

NEW SPECIES OF *INDOTRITIA* JACOT, 1929 (ACARINA : ORIBATIDA) FROM LAKSHADWEEP, INDIA

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ABSTRACT

Lakshadweep is one of the smallest Union Territories of India. The first ever study of soil inhabiting oribatid mites from Lakshadweep revealed one new species under the genus *Indotritia* Jacot, 1929. Only two species of *Indotritia* were reported so far from India (Uttar Pradesh, West Bengal and Kashmir). The family and genus are reported here for the first time from Lakshadweep.

The new species *Indotritia lakshadweepensis* (Acarina: Oribatida) can be distinguished readily from all other known species in its possession of faint, wavy, longitudinal and vertical lineation in the proximal part of notogaster, single solenidia in genu I and absence of any solenidia in genu IV.

INTRODUCTION

The cryptostigmatid or oribatid mites (Acarina : Oribatida) are commonly found to inhabit soil and litter with rich organic matter. These mites are numerically the most abundant soil acarina constituting about 80% of the soil fauna. The oribatids are economically very important to man because of their direct and indirect effect on human beings and other animals.

Lakshadweep, one of the smallest Union Territories of India, consists of 12 atolls, three

reefs and five submerged banks with 10 of its 36 Islands (area 32 sq.km.) being inhabited. Though the islands are unique in their ecosystem, no extensive faunal survey has yet been undertaken. Considering the fact, a survey was undertaken in Agatti Island, Lakshadweep for short duration and collected insects and oribatid mites. The study of soil inhabiting mites revealed one species which is described and illustrated in the present paper as new to science under the genus *Indotritia* Jacot, 1929.

The genus *Indotritia* includes 37 species (Subias, 2009), of which 2 were recorded previously from India (*Indotritia propinqua* Niedbala (2000) from Uttar Pradesh and West Bengal and *Indotritia undulata* Bayoumi and Mahunka (1979) from Kashmir).

Eight specimens of the new species *Indotritia lakshadweepensis* were collected from the soil of Lakshadweep during a survey tour conducted by the first author in July, 2011. The family and genus are reported for the first time from Lakshadweep.

MATERIAL AND METHODS

The soil samples were collected from a garden having semidecomposed banana plants and a few wild herbs in the Agricultural Office Campus at Agatti Island, Lakshadweep, India. The mites

were extracted from the soil samples with the help of a modified Tullgren dry funnel extraction apparatus. Specimens were cleared in lactic acid. For microscopic observations temporary mounting method was followed. Mite specimens were placed on a slide containing a small amount of lactic acid as mounting medium, covered by a small piece of cover slip and necessary microscopic observations were done. A total of eight specimens under the genus *Indotritia* were identified by following Balogh (1972). The measurements provided in the text were taken with the help of ocular and stage micrometers. The measurements of the specimens have been given in micron (μm).

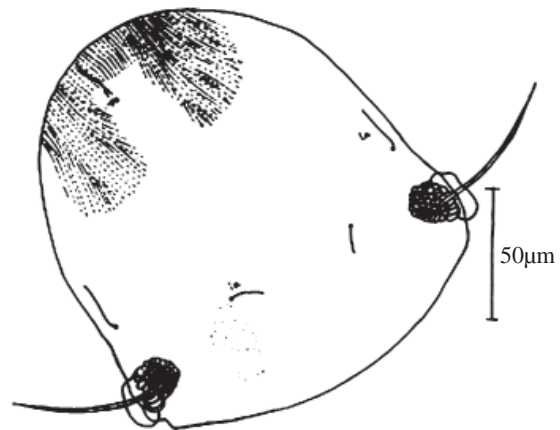
Holotype: Female: India, Lakshadweep, Agatti Island, Soil, 2-vii-2011, coll. A. K. Sanyal (Registration No. 4256/17); **Paratypes:** 7 Female: data same as for holotype (Registration No. 4257/17) were deposited in the National Zoological Collection, Zoological Survey of India, Kolkata.

RESULTS

Indotritia lakshadweepensis sp. nov.

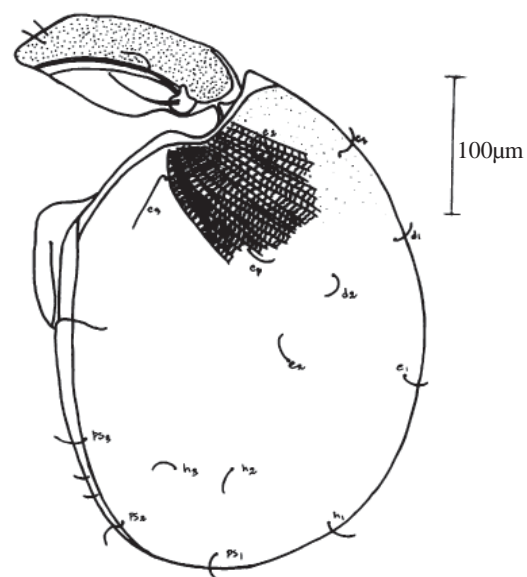
(Figs. 1-6)

Aspis: Length of Aspis- 400.08; Breadth of Aspis- 368.88. Length / breadth ratio of aspis 1.08. Aspis with two pairs of lateral carinae, one pair on each side; upper carinae well developed and larger than lower carinae and reaches almost the end of the rostrum. Anterolateral margin of aspis in dorsal view not smoothly rounded, but rostrum weakly protruding. A weak swelling exists on the anterior part behind rostral setae. Rostral, lamellar and interlamellar setae smooth. Lamellar setae (57.90) thin, long and directed anteriorad, parallel with the surface of prodorsum, longer than rostral setae. Rostral setae (42.03) originating from a small papillae, longer than interlamellar setae (32.35), extends beyond the margin of the rostrum. Exobothridial setae vestigial. Sensillus (157.31) smooth, setiform, pointed. Anterior margin of aspis with fine lineation. Irregular granulation in aspis. Bothridial squama prominent and situated above bothridium (Fig. 1).



Figs. 1. Aspis in dorsal view of *Indotritia lakshadweepensis* sp. nov.

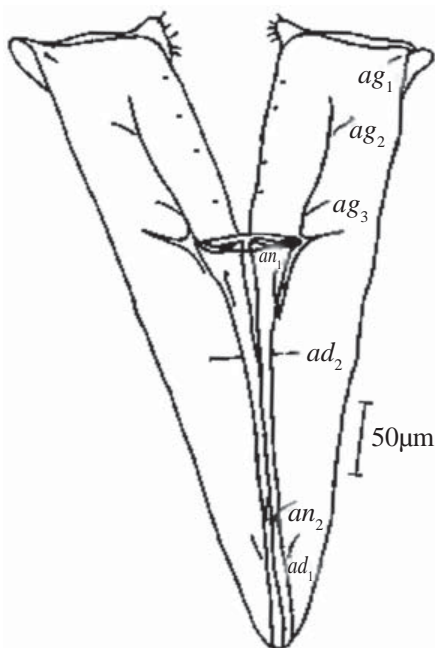
Notogaster: Length of notogaster-848.29; breadth of notogaster- 696.30. Strongly arched in lateral view. Length / breadth ratio of notogaster 1.22. 14 pairs of notogastral setae smooth, fairly strong, sickle shaped. Setae c_3 (128.06) inserted close to the anterolateral margin of notogaster and longer than other setae. Anterior part of notogaster sculptured with longitudinal lineation with vertical wavy furrows in between two successive longitudinal lines. Lineations originate from anterolateral margin of notogaster and extend upto notogastral setae cp . Irregular granulations present in notogaster. Lyrifissures ia , im , ip , ips , ih present (Fig. 2).



Figs. 2. Lateral view of body of *Indotritia lakshadweepensis* sp. nov.

Epimere: Epimeral setal formula 3-0-3-3.

Genito-Anal Region : Length of genital plate-227.92; length of progenital plate-30.8; length of anal plate-412.81. Genital and aggenital plate incompletely separated by genito-aggenital suture. Genito-aggenital suture (141.77) reaching up to the middle of g_6 and g_7 and bent inward. Genital setae 9 pairs among which 5 pairs located on progenital plate and 4 pairs on genital plate. Aggenital region bear 3 pairs of setae; ag_1 located near anterolateral corner of the region; ag_2 parallel with g_7 and ag_3 parallel with g_9 . Each anal plate and adanal plate bears 2 pairs of setae (Fig. 3).



Figs. 3. Ano-genital region of *Indotritia lakshadweepensis* sp. nov.

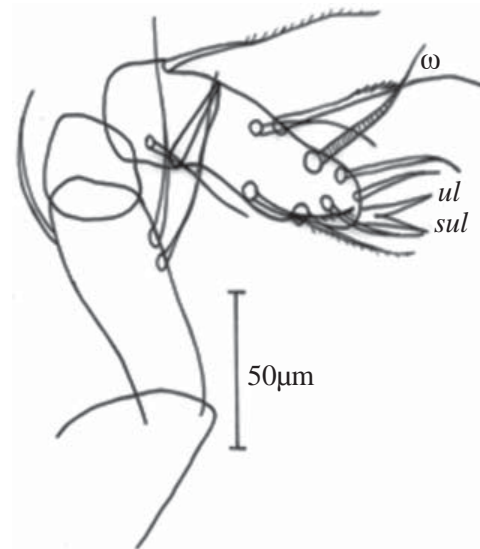
Length of aggenital and genital setae: ag_1 -20.44, ag_2 -28.57, ag_3 -28.18, genital setae-9.67, progenital setae-8.98.

Length of anal and adanal setae: an_1 -28.38, an_2 -23.32, ad_1 -20.78, ad_2 -18.20.

Palp : Palp five segmented with setal formula: 0-3-0-2-10 and one solenidia on the tarsus. Femur and genu distinguishable but immovably articulated. Eupathidia *ul'* and *sul* fused basally (Fig. 4).

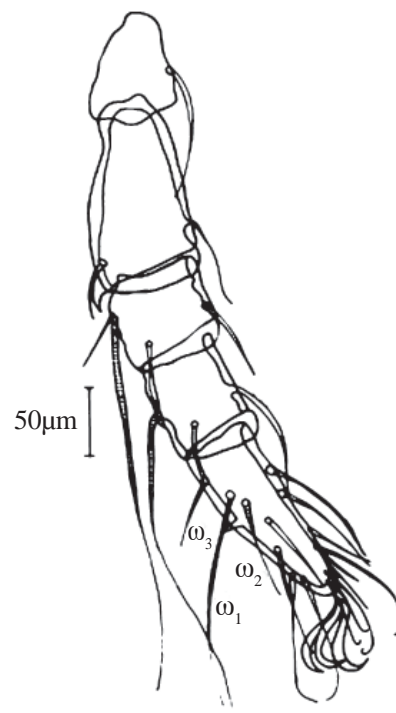
Legs : Chaetotaxy of the legs mentioned below. Anteriodorsal spine of femora I stout

and hooked. A small setae present on tarsus I immediately below ω_2 . All solenidia on genu and tibia accompanied each by a short setae. Tarsi of legs tridactylous (Figs. 5 & 6).



Figs. 4. Palp of *Indotritia lakshadweepensis* sp. nov.

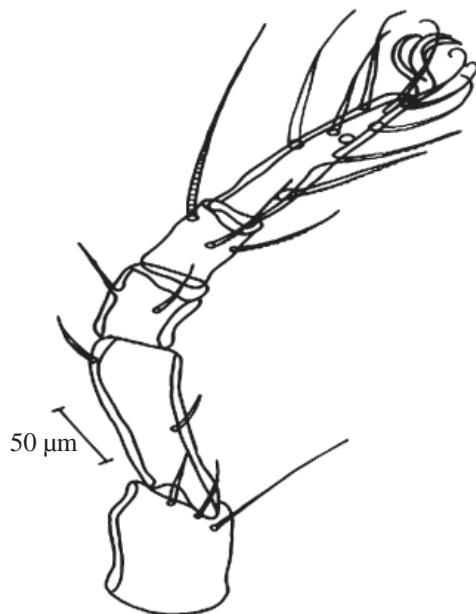
Leg Setae: Total setae: I(1-3-5-4-22); II(1-4-4-4-16); III(0-2-4-4-12); IV(3-2-2-3-11); solenidia: I(1-1-3); II(1-1-2); III(1-1-2); IV(0-1-0).



Figs. 5. Leg I of *Indotritia lakshadweepensis* sp. nov.

Distribution : India: Lakshadweep (Agatti Island).

Etymology: The new species is named after the name of the collection locality, Lakshadweep Islands.



Figs. 6. Legs IV of *Indotritia lakshadweepensis* sp. nov.

DISCUSSION

The new species is related with *I. acanthophora* Markel, 1964 described from Peru. Similarities with the new species are in presence of setiform sensillus, well developed upper carinae, number of genital, aggenital, anal and adanal setae, c_3 longer than other, fine striations in the anterior margin of aspis, presence of acanthophore in femur I. But the species *I. lakshadweepensis* shows dissimilarities in granulations in aspis, longitudinal lineation with vertical wavy furrows in notogaster which originate from the anterior margin of notogaster and run backward, an_2 and ad_2 are very minute in *I. acanthophora* whereas in the new species the length of an_2 and ad_2 more or less same with an_1 and ad_1 respectively. Other most important dissimilarities are presence of single solenidia in genu I and no solenidia in genu IV of new species whereas 2 in genu I and 1 in genu IV of *I. acanthophora* (Table-I).

Table-I : Characters showing similarities and dissimilarities between *I. acanthophora* and *I. lakshadweepensis*

Characters	<i>I. acanthophora</i>	<i>I. lakshadweepensis</i>
Acanthophore in leg I	Present	Present
Lineation in aspis	Present	Present
Shape of sensillus	Setiform, pointed	Setiform, pointed
Solenidia in genu I	2	1
Solenidia in genu IV	1	0
Lineations in notogaster	Absent	Present
Notogaster length (μm)	790	848.29
Notogaster Breadth (μm)	580	696.30
Aspis length (μm)	415	400.08
Aspis breadth (μm)	365	368.88
Length of genital plate (μm)	210	258.72
Length of Anal Plate (μm)	365	412.81
Length of Sensillus (μm)	140	157.31
Length of c_3 (μm)	115	128.06

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REFERENCES

- Balogh, J. 1972. *The oribatid genera of the world*: 1-359. Published by Akad. Kiado, Budapest, Hungary.
- Bayoumi, B. M. and Mahunka, S. 1979. Ergebnisse der Bhutan- Expedition 1972 des Naturhistorischen Museums in Basel, Acari: Oribatida (Part I). *Entomologica Basiliensia*, **4**: 13-24.
- Jacot, A. P. 1929. New Oribatoid Mites. *Psyche*, **35**: 213-215.
- Markel, K. 1964. Die Eupthiracaridae Jacot, 1930, Und Ihre Gattungen (Acari, Oribatei). *Zool. Verh.*, **67**: 1-78.
- Niedbala, W. 2000. *The Ptyctimous Mites Fauna of the Oriental and Australian Regions and their Centers of Origin (Acari: Oribatida)*: 116. Published by Polskie Towarzystwo Taksonomiczne (Polish Taxonomical Society), Wroclaw, Poland.
- Subías, L. S. 2009. Listado sistemático, sinónimo y biogeográfico de los ácaros oribátidos (Acariformes: Oribatida) del mundo (Excepto fósiles). *Publicado originalmente en Graellsia 60 (número extraordinario)*: 3-305 (2004). Actualizado en junio de 2006, en abril de 2007, en mayo de 2008 y en abril de 2009. 1-547.