Opusc. Zool. Budapest, 2019, 50(1): 03–15

The biodiverse rotifers (Rotifera: Eurotatoria) of the floodplain wetlands of Barak valley of Assam, Northeast India

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Abstract. The present analysis of alpha diversity of Rotifera of the floodplain wetlands of Barak valley, south Assam, northeast India (NEI) reveals 170 species, belonging to 39 genera and 19 families, with three species new to the Indian sub-region and two species new to Assam state. The rich and diverse rotifer assemblages comprise ~70%, ~57% and ~39% of total species of the Phylum known till date from Assam, NEI and India, respectively and thus affirm habitat and ecological heterogeneity of the Barak River floodplain wetlands. The elements of global biogeographic importance include one Australasian, eight Oriental, 10 Paleotropical, one Indo-Chinese, one cosmo (sub) tropical and four other species, and ~37% species merit regional distribution interest for India with ~13% exclusively reported from NEI. Lecanidae (~30%) and Brachionidae ≈ Lepadellidae (~32%) largely contribute to the rotifer richness; Trichocercidae > Testudinellidae are notable (~15%), and Notommatidae, Euchlanidae, Mytilinidae, Trichotriidae and Trochosphaeridae collectively form 16.5%. *Lecane* is the most speciose genus; *Lepadella* > *Brachionus* = *Trichocerca* include ~32% species, while *Testudinella* > *Keratella* deserve mention. Rotifera of the Barak floodplains exhibit the littoral-periphytonic nature, several small sized species and tropical character.

Keywords. Barak River, biodiversity, composition, important taxa, richness, south Assam.

INTRODUCTION

Rotifera or Rotatoria, an integral component of aquatic metazoans, have been recorded from distant parts of India since the pioneering work of Anderson (1889). Nevertheless, the Indian literature still lacks attention on regional faunal diversity of these `wheel animalcules' except for NEI - the most rich and Rotifera biodiverse region of India (Sharma & Sharma 2014a, 2017). Importantly, Assam state of NEI, a part of the Indo-Myanmar biodiversity hotspot, merits attention as `the Assam-gateway' which is recognized as a unique phase in the biogeographic evolution of India (Mani 1974, Ranga Reddy 2013). Further, this state is characterized by the fluvial floodplain wetlands of the Brahmaputra and Barak Rivers; the former are hypothesized as globally rich rotifer habitats (Sharma & Sharma 2008, 2014b, Sharma *et al*. 2018).

In light of the salient highlights of Assam, we extend our studies to the floodplains of the Barak river basin of south Assam (known as Barak valley) which is yet practically unexplored with regards to rotifer fauna (Sharma & Sharma 2014a). This lacuna assumes more prominence in spite of several limnological works (Kar & Kar 2013, Gupta & Devi 2014, Narzary *et al.* 2015, Das & Kar 2016, Kar & Kar 2016a, 2016b, Das *et al.* 2018, Kar *et al.* 2018) from Barak valley but loaded with 'ad-hoc' rotifer inventories due to lack of species determinations, incomplete species lists, overlooking identifications of small taxa, inadequate sampling and lack of taxonomic expertise. The present study thus provides the first exhaustive assessment of the rotifer biodiversity from the floodplain wetlands of the Barak River basin. An inventory of the observed species is presented, and various new records and interesting species are illustrated to warrant validations routinely lacking for the rotifer taxa reported from India (Sharma & Sharma 2014a, 2017). Remarks are made on species composition, richness and distribution, and important taxa. The results mark a useful contribution to biodiversity of Rotifera of

urn: lsid:zoobank.org:pub:AC14E37D-6C2A-4CEE-BA78-8AC650AA613A *published: 20 March 2019*
HU ISSN 2063-1588 (online), HU ISSN 0237-5419 (print) *http://dx.doi.org/10.18348/opzool.2019.1.3*

India, the floodplain wetlands of this country as well as that of (sub) tropical floodplains.

MATERIALS AND METHODS

The present observations are based on analysis of plankton and semi-plankton samples collected during August 2005, November 2008, February 2011 and April–May 2014 from all three districts, namely Cachar, Hailakandi and Karimganj of Barak valley (Fig. 1 A–C) of south Assam (24°48′ – 24.80°N; 92°45′ – 92.75°E). The latter region is named after the Barak River which originates from the Barail Range (Assam–Nagaland border), flows through 40–50 km wide Barak valley and finally forms a part of the Surma–Meghna River system of Bangladesh. The study area is characterized by the tropical monsoon climate.

The plankton and semi-plankton samples were collected from scattered perennial floodplain lakes (beels), seasonal floodplain lakes (hoars) and small wetlands (dobas or dubies) by towing a nylobolt plankton net (# size 50 µm) and were preserved in 5% formalin. All the collections were screened with a Wild stereoscopic binocular microscope; the rotifers were isolated and mounted in polyvinyl alcohol–lactophenol, and were observed with Leica DM 1000 stereoscopic phase contrast microscope fitted with an image analyzer. Microphotographs were provided for interesting species and measurements were indicated in micrometers (µm). Various rotifer taxa were identified following the works of Koste (1978), Koste & Shiel (1987, 1989, 1990), Segers (1995), Sharma (1983, 1998), Sharma & Sharma (1999, 2000, 2008, 2013), and Jersabek & Leitner (2013). Segers (2007) and Jersabek & Leitner (2013) were considered for biogeographic comments on various taxa.

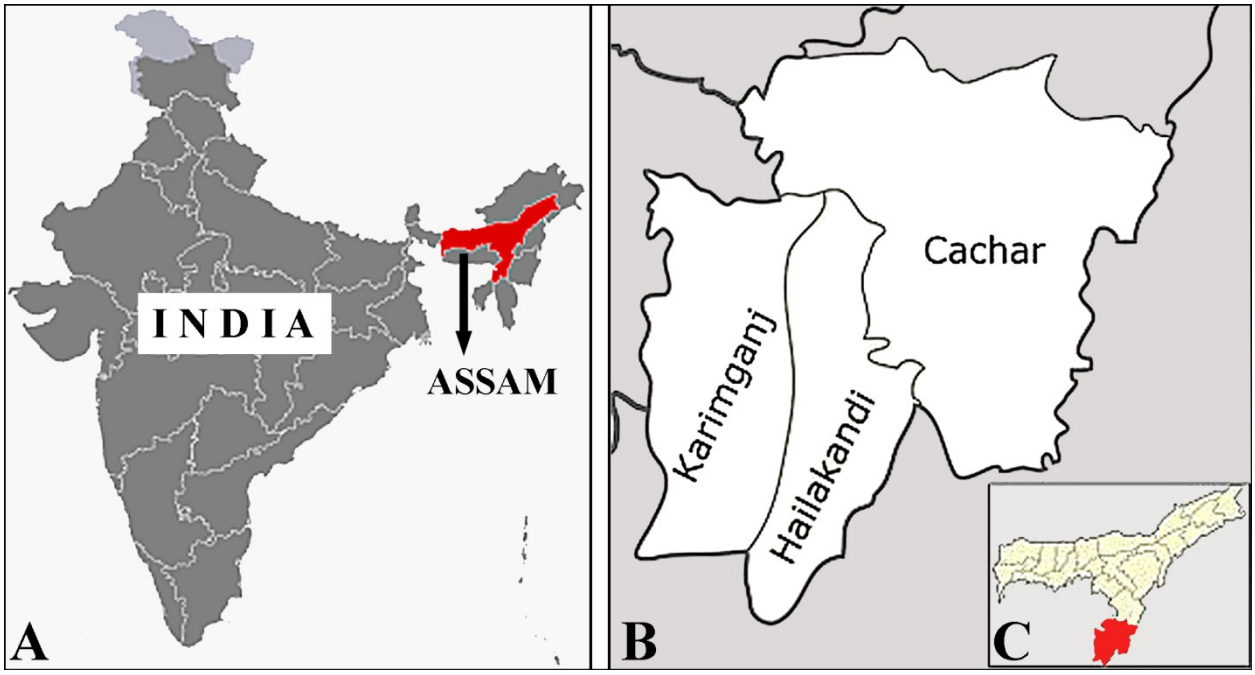

Figure 1. A = map of India indicating northeast India (NEI) and the state of Assam; B = map indicating the sampled districts of Barak valley of south Assam; C = inset map of Assam indicating Barak valley.

RESULTS

Our plankton and semi-plankton collections from floodplains of the Barak valley of south Assam reveal 170 species, belonging to 39 genera and 19 families. The detailed systematic list of the examined species is presented below:

Rotifera recorded from the Barak River floodplain wetlands

Phylum: Rotifera
Class: Eurotatoria
Subclass: Monogononta
Order: Ploima

Family: **Brachionidae**
1. *Anuraeopsis fissa* Gosse, 1851
2. *Brachionus angularis* Gosse, 1851
3. *B. bennini* Leissling, 1924
4. *B. bidentatus* Anderson, 1889
5. *B. budapestinensis* Daday, 1885
6. *B. calyciflorus* Pallas, 1766
7. *Brachionus caudatus* Barrois & Daday, 1894
8. *B. diversicornis* (Daday, 1883)
9. *B. durgae* Dhanapathi, 1974
10. *B. falcatus* Zacharias, 1898
11. *B. forficula* Wierzejski, 1891
12. *B. mirabilis* Daday, 1897
13. *B. murphyi* Sudzuki, 1989**#
14. *B. nilsoni* Ahlstrom, 1940*#
15. *B. quadridentatus* Hermann, 1783
16. *B. rubens* Ehrenberg, 1838
17. *B. srisumonae* Segers, Kotethip & Sanoamuang, 2004*#
18. *Keratella cochlearis* (Gosse, 1851)
19. *K. edmondsoni* Ahlstrom, 1943
20. *K. javana* Hauer, 1937#
21. *K. lenzi* Hauer, 1953
22. *K. tecta* (Gosse, 1851)
23. *K. tropica* (Apstein, 1907)
24. *Platyias leloupi* (Gillard, 1967)
25. *P. quadricornis* (Ehrenberg, 1832)
26. *Plationus patulus* (Muller, 1786)

Family: **Epiphanidae**
27. *Epiphanes brachionus* (Ehrenberg, 1837)

Family: **Euchlanidae**
28. *Beauchampiella eudactylota* (Gosse, 1886)
29. *Dipleuchlanis propatula* (Gosse, 1886)
30. *Euchlanis dilatata* Ehrenberg, 1832
31. *E. incisa* Carlin, 1939
32. *E. triquetra* Ehrenberg, 1838
33. *Tripleuchlanis plicata* (Levander, 1894)

Family: **Mytilinidae**
34. *Lophocharis salpina* (Ehrenberg, 1834)
35. *Mytilina acanthophora* Hauer, 1938
36. *M. bisulcata* (Lucks, 1912)
37. *M. michelangellii* Reid & Turner, 1988
38. *M. ventralis* (Ehrenberg, 1830)

Family: **Trichotriidae**
39. *Macrochaetus collinsi* (Gosse, 1867)
40. *M. longipes* Myers, 1934
41. *M. sericus* (Thorpe, 1893)
42. *T. tetractis* (Ehrenberg, 1830)
43. *Wolga spinifera* (Western, 1894)

Family: **Lepadellidae**
44. *Colurella adriatica* Ehrenberg, 1831
45. *C. colurus* (Ehrenberg, 1830)
46. *C. obtusa* (Gosse, 1886)
47. *C. sulcata* (Stenroos, 1898)
48. *C. uncinata* (Müller, 1773)
49. *Lepadella acuminata* (Ehrenberg, 1834)
50. *L. apsicora* Myers, 1934
51. *L. apsida* Harring, 1916
52. *L. benjamini* Harring, 1916
53. *L. biloba* Hauer,1958
54. *L. costatoides* Segers, 1992
55. *L. dactyliseta* (Stenroos, 1898)
56. *L. discoidea* Segers, 1993
57. *L. ehrenbergi* (Perty, 1850)
58. *L. eurysterna* Myers, 1942
59. *L. heterostyla* (Murray, 1913)
60. *L. minuta* (Weber & Montet, 1918)
61. *L. ovalis* (Müller, 1786)
62. *L. patella* (Müller, 1773)
63. *L. quinquecostata* (Lucks, 1912)
64. *L. rhomboides* (Gosse, 1886)
65. *L. triba* Myers, 1934
66. *L. triptera* (Ehrenberg, 1832)
67. *L. vandenbrandei* Gillard, 1952#
68. *Squatinella lamellaris* (Müller, 1786)

Family: **Lecanidae**
69. *Lecane aculeata* (Jakubski, 1912)
70. *L. arcula* Harring, 1914
71. *L. batillifer* (Murray, 1913)
72. *L. bifastigata* Hauer, 1938
73. *L. bifurca* (Bryce, 1892)
74. *L. blachei* Berzins, 1973
75. *L. bulla* (Gosse, 1851)
76. *L. calcaria* Harring & Myers, 1926*#
77. *L. closterocerca* (Schmarda, 1859)
78. *L. crepida* Harring, 1914
79. *L. curvicornis* (Murray, 1913)
80. *L. decipiens* (Murray, 1913)
81. *L. dorysimilis* Trinh Dang, Segers & Sanoamuang, 2015#
82. *L. doryssa* Harring, 1914
83. *L. elegans* Harring, 1914
84. *L. flexilis* (Gosse, 1886)
85. *L. furcata* (Murray, 1913)
86. *L. haliclysta* Harring & Myers, 1926
87. *L. hamata* (Stokes, 1896)

88. *L. hastata* (Murray, 1913)
89. *L. hornemanni* (Ehrenberg, 1834)
90. *L. inermis* (Bryce, 1892)
91. *L. inopinata* Harring & Myers, 1926
92. *L. lateralis* Sharma, 1978
93. *L. latissima* Yamamoto, 1951#
94. *L. leontina* (Turner, 1892)
95. *L. ludwigii* (Eckstein, 1883)
96. *L. luna* (Müller, 1776)
97. *L. lunaris* (Ehrenberg, 1832)
98. *L. monostyla* (Daday, 1897)
99. *L. nitida* (Murray, 1913)
100. *L. niwati* Segers, Kotethip & Sanoamuang, 2004#
101. *L. obtusa* (Murray, 1913)
102. *L. papuana* (Murray, 1913)
103. *L. paxiana* Hauer, 1940
104. *L. ploenensis* (Voigt, 1902)
105. *L. pusilla* Harring, 1914
106. *L. pyriformis* (Daday, 1905)
107. *L. quadridentata* (Ehrenberg,1830)
108. *L. rhenana* Hauer, 1929#
109. *L. rhytida* Harring & Myers, 1926 #
110. *L. signifera* (Jennings, 1896)
111. *L. simonneae* Segers, 1993
112. *L. stichoclysta* Segers, 1993**#
113. *L. stenroosi* (Meissner, 1908)
114. *L. superaculeata* Sanoamuang & Segers, 1997#
115. *L. tensuiseta* Harring, 1914
116. *L. thienemanni* (Hauer, 1938)
117. *L. undulata* Hauer, 1938
118. *L. unguitata* (Fadeev, 1925)
119. *L. ungulata* (Gosse, 1887)

Family: **Notommatidae**
120. *Cephalodella gibba* (Ehrenberg, 1830)
121. *C. mucronata* Myers, 1924
122. *C. trigona* (Rousselet, 1895) #
123. *Monommata longiseta* (Müller, 1786)
124. *M. maculata* Harring & Myers, 1930
125. *Notommata pachyura* (Gosse, 1886)
126. *N. tripus* Ehrenberg, 1838

Family: Scaridiidae
127. *Scaridium longicaudum* (Müller, 1786)

Family: **Gastropodidae**
128. *Ascomorpha ecaudis* Perty, 1850
129. *A. ovalis* (Bergendal, 1892)

Family: Trichocercidae
130. *Trichocerca bicristata* (Gosse, 1887)
131. *T. bidens* (Lucks, 1912) #
132. *T. capucina* (Wierzejski & Zacharias, 1893)
133. *T. cylindrica* (Imhof, 1891)
134. *T. elongata* (Gosse, 1886)
135. *T. flagellata* Hauer, 1937
136. *T. hollaerti* De Smet, 1990#
137. *T. insignis* (Herrick, 1885) #
138. *T. longiseta* (Schrank, 1802)
139. *T. pusilla* (Jennings, 1903)
140. *T. rattus* (Müller, 1776)
141. *T. similis* (Wierzejski, 1893)
142. *T. tenuior* (Gosse, 1886)
143. *T. tigris* (Muller, 1786)
144. *T. weberi* (Jennings, 1903)

Family: Asplanchnidae
145. *Asplanchna brightwellii* Gosse, 1850
146. *A. priodonta* Gosse, 1850

Family: **Synchaetidae**
147. *Ploesoma lenticulare* Herrick, 1885
148. *Polyarthra vulgaris* Carlin, 1943

Family: **Dicranophoridae**
149. *Dicranophoroides caudatus* (Ehrenberg, 1834)
150. *Dicranophorus forcipatus* (Müller, 1786)

Order: **Flosculariaceae**
Family: **Flosculariidae**
151. *Sinantherina socialis* (Linne, 1758)
152. *S. spinosa* (Thorpe, 1893)

Family: **Conochilidae**
153. *Conochilus unicornis* Rousselet, 1892

Family: Hexarthridae
154. *Hexarthra mira* (Hudson, 1871)

Family: **Testudinellidae**
155. *Testudinella amphora* Hauer, 1938#
156. *T. brevicaudata* Yamamoto, 1951#
157. *T. dendradena* de Beauchamp, 1955#
158. *T. emarginula* (Stenroos, 1898)
159. *T. greeni* Koste, 1981#
160. *T. parva* (Ternetz, 1892)
T. parva bidentata (Ternetz, 1892)
161. *T. patina* (Hermann, 1783)
162. *T. tridentata* Smirnov, 1931#
163. *Pompholyx sulcata* Hudson,1885

Family: **Trochosphaeridae**
164. *Filinia camasecla* Myers, 1938
165. *F. longiseta* (Ehrenberg, 1834)
166. *F. opoliensis* (Zacharias, 1898)
167. *F. saltator* (Gosse, 1886)
168. *Trochosphaera aequatorialis* Semper, 1872

Sub-class: Bdelloidea
Order: Philodinida
Family: Philodinidae
169. *Dissotrocha aculeata* (Ehrenberg, 1832)
170. *Rotaria neptunia* (Ehrenberg, 1830)

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* New records from the Indian sub-region; ** new records from Assam state; # reported only from NEI

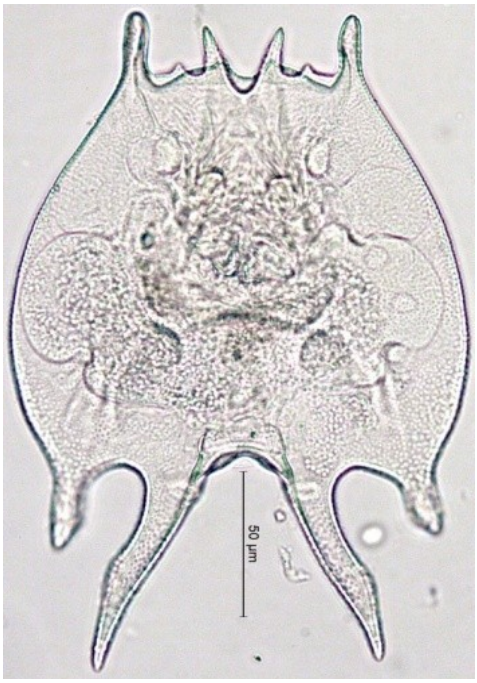
Brachionus srisumonae (Fig. 2), *B. nilsoni* (Fig. 3) and *Lecane calcaria* (Fig. 4) are new records from the Indian sub-region, while *Brachionus murphyi* (Fig. 5) and *Lecane stichoclysta* (Fig. 6) are new records from Assam state. Several other species of biogeographic interest noticed in our collections include *Brachionus bennini* (Fig. 7), *B. durgae* (Fig. 8), *Filinia camasecla* (Fig. 9), *Keratella edmondsoni* (Fig. 10), *Lecane batillifer* (Fig. 11), *L. bifastigata* (Fig. 12), *L. blachei* (Fig. 13), *L. dorysimilis* (Fig.14), *L. latissima* (Fig.15), *L. niwati* (Fig.16), *L. rhenana* (Fig.17), *L. rhytida* (Fig. 18), *L. simonneae* (Fig. 19), *L. superaculeata* (Fig. 20), *Lepadella benjamini* (Fig. 21), *L. discoidea* (Fig. 22), *L quinquecostata* (Fig. 23), *L. vandenbrandei* (Fig. 24), *Testudinella amphora* (Fig. 25), *T. brevicaudata* (Fig. 26), *T. greeni* (Fig. 27), *T. parva bidentata* (Fig. 28), *T. tridentata* (Fig. 29) and *Trichocerca hollaerti* (Fig. 30).

Lecanidae, Brachionidae, Lepadellidae, Trichocercidae and Testudinellidae are represented by 50, 26, 25, 15 and 10 species, respectively; Notommatidae and Euchlanidae include 7 and 6 species respectively; and Mytilinidae, Trichocercidae and Trochosphaeridae include five species each. *Lecane, Lepadella, Brachionus, Trichocerca, Testudinella* and *Keratella* record 50, 19, 16, 16, 9 and 6 species, respectively. Our 2005, 2008, 2011 and 2014 collections indicate 153, 148, 155 and 150 species, respectively.

DISCUSSION

Our collections from the floodplain wetlands of Barak valley of Assam state of NEI reveal rich Rotifera diversity of 170 species belonging to 39 genera and 19 families. The richness forms a notable fraction *i.e.*, ~70%, ~57% and ~39% of the species of the phylum known till date from Assam, NEI and India (Sharma & Sharma 2017, BKS unpublished), respectively; the rich and diverse rotifer assemblages are hypothesized to micro-habitat and ecological heterogeneity of the sampled wetlands. The reports of ~90%, ~87%, ~91% and ~82% of species from our 2005, 2008, 2012 and 2014 surveys from the Barak basin endorse consistently biodiverse rotifers with limited seasonal differences in species composition *vis-a-vis* the sampling intensity. This study marks a significant update over our unpublished report of 90 species from Barak valley (Sharma & Sharma 2014a). Our collections from south Assam even reveal more species-rich rotifers than the reports of 162, 161 and 150 species from the states of Mizoram (Sharma & Sharma 2015), Meghalaya (Sharma *et al.* 2016) and Nagaland (Sharma *et al*. 2017) of NEI, respectively.

The present study indicates higher rotifer richness than certain reports from the floodplains of the Rio Pilcomayo National Park of Argentina (114 species; Jose de Paggi 2001), 124 and 136 species from Oguta and Iyi-Efi lakes of the Niger delta (Segers *et al*. 1993) of Africa, respectively; Lake Guarana (130 species; Bonecker *et al*. 1994), and Rio Tapajos (151 species; Koste 1974) and Lago Camaleao (148 species; Koste & Robertson 1983) of Brazil, respectively; Thale-Noi Lake, Thailand (106 taxa; Segers & Pholpunthin 1997); and Laguana Bufeos of Bolivia (104 species; Segers *et al*. 1998). The richness from the Barak River floodplains, however, compares well with 184 species known from more intensively sampled Upper Paraná floodplains (Bonecker *et al.* 1994, 1998, 2005) of Brazil. Further, our collections highlight more biodiverse rotifer assemblages than the 144 species reported from beels of the Majuli River Island (Sharma *et al.* 2015) and 141 species from three beels of the Dibru-Saikhowa Biosphere Reserve (Sharma *et al.* 2017) of upper Assam; 164 species from 15 beels (Sharma 2005) and 160 species from four beels of lower Assam (Sharma *et al.* 2018); 162 species from Loktak Lake basin of Manipur (Sharma *et al.* 2016); and 110 species from the floodplains of the Yamuna River at Delhi (Arora & Mehra 2003). The stated comparisons affirm the rich faunal diversity of the floodplain wetlands of the Barak River and thus endorse our reports from the floodplains of NEI (Sharma & Sharma 2014a, 2014b, 2017, 2018a, Sharma *et al.* 2018) *vis-a-vis* Rotifera-rich habitats. In contrast, comparisons with reports of 12 (Kar & Kar 2013), 2 (Gupta & Devi 2014), 7 (Narzary *et al*. 2015), 18 (Das & Kar 2016), 20 (Kar & Kar 2016a), 20 (Kar & Kar 2016b), 21 (Das *et al.* 2018) and 10 (Kar *et*



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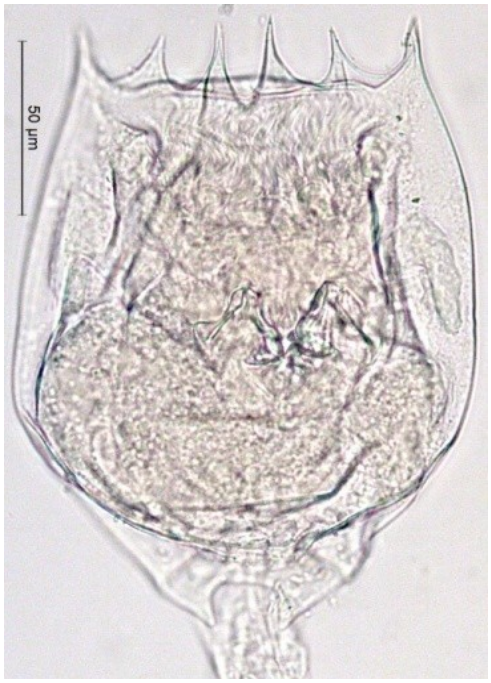

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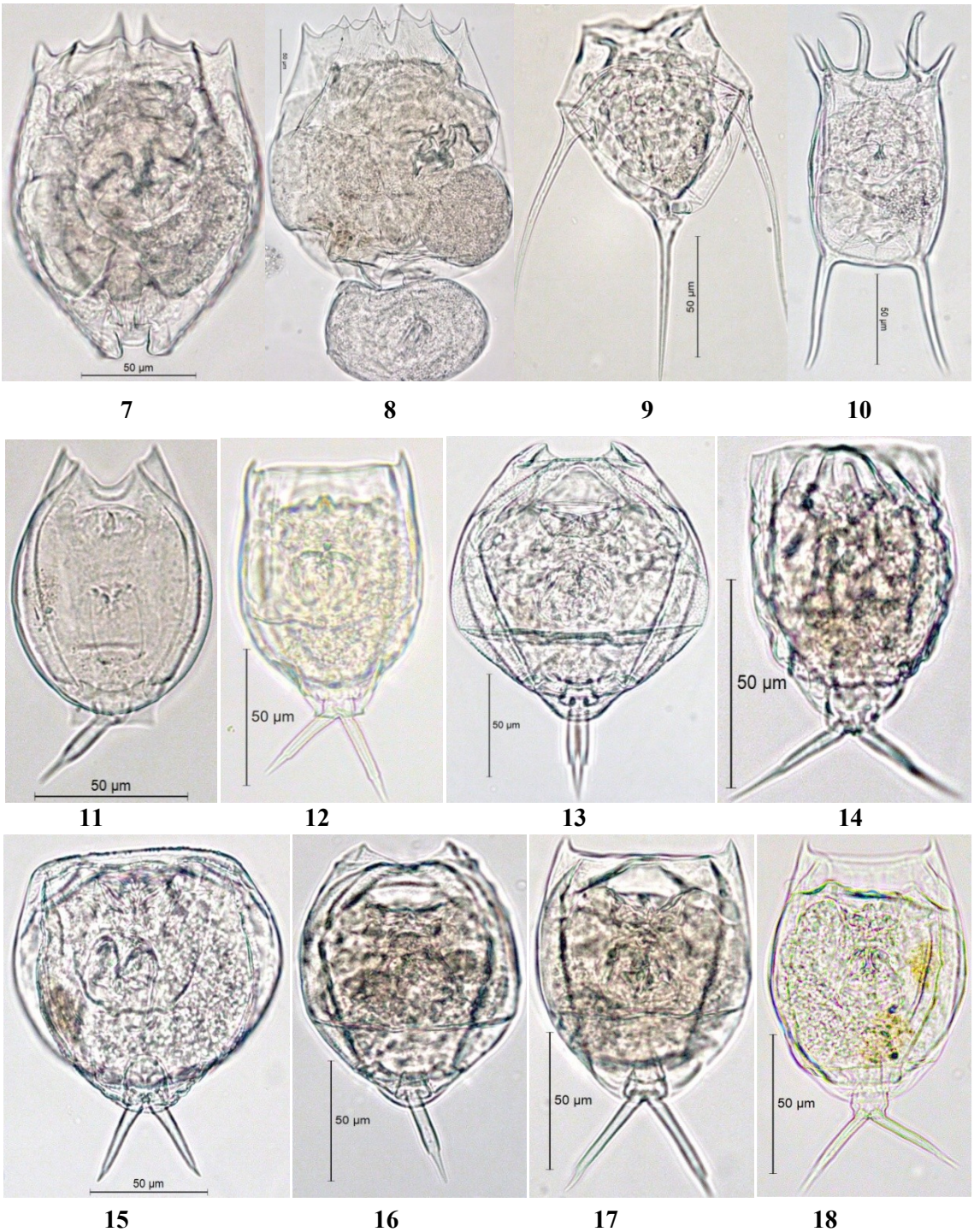
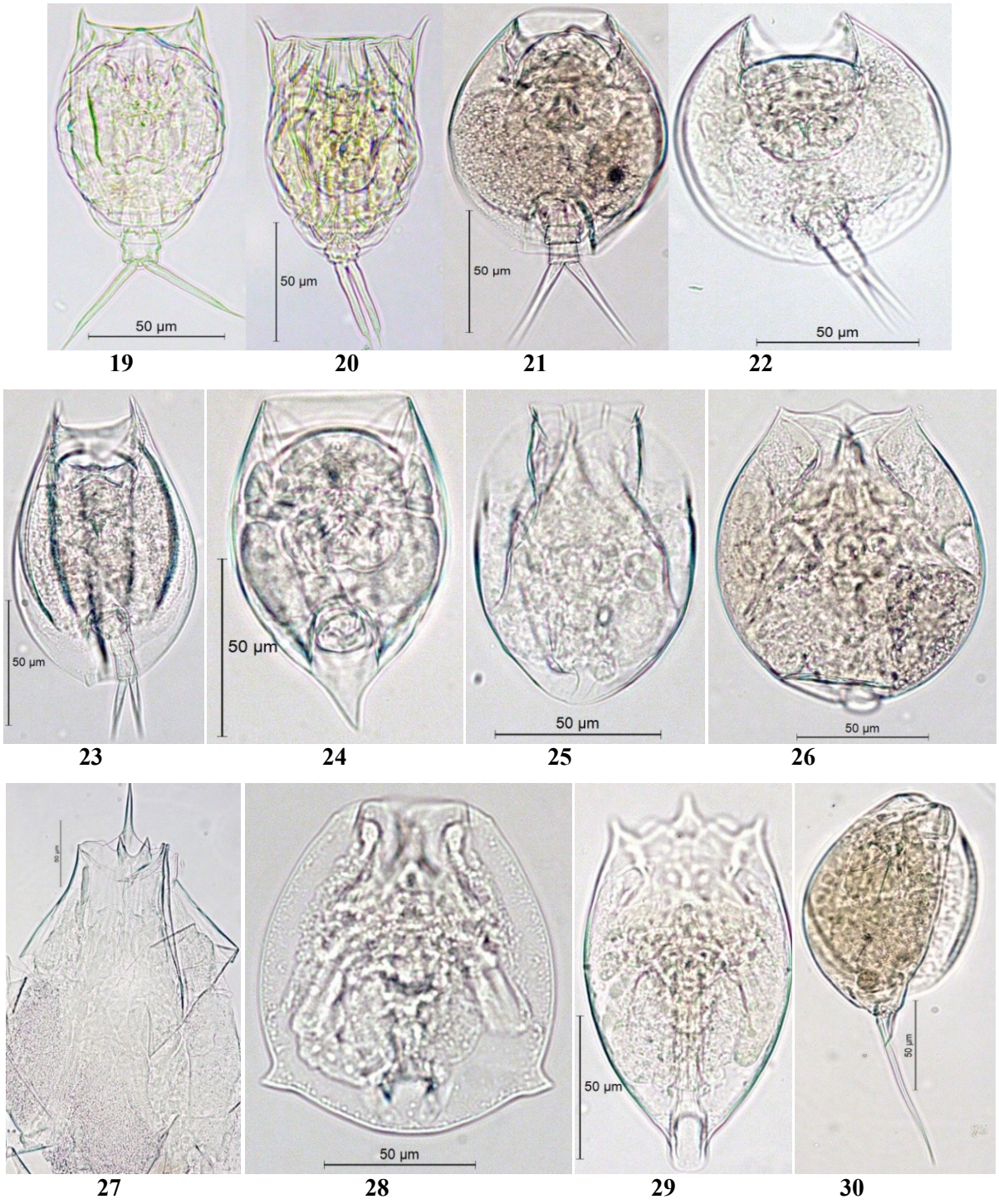
Figures 2-6. New records of Rotifera from Barak valley. 2 = *Brachionus srisumonae* Segers, Kotethip & Sanoamuang (dorsal view); 3 = *Brachionus nilsoni* Ahlstrom (ventral view); 4 = *Lecane calcaria* Harring & Myers (ventral view); 5 = *Brachionus murphyi* Sudzuki (ventral view); 6 = *Lecane stichoclysta* Segers (ventral view).



Figures 7-18. Interesting Rotifera from Barak valley. 7 = *Brachionus bennini* Leissling (ventral view); 8 = *Brachionus durgae* Dhanapathi (dorsal view); 9 = *Filinia camasecla* Myers (ventral view); 10 = *Keratella edmondsoni* Ahlstrom (ventral view); 11 = *Lecane batillifer* (Murray) (dorsal view); 12 = *Lecane bifastigata* Hauer (ventral view); 13 = *Lecane blachei* Berzins (ventral view); 14 = *Lecane dorysimilis* Trinh Dang, Segers & Sanoamuang (dorsal view); 15 = *Lecane latissima* Yammoto (dorsal view); 16 = *Lecane niwati* Segers, Kotethip & Sanoamuang (ventral view); 17 = *Lecane rhenana* Hauer (ventral view); 18 = *Lecane rhytida* Harring & Myers (dorsal view).



Figures 19-30. Interesting Rotifera species from Barak valley. 19 = *Lecane simonneae* Segers (dorsal view); 20 = *Lecane superaculeata* Sanoamuang & Segers (ventral view); 21 = *Lepadella benjamini* Harring (ventral view); 22 = *Lepadella discoidea* Segers (ventral view); 23 = *Lepadella quinquecostata* (Lucks) (dorsal view); 24 = *Lepadella vandenbrandei* Gillard (ventral view) 25 = *Testudinella amphora* Hauer (dorsal view); 26 = *Testudinella brevicaudata* Yamamoto (ventral view); 27 = *Testudinella greeni* (part) (ventral view); 28 = *Testudinella parva bidentata* (Ternetz) (ventral view); 29 = *Testudinella tridentata* Smirnov (ventral view); 30 = *Trichocerca hollaerti* De Smet (lateral view).

al. 2018) rotifer taxa from wetlands of south Assam indicate under-estimation of the richness with lack of species identifications in most of these works.

Brachionus srisumonae, *B. nilsoni* and *Lecane calcaria* are new additions to Rotifera of the Indian sub-region; these species are listed elsewhere from the Oriental region from Thailand (Sa-Ardrit *et al*. 2013). Of these, the rare and interesting brachionid *B. srisumonae* was described from Thailand (Segers *et al.* 2004) and was since listed as 'Thai endemic' (Sa-Ardrit *et al.* 2013), while we now designate it as 'Oriental endemic'. The cosmopolitan *B. nilsoni* is likely to be confused with *B. urceolaris* while *L. calcaria*, known from the Neotropical and Oriental regions (Segers 2007), is characterized by its small-size, soft lorica and distinctive toes. All three new records are notable for rare occurrence in our collections from Barak valley. In addition, *Brachionus murphyi* and *Lecane stichoclysta* are new records from Assam state; the former was reported from India from Nagaland (Sharma *et al.* 2017) state of NEI while this brachionid and *Lecane stichoclysta* are recently observed from Arunachal Pradesh, the eastern Himalayas (Sharma and Sharma, 2019).

Our results highlight both (i) the global and (ii) regional distribution importance of the rotifers from Barak valley. The former feature is endorsed by a notable fraction (~15%) of the reported species including: (a) the Australasian *Lecane batillifer*; (b) the Oriental endemics *Brachionus srisumonae, B. murphyi, Keratella edmondsoni, Lecane blachei, L. latissima, L. niwati, L. superaculeata* and *Filinia camasecla*; (c) the Paleotropical *Keratella javana, Lecane lateralis*, *L. simonneae, L. stichoclysta*, *L. unguitata*, *Lepadella discoidea, L. vandenbrandei, Testudinella brevicaudata, T. greeni* and *Trichocerca hollaerti*; (d) the Indo-Chinese *L. dorysimilis*; (e) the cosmo (sub) tropical *Brachionus durgae*; and (f) other species namely *Cephalodella trigona, L. bifastigata, L. calcaria,* and *Testudinella amphora.* Besides, we report a sizable component (~37%) of species of (ii) regional distribution interest for India with ~13% known exclusively to date from NEI; the latter include *Brachionus murphyi, B. nilsoni, B. srisumonae, Cephalodella trigona, Keratella javana, Lecane calcaria, L. dorysimilis, L. latissima, L. niwati, L. rhenana, L. rhytida,* L. *stichoclysta*, L. *superaculeata, Lepadella vandenbrandei, Testudinella amphora, T. brevicaudata, T. dendradena, T. greeni*, *T. tridentata*, *Trichocerca bidens*, *T. hollaerti* and *T. insignis*.

Lecanidae, represented by the 'tropic-centered' *Lecane,* records distinctly diverse nature (50 species; ~30%). The lecanids along with Eurotatoria families Brachionidae ≈ Lepadellidae (~32%) largely contribute to the rotifer richness of the Barak floodplains; Trichocercidae > Testudinellidae are notable (~15%), while Notommatidae, Euchlanidae, Mytilinidae, Trichotriidae and Trochosphaeridae collectively include 16.5% species. Besides the speciose genus *Lecane*, *Lepadella* > *Brachionus* = *Trichocerca* together include ~32% species, while *Testudinella* > *Keratella* deserve mention (~9 %). The richness of the 'tropic-centered' *Brachionus* (16 species) in the Barak valley floodplains is higher than our reports from other floodplains of NEI *i.e*., the Majuli River Island (Sharma 2014) and the Dibru-Saikhowa Biosphere reserve (Sharma *et al*. 2017) of upper Assam, and the Loktak Lake basin of Manipur (Sharma & Sharma 2018a). The richness importance of *Lecane* and *Brachionus***,** large fraction of cosmopolitan species (~66%) and occurrence of several pantropical and cosmotropical species (~20%) imparts 'tropical character' to the rotifer assemblages of the Barak valley floodplains. This generalization concurs with various global reports on the composition of the tropical rotifer faunas (Fernando 1980; Dussart *et al.* 1984; Segers 1996, 2001, 2008). The lecanid dominance compares well with the reports from the floodplains of Africa (Segers *et al.* 1993, 1998), Thailand (Sa-Ardrit *et al*. 2013) and Argentina (Jose de Paggi 2001). The overall significance of important Eurotatoria families and genera concurs with the reports from the floodplains of Africa (Segers *et al*. 1993, Green 2003), Brazil (Koste 1974, Koste & Robertson 1983, Bonecker *et al.* 1998), Thailand (Segers & Pholpunthin 1997), Bolivia (Segers *et al.* 1998) and Argentina (Jose De

Paggi 2001). This generalization, in turn, assigns the littoral-periphytonic nature to Rotifera of the Barak River floodplains with occurrence of several small-sized species of *Colurella*, *Lecane*, *Lepadella* and *Trichocerca*. The latter attribute is hypothesized to the predation influence of juvenile fish and invertebrates (Baumgartner *et al.* 1997); this feature also endorses our remarks on the rotifers from the floodplains of NEI (Sharma & Sharma 2014a, 2018a; Sharma *et al.* 2016, 2017, 2018) as well as of the Kashmir Himalayas (Sharma & Sharma 2018b).

To sum up, this first comprehensive analysis of zooplankton of the Barak River floodplains of south Assam depicts the species-rich and diverse Rotifera assemblages, and thus affirms microhabitat and environmental heterogeneity of the wetlands of the region. Our study highlights sizeable fractions of species of global as well as regional biogeographic interest, various new records and interesting taxa, the littoral-periphytic nature, several small-sized species, large fraction of cosmopolitan species and occurrence of several pantropical and cosmotropical rotifers. The results merit biodiversity and biogeographic interest for Indian Rotifera as well as that of the floodplains of the Indian sub-region in particular. Analysis of more intensive collections with emphasis on the periphytic, sessile, colonial and benthic taxa is likely to update the rotifer biodiversity of the Barak floodplains, Assam state and NEI.

Acknowledgements – The senior author (BKS) is thankful to the Ministry of Environment & Forests (Govt. of India) for a research project No. 22018-09/2010-CS (Tax) which facilitated the sampling partially, while this study was initiated under the "University with Potential for Excellence Program (Focused Area: Biosciences)" of North-Eastern Hill University, Shillong. We thank Drs. L. Pachuau and M. K. Hatimuria for help in the field collections. The authors have no conflict of interests.

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