

FOUR NEW SPECIES OF PHTHIRACARID MITES (ACARI: ORIBATEI) FROM MALABAR, KERALA, INDIA

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ABSTRACT

Four new species of phtthiracarid mites, viz., Atropacarus (Hoplophorella) chaliyamensis, A. (H.) crenulus, A. (H.) reticulatus and A. (H.) calotropicus are reported from Kerala, India. This is the first report of this genus from southern India. A. (H.) chaliyamensis is characterised by the presence of two lateral carinae as a pair of stumps on the prodorsum which stop abruptly at the middle and the barbed nature of adanal seta ad₂. A. (H.) crenulus possesses an oval prodorsum with slightly pointed tip and an elongated sensillus with a round fan-shaped projection towards the tip with crenulation along its anterior margin. Exobothridial seta is absent while seta ad₂ is thin and smooth with pointed tip. In A. (H.) reticulatus lateral carina is well developed which bulges outwards towards the middle of prodorsum. Prodorsal integument shows a number of longitudinal striations which cross one over the other presenting a highly reticulated appearance. Rostral seta is thick, lamellar seta is elongated while notogastral setae are bare. In A. (H.) calotropicus, prodorsum is oblong with rounded rostral apex and without lateral carina. Prodorsum exhibit wrinkled ornamentation while notogaster is densely foveolate. Rostral seta is barbed while notogastral setae c₁, d₁ and e₁ appear foliate with uniform thickness.

KEYWORDS

Atropacarus (Hoplophorella) calotropicus sp. nov.,
Atropacarus (Hoplophorella) chaliyamensis sp. nov.,
Atropacarus (Hoplophorella) crenulus sp. nov.,
Atropacarus (Hoplophorella) reticulatus sp. nov., Kerala,
Malabar, new species, phtthiracarid mites

ABBREVIATIONS

a, h, m - infracapitular setae; a', a'' - antilateral setae; acm - anterior centromedian seta; ad - adanal; ag - aggenital seta; am - antero median seta; an - anal; bo - bothridium; cha - cheliceral seta a; chb - cheliceral seta b; c₁, c₂, c₃ - setae of first notogastral segment c; cm - centromedian seta; d', d'' - dorsal setae; d₁, d₂, d₂' - setae of second notogastral segment d; e - famulus; e₁, e₂ - setae third notogastral segment e; ex - exobothridial seta; f₁, f₂ - setae of fourth notogastral segment f; ft', ft'' - fastigial setae; g - genital; g₁-g₉ - genital setae; h₁, h₂, h₃ - setae of fifth notogastral segment h; in - interlamellar seta; inf - inferior seta; it', it'' - iteral setae; l', l'' - lateral setae; le - lamellar seta; m - monotropic seta; p', p'' - proral setae; ps₁, ps₂, ps₃ - setae of sixth notogastral segment ps; pl', pl'' - primilateral setae; pv', pv'' - primiventral setae; ro - rostral seta; ss - sensillus; su/s - subunguinal seta; tc', tc'' - tectal setae; u', u'' - unguinal setae; ul', ul'' - unguinal lateral setae, v', v'' - ventral setae; w, j, s - solenidion omega, phi, sigma

Phtthiracarid mites constitute one of the most important group of oribatid mites, rendering substantial removal of organic materials by their voracious and xylophagous feeding habit. While feeding they bore into wood pieces, form tunnels and galleries in the wood and transform the excavated wood into

energy rich faecal pellets. Such rare ability of this group of mites raised their status as potential biodegraders of higher plant materials (Dinsdale, 1974; Haq, 1984, 1987, 2003; Haq & Konikkara, 1988; Edsberg & Hagwar, 1999). However, knowledge on these group of mites from India is practically meagre. Hence better chances of utilisation of these mites is seriously warranted particularly in an agricultural country like India.

The genus *Atropacarus* Ewing, 1917 is characterised by fifteen pairs of notogastral setae, nine pairs of genital setae and five pairs of anoanal setae. Seta ad₂ slightly away from paraxial margin.

The type materials are deposited at the Division of Acarology, Department of Zoology, University of Calicut, Kerala, India.

All measurements are given in µm.

Atropacarus (Hoplophorella) chaliyamensis sp. nov.
(Figs. 1-12)

Material Examined

Holotype: Female, 20.v.2001, from unidentified wooden pieces, Chaliyam, Kerala, India, coll. M.A. Haq.
Paratype: 20 females, 3 males, same information as above.

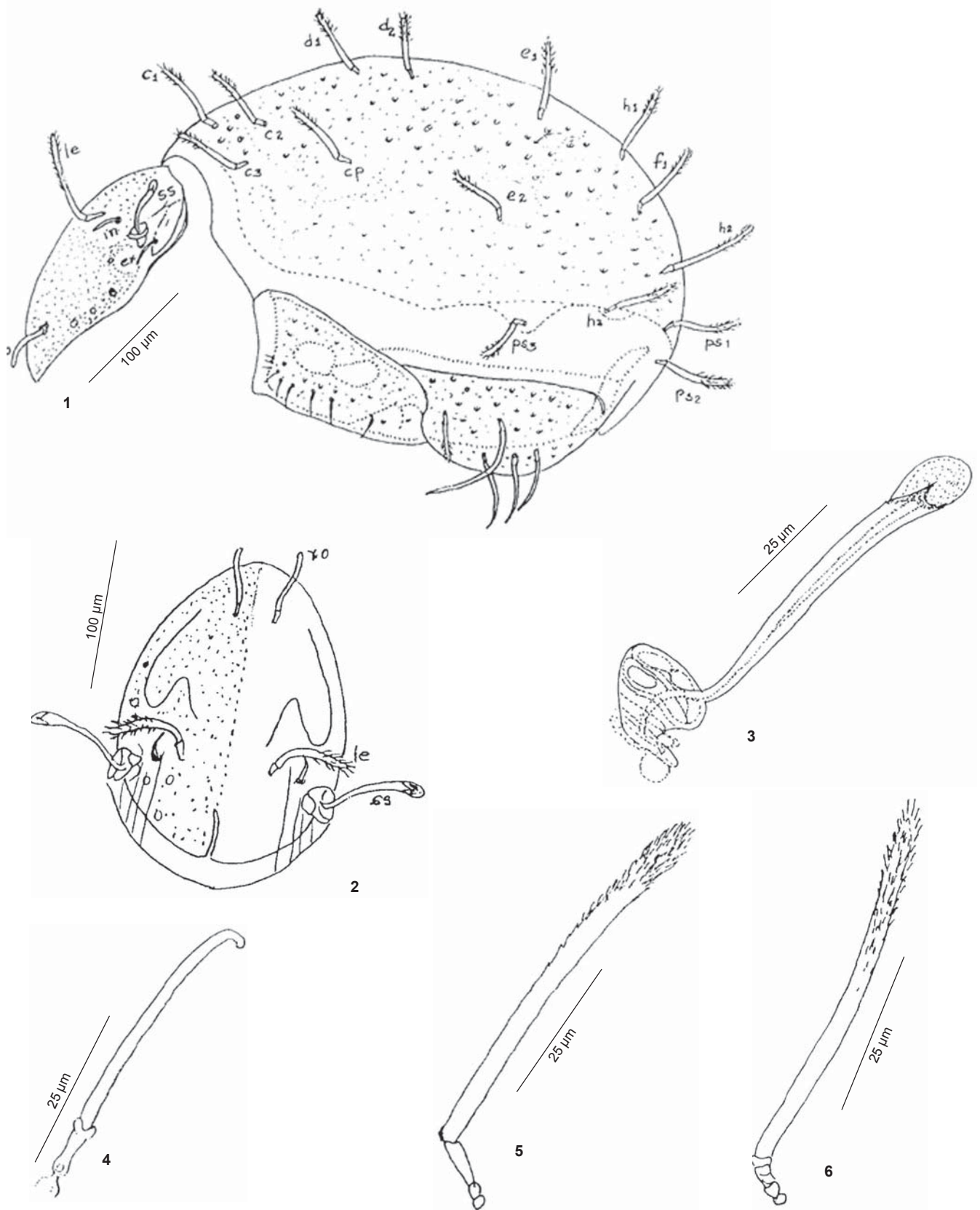
Etymology

Species name pertains to the place of collection, the Chaliyam Beach.

Diagnosis

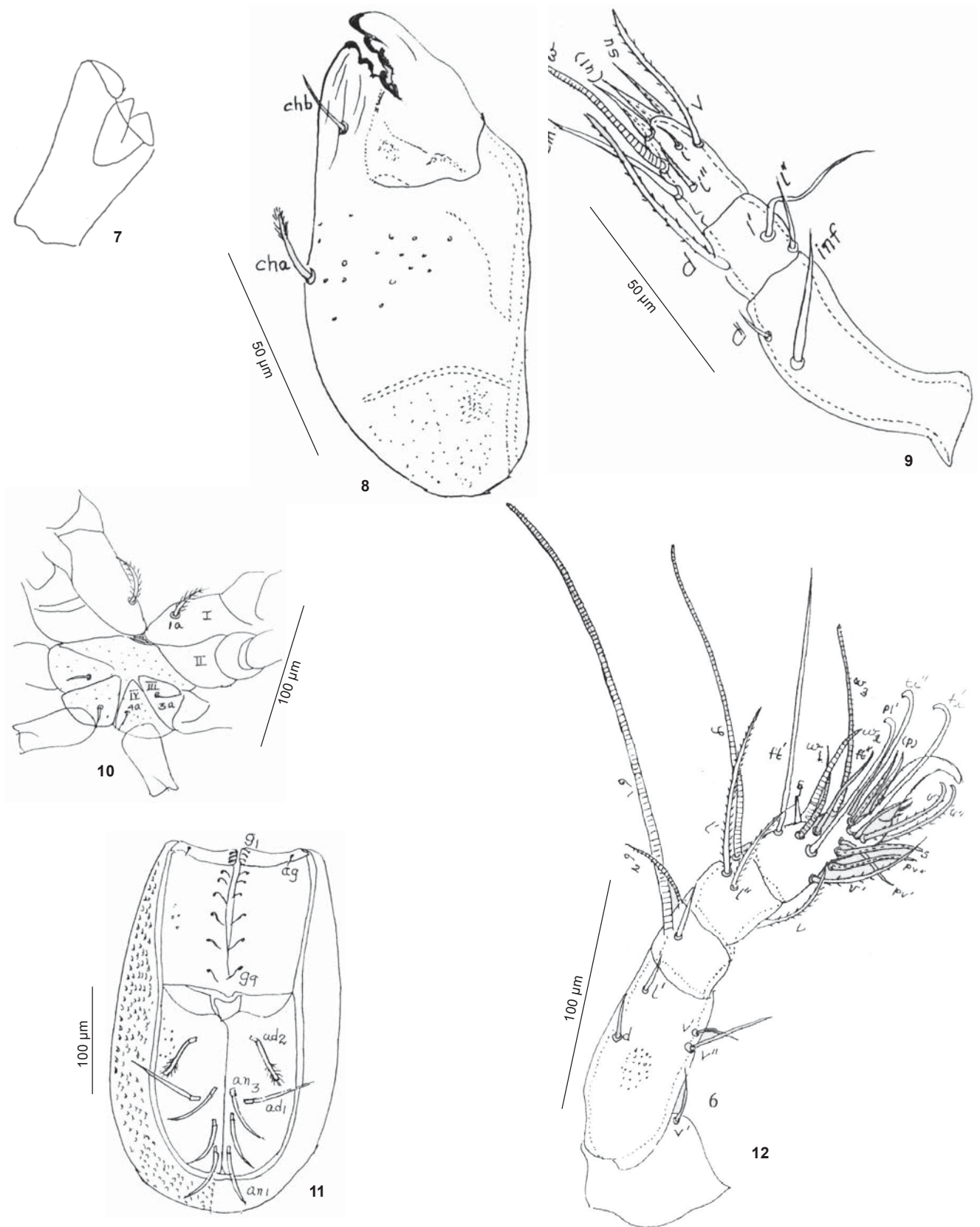
Colour: Wheat brown.

Prodorsum (Figs. 1 & 2): Length - 230 (Range 208-236); width - 110 (Range 102-116). Prodorsum elongated and flexed medio-ventrally. Two lateral carinae present as a pair of stumps on the prodorsum which stop abruptly at the middle of prodorsum. Seta *ro* (Fig. 4) short, blunt, smooth, curved inwards, measures 37 and inserted far below the anterior margin of the rostrum. Seta *le* (Fig. 5) long, stout, measures 110, barbed half of its length, barbs appear stronger towards the tip. Seta *in* short reaching 13, thinner than *ro*, erect and inserted in between *le* and *bo*. All prodorsal setae with pronounced insertional points and deeply inserted in the integument. Seta *ex* thinnest, measuring 29 and inserted near *bo*. Bothridium (Fig. 3) laterally opened. Sensillus (Fig. 3) long stalked with a length of 66 and



Figures 1-6. *Atropacarus (Hoplophorella) chaliyamensis* sp. nov.

1 - Lateral view of adult; 2 - Prodorsum; 3 - Bothridium and sensillus; 4 - Rostral seta; 5 - Lamellar seta; 6 - Notogastral seta



Figures 7-12. *Atropacarus (Hoplophorella) chaliyamensis* sp. nov.
 7 - Rutellum; 8 - Chelicera; 9 - Pedipalp; 10 - Epimeral region; 11 - Genital and ano adanal region; 12 - Leg 1

gradually dilating to form a club shaped head. Lateral border of prodorsum with scattered foveolae. Postero-lateral margins of prodorsum with vertical striations of varying number which stop abruptly below the level of seta *le*. Posterior margin of the prodorsum below the level of *bo* wavy. Entire prodorsal integument punctated.

Notogaster (Fig. 1): Length - 447 (Range 409-457); width - 322 (Range 312-348). Notogaster highly convex with a round posterior border, the extreme posterior apex produced into a caud. Fifteen pairs of setae arranged on the notogaster (Figs. 1 & 6). These setae show variation in length ranging from 57-99, ps_3 the shortest h_2 the longest. Notogastral integument sculptured with round foveoles which follow a regular pattern of arrangement. Foveoles more distinct on the dorsal aspect, but feeble, sparsely arranged and often indistinct along the medio-lateral aspects. Micropunctations present on notogaster interspersed with foveoles. Sclerotisation well along the dorsal and lateral borders of notogaster.

Ventral region: Labiogenal articulation stenarthric. Rutellum (Fig. 7) stout, broad with three notches, the central notch resembles a well developed blunt spine and the two lateral notches broad, the inner notch also produced into a pointed spine. Chelicerae (Fig. 8) broad and stout with punctations on basal portion, each digit with four blunt teeth. Seta *chb* smooth while *cha* with barbs at distal end. Pedipalp (Fig. 9) with a chaetotaxy of 2-3-8. Palpal tarsus with three eupathidia, *ul'*, *ul''* and *su*, one solenidion, '*w*', one barbed seta and three simple setae. Infracapitular setae smooth and show variation in length, *a* the longest and barbed. Gnathosomal integument punctated. Epimeral setal formula 1-0-1-1, seta on epimer 1 long, barbed and tapering. Setae on epimeres 3 and 4 almost equal and smooth (Fig. 10). Genital plates (Fig. 11) somewhat rectangular, carrying nine pairs of smooth setae, g_7 , g_2 and g_3 minute. Distance between g_6 , g_7 , g_8 and g_9 almost equal. Anterior genital setae placed nearer compared to the posterior ones. A pair of small, smooth aggenital setae detected. Genital plates ornamented with small foveoles. Anoadanal plates (Fig. 11) also rectangular with round posterior and concave anterior borders. Each plate bears three smooth, short setae at its inner posterior margin. Two pairs of adanal setae detected, ad_1 long, smooth and inserted at a level between an_2 and an_3 . Seta ad_2 inserted far anteriorly on the adanal plate. Seta ad_2 short and barbed distally. Ventral plate lying adjacent to the anoadanal plate also foveolated.

Legs: All legs monodactylous with the claws bearing two spines each, distal spine longer and stouter than proximal spine. Chaetotaxy of leg I (Fig. 12) 1-4-3-4-18. Seta *v* on trochanter I, smooth and thin. Two solenidia s_1 and s_2 present on genu I, the former thicker and longer than the latter, reaching four times its length. Tibia I carries a single solenidion *j*, and three barbed setae *l'*, *l''* and *v*. Tarsus I carries three solenidia w_1 , w_2 and w_3 . Famulus *e* elongated, stump like and situated very near to w_1 . Seta *tc'*, *tc''*, *p'u'* and *u''* with curved tips. Setae *s*, *pv''*, *p'* and *p''* eupathidic, setae *v'*, *u'* and *u''* provided with a few barbs.

Remarks

A total of 23 species of *Atropacarus* (*Hoplophorella*) have been described so far, as given in the list enclosed. A close scrutiny of the morphological features of the new species *A. chaliyamensis* with other known species of the genus helped to detect its similarity with *A. (H.) venusta* described by Niedbala (1983c) from Uganda in the nature of prodorsal and notogastral setae and in the number and arrangement of epimeral, genital and ano-adanal setae. But on the basis of the following characters, the present species has been assigned a new taxonomic status:

- (i) Absence of dorsal carina on prodorsum;
- (ii) Barbed nature of seta ad_2 ;
- (iii) Elongated nature of anal setae an_1 - an_3 ;
- (iv) Possession of palpal setal formula of 2-3-8 instead of 2-2-6 and leg chaetotaxy of 1-4-3-4-18 instead of 1-4-3-4-17;
- (v) Seta *s* present in the new species.

The differences between *A. (H.) chaliyamensis* and *A. (H.) sundarbanensis* are as follows:

- (i) Apis of *A. (H.) chaliyamensis* is elongated with a narrow tip (Fig. 1). But aspis of *A. (H.) sundarbanensis* is not as elongated and without a narrow tip;
- (ii) Two lateral carine are present as a pair of stumps on the prodorsum which stop abruptly at the middle of the prodorsum in the case of *A. (H.) chaliyamensis*. There is no mention of such a feature in the case of *A. (H.) sundarbanensis*;
- (iii) Seta *ro* of *A. (H.) chaliyamensis* is short, blunt, smooth and curved inwards. But seta *ro* of *A. (H.) sundarbanensis* is moderately long, stout, outwardly directed and pointed;
- (iv) Aggenito-genital plates of *A. (H.) chaliyamensis* bears nine pairs of smooth setae with definite pattern of arrangement while *A. (H.) sundarbanensis* bears only 4 pairs of setae in this region;
- (v) Rutellum, chelicera, pedipalp, infracapitular setae, epimeral region and leg cannot be compared as these structures of *A. (H.) sundarbanensis* have not been described.

Atropacarus (Hoplophorella) crenulus sp. nov. (Figs. 13-21)

Material Examined

Holotype: Female, 04.vi.2001, from unidentified drift wood, Chaliyam, Kerala, India, coll. M.A. Haq.

Paratype: 2 females and 1 male, same information as above.

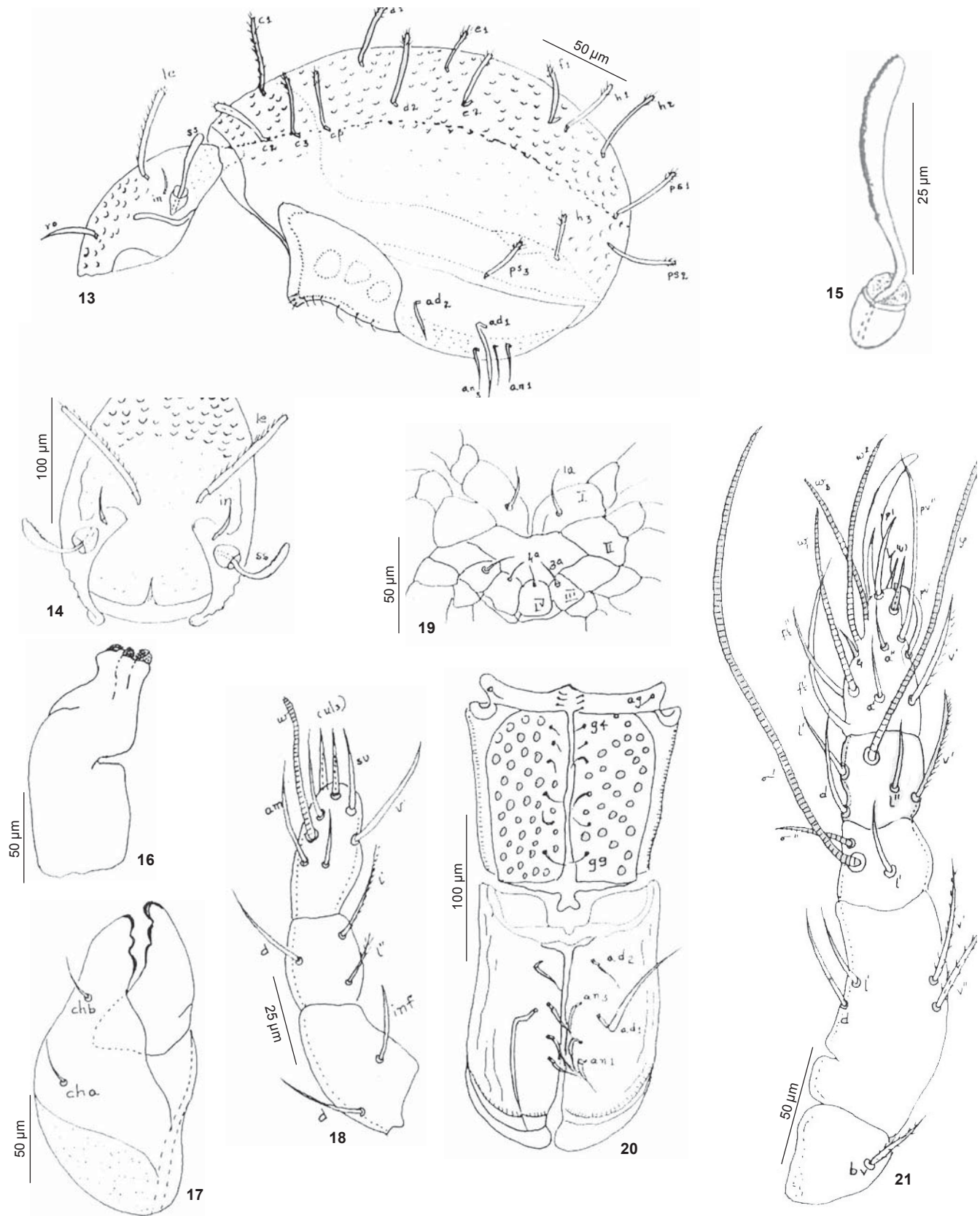
Etymology

Species name pertains to the crenulated anterior margin of the sensillus.

Diagnosis

Colour: Creamy white

Prodorsum (Figs. 13 & 14): Length - 208 (Range 202-214); width - 100 (Range 96-105). Prodorsum oval in shape with slightly pointed tip. Seta *ro* stiff, with slight bent, smooth and inserted slightly away from the rostral apex, measuring 60 in length. Seta *le* largest among all the prodorsal setae, measuring 90 bearing fine barbs on one side. Seta *in* small and smooth,



Figures 13-21. *Atropacarus (Hoplophorella) crenulus* sp. nov.

13 - Lateral view of adult; 14 - Prodorsum; 15 - Bothridium and sensillus; 16 - Rutellum; 17 - Chelicera; 18 - Pedipalp; 19 - Epimeral region; 20 - Genital and ano adanal region; 21 - Leg 1

measuring 22 and inserted very close to base of *bo*. Seta *ex* not visible. Sensillus elongate with a round fan shaped projection towards the tip with crenulation along the anterior margin (Fig. 15). Bothridium cup shaped, directed posteriorly towards the lateral side. Prodorsum exhibits prominent foveolae towards the anterior one third of the tip with sparse and minute punctations towards the posterior region. A thin median ridge extends from the base of the prodorsum to a short distance while lateral carina with a prominent ridge projects towards the centre enclosing *bo* and *in*.

Notogaster (Fig. 12): Length - 440 (Range 436-444); width - 300 (Range 294-306). Notogaster globular with rounded posterior end. Ornamentation more pronounced than on prodorsum, especially along the mid dorsal region of notogaster and becoming less prominent laterally. 15 pairs of notogastral setae. Seta *c*₁ with fine barbs all along its length, all other setae with fine barbs towards the tip alone. Setae *e*₁, *h*₃, and *ps*₃ measure 42-50 while others measure 82-92.

Ventral region: Rutellum (Fig. 16) broad and thick with three well developed bent notches of equal size. Chelicerae stout with well developed teeth on both digits. Setae *cha* and *chb* smooth and pointed. (Fig. 17). Pedipalp with a chaetotaxy of 2-3-8, palpal solenidion thick and blunt (Fig. 18). Infracapitulum with three setae *a*, *h* and *m*, all simple, smooth with pointed tip. Epimeral setal formula 1-0-1-1. All setae smooth and pointed, but seta of epimere 1 longer than the others (Fig. 19). Each genital plate (Fig. 20) rectangular in shape, carrying the broad and short aggenital plate which in turn carries a minute seta *ag* at its outer corner. Genital setae *g*₁-*g*₉ clearly visible, arranged in a row towards the inner margin, *g*₁-*g*₃ much smaller than the others and very closely arranged. Genital plates ornamented with foveoles. Ano-adanal plates broader towards the middle region and with rounded posterior border. Three pairs of anal and two pairs of adanal setae present. Anal setae simple, thin and with pointed tip. *ad*₁ much longer than *ad*₂ with a 90° bent towards the base, and with straight pointed tip. Seta *ad*₂ resembles anal setae. Integument of ano-adanal plate with a few wrinkles towards the lateral and basal portion.

Legs: All legs monodactylous, with a stout claw on each tarsal segment. Chaetotaxy of leg I (Fig. 21) 1-4-3-5-15. Seta of trochanter I with a few barbs. Femur I with four setae, *v*' and *v*'' with barbs, *d* and *l*' smooth. Genu I carries two solenidia *s*₁ and *s*₂, *s*₁ very long, thick and pointed towards the tip. *s*₂ short and pointed. Tibia I bears five setae, of which *j* long and blunt solenidion, *v*' barbed, others smooth. Tarsus I bears 15 setae including three solenidia *w*₁, *w*₂ and *w*₃. Famulus *e* seen close to *w*₂. Seta *s* absent. Claw on the tarsus blunt with a basal ventral tooth.

Remarks

On comparing the morphological characters of the present specimen with other described species, it shows close similarity with *A. (H.) singularis* (Sellnick, 1959) in the following characters:

(i) Notogastral setae with barbs towards distal half.

(ii) Long and thin nature of anal setae.
(iii) Arrangement of genital setae.

But the present specimen can be distinguished from *A. (H.) singularis* in the following features:

(i) Sensillus with broad tip, crenulated along the anterior margin.
(ii) Seta *le* with fine barbs on one side
(iii) Absence of seta *ex*.
(iv) Seta *in* small and smooth
(v) Seta *ad*₂ thin and smooth with pointed tip
(vi) Difference in leg chaetotaxy; chaetotaxy of leg I in *A. (H.) singularis* 1-4-2-5-18 while that of the present species 1-4-3-5-15.

These features justify the erection of a new taxon.

Atropacarus (Hoplophorella) reticulatus sp. nov. (Figs. 22-31)

Material Examined

Holotype: Female, 14.vi.2001, secondary forest behind Pareeksha Bhavan, Calicut University Campus, Kerala, India, coll. Alphonsa Xavier.

Paratype: 3 females, same information as above.

Etymology

Species name pertains to the reticulated appearance of prodorsal integument

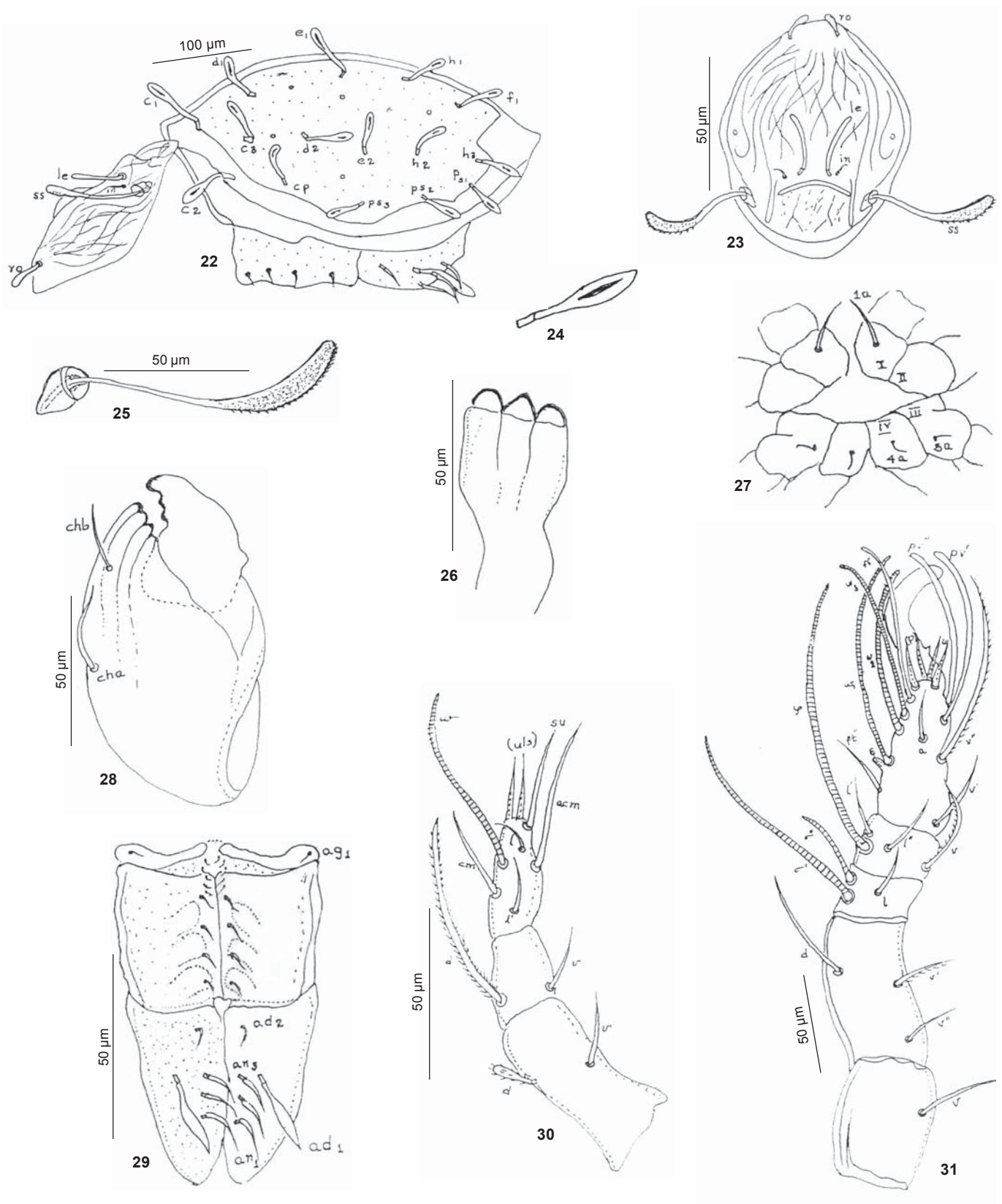
Diagnosis

Colour: Creamy white.

Prodorsum (Figs. 22 & 23): Length - 208 (Range 192-208); width - 96 (Range 88-96). Prodorsum elongated with well developed lateral carina which bulges outwards towards the middle of the prodorsum. Rostral apex conical. Seta *ro* short, thick and foliate towards the tip, inserted away from rostral apex and measuring 36. Seta *le* longest of all prodorsal setae with uniform thickness, measuring 53. Seta *in* thin and pointed, 16 long. Seta *ex* not visible. Bothridium cup shaped with a wide opening. Sensillus (Fig. 25) with long thin pedicel becoming broader towards the tip, crenulated and spinous along the posterior margin. Prodorsal integument provided with a number of longitudinal striations which cross one over the other presenting a highly reticulated appearance; these striations not reach the rostral apex, so that the rostral tip remains smooth.

Notogaster: Length - 380 (Range 368-380); width - 240 (Range 232-240). Notogaster convex with its extreme posterior end produced into a caud. Fifteen pairs of smooth spoon shaped setae (Fig. 24) ranging in size from 40-60. Seta *c*₁ the longest and *ps*₃ the shortest. Integument of notogaster with fine punctuations and a few foveolae.

Ventral region: Rutellum (Fig. 26) broad and thick with three well-developed notches, the median one triangular while the lateral ones rounded. Chelicerae (Fig. 28) rugose in appearance with four teeth on the fixed digit and three on the movable digit.



Figures 22-31. *Atropacarus (Hoplophorella) crenulus* sp. nov.

22 - Lateral view of adult; 23 - Prodorsum; 24 - Notogastral seta; 25 - Bothridium and sensillum; 26 - Rutellum; 27 - Epimeral region; 28 - Chelicera; 29 - Genital and ano adanal region; 30 - Padipalp; 31 - Leg 1

Setae *cha* and *chb* smooth and pointed. Pedipalp (Fig. 30) with a chaetotaxy of 2-2-8. Epimeral setal formula 1-0-1-1 (Fig. 27), seta of first epimere double the size of the others. All setae thin and pointed. Genital plate rectangular, carrying a broad aggenital plate anteriorly, which bears a minute aggenital seta *ag* at its outer corner. Genital setae g_1 - g_5 minute and very closely arranged along the anterior inner margin while g_6 - g_9 longer and arranged at equal distance along the inner margin of the genital plate (Fig. 29). Anoadanal plate broader at the anterior region, almost conical towards the posterior region, carrying three pairs of anal and two pairs of adanal setae. Seta ad_1 , long and foliate while ad_2 spiniform. Anal setae closely arranged, thin and long with pointed tip. Integument of anoadanal plate finely punctuated.

Legs: All legs monodactylous with a thick claw. Chaetotaxy of legs reduced. Chaetotaxy of leg I (Fig. 31) 1:3:3:4:15. Trochanter I with a long thin, smooth seta. Femur I carries three setae, seta *d* thin and long, *v'* slightly barbed. Genu carries two solenidia, a long s_1 and a short s_2 . Tibia bears four setae including solenidium *j*. Tarsus bears fifteen setae including three solenidia w_1 , w_2 , and w_3 . Famulus *e* seen closely associated with w_1 . Seta *s* absent. Claw thick and stout with a spinous projection at the base ventrally.

Remarks

A detailed examination of the morphological features of the present species with the known species of the genus *Atropacarus* (*Hoplophorella*) helped to detect its similarity with *A. (H.) glaucus* described by Hammer (1972) in

- (i) Spoon shaped notogastral setae
- (ii) Disposition of genital setae g_6 - g_9
- (iii) Long and pointed nature of anal setae
- (iv) Foliate nature of ad_1 and
- (v) In the absence of seta *s* on tarsus I

But on the basis of the following specific characters, it differs from *A. glaucus* and hence been assigned to a new taxonomic status.

- (i) Presence of crossed longitudinal striations on prodorsum.
- (ii) Thick nature of seta *ro*.
- (iii) Elongated nature of seta *le*
- (iv) Bare nature of notogastral setae

Atropacarus (Hoplophorella) calotropicus sp. nov. (Figs. 32-43)

Material Examined

Holotype: Female, 03.viii.2001, Calicut University Campus, Kerala India, coll. Alphonsa Xavier.

Paratype: 4 females and 1 male, from the decomposed root of *Calotropis gigantea*.

Etymology

Species name relates to *Calotropis gigantea*, the plant with which the species is associated.

Diagnosis

Colour: Yellowish-brown.

Prodorsum (Figs. 32 & 33): Length - 232 (Range 218-242); width - 108 (Range 104-116). Prodorsum oblong with rounded rostral apex and without lateral carina. Seta *ro* thick 22 in length with a definite inward bent and a few fine barbs, inserted quite away from rostral apex. Seta *le* the largest among the prodorsal setae, measuring 44, lanceolate and smooth. Seta *in* small, smooth and spine like measuring 11 and inserted in between *le* and *bo*. Seta *ex* minute and placed posterior to *bo*. Sensillus elongate, proximal two third very narrow while the distal one third highly expanded with a crenulated anterior margin (Fig. 34). Bothridium cup shaped with a wide anteriorly directed opening through which emerges the *ss*. Prodorsum exhibits wrinkled ornamentation along the lateral side, feeble punctations medially and varying number of vertical striations posteriorly (Fig. 33).

Notogaster (Fig. 32): Length - 384 (Range 368-396); width - 300 (Range 292-312). Notogaster densely foveolate, more towards the mid-dorsal region. Fifteen pairs of notogastral setae, setae c_1 , d_1 and e_1 (Fig. 35) of uniform width with inward bent while the rest spoon shaped with short basal portion and with medial thickening (Fig. 36). Seta d_1 longest (44), ps_1 shortest (22), others more or less of same length.

Ventral region: Rutellum (Fig. 37) broad and stout with three well developed notches, central notch smaller than the other two. Chelicerae (Fig. 38) stout and punctate, setae *cha* and *chb* smooth. Pedipalp (Fig. 37) with a chaetotaxy of 2-2-9. Infracapitulum (Fig. 37) bears three setae, *a*, *h*, and *m*, all setae smooth and almost of the same length. Gnathosomal integument with fine punctations. Epimeral setal formula 1-0-1-1 (Fig. 39). Setae of epimere 1 foliate and longer while those of 3 and 4 thin and pointed towards tip. Genital plate (Fig. 40) rectangular in outline carrying the broad aggenital plate anteriorly. A small aggenital seta, *ag* seen at the outer corner of each aggenital plate. Genital setae g_1 - g_3 closely arranged, g_4 - g_9 visible clearly, arranged in a row towards the inner margin. All setae small and smooth. Genital plates ornamented with fine punctations. Anoadanal plate (Fig. 40) rectangular like the genital plate and almost of the same length. Three pairs of anal and two pairs of adanal setae present. Anal setae of equal length, smooth with pointed tip (Fig. 41), ad_1 long and foliate (Fig. 42), ad_2 smaller, smooth with pointed tip. Integument of anoadanal plate provided with wrinkles along the lateral and posterior periphery.

Legs: All legs monodactylous with a thick empodial claw on each tarsal segment. Chaetotaxy of leg I (Fig. 43) 1-4-3-6-16. Seta of trochanter I thin and smooth with fine tip. Femur I with four setae with varying degrees of barbation. Genu I carries two solenidia s_1 and s_2 , the latter twice longer than the former. Tibia I carries a single solenidium *j*. Seta *d* very small and seen in close association with the solenidium. Setae *l'* and *l''* smooth, *v'* and *v''* with fine barbs. Tarsus I with 16 setae. Of the three solenidia, w_2 and w_3 of equal length, w_1 smaller. Famulus (*e*), smooth and pointed. Claw on tarsus I stout with rounded apex bearing two spinous teeth ventrally towards the base.

Remarks

A comparison of the present species with other described species of the genus *Atropacarus* reveals its resemblance to *A. (H.) rangiroaensis* (Hammer, 1972) in the following features:

- (i) Absence of lateral carina.
- (ii) Spoon shaped setae of notogaster.
- (iii) Distally expanded nature of sensillus.
- (iv) Slender nature of ad_2 .
- (v) Long and comparatively thick nature of anal setae.

But the present species can be easily distinguished from *A. rangiroaensis* by the following characters.

- (i) Foveolate nature of integument.
- (ii) Barbed nature of seta ro
- (iii) Foliolate nature of setae c_p , d_1 and e_p , with uniform thickness.
- (iv) Arrangement of genital setae.

The above characters enable to assign the present species to a new taxon.

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**Volunteers needed**

The Chiroptera Conservation and Information Network of South Asia (CCINSA) along with Dr. Shahroukh Mistry, USA, have embarked on a project that involves identification and monitoring of fruit bat (*Pteropus giganteus*) colonies/roosts all over South Asia. The project will be an ongoing one with regular monitoring of colonies to understand the dynamics, population trends and various other aspects of the region's largest bats.

If you or any one of your colleagues or friends are interested in joining this exciting project, please write with your name, address, occupation, interest in this subject, and the geographical area you would like to participate in monitoring fruit bats.

We already have a few volunteers who have started work in different parts of South Asia. South Asia is a large region and we need many more people.

Write to us at the earliest to be part of this long-term, first of its kind project:

Ptero Count

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