	27	39
FeI	30	33	31	30	31	48	48	81
FeII	30	29	30	26	28,7	51	48	63
FeIII	30	27	27	27	27,7	49	53	74

### Genus *Mbandakania* gen.nov.

**Definition:** With the characters of the genus *Tetrathrombium* (coxae with 2-1-1 similar setae, same characters of the dorsal shield, similar gnathosoma etc...). It differs from this genus by the following characters: Palptarsus with two strong bipectinate setae and a strong and long pectinate seta, palptibia ending into two strongly curved clawlike spines, medial seta of coxa I bipectinate, anterior pair of eyes very large with abundant retinal pigment.

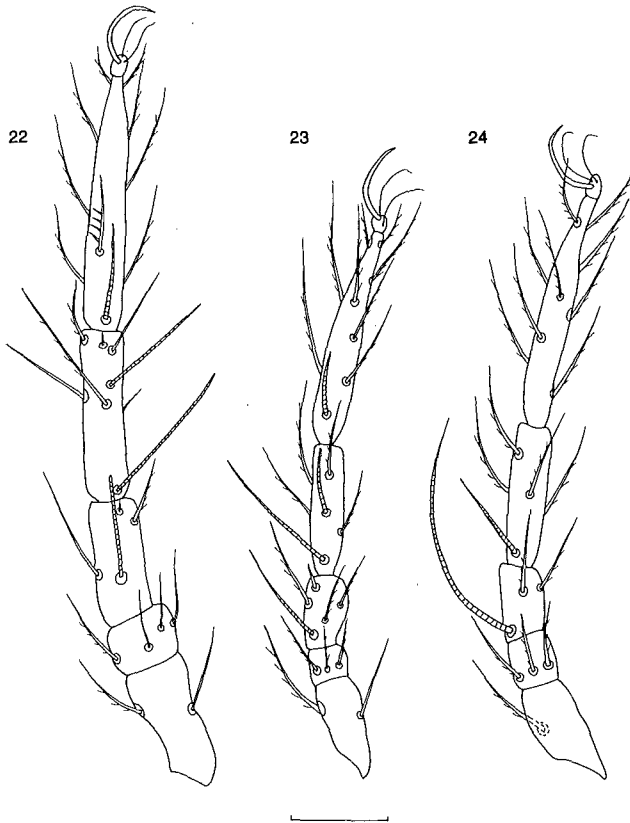
**Type species:** *Mbandakania congoense* sp. nov.

### *Mbandakania congoense* spec. nov.

**Larva, holotype** (figs, 5; 8; 20-24): Metric data: see table I. Length and width of idiosoma 660 x 550. **Dorsum:** Scutum slightly longer than wide, with a transverse constriction in its middle part. In the middle of the scutum there is a ringlike structure. ASE much longer than the

length of the shield and the PSE, both setae smooth. AL smooth, PL with poorly distinct setules. Soft skin on dorsum with 12 thin, almost smooth setae 30 to 40 long. Anterior pair of eyes 30 diameter, posterior eyes 15 diameter. Abundant retinal pigment present around anterior eyes. **Venter:** with 12 very thin and smooth setae. Uropore very small.

**Gnathosoma:** length of palps 98. Palptarsus with two large bipectinate setae, one thick and long pectinate seta, a smooth setae and a dorsal solenidion. Palptibia ending into two small strongly curved claw-like spines. **Legs:** all legs with 7 segments. Tarsi ending in a moderately curved empodium 22 to 25 long and bearing two very thin claws (anterior and posterior) 19 to 23 long. Coxae I and II separated. Number of setae (without the solenidia and other specialized setae): Trochanter 1-1-1; Basifemur 2-2-1; Telofemur 5-5-5; Genu 4-4-4; Tibia 10-10-10; Tarsus 20-20-20. Tarsi IV bears dorsally, in the basal part of the segment, a strong seta with 5 heavy setules. **Solenidia:**  $\omega I$  52;  $\omega II$  28;  $\phi Ia$  60;  $\phi Ib$  80;  $\phi IIa$  38;  $\phi IIb$  75;  $\phi III$  42;  $\sigma I$  48;  $\sigma II$  45;  $\sigma III$  105.



Figs 22-24. — *Mbandakania congoense* sp. n. Larva: Legs I (22) and II (23) in dorsal view; leg III (24) in dorso-lateral view. Scale line 50  $\mu$ m.

#### Habitat

Holotype and only known specimen, from an unidentified host. Locality: Bamania, Mbandaka, Equatorial Province,

Congo-Kinshasa (Coll. A. Fain, VI.1979). Holotype in the Musée royal de l'Afrique Centrale, Tervuren.

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