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A NEW GENUS AND FOUR NEW SPECIES
OF ERIOPHYID MITES (ACARI : ERIOPHYOIDEA)
FROM NORTH BENGAL, INDIA

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(Accepted June 2000)

SUMMARY: One new genus, Protumescoptes and four new species, Aceria fissistigmae sp. nov. infesting Fissistigma rubigenosa Griff.; Aculops jalpaiguriensis sp. nov. infesting Beilschmedia sp.; Protumescoptes antedesmae sp. nov. infesting Antedesma ghasembilla Gaertn. and Vasates lakoochae sp. nov. infesting Artocarpus lakoocha Roxb. are described from the sub-himalayan West Bengal, India.

INTRODUCTION

During surveys for eriophyid mites in the sub-himalayan West Bengal, a new genus, Protumescoptes and four new species, viz. Aceria fissistigmae sp. nov. infesting Fissistigma rubigenosa Griff. (Annonaceae); Aculops jalpaiguriensis sp. nov. infesting Beilschmedia sp. (Lauraceae); Protumescoptes antedesmae sp. nov. infesting Antedesma ghasembilla Gaertn. (Euphorbiaceae) and Vasates lakoochae sp. nov. infesting Artocarpus lakoocha Roxb. (Moraceae) were collected. These are described in this paper. The nature of damages to the host plants by these mites are also mentioned.

All measurements are expressed in micrometers (μm). In the text, measurements of the holotype are followed by the range of measurements of the paratypes in parenthesis. The type slides are deposited at present in the Biosystematics Research Unit, Department of Zoology, University of Kalyani, Kalyani 741 235, India.

Aceria fissistigmae sp. nov.
(Figs. 1-8)

FEMALE : Body 158.7 (154.0-200.7) μm long, 46 (46-54) μm wide; worm-like; white in colour. Gnathosoma 14 (13-16) μm long, projecting obliquely forward; dorsal pedipalp genual seta 4.6 (4.6-6.0) μm long. Prodorsal shield 28.0 (27.0-30.8) μm long, 56 (46-56) μm wide, broadly lobed in front; median line present on 0.25 part of posterior prodorsal shield; admedian line sinuate; submedian numerous and curved lines; few granules present on anterolateral mar-

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30 μm
gins of prodorsal shield. Prodorsal scapular tubercles located at the rear margin, 20.5 (17.7-20.5) \(\mu\)m apart; prodorsal scapular seta 12.0 (11.2-14.0) \(\mu\)m long, converging to rear. Leg I 24 (23-26) \(\mu\)m long from base of trochanter; femur 9.3 (8.4-9.3) \(\mu\)m long, basiventral femoral seta 8.4 (6.4-9.3) \(\mu\)m long; genu 3.7 (3.7-4.6) \(\mu\)m long, with antaxial genual seta 18.6 (16.8-20.5) \(\mu\)m long; tibia 4.6 (3.7-4.6) \(\mu\)m long, paraxial tarsal seta 7.4 (5.6-7.4) \(\mu\)m long; tarsus 5.6 (5.6-6.5) \(\mu\)m long, paraxial fastigial tarsal seta 20.8 (16.8-23.0) \(\mu\)m long and the paraxial unguinal tarsal seta 4-5 \(\mu\)m long; tarsal solenidion 8.4 (6.5-8.4) \(\mu\)m long, simple; empodial featherclaw 4-rayed. Leg II from the base of trochanter 21.4 (21.4-27.0) \(\mu\)m long; femur 9.3 (8.4-9.3) \(\mu\)m long, with antaxial genual seta 9.3 (7.4-9.3) \(\mu\)m long; tarsal solenidion 6.5 (6.5-7.0) \(\mu\)m long; other characters as in Leg I. Coxal plates granulated and prosternal apodeme absent; 1b tubercles placed at the level below the anterior coxal approximation; 1a tubercles set ahead of the line between the 2a tubercles.

Opisthosoma with 122 (88-125) uniformly microtuberculate annuli; microtubercles oval in shape and on anterior margins of annuli. Seta c2 17 (13.0-18.6) \(\mu\)m long, on ventral annula 13 (11-15); seta d 32.6 (32.6-42.0) \(\mu\)m long on ventral annula 26 (22-26); seta e 39 (37-42) \(\mu\)m long on ventral annula 43 (42-54); seta f 14.0 (12.0-14.9) \(\mu\)m long, on ventral annula 9 (8-9) from rear end; 7-9 annuli of thanosome from rear end almost smooth; seta h2 33.6 (33.6-44.0) \(\mu\)m long; seta h1 7.4 (7.4-11.2) \(\mu\)m long. Genitalia 14.0 (12.0-14.9) \(\mu\)m long and 22.4 (20.5-22.4) \(\mu\)m wide; genital coverflap granulated anteriorly and seta 3a 8.4 (7.4-9.3) \(\mu\)m long.

Male: Unknown.


Relation to host: This species inhabits inside the bead galls of leaves. These galls are solid or spongy and filled with numerous hairs. Large number of galls develop on both sides of leaf surfaces and as a result distortion of leaves occurs. The peak period of incidence of galls was observed during July-August and the galls dry out by the end of October.

**Remarks:** Among the Indian species of the genus Aceria Keifer, this new species resembles to *A. crotalarias* Channabasavanna (1966) and *A. setaceus* Mohanasundaram (1983) in having ornamented coxal plates, median line present on 0.25 part of posterior prodorsal shield and position of microtubercles on anterior margin of annuli. However, the present species differs from both the above mentioned species by the absence of sternal line, 4-rayed empodial featherclaw and anterior granulated genital coverflap.

*Aculops jalpaugurienis* sp. nov.

(Figs. 9-16)

**Female:** Body 128 (125-133) \(\mu\)m long, 40 (40-43) \(\mu\)m wide; fusiform; light brown in colour. Gna­thosoma 14 (13-15) \(\mu\)m long, curved down; dorsal pedipalp genual seta minute 3 (3-4) \(\mu\)m long. Pro­dorsal shield 25 (24-28) \(\mu\)m long, 28 (28-32) \(\mu\)m wide with an anterior lobe; median line occurs on rear 0.42 part of prodorsal shield; admedian lines complete, gently sinuate, first submedian lines on anterior half, gradually converging; other few curved submedian lines and granulations present on the lateral side of prodorsal shield; scapular tubercles 14 (12-14) \(\mu\)m apart, set on rear prodorsal shield margin; setae 13 (12-14) \(\mu\)m long, directed to rear. Leg I 22 (22-24) \(\mu\)m long from trochanter base; femur 7.4 (7.4-9.0) \(\mu\)m long, basiventral femoral seta 6 (6-8) \(\mu\)m long; genu 3.7 (2.8-3.7) \(\mu\)m long, antaxial genual seta 16.8 (15.0-16.8) \(\mu\)m long; tibia 4.6 (4.6-5.8) \(\mu\)m long, paraxial tibial seta 4.6 (3.8-4.6) \(\mu\)m long; tarsus 5 (5-6) \(\mu\)m long, paraxial fastigial tarsal seta and antaxial fastigial tarsal seta 16.8 (16.0-18.6) \(\mu\)m long; tarsal solenidion 7.4 (7.4-9.0) \(\mu\)m long; empodial featherclaw simple, 4-rayed. Leg II from base of trochanter 21 (21-23) \(\mu\)m long; femur 7.4 (7-8) \(\mu\)m long, basiventral femoral seta 6 (6-7) \(\mu\)m long; genu 2.8 (2.8-3.7) \(\mu\)m long, antaxial genual seta 9.3 (9.3-11.0) \(\mu\)m long; tibia 4.6 (4.6-5.8) \(\mu\)m long without seta; other charac-

Coxal plates I separate; coxal plates ornamented with granules; Ib tubercles placed at the level of anterior coxal approximation; Ia tubercles set above the level of 2a tubercles.

Opisthosoma with 72 (65-72) uniformly microtuberculate annuli; microtubercles ovoid and on anterior margin; seta c2 12 (10-12) μm long on ventral annula 8 (8-10); seta d 21 (21-23) μm long on ventral annula 27 (25-28); seta e 25 (24-25) μm long on ventral annula 43 (40-44); seta f 24 (20-24) μm long on ventral annuli 6 (6-7) from rear; seta h2 37 (36-40) μm long; seta h1 absent. Genitalia 7.4 (7.4-9.0) μm long, 16.8 (16.8-18.0) μm wide; coverflap with 8 (8-10) longitudinal lines; seta 3a 5.6 (5.6-7.0) μm long.

Male: Unknown.

HOLOTYPE: Female (marked), on slide (No. 1226/74/1993), India: West Bengal: Jalpaiguri, Lataguri forest, 12.x.1993 from Beilschmiedia sp. (Lauraceae), coll. R. K. PANDIT. Paratypes: 7 females on slide bearing holotype and on 5 other slides (Nos. 1227-1231/74/1993), collection data as in holotype.

DISTRIBUTION: India: West Bengal.
**REMARKS** : This new species resembles to Aculops tephrosie Keifer (1962), A. bassiae Keifer (1971); A. ichnocarpi Ghosh and Chakrabarti (1989) by its microtuberculated dorsal annuli, simple tarsal solenidion, granulated coxal plates and female genital coverflap with longitudinal scoring. However, Aculops jalpaiguriensis sp. nov. is distinct from all the four above species by the prodorsal shield structure, separated coxal plates and 4-rayed empodial featherclaw.

**Genus Protumescoptes gen. nov.**

Robust, fusiform with a broad propodosoma, dorsoventrally a little flattened. Prodorsal shield with a thick lobe over the gnathosomal base; scapular tubercles ahead of the prodorsal shield margin, scapular setae projecting upward and caudad; gnathosomal moderately large, projecting vertically down; leg I without proaxial tibial seta; leg II without antaxial genual seta; empodial featherclaw divided. Opisthosoma with the anterior first few dorsal annuli modified into plate-like extension of prodorsal shield; setae d and setae e absent; coxal plates with all three setiferous tubercles; female genitalia little away from coxal base; genual apodeme of normal length.

**TYPE SPECIES** : Protumescoptes antedesinae sp. nov.

**DISTRIBUTION** : India.

**REMARKS** : Fusiform body, thanosome with well differentiated dorsal annuli, ventral annuli and divided tarsal empodium bring this new genus in proximity with the Phyllocoptinae genera like Tumescoptes Keifer (1939), Schizacea Keifer (1977) and Knorella Keifer (1975).

However, the new genus differs from Schizacea in having scapular seta and basiventral femoral seta (absent in Schizacea); from Knorella in having scapular tubercles with setae and presence of basiventral femoral seta (absent in Knorella), and dorsal annular structure of opisthosoma and from Tumescoptes having prodorsal shield margin and posterior part of the prodorsal shield with large dorsal expansion and by having basiventral femoral seta.

**Protumescoptes antedesinae** sp. nov. (Figs. 17-24):

**FEMALE** : Body 121 (93-126) μm long, 43 (32-51) μm wide, fusiform, dorsoventrally flattened, colour light whitish. Gnathosoma 20.5 (18.6-21.0) μm long, curved down, dorsal pedipalp genual seta 11.2 (9.0-12.0) μm long. Prodorsal shield 42 (37-42) μm long and 51 (42.9-52.0) μm wide, with distinctly defined thick anterior cephalic lobe over rostral base, outer margin of the lobe convoluted and extending as a hood over gnathosomal rostral base; prodorsal shield design not very prominent; median line obliterate; admedian line weak, sinuate, present on 0.5 part of median prodorsal shield; submedian lines as lateral wavy strokes; posterior prodorsal shield lobe broad and curving down towards coxal plates; posterolateral angle of prodorsal shield smooth. Scapular tubercles 4.6 (4.6-6.0) μm ahead of rear prodorsal shield margin, with longitudinally extended bases, 18.6 (14.0-18.6) μm apart; diverging setae 9 (9-10) μm long, dorsocentrad; a wide pseudoprodorsal shield like structure is formed behind the prodorsal shield which is made up of 4 fused dorsal annuli; this structure likely to be of opisthosomal origin since it is clearly separated from the prodorsal shield through a rear prodorsal shield cleft. Legs with all usual segments. Leg I 20.5 (18.6-23.0) μm long from trochanter base; femur 8.4 (7.4-8.4) μm long, with basiventral femoral seta 5.6 (4.6-5.6) μm long; genu 2.8 (2.8-3.2) μm long, with antaxial genual seta 15.0 (13.0-15.8) μm long; tibia 4.6 (3.0-4.6) μm long, without seta; tarsus 4.6 (3.2-4.6) μm long, with paraxial festigial tarsal seta and antaxial festigial tarsal setae, each 14 (14-15) μm long; tarsal solenidion 4.6 (4.0-6.0) μm long, distinctly knobbed; empodial featherclaw divided, 5-rayed. Leg II 20.5 (16.8-20.5) μm long from trochanter base; femur 7.4 (5.6-7.4) μm long, with basiventral femoral seta 4.6 (3.8-4.6) μm long; genu 2.8 (2.8-3.1) μm long, without seta; tibia 3.7 (2.8-3.7) μm long, without seta; tarsus...
4.6 (4.6-5.6) μm long and other characters as in Leg I. Coxal plates broadly jointed; 1b tubercles 14 (14-16) μm apart and just above the coxal approximation, 1a tubercles at the base of coax I, coxal area ornamented with longitudinal lines.

Opisthosoma with 26 (24-28) dorsal annuli and 43 (42-44) microtuberculated ventral annuli. Dorsal annuli smooth and each dorsal annuli separated by a thick membrane, such demarcation distinct up to the level of third microtubercles present on the anterior ring margin. Seta c 2 11.2 (9.3-12.0) μm long, on ventral annula 5 (5-7); seta d and seta e absent; seta f 14 (14-16) μm long, on ventral annula 6 (6-7) from behind; seta h2 18.6 (18.6-21.0) μm long; seta h1 absent; female genitalia 11.2 (8.4-14.9) μm long and 18.6 (16.0-20.0) μm wide; female genital cover flap with few fine longitudinal scorings; seta 3a 5.6 (4.8-5.6) μm long.
MALE: Unknown.


RELATION TO HOST: The mites are vagrant on lower surface of leaves. No apparent damage symptom on host plant has been observed during summer and monsoon months.

*Vasates lakoochae* sp. nov.

(Figs. 25-32)

FEMALE: Body 112 (112-140) μm long, 35 (35-46) μm wide; robust fusiform; white in colour. Gnathosoma 17.7 (15.0-21.0) μm long, curved down, dorsal pedipalp genual seta 4.6 (4.0-6.0) μm long. Prodorsal shield 26 (24-31) μm long, 42 (41-46) μm wide; subtriangular with an anterior lobe; median line subcircular with an anterior lobe; median line occurs on rear 0.35 part of prodorsal shield; median line and submedian by cross lines at 0.35 and 0.5 part of the prodorsal shield; first submedian line and form 10 cells on either side of the median line. Scapular tubercles located on rear prodorsal shield margin and 15.8 (15.0-19.0) μm apart; scapular setae 20 (16-22) μm long, directed caudad. Leg I 24 (24-25) μm long from the base of trochanter; femur 9.3 (8.4-10.0) μm long, basiventral seta 9.3 (7.4-10.0) μm long; genu 3.7 (2.8-3.7) μm long, antaxial genual seta 20.5 (18.0-21.4) μm long; tibia 5.6 (5.6-6.5) μm long, paraxial seta 3.7 (3.7-6.5) μm long; tarsus 5.6 (5.6-6.5) μm long, paraxial and antaxial fastigial tarsal setae, each 17.7 (17.7-18.6) μm long and paraxial ungual tarsal setae 2.8 (2.8-4.0) μm long; tarsal solenidion 7.4 (7.4-9.3) μm long; empodial featherclaw 6-rayed. Leg II 20.5 (20.5-23.0) μm long from the trochanter base; femur 8.4 (5.6-9.3) μm long, basiventral femoral seta 7.4 (5.6-7.4) μm long; genu 3.7 (2.8-3.7) μm long, antaxial genual seta 9.3 (9.3-11.0) μm long; tibia 4.6 (4.6-6.0) μm long, without seta; tarsus 4.6 (4.6-6.5) μm long, paraxial and antaxial fastigial tarsal setae, each 15.8 (15.8-21.4) μm long, paraxial ungual tarsal seta 2.8-4.0 μm long; claw 7.4 (6.5-8.4) μm long; empodial featherclaw 6-rayed. Coxal plates I contiguous with distinct prosternal apodeme; coxal surface smooth; 1b tubercles placed below the anterior coxal approximation; 1a tubercles ahead of the level of 2a tubercles. Opisthosoma with 49 (49-54) dorsal annuli and 85 (69-86) ventral annuli, dorsal annula broader than ventral annula; microtubercules on dorsal annuli elongate but on ventral annuli bead like. Seta c2 18.7 (18.0-23.8) μm long, on ventral annula 11 (10-11); seta d 38 (35-38) μm long, on ventral annula 31 (29-31); seta e 8.4 (8.4-9.3) μm long, on ventral annula 44 (39-44); seta f 18 (14-18) μm long, on ventral annuli 7 (6-7) from rear end, seta h1 4.6 (3.7-4.6) μm long; seta h2 37.3 (37.0-42.0) μm long. Genitalia 14 (14.0-20.5) μm long, 15.8 (15.8-18.8) μm wide; coverflap with 13 longitudinal lines; seta 3a 15.8 (15.0-19.0) μm long.

MALE: Unknown.


RELATION TO HOST: This mite is found to inhabit within hairs of leaf bud without showing any damage symptom.

REMARKS: The present species, *Vasates lakoochae* sp. nov. is a vagrant one. Among the vagrant species under *Vasates*, the present new species is related to *V. cassiae* Mohanasundaram (1982) by the presence of microtuberculated dorsal and ventral annuli, 13 longitudinal striated lines on genital coverflap and simple tarsal solenidion. However, the new species remains distinct from *V. cassiae* by the presence of...
smooth coxal plates, 6-rayed empodial featherclaw besides the entire prodorsal shield structure.

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