

TWO NEW SPECIES AND TEN NEW RECORDS OF THE GENUS *PERGALUMNA* (ACARINA: ORIBATIDA: GALUMNIDAE) FROM INDIA

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INTRODUCTION

The genus *Pergalumna* was established by Grandjean (1936) with *Oribates nervosa* Berlese, 1914 from Italy as the type under the family Galumnidae Jacot, 1925 and the superfamily Galumnoidea Jacot, 1925. Woodring (1962) referred the family as the most advanced pterogasterine group of mites. These mites are commonly known as galumnid mites. The "characteristically shaped" galumnid mites possess a pair of wing like 'pteromorphae' at both the sides of notogaster and most of them are heavily sclerotized and highly pigmented. They inhabit in all types of soil but predominantly found in soil and litter with rich organic matter. Under the family Galumnidae a total of 34 genera are known from the world of which 13 galumnid genera have been reported from India till date. The genus *Pergalumna* Grandjean, 1936 is one of the major genera having 105 species and 14 subspecies reported till date from all over the world except Antarctica (Subias, 2009). In India, a total of 5 species of *Pergalumna* were reported till 2004, of which *Pergalumna andhraense* Raju *et al.*, 1981 was described as new species from Andhra Pradesh. The other pergalumnid species known from India were *P. corolevuensis* Hammer, 1971 (Sarkar, 1986; Tripura), *P. intermedia* Aoki, 1963 (Balakrishnan and Haq, 1985; Kerala), *P. magnipora capensis* Engelbrecht, 1972 (Chakraborti and Bhattacharya, 1991; Tripura), *P. remota* (Hammer, 1968) and *P. taprobatica* Balogh, 1988 (Mondal and Kundu, 1999; West Bengal). In addition, Sanyal (1999, 2004)

recorded the genus with undetermined species from West Bengal and Manipur and Pandit and Bhattacharya (2000) reported from West Bengal.

The present paper records another 12 including two new species of pergalumnid mite from India. These species include *P. pertrichosa* Mahunka, 1995; *P. intermedia retroversa* Aoki and Hu, 1993; *P. incompta* Engelbrecht, 1972; *P. longiporosa* Fujita and Fujikawa, 1987; *P. aegra* Perez-Inigo and Baggio, *P. margaritata* Mahunka, 1989; *P. granulata* Balogh and Mahunka, 1967; *P. hastata* Aoki, 1987; *P. longisetosa* Balogh, 1960; *P. andicola* Hammer, 1961 and the two new species are *P. bhaskari* and *P. sabitai*.

DESCRIPTION OF THE NEW SPECIES

Pergalumna bhaskari sp. nov.
(Figs. 1- 4)

Colour : Light brown.

Measurements (in micron): Length of the body: 351.5; width of the body: 277.5; length of lamellar setae: 74; length of interlamellar setae: 55.5; length of rostral setae: 18.5; length of sensillus: 111.0; distance between lamellar setae: 111.0; distance between rostral setae: 55.5; distance between interlamellar setae: 92.5; length of bothridium: 18.5; distance between sensillus: 166.5; length of anal plate: 70.5; width of anal plate: 70.5; length of genital plate: 47; width of genital plate: 55.5; distance between aggenital setae: 70.5.

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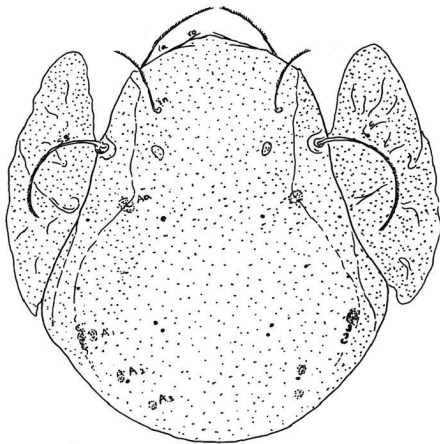


Fig. 1 : Dorsal view of *Pergalumna bhaskari*

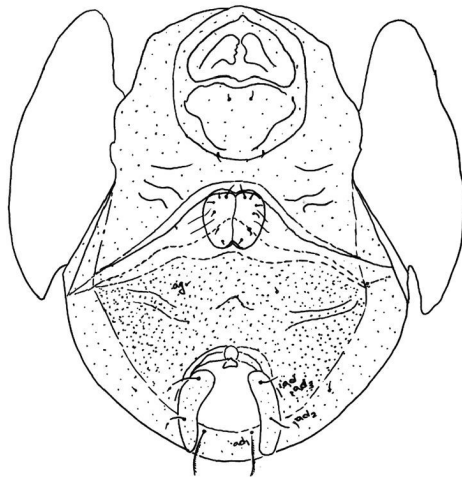


Fig. 2 : Ventral view of *Pergalumna bhaskari*

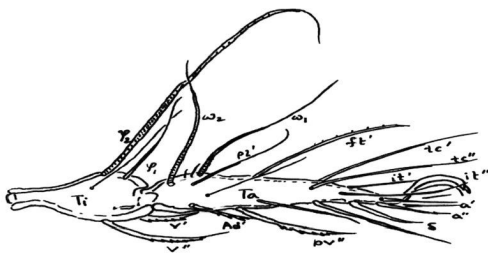


Fig. 3 : Tarsus and tibia of right leg I of *P. bhaskari*

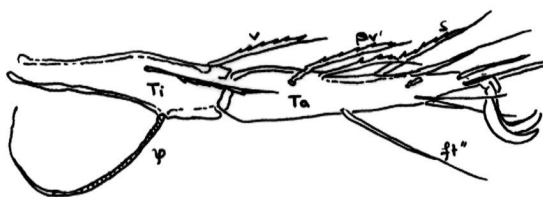


Fig. 4 : Tibia and tarsus of right leg IV of *P. bhaskari*

Prodorsum : The whole prodorsal surface including the pteromorphae with dense granulation. Sensillus very long, directed outwards and having spines mostly on the outer side. Dorsosejugal suture completely absent. Area porosa dorsosejugal is very light. Lamellar setae and interlamellar setae longer than rostral setae. The ratio of prodorsal setae: $la > in > ro$. Lamellar setae inserted in between lines 'L'.

Notogaster : Three pairs of area porosae present but A3 not clearly visible. 10 pairs of notogastral alveoli present. All legs are tridactylous and heterodactylous.

Ventral plate : The epimeral, ventral and anal regions with fine cerotegumental punctuation but more punctuation present in between the anal and genital plates. Two prominent bands are present in the ventral plate - one dark chitinized band present in front of the genital plate and a weak chitinized band present along the middle of the genital plate. Both bands extend to the lateral margins of the ventral plate. A pair of unusual ridge present in between anal and genital plates. 6 pairs of genital setae present of which the anterior 1st pair is longer than the others. 2 pairs of anal setae and 3 pairs of adanal setae present. ad1 is the longest setae in the ventral side.

Material examined : HOLOTYPE: Adult female, INDIA: West Bengal, Purulia, Govt. Girls' High School Compound, from leaf litter, 22.xii.2007, coll. S. Sarkar.

PARATYPES : 2 adult females, data same as for holotype.

Disrtibution : India: West Bengal (Purulia District).

Remarks : The new species shows close similarities with *P. granulata* Balogh and Mahunka, 1967 in the nature of the granulation on the dorsal surface; position of lamellar and interlamellar setae and the position and size of three pairs of area porosae. But *P. bhaskari* differs from *P. granulata* in shape and size of the prodorsal setae. The ventrally located prominent bands are also absent in *P. granulata*. The present species also comes closer to *P. filifera* Mahunka, 1978 and *P. kotschyl* Mahunka, 1989 in having the broad bridge in front of the genital plate. But the other band through the genital

plates is absent in the two formerly known species. Hence, on the basis of the densely granulated dorsum, long and ciliated prodorsal setae, absence of dorsosejugal suture, ventral chitinized band and long, ciliated ad₁ *P. bhaskari* differs from all other species under the genus *Pergalumna* and described as a species new to science.

***Pergalumna sabitai* sp. nov.**

(Figs. 5 – 8)

Colour : Light brown to yellowish brown.

Measurements (in micron) : Length of body: 333; width of body: 270; length of rostral setae: 37; length of lamellar setae: 62.9; length of inter lamellar setae: 11.1; length of sensillus: 111.0; length of bothridium: 18.5; distance between rostral setae: 59.2; distance between interlamellar setae: 92.5; distance between lamellar setae: 92.5; length of genital plate: 48.1; width of genital plate: 55.5; length of anal plate: 62.9; width of anal plate: 74.0; distance between aggenital setae: 62.9.

Prodorsum : Rostral setae not visible in dorsal view, it is near to the lateral margin of prodorsum. Lamellar setae long, thin, smooth and near to lines 'L'. Interlamellar setae very short. Sensillus long, curved, directly outwards and distinctly pilose.

Notogaster : Whole dorsal plate including the pteromorphae punctated. The punctuation is fine upto the mid dorsal portion of the notogaster but the posterior half of the notogaster is with honeycomb like ornamentation. All legs are tridactylous. Pteromorphae with radiating lines and with prominent pteromorphae setae.

Ventral plate : The epimeral region is punctated and the epimeral setal formula: 1-0-2-2. All epimeral setae comparatively short. Genital plates with 6 pairs of genital setae. 1 pair of aggenital setae present. 2 pairs of anal setae present on anal plates. Anogenital region is alveolated but becoming larger posteriorly. 3 pairs of adanal setae present of which ad₁ and ad₂ longer than ad₃. Postanal area porosa well developed.

Material examined : HOLOTYPE: Adult female, INDIA: West Bengal: North 24-Parganas: Gobardanga, near Sutia market, 16.vi.2007, from a China rose cultivation field, coll. S. Sarkar.

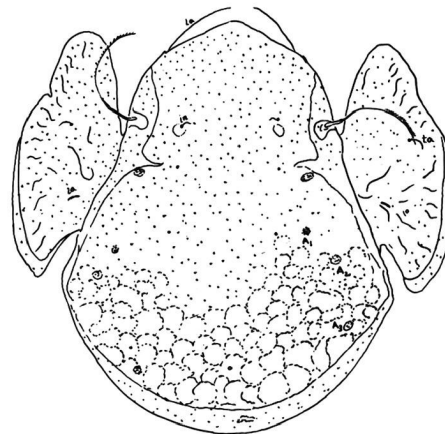


Fig. 5 : Dorsal view of *Pergalumna sabitai*

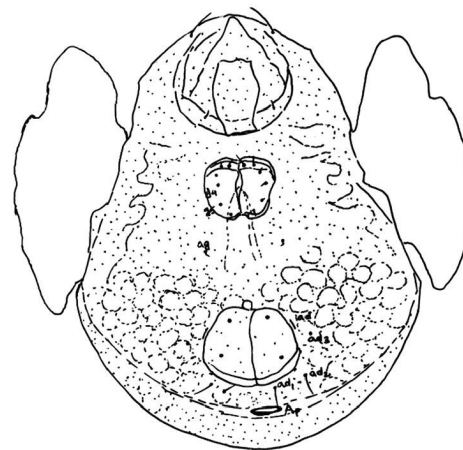


Fig. 6 : Ventral view of *Pergalumna sabitai*



Fig. 7 : Tarsus and tibia of leg I of *P. sabitai*



Fig. 8 : Tarsus and tibia of left leg III of *P. sabitai*

PARATYPE : Two adult females, data same as for holotype.

Remarks : The new species *P. sabitai* differs from all known species under *Pergalumna* except one species *P. tsavoensis* Mahunka, 1986. On the basis of the absence of dorsosejugal suture, structure of sensillus and finely punctated dorsal surface and position and structure of ad1 and ad2 the new species shows resemblances with *P. tsavoensis* Mahunka, 1986. But *P. sabitai* is distinguished from *P. tsavoensis* by presence of gradually increasing alveolate structure both on the notogaster and the ventral side, small sized A1, well developed postanal area porosa, wide punctated pteromorphae with pteromorph setae and position of ad3 arising from a little distance of *iad*. *P. sabitai* is therefore described as a new species.

The two new species have been dedicated to Sri Bhaskar Jyoti Sarkar and Smt. Sabita Sarkar, father and mother of the first author.

List of new record of species of the genus *Pergalumna* from India

1. *Pergalumna pertrichosa* Mahunka, 1995

Material examined: 2 adult females, India: West Bengal: North 24-Parganas: Keshtopur, 6.iii.2006, from garden soil, coll: S. Sarkar; 1 adult female, India: West Bengal: North 24 Parganas: Keshtopur, 1.vi.2007, from soil and litter beside Keshtopur canal, coll. S. Sarkar.

Distribution: INDIA: West Bengal: North 24-Parganas; Elsewhere: Borneo.

2. *Pergalumna intermedia retroversa* Aoki and Hu, 1993

Material examined : 3 adult females, India: West Bengal: Barrackpore: CIFRI compound, 5.x.2003, from garden soil, coll. S. Sarkar; 1 adult female, India: Sikkim: 12. i. 2003, from soil and litter, coll, A.K.Sanyal; 2 adult females, India: Uttar Pradesh: Mughalsarai, 21.x.2007, from soil and litter, coll, B.J.Sarkar; 1 adult female, India: Assam: Barak valley, 11.vii.2004, soil from forest, coll, R. B. Gope.

Distribution : INDIA: West Bengal, Sikkim, Uttar Pradesh, Assam; Elsewhere: Yunnan Province of Southern China.

3. *Pergalumna granulata* Balogh and Mahunka, 1967

Material examined : Single adult female, India: Uttarakhand: 15 Km. west of Gobindaghat; 4.xi.2004, from soil and litter, coll, A.K.Sanyal.

Distribution : INDIA: Uttarakhand; Elsewhere: Vietnam.

4. *Pergalumna andicola* Hammer, 1961

Material examined : 2 adult females, India: Jharkhand: Ranchi, 5.ix.2007, from soil and litter near Hundru falls, coll, S. Sarkar; single male, India: West Bengal: Purulia, 22.xii.2007, from soil litter, from Govt. Girls' High School compound, coll, S. Sarkar.

Distribution : INDIA: Jharkhand: Ranchi; West Bengal: Purulia; Elsewhere: Peru.

5. *Pergalumna incompta* Engelbrecht, 1972

Material examined : 4 adult females, India: Uttarakhand: Mayapur, 9.xi.2004, from leaf litter, coll, A.K.Sanyal

Distribution : INDIA: Uttarakhand; Elsewhere: South Africa.

6. *Pergalumna aegra* Perez-Inigo and Baggio, 1986

Material examined : 2 adult females, India: Lakshadweep: Agatti Island, 10.xii.1996, from soil and litter from vegetable fields, coll, S. K. Gupta; single male, India: Karnataka: Bangalore, ISRO compound, from soil litter, 21.ix.1995, coll, A. K. Bhattacharyya.

Distribution : INDIA: Lakshadweep, Karnataka; Elsewhere: Brazil.

7. *Pergalumna margaritata* Mahunka, 1989

Material examined: 2 nymphs and 3 females, India: Uttarakhand: Janakichatti, 14.iv.2006, from soil, coll, B.J.Sarkar; 1 adult female, India: Uttarakhand: Chamba, 15. iv.2006, from soil, coll, B. J. Sarkar.

Distribution : INDIA: Uttarakhand; Elsewhere: Vietnam.

8. *Pergalumna longiporosa* Fujita and Fujikawa, 1987

Material examined: Single female, India: Andaman: Ross Island, 27.ix.2005, from soil and litter, coll, A.K. Sanyal.

Distribution : INDIA: Andaman; Elsewhere: Maharashtra: Nagzira wildlife sanctuary, 13.i.2009, Japan. from soil and litter, coll, S. Sarkar.

9. *Pergalumna hastata* Aoki, 1987

Material examined : 2 adult females, India: West Bengal: Kolkata: near New Alipore railway station, 9.i.2005, from soil and litter, coll, S. Sarkar.

Distribution : INDIA: West Bengal: Kolkata; Elsewhere: Japan: Northern Yoron Island.

10. *Pergalumna longisetosa* Balogh, 1960

Material examined : 3 adult females, India:

Distribution : INDIA: Maharashtra; Elsewhere: Central Africa.

ACKNOWLEDGEMENTS

The authors are thankful to the Director, Zoological Survey of India, Kolkata for providing laboratory facilities. They also express thanks to the Head of the Department of Zoology, University of Kalyani for providing necessary infrastructural facilities.

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