

STUDIES ON THE ERIOPHYID MITES
(ACARINA : ERIOPHYOIDEA) OF INDIA
V : NEW SPECIES OF *TEGOLOPHUS* KEIFER
FROM WEST BENGAL WITH KEY TO INDIAN SPECIES

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| ERIOPHYIDAE
FROM
INDIA | ABSTRACT : Two new species of <i>Tegolophus</i> Keifer viz., <i>Tegolophus spondiallus</i> infesting <i>Spondias mangifera</i> Willd and <i>Tegolophus vitexis</i> infesting <i>Vitex negundo</i> Linn. are described from West Bengal, India. Relationships of these two new species with other known species have been discussed. Account of the genus <i>Tegolophus</i> has also been provided with a key to 7 species occurring in India. |
| ERIOPHYIDAE
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L'INDE | RÉSUMÉ : Deux espèces nouvelles de <i>Tegolophus</i> , <i>Tegolophus spondiallus</i> infestant <i>Spondias mangifera</i> Willd et <i>Tegolophus vitexis</i> infestant <i>Vitex negundo</i> Linn., sont décrites du Bengale Occidental. Les rapports entre ces deux espèces et les autres espèces connues sont discutés. Un compte rendu sur le genre <i>Tegolophus</i> est également donné avec la clé pour les sept espèces que l'on rencontre en Inde. |

INTRODUCTION

During the survey of Eriophyid mites from North East India, a number of representatives belonging to the genus *Tegolophus* Keifer (1961) have been collected. These mites are known to be leaf vagrants having a fusiform body characterised by the dorsal tubercles with setae situated on rear shield margin, directed posteriorly and by a longer mid-dorsal and two shorter lateral thanosomal ridges.

Nineteen species are so far known from different parts of the world. Among these, 5 species are known from India.

Out of these Indian species, *Tegolophus bambusae* Channa, Basavanna (1966) infesting *Bambusa vulgaris* Schrad. is known from Karnataka

state (South India) and rest 4 species viz., *Tegolophus indica* Chakrabarti and Mondal (1979) infesting *Artocarpus heterophyllus* Lamak., *Tegolophus calotropi* Chakrabarti and Mondal (1979) infesting *Calotropis procera* R. Br., *Tegolophus ficusi* Mondal and Chakrabarti (1979) infesting *Ficus infectoria* Roxb. and *Tegolophus nerii* Mondal and Chakrabarti (1979) infesting *Nerium odoratum* Soland are known from West Bengal (North East India).

In this paper additional accounts of two new species viz., *Tegolophus spondiallus* and *Tegolophus vitexis* have been provided from West Bengal. So the genus *Tegolophus* now embodies 21 species of which 7 species are found in India. A key for separating the Indian species is also provided.

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Tegolophus spondiallus sp. nov.

(Figs. 1A-1I)

■ **Female** : 137.8-182.0 μm long, 52.0-67.6 μm wide, fusiform, pale yellow in colour. Rostrum 28.0-31.5 μm long, projecting diagonally down; antapical seta 9.0 μm long. Shield subtriangular, smooth with well developed anterior lobe, 50.63-61.88 μm long and 56.25-60.50 μm wide; shield design with a pattern of longitudinal and oblique lines forming a network laterally; median line faint; admedian lines originate from posterior lateral margin of the apical cell, diverging upto 0.2 portion from anterior margin of the shield, then converge upto 0.4 portion where they are connected with each other by a cross line, afterward they diverge upto 0.8 portion and move parallelly to meet the rear shield margin inner to the dorsal tubercles; submedian line single and parallel to the lateral shield margin. Lateral shield with a number of indistinct cells; one curve transverse line and two longitudinal oblique lines present in between the admedians and submedians forming 1 subtriangular, 1 triangular and 2 trapezoidal cells on either side. Dorsal tubercles placed at rear shield margin, 25.68-31.54 μm apart; dorsal seta 7.88-11.25 μm long, directed caudad. Forelegs 31.5-40.5 μm long from the base of trochanter; femur 9.0-10.13 μm long, with seta 13.5 μm long; patella 4.0-4.5 μm long, with seta 24.75-28.13 μm long; tibia 7.88-9.5 μm long, with a tibial seta 6.75 μm long at the middle; tarsus 6.75-7.88 μm long with two setae, each 22.5-24.75 μm long; claw 7.88-10.13 μm long, moderately arched and without knob; featherclaw simple, 4-rayed. Hindlegs 28.13-34.88 μm long from trochanter base; femur 7.88-9.0 μm long, with seta 10.13 μm long; patella 3.38-4.30 μm long, with a seta 14.63-15.75 μm long; tibia 6.75 μm long, without hind tibial seta; tarsus 6.75-7.88 μm long with two setae, each 22.5-28.13 μm long; claw 7.88 μm long. Anterior coxae connate with prominent median suture; anterior coxae ornamented with dotted lines and posterior coxae ornamented with irregu-

lar faint curved lines; first coxal tubercles situated just below the level of anterior coxal approximation and 6.75-11.25 μm apart; second coxal tubercles situated nearly on the transverse axis connecting the third coxal tubercles; second coxal tubercles 5.63 μm apart and third coxal tubercles 22.5 μm apart; first coxal seta 6.75-11.25 μm long; second coxal seta 14.63-20.25 μm long; third coxal seta 22.5 μm long.

Abdomen with about 27-29 tergites and 75-78 sternites; tergites with more conspicuous margin and without microtubercles; three ridges, one middorsal and the other two subdorsals present; sternites with less conspicuous margins and smaller microtubercles set along the rear margins; last few sternites are with indistinct microstriations. Lateral seta 14.63-16.88 μm long, on about sternite 9; first ventral seta 50.0-56.25 μm long, on about sternite 28; second ventral seta 7.88-13.50 μm long, on about sternite 46; third ventral seta 22.5-28.13 μm long, on about sternite 72; caudal seta 70.0-78.75 μm long; accessory seta missing. Female genitalia 22.5-24.75 μm wide, 11.25-14.63 μm long; coverflap with about 14-16 longitudinal stripes; genital seta 16.88-19.13 μm long.

■ **Male** : Common; 137.8 μm long; genitalia 15.75 μm wide; seta 13.5 μm long.

■ **Distribution** : India : West Bengal.

■ **Holotype** : ♀, on (slide No. 101/53/78), India : West Bengal : 24-Parganas, Sagar Island, 7.viii.78, collected from *Spondias mangifera* Willd (Family : Anacardiaceae), (Coll. S. MONDAL and A. ROY). **Pratypes** : Many ♀♀, ♂♂, on 3 slides (Nos. 102/53/78 to 104/53/78), collection data as in the holotype.

■ **Relation to the host plant** : Mites were collected in fairly large number from ventral surface of leaves. Maximum population was noticed during July-September. Due to infestation leaves turn yellowish. No other appreciable damage was noticed.

■ **Remarks** : *Tegolophus spondiallus* sp. nov. in having broad tergites and narrow sternites, 4-

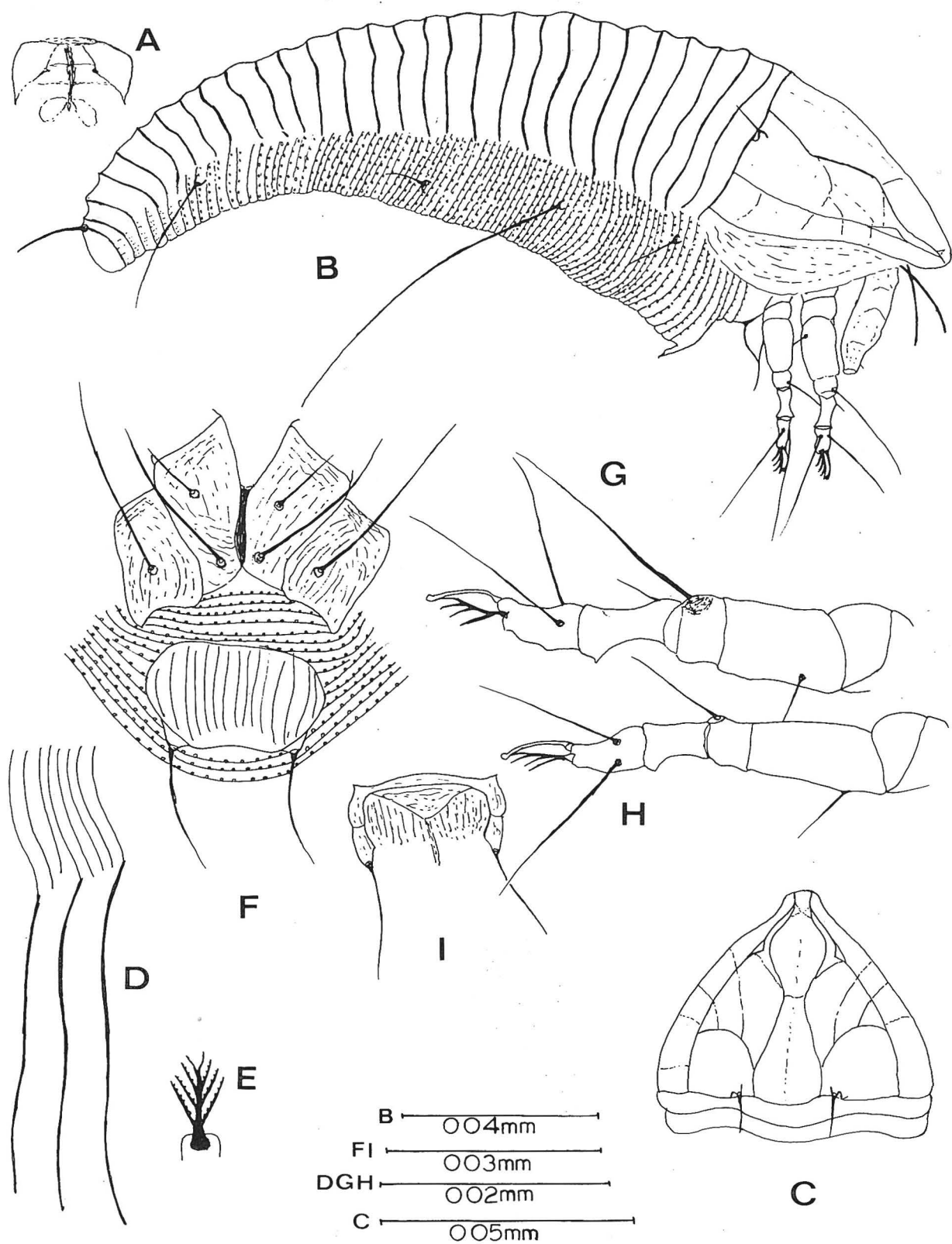


FIG. 1 (A-I) : *Tegolophus spondiallus*, sp. nov., female (A-H) and male (I).

A. — Internal female genitalia. B. — Lateral view of mite. C. — Anterior dorsum of mite. D. — Side view of skin structure. E. — Featherclaw (empodium). F. — Coxae and female genitalia. G. — Foreleg. H. — Second leg. I. — Male genitalia.

rayed featherclaw coupled with the absence of microtubercles on tergites, comes close to *Tegolophus australis* Keifer (1964), *T. hassani* Keifer (1959), *T. artocarpi* Keifer (1977), *T. indica* Chakrabarti and Mondal (1979), *T. ficusi* Mondal and Chakrabarti (1979), *T. nerii* Mondal and Chakrabarti (1979) and *T. vitexis* sp. nov. But from all these species, *T. spondiillus* can be distinguished by its shield design and very long first ventral seta besides other characters.

***Tegolophus vitexis* sp. nov.**
(Figs. 2A-2I)

■ **Female** : 130.0-169.0 μm long, 44.2-52.0 μm wide; fusiform; pale yellow. Rostrum 22.5-30.5 μm long, projecting diagonally down; antapical seta 6.75 μm long. Shield 31.5-38.25 μm long, 50.0-56.25 μm wide, subtriangular with prominent and blunt anterior lobe; shield design with a pattern of longitudinal lines; median line straight, present only on posterior 0.3 portion of shield and connected with the admedians of either side as in the figure; admedian lines sinuate, originates from either side of the apex of anterior lobe, running posteriorly and meet the rear margin; submedian line single, arises from the lateral 0.25 part of the shield and forms an arc and meet the rear margin of shield inner to the dorsal tubercles; a semicircular ridge arises from posterior shield margin outside the tubercles and cross submedian and admedian lines at 0.4 portion of the shield; inner part of the shield is elevated and smooth, outer part is depressed and with longitudinal discontinuous lines specially on the lateral margin. Dorsal tubercles placed at rear margin, 22.5-24.75 μm apart; dorsal setae 19.13-33.75 μm long, directed caudad. Forelegs 31.5-33.75 μm long from the base of trochanter; femur 9.0-10.13 μm long, with seta 10.13-12.38 μm long; patella 4.5-5.63 μm long, with a patellar seta 24.75-28.13 μm long; tibia 6.75-7.88 μm long, with a seta 5.63 μm long, at about 1/3; tarsus 6.75-7.88 μm long, with two setae each 16.88-19.13 μm long; claw 6.75-7.88 μm long, moderately arched, without knob; featherclaw simple

and 4-rayed. Hindlegs 27.0-29.35 μm long; femur 6.75-9.0 μm long, with a seta 11.25-15.75 μm long; patella 3.35-4.5 μm long, with a seta 10.13-16.88 μm long; tibia 4.5-5.63 μm long, without hind tibial seta; tarsus 5.63-7.88 μm long, with two setae, each 19.13-22.5 μm long; claw 6.75-9.0 μm long. Anterior coxae broadly contiguous, with prominent median suture; both the coxae ornamented with curved lines; first coxal tubercles just below the anterior coxal approximation and 9.0 μm apart; second coxal tubercles well ahead of first and second coxal junction and 10.13 μm apart; first coxal seta 11.25 μm long; second coxal seta 16.88-24.75 μm long; third coxal seta 33.75 μm long; third coxal tubercles 22.5-31.5 μm apart.

Abdomen with smooth tergites and microtuberculate sternites; tergites form three longitudinal ridges: the mid-dorsal ridge broad, bounded on either side by a shallow furrow; the subdorsals are not as long as the mid-dorsal. Microtubercles rounded, bead like set on rear margins. Lateral seta 22.5-28.13 μm long, on about sternite 12; first ventral seta 45-50 μm long, on about sternite 24; second ventral seta 25.88-28.13 μm long, on about sternite 41; third ventral seta 28.13-33.75 μm long, on about sternite 60; caudal seta 56.25-90 μm ; accessory seta absent. Female genitalia 13.5-21.38 μm wide, 12.38-14.63 μm long; coverflap with 13-15 longitudinal stripes; genital seta 16.88-25.88 μm long.

■ **Male** : Common; 148.75 μm long; genitalia 16.88 μm wide; seta 13.5 μm long.

■ **Distribution** : India : West Bengal.

■ **Holotype** : ♀, on (slide No. 105/46/78), India : West Bengal : 24-Parganas, Shyamnagar, 24.iv.78 from *Vitex negundo* Linn. (Family : Verbenaceae), (Coll. A. ROY).

■ **Paratypes** : Many ♀♀, ♂♂, on 2 slides (Nos. 106/46/78 to 107/46/78), collection data as in the holotype; many ♀♀, ♂♂, on slide (No. 108/64/79), collected on 21.vi.79 from the same plant and locality.

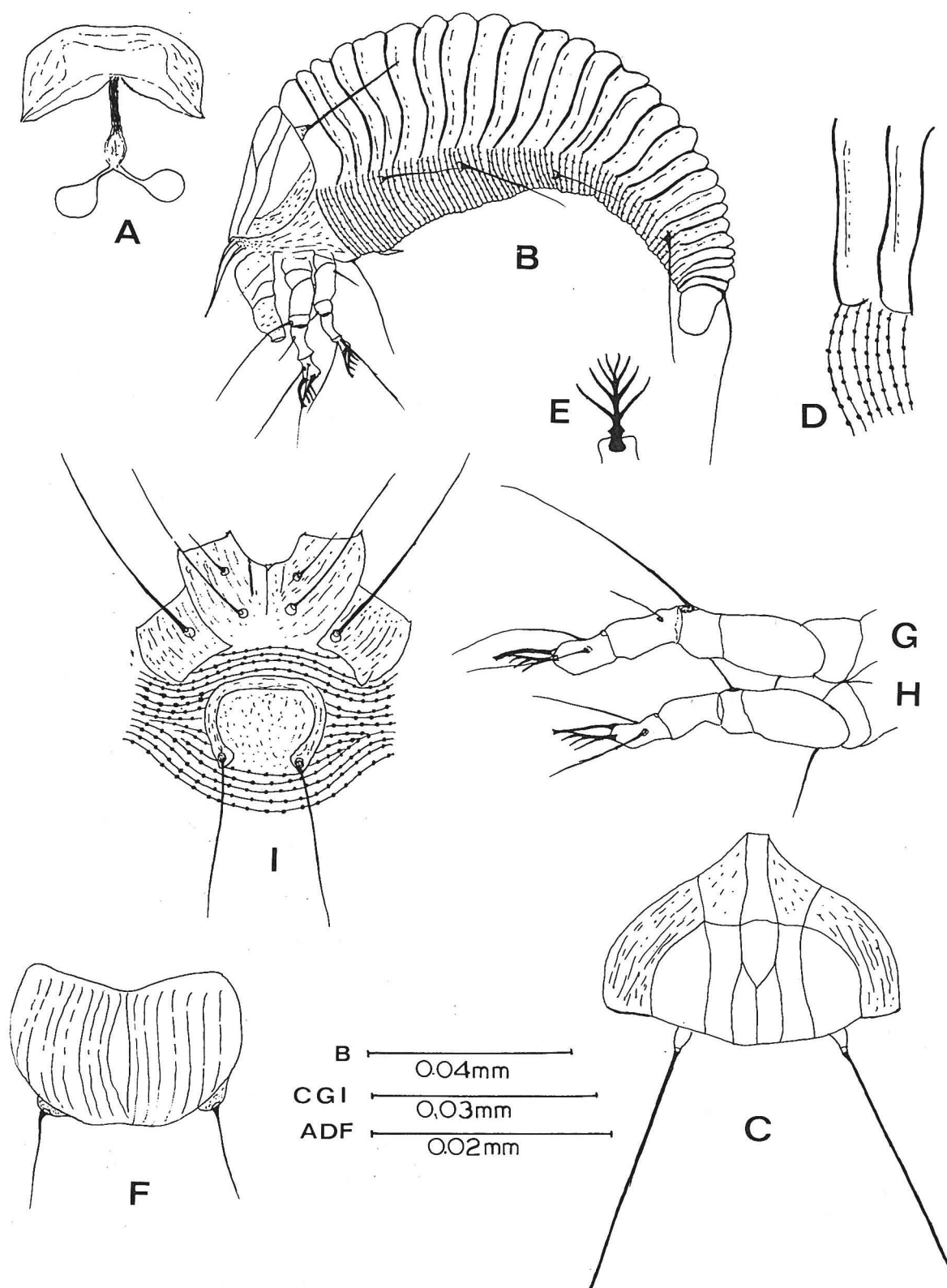


FIG. 2 (A-I) : *Tegolophus vitexis* sp. nov., female (A-H) and male (I).

A. — Internal female genitalia. B. — Lateral view of mite. C. — Anterior dorsum of mite. D. — Side view of skin structure. E. — Featherclaw (empodium). F. — Female genitalia. G. — Foreleg. H. — Second leg. I. — Coxae and male genitalia.

■ *Relation to host plant* : This species infest *Vitex negundo*, a medicinally important plant. Mites were found among hairy outgrowths on ventral surface of tender leaves. Apparently no damage symptom has been noticed. Mites were collected in large numbers specially during the months of March-July.

■ *Remarks* : *Tegolophus vitexis* sp. nov. is included in the same group that *Tegolophus spondiallus* sp. nov. This species is also very distinct in its shield design, coxal structure and long and stout dorsal seta. In having laterally granulated shield, *T. vitexis* sp. nov. is very close to *T. australis* Keifer, *T. ficusi* Mondal and Chakrabarti and *T. nerii* Mondal and Chakrabarti but otherwise this species is a distinct one.

KEY TO THE INDIAN SPECIES OF *Tegolophus* KEIFER

1. Abdomen with broad smooth tergites and narrow microtuberculate sternites..... 2
Abdomen with narrow microtuberculate tergites and sternites 6
2. Lateral shield partly or completely with granules or dotted lines 3
Lateral shield without any granules or dotted lines. 5
3. Dorsal tubercles conspicuous and extended over tergites ; dorsal setae very long (15.0-33.0 μ m)..... 4
Dorsal tubercles short and not extended over tergites ; dorsal seta small (4.24-6.36 μ m) ; lateral shield with dotted lines on anterior half only.....
T. ficusi Mondal and Chakrabarti.
4. Median line faint ; submedian line three ; claw knobbed *T. nerii* Mondal and Chakrabarti.
Median line prominent on posterior 0.33 portion of the shield ; submedian line single ; a semicircular arched line divide the shield into outer and inner portion..... *T. vitexis* sp. nov.
5. Shield with lateral and central disc ; scorings on genital coverflap arranged in two ranks ; first ventral seta small (5.4-10.8 μ m).....
T. indica Chakrabarti and Mondal.
Shield without any discs ; shield design with longitudinal lines forming network ; median line faint ;

scorings on genital coverflap arranged in one rank ; first ventral seta very long (50-56.25 μ m).....

T. spondiallus sp. nov.

6. Featherclaw 6-rayed ; shield design with longitudinal lines without forming any network ; microtubercles on tergites minute and bead like and those on sternites very prominent ; lateral shield not granulated.

T. bambusae ChannaBasavanna.

Feather claw 4-rayed ; shield design represents a network ; microtubercles very prominent on tergites and sternites ; lateral shield granulated.....

T. calotropi Chakrabarti and Mondal.

The type slides of the new species are deposited in the collection of the Entomology Laboratory, Department of Zoology, University of Kalyani.

ACKNOWLEDGEMENT

The authors express their deep sense of gratitude to the Head, Department of Zoology, University of Kalyani for laboratory facilities and to the University Grants Commission, Govt. of India for financing the work through a grant-in-aid project.

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Paru en avril 1982.