

# STUDIES ON THE ERIOPHYID MITES (ACARINA : ERIOPHYOIDEA) OF INDIA IX. NEW SPECIES OF *CALEPITRIMERUS* WITH A KEY TO INDIAN SPECIES

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INDIAN  
ERIOPHYIDAE

ABSTRACT : Three new species under the genus *Calepitrimerus* Keifer viz. *C. hispidis* sp. nov. infesting *Ficus hispida* L. f., *C. sagarensis* sp. nov. infesting *Excoecaria agallocha* L. and *C. tabernaemontanis* sp. nov. infesting *Tabernaemontana coronaria* Wild. are described. Relationships of the new species with the other known species under the genus have been discussed. A key for separating the Indian *Calepitrimerus* species has been provided.

ERIOPHYIDAE  
DE L'INDE

RÉSUMÉ : Trois nouvelles espèces du genre *Calepitrimerus* Keifer sont décrites, *C. hispidis* sp. nov. infestant *Ficus hispida* Lf., *C. sagarensis* sp. nov. infestant *Excoecaria agallocha* L. et *C. tabernaemontanis* sp. nov. infestant *Tabernaemontana coronaria* Wild. Les affinités des nouvelles espèces avec les espèces du genre déjà connues sont discutées. Une clé d'identification des *Calepitrimerus* de l'Inde est établie.

## INTRODUCTION

The members of the genus *Calepitrimerus* Keifer (1938) are mostly vagrants on the leaves and apical shoots of the host plants and can easily be recognised from other genus under the subfamily Phyllooptinae of family Eriophyidae by their dorsal tubercles placed ahead of rear shield margin and the dorsal seta directing up and centrad in addition to the mid-dorsal ridge which ends in a broad trough before the tip of subdorsal or lateral ridges near telosomal lobes. So far about 25 species of *Calepitrimerus* including 6 species from

India, are known from different parts of the world. The species found in India are *Calepitrimerus antidesmae* Chakrabarti and Das (1982) infesting *Antidesma ghesembilla* Gaertn., *Calepitrimerus cordiae* Chakrabarti and Das (1982) infesting *Cordia myxa* L. and *C. massanioris* Das and Chakrabarti (1982) infesting *Tectona* sp. in West Bengal (North east India), *C. azadirachtae* Channabasavanna (1966) infesting *Azadirachta indica* A. Juss. in Delhi and Mysore, *C. mysorensis* Channabasavanna (1966) infesting *Neolitsea* Merr. in Mysore and *C. leucadis* Channabasavanna infesting *Leucas aspera* Spr. in Mysore.

In the present paper 3 new species have been

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described from West Bengal. So the genus *Calepitrimerus* now embodies 28 species of which 9 species are found in India. Besides the detailed account of these new species, a key for separating the Indian species has also been provided here.

***Calepitrimerus hispidis* sp. nov.**  
(Figs. 1A-H)

■ **Female** : Body 164-188  $\mu\text{m}$  long, 57-65  $\mu\text{m}$  wide ; robust fusiform, yellowish brown in colour. Rostrum 24-27  $\mu\text{m}$  long, projecting down ; subapical seta 6-7  $\mu\text{m}$  long. Shield 47-50  $\mu\text{m}$  long, 55-64  $\mu\text{m}$  wide, subtriangular with prominent anterior lobe ; shield design represents a central disc formed by union of admedian lines with median in a common point near rear margin and two lateral discs formed by union of submedians with admedians just ahead of rear shield margin on either side ; median line present only on posterior 0.5 part ; admedian lines arising from the base of anterior lobe, runs first parallel to each other upto 0.5 part anteriorly where they join to median line by a cross line, then run divergently and ultimately turn inwards in front of the dorsal tubercles to meet the median line just ahead of the rear margin. Dorsal tubercles 5-7  $\mu\text{m}$  ahead of rear margin, 16-24  $\mu\text{m}$  apart from each other ; dorsal seta 5-7  $\mu\text{m}$  long directed up and centrad. Forelegs 26-30  $\mu\text{m}$  long from trochanter base ; femur 8-9  $\mu\text{m}$  long with a seta 10  $\mu\text{m}$  long ; patella 3-4  $\mu\text{m}$  long with a seta 15-21  $\mu\text{m}$  long ; tibia 5-7  $\mu\text{m}$  long with a foretibial seta 3-4  $\mu\text{m}$  long ; tarsus 5-7  $\mu\text{m}$  long with seta 16-20  $\mu\text{m}$  long ; claw moderately arched and knobbed, 5-6  $\mu\text{m}$  long ; featherclaw simple, 4-rayed. Hindlegs 23-27  $\mu\text{m}$  long from trochanter base ; femur 7-9  $\mu\text{m}$  long with a seta 8-11  $\mu\text{m}$  long ; patellar seta 8  $\mu\text{m}$  long ; tibia 4-6  $\mu\text{m}$  long without seta ; tarsus 4-6  $\mu\text{m}$  long ; claw 5  $\mu\text{m}$  long ; other characters as in the foreleg. Anterior coxae contiguous, with prominent median suture ; both the coxae almost without any ornamentation. First coxal tubercles slightly ahead of the anterior coxal approximation ; second coxal

tubercles much ahead of the transverse line across the third coxal tubercles.

Abdomen with 27 tergites and 56-59 sternites ; tergites non-microtuberculous, broader than sternites and with distinct margins ; abdominal thanosome with a middorsal ridge ending ahead a few telosomal rings and two lateral ridges ; microtubercles present only on sternites as round bead-like structures. Lateral seta 8-13  $\mu\text{m}$  long, on about sternite 9 ; first ventral seta 18-24  $\mu\text{m}$  long, on about sternite 23 ; second ventral seta 7-11  $\mu\text{m}$  long, on about sternite 36 ; third ventral seta 18-21  $\mu\text{m}$  long, on about sternite 54 ; caudal seta 23-37  $\mu\text{m}$  long ; accessory seta absent. Genitalia 15-18  $\mu\text{m}$  wide and 9-12  $\mu\text{m}$  long ; genital coverflap with longitudinal lines (14-16) in two rows ; genital seta 11-13  $\mu\text{m}$  long.

■ **Male** ; Unknown.

■ **Holotype** : ♀, INDIA : WEST BENGAL : Nadia, Kalyani, 5-IV-1979, ex *Ficus hispida* L.f. (Moraceae) on slide (No. 178/63/79), coll. S. MONDAL.

■ **Paratypes** : many ♀♀, on the holotypic slide and on 3 slides (Nos. 178/63/79 to 180/63/79), collected from the same plant and locality.

**Distribution** : India : West Bengal.

**Relation to the host plant**. — The mites were found on ventral surface of leaves particularly on the leaf vein under hairy outgrowth. Due to infestation leaves turn yellowish and show stunted growth.

■ **Remarks** : Three new species *Calepitrimerus hispidis*, *Calepitrimerus sagarensis* and *Calepitrimerus tabernaemontanis* collected from the area are with 4-rayed featherclaw. The other species under the genus *Calepitrimerus* having 4-rayed featherclaw are *C. achilleae* (Liro) Roivainen (1950), *C. azadirachtae* Channabasavanna (1966), *C. baileyi* Keifer (1938), *C. cariniferus* Keifer (1938) and *C. chamaemori* Roivainen (1951). But these three new species differ from all the above 5 species by shield designs and in other characters in details. *C. sagarensis* sp. nov. differs from *C.*

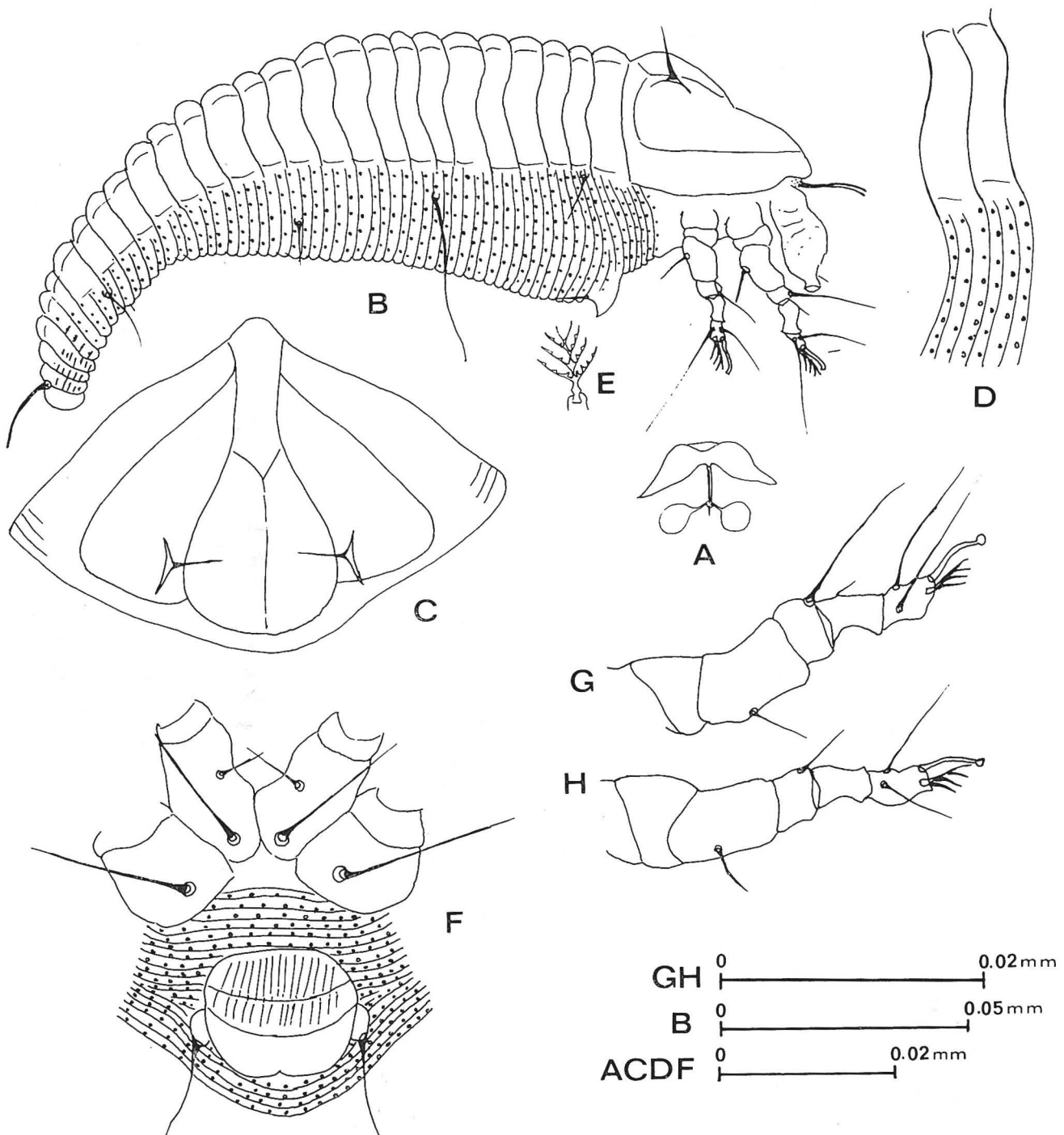


FIG. 1A-H : *Calepitrimerus hispidus* sp. nov., female.

A) internal female genitalia ; B) lateral view of mite ; C) anterior dorsum of mite ; D) side view of the skin structure ;  
E) featherclaw (empodium) ; F) coxae and female genitalia ; G) foreleg ; H) second leg.

*tabernaemontanis* sp. nov. in having about 14-16 distinct longitudinal stripes on genital coverflap (absent or indistinct in *C. tabernaemontanis*) and detail shield design besides other characters. *C. hispidis* sp. nov. remains distinct from the above two new species in having longitudinal stripes in two ranks on genital coverflap and also by different shield design.

***Calepitrimerus sagarensis* sp. nov.**

(Fig. 2A-I)

■ **Female** : Body 136-183  $\mu\text{m}$  long, 52-70  $\mu\text{m}$  wide ; fusiform, yellowish brown in colour. Rostrum 21-26  $\mu\text{m}$  long, straight, directed ventrad, with subapical seta 8-13  $\mu\text{m}$  long. Shield 45-56  $\mu\text{m}$  long, 63-80  $\mu\text{m}$  wide, subtriangular, smooth with

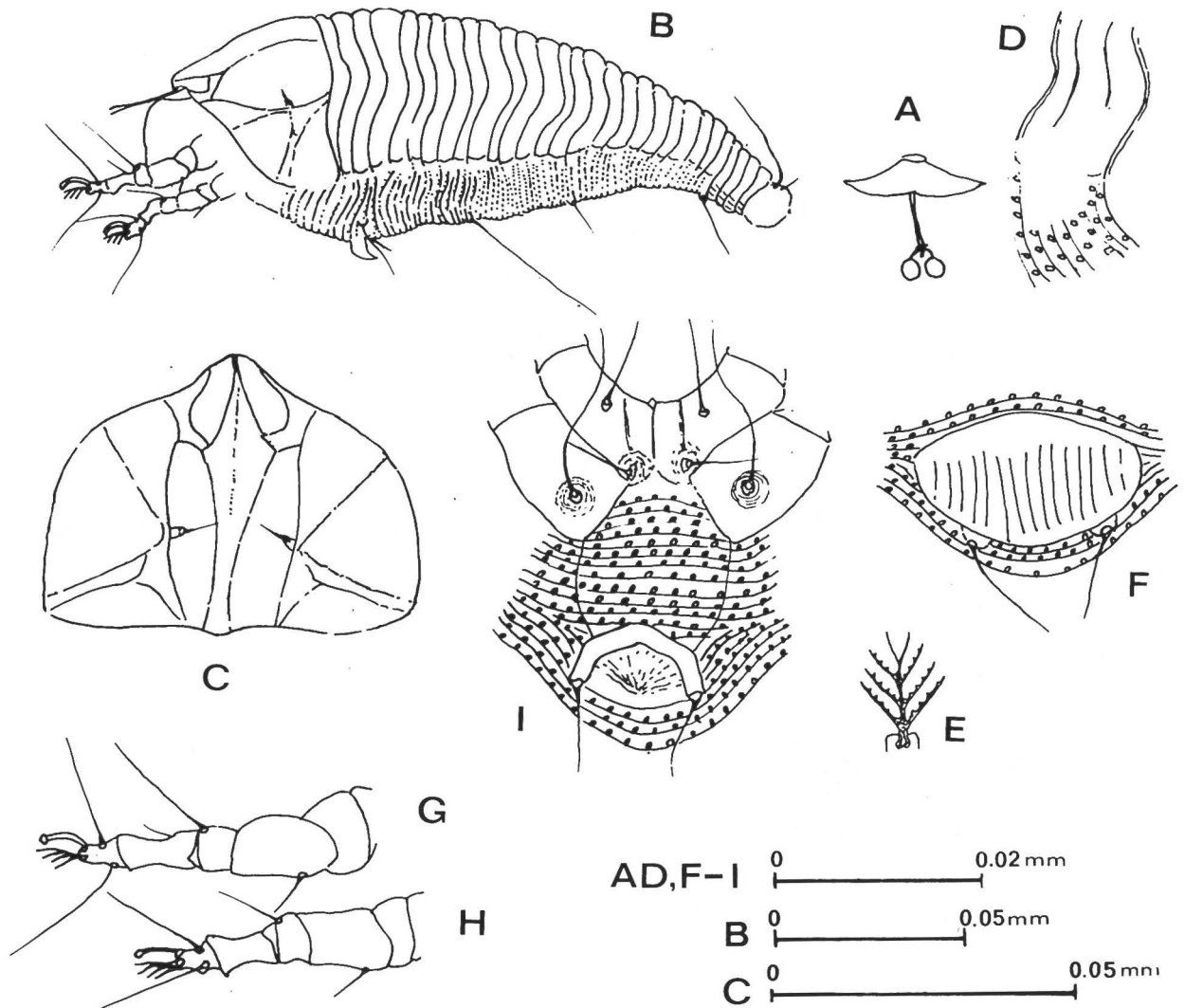


FIG. 2A-I : *Calepitrimerus sagarensis* sp. nov., female.

A) internal female genitalia ; B) lateral view of mite ; C) anterior dorsum of mite ; D) side view of skin structure ; E) feather-claw (empodium) ; F) female genitalia ; G) foreleg ; H) second leg.

Male : I) coxae and male genitalia.

blunt but prominent anterior lobe over rostrum ; median line faint, discontinuous and present on anterior half only ; admedians arising from the tip of anterior lobe run backwards divergently upto 0.33 part where it is connected with the first submedian by a transverse line and then become convergent and ultimately meet the rear shield margin ; submedian lines two ; first submedian distinct, sinuate, extends upto rear shield margin touching the base of dorsal tubercles ; second submedian faint, arises from the lateral shield margin, meets diagonally the bases of dorsal tubercles and runs first outwardly and then inwardly to meet the rear shield margin ; two transverse lines, one faint and the other distinct arise from rear lateral angle of the shield and meet the second submedian on its divergent part below the level of dorsal tubercles. Dorsal tubercles 8-20  $\mu\text{m}$  ahead of rear shield margin and 23-31  $\mu\text{m}$  apart from each other ; dorsal seta 5-7  $\mu\text{m}$  long, directed up and centrad. Forelegs 46-50  $\mu\text{m}$  long from coxal base ; femur 8-11  $\mu\text{m}$  long with a seta 8  $\mu\text{m}$  long ; patella 4-5  $\mu\text{m}$  long with a patellar seta 14-26  $\mu\text{m}$  long ; tibia 7-9  $\mu\text{m}$  long with a thin foretibial seta on 1/3 and 4-6  $\mu\text{m}$  long ; tarsus 5-7  $\mu\text{m}$  long with two setae, each 15-21  $\mu\text{m}$  long ; claw 5-6  $\mu\text{m}$  long without knob ; featherclaw simple, 4-rayed. Hindlegs 39-47  $\mu\text{m}$  long from coxal base ; femur 7-10  $\mu\text{m}$  long with a seta 10-12  $\mu\text{m}$  long ; patellar seta 11-13  $\mu\text{m}$  long ; tibia 6-7  $\mu\text{m}$  long without tibial seta ; claw 4-5  $\mu\text{m}$  long ; other characters as in foreleg. Anterior coxae broadly contiguous with moderately developed median suture ; both the coxae smooth except the bases of tubercles ; first coxal tubercles just below the level of anterior coxal approximation ; second coxal tubercles just ahead of the level of third coxal tubercles.

Abdomen with 29 tergites and about 70 sternites ; a broad thanosomal mid dorsal ridge present upto tergites 21. Microtubercles absent on tergites, but present as oval or elliptical structures on the margin of sternites except a few (3-5) last sternites which are microstriated. Lateral seta 21-23  $\mu\text{m}$  long, on about sternite 9 ; first ventral seta 44-52  $\mu\text{m}$  long, on about sternite 28 ; second ventral seta 8-13  $\mu\text{m}$  long, on about sternite 45 ; third ventral seta 19-23  $\mu\text{m}$  long, on about sternite 65 ;

caudal seta 31-47  $\mu\text{m}$  long ; accessory seta very small 4  $\mu\text{m}$  long. Female genitalia 22-23  $\mu\text{m}$  wide, 13-15  $\mu\text{m}$  long ; genital coverflap with 14-16 longitudinal scorings ; genital seta 10-12  $\mu\text{m}$  long.

■ *Male* : scarce ; body 164  $\mu\text{m}$  long. Genitalia 14-16  $\mu\text{m}$  wide ; genital seta 16  $\mu\text{m}$  long.

■ *Holotype* : ♀, INDIA : WEST BENGAL : 24-Parganas, Sagar Island, 6-VII-1978, ex *Excoecaria agallocha* L. (Euphorbiaceae) on slide (No. 165/52/78), coll. S. MONDAL and A. ROY.

■ *Paratypes* : many ♀♀ and a few ♂♂ on the holotypic slide and on 2 slides (Nos. 166/52/78 to 167/52/78), collection data as in the holotype.

*Distribution* : India : West Bengal.

*Relation to the host plant.* — The mites inhabit both the surfaces of leaves along with *Aculops excoecaria* Mondal *et al.* No significant injury is made by this mite to their host plant except some changes in colour of the leaves. A high population of the species was noticed during August-November.

■ *Remarks* : The affinity of this species with other species has been discussed under *Calepitrimerus hispidis* sp. nov.

***Calepitrimerus tabernaemontanis* sp. nov.**  
(Figs. 3A-H)

■ *Female* : Body 141-164  $\mu\text{m}$  long, 63-81  $\mu\text{m}$  wide ; fusiform, deep brownish in colour. Rostrum 19-26  $\mu\text{m}$  long, projecting down ; subapical seta 5-7  $\mu\text{m}$  long. Shield 49-51  $\mu\text{m}$  long, 61-66  $\mu\text{m}$  wide, subtriangular with rather broad and blunt anterior lobe ; shield with longitudinal dashes on anterior lobe and lateral margin ; shield design with a number of longitudinal lines ; median line present throughout the shield length ; admedian lines sinuate arising from either side of the median line and ultimately meet the rear shield margin ; submedian lines straight, two or three in number ; a transverse line parallel to the

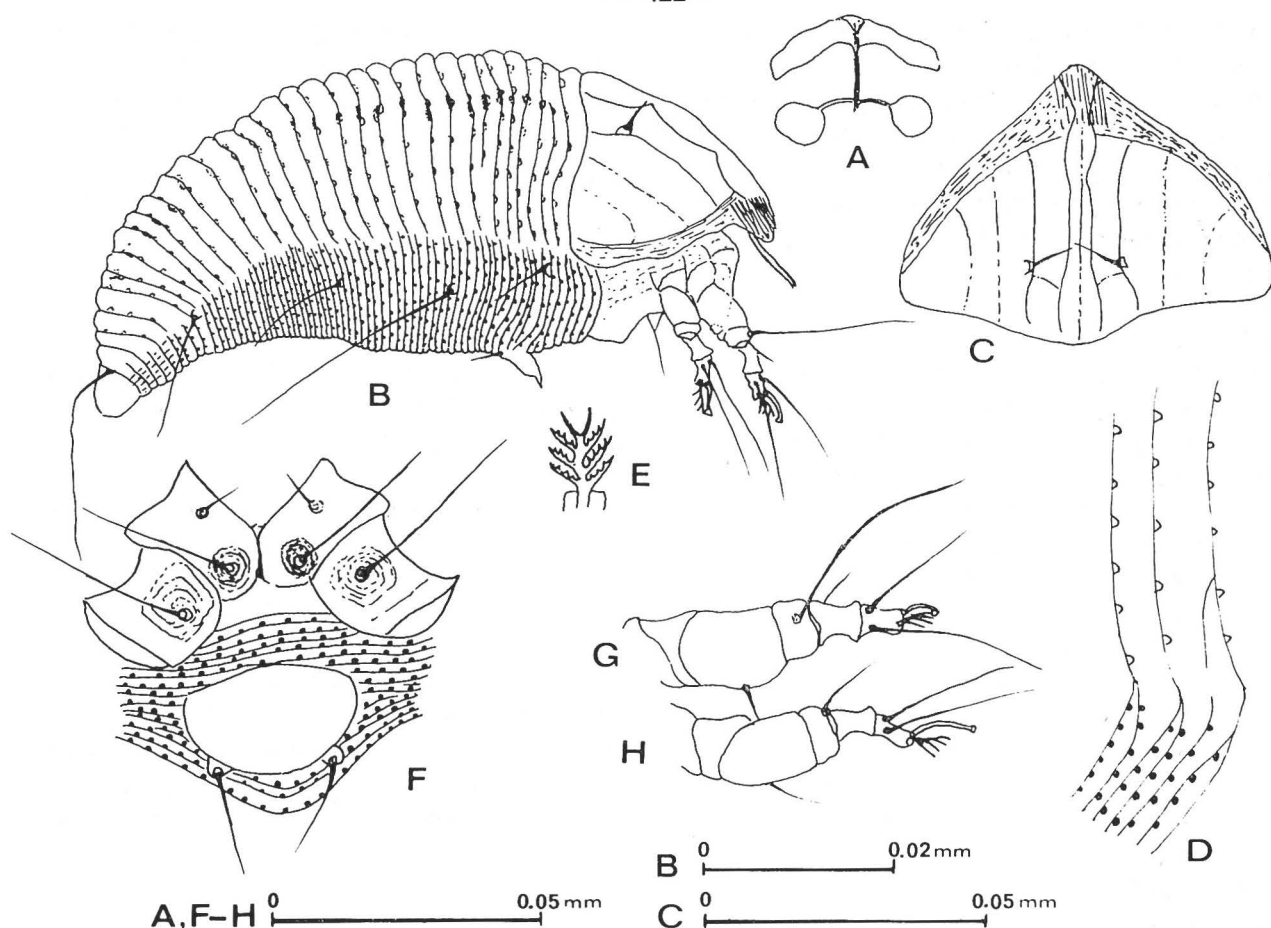


FIG. 3A-H : *Calepitrimerus tabernaemontanis* sp. nov., female.

A) internal female genitalia ; B) lateral view of mite ; C) anterior dorsum of mite ; D) side of the skin structure ; E) feather-claw (empodium) ; F) coxae and female genitalia ; G) foreleg ; H) second leg.

lateral shield margin and crossing the median, admedian and submedians present on 0.25 part of shield. Dorsal tubercles 7-9  $\mu\text{m}$  ahead of rear shield margin and 16-20  $\mu\text{m}$  apart from each other ; dorsal seta 7-10  $\mu\text{m}$  long directed centrad. Forelegs 32-34  $\mu\text{m}$  long from trochanter base ; femur 9-11  $\mu\text{m}$  long with a seta 8-11  $\mu\text{m}$  long ; patella 4-5  $\mu\text{m}$  long with a seta 25-31  $\mu\text{m}$  long ; tibia 6-7  $\mu\text{m}$  long with a seta 4-6  $\mu\text{m}$  long and on about 1/3 ; tarsus 5-7  $\mu\text{m}$  long with setae 16-21  $\mu\text{m}$  long ; claw 6  $\mu\text{m}$  long, arched and knobbed ; featherclaw 4-rayed. Hindlegs 22-24  $\mu\text{m}$  long from trochanter base ; femur 7-9  $\mu\text{m}$  long ; patella 3-4  $\mu\text{m}$  long with a seta 12-15  $\mu\text{m}$  long ; tibia 4-6  $\mu\text{m}$  long without setae ; tarsus 4-5  $\mu\text{m}$

long with seta 15-21  $\mu\text{m}$  long ; claw 6-8  $\mu\text{m}$  long ; other characters as in foreleg. Anterior coxae connate posteriorly with a short median suture ; both the coxae almost without any ornamentation except the tubercular bases which are surrounded by rectangular marking ; first coxal tubercles little ahead of anterior coxal approximation ; second coxal tubercles ahead of the transverse lines through third coxal tubercles.

Abdomen with 28-30 tergites and 58-62 sternites ; middorsal longitudinal ridge quite prominent ending near tergite 16 or 17 ; sternites completely microtuberculous ; microtubercles fading dorsally ; ridges with rough edges. Lateral seta 13-16  $\mu\text{m}$  long, on about sternite 7 ; first ventral seta



37-42  $\mu\text{m}$  long on about sternite 19 ; second ventral seta 11-13  $\mu\text{m}$  long, on about sternite 34 ; third ventral seta 18-26  $\mu\text{m}$  long, on about sternite 56 ; caudal seta 29-37  $\mu\text{m}$  long ; accessory seta missing. Female genitalia 8-12  $\mu\text{m}$  long, 18-20  $\mu\text{m}$  wide ; coverflap almost smooth ; genital seta 6-8  $\mu\text{m}$  long.

■ **Male** : Unknown.

■ **Holotype** : ♀, INDIA : WEST BENGAL : 24-Parganas, Shyamnagar, 21-IV-1978, ex *Tabernaemontana coronaria* Wild (Apocynaceae) on slide (No. 181/44/78), coll. S. MONDAL.

■ **Paratypes** : many ♀♀, on the holotypic slide and on 1 slides (No. 182/44/78), collected from the same plant and locality.

**Distribution** : India : West Bengal.

**Relation to the host plant.** — The mites live on both the surfaces of leaves without showing any apparent damage symptoms.

■ **Remarks** : The affinity of this species with other species has been discussed under *Calepitrimerus hispidis* sp. nov.

#### KEY TO THE INDIAN SPECIES OF *Calepitrimerus* KEIFER

1. Featherclaw 6-rayed ; lateral shield granular ; genital coverflap and coxae smooth.....  
*leucadis* Channabasavanna  
Featherclaw less than 6-rayed (4 or 5-rayed)..... 2
2. Featherclaw 4-rayed. .... 3  
Featherclaw 5-rayed. .... 6
3. Shield with longitudinal dashes on anterior lobe and on lateral margin ; tergites microtuberculous ; genital coverflap smooth..... *tabernaemontanis* sp. nov.  
Shield without longitudinal dashes on anterior lobe and on lateral margin ; tergites non-microtuberculous ; genital coverflap with longitudinal scorings 4
4. Shield design represents a central disc and two lateral discs ; genital coverflap with scorings in double ranks. .... *hispidis* sp. nov.  
Shield design represents longitudinal and oblique lines instead of discs ; genital coverflap with scorings in a single rank..... 5

5. Median line on shield distinct and almost complete except on anterior lobe ; forecoxae with longitudinal lines ; genital seta longer than length of genitalia...

*azadirachtae* Channabasavanna

Median line on shield faint and present only on anterior half ; both the coxae almost smooth ; length of genital seta and genitalia more or less equal.....

*sagarensis* sp. nov.

6. First ventral seta very small (3-5  $\mu\text{m}$ ) and thin ; second ventral seta minute, not easily visible ; genital coverflap smooth except some fine granules on lower margin. .... *antidesmae* Chakrabarti and Das  
First ventral seta much longer (15-48  $\mu\text{m}$ ) ; second ventral seta prominent ; genital covering with longitudinal scorings..... 7

7. Shield with admedian lines highly sinuate ; median line absent on anterior and posterior 0.25 portion ; genital coverflap with longitudinal scorings in double ranks..... *cordiae* Chakrabarti and Das  
Shield with admedian lines less sinuate ; median line absent on anterior half and present on posterior half ; genital coverflap with longitudinal scorings in single rank..... 8

8. Anterior lobe of shield with a blunt short spiny projection at lower anterior margin and the admedian lines are connected with the median line ; dorsal setae small (2  $\mu\text{m}$ ) ; accessory setae present ; length of genital setae and genitalia almost equal.....

*mysorensis* Channabasavanna

Anterior lobe of shield without any spiny projection and the admedians are not connected with the median line ; dorsal setae large (8  $\mu\text{m}$ ) ; accessory setae absent ; genital seta shorter than length of genitalia..... *massanjoris* Das and Chakrabarti

All the type materials mentioned in this paper are deposited at present in the collection of Biosystematics Research Unit, Department of Zoology, University of Kalyani, Kalyani.

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