

***EUDUSBABEKIA (SYNOECOMYOBIA) ARTIBEI*, NEW SUBGENUS,
NEW SPECIES (ACARINA: PROSTIGMATA: MYOBIIDAE),
INFESTING THE PHYLLOSTOMID BAT
ARTIBEUS PHAEOTIS IN PANAMA**

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Abstract. *Eudusbabekia (Synoecomyobia) artibei*, a new subgenus and new species of myobiid mite found on a Panamanian *Artibeus phaeotis*, a bat of the family Phyllostomidae, is described and illustrated. In addition, the subgenera *Eudusbabekia* and *Synoecomyobia* are established.

The specimens on which this paper is based were found by one of us (E.M.) in a cluster within a tumorlike skin formation on the chin of an adult female *Artibeus phaeotis*. Adults of both sexes, nymphs, larvae and eggs were examined. The adults and the immature forms adhered to the skin surface of the sparsely haired area and were not attached to hairs, as is common in species in nearly all the genera of the family. However, several eggs were found individually attached to hairs.

It is probable that the entire life cycle of this mite is carried on within the boillike lesion and that the original penetration of the skin is accomplished by a gravid female through a hair follicle. It may be presumed that after the eggs are laid and the larvae hatch, further development of the mites influences the growth of the tumor. The swelling was found raised and indurated, having a diameter of approximately 2.5 mm and a small central opening, facilitating free respiration by the mites. There was no evidence of suppuration or necrosis and the whole area appeared dry and clean. Although the pathology of the tumor appeared minor, it is very likely that the inflammation of the area and the activity of the mites produced some irritation to the host.

The adults of the new taxon share a number of characteristics with the 26 described species of the genus *Eudusbabekia* Jameson, 1971. However, they display the following morphological and biological differences: the possession of short, thick legs II-IV; short strong claws; brief lateral setae 5; and clasping tubercle of genu I projected ventrally. In addition, the life cycle lacks the tritonymphal stage and the behavior is different. The differences outlined prompt the redefinition of the genus *Eudusbabekia*. It has been also necessary to define in this paper 2 subgenera in order to accommodate the new species.

The discussion included below contains comparative features, presented at generic

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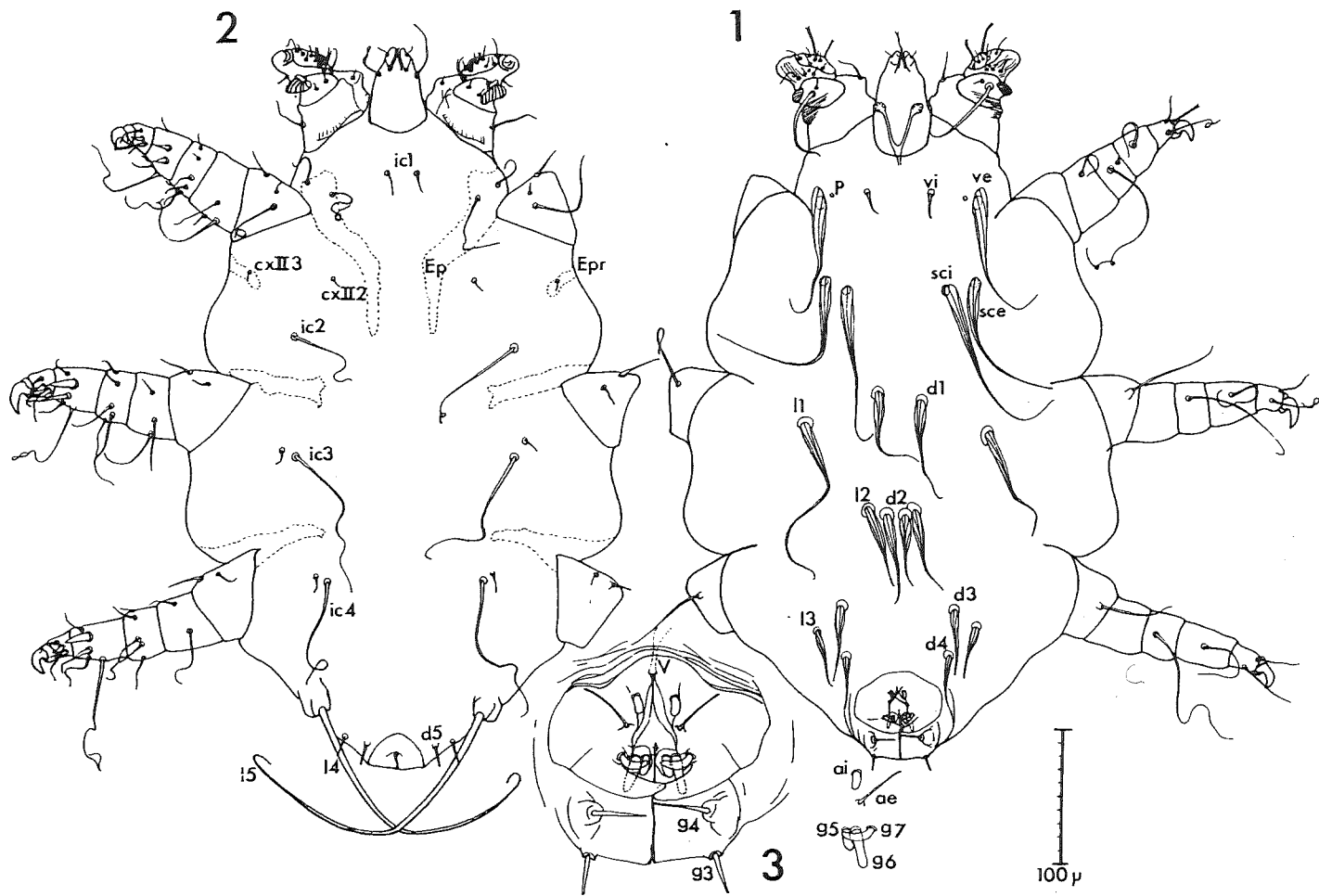


FIG. 1-3. *Eudusababekia* (*Synoecomyobia*) *artibeii*, ♀: 1, holotype dorsum; 2, holotype venter; 3, genital region of paratype.

TABLE 1. Chaetotaxy measurements (in μm) of *E. (S.) artibeii* adults.

	♀		♂	
	Holotype	Paratypes (<i>n</i> = 10)	Allotype	Paratypes (<i>n</i> = 4)
<i>ic1</i>	26	24(22-26)	11	12(10-16)
<i>ic2</i>	105	102(91-112)	94	88(79-94)
<i>ic3</i>	136	131(112-149)	119	112(97-130)
<i>ic4</i>	131	134(125-146)	128	128(109-143)
<i>cxII2</i>	76	68(62-76)	29	34(31-37)
<i>vi</i>	18	17(15-18)	6	6(6-6)
<i>ve</i>	125	107(94-116)	94	85(82-91)
<i>sci</i>	131	127(119-134)	2	2(2-3)
<i>sce</i>	149	136(131-140)	149	146(137-152)
<i>d1</i>	79	80(73-91)	9	9(9-9)
<i>d2</i>	70	75(64-68)	—	—
<i>d3</i>	67	65(61-67)	13	16(12-18)
<i>d4</i>	40	47(40-64)	18	21(15-24)
<i>d5</i>	18	17(15-18)	—	—
<i>l1</i>	146	150(146-155)	158	153(146-161)
<i>l2</i>	58	55(49-64)	36	27(24-30)
<i>l3</i>	46	61(48-67)	24	24(21-27)
<i>l4</i>	18	17(15-18)	—	—
<i>l5</i>	125	135(125-146)	149	148(143-155)
<i>g3</i>	12	13(12-15)	—	—
<i>g4</i>	18	17(15-18)	—	—

and subgeneric levels, of myobiids parasitizing bats. The setal nomenclature followed is that of Fain (1973b). All measurements are in micrometres, with those of holotype, allotype or figured specimen followed in parentheses by mean and range for paratypes.

Genus *Eudusbabekia* Jameson

Jamesonia Dusbábek, 1967: 247; 1969: 9 (preoccupied).

Eudusbabekia Jameson, 1971: 513 (new name).—Dusbábek & Lukoschus, 1974: 477.

Body short, stout. Setae *vi* short, setiform, *sci* more lateral and closer to *sce* than in other genera. Legs I consist of 4 segments, without terminal claws. Intercostal setae 1 in transverse line with coxal setae and shorter than 1st coxal seta. Femur I with blunt sensory seta and a shell-like formation ventrally. Tibia and tarsus I completely fused, with a shell-like formation ventroapically. In rank of coxal II setae, 2nd seta lies at level of 3rd seta and more medially and anteriorly than *ic2*. Vulva with 2 vulvar valves, setae *g7* on sides of vulvar valves but never on posterior end of valves, mostly thickened, imitating genital hooks. Setae *ai*, *g5* and *g6* around vulvar opening broadened and specialized. Male genital plate situated at level of *sce* or *ve*. Penis straight, slender, tapering to end, directed forwards. Basis of penis broad, bifurcated, continuing in spermatid duct. Gnathosoma conical or rectangular, palpal hooks well developed, but very fine. Formula of nymphal claws 0-1-1-1. No sexual dimorphism in developmental stages has been observed.

Type-species: *Jamesonia danieli* Dusbábek, 1967.

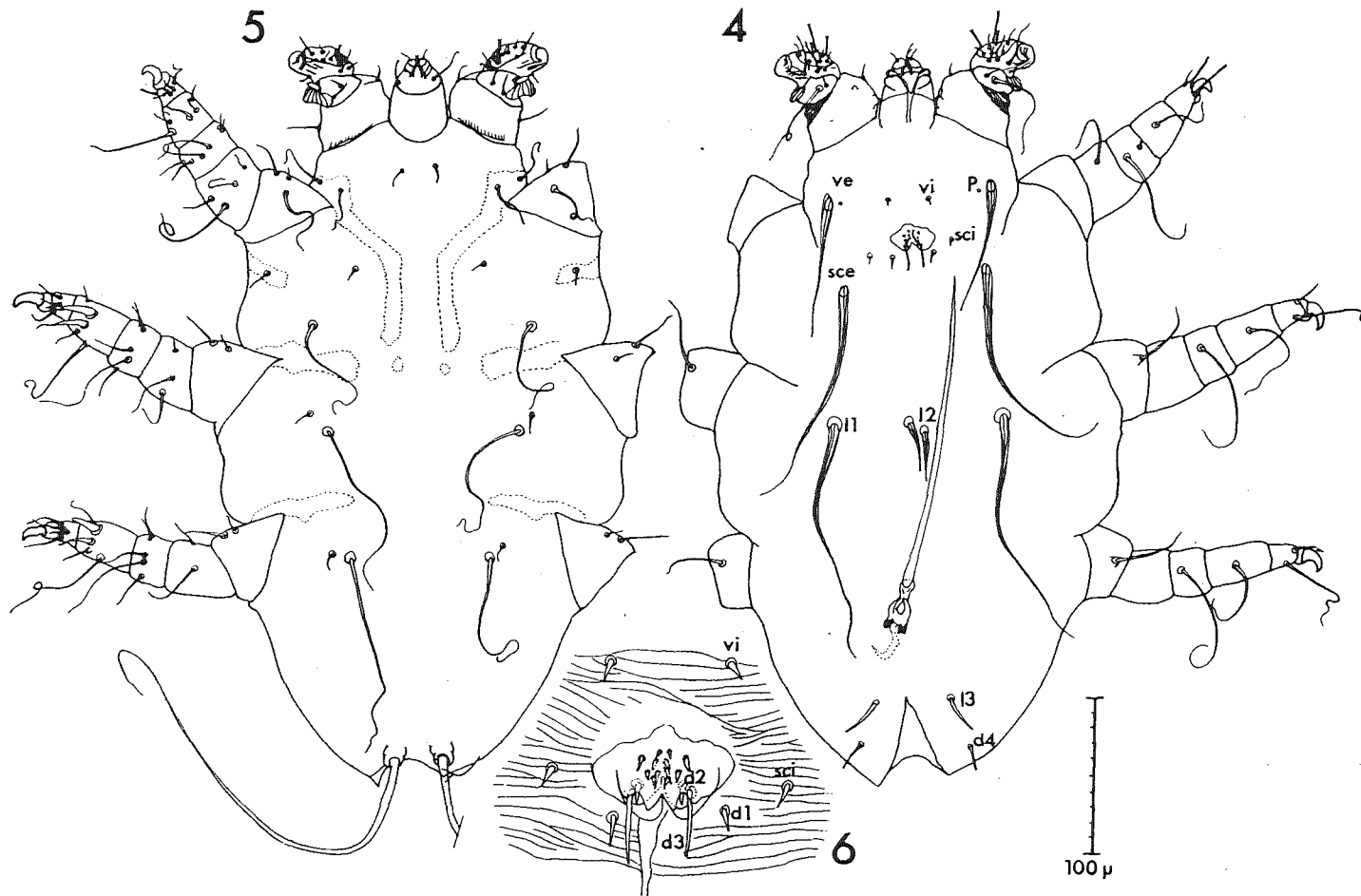


FIG. 4-6. *Eudusbabekia (Synoecomyobia) artibeii*, ♂: 4, allotype dorsum; 5, allotype venter; 6, genital region.

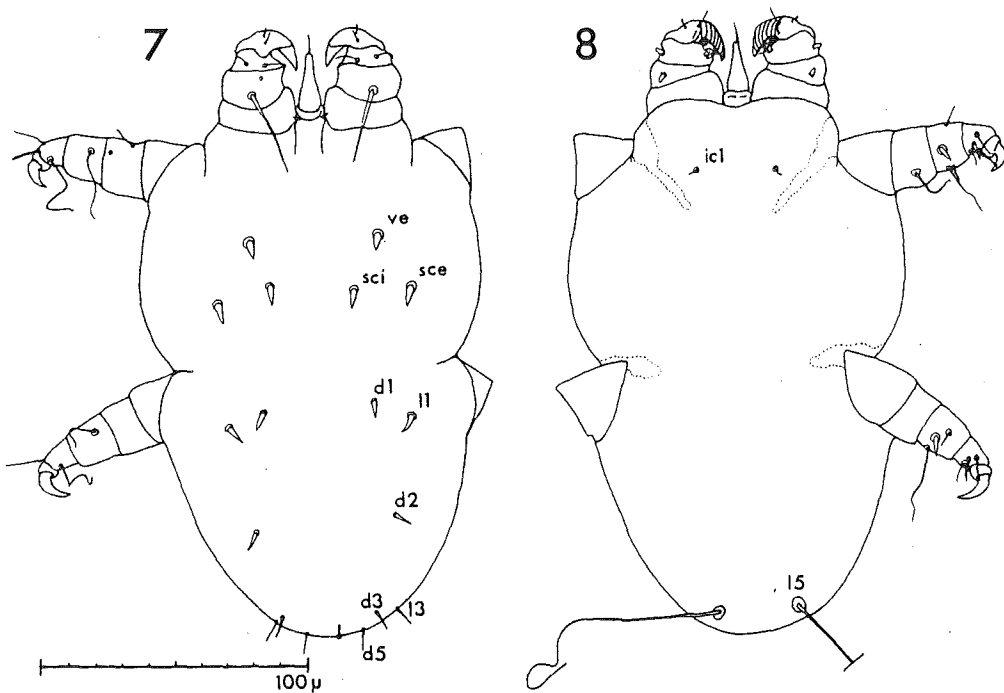


FIG. 7-8. *Eudusbabekia (Synoecomyobia) artibeii*, larva: 7, dorsum; 8, venter.

Eudusbabekia, new subgenus

Dorsal setae mostly expanded and striated, several setae in *d* and *l* series blunt, with barb or lateral bulbous protrusion. Clasp ing tubercle on genu I directed anteriorly. Legs II-IV normal, slender. Tarsus II-IV generally each with 1 long straight claw; 2nd claw completely reduced in majority of species, but in several species a rudimentary 2nd claw on tarsus III and IV is developed. Laterals 5 longer than $\frac{3}{8}$ of body length. Tritonymphal stage present (as far as developmental stages have been observed). Dorsal propodosomal setae of nymphs long, flattened. Eggs deposited singly.

Type-species: *Jamesonia danieli* Dusbábek, 1967.

Synoecomyobia, new subgenus

Dorsal setae strong, with whiplike terminal portion, striated, rounded, not flattened. Tarsus II-IV each with 1 strong, short and curved claw. Clasp ing tubercle on genu I directed ventrally. Legs II-IV relatively short and stout. Laterals 5 shorter than $\frac{1}{2}$ body length. Tritonymphal stage absent. Dorsal propodosomal setae of nymphs short conical spines. Eggs deposited in clusters.

Type-species: *Eudusbabekia (Synoecomyobia) artibeii*, n. sp.

***Eudusbabekia (Synoecomyobia) artibeii* Lukoschus, Scheperboer, Méndez & Fain,
new species** Fig. 1-10

♀ (Fig. 1-3). Large broad species with characteristics of genus and subgenus. Holotype length 533 (536, 517-551, $n = 10$); width 321 (349, 315-394). Greatest width between legs III and IV. Dorsum (Fig. 1)

TABLE 2. Chaetotaxy measurements (in μm) of *E. (S.) artibeii* immatures.

	DEUTONYMPH		PROTONYMPH PARATYPES (n = 10)	LARVA	
	Spec. in Fig. 9-10	Other paratypes (n = 5)		Spec. in Fig. 7-8	Other paratypes (n = 10)
<i>icl</i>	6	6(5-6)	5(4-5)	4	5(4-5)
<i>ic2</i>	7	6(5-6)	4(4-5)	—	—
<i>ic3</i>	7	7(6-7)	5(5-6)	—	—
<i>ic4</i>	6	7(6-7)	—	—	—
<i>cxI</i>	13	13(12-15)	8(7-11)	—	—
<i>cxII</i>	4	4(4-4)	—	—	—
<i>ve</i>	7	8(7-9)	7(6-9)	7	7(6-7)
<i>sci</i>	7	8(7-10)	7(6-10)	7	7(6-9)
<i>sce</i>	11	12(11-12)	9(9-10)	9	8(7-10)
<i>d1</i>	7	7(6-7)	7(7-7)	7	7(6-7)
<i>d2</i>	7	7(6-9)	7(6-9)	7	7(6-9)
<i>d3</i>	9	7(7-8)	7(6-8)	7	7(6-8)
<i>d4</i>	11	9(9-10)	8(7-9)	—	—
<i>d5</i>	9	7(6-9)	7(6-9)	7	7(6-8)
<i>l1</i>	10	10(9-12)	9(7-10)	8	8(6-10)
<i>l3</i>	9	8(7-10)	8(7-10)	8	8(7-9)
<i>l4</i>	10	10(9-11)	—	—	—
<i>l5</i>	143	165(128-188)	130(112-146)	107	122(105-143)

with strong, striated setae tapering to whiplike tip, less flattened than in typical subgenus. Laterals and dorsals 2 closely joined together in species typical rank. Gnathosoma conical, with 2 pairs of ventral setae and 1 pair of slender dorsal setae, 2-segmented palps with fine palpal hooks, and 1 seta on each segment. Genital region (Fig. 3) with large vulvar valves, having broadened *g7* on inner lateral side. Vulva (V) surrounding setae *ai*, *g5*, *g6*, broadened as in most species of typical subgenus. Genital cone with styletlike *g4* and *g3*. Duct from vulvar opening to receptaculum seminis chitinized only in last portion. Legs I with broad trochanter but without trochanter hooks, clasping tubercle of genu directed ventrally. Other characteristics as in typical subgenus. Legs II-IV with single short, stout and curved claws. Legs II-IV relatively short and stout, with femora and genua shorter than broad. Tibiae and tarsi each with 2 spinelike setae. Chaetotaxy: tarsi 6-6-6-6; tibiae 6-6-6-6; genua 6-7-6-6; femora 5-5-3-3; trochanters 3-3-3-3; coxal fields 3-3-2-2. Solenidiotaxy: tarsi 3-2-0-0; genua 1-1-0-0. Solenidia bifurcated on tarsus I and on ventral side of tarsus II. Venter (Fig. 2) showing distinct epimera I-IV (Ep); in addition, short epimerites (Epr) are present on coxal region II. Intercoxal setae 1 shorter than *cxII* and at level of coxal setae. Setae *l4* and *d5* outside of genital cone oriented ventrocaudally. *cxII2* more mediad than *ic2*. Laterals 5 on small tubercles relatively feeble and distinctly shorter than $\frac{1}{2}$ body length. Setal measurements are given in Table 1.

δ (Fig. 4-6). Allotype length 442 (450, 431-467, $n = 4$); width 241 (246, 236-261). With 6 pairs of genital setae, having *d2* and *d3* located in fold beneath this plate and shifted forwards by translocation of genital region. Penis length 198 (200, 189-204). This structure long, with bifurcated base and partly chitinized spermal duct. Legs similar to η in chaetotaxy, solenidiotaxy and shape; however, dorsomedian setae on tarsi I and II thick, with blunt apex. Venter (Fig. 5) without remarkable differences from η .

Egg. Without shell pattern, 213-220 long and 108-122 wide.

Prelarva. Within egg shell. Showing transverse fine striation, 2 strongly chitinized spearlike horns dorsally, and ventral small duct running almost to caudal end.

Larva (Fig. 7-8). Length 241 (241, 206-273, $n = 10$); width 145 (127-164). Chaetotaxy of dorsum (Fig. 7): *ve*, *sci*, *sce*, dorsal 1, 2, 3, 5, laterals 1 and 3. Chaetotaxy of venter (Fig. 8): laterals 5 and *icl*. Legs I symmetrical, legs II and III with short strong single claws. Chaetotaxy of legs: tarsi 2-6-6; tibiae 4-5-4; genu-femora 2-2-0; trochanters 0-0-0; coxal fields 1-0-0. Solenidiotaxy as in adults. Setal measurements are given in Table 2.

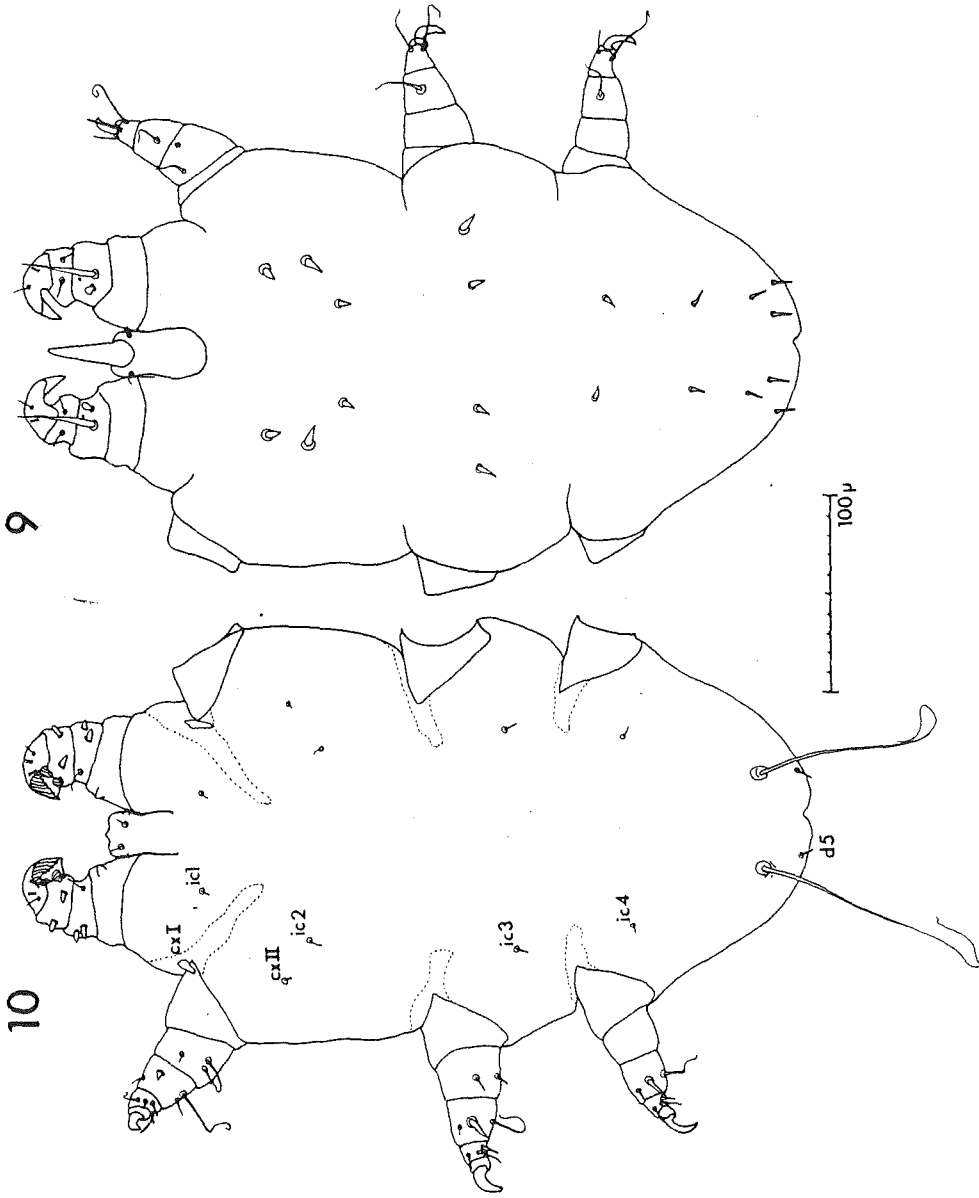


FIG. 9-10. *Eulusabekia (Synoconyobia) artibeii*, deutonymph: 9, dorsum; 10, venter.

TABLE 3. Comparative features of myobiid taxa found on phyllostomid bats.

	<i>Ioannela</i>	<i>Phyllostomyobia</i>	<i>Eudusbabekia</i>	<i>Synoecomyobia</i>
Leg I segments	5	4	4	4
Clasping tubercle on genu I	forward	ventral	forward	ventral
Claws				
Leg I	1	0	0	0
Legs II-IV	2	2	1*	1
Shape	short, stout	slender	slender	short, stout
Curve	slight	slight	slight	strong
Setae				
<i>sci</i>	minute	minute	foliate** striated	thick striated
Ratio 15 to idiosoma length	ca. 2/3	ca. 2/3	2/3	1/2
<i>ai</i> , <i>g5</i> , <i>g6</i>	setiform	setiform	modified	modified
Nymphs				
Legs I	asymmetrical	asymmetrical	symmetrical***	symmetrical
Claw formula	0-2-1-1	0-2-1-1	0-1-1-1	0-1-1-1
Scapular setae	absent	?	foliate†	conical spines

* In 3 species rudimentary 2nd claw present on legs III, IV.

** With exception of *E. cernyi* (Dusbábek, 1967).

*** With exception of *E. arganoi* (Vomera, 1972).

† With exception of *E. arganoi*.

Protonymph. Length 306 (236-400, $n = 19$); width 185 (152-242). Like larva and deutonymph but having a 4th pair of legs with strong claws, setae *d4*, *cxII*, *ic2* and *ic3*. Chaetotaxy of legs: tarsi 2-6-6-6; tibiae 5-5-4-4; genu-femora 4-4-1-0; trochanters 0-0-0-0; coxal fields 2-1-1-0. Solenidiotaxy as in adults. Setal measurements are given in Table 2.

Deutonymph (Fig. 9-10). Length 345 (390, 333-490, $n = 6$); width 212 (231, 206-273). In addition to chaetotaxy typical of protonymph, setae *l4*, *ic4*, and *cxII* are also present. Chaetotaxy of legs: tarsi 2-6-6-6; tibiae 5-5-4-4; genu-femora 4-4-2-0; trochanters 0-0-0-0; coxal fields 2-2-1-1. Solenidiotaxy as in adults. Setal measurements are given in Table 2.

Tritonymph. Absent in this species. Adults develop within deutonymph.

Type data. 19 adults (including holotype ♀ and allotype ♂), 39 nymphs, 39 larvae, 242 eggs, from *Artibeus phaeotis*, PANAMA: Province of Panama, Altos de Maje, 7.I.1977, E. Méndez. All specimens were found within a gall-like skin formation on the bat's chin.

Holotype and allotype are deposited in the U.S. National Museum of Natural History, Washington, D.C. (type collection No. 3979). Paratypes will be distributed among the following institutions: Field Museum of Natural History, Chicago; Acarology Laboratory, Columbus, Ohio; Rijksmuseum van Natuurlijke Historie, Leiden, The Netherlands; Gorgas Memorial Laboratory, Panama City; Institut de Médecine Tropicale Prince Léopold, Antwerp, Belgium; British Museum (Natural History), London; Zoologisches Institut und Zoologisches Museum, Hamburg; Institute of Parasitology, Czechoslovak Academy of Sciences, Prague; and in collections of authors.

Remarks. *Artibeus phaeotis* has been found to be also parasitized by *Eudusbabekia vigerasi* (Dusbábek, 1967), which is apparently more commonly found on this host.

Synoecomyobia, new subgenus, shares with the genera *Xenomyobia* Fain & Lukoschus, 1976a, *Nectogalobia* Fain & Lukoschus, 1976b, *Pteracarus* Jameson & Chow, 1952, and *Hipposiderobia* Dusbábek, 1968, the following combination of characters: short, broad body, relatively short and stout legs II-IV, and strongly curved claws. Mites of these genera are known to attach to the host's skin surface in sparsely haired areas rather than affixing themselves along the hairs. Morphological adaptations to such a habitat are evident.

GENERAL DISCUSSION

Bats of the Neotropical family Phyllostomidae are host to 3 genera of Myobiidae; *Eudusbabekia* Jameson, 1971 (26 species), *Phyllostomyobia* Fain, 1973 (3 species) and the monotypic *Ioannela* Dusbábek and Lukoschus, 1973. These genera appear to be family-specific. Only 1 species, *Eudusbabekia arganoi* Vomera, 1972, is parasitic on the common vampire bat, *Desmodus rotundus*. Systematically, vampire bats are placed by some authors as a subfamily within the family Phyllostomidae, while others regard them as members of the family Desmodidae.

Some characteristics of genera and subgenera of myobiid mites parasitic on bats of the family Phyllostomidae are given in Table 3.

LITERATURE CITED

- Dusbábek, F.** 1967. *Jamesonia*, a new genus (Acarina: Myobiidae) with seven new species from Cuban bats. *Folia Parasitol. (Prague)* 14: 247-61.
 1968. Some genera and species of myobiid mites (Acarina). *Folia Parasitol. (Prague)* 15: 359-76.
 1969. Generic revision of the myobiid mites (Acarina: Myobiidae) parasitic on bats. *Folia Parasitol. (Prague)* 16: 247-61.
- Dusbábek, F. & F. S. Lukoschus.** 1973. Parasitic mites of Surinam. XXIII. *Ioannela martae*, new genus and new species (Acarina: Myobiidae) from a phyllostomid bat. *Zool. Anz. Leipzig* 191: 108-13.
 1974. Parasitic mites of Surinam. XXVI. Mites of the genus *Eudusbabekia* (Myobiidae: Trombidiformes) of the leaf-nosed bat subfamily Phyllostominae. *Acarologia* 16: 476-99.
 1975. Parasitic mites of Surinam. XXXIV. Mites of the genus *Eudusbabekia* (Myobiidae: Trombidiformes) of phyllostomid and demodontid bats, with a key to the known species. *Acarologia* 17(2): 306-19.
- Fain, A.** 1972. Diagnoses de nouveaux Myobiidae (Acarina: Trombidiformes). *Rev. Zool. Bot. Afr.* 86(1-2): 148-57.
 1973a. Nouveaux taxa dans la famille Myobiidae (Acarina: Trombidiformes). *Rev. Zool. Bot. Afr.* 87(3): 614-21.
 1973b. Notes sur la nomenclature des poils idiosomaux chez les Myobiidae avec description de taxa nouveaux (Acarina: Trombidiformes). *Acarologia* 15: 279-309.
 1978. Mites of the family Myobiidae (Acarina: Prostigmata) from mammals in the collection of the British Museum (Natural History). *Bull. Br. Mus. (Nat. Hist.), Zool.* 33(3): 193-229.
- Fain, A. & F. S. Lukoschus.** 1976a. A new genus and species of Myobiidae from the marsupial *Lestorus inca* (Acarina: Prostigmata). *Acarologia* 18: 489-95.
 1976b. Observations sur les Myobiidae d'Insectivores avec description de taxa nouveaux (Acarina: Prostigmata). *Acta Zool. Pathol., Antwerp.* 66: 121-88.
- Jameson, E. W., Jr.** 1971. Comments on *Eudusbabekia*, new name (*Jamesonia* Dusbábek, 1967, preoccupied), with two new species (Acarina: Myobiidae). *J. Med. Entomol.* 8: 513-18.
- Vomera, V.** 1972. A new species of *Jamesonia* Dusbábek, 1967 (Acarina: Trombidiformes: Myobiidae) parasitic on the vampire bat *Desmodus rotundus*, with a description of the nymphal and larval stages. *Probl. Attuali Sci. Cult.* 171: 157-72.