

## The distribution of the Lecanid rotifers (Rotifera : Monogononta : Lecanidae) in North-Eastern India

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### ABSTRACT

Thirty species (thirty two taxa) of the genus *Lecane* (Family: Lecanidae), including *Lecane jaintiaensis* sp. n., are examined from North-Eastern India. Seven taxa are new to India while twenty five taxa represent new records from this region. Remarks are made on the distribution and ecology of the different taxa.

KEY WORDS : Lecanidae — India — Taxonomy — Biogeography.

### RÉSUMÉ

RÉPARTITION DES ROTIFÈRES LECANIDAE (ROTIFERA, MONOGONONTA, LECANIDAE) DANS L'INDE DU NORD-EST

Trente espèces (trente-deux taxons), du genre *Lecane*, y compris *Lecane jaintianensis* sp. n., de la province du Nord-Est de l'Inde sont examinées. Sept taxons sont nouveaux pour l'Inde et 30 sont nouveaux pour la région. Des éléments d'écologie et de distribution sont donnés.

MOTS-CLÉS : Lecanidae — Inde — Taxinomie — Répartition.

### INTRODUCTION

The members of the family Lecanidae constitute an important fraction (fifty nine species) of Indian Rotifera (SHARMA & MICHAEL, 1980). However, so far only nine species are listed from the states of Assam and Meghalaya in North-Eastern India (PATIL, 1978; SHARMA, 1980).

This communication deals with thirty species (thirty two taxa) belonging to the genus *Lecane*, including one new species, collected from various parts of the North-Eastern region. Some rare and interesting taxa noticed in the studied material are briefly described. Comments are made on the composition, biogeography and ecology of the various taxa.

### MATERIAL AND METHODS

The material for this study was collected from various freshwater habitats from different states

(between Lat. 20°-28° N; Long. 90°-96° E) in North-Eastern India (Fig. 1). The samples were preserved in 5 % formalin. Individual taxa were mounted in Polyvinyl alcohol-Lactophenol mixture. The drawings are made with a Leitz-Dialux phase contrast stereoscopic microscope and the measurements are given in micrometers ( $\mu\text{m}$ ). The reference collections are deposited in the Freshwater Biology Laboratory, Department of Zoology, North-Eastern Hill University, Shillong, India.

List of *Lecane* spp. presently examined from North-Eastern India:

Reported taxa	States
<i>Lecane (Lecane) aculeata</i> (Jakubski, 1912).....	1
<i>L. (L.) arcuata</i> Harring, 1914.....	6
<i>L. (L.) crepida</i> Harring, 1914.....	1, 2
<i>L. (L.) curvicornis</i> f. <i>nitida</i> (Murray, 1913).....	1
<i>L. (L.) doryssa</i> Harring, 1914.....	1
<i>L. (L.) flexilis</i> (Gosse, 1836).....	1

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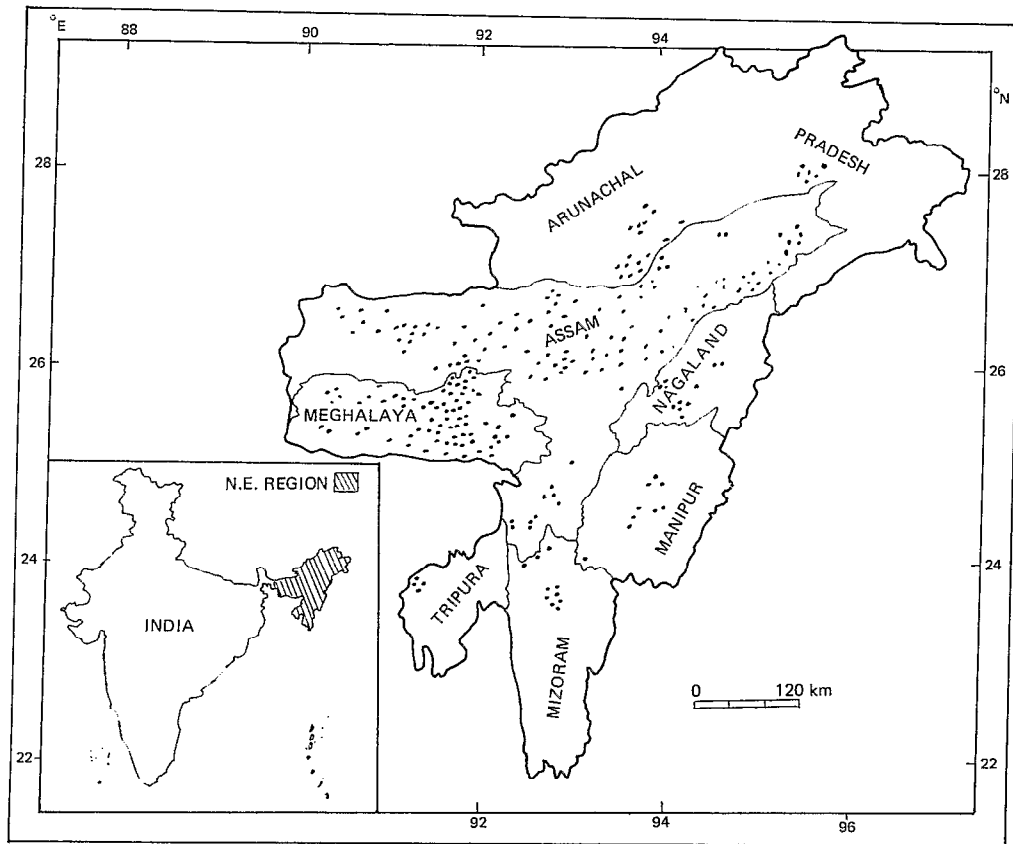


FIG. 1. — Map of North-Eastern India showing sampling sites (inset map of India indicating North-Eastern region)

*La région du Nord-Est de l'Inde; les stations de prélèvement sont indiquées par des points*

- L. (L.) hornemanni* (Ehrb. 1834)..... 1
- L. (L.) leontina* (Turner, 1892)..... 1, 2, 3, 4, 5, 6, 7
- L. (L.) luna* (Müller, 1776)..... 1, 2, 3, 4, 5, 6, 7
- L. (L.) ludwigi* (Eckstein, 1893)..... 1, 2
- L. (L.) haliclysta* Harring & Myers, 1926..... 1
- L. (L.) inermis* (Bryce, 1892)..... 1
- L. (L.) papuana* (Murray, 1913)..... 1, 2, 4, 5
- L. (L.) pertica* Harring & Myers, 1926..... 1, 2
- L. (L.) signifera signifera* (Jennings, 1896)..... 1
- L. (L.) signifera f. ploenensis* (Voigt, 1902)..... 1, 6
- L. (L.) jaintiaensis* sp. n..... 1
- L. (L.) ungulata* (Gosse, 1887)..... 1, 2, 4, 5
- Lecane (Hemimonostyla) inopinata* Harring & Myers, 1926..... 1, 2
- Lecane (Monostyla) bulla* Gosse, 1851... 1, 2, 3, 4, 5, 6, 7
- L. (M.) closterocerca* (Schmarda, 1859).... 1, 2, 3, 4, 5, 6, 7
- L. (M.) decipiens* (Murray, 1913)..... 1, 2, 6
- L. (M.) furcata* (Murray, 1913)..... 1, 2, 6
- L. (M.) hamata* (Stokes, 1896)..... 1, 2, 6
- L. (M.) lunaris lunaris* (Ehrb. 1832).... 1, 2, 3, 4, 5, 6, 7
- L. (M.) lunaris f. crenata* (Harring, 1913)..... 1, 2, 4
- L. (M.) pyriformis* (Daday, 1905)..... 1
- L. (M.) quadridentata* (Ehrb. 1832)..... 1, 2, 4, 5, 6
- L. (M.) scutata* (Harring & Myers, 1926)..... 1

- L. (M.) stenroosi* (Meissner, 1908)..... 2
- L. (M.) thienemanni* (Hauer, 1938)..... 1
- L. (M.) unguitata* (Padcev, 1925)..... 1, 2

1. Meghalaya; 2. Assam; 3. Arunachal Pradesh; 4. Nagaland; 5. Manipur; 6. Mizoram; 7. Tripura.

**TAXONOMIC NOTES ON SOME INTERESTING TAXA**

The *Lecane* complex is divided into three subgenera depending on the condition of the toes i.e., *Lecane* s. str. Nitzsch 1827, *Hemimonostyla* Bartos 1959 and *Monostyla* Ehrenberg 1830. All the stated subgenera are included in the present material and are represented by seventeen, one and twelve species respectively. The taxa that are new to India are briefly described and illustrated in this account:

***Lecane curvicornis* f. *nitida* (Murray, 1913) (Fig. 2)**

Dorsal and ventral plates with a strong pattern of surface markings. Previous report of this taxon

(WULFERT, 1966) refers to *L. curvicornis* f. *lofuana* (refer: KOSTE, 1978).

*Measurements*: length dorsal plate 170; width dorsal plate 140; length ventral plate 190; width ventral plate 148; toes 70; claws 20-22.

***Lecane (Lecane) doryssa*** Harring, 1914 (Fig. 3)

Lorica flexible, with surface markings; dorsal plate broader than ventral plate. Posterior segment large. Toes short and with thin, pointed and undifferentiated claws.

*Measurements*: length dorsal plate 70-72; width dorsal plate 68-70; length ventral plate 80-82; width ventral plate 60-63; toes 29-30; claws 12-13.

***Lecane (Lecane) haliclysta*** Harring & Myers, 1926 (Fig. 4)

Dorsal and ventral plates with surface markings; anterior ventral margin with small spines at external angles. Toes parallel-sided and ending into undifferentiated acutely pointed claws.

*Measurements*: length dorsal plate 82-84; length ventral plate 92-95; width dorsal plate 80-82; width ventral plate 73-75; toes 28-30; claws 10-11.

***Lecane (Lecane) inermis*** (Bryce, 1892) (Fig. 5)

Lorica flexible and elongated; dorsal and ventral plates equally broad. Toes small and ending into long and pointed claws.

*Measurements*: total length 94; length dorsal plate 62; maximum width 42; toes 14; claws 12.

***Lecane (Lecane) pertica*** Harring & Myers, 1926 (Fig. 6)

Lorica elongated oval and produced into small spines at external angles. Second foot-segment squarish and projecting beyond lorica. Toes long, parallel-sided and tapering into acutely pointed tips.

*Measurements*: length dorsal plate 110-115; length ventral plate 122-124; width dorsal plate 66-70; width ventral plate 66-68; toes 70-72.

***Lecane (Lecane) signifera signifera*** (Jennings, 1896) (Fig. 7)

Lorica oblong and relatively broad anteriorly; anterior margins coincident and with small external angles. Dorsal plate with rounded surface markings. Posterior segment broad and semicircular.

*Measurements*: length dorsal plate 138-140; length ventral plate 162-165; width dorsal plate 108-110;

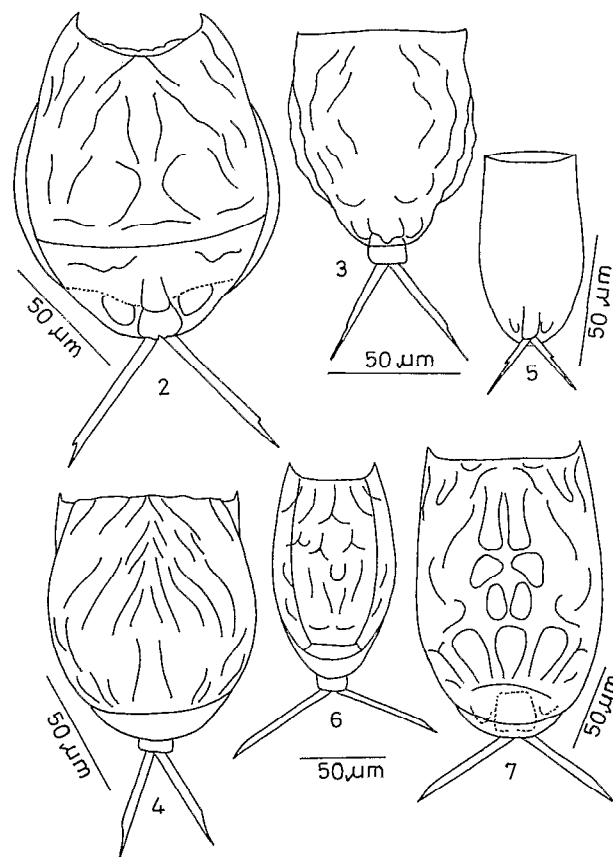


FIG. 2-7. — 2. *Lecane (Lecane) curvicornis* f. *nitida* (Murray), ventral view; *vue ventrale*. 3. *Lecane (Lecane) doryssa* Harring, ventral view; *vue ventrale*. 4. *Lecane (Lecane) haliclysta* Harring & Myers, dorsal view; *vue dorsale*. 5. *Lecane (Lecane) inermis* (Bryce), ventral view; *vue ventrale*. 6. *Lecane (Lecane) pertica* Harring & Myers, dorsal view; *vue dorsale*. 7. *Lecane (Lecane) signifera signifera* (Jennings), dorsal view; *vue dorsale*

width ventral plate 102-104; anterior width 90-92; toes 66-68.

***Lecane (Lecane) jaintiaensis*** sp. n. (Figs 8 and 9)

*Holotype*: on slide, Regd. No. R. NE. 108/1, Department of Zoology North-Eastern Hill University, Shillong. Type locality: Ricefield in Nartiang (Lat. 25°35' N; Long. 92°15' E), Jaintia Hills district, Meghalaya State. Date of collection: 13.10.1984. Water temperature: 21 °C. pH: 6.5. Coll.: Dr. B. K. Sharma.

*Paratypes*: two (one on each slide). Regd. No. R. NE. 109/1 and 109/2, other details as per holotype.

*Etymology*: this new species is named after Jaintia Hills district of Meghalaya State.

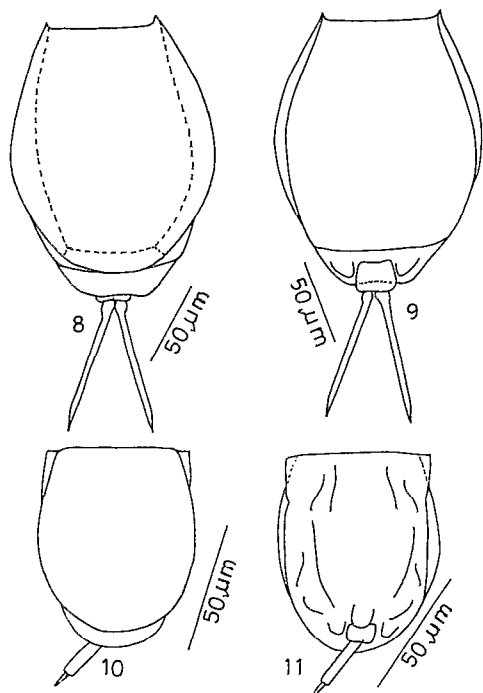


FIG. 8-9. — *Lecane (Lecane) jaintiaensis* sp. n., dorsal and ventral views; vues dorsale et ventrale

FIG. 10-11. — *Lecane (Monostyla) scutata* (Harring & Myers), dorsal and ventral views; vues dorsale et ventrale

**Description:** lorica elongated-oval in outline and with coincident anterior margins; anterior dorsal margin straight and with triangular cusps at external angles. Dorsal plate elongated, slightly truncate posteriorly and without surface markings. Ventral plate narrower than the dorsal plate and with a transverse fold in its posterior region. Posterior segment broad and with a shallow posterior concavity. First foot-segment indistinct; second foot-segment rectangular and projecting beyond lorica. Coxal plates large and rounded. Toes long, swollen at their bases, almost parallel-sided and terminating into acutely pointed tips.

**Measurements (Holotype):** length dorsal plate 148; width dorsal plate 122; length ventral plate 160; width ventral plate 102; anterior width 68; toes 85.

**Measurements (Paratypes):** length dorsal plate 146-148; width dorsal plate 123-124; length ventral plate 160; width ventral plate 102; anterior width 68; toes 85.

**Remarks:** *Lecane jaintiaensis* sp. n. resembles *L. tasmaniensis* Shiel and Koste, 1985 but differs from the same in: (a) the elongated lorica; (b) the distinct

shape of the posterior segment; (c) the toes swollen at their bases; (d) claws absent.

***Lecane (Monostyla) scutata* (Harring & Myers, 1926) (Figs. 10 and 11)**

Lorica elongate-oval, anterior margins straight and with distinct external angles. Toes moderately long and parallel-sided; claws short and pointed.

**Measurements:** length dorsal plate 68-70; length ventral plate 74-76; width dorsal plate 58-60; width ventral plate 50-52; toes 20-22; claws 6-8.

**REMARKS**

The lecanid fauna of North-Eastern India appears to be fairly rich and diversified. It includes a good number of cosmopolitan species. Tropical and subtropical elements are represented by *L. aculeata*, *L. crepida*, *L. hornemanni*, *L. leontina*, *L. papuana*, *L. pertica* and *L. (M.) lunaris* f. *crenata*. *L. doryssa*, *L. haliclysta*, *L. curvicornis* f. *nitida*, *L. inermis*, *L. pertica*, *L. signifera* *signifera* and *L. (M.) scutata* are new to this country. These, along with, *L. jaintiaensis* sp. n. and *L. arcula* show restricted occurrence in the present collections and offer examples of biogeographical interest in the rotifer fauna of India. In addition, twenty-five taxa comprise new records from N. E. region. The earlier reports of *L. tessellata* Arora from Assam and *L. longidactylus* Arora from Meghalaya (PATIL, 1978) await confirmation. Even the taxonomic status of these two species, described by ARORA (1965) from Nagpur in Central India, is yet to be ascertained.

A large number of the taxa, particularly those from hilly areas of this region, are collected from acidic to slightly alkaline waters (pH 5.6-7.4). *L. doryssa*, *L. pertica*, *L. inermis*, *L. jaintiaensis*, *L. signifera* *signifera* and *L. (M.) scutata* appear to be confined to acidic waters (pH 5.6-6.5). *L. flexilis* and *L. (M.) thienemanni*, stated to be alkalophilic species (KOSTE, 1978), are obtained from acidic waters from Meghalaya State. *L. bulla*, *L. signifera* f. *ploenensis*, *L. closterocerca*, *L. (M.) hamata*, *L. (M.) lunaris lunaris* and *L. (M.) quadridentata* are noticed at pH between 5.6 and 8.0.

Maximum number of *Lecane* spp. (28 species) are observed from Meghalaya State, followed by seventeen and twelve species from Assam and Mizoram respectively. The paucity of lecanids from various states of this region is attributed to the lack of sufficient collections of the periphytic rotifers. The samples from rice-fields of Meghalaya State (SHARMA & SHARMA, 1987) showed a high diversity (maximum 30-32 species/sample) which included 6-8 species of *Lepadella* and 18-20 species of *Lecane*. More recent

collections from rice-fields of Assam State (SHARMA: unpublished) also confirm this pattern but indicated maximum of 54 species/sample. The importance of the stated two genera is also indicated in general in the rotifer fauna of South-East Asia (DUMONT, 1983). Further extensive collections from various parts of this region, particularly those from rice-fields, are likely to yield more rare and zoogeographically important species.

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