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TWO NEW SPECIES OF ASCID MITES (ACARINA : MESOSTIGMATA) FROM THE THAR DESERT OF RAJASTHAN, INDIA

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INTRODUCTION

Indian Thar Desert stretching from the west of Aravallis to the Indus basin, is an arid wasteland covered under wind-blown sands. It covers an area of 1,02,400 sq. kms., occupying 12% of the Indian mainland. Considering the huge land area, the invertebrate fauna of this region has been very little explored. Tandon (1996) gave a detailed account of taxonomic researches conducted on different insect groups in the Indian Thar Desert. Literature studies reveal that soil acarine fauna of the Thar Desert is represented by only ten species (Sanyal, 1996). Out of these, seven species belong to the order Cryptostigmata, two species belong to the order Mesostigmata and the remaining one belongs to the order Prostigmata. While working on soil acarine fauna of the Thar Desert, alongwith other acarines two new species of ascid mites belonging to two genera *viz.*, *Lasioseius* Berlese and *Gamasellodes* Athias-Henriot were collected.

Nine species of plant-, soil- and nest-inhabiting *Lasioseius* mites are known from India (Chant, 1960; Menon and Ghai, 1968; Bhattacharyya, 1968; Gupta and Paul, 1985; Bhattacharyya *et al.*, 1997, 2000; Bhattacharyya and Bhattacharyya, 2001). Bhattacharyya (1978), Pramanik and Raychaudhury (1978) reported the occurrence of the *Gamasellodes bicolor* (Berlese, 1918) from West Bengal.

KEY WORDS : *Gamasellodes jodhpurensis* sp. nov., *Lasioseius prakashii* sp. nov., Thar Desert, Rajasthan, India.

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MATERIAL AND METHODS

Mites were cleared in lactic acid before mounting on microscopic slides using Hoyer's medium. Measurement (in micrometer, μm) were taken from slide-mounted specimens with stage-calibrated ocular micrometer. Setae were measured from the base of their insertion to their tips. The system of setal nomenclature for idiosoma and legs follows that of Lindquist and Evans (1965). Type-materials are deposited in the National Zoological Collection, Zoological Survey of India, Calcutta.

Gamasellodes jodhpurensis sp. nov.

(Text-figs. 1-3)

Female : Anterior dorsal shield (126 μm long along midline, 104 μm wide at widest point) with fifteen pairs of simple setae; setae j1, j2 and z1 almost subequal in length (11 μm); posterior dorsal shield (120 μm long, 101 μm wide) with fifteen pairs of simple setae; setae J1–J3 subequal (11 μm), J4 and J5 subequal (9 μm); setae J5 and S5 40 μm and 20 μm long respectively; area between J4 and J5 finely granulated medially; six pairs of short, simple, smooth setae present on lined lateral membrane; peritreme visible dorsally extending upto setae z1 apically (Fig. 1).

Sternal shield smooth, 62 μm long, 61 μm wide; setae st1 placed on extended anterior portion of sternal shield; bilobed portion containing setae st1 finely granulated; setae st3 longer (13 μm) than subequal st1 and st2 (11 μm); metasternal setae placed on ventral membrane; epigynial shield with a pair of setae; ventral membrane beyond epigynial shield folded to form membrane; ventral membrane around ventri-anal shield with three pairs of ventral setae and platelets as depicted in fig. 2; metapodal platelets narrow, arranged lateral to body margin. Ventri-anal shield (78 μm long along midline, 100 μm wide) coarsely granulated posteriorly, with four pairs of setae, excluding a pair of para- and a post-anal setae. Peritreme narrow, stigma placed on anterior level of coxa IV; post-stigmatal prolongation of peritrematal shield extending posteriorly, encircling coxa IV.

Tectum trispinnate (Fig. 3). Ventrally gnathosoma with five rows of deutosternal denticles; anterior second row widest, with five teeth.

Leg setation normal for the genus *i.e.*, femora I–II–III–IV, 12–10–6–6, and that of tibiae 13–11–8–9; legs I–II–III–IV, 257 μm , 241 μm , 223 μm and 217 μm long respectively.

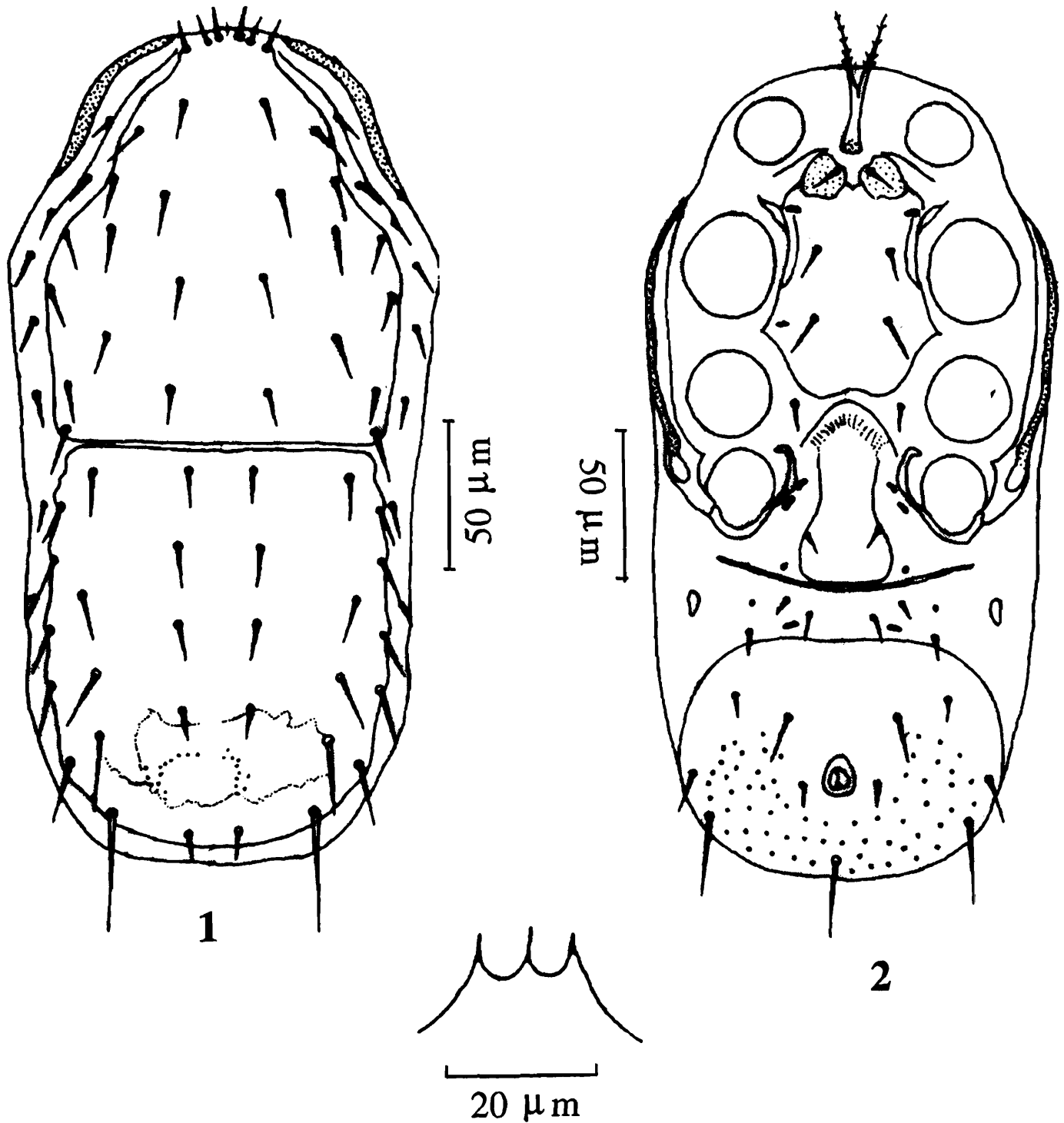
Male : Unknown.

Material examined : HOLOTYPE female, ex. soil; Kharia Mithapur, Jodhpur, Rajasthan; 20.i.2001; A. K. Bhattacharyya coll. PARATYPE : One female, data same as for holotype.

Differential diagnosis : The new species, *Gamasellodes jodhpurensis* shows its similarity with another Indian species *Gamasellodes islandicus* Bhattacharyya and Sanyal, 2002 in having similar shape of sternal and ventri-anal shield and tectum, nature and length of dorsal setae.

However, the new species differ from its allied species in the following aspects : setal disposition of j2, shorter length of j3, longer length of sternal setae st3, punctuated nature of ventri-anal shield and presence of exopodal shield.

Etymology : The specific designation *jodhpurensis* refers to the type-locality.



Figs. 1-3. : *Gamasellodes jodhpurensis* sp. nov., female : 1. Dorsum, 2. Venter, 3. Tectum.

Lasioseius prakashii sp. nov.

(Text-figs. 4–8)

Female : Dorsal shield (390 μm long along midline, 180 μm wide at their widest point) reticulated, with twenty-one pairs of simple to serrated setae; anterior region with twelve pairs of setae, nine pairs of setae on posterior region (Fig. 4); setae j1, r3, S5, Z5 and J5 33 μm , 48 μm , 60 μm , 70 μm and 12 μm long respectively; setae S5 and J5 borne on tubercles; lateral membrane with three pairs of short, simple lateral setae; peritreme visible dorsally, extending beyond apical setae anteriorly.

Tritosternum with long, pilose lacinae. Sternal shield (90 μm long along midline, 117 μm wide between two anterolateral corners) slightly convex posteriorly, with three pairs of setae, st1 longer (23 μm) than subequal st2 and st3 (15 μm); paired platelets flanking the base of tritosternum present anterior to sternal shield; metasternal shield with metasternal seta; genital shield truncate posteriorly, reticulated laterally, with paired genital setae. Peritreme moderately wide, stigma at level of coxa IV; post-stigmatal prolongation of peritrematal shield encircling coxa IV posteriorly. Ventri-anal shield (148 μm long along median line, 165 μm wide at their widest point) large, completely reticulated, with a total of fifteen setae; ventral membrane posterior to ventri-anal shield with two pairs of setae (Fig. 5).

Tectum denticulate, roughly circular in shape (Fig. 6). Ventrally seven rows of deutosternal denticles present in hypognathal groove; anterior second and seventh row with eleven and five teeth respectively.

Chaetotactic formulae of genua and tibiae of legs I–II–III–IV as follows : 13–11–9–9 and 13–10–8–10 respectively; length of legs I–IV, 437 μm , 318 μm , 307 μm and 443 μm respectively.

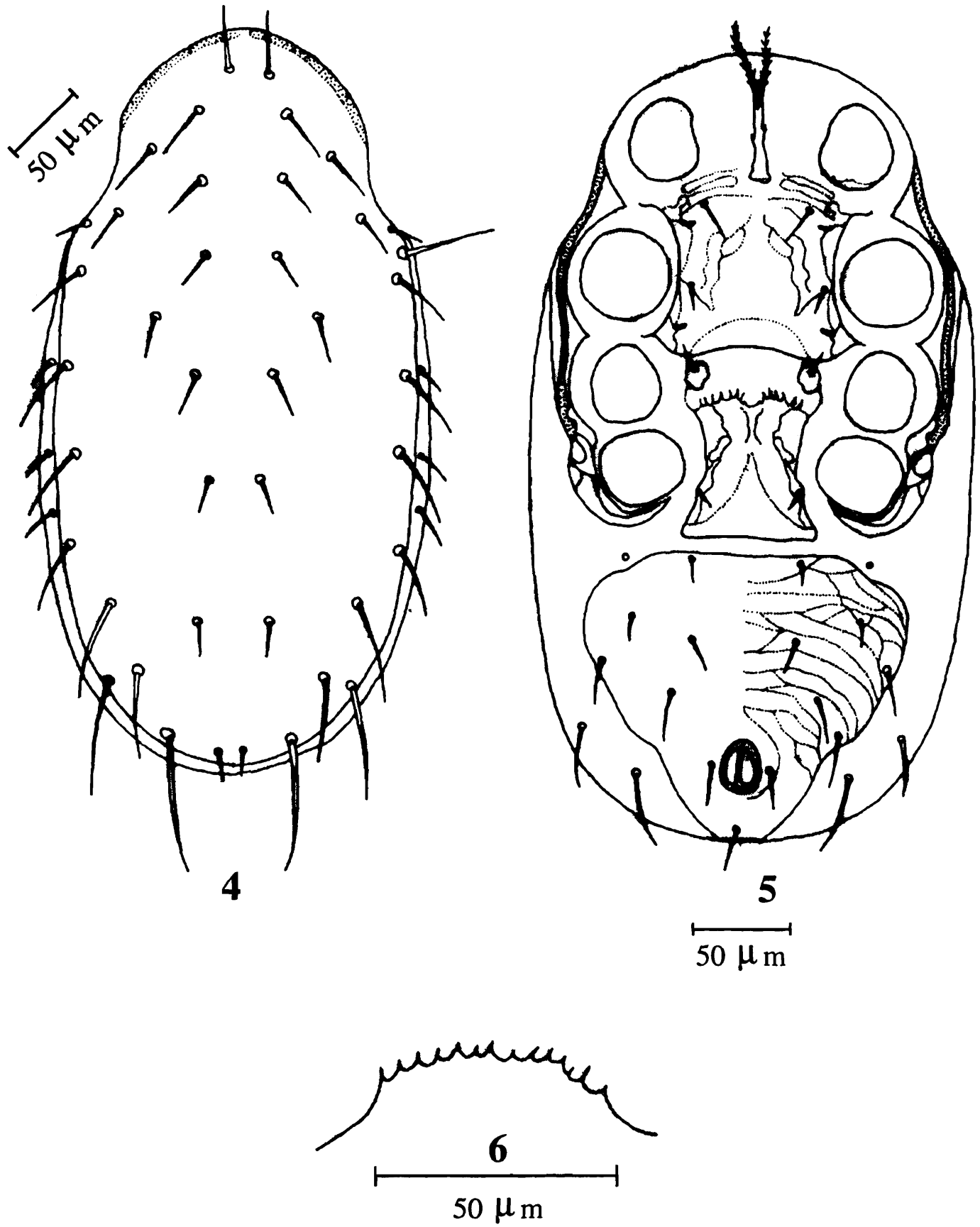
Male : Dorsal shield (278 μm long, 128 μm wide) with twenty pairs of setae, equally divided on anterior and posterior region; setae r3, j2, S5 and J5 32 μm , 28 μm , 51 μm and 9 μm long respectively (Fig. 7); reticulation of dorsal shield same as in female.

Tritosternum same as in female; sterniti-genital shield (117 μm long along midline, 51 μm wide along two anterolateral corners at level of setae st1) with three pairs of setae, st2 longest (11 μm). Peritreme moderately wide, stigma situated at level of upper half of coxa IV. Ventri-anal shield (104 μm long, 148 μm wide) reticulated, with fifteen setae (Fig. 8).

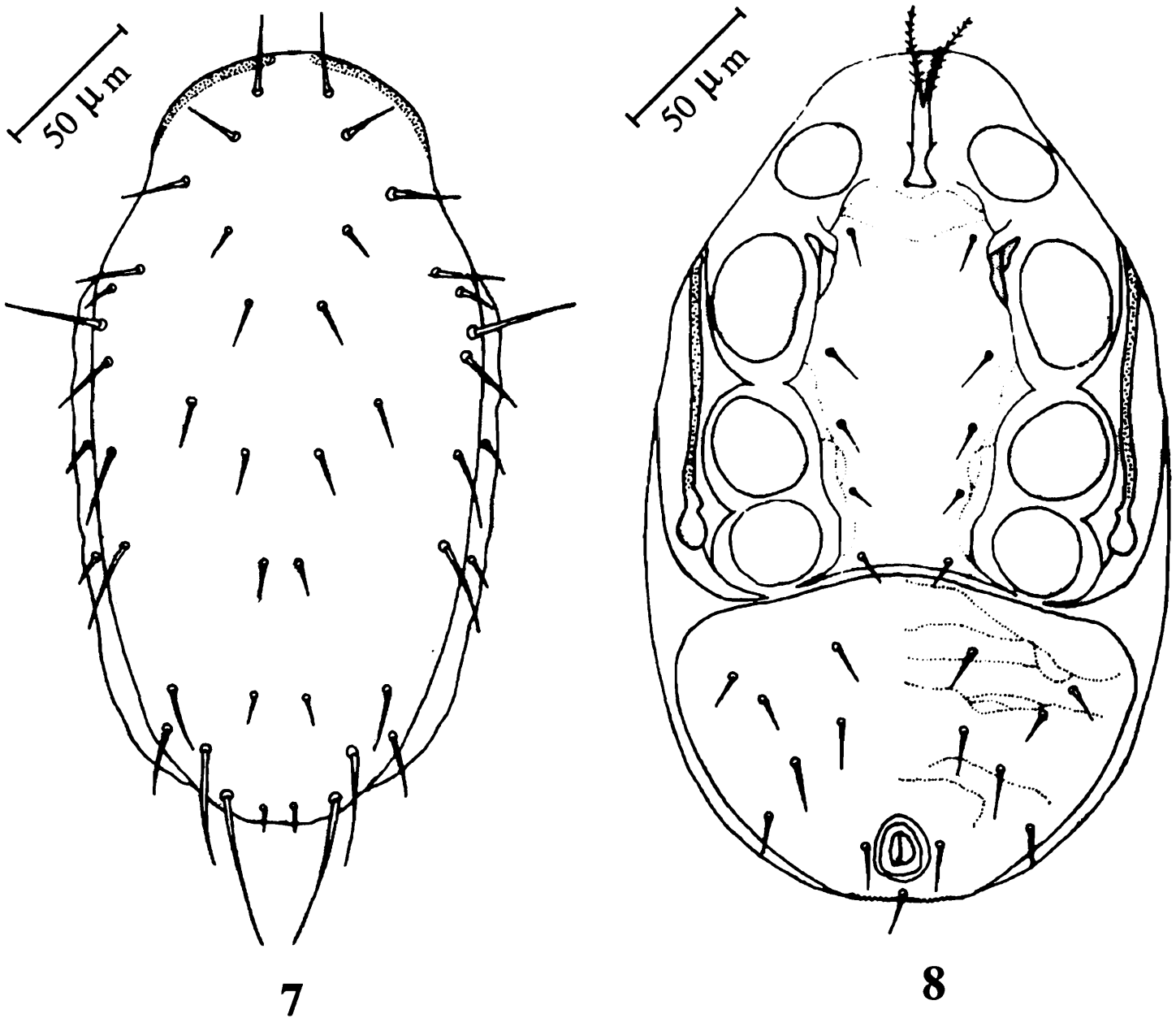
Tectum same as in female. Ventrally gnathosoma with seven rows of deutosternal denticles, with 9–15 teeth in each row, second row widest with fifteen teeth. Fixed cheliceral digit with nine teeth, spermatodactyl process long, movable cheliceral digit unidentate.

Sexual dimorphism absent in legs.

Material examined : HOLOTYPE female, ex. soil; Jaliwada, Jodhpur, Rajasthan; 15.i.2001; A. K. Bhattacharyya coll. PARATYPES : Two females, data same as for holotype. Two females,



Figs. 4-6. : *Lasioseius prakashii* sp. nov., female : 4. Dorsum, 5. Venter, 6. Tectum.



Figs. 7-8. : *Lasioseius prakashii* sp. nov., male : 7. Dorsum, 8. Venter.

ex. soil; Ghaseri, Jalore, Rajasthan; 6.xii.2001; A. K. Bhattacharyya coll. Three females, ex. soil; Kharia Mithapur, Jodhpur, Rajasthan; 20.i.2001; A. K. Bhattacharyya coll. Two females, ex. soil; Sri Vijaynagar, Sri Ganganagar, Rajasthan; 9.ii.2001; A. K. Bhattacharyya coll. One male, ex. soil; Sikwada, Jalore, Rajasthan; 6.xii.2000; A. K. Bhattacharyya coll.

Differential diagnosis : *Lasioseius prakashii* sp. nov. can be differentiated from its nearest congeneric species, *L. lindquisti* Nasr and Abou-Awad, 1987, in the following aspects : total number of setae on dorsal shield, shape of sternal shield, metasternal shield and tectum.

Etymology : The species is named after the name of late Dr. Ishwar Prakash, eminent Indian ecologist, considered an authority on desert ecology.

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