



ORIBATID MITES (ACARI: ORIBATIDA) OF LAKSHADWEEP

A. K. SANYAL AND PARAMITA BASU

Zoological Survey of India, M-Block, New Alipore, Kolkata-700053

Email: asokzsi@yahoo.co.in, paramitabasul@gmail.com

INTRODUCTION

Oribatid mites are one of the major components of soil microarthropod groups. They are classified as class arachnida and subclass acari. The body generally divisible into two distinct regions like the cephalothorax and abdomen which possesses 4 pairs of jointed legs and have no wings and antennae. These mites take part in soil organic matter decomposition, nutrient cycling, etc. and thus increase the soil fertility.

Lakshadweep as a smallest union territory of India comprised of several small islands in the Arabian Sea near the south-western coast of India. Agatti Island, one of the inhabited islands of the Lakshadweep, is a small island with 5.6 km length and 2.7 km² surface area and is inhabited by nearly 8000 people, according to the last census of 2001. Soil of the island was mainly sandy with very less organic matter content.

A total of 8 soil samples were collected from the different habitats of Agatti Island, Lakshadweep, during a tour conducted by the first author in July, 2011. 53 specimens of oribatid mites were extracted from the soil samples. A total of nine species belonging to nine genera under seven families were identified. Of these, two were newly described species to science, one was first time recorded species from India and other six species and genera were recorded first

time from Lakshadweep. The specimens were deposited in the National Zoological Collection, Zoological Survey of India, Kolkata. Previously during an expedition to Lakshadweep Haq and Ramani (1997) explored one new species of the genus *Lepidacarus* which is incorporated in the present paper.

MATERIALS AND METHODS

For taxonomic studies of oribatid mites, litter, soil and humus samples from all possible habitats from the Agatti Island of Lakshadweep were collected by shovel from upper 10 cm soil profile and kept in polythene bags. The samples were extracted by using modified Tullgren funnel apparatus and extracted mite specimens were collected in glass tubes containing 70% alcohol.

The body of most of the oribatid mite is heavily sclerotized and opaque. The extracted material were made ready for taxonomic study following the usual procedure of keeping the specimen in solution of 90% alcohol and lactic acid (v/v) as advocated by Balogh (1965). For microscopic observations, Balogh's (1965) method of temporary mounting in lactic acid was followed. After necessary microscopic observations the specimen was transferred in small glass vials containing 90% alcohol. The vials were then properly labeled and stored.

SYSTEMATIC ACCOUNT

Family PHTHIRACARIDAE Perty, 1841

1. Genus *Hoplophorella* Berlese, 1923

1923. *Hoplophorella* Berlese, *Redia*, **25**: 260.

1. *Hoplophorella* (*Hoplophorella*) *singularis*
Sellnick, 1959

1959. *Hoplophorella* (*Hoplophorella*) *singularis* Sellnick,
Occ. Pap. Bernice P. Bishop. Mus., **XXII**: 148.

1990. *Hoplophorella sunderbanensis* Sanyal and Bhaduri,
Indian J. Acarol., **6**(1 & 2): 35.

Diagnosis: Rostral setae moderately long, stout, directly outward; interlamellar setae long, thick and pilose; very minute lamellar setae present between the region of interlamellar setae and pseudostigmata; sensillus moderately long with rounded head and devoid of bristles; notogastral setae thick, long and pilose; setae ad_2 larger and thickened than ad_1 , an_1 and an_2 ; ad_3 thick and pilose.

Material examined: Lakshadweep: Agatti Island: Tangi Palli, near Mosque, 5 ♀, 02. vii. 2011, from sandy soil, under banana plant, coll. A. K. Sanyal.

Distribution: India: West Bengal, Lakshadweep.

Remarks: The species is recorded here for the first time from Lakshadweep.

Family ORIBOTRITIDAE Grandjean, 1967

2. Genus *Indotritia* Jacot, 1928

1928. *Indotritia* Jacot, *Psyche*, **35**: 213.

2. *Indotritia lakshadweepensis* Sanyal and Basu
(in press)

Diagnosis: Rostral, lamellar and interlamellar setae smooth; lamellar setae longer than rostral setae and rostral setae longer than interlamellar setae; sensillus smooth, setiform, pointed; anterior margin of aspis with fine lineation; irregular granulations in aspis; notogastral setae smooth, fairly strong, sickle shaped; length of an_2 and ad_2 more or less same with an_1 and ad_1 respectively; single solenidia in genu I and no solenidia in genu IV; genito-aggenital suture reaching up to the middle of g_6 and g_7 and bent inward.

Material examined: Lakshadweep: Agatti Island: Agricultural Office garden, 7 kms north of Airport, 10 ♀♀, 02. vii. 2011, from soil with semidecomposed banana plant, coll. A. K. Sanyal.

Distribution: India: Lakshadweep (Agatti Island).

Remarks: The species is recorded as new to science.

Family LOHMANNIIDAE Berlese, 1916

3. Genus *Heptacarus* Piffel, 1963

1963. *Heptacarus* Piffel, *Anz. Ost. Akad. Wiss.*, **2**: 24.

3. *Heptacarus hirsutus* Wallwork, 1964

1964. *Heptacarus hirsutus* Wallwork, *Rev. Zool. Bot. Afr.*, **70**(3-1): 358.

Diagnosis: Rostral setae relatively slender, divergent and finely pilose; lamellar setae slightly longer and thicker than rostral setae and barbed conspicuously; sensillus pectinate; notogaster with strong neothichy, a total of 120 to 140 slender and conspicuously barbed notogastral setae observed, progressively longer toward posterior region.

Material examined: Lakshadweep: Agatti Island: 6 kms north of Airport, 6 ♀♀, 02. vii. 2011, from sandy soil with dry semidecomposed leaves, coll. A. K. Sanyal.

Distribution: India: Kerala, Rajasthan, Andhra Pradesh, Gujarat, Lakshadweep.

Remarks: The species is recorded here for the first time from Lakshadweep.

4. Genus *Lepidacarus* Csiszar, 1961

1961. *Lepidacarus* Csiszar, *Acta. Zool. Sci. Hung.*, **7**: 345-366.

4. *Lepidacarus ennarpi* Haq and Ramani, 1997

1997. *Lepidacarus ennarpi* Haq and Ramani, *Entomon.*, **22**(2): 119.

Diagnosis: Prodorsum punctuated; all prodorsal setae toothed, broad and palmate; rostrum pointed; sensillus clavate with an inner rachis, barbed distally; distinct lateral prodorsum tooth just above *exa*; 16 pairs of spoon shaped notogastral setae with inner rachis and distinct spines; c_3 longest and d_1 shortest setae; punctation present in notogaster.

Distribution: India: Lakshadweep (Bengarum Island).

Family TRHYPOCHTHONIIDAE
Willmann, 1931

5. Genus *Archegozetes* Grandjean, 1931

1931. *Archegozetes* Grandjean, *Bull. Mus. Hist. Nat. Paris*, **3**(2): 144.

5. *Archegozetes longisetosus* Aoki, 1965

1965. *Archegozetes longisetosus* Aoki, *Nat. Life Southeast Asia*, **4**: 147.

Diagnosis: Prodorsum punctated; prodorsal and notogastral setae long, fine, densely beset with fine bristles; sensillus long, fine, densely covered with bristles; d_1 longer than their mutual distance; genital setae 7 pairs; $4a$ about $1/2$ as long as $4b$; solenidia on palp sharp.

Material examined: Lakshadweep: Agatti Island: Agricultural Office garden, 7 kms north of Airport, 12♀♀, 02. vii. 2011, compost mixed soil from the tub of ornamental plants, coll. A. K. Sanyal.

Distribution: India: West Bengal, Assam, Kerala, Tripura, Lakshadweep.

Remarks: The species is recorded here for the first time from Lakshadweep.

Family TECTOCEPHEIDAE Grandjean, 1954

6. Genus *Tectocephus* Berlese, 1913

1913. *Tectocephus* Berlese, *Redia*, **9**: 91.

6. *Tectocephus sarekensis* Tragardh, 1910

1910. *Tectocephus sarekensis* Tragardh, *Naturw. Unterr. Sarekgeb in Schw.- Lappland*, **4**: 567.

Diagnosis: Rostrum rounded with tendency to be trilobite; lamellae rounded and extended upto the rostrum; pteromorph obtuse-angled; sensillus with discoid head and densely covered with spinules; lamellar setae weakly serrated at base and smooth distally and curved towards the apex; rostral setae similar in length and shape with lamellar setae but directed anteriorly.

Material examined: Lakshadweep: Agatti Island: 6 kms north of Airport, 1♀, 02. vii. 2011, from sandy soil with dry and decomposed leaves, coll. A. K. Sanyal.

Distribution: India: West Bengal, Uttar Pradesh, Lakshadweep.

Remarks: The species is recorded here for the first time from Lakshadweep.

Family OPPIIDAE Grandjean, 1954

7. Genus *Oppiella* Jacot, 1937

1937. *Oppiella* Jacot, *J. New York Entomol. Soc.*, **45**(3 & 4): 356.

7. *Oppiella suramericana* (Hammer, 1958)

1958. *Oppia suramericana* Hammer, *Biol. Skr. Dan. Vid. Selsk.*, **10**(1): 48.

Diagnosis: Prodorsum slender; rostral setae smooth and longer than their mutual distance; lamellae almost parallel to each other and connected with thin translamellae; sensillus with long, broad, rounded head and furnished with 7-8 stiff bristles; one pair of short cristae, originate from anterior margin of notogaster, continue longitudinally on notogaster; notogastral setae thin and moderately long.

Material examined: Lakshadweep: Agatti Island: Agricultural Office garden, 7 kms north of Airport, 3♀♀, 02. vii. 2011, from soil with semidecomposed coconut leaves, coll. A. K. Sanyal.

Distribution: India: Lakshadweep (Agatti Island).

Remarks: The species is recorded here for the first time from India.

8. Genus *Ramusella* Hammer, 1962

1962. *Ramusella* Hammer, *Biol. Skr. Dan. Vid. Selsk.*, **13**(2): 50.

8. *Ramusella chulumaniensis* (Hammer, 1958)

1958. *Oppia chulumaniensis* Hammer, *Biol. Skr. Dan. Vid. Selsk.*, **10**(1): 48.

Diagnosis: Sensillus strongly setiform with 7-10 branches and distal part slightly dilated; 3rd and 4th branches of sensillus much longer; rostral setae bent anteriorad, proximal half thick and barbed while distal half thin and smooth; interlamellar setae thicker and longer than lamellar setae and directed outward; notogastral setae stiff, almost equal in length.

Material examined: Lakshadweep: Agatti Island: Tangi Palli, near Mosque, 4♀♀, 02. vii. 2011, from sandy soil under banana plant, coll. A. K. Sanyal.

Distribution: India: Tripura, Uttarakhand, Lakshadweep.

Remarks: The species is recorded here for the first time from Lakshadweep.

9. Genus *Striatoppia* Balogh, 1958
1958. *Striatoppia* Balogh, *Rev. Zool. Bot. Afr.*, **58**(1&2): 16.

9. *Striatoppia milii* Sanyal and Basu (in press)

Diagnosis: Prolamellae well developed; rostral setae robust and setiform; lamellar costulae short with well developed translamellae; 4 large foveolae present in interbothridial region and enclosed by 2 branched costular portion; lamellar setae barbed, phylliform; interlamellar setae hardly discernible stumps; sensillus pro- to exclinate with densely ciliated border; 4 to 5 pairs of longitudinal striations present in notogaster; 9 pairs of notogastral setae widened, barbed and phylliform but p_1 is smaller than other and not phylliform.

Material examined: Lakshadweep: Agatti Island: Agricultural Office garden, 7 kms north of Airport, 02. vii. 2011, 2♀♀, from soil mixed with semidecomposed coconut leaves, coll. M. Sanyal.

Distribution: India: Lakshadweep (Agatti Island).

Remarks: The species is recorded as new to science.

Family ORIBATELLIDAE Jacot, 1925

10. Genus *Lamellobates* Hammer, 1958
1958. *Lamellobates* Hammer, *Biol. Skr. Dan. Vid. Selsk.*, **10**(1): 100.

10. *Lamellobates palustris* Hammer, 1958
1958. *Lamellobates palustris* Hammer, *Biol. Skr. Dan. Vid. Selsk.*, **10**(1): 100.

Diagnosis: Inner cuspides of lamellae rounded, outer lamellar cuspides tapering into a short and sharp point; lamellar setae equally very thick throughout, rough; interlamellar setae long, rough; sensillus club-shaped, tip pointed, beset with short setae; notogastral setae 9 pairs; genital setae 6 pairs.

Material examined: Lakshadweep: Agatti Island: Tangi Palli, near Mosque, 10♀♀, 02. vii. 2011, from sandy soil under banana plant, coll. A. K. Sanyal.

Distribution: India: Uttar Pradesh, Bihar, Tripura, West Bengal, Lakshadweep.

Remarks: The species is recorded here for the first time from Lakshadweep.

SUMMARY

The paper deals with the Oribatid fauna collected from Agatti Island, Lakshadweep. Altogether ten species of oribatid mites belonging to ten genera under seven families have been recorded from Lakshadweep. The present study recorded nine species, nine genera and six families as the first record from Lakshadweep. Of these, two species were described as new to science from the island.

ACKNOWLEDGEMENT

The authors express gratefulness to the Director, Zoological Survey of India for providing laboratory facilities. Thanks are also due to the staffs of Acarology Section, Zoological Survey of India for assistance.

REFERENCES

- Balogh, J. 1965. A Synopsis of World Oribatid (Acari) Genera. *Acta Zoologica Academiae Scientiarum Hungarica*, **11**(1-2): 1-99.
- Haq, M. A. and Ramani, N. 1997. Oribatid Mites from Lakshadweep- 1. A New Species of *Lepidacarus* Csiszar, 1961 (Acari: Lohmanniidae). *Entomon*, **22**(2): 119-123.