

NEW DATA ON MITES OF THE GENUS *LASIOSEIUS* (MESOSTIGMATA, ASCIDAE) IN INDIA ALONGWITH THE DESCRIPTION OF TWO NEW SPECIES

НОВЫЕ ДАННЫЕ ПО КЛЕЩАМ РОДА *LASIOSEIUS* (MESOSTIGMATA, ASCIDAE) В ИНДИИ С ОПИСАНИЕМ ДВУХ НОВЫХ ВИДОВ

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Ключевые слова: *Lasioseius triangularis* sp.n., *L. punjabensis* sp.n.; *L. reticulatus* Bhattacharyya, 1968, самец, новые находки

ABSTRACT

Two new species of the genus *Lasioseius*: *L. triangularis* sp.n., *L. punjabensis* sp.n. are described from India. Description of male of *L. reticulatus* of which only females from West Bengal has been known is presented.

РЕЗЮМЕ

Описаны два новых вида рода *Lasioseius*: *L. triangularis* sp.n., *L. punjabensis* sp.n. из Индии. Приводится описание самца *L. reticulatus*, ранее известного только по самке из Западной Бенгалии.

INTRODUCTION

The genus *Lasioseius* Berlese, one of the cosmopolitan ascid genus is estimated to have a global diversity of around 100 species [Halliday *et al.*, 1998], most of which are known from soil and litter. Altogether ten species of *Lasioseius* Berlese is known in India through the works of Chant [1963], Bhattacharyya [1968], Menon and Ghai [1968], Gupta and Paul [1985], Bhattacharyya *et al.* [1997] and Bhattacharyya *et al.* [2000]. Bhattacharyya [1968] described a new species, *Lasioseius reticulatus*, from West Bengal, based on female specimens.

MATERIAL AND METHODS

Soil and litter samples were brought to laboratory in polyethylene bags and were immediately placed in the dry funnel extraction apparatus to collect the mites. Specimens were mounted on

slides using Hoyer's medium as suggested by Evans [1992]. Measurements (in μm) were made from slide-mounted specimens using the ocular micrometer. Setae were measured from the bases of their insertions to their tips.

Chaetotactic pattern of Lindquist and Evans [1965] is followed in the description. Specimens are deposited in the National Zoological Collection, Zoological Survey of India, Calcutta.

DESCRIPTION OF SPECIES

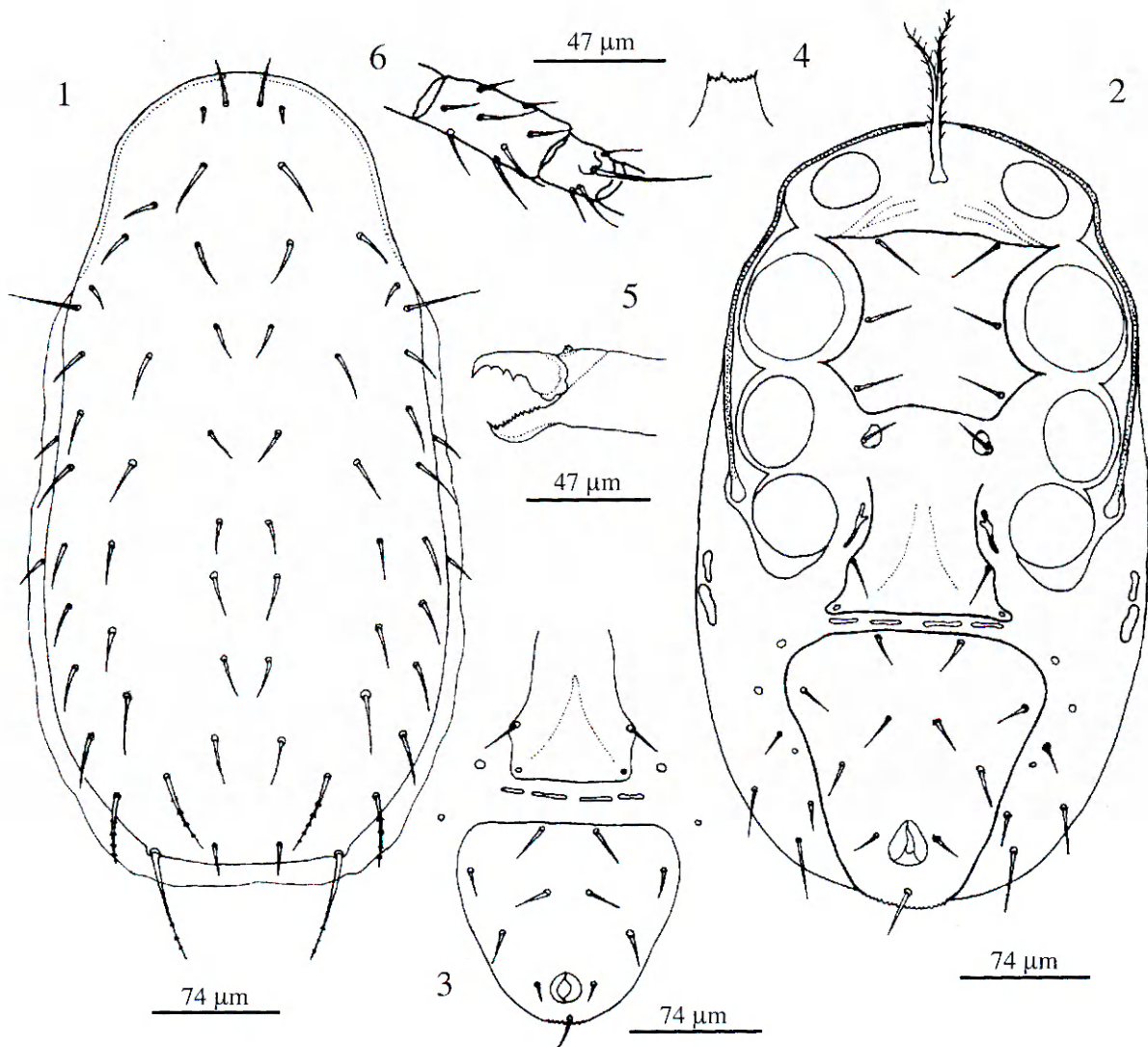
Lasioseius triangularis sp. n.

Figs. 1–6.

Description of female

Idiosomal dorsum (Fig. 1). Dorsal shield entire, 462.5 long, 218.9 wide, with thirty pairs of setae (Fig. 1); podonotal region with fifteen pairs of setae, all simple; humeral setae (r3) 37 long; ophisthonotal region with fifteen pairs of setae; setae Z4 (49.33), Z5 (67.83) and S5 (43.16) barbed, others simple; caudal setae (J5) two times shorter than paravertical setae (9.25); two pairs of short, simple lateral setae arise from the body margin; peritreme visible dorsally extending up to setae j1.

Idiosomal venter (Figs. 2–3). Tritosternum well-developed, lacinae pilose; pre-sternal area lined anterolaterally; sternal shield (138.74 wide between two anterolateral corners, 101.74 long along midline) slightly convex posteriorly, without any reticulation, and with three pairs of sub-equal sternal setae (Fig. 2); metasternal setae placed on irregularly shaped metasternal plate; shape of gen-



Figs. 1–6. *Lasioseius triangularis* sp. n., female: 1 — dorsal view, 2 — ventral view, 3 — variation in ventri-anal shield, 4 — tectum, 5 — chelicera, 6 — genu and tibia of leg IV.

ital shield varies posteriorly; two pairs of plates arranged in linear fashion between genital and ventri-anal shield. Ventri-anal shield (167 long along midline, 142.66 wide at their widest point) roughly triangular in shape, forming cribrum posteriorly, with four pairs of pre-anal setae, excluding paired para-anal and a post-anal setae; variation in the shape of genital and ventri-anal shield in a paratype shown in fig. 3; five pairs of setae present on ventral membrane around ventri-anal shield, one pair anteriorly and four pairs laterally. Paired conspicuous metapodal shields present along lateral margin. Remnants of free endopodal shields present at level of coxa IV. Peritreme long, narrow, extending up to vertical setae; stigma situated at level of anterior half of coxa IV; peritrematal shield extending anteriorly up to mid-level of coxae I and II; post-stigmatal extension of peritrematal shield encircling coxa IV.

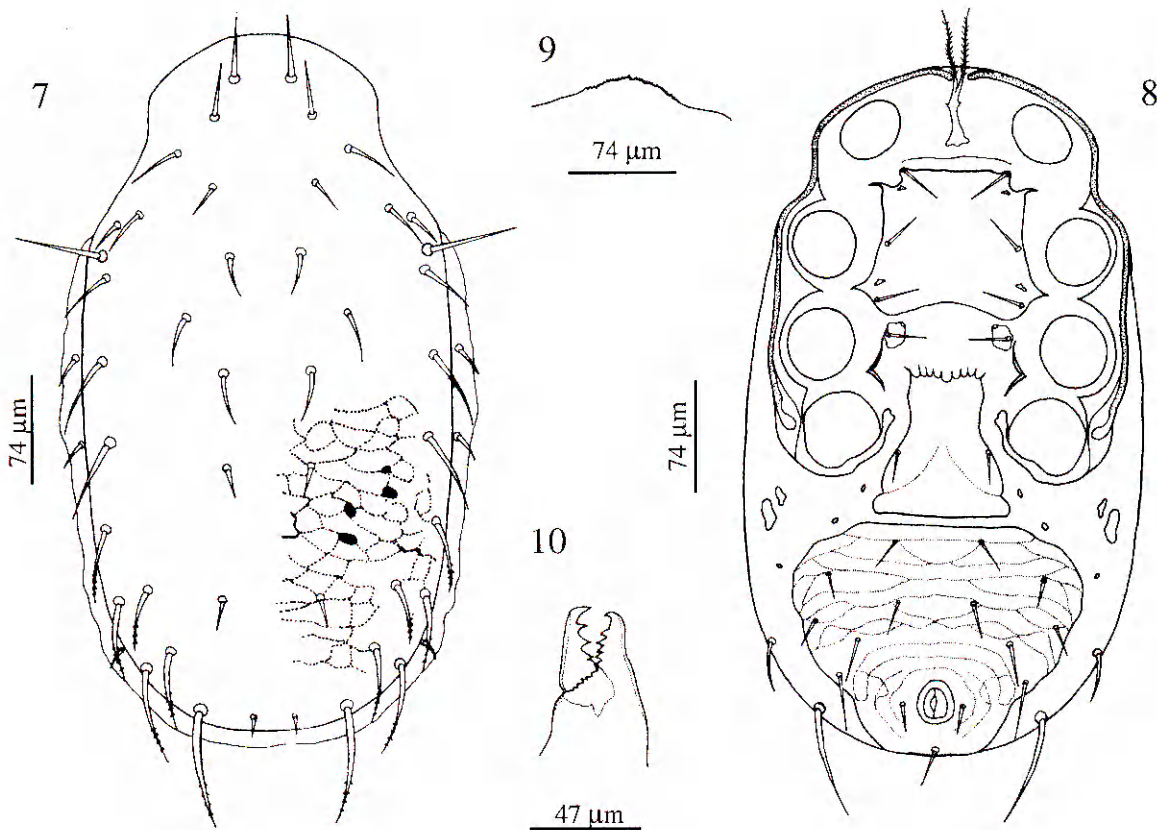
Gnathosoma (Figs. 4–5). Tectum anteriorly denticulate (Fig. 4). Pedipalps five-segmented; apotele two-tined; six rows of deutosternal denticles present, with 8–11 teeth in each row; corniculi slender; internal malae fringed. Chelicerae dentate, movable digit with four teeth, fixed digit multidentate (Fig. 5).

Legs (Fig. 6). Legs I–IV provided with ambulacra and claws; macrosetae on tibia IV arises from tubercles (Fig. 6). Chaetotaxy of genua I–II–III–IV, respectively 13–11–9–9; tibiae: 13–10–8–10.

Male unknown.

Material examined. Holotype female, 7 km away from Silver Cascade along Kodaikanal Highway, Ooty, Tamil Nadu; ex Oak leaf litter; 21.11.1982; S.K. Bhattacharyya coll. Paratypes, three females, data same as for holotype.

Distribution. India: Tamil Nadu.



Figs. 7–10. *Lasioseius punjabensis* sp. n., female: 7 — dorsal view, 8 — ventral view, 9 — tectum, 10 — chelicera.

Differential diagnosis. The new species superficially resembles the Mexican species *Lasioseius porulosus* De Leon, 1963 in the number of setae, shape of sternal and ventri-anal shield but differs in the nature of setae, shape of chelicerae and tectum, and the relative length of Z4, Z5 and S5.

Etymology. The species name *triangularis* is derived from the triangular shape of the ventri-anal shield.

***Lasioseius punjabensis* sp. n.**

Figs. 7–10.

Description of female

Idiosomal dorsum (Fig. 7). Dorsal shield 394.8–423 long, 225.6–253.8 wide, reticulated over entire surface, with twenty-two pairs of robust, stout setae (Fig. 7); anterior region with twelve pairs of setae, ten pairs of setae on posterior region; all setae of anterior region simple and smooth; posterior region with six pairs of serrated setae (S3, S4, Z3, Z4, S5 and Z5); setae r3, Z4, Z5 and S5 61.13, 48.26, 80.43 and 64.3 long, respectively. Lateral membrane with three pairs of simple setae, posterior one equal to J5 in length (12).

Idiosomal venter (Fig. 8). Tritosternum with moderately pilose bifid lacinae; portion between

tritosternum and sternal shield lineated horizontally (Fig. 8). Sternal shield (93.3 long along midline, 135.13 wide at their widest point) with three pairs of subequal (24) sternal setae; sternal shield truncate anteriorly, posterior margin highly convex; anterolateral corner of sternal shield immediately beside first sternal setae depressed; metasternal shields with a pair of metasternal setae. Genital shield truncate posteriorly, with paired genital setae, ornamented with pair of procurved lines; all setae on sternal and metasternal shield simple, subequal and slightly longer than genital setae. Ventri-anal shield (160.86 long along midline, 199.47 wide at their widest point) strongly reticulated, over entire surface, with six pairs of circum-anal setae; para-anal setae nearly as long as post-anal ones, all simple; anal aperture medium-sized; two pairs of ventral setae on ventral membrane around ventri-anal shield, most posterior pair largest. Metapodal plates divided into smaller and larger lateral elements. Endopodal plates well-formed between coxae III and IV. Exopodal shield fused with peritrematal shield posteriorly; stigma small, situated at level of coxa IV, post-stigmatal prolongation of peritrematal shield fused with podal elements at level of coxa IV.

Gnathosoma (Figs. 9–10). Margin of tectum denticulate, gently convex medially (Fig. 9); specialized seta of palpal tarsus two-tined. Corniculi normal in shape, internal malae finely fringed, extending slightly beyond tips of corniculi. Deutosternum with 8–9 rows of deutosternal denticles, anterior seven rows with 5–7 denticles, basal row with eleven denticles, eighth row widest having sixteen denticles. Both cheliceral digits of equal length, movable digit tridentate (Fig. 10), fixed digit with a set of teeth arranged on its cutting edge.

Legs. All legs provided with ambulacra and claws; chaetotactic formulae normal for the genus; setation of genua of legs I–II–III–IV, respectively 13–11–9–9 and that of tibiae 13–10–8–10; all leg setae simple; no macrosetae on legs I–IV.

Male unknown.

Material examined. Holotype female, Seesh Mahal, Patiala, Punjab; ex soil and litter; 5.01.1996; A.K. Bhattacharyya coll. Paratypes, five females, data same as for holotype.

Distribution. India: Punjab.

Differential diagnosis. The new species, *Lasioseius punjabensis* shares its relationship with *L. lindquisti* Nasr and Abou-Awad 1987, in having similar number and nature of setae on dorsal shield, nature of reticulation, similar shape of metasternal shield, same number of setae on ventri-anal shield and absence of any macrosetae on legs I–IV. However, the new species differs from its nearest congeneric species in combination of the following characters: characteristic shape of the anterior region of sternal shield, shape of peritrematal shield and structure of tectum and chelicerae.

Etymology. The species is named by its type-locality, Punjab.

Lasioseius reticulatus Bhattacharyya, 1968

Figs. 11–14.

1968. *Lasioseius reticulatus* Bhattacharyya, *Acarologia*, 10(4): 534.

1996. *Lasioseius reticulatus*, Bhattacharyya et al., *Environ. Ecol.*, 14(4): 851.

Description of female

Idiosomal dorsum. Dorsal shield (365–376.4 long, 181.4–193 wide) reticulated over entire surface; thirty-six pairs of setae on dorsal shield, twenty-one pairs on anterior region of dorsal shield, remaining setae on posterior region of dorsal shield; lateral membrane with eight pairs of setae, all simple in nature. Peritreme visible dorsally slightly protruding beyond vertical setae.

Idiosomal venter. Tritosternum with paired pilose lacinae, basal part long; weakly sclerotized pre-sternal shield present; sternal shield slightly convex posteriorly, anteromedian region reticulate, with three pairs of subequal sternal setae, metasternal setae placed on metasternal shield; genital shield wedge-shaped, with paired genital setae. Exopodal shield fused posteriorly with peritrematal shield; endopodal shield connecting with posterior extremities of peritrematal shield wholly encircling coxa IV, reaching upto level of coxa III; stigma placed between coxae III and IV, metapodal shield two pairs in number; ventral membrane with four platelets between genital and ventri-anal shield. Ventri-anal shield lineated, with a total of eleven setae; ventral membrane around ventri-anal shield with five pairs of setae.

Gnathosoma. Tectum basically three-tined with small denticles on each tine; movable chela tridentate, fixed chela with 13–15 teeth of irregular size; 7–8 rows of deutosternal denticles present.

Legs. Leg setation normal for the genus; tarsus IV without any macrosetae.

Description of male

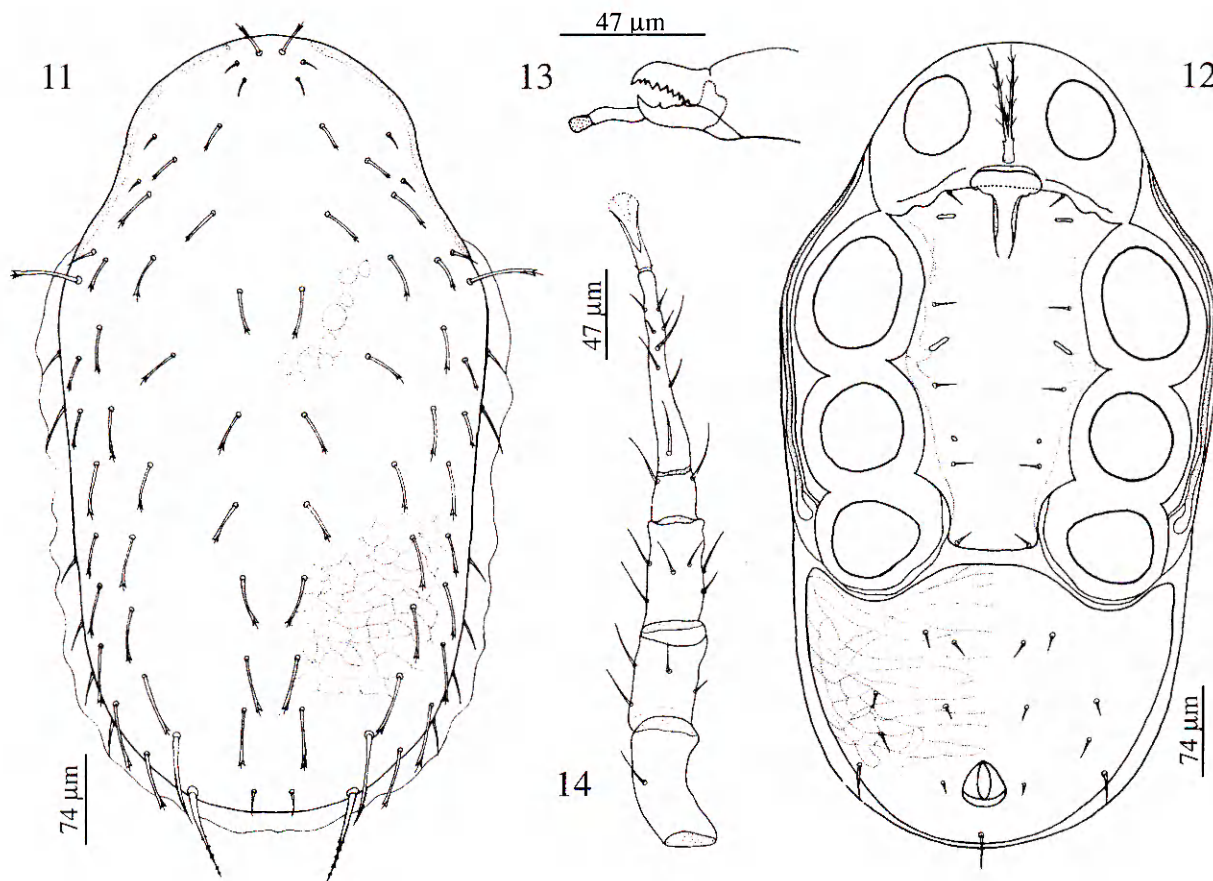
Idiosomal venter (Fig. 11). Reticulation and ornamentation as in fig. 11; dorsal setae on posterior region of dorsal shield larger than female; lateral membrane with six pairs of simple marginal setae.

Idiosomal venter (Fig. 12). Tritosternum with paired lacinae, basal part short (Fig. 12). Sterniti-genital shield with five pairs of short setae, genital aperture pre-sternal; exopodal and peritrematal shield structurally same as in female; endopodal shield united with sterniti-genital shield at level of coxa IV laterally. Ventri-anal shield lineated, with five pairs of setae, excluding paired para-anal and a post-anal setae.

Gnathosoma (Fig. 13). Gnathosomal structure same as in female; movable chela unidentate with long spermatodactyl process, fixed chela multi-dentate (Fig. 13).

Legs (Fig. 14). Legs similar to those in female, tarsus IV without macrosetae (Fig. 14).

Material examined. Two females and three males, Debra, Midnapore, West Bengal; ex soil and grass; 17.11.1996; S. Pandit coll. Two females, Nehru Garden, Bhubaneswar, Orissa; ex soil and grass; 4.07.1996; A.K. Bhattacharyya coll. One female and one male, Nayachar Island, Haldia, West Bengal; ex soil; 2.02.1997; A.K. Bhattacharyya coll.



Figs. 11–14. *Lasioseius reticulatus* Bhattacharyya 1968, male: 11 — dorsal view, 12 — ventral view, 13 — chelicera, 14 — segmental view of leg IV.

Distribution. India: Orissa, West Bengal.

Remarks. Males of this species is being described for the first time.

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