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The labidocarpine mites (Acari, Chirodiscidae) from oriental bats. III. Genera *Paralabidocarpus* Pinichpongse, 1963, *Labidocarpoides* Fain, 1970, *Labidocarpus* Trouessart, 1895 and *Alabidocarpus* Ewing, 1929

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Summary

Four genera of Labidocarpinae (Listrophoroidea, Chirodiscidae), parasitic on oriental bats are revised: *Paralabidocarpus* Pinichpongse, 1963, *Labidocarpoides* Fain, 1970, *Labidocarpus* Trouessart, 1895 and *Alabidocarpus* Ewing, 1929. These genera are represented in oriental bats by 28 species of which five are new. These mites live attached to the hairs of their host (fur-mites). They are low grade pathogens and are generally well tolerated by their hosts. The holotypes of all these species, except that of *Alabidocarpus fujii* Wada which was not available, have been examined.

The genus *Alabidocarpus* is represented by 11 species, of which one is new, *A. scutellatus* n.sp. The subspecies *A. megalonyx lankadivae* Fain is elevated to the species level. Among the six species of the genus *Paralabidocarpus* two are new, *P. megaderma* n.sp. and *P. aselliscus* n.sp. In the genus *Labidocarpus* there are eight species, of which two are new, *L. acuminatus* n.sp. and *L. hongkongensis* n.sp. The genus *Labidocarpoides* contains three species. The monotypic genus *Schizolabicarpus* Fain, 1976 is synonymized with *Labidocarpus*. New descriptions and figures are given for all but four of these species which have already been fully described. Keys are given to all these genera.

Introduction

The subfamily Labidocarpinae contains all the species of Chirodiscidae living on bats. They belong to 13 genera, of which 11 are represented in the Oriental Region: *Labidocarpus* Trouessart, 1895, *Labidocarpoides* Fain, 1970, *Alabidocarpus* Ewing, 1929, *Olabidocarpus* Lawrence, 1948, *Paralabidocarpus* Pinichpongse, 1963, *Dentocarpus* Dusbabek & Cruz, 1966, *Parakosa* McDaniel & Lawrence, 1962, *Afrolabidocarpus* Fain, 1970, *Asiolabidocarpus* Fain, 1972, *Labidocarpellus* Fain, 1976 and *Pteropiella* Fain, 1970.

The genera *Asiolabidocarpus*, *Afrolabidocarpus* and *Parakosa* have been revised recently (Fain, 1980, 1981). In the present paper four other genera are revised: *Alabidocarpus* Ewing with 11 species of which one is new, *Paralabidocarpus* Pinichpongse with six species of which two are new, *Labidocarpus* Trouessart with eight species of which two are new and *Labidocarpoides* Fain with three species. Moreover, the subspecies *Alabidocarpus megalonyx lankadivae* Fain is elevated to the species level, and the monotypic genus *Schizolabicarpus* Fain, 1976 is synonymized with *Labidocarpus*.

Most of these species have, to date been only briefly described without figures, and they are therefore difficult to identify with certainty. These descriptions are completed here and figures are given for the first time. In addition, five new species are described. Keys to females are given for the four genera studied.

The nomenclature of the idiosomal setae proposed previously (Fain, 1963, 1971) is used here. The length of the body includes the palps, the width is the maximum width.

Abbreviations of the Institutions where the types have been deposited are: BM = British Museum, Natural History, London; BMH = Bishop Museum, Honolulu, U.S.A.; IRSNB = Institut royal des Sciences naturelles, Belgium.

Genus *Paralabidocarpus* Pinichpongse, 1963

This genus is well characterized by the presence of a pedunculate sucker on the legs III and IV, in both sexes. In all the other genera of Labidocarpinae these suckers are lacking either on legs IV or on legs III and IV. This genus may therefore be considered as the most primitive (less regressed) of all the genera of the subfamily (e.g. *Labidocarpus*, *Labidocarpoides*, *Alabidocarpus*, etc.) As a matter of fact this genus is found on some of the most primitive families of Microchiroptera (Emballonuridae, Megadermatidae, Nycteridae, Hipposideridae, Phyllostomatidae and Desmodontidae). It is not known from Vespertilionidae or Molossidae.

This genus is represented in the world by 17 species, of which ten live on South American bats (six species on Phyllostomatidae, one species on Desmodontidae, one species on Emballonuridae and two species on Furipteridae), six on oriental bats (three on Megadermatidae, three on Hipposideridae, one of which lives also on Rhinolophidae) and one on an African nycterid.

Key to the oriental species of *Paralabidocarpus* (females)

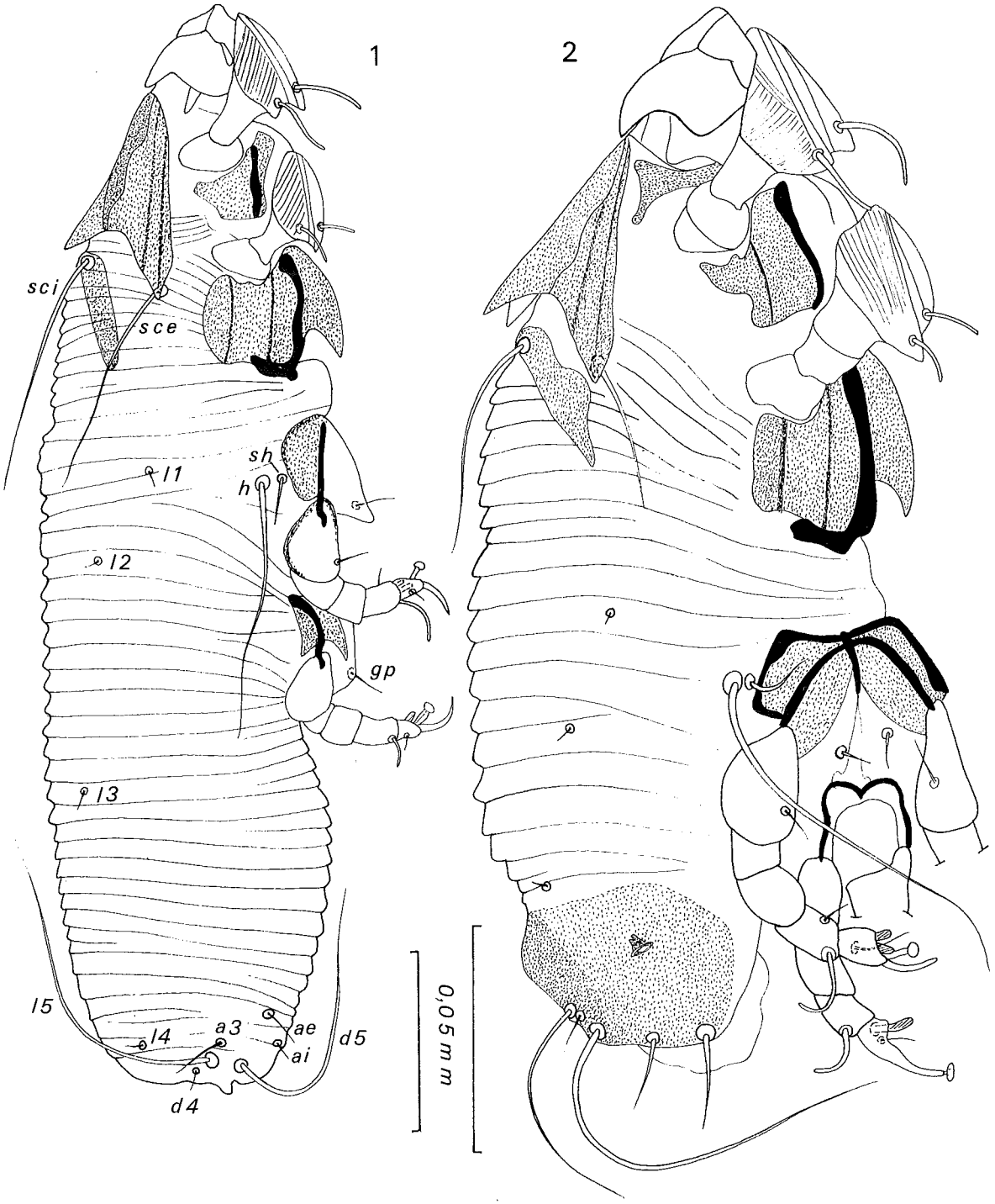
(N.B. The female of *P. megaderma* is unknown)

1. Coxae II very long, much longer than wide, arriving close to *h* setae . . . . . *P. coxatus* Fain, 1979
   Coxae II not abnormally long, remaining far from *h* setae 2
2. Coxa II with a ventral conical process directed posteriorly. Gnathosoma strongly convex with 2 posterior paramedian conical processes. Small median postscapular poorly sclerotized plate in the shape of an inverted U present . . . . . *P. dentatus* Fain, 1972
   Coxa II without a ventral conical process. Median inverted U-shaped postscapular plate absent 3
3. Coxae II small, with a long and narrow anterolateral sclerotized prolongation longer than the width of coxa. Setae *sh* long. Gnathosoma not convex 4
   Coxae II without a long and narrow anterolateral sclerotized prolongation. Setae *sh* very short. Gnathosoma strongly convex. . . . . *P. pilosus* Fain, 1979
4. Gnathosomal lobes well developed. Tarsi III–IV with short apical spines. Coxa I not fused with prescapular plate . . . . . *P. hipposideros* Fain, 1976
   Gnathosomal lobes very poorly developed. Tarsi III-IV with long apical spines. Coxa I fused with prescapular plate . . . . . *P. aselliscus* n.sp.

1. Paralabidocarpus dentatus Fain, 1972

Female (Fig 1): Holotype 283 μ long, 91 μ wide. In 2 paratypes: 309 × 87 μ (larvigerous) and 295 × 90 μ. There are 42 cuticular striations in midline. Gnathosoma strongly convex, with 2 large conical lobes. Prescapular plate with 4 well developed posterior lobes, the laterals broader than the paramedians, its minimum length is 39 μ between the lateral and paramedian processes and its maximum length, 57 μ along the lateral processes. There is a postscapular plate in an inverted-U, bearing the *sc i* setae, 60–70 μ long. The lateral part of this plate is about 30 μ long and 5–6 μ wide. Setae *sc e* situated on soft cuticle and 55 μ long. Plate of coxa II approximately rectangular, bearing two ventral, conical, posteriorly curved processes and laterally 2 longitudinal sclerotized thickenings. Setae *sh* 10–15 μ long, setae *h* strong, 75 to 90 μ long. Setae *d 5* and *l 5* 75 and 90 μ long respectively. Legs small, ending in small pedunculate suckers.

Male (Fig. 2): Paratype 205 μ long, 96 μ wide. There are 21 striations in midline. Gnathosoma,



Figs. 1–2. *Paralabidocarpus dentatus* Fain. Fig. 1. Female, holotype; Fig. 2 Male.

prescapular, postscapular and coxal I plates as in female. Opisthosomal plate 33 μ long (maximum length). Posterior margins of body bearing 5 pairs of setae (from dorsum to venter) 12 μ, 45 μ, 110 μ, 12 μ and 15 μ long respectively. Posterior legs well developed. Tarsus IV long and flattened and ending in a short pedunculate sucker.

Host and locality: On *Megaderma spasma*, India. Bat in the IRSNB, Brussels, Belgium (No. 202B). Holotype and 8 paratypes female, 3 paratypes male. Holotype in IRSNB.

2. *Paralabidocarpus pilosus* Fain, 1979

Female (Fig. 3, 40–41): Holotype 300 μ long, 100 μ wide. There are 40 cuticular striations in midline. Gnathosoma convex with two posterior paramedian thick lobes. Prescapular plate with 4 posterior lobes, the lateral lobes being bilobed; maximum length (along lateral lobes) 48 μ. Plate of coxa I fused to prescapular plate by a narrow strip. Plate of coxa II with a short and narrow lateral prolongation. Setae *sc i* thin, 50 μ long, situated on a narrow median punctate band; setae *sc e* thicker 75–90 μ long. Setae *h* about 80–90 μ long, *sh* very small. Posterior extremity with 7 pairs of setae: *d 5* and *l 5* long, subequal (150 μ long) and 5 other pairs of much shorter setae. Posterior legs well developed with relatively large and rounded suckers (without prolongations) situated on long peduncles.

Male (Figs. 4, 42–43): Paratype 243 μ long, 123 μ wide. There are 25 striations in midline. Gnathosoma, prescapular and coxal I–II plates as in female. Opisthosomal plate 42 μ long maximum. Posterior margin of body bearing 5 pairs of unequal setae measuring (from dorsum to venter) 10 μ, 110 μ, 120 μ, 15 μ and 15 μ respectively.

Host and locality: On *Megaderma spasma medium*, Besut, Trengganu, Malaysia. Bat in BM No. 75.1235-36. Mites were fixed on hairs of the head. Holotype female and paratype male. Types in BM.

Remarks: On first sight this species resembles *P. dentatus* in the convex aspect of the gnathosoma. It differs clearly from it in the following characters: absence of an inverted-U shaped postscapular plate, and different shape of the plate of coxa II which is not prolonged anterolaterally and lacks ventral conical processes.

3. *Paralabidocarpus megaderma* n.sp.

Male (Fig. 5): Holotype 360 μ long and 150 μ wide. There are 29 striations in midline. Gnathosoma not convex, with 2 large conical paramedians posterior lobes. Prescapular plate 75 μ long (paramedian lobes included). There is a pair of small postscapular paramedian plates bearing the *sc i* and *sc e* setae; the latter setae are thick but only *sc i* are complete (50 μ long). Plate of coxa I bilobed laterally, not fused with prescapular plate. Plate of coxa II small, with a long and narrow antero-lateral prolongation. Setae *h* thick, at least 65 μ long; *sh* thin 23 μ long. Opisthosomal plate 54 μ long (maximum). Posterior margin of body with 5 pairs of setae measuring (from dorsum to venter): 15 μ, 120–130 μ, 130–140 μ, 25 μ and 42 μ respectively.

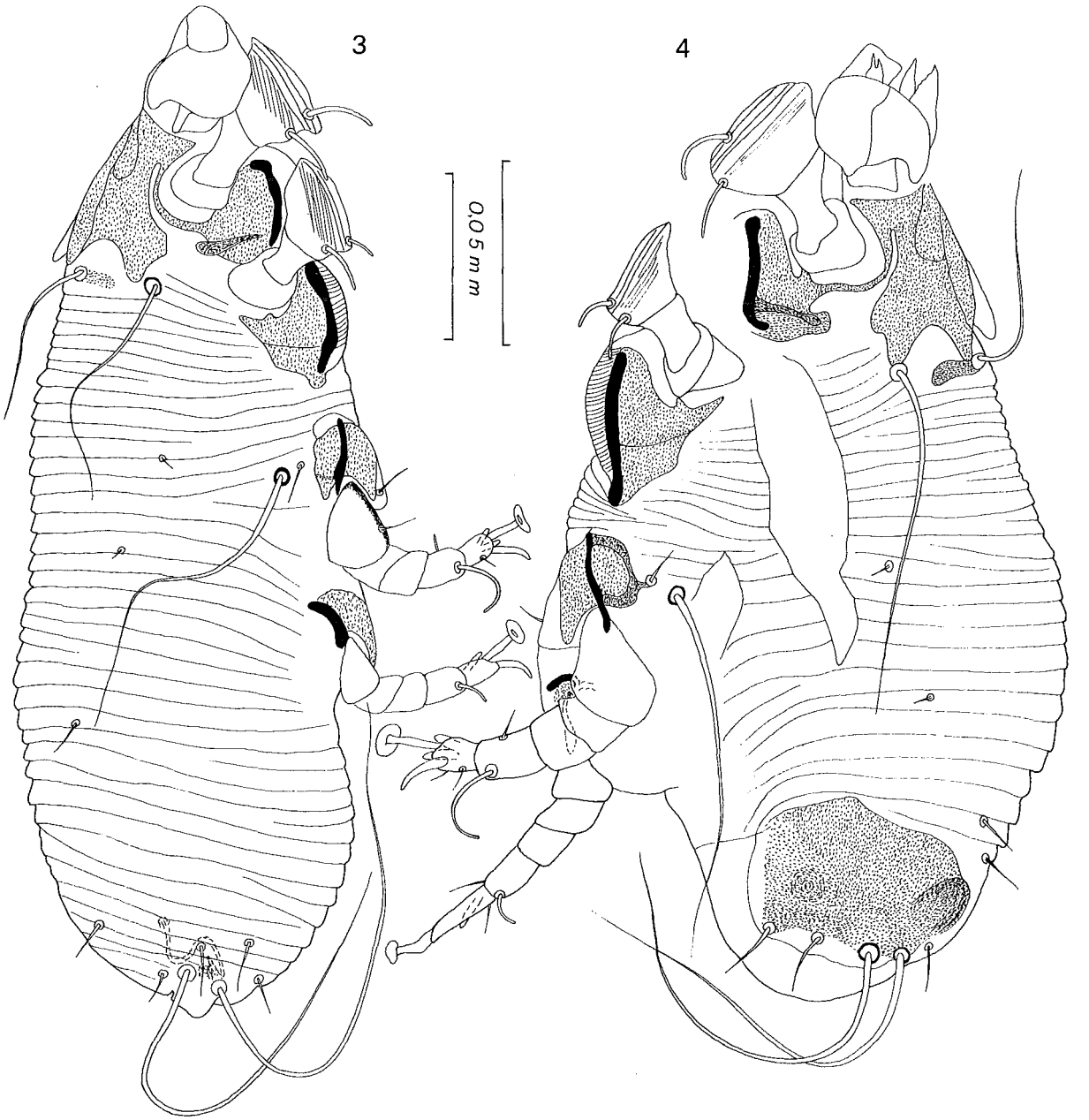
Female: Unknown.

Host and locality: On *Megaderma spasma medium*, Besut, Trengganu, Malaysia. Bat in BM No. 75.1235-36. Holotype and only known specimen. This specimen was mixed with the type series of *P. pilosus*.

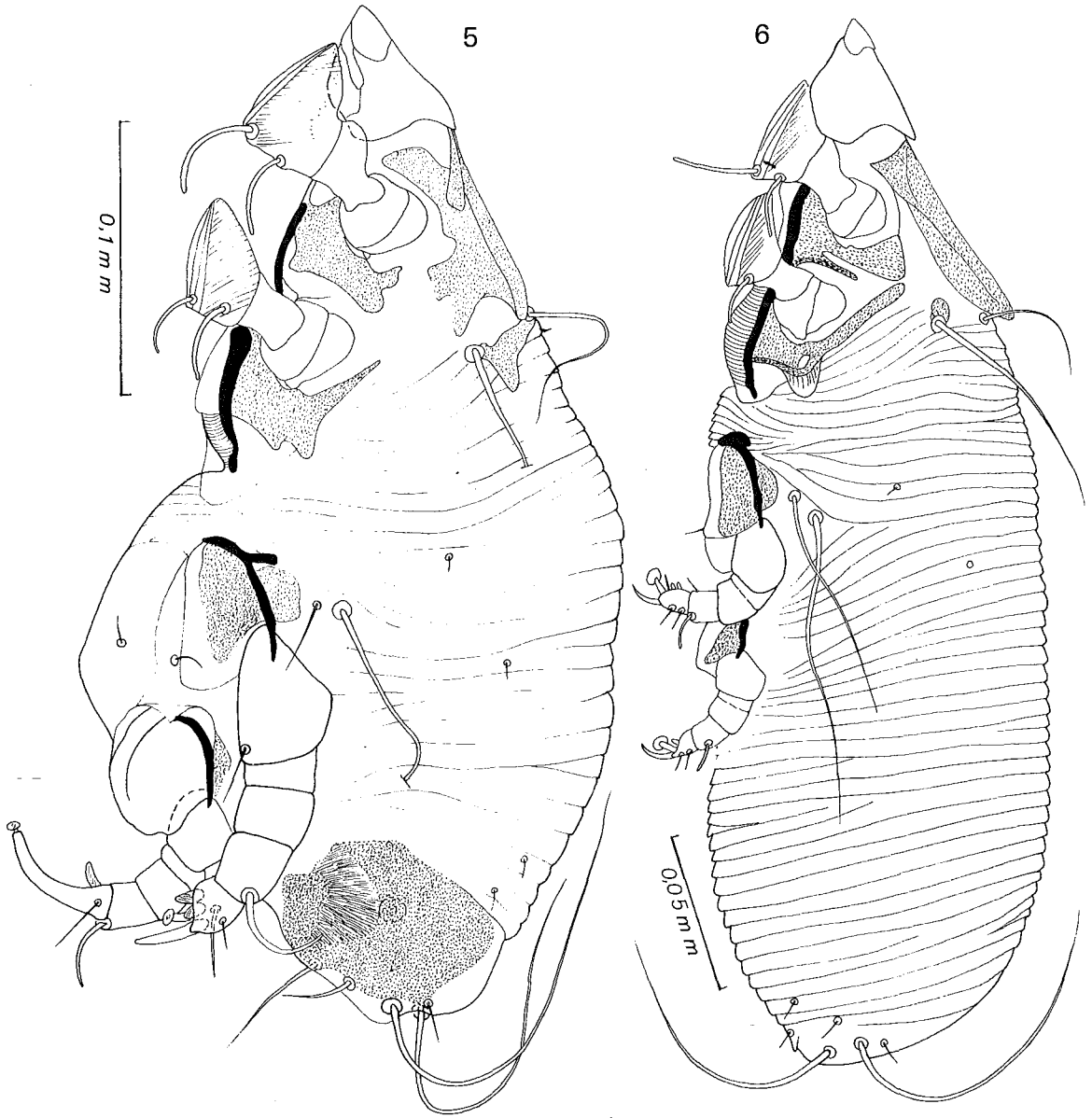
Remarks: This species differs from *P. pilosus*, in the male, by the much greater size of the body, the normal (not convex) shape of the gnathosoma, the bilobed shape of the plate of coxa I which is not fused with the prescapular plate, the different shape of the postcapular plate bearing setae *sc i* and *sc e*, the presence of a longer prolongation on coxa II, and the relatively greater length of the ventral pair of setae of the posterior margin of body.

4. *Paralabidocarpus coxatus* Fain, 1979

Female (Figs. 7, 44–45): Holotype 510 μ long, 180 μ wide. In 2 paratypes : 495 × 160 μ and 500 × 160 μ. There are 44 cuticular striations in midline. Gnathosoma with posterior margin not lobed. Prescapular plate 120 μ long in midline with 2 long and thick postero-lateral lobes and connected antero-laterally to coxa I by means of a narrow punctate strip. The plate covering coxa II very long (100 μ) arriving close to *h* setae. Seta *sc i* thin 60 μ long; *sc e* thick, membranous, striated and short (21 μ). Seta *h* 60 μ; *sh* very short and thin. Setae *d 5* and *l 5* 75 μ and 120 μ long. Posterior legs well developed



Figs. 3–4. *Paralabidocarpus pilosus* Fain. Fig. 3. Female, holotype; Fig. 4. Male, paratype.



Figs. 5–6. Fig. 5. *Paralabidocarpus megaderma* n. sp. Male, holotype. Fig. 6. *Paralabidocarpus hipposideros* Fain. Female, holotype.

with relatively large pedunculate suckers bearing a short and narrow ventral process.

Male (Figs. 8, 46–47): Paratype 355 μ long, 145 μ wide. Gnathosoma, prescapular plate and coxae I-II as in female. Opisthosomal plate 84 μ long. Posterior margin of body with 3 pairs of unequal setae: *d 4* 15–20μ, *l 5* 80–90 μ and *d 5* 24–28 μ long. Tarsi IV long, flattened, with an apical pedunculate sucker.

Host and locality: (i) *Hipposideros pratti*, Chapa, Vietnam (= Tonkin). Bat in BM No. 33.4.1.70–77: Holotype and 2 paratypes female, 2 paratypes male. Holotype in BM. (ii) *Rhinolophus affinis superaris*, Gunong Berim, Pahang, Malaysiz. Bat in BM No. 67.1562–1566 (2 females and 4 males, paratypes).

Remarks: This species is characterized by the great development of the coxa II and the thick and membranous aspect of setae *sc e*.

5. Paralabidocarpus hipposideros Fain, 1976

Female (Figs. 6, 38–39): Holotype (larvigerous) 321 μ long, 111 μ wide. There are 44 cuticular striations in the midline. Gnathosoma with 2 paramedian conical posterior lobes. Prescapular plate ending posteriorly in two long paramedian lobes; maximum length 63 μ. Plate of coxa II small, prolonged antero-laterally in a long (33 μ) narrow (3 μ wide) punctate band arriving close to the plate of coxa I. Setae *sc i*, *sc e*, *h* and *sh* 45 μ, 65 μ, 120 μ and 50 μ long respectively. Seta *d 5* 90 μ, *l 5*, 115 μ.

Male: Unknown.

Host and locality: (i) On *Hipposideros lankadiva*, from a cave at Pitakele, Sinharaga Forest, Sri Lanka (Ceylon) (alt. 400 m.). Bat in BM No. 36.11.26.4–5. The mites were fixed on the hairs of the wings, postero-dorsally close to the body. Holotype and three paratypes female. Holotype in BM. (ii) On *Hipposideros* sp., Vientiane, Prov. Ban van Heua, Laos, 7.X.1966, 4 paratypes, female (Bat in BMH No. LA 41515). (iii) On *Hipposideros diadema*, Templer Park, Selangor, Malaysia, 23.V.1979 (three females) (Coll. Dr. F. Lukoschus).

Remarks: This species differs from *P. surinamensis* described from *Saccopteryx* spp. in Surinam, by the much smaller size of the body, the different shape of the plates of coxae I and II and, especially, the long punctate lateral prolongation of coxa II arriving close to coxa I, and the relatively smaller size of the posterior legs and of the apical spines of tarsi III–IV.

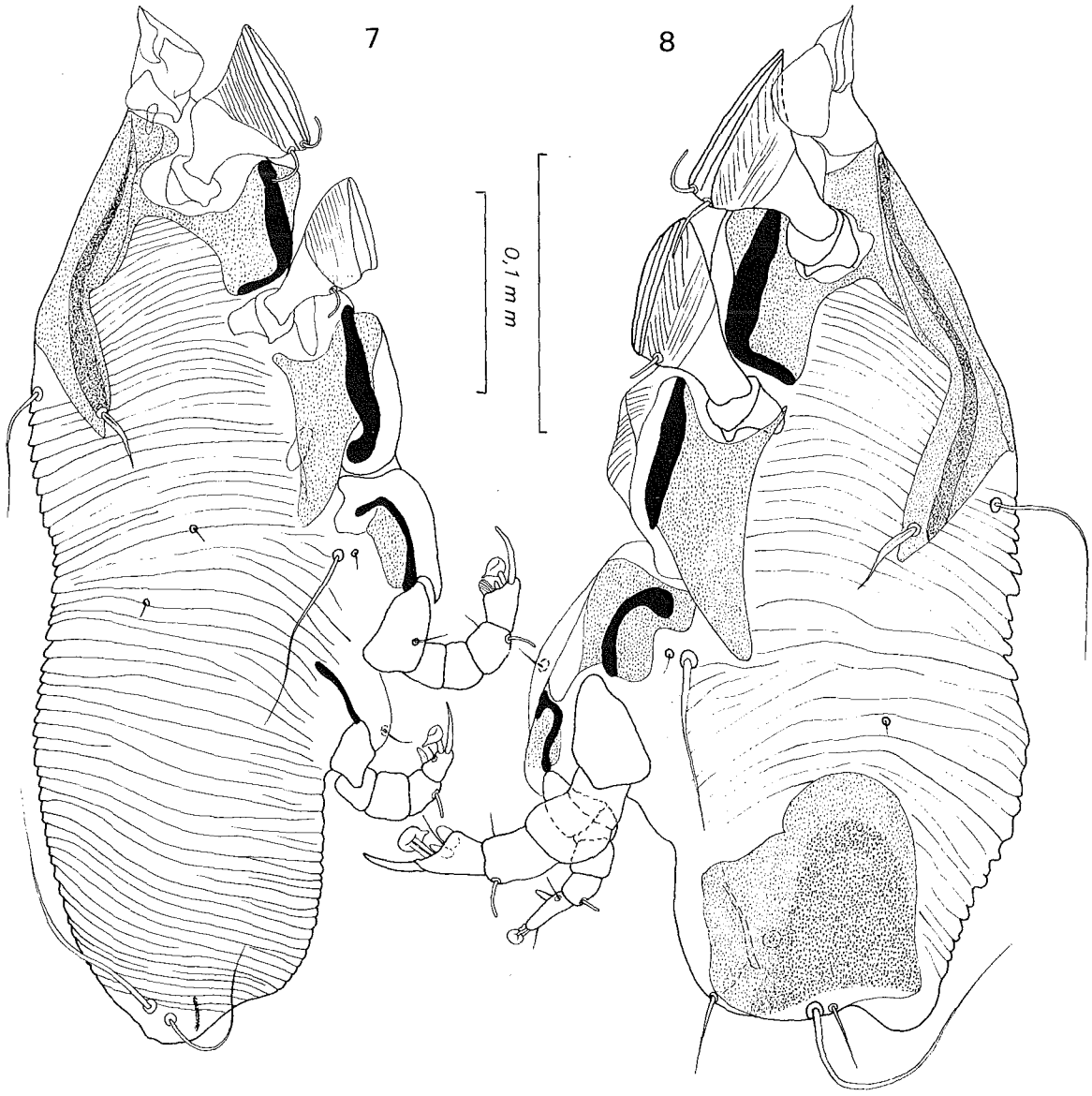
6. Paralabidocarpus aselliscus n.sp.

Female (Fig. 9): Holotype 300 μlong, 91 μ wide. There are 49–50 striations in the midline. Posterior margin of gnathosoma with very poorly developed lobes. Prescapular plate bilobed posteriorly, maximum length 54 μ (lobes included). Coxa I fused with this plate by means of a narrow punctate curved strip. Plate of coxa II small, with a long and very narrow antero-lateral strip. Setae *sc i* 45 μ, *sc e* 60 μ. Setae *h* much longer (75 μ) than *sh* (25–30 μ). Setae *d 5* and *l 5* long, subequal (approximately 70–80 μ). Tarsi III–IV bearing relatively long apical spines, almost straight, 18 and 21 μ long respectively. Pedunculate suckers of these tarsi relatively small.

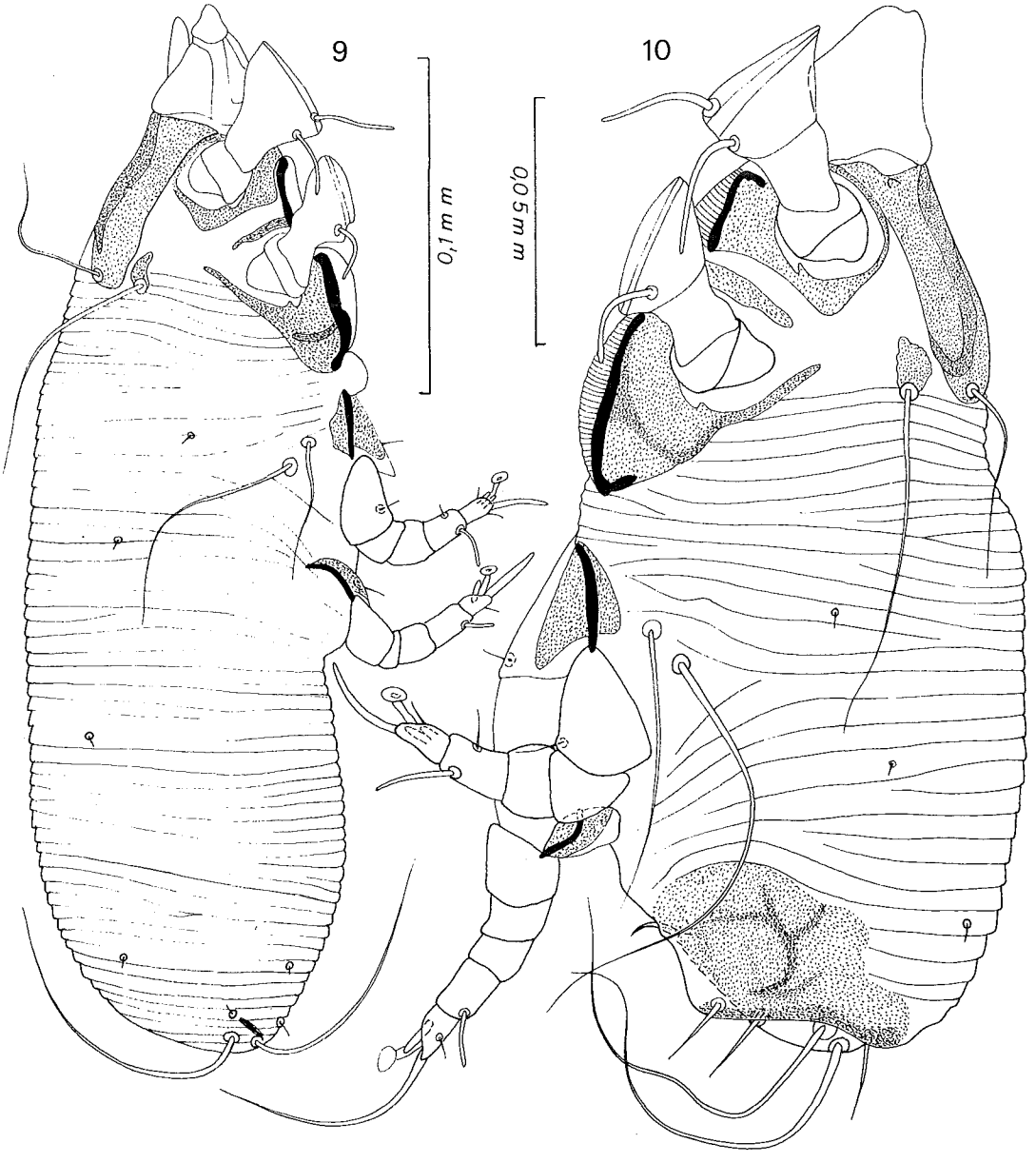
Male (Fig. 10): Paratype 204 μ long, 90 μ wide. Gnathosoma, prescapular and coxal I–II plates, setae *sc i* and *sc e* as in female. Opisthosomal plate 36 μ long (maximum length). Posterior margins of body with 5 pairs of setae, measuring from dorsum to venter 12 μ, 80–90 μ, 80–90 μ, 15 μ and 15 μ respectively.

Host and locality: On *Aselliscus tricuspidatus*, Riba Caves, Auki, Malaita Is., Solomon Is. Bat is BM.No. 67.2123–24. Holotype and male paratype. Types in BM.

Remarks: This species is close to *P.hipposideros*. It differs from it in the fusion of coxa I with the prescapular plate, the smaller shape of the lateral projection of coxa II, the poor development of the gnathosomal lobes and the longer apical spines of tarsi III–IV. From *P. surinamensis* Fain it is distinguished by the very poor development of the gnathosomal lobes, the much smaller body, the different shape of the prescapular plate, and the absence of a visible spermathecal sclerite (clearly visible in *P. surinamensis*).



Figs. 7–8. *Paralabidocarpus coxatus* Fain. Fig. 7. Female, holotype; Fig. 8. Male, paratype.



Figs. 9–10. *Paralabidocarpus aselliscus* Fain. Fig. 9. Female, holotype; Fig. 10. Male, paratype.

Genus *Labidocarpoides* Fain, 1970

This genus is more regressed (= more evolved) than *Paralabidocarpus*. A pedunculate sucker is present in both sexes only on tarsi III, tarsi IV having lost their sucker, although in the female the peduncle of the sucker is still conserved. Both sucker and peduncle have disappeared from tarsi IV of the male and the tarsus is elongate, flattened and triangular. This prolongation of the tarsus IV probably represents a modified peduncle.

Key to the oriental species of *Labidocarpoides* (females)

1. Lateral surface of body with 12 ≃13 transverse punctate bands . . . . . *L. hipposideros ceylanicus* Fain, 1976
   Lateral surface of body soft, without punctate bands 2
2. Setae *sc i*, *sc e*, *h*, and *d 5* respectively 25 μ, 30 μ, 27 μ and 6 μ respectively. Body 325 μ long . . . . . *L. uluensis* Fain, 1979
   Setae *sc i*, *sc e*, *h*, and *d 5* respectively 50 μ, 100 μ, 120 μ and 80 μ long. Body 570 μ long . . . . . *L. grandior* Fain, 1979

1. Labidocarpoides hipposideros ceylanicus Fain, 1976

Female (Figs. 11, 48–49): Holotype 380 μ long, 120 μ wide. Prescapular plate 93 μ long in midline and 102 μ long laterally (maximum length). Plate of coxa II longer than wide. There are 35–37 complete striations along a line joining setae *sc e* and *l 5* and 41 striations in the midline. The 12 anterior striations bear punctate bands 5–6 μ long and 15–30 μ wide; the posterior margins of these bands are sclerotized and scale-like. Setae *sc i*, *sce*, *h*, *d 5* and *l 5* are 7 μ, 5 μ, 30 μ, 50 μ and 140 μ long respectively. Tarsus III with a small sucker shortly pedunculate.

Male (Figs. 12, 50–51): Paratype 315 μ long, 120 μ wide. Length of prescapular plate 90 μ in midline, 100 μ laterally. Laterally there are 11 cuticular striations, all with a punctate band with sclerotized edges except the posterior striation without such a band. In the midline the striations are 20 in number. Opisthosomal plate 90 μ long. Setae *sc i*, *sc e*, *h*, *d 4*, *d 5* and *l 5* are 7 μ, 6 μ, 36 μ, 8 μ, 80 μ and 20 μ long respectively.

Host and locality: On *Rhinolophus luctus sobrinus*, Pitakele Cave, Sri Lanka. Bat in the BM No. 36.11.26.2–3. Holotype and 12 paratypes female, 4 paratypes male. Holotype in the BM.

Remarks: This subspecies differs from the typical form by the much shorter *sc i* and *h* setae, the much smaller size and the rounded appearance of the suckers of tarsi III, and the smaller size of the posterior legs.

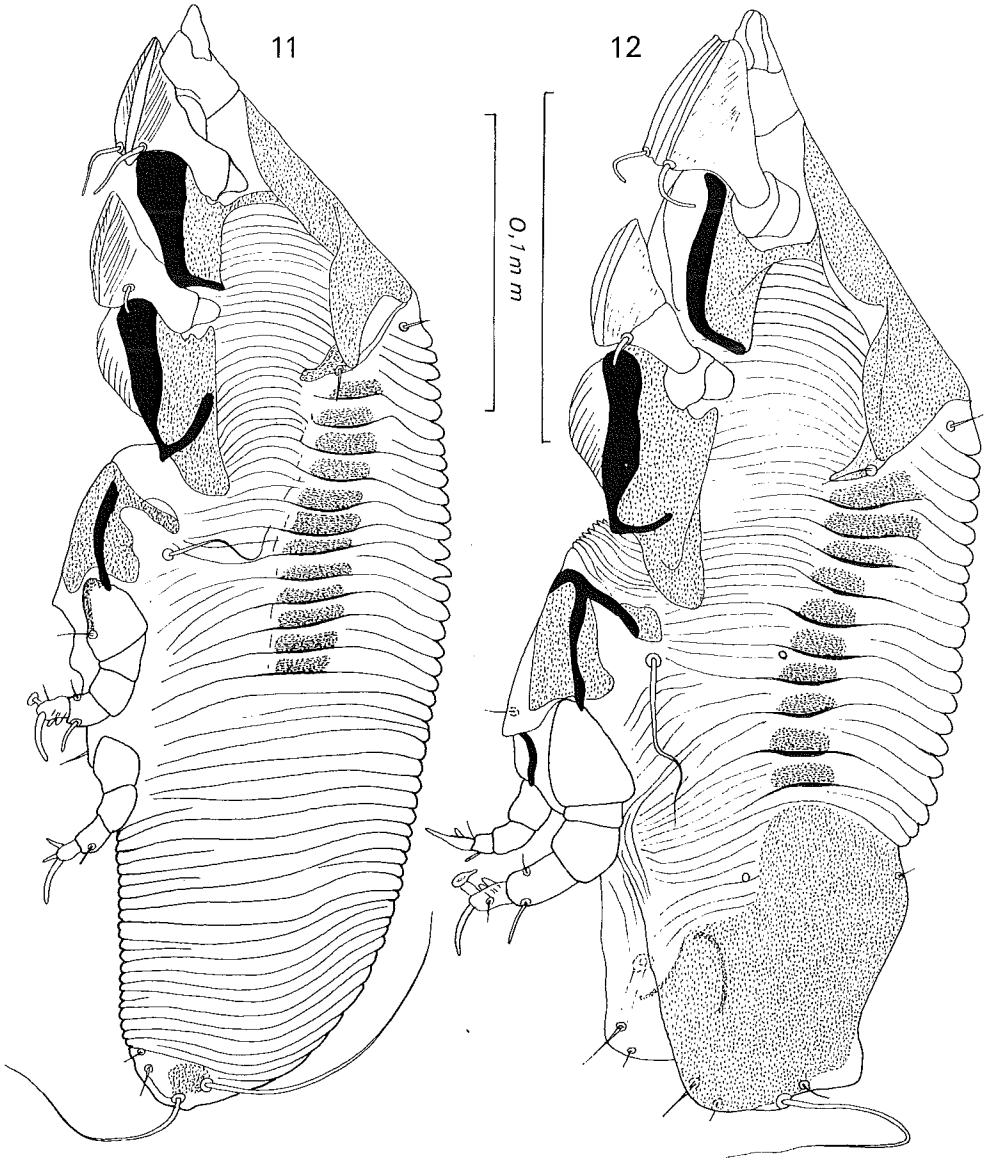
2. Labidocarpoides grandior Fain, 1979

Female (Figs. 13, 52–53): Holotype (larvigerous) 535 μ long (not 570 μ as mentioned in original discription) and 150 μ wide. Length of prescapular plate in midline 93 μ, laterally 108 μ. Plate of coxa II with a long, very narrow antero-lateral prolongation. There are 37 complete striations between setae *sc e* and *l 5*. Cuticle soft, without punctation or scales. Setae *sc i* 48 μ long situated on the soft cuticle. Setae *sc e* 100 μ long situated on a sclerotized strip connected with the prescapular plate; setae *h* 110–120 μ long; setae *sh* absent; setae *d 5* and *l 5* 75 μ and 140 μ long. Tarsi III with a large pedunculate sucker. Tarsi IV with a peduncle slightly inflated apically but without sucker.

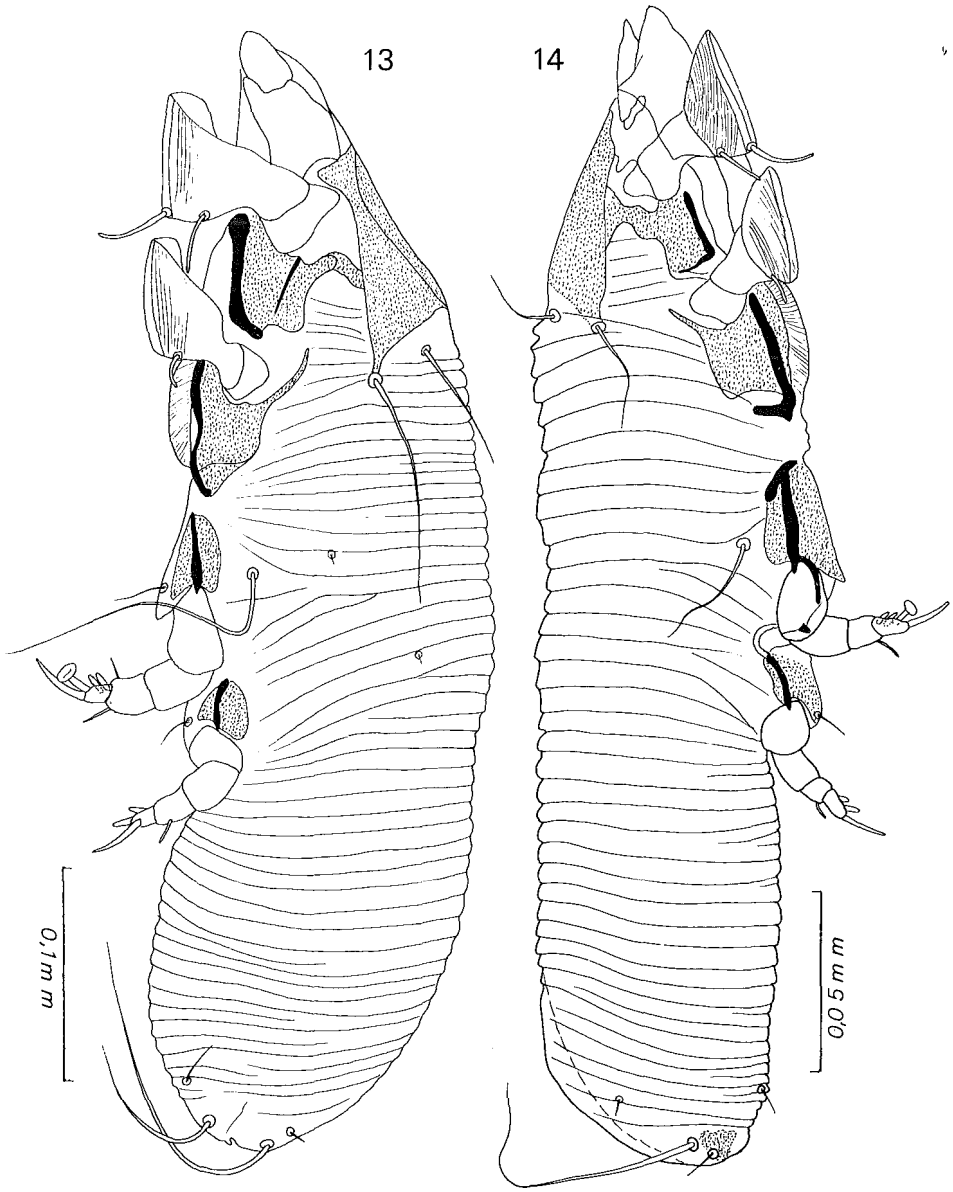
Male: Unknown.

Host and locality: On *Rhinolophus luctus morio*, Ulu Gombat, Selangor, Malaysia. Bat in BM No. 73.611. The mites were attached to the hairs of the head and the back. Holotype and only specimen known, in the BM.

Remarks: This species resembles *L. congoensis* Fain, 1970 described from *Rhinolophus hildebrandti* in Zaïre. It is distinguished from it by the different shape of the prescapular plate which is much more expanded laterally, the much larger body, the absence of the *sh* setae, and the relatively longer apical spines of tarsi III and IV.



Figs. 11–12. *Labidocarpoides hipposideros ceylanicus* Fain. Fig. 11. Female, holotype; Fig. 12. Male, paratype.



Figs. 13–14. Fig. 13. *Labidocarpoides grandior* Fain. Female, holotype. Fig. 14. *Labidocarpoides uluensis* Fain. Female, holotype.

3. Labidocarpoides uluensis Fain, 1979

Female (Figs. 14, 54–55): Holotype 325 μ long, 86 μ wide. Prescapular plate 53 μ long in midline and 60 μ laterally. There are 36 cuticular striations in the midline. Cuticle soft, without punctation and scales. Coxal plate II with a very narrow antero-lateral prolongation. Setae *sc i* 25 μ long, situated on the soft cuticle, setae *sc e* 30 μ long, situated on the postero-lateral lobe of prescapular plate. Setae *h* 25 μ. Setae *d 5* and *l 5* 6 μ and 75 μ long. Posterior legs small, tarsi prolonged by rather thin apical spines. Tarsi III with a pedunculate sucker, tarsi IV with peduncle but without sucker.

Male: unknown.

Host and locality: On *Rhinolophus luctus morio*, Ulu Gombak, Selangor, Malaysia. Bat in the BM No. 73.611. Holotype and only known specimen in the BM.

Remarks: This species resembles *L. guineae* Fain, described from *Rhinolophus landeri* in Spanish Guinea. It differs from the latter by the presence of a narrow punctate band joining the prescapular plate and the coxa I, and by the shorter setae *h* and apical spine of the posterior tarsi.

Genus *Labidocarpus* Trouessart, 1895

Schizolabicarpus Fain, 1976, new synonym

The genus *Labidocarpus* is more evolved than *Labidocarpoides*. The suckers have completely disappeared on legs III–IV in both sexes. Only the peduncle of the sucker is present on tarsi III and IV of the female and on tarsi III of the male. The tarsus IV of the male is modified as in *Labidocarpoides*.

The genus *Schizolabicarpus* Fain, 1976 is synonymized here with *Labidocarpus*, as a result of the discovery of two new species intermediate between both genera.

Key to the oriental species of *Labidocarpus* (females)

1. Cuticle soft, without punctate bands or scales. Setae *h* present, the *sh* lacking 2
   Cuticle bearing transverse punctate bands on lateral surfaces and sometimes scales on posterior margins of striations. Setae *h* either present or lacking, the *sh* lacking 4
2. Prescapular plate with posterior margin strongly concave and in the shape of an inverted-Y with long, narrow lateral arms . . . . . *L. vittatus* (Fain, 1976)
   Prescapular plate with posterior margin slightly concave or straight and with much shorter lateral prolongations. 3
3. Setae *sc i, sc e, h, d 5* and *l 5* thin and 15 μ, 18 μ, 18–20 μ, 12 μ and 75 μ long respectively. Plate of coxa I loosely fused with prescapular plate . . . . . *L. selangorensis* Fain, 1979
   Setae *sc i, sc e, h, d 5* and *l 5* thicker and 35 μ, 60 μ, 55 μ, 50μ and 90 μ long respectively. Plate of coxa I not fused with prescapular plate . . . . . *L. refulgens* Fain, 1979
4. Cuticle without scales at the posterior margins of the striations. Plate of coxa II in an inverted-L and arriving very close to the prescapular plate. Setae *sc i* situated on a narrow punctate band not crossing the midline. Setae *h* present . . . . . *L. formosanus* Fain, 1979
   Cuticle with scales at posterior margins of some striations. Plate of coxa II rectangular, widely separated from the prescapular plate. Setae *sc i* situated either on the soft cuticle or on a sclerotized band crossing the midline. Seta *h* present or absent. 5
5. Setae *sc i* situated on soft cuticle. Setae *h* well developed 40 μ long. Ambulacral peduncle of tarsus III strongly developed as long as tarsus. Punctate bands of cuticle poorly developed on opisthosoma, very strongly developed on podosoma . . . . . *L. australiensis* Fain & Lukoschus, 1981
   Setae *sc i* situated on a sclerotized band crossing the midline. Setae *h* lacking. Ambulacral peduncle of tarsus III shorter. Punctation well developed on cuticle of opisthosoma 6
6. Body with 27 cuticular complete striations (counted laterally along a line joining setae *sc e* and *l 5*). Only the 10 anterior striations have a median area more sclerotized and the posterior margin with one sclerotized scale. Postero-lateral

lobes of prescapular plate not expanded. Ambulacral peduncle of tarsus IV pointed apically . . . . . *L. acuminatus* n.sp.
Body with 36 to 41 cuticular complete striations (counted laterally) all bearing punctate bands and some in addition bearing sclerotized scales. Postero-lateral lobes of prescapular plate expanded. Ambulacral peduncle of tarsus IV rounded apically 7

7. Body 285 μ long, opisthosoma 100 μ long. Seta *d 5* 7 μ long. Postero-lateral prolongations of prescapular plate small, truncate, more or less bilobate. . . . . *L. rhinolophi* Fain, 1976
Body 345 μ long, opisthosoma 145 μ long. Seta *d 5* 30 μ long. Postero-lateral prolongations of prescapular plate more inflated . . . . . *L. hongkongensis* n.sp.

1. Labidocarpus selangorensis Fain, 1979

Female (Figs. 16, 62–63): Holotype 345 μ long; 90 μ wide. In 3 paratypes: 315 × 86 μ, 345 μ × 84 μ and 342 × 92 μ. Prescapular plate 52 μ long in midline, and 63 μ long laterally (maximum length), loosely connected with plate of coxa I by a poorly sclerotized band. Plate of coxa I with one, plate of coxa II with two longitudinal thickenings. There are 44–46 complete cuticular striations (counted along a line joining setae *sc e* and *l 5*). Cuticle soft, without punctate bands or scales. Setae *sc i*, *sc e*, *h*, *d 5* and *l 5* thin and 15 μ, 18 μ, 18–20 μ, 12 μ and 75 μ long respectively; the *sh* are lacking. Setae *sc e* and *sc i* situated on soft cuticle. *Legs:* tarsi III with a strong apical curved spine with pointed apex, the apical spine of tarsus IV is thinner and shorter.

Male (Fig. 15): Paratype 225 μ long, 96 μ wide. Coxae I–II and prescapular plate as in the female. There are 20 complete cuticular striations (counted behind setae *sc e*). Absence of punctations or scales on the lateral surfaces of the body. Opisthosomal plate 42 μ long. Setae *sc i*, *sc e*, *h*, *d 4*, *d 5* and *l 5* are 15 μ, 18 μ, 22 μ, 10 μ, 80 μ and 12 μ respectively (paratypes). Leg IV much smaller than leg III. Tarsi IV with a broad flat prolongation.

Host and locality: On *Rhinolophus luctus morio*, Ulu Gombak, Selangor, Malaysia. Bat in the collection of BM, No. 73.611. The mites were fixed to the hairs of the head and of the back. Holotype and 3 paratypes female, 4 paratypes male. Holotype in BM.

2. Labidocarpus refulgens Fain, 1979

Female (Figs. 17, 66–67): Holotype 330 μ long, 100 μ wide. Prescapular plate 58 μ long in midline and 63 μ laterally, its posterior margin concave; this plate is not fused with the plate of coxa I. Plates of coxae I–II with poorly developed longitudinal thickenings. There are 32–34 complete striations along a longitudinal line joining setae *sc e* and *l 5*. Cuticle soft, without punctate bands or scales. Setae *sh* absent. Setae *sc i*, *sc e*, *h*, *d 5* and *l 5* are 35 μ, 60 μ, 55 μ, 55 μ and 90 μ respectively.

Male: Unknown

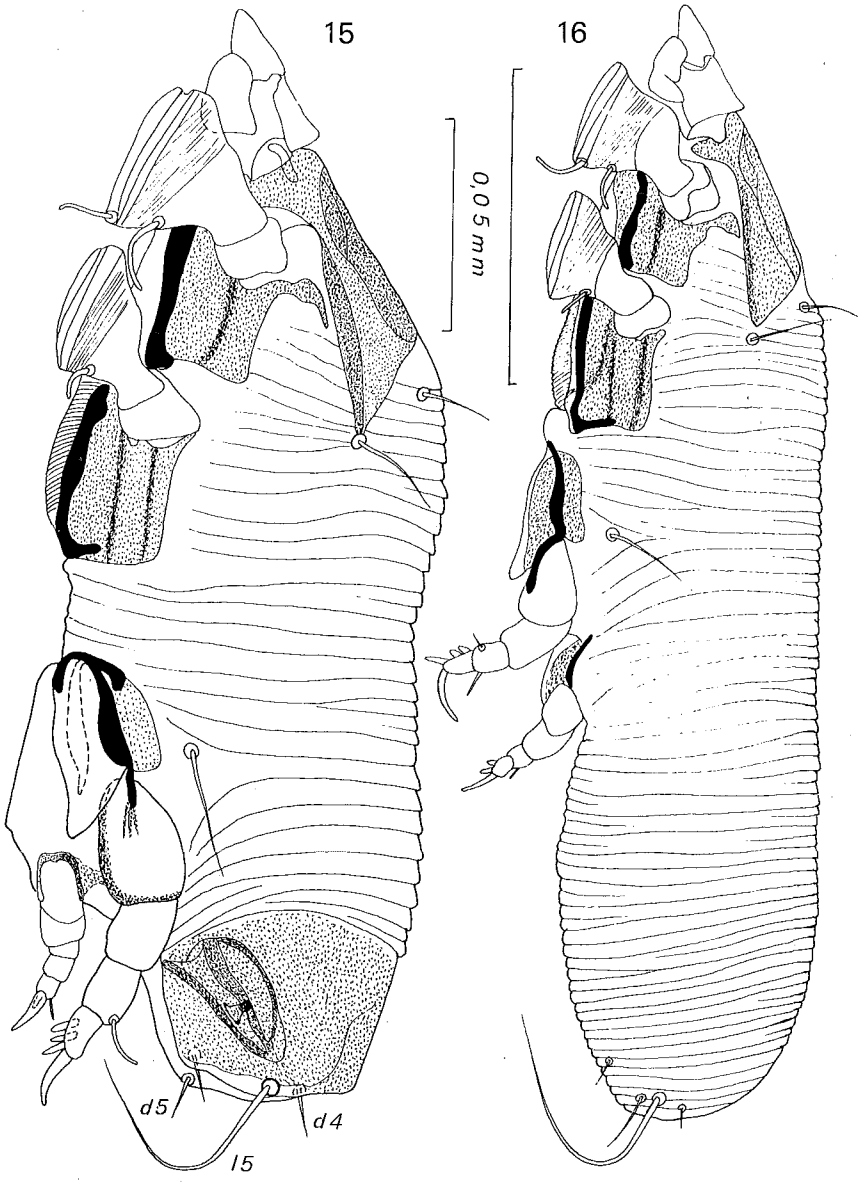
Host and locality: (i) *Rhinolophus refulgens*, Ulu Trengganu, Malaysia. Bat in the BM No. 75.1273–78. Holotype female, one nymph and one larva paratype. Holotype in BM. (ii) *Rhinolophus euryotis timidus*, Weyland Range, Papua. Bat in the BM No. 33.6.1.4–9 (one female).

Remarks: This species is close to *L. selangorensis*. It differs from it, in the female, by the absence of fusion between the coxa I and the prescapular plate and by the longer setae, especially the *sc i*, *sc e*, *h* and *d 5* setae.

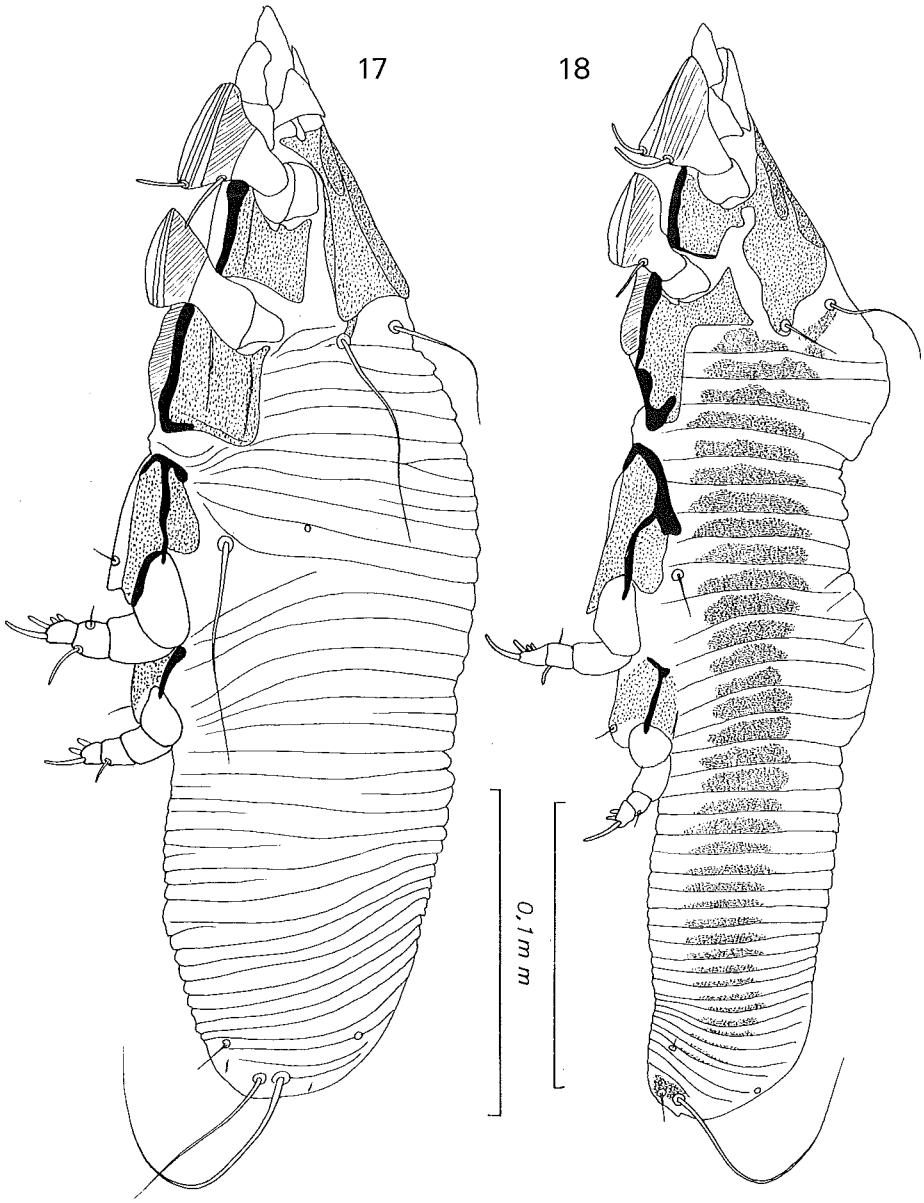
3. Labidocarpus formosanus Fain, 1979

Female (Figs. 18, 64–65): Holotype 375 μ long and 90 μ wide. Prescapular plate 48 μ long in midline and 72 μ laterally (along lobes). Plate of coxa II very long, in the shape of an inverted-L and with a broad lateral prolongation extending close to the prescapular plate. Plate of coxa I connected with the prescapular plate by a very narrow punctate strip. There are 38 cuticular striations, of which 30 to 34 bear a punctate band 21 to 40 μ wide. There are no cuticular scales. Seta *sc e* situated on the prescapular plate, shorter (16 μ) than *sc i* (40 μ), the latter situated on a narrow punctate band directed laterally. Seta *h* very thin, 10 μ long, seta *sh* absent. Seta *l 5* 90 μ, *d 5* 9 μ. Tarsi III–IV ending in a rather short, slightly curved spine.

Male: Unknown.



Figs. 15–16. *Labidocarpus selangorensis* Fain. Fig. 15. Male, paratype; Fig. 16. Female, holotype.



Figs. 17–18. Fig. 17. *Labidocarpus refulgens* fain. Female, holotype. Fig. 18. *Labidocarpus formosanus* Fain. Female, holotype.

Host and locality: On *Coelops frithi formosanus*, near Kulalu, Taiwan. Bat in BM No. 62.1921. Holotype female and only known specimen, in BM.

4. Labidocarpus rhinolophi Fain, 1976

Female (Figs. 19, 56–57): Holotype 285 μ long and 84 μ wide. Opisthosoma 100 μ long. Prescapular plate 57 μ long in midline, 63 μ laterally (along lobes), fused antero-laterally with coxa I by a narrow band. Coxa I with a large punctate plate. There are 36 cuticular striations (counted along a line joining setae *sc e* and *l 5*) bearing punctate bands and the more posterior ones are sinuous. Most of these striations bear one or several sclerotized scales at their posterior margins. Setae *h* and *sh* absent. Setae *sc i* longer (25 μ) than *sc e* (6 μ). Setae *d 5* much shorter (7 μ) than *l 5* (100 μ). Tarsi IV ending in a spine strongly attenuated apically.

Male: Unknown.

Host and locality: On *Rhinolophus malayanus*, Wang Tangga, Kangar, Perlis, N. Malaysia (6° 39′N; 100° 12′E). On head and in neck. Host in BM No. 68.812. Holotype and only known specimen in BM.

Remarks: This species is characterized by the absence of setae *h* and *sh* and the punctate aspect of the cuticular striations.

5. Labidocarpus hongkongensis n.sp.

Female (Figs. 20, 58–59): Holotype (larvigerous) 345) μ long and 90 μ wide. Opisthosoma 145 μ long. Prescapular plate 60 μ in midline and 70 μ long laterally. It is fused antero-laterally with coxa I by a narrow sclerotized strip. Coxa II covered by a large punctate plate with anterior margin prolonged antero-laterally by a short and narrow strip. There are 41 body striations, all bearing punctate bands and one or several sclerotized scales on their posterior margins. Setae *h* and *sh* absent. Setae *sc i* 27 μ, *sc e* 6 μ, *d 5* 30 μ, *l 5* 90–100 μ. Setae *sc i* situated on a small sclerotized band crossing the midline. *Legs:* tarsi III and IV ending in a curved spine, the spine of tarsus IV being very thin apically.

Male: Unknown.

Host and locality: On *Rhinolophus cornutus szechwanus*, Hong Kong (1965). Bat in the BM No. 65.559. Holotype and 3 paratypes female. Holotype in BM.

Remarks: This species is close to *L. rhinolophi*. It differs from it by the larger body, the relatively longer opisthosoma, the longer *d 5* setae, and the greater development of the lateral lobes of the prescapular plate.

6. Labidocarpus acuminatus n.sp.

Female (Figs. 21, 60–61): Holotype 327 μ long, 93 μ wide. Prescapular plate 68 μ long in midline and 78 μ long along lateral lobes. It is connected with coxa I by a narrow band. Coxal II plate longer than wide. There are 27 cuticular striations (along a line joining *sc e* and *l 5*), all of which have punctate bands and, in addition, the 11 anterior ones bear a sclerotized scale on their posterior margin. The more posterior striations are not scaly. Setae *sc i* situated on a tranverse median sclerotized band, setae *sc e* situated on the prescapular plate. Setae *sc e*, *sc i*, *d 5* and *l 5* are 5 μ, 28 μ, 40 μ and 100 μ long respectively. The *h* and *sh* are lacking. *Legs:* tarsus IV with an apical spine longer than that of tarsus III and more attenuated apically, its ambulacral peduncle strongly narrowed apically.

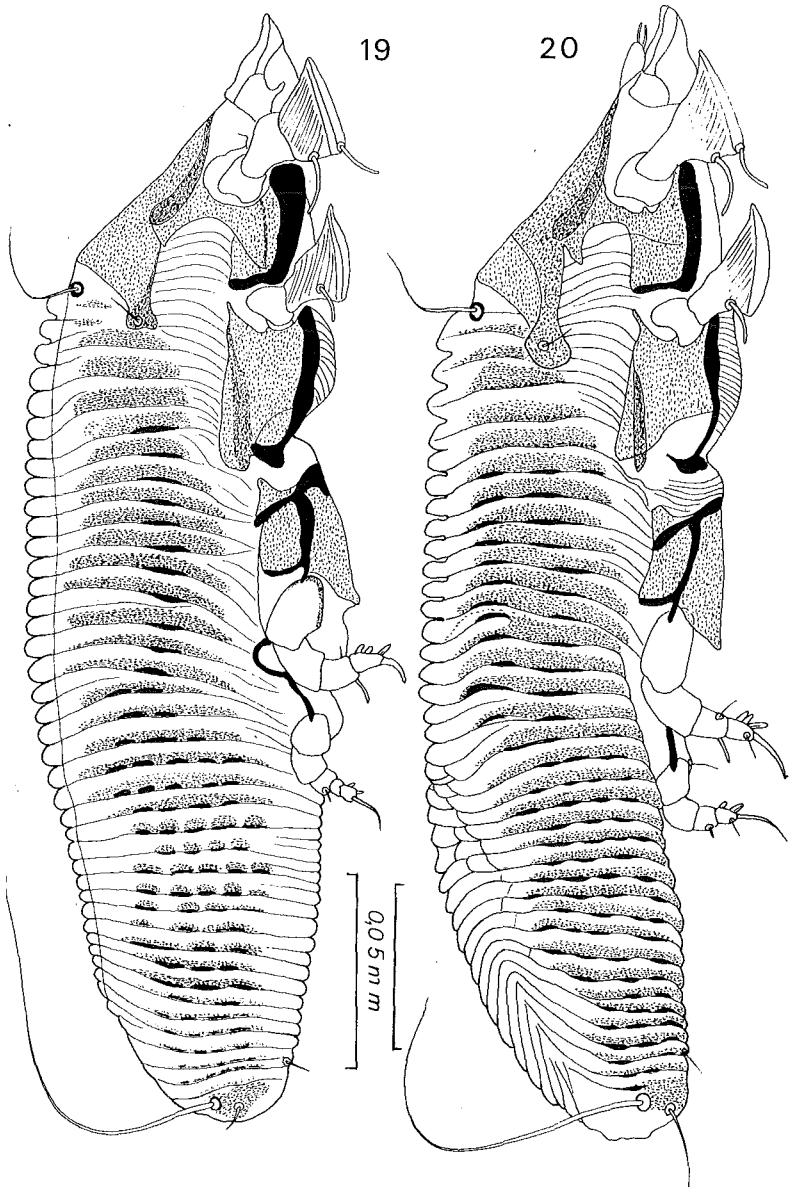
Male: Unknown.

Host and locality: On *Rhinolophus acuminatus*, Ulu, Perak, Malaysia. Bat in BM No. 73.609–610. The mites were attached on hairs of the back. Holotype and one paratype female. Holotype in BM.

7. Labidocarpus vittatus (Fain, 1976) n. comb.
Schizolabicarpus vittatus Fain, 1976, p. 46.

Female (Figs. 22, 68–69): Holotype 282 μ long, 87 μ wide. There are 36 striations between setae *sc e* and *l 5*. Prescapular plate 54 μ long in midline and 73 μ along the narrow lateral prolongations, which are 5 μ wide (maximum). Coxa II 33 μ long (maximum and 24 μ wide, bearing one longitudinal thickening. Setae *sh* lacking, *h* 12–15 μ. Setae *l 5* 75 μ, *d 5* very short. Legs III–IV with a peduncle but without sucker.

Male (Figs. 23, 70–71): Length 195 μ, width 66 μ.



Figs. 19–20. Fig. 19. *Labidocarpus rhinolophi* Fain. Female, holotype. Fig. 20. *Labidocarpus hongkongensis* n.sp. Female, holotype.

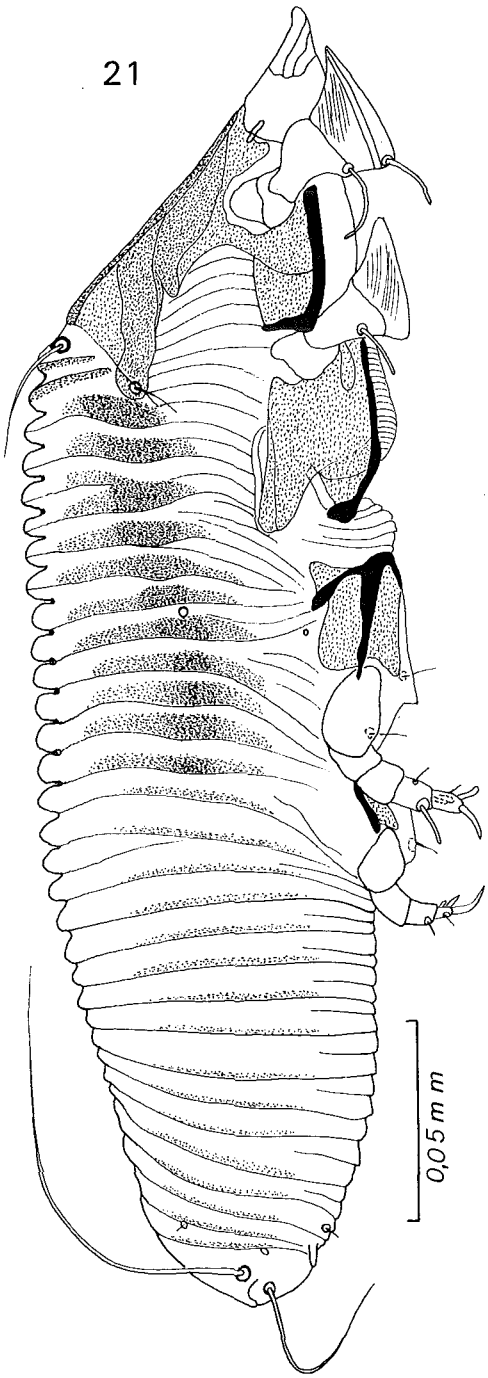


Fig. 21. *Labidocarpus acuminatus* n.sp. Female holotype.

There are 14 striations laterally. Prescapular plate as in female. Opisthosomal plate 36 μ long (maximum). Setae *d 4*, *l 5* and *d 5* (from dorsum to venter) 7 μ, 60 μ and 12 μ. Tarsi IV small, triangular and flattened, bearing only one single, thin, short seta and not a thick basal spine as usual or a sucker peduncle.

Host and locality: (i) On *Rhinolophus malayanus*, Wang Tangga, Malaysia. Bat in BM No. 68.812. Holotype female. Type in BM. (ii) On *Rhinolophus cornutus*, Lake Bewa, Japan. Bat in BM No. 77.8.6.21. Nine females and five males. All the mites where fixed to the hair of head and neck.

8. Labidocarpus australiensis Fain & Lukoschus, 1981

This species has been discribed from *Hipposideros ater*, in Western Australia. It has been found again from *H. bicolor atrox*, in Selangor, Malaysia. Bat in BM No. 73.612. Three females and one male attached on hairs of the back.

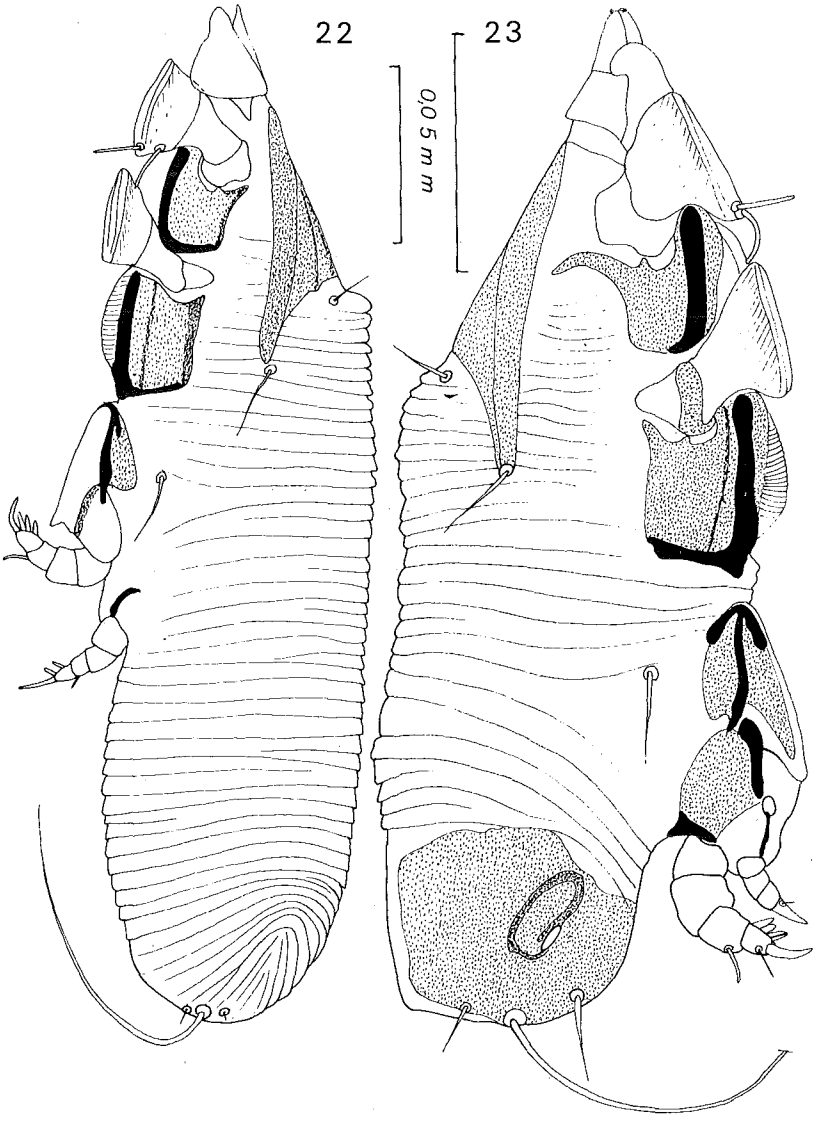
Genus *Alabidocarpus* Ewing, 1929

This genus is characterized by the complete absence of suckers or peduncles of suckers on tarsi III and IV in both sexes. It is the most regressed genus of the subfamily.

This genus is represented in the oriental region by 11 species of which one is new. A key to these species is given below.

Key to the oriental species of *Alabidocarpus* (females)

1. Posterior extremity with one pair of very short setae. Prescapular plate separated from coxa II by a small triangular additional plate. Striated membranes of legs I about twice as long as those of legs II . . . . . *A. rousetti* Fain, 1970
   Posterior extremity with at least one pair of long setae. Absence of additional plate between coxa II and prescapular plate. Striated membranes of legs I equal or only slightly longer than that of



Figs. 22–23. *Labidocarpus vittatus* (Fain). Fig. 22. Female, holotype; Fig. 23 Male

legs II 2
2. Cuticle with numerous transverse punctate and scaly bands. Coxae II–III separated by 2 or 3 cuticular striations. Setae *sc i* long, *sc e* lacking . . . . . *A. nodulosus* Fain, 1979
Cuticle without punctate bands or scales. Coxae II–III close to each other, not distinctly separated by cuticular striations. 3
3. Setae *sc e* very long (140 μ); setae *sc i* vestigial; setae *sh* situated far in front of *h*. . . . . *A. laoensis* Fain, 1976
Setae *sc i* and *sc e* very short or represented only by their insertion bases; setae *sh* situated close to *h*. 4
4. Setae *d 5* and *l 5* long. Prescapular plate with 4 well-developed lobes 5
Setae *d 5* short and *l 5* long. Lobes of prescapular plate poorly developed or absent . 6
5. Gnathosoma and prescapular plate each with 4 posterior pointed lobes. Solenidions of tibiae III–IV subequal . . . . . *A. octodens* Fain, 1972
Gnathosoma and prescapular plate each with 4 posterior broadly rounded lobes. Solenidion of tibia III much longer than that of tibia IV . . . . . *A. scotophilus* Fain, 1972
6. Posterior margin of prescapular plate with 4 poorly developed lobes 7
Posterior margin of prescapular plate either straight and without lobes or slightly concave with lateral corners either extended or not 8
7. Prescapular plate including coxa I much wider than long, without longitudinal thickenings. Gnathosoma with 2 broad paramedian lobes. Opisthosoma distinctly shorter than half the body length . . . . . *A. parryae* Fain, 1976
Prescapular plate including coxa I longer than wide with 3 longitudinal thickenings. Gnathosoma with 2 small, poorly developed lobes. Opisthosoma as long as half the body . . . . . *A. vietnamensis* Fain, 1976
8. Gnathosomal lobes very poorly developed or absent. Setae *gp* thin. . . . . *A. lankadivae* Fain, 1976 n.stat.
Posterior border of gnathosoma with 4 strong hooks. Setae *gp* either thin or spinous 9
9. Setae *gp* thin. Prescapular plate with very long and broad postero-lateral prolongations. Body length less than 670 μ. . . . *A. scutellatus* n.sp.
Setae *gp* are short and thick spines. Prescapular plate with poorly developed postero-lateral prolongations 10
10. Body 1075 μ long. Lateral hooks of gnathosoma much wider and more rounded than paramedian hooks (specimen from New Hebrides). . . . . *A. fujii* Wada, 1967
Body 700–800 μ long. Lateral hooks of gnathosoma only slightly wider and more rounded than paramedian hooks. . . . . *A. calcaratus* Lawrence, 1952

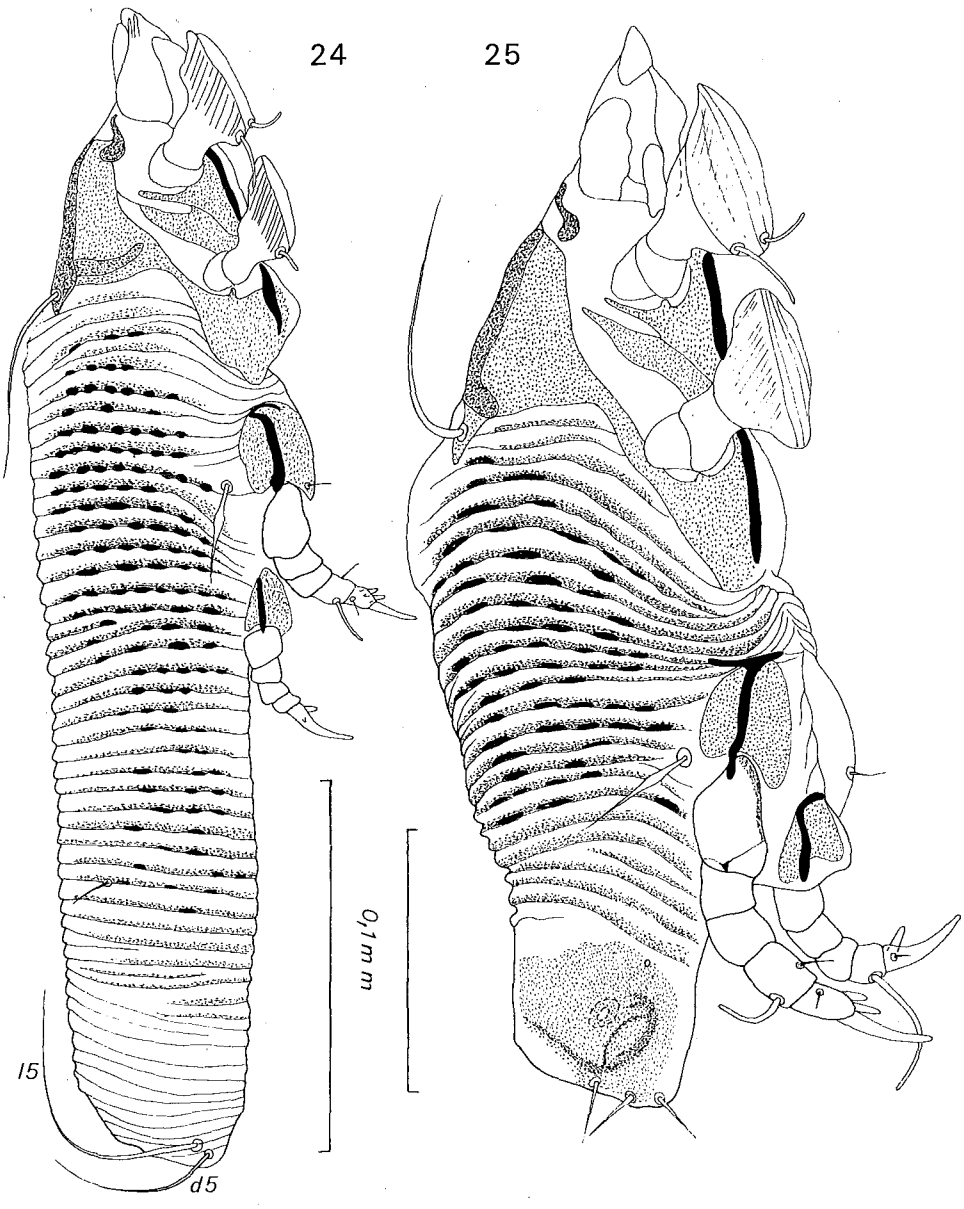
1. Alabidocarpus nodulosus Fain, 1979

Female (Fig. 24): Holotype 305 μ long, 66 μ wide. There are 45–50 cuticular striations in the midline. These striations bear punctate bands and sclerotized scaly-like formations especially in the anterior part of hysterosoma. Coxae II and III are separated by 3 striations. Gnathosoma poorly developed, 30 μ long. Prescapular plate 48 μ long along the paramedians lobes prolonging the plate behind. This plate is connected with coxa II by a narrow punctate strip. A thick median S-shaped sclerite separates the gnathosoma from the prescapular plate. Seta *sc i* 50 μ long situated on the posterior lobe of the prescapular plate; *sc e* lacking. Setae *h* 30 μ long, inflated in middle; *sh* absent. Setae *d 5* 40 μ and *l 5* 75 μ.

Male (Fig. 25): Paratype 210 μ long, 75 μ wide. Propodosoma as in female. Opisthosomal plate 30 μ long (maximum). The 3 pairs of terminal setae (*d 4, l 5, d 5*) are short (9 μ). Posterior legs relatively well developed.

Host and locality: (i) On *Miniopterus australis witkampi*, Ganaton Caves, N. Borneo. Bat in BM No. 57.460–470, holotype female; (ii) On *M. australis australis*, Efate Is., near Port Vila, New Hebrides. Bat in BM No. 73.1434–43, 2 paratypes male. Holotype in BM.

Remarks: This species is well characterized by the presence of punctate bands and sclerotized scales on the cuticle, the complete absence of *sc e* and the separation of coxae II–III by striations.



Figs. 24–25. *Alabidocarpus nodulosus* Fain. Fig. 24. Female, holotype; Fig. 25. Male, paratype.

Figs. 26–27. *Alabidocarpus laoensis* Fain. Fig. 26. Female, holotype; Fig. 27. Male, paratype.

2. Alabidocarpus laoensis Fain, 1976

Female (Fig. 26): Holotype 420 μ long, 165 μ wide. There are 52–54 cuticular striations between *sc e* and *l 5*. Gnathosoma without distinct lobes. Prescapular plate deeply incised laterally forming 4 rounded lobes. Setae *sc i* absent, represented by small sclerotized circles. Setae *sc e* long (100 μ) and strong. Setae *h* 100 μ, *sh* very small (6 μ) and relatively far in front of *h*. Seta *l 5* thick, long (90 μ) very thin apically; *d 5* is lacking. Legs IV stronger than legs III.

Male (Fig. 27): Paratype 321 μ long. Propodosoma as in female. There are 31–32 cuticular striations in the midline. Setae *h* and *sh* as in female. Opisthosomal plate 48 μ long (maximum). Terminal setae *d 4*, *l 5* and *d 5* (from dorsum to venter) 40 μ, 80 μ and 12 μ long respectively. Legs IV distinctly longer and stronger than legs III. Tarsus IV with a very long apical prolongation and a long strong seta longer than tarsal prolongation.

Host and locality: On *Hipposideros* sp. Ban van Heus, Province Vientiane, Laos 7.X.1966 Bat in BMH, No. BBM-LA 41513. (Holotype female, 2 paratypes male). Type in BMH.

Remarks: This species is clearly distinguished by the shape of the prescapular plate, the absence of *sc i* contrasting with the great length of *sc e*, the size of leg IV which is larger than leg III, and the great separation of setae *h* and *sh*.

3. Alabidocarpus scotophilus Fain, 1972

Female (Fig. 28): Holotype (larvigerous) 264 μ long, 90 μ wide. In 3 paratypes 245 × 78 μ and 261 μ × 80 μ and 270 × 80 μ. There are 30–31 striations in the midline. Gnathosoma with 2 rounded, well-developed paramedian lobes. Prescapular plate 34 μ long in midline, bearing on its posterior margin 4 relatively large and rounded prolongations. Coxa II small with a narrow curved punctate prolongation directed antero-laterally and 16 μ long. Setae *sc i* and *sc e* very small, situated on the soft skin. Seta *h* 45 μ long, membranous in apical half; *sh* very short. Setae *d 5* and *l 5* 50–65 μ and 90–100 μ long respectively. Legs III and IV well developed ending in relatively long spines (21–23 μ).

Male: A specimen from *Scotophilus nigrita* is 180 μ long and 78 μ wide. Propodosoma as in female. There are 19–20 cuticular striations in midline. Opisthosomal plate 29 μ long (maximum length). Setae *d 4* 30 μ, *d 5* 18 μ and *l 5* 130 μ.

Host and locality: (i) On *Scotophilus temmincki*, Djoga, Indonesia, 10 January 1929. Bat No. 9223, in the IRSNB. Holotype and 6 paratypes female. Holotype in IRSNB. (ii) On *S. nigrita*, Kananga (Luluabourgh), Zaïre, 19.3.65 (6 females and 4 males).

Remarks: This species resembles *A. eptesicus* Fain, 1970. It is distinguished from it by the greater size of the body, the relatively larger size of the lobes of prescapular plate and the different aspect of the gnathosomal lobes which are smaller and much less convex. It differs from *A. kivuensis* Fain, 1971 in the female by the much greater length of setae *d 5* and in both sexes by the equal size of the 4 lobes of prescapular plate (distinctly unequal in *A. kivuensis*).

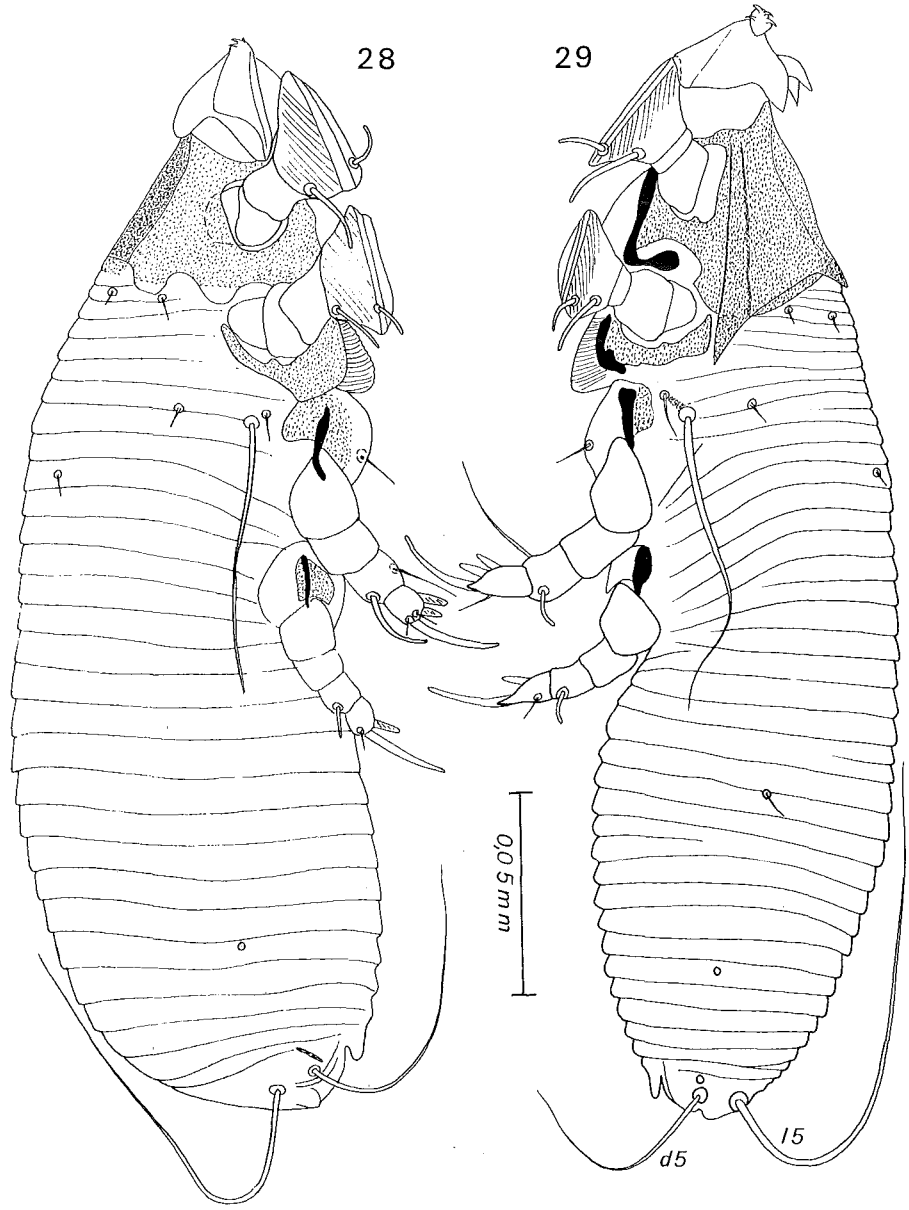
4. Alabidocarpus octodens Fain, 1972

Female (Fig. 29): Holotype 280 μ long, 81 μ wide. In paratype 260 μ × 78 μ. There are 40–42 cuticular striations in the midline. Gnathosoma with 4 strong, curved posterior lobes. Prescapular plate with 4 posterior well-developed triangular lobes; its length along paramedian lobes is 51 μ and along lateral lobes 69 μ. Coxa II much wider than long, extending laterally close to the prescapular plate. Setae *sc i*, *sc e* very short, situated on the soft cuticle. Setae *h* strong (90 μ); *sh* thin (12 μ long). Setae *d 5* 60 μ, *l 5* 130 μ. Legs III–IV relatively large, their tarsi ending in a long spine (24 μ).

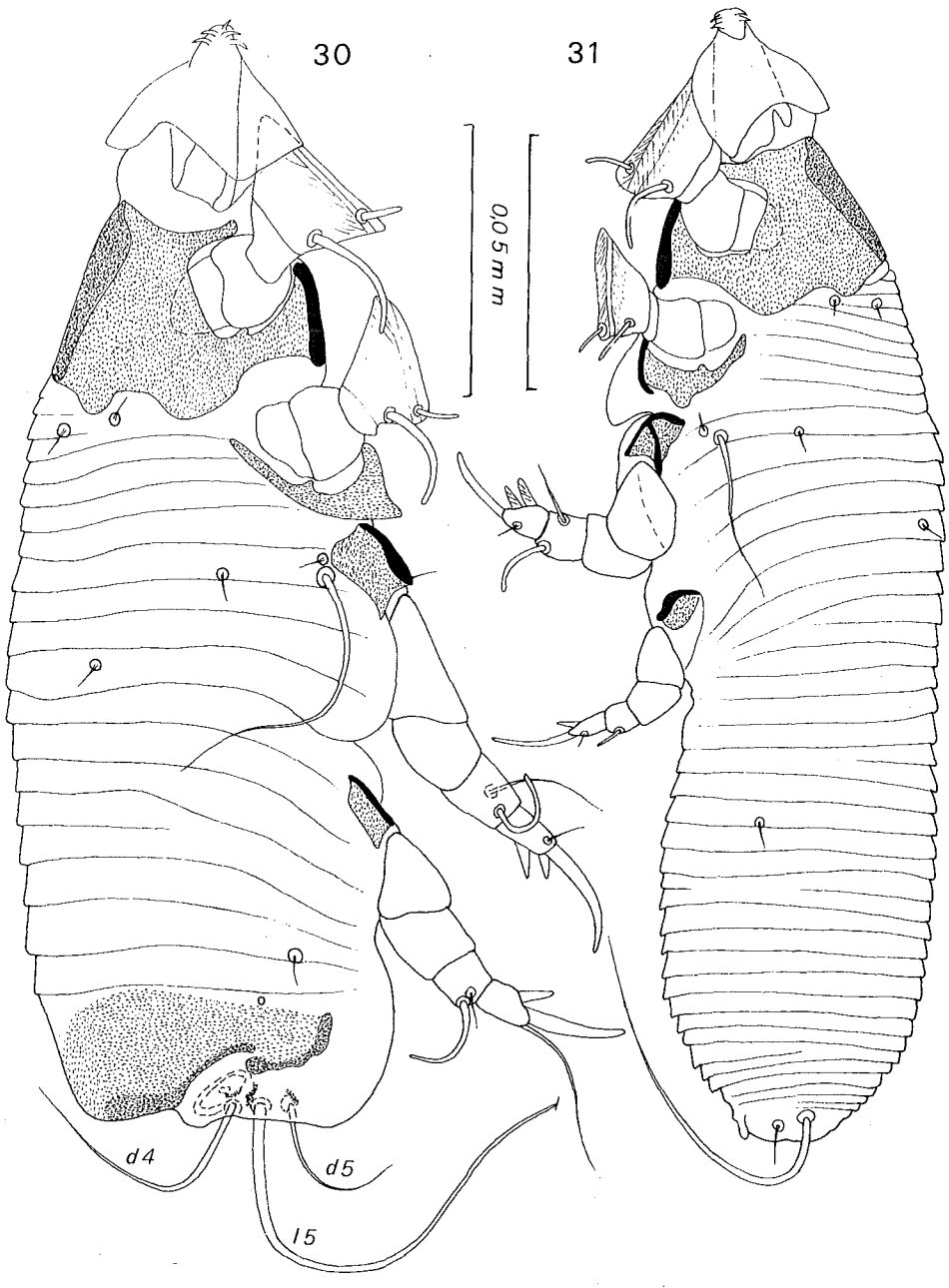
Male: Unknown.

Host and locality: On *Megaderma spasma*, India. Bat in the IRSNB, No. 202 B. Holotype and one paratype female. Holotype in IRSNB.

Remarks: This species is clearly recognizable by the shape of the gnathosoma and the prescapular plate each ending in 4 strong horns.



Figs. 28–29. Fig. 28. *Alabidocarpus scotophilus* Fain. Fig. 28. Female, holotype. Fig. 29. *Alabidocarpus octodens*. Female, holotype.



Figs. 30–31. *Alabidocarpus parryae* Fain. Fig. 30. Male, holotype; Fig. 31. Female, paratype.

5. *Alabidocarpus parrayae* Fain, 1976

Male (Fig. 30): Holotype 160 μ long, 63 μ wide. In 2 paratypes 175 × 65 μ and 165 × 62 μ. There are 20 striations in midline and 17 laterally between setae *sc e* and opisthosomal plate. Gnathosomal hooks strongly developed. Prescapular plate broadly fused with coxa I, with 4 poorly developed, rounded posterior lobes. Setae *h* 42 μ. Opisthosomal plate 19 μ long (maximum length. Setae *d 4* 32 μ, *d 5* 18–20 μ and *l 5* 75 μ. Tarsi III–IV with apical spines 18 and 15 μ long respectively.

Female (Fig. 31): Paratype 225 μ long, 60 μ wide. There are 42–43 striations in midline. Propodosoma as in the female. Setae *sc i*, *sc e*, *sh*, *d 5* very short and thin. Setae *h* and *l 5* 30 μ and 80 μ long respectively. Apical spine of tarsi III 17 μ, of tarsi IV 14 μ long.

Host and locality: On *Myotis adversus moluccarum*, Aouta Plantation, Aore Is., New Hebrides. Bat in BM No. 73.1404. The mites were attached to the hairs of the neck. Holotype and 3 paratypes male, 5 paratypes female. Holotype in BM.

Remarks: This species is characterized by the presence of large gnathosomal hooks combined with the sinuous aspect of the posterior margin of the prescapular plate, which bears 4 short but widely rounded lobes, and by the short *d 5* setae in female.

6. *Alabidocarpus vietnamensis* Fain, 1976

Male (Fig. 33): Holotype 180 μ long, 63 μ wide. There are 15 striations laterally between setae *sc i* and opisthosomal plate. Gnathosomal hooks moderately developed. Prescapular plate 30 μ long in midline and 42 μ along its most lateral lobe. This plate bears 3 longitudinal thickenings on each side, the thickenings ending posteriorly in 3 small pointed denticulations. Coxae II short, extending slightly in lateral direction. Opisthosomal plate 15 μ long. Setae *sc i*, *sc e*, *sh* very short and thin. Setae *h* 45 μ long with basal part thick. Setae *d 4* 36 μ long, thick with apex strongly attenuated; *d 5* very thin, 9 μ long; *l 5* strong 90 μ.

Female (Fig. 32): Paratype 285 μ long 60 μ wide. There are 36–38 striations (counted laterally). Gnathosomal lobes less developed than in male. Prescapular plate and setae *sc i*, *sc e*, *s h* as in male. Setae *h* inflated basally, 36 μ long. Setae *d 5* very short, *l 5* 75 μ long.

Host and locality: (i) *Rhinolophus macrotis (Rh. episcopus caldwelli)*, from Chapa, Vietnam. Bat in BM No. 33.4.1.26–27. Holotype male, 5 paratypes female. Holotype in BM. (ii) *R. arcuatus proconsulis*, without locality. Bat in BM No. 59.190–191. One female. (iii) *R. shameli*, Siem Reap, Cambodia. Bat in BM No. 70.1037. One female.

Remarks: This species is well characterized by the toothed aspect of posterior border of prescapular plate, combined to the tickening of the *h* setae in both sexes and of the *d 4* setae in male.

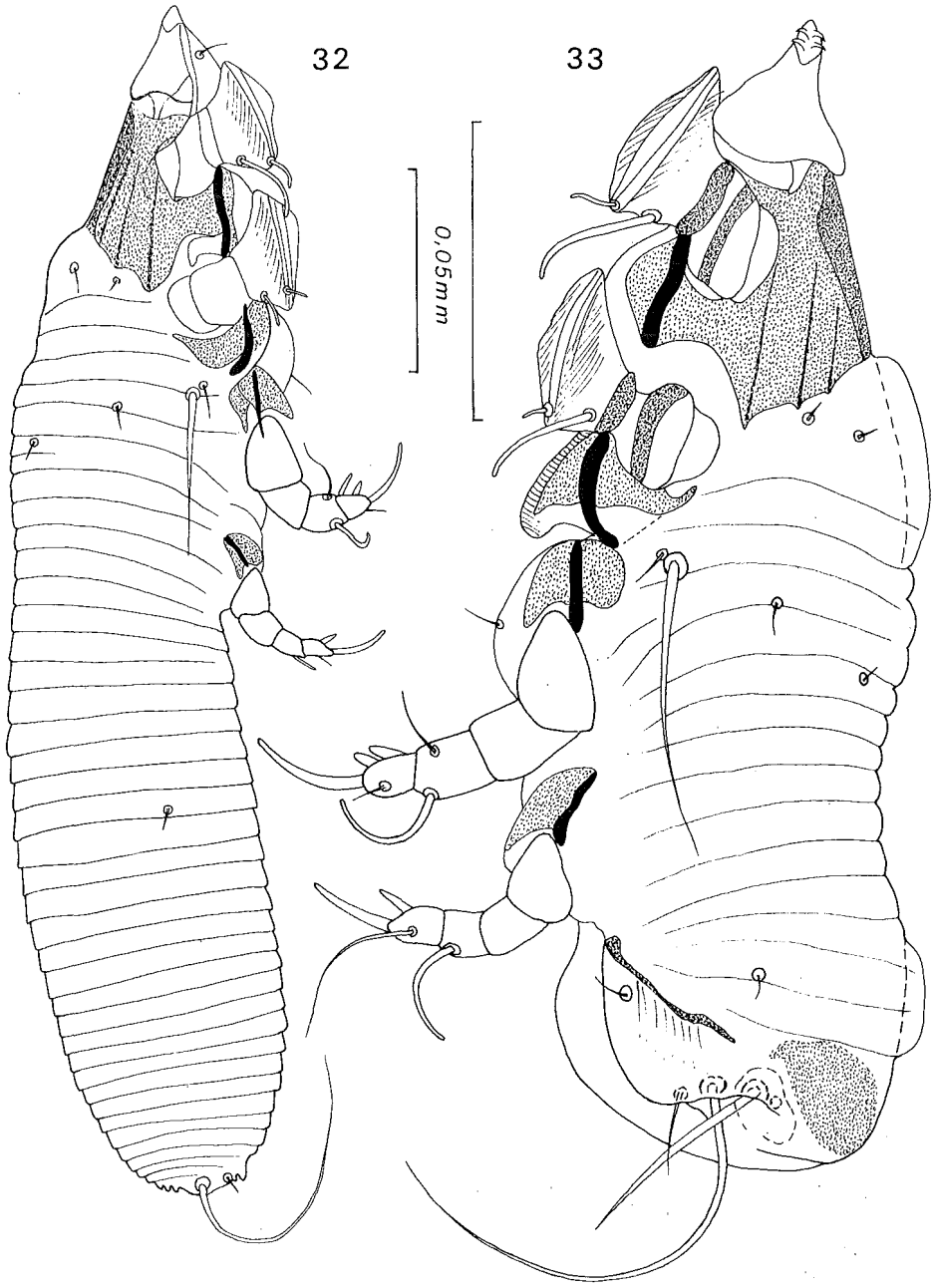
7. *Alabidocarpus lankadivae* Fain, 1976 n.stat.
Alabidocarpus megalonyx lankadivae Fain, 1976: p. 54

Male (Fig. 34): Holotype 570 μ long and 300 μ wide. There are 36 striations in the midline. Posterior border of gnathosoma slightly sinuous without lobes. Prescapular plate with lateral projections poorly developed and rounded. Opisthosomal plate 90–100 μ long. Setae *d 4* and *d 5* 60 μ, *l 5* 210 μ. Apical spine of tarsus III curved, 46 μ long. Tarsus IV including apical prolongation 125 μ long.

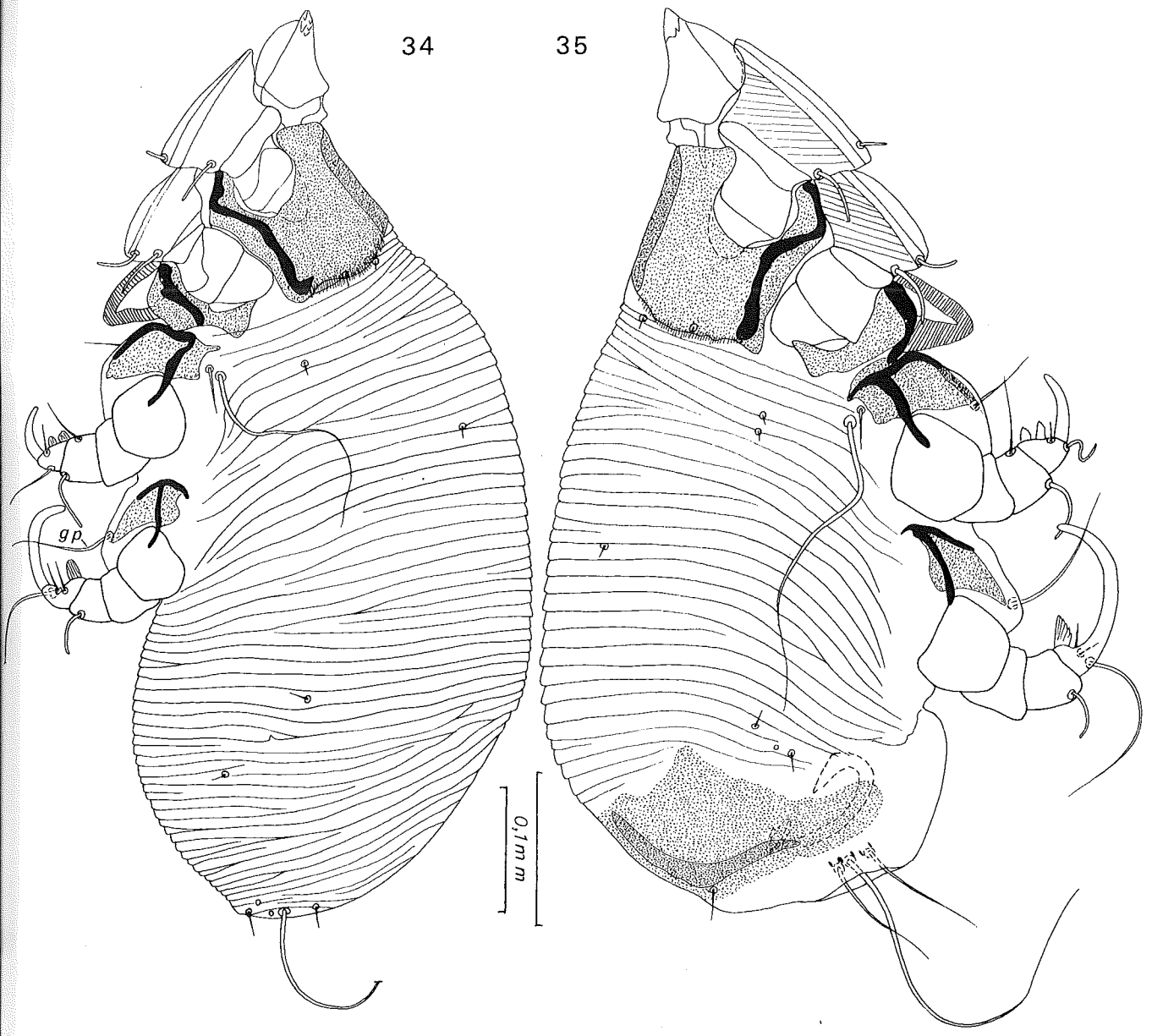
Female (Fig. 35): Paratype 740 μ long, 310 μ wide. There are 42 striations in midline. Gnathosoma as in male. Prescapular plate 90 μ long in midline and 148 μ long along the postero-lateral lobes. Setae *h* 180 μ long, setae *sh* very thin 30 μ long (in a paratype). Setae *l 5* at least 180 μ.

Host and locality: On *Hipposideros lankadiva*, Pitakele Cave, Sri Lanka. Bat in BM No. 36.11.26. 4–5. Holotype and one paratype male, two paratypes female.

Remarks: This species differs from *A. megalonyx*, in both sexes, by the short and rounded aspect of the postero-lateral corners of the prescapular plate. In the female the striations are less numerous (42–46, instead of 60–63). In male the opisthosomal plate is longer (90 μ instead of 50 μ in *A. megalonyx*), the setae *l 5* much longer (210 μ, instead of 105 μ) and 3.5 times longer than *d 4* and *d 5* (instead of twice in *A.megalonyx*). It is distinguished from



Figs. 32–33. *Alabidocarpus vietnamensis* Fain. Fig. 32. Female, paratype. Fig. 33. Male, holotype.



Figs. 34–35. *Alabidocarpus lankadivae* Fain. Fig. 34. Male, holotype; Fig. 35. Female, paratype.

A. yandinae Domrow & Moorhouse, *A. fujii* Wada and *A. recurvus* Womersley mainly by the very poor development of the gnathosomal lobes.

8. Alabidocarpus scutellatus n.sp.

Female (Fig. 36): Holotype (larvigerous) 660 μ long, 180 μ wide. In 3 paratypes 575 × 150 μ, 670 × 185 μ and 690 × 185 μ. There are 67 striations in midline. Gnathosoma with 2 strong, conical paramedian lobes (21 μ long) and 2 shorter, more rounded lateral lobes. Prescapular plate 105 μ long in midline and 153 μ along its postero-lateral projections. Setae *sc i*, *sc e* and *sh* vestigial. Setae *gp* thin; *h* 120 μ; *d 5* thin 18 μ; *l 5* 150 μ. Apical spines of tarsi III 33 μ, of tarsi IV 60 μ.

Male (Fig. 37): Paratype 450 μ long, 170 μ wide. In 2 paratypes 435 × 160 μ and 460 × 180 μ. Propodosoma as in female. Opisthosomal plate 50 μ long. Setae *h* about 120 μ. Setae *d 4*, *d 5* and *l 5* 54 μ, 54 μ and 120 μ. Apical spines of tarsi III 32–35 μ. On leg IV tarsus and apical spine are fused in a complex 65–70 μ long.

Host and locality: On *Rhinolophus creaghi creaghi*, Comantan Cave, Sandantan, Borneo. Bat in BM No. 72.681–708. The mites were attached to the vibrissae of the face. Holotype and 4 paratypes female, 4 paratypes male. Holotype in BM.

Remarks: This new species differs from paratypes of *A. diceratops* Lawrence, in both sexes, by the larger body, the different shape of the gnathosomal hooks, shorter (21 μ instead of 26–27 μ) and less convex, the relatively shorter postero-lateral prolongations of the prescapular plate remaining far in front of setae *h;* the female, in addition, is distinguished by the smaller number of cuticular striations, the vestigial aspect of setae *sc i*, *sc e* and *sh*, and the much longer setae *h* (120 μ instead of 50 μ). The male differs by the longer setae *h* (120 μ compared with 50 μ) and *l 5* (120 μ compared with 60 μ in *A. diceratops*).

9. Alabidocarpus rousetti Fain, 1970

This species has been described from frugivorous bats (*Rousettus* sp. and *Eidolon helvum*) in Central Africa.

In the oriental region we found it on *Dobsonia inermis* Kalombangara, Salomon Is. Bat in BM No. 67.1921 (5 females and 6 males); on *Eonycteris spelaea*, Raub Cave, Pahang, Malaysia (one female collected by Dr. F. Lukoschus) and on *R. amplexicaudatus*, Farm Caves, Southern Asia (3 females).

10. Alabidocarpus calcaratus Lawrence, 1952

This species has been described from *Myotis tricolor* in South Africa.

I have found it on *Myotis blythi*, near Achaba, in Kashmir. Bat in BM No. 71–14 (8 females, 4 males, immatures) and *M. blythii omarii*, in Janch, 25 m from Kuhrang on Shakurd road, Zagros Mt., Bakhitiari province, Iran. Bat in BM No. 66.3215–26 (8 females, 6 males, immatures). All the mites were fixed to the vibrissae of the face.

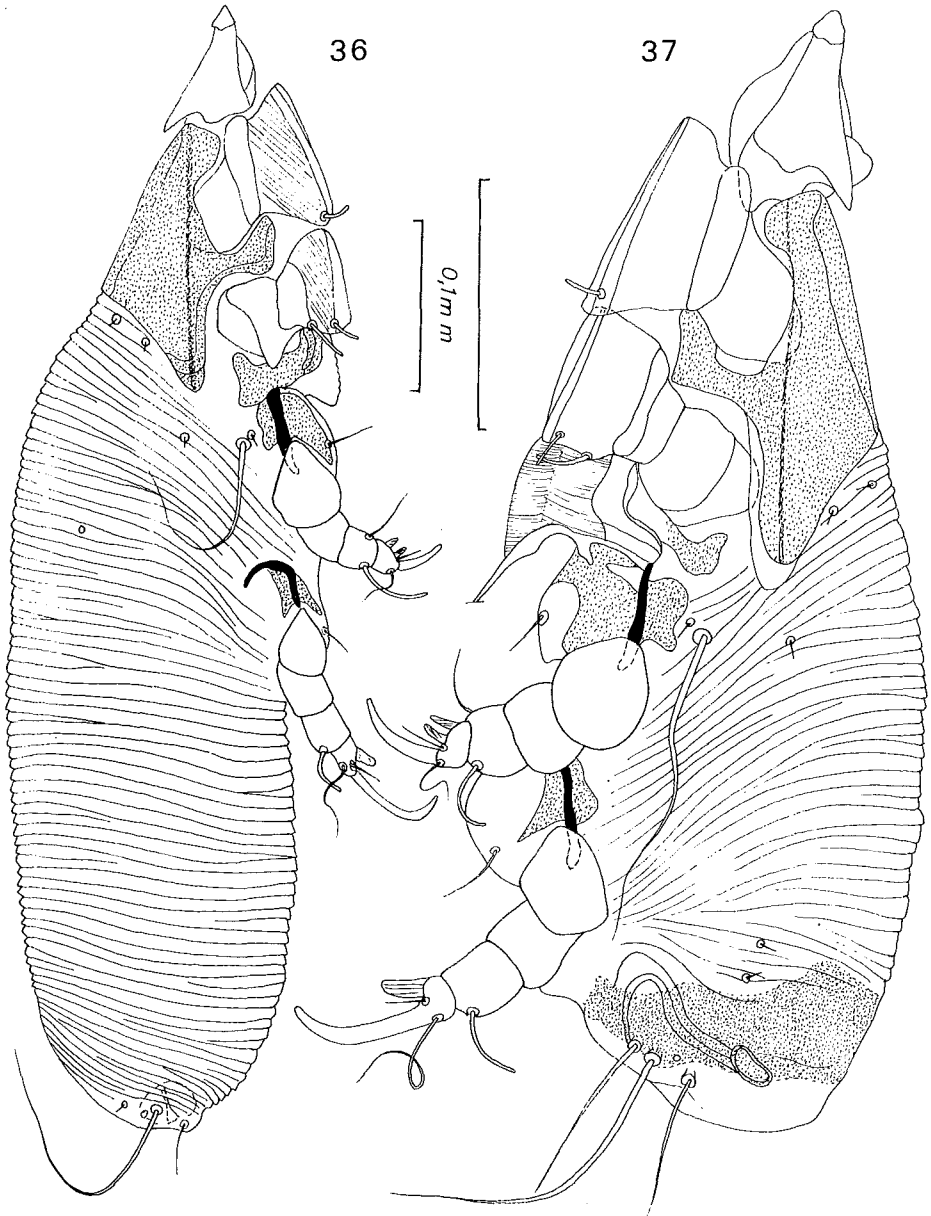
I have also seen specimens of this species from *M. volans* in Oregon (USA) and *M.californicus* in USA (collection Dr. J. Whitaker).

11. Alabidocarpus fujii Wada, 1967

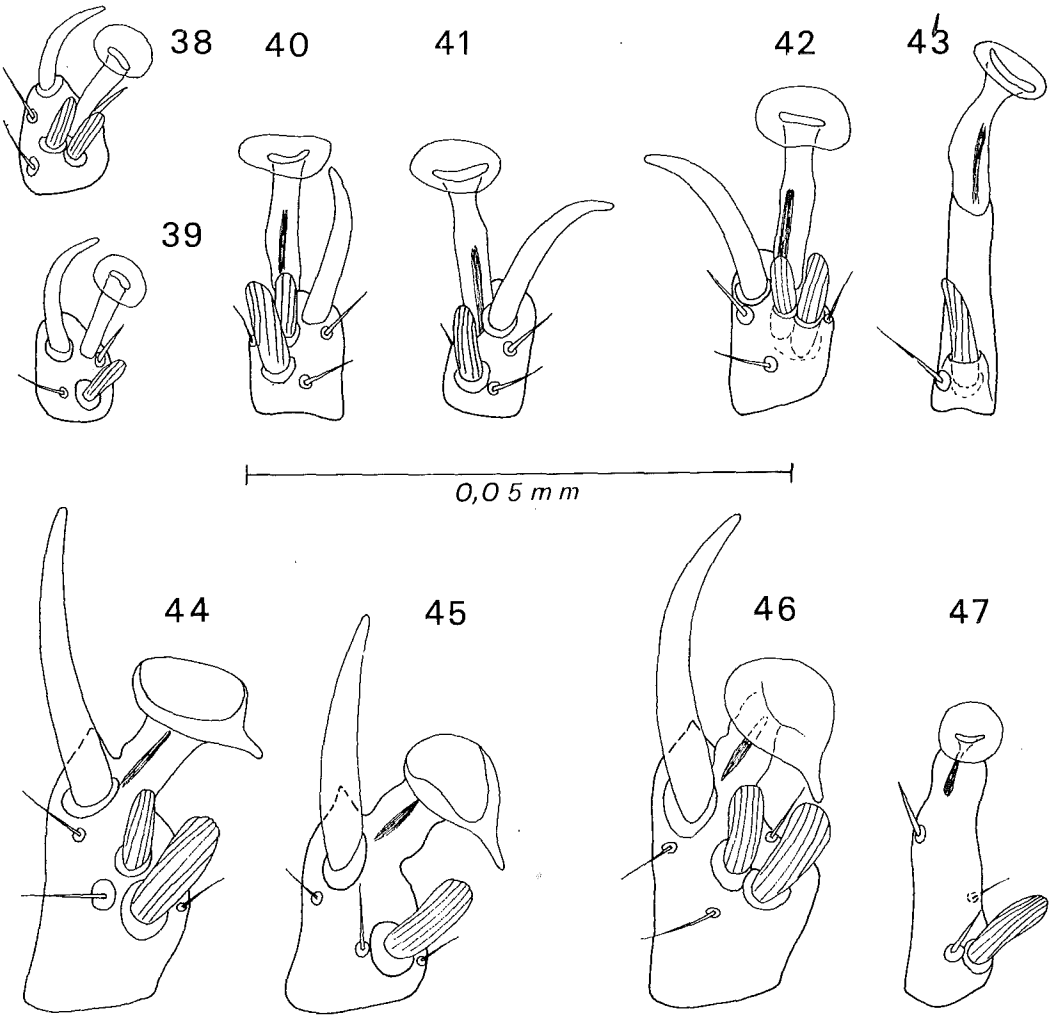
This species has been redescribed and redepicted by Domrow & Moorhouse (1975).

It is known from *Miniopterus schreibersi niponiae* in Japan (type series) and from *M. australis* in New Guinea, Australia (Domrow & Moorhouse) and in the New Hebrides (Fain & Lukoschus, 1981). In New Hebrides, the infected bats were found in Aore Is. (bat in BM No. 73–1478–83) and in Efate Is. bat in BM No. 73–1434–43); all the mites, mostly immatures, were attached to the vibrissae of the face.

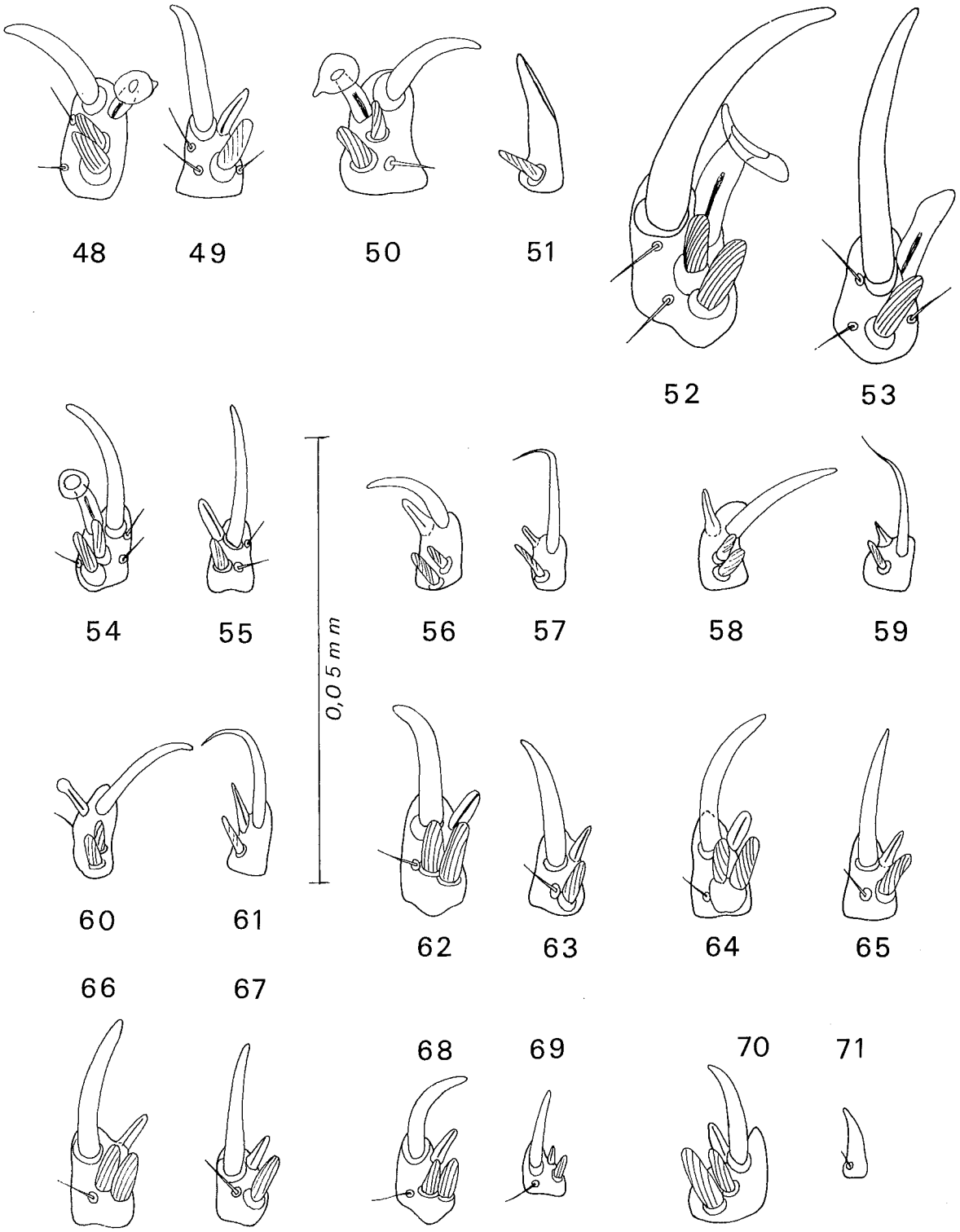
The *gp* setae (situated between coxae IV) in the female of *A. fujii* are thick, short spines as in *A. calcaratus* (see original drawing by Wada and our redescription of *A. calcaratus* (Fain, 1971)). Domrow & Moorhouse (1975) in their redrawing of *A. fujii* have erroneously depicted these setae as very thin.



Figs. 36–37. *Alabidocarpus scutellatus* n.sp. Fig. 36. Female, holotype; Fig. 37. Male, paratype.



Figs. 38–47. Tarsi III and IV in *Paralabidocarpus* spp. Figs. 38–39: *P. hipposideros*, Fain, female. Figs. 40–43: *P. pilosus* Fain, female (40–41) and male (42–43). Figs. 44–47: *P. coxatus* Fain, female (44–45) and male (46–47).



Figs. 48–71. Figs. 48–55: Tarsi III and IV in *Labidocarpoides* spp. Figs. 48–51: *L. hipposideros ceylanicus* Fain, female (48–49) and male (50–51). Figs. 52–53: *L. grandior* Fain, female. Figs. 54–55: *L. uluensis* Fain, female. Figs. 56–71: Tarsi III and IV in *Labidocarpus* spp. Figs. 56–57: *L. rhinolophi* Fain, female. Figs. 58–59. *L. hongkongensis* sp.nov., female. Figs. 60–61: *L. acuminatus* sp.nov., female. Figs. 62–63: *L.selangorensis* Fain, female. Figs. 64–65: *L. formosanus* Fain, female. Figs. 66–67: *L. refulgens* Fain, female, Figs. 68–71: *L. vitatus* (Fain), female (68–69) and male (70–71).

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