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FRESHWATER CILIATES (PROTOZOA) FROM KOLKATA WETLANDS

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INTRODUCTION

The ciliophorans coming under the phylum ciliophora are universally distributed in water bodies like freshwater ponds, streams and rivers and some species occur in wet soils and mosses. These freeliving ciliates play an important role in the aquatic ecosystem and form an important component of the environment monitoring surveillance and these aquatic animalcules occupy an important position in the aquatic food chain. In West Bengal, in all 152 species of ciliates, belonging to 2 classes, 16 orders, 52 families and 75 genera have been recorded by several investigators since 1840s (Das *et al.*, 1993; Piyali and Das, 1997). Ghosh (1918-29) in a series of papers recorded 29 species of ciliates from Kolkata, while Mahajan and Nair (1965), Das (1971), Das *et al.* (1993) and Piyali and Das (1997) reported a considerable number of species from different freshwater ecosystems of Kolkata. Although Kolkata metropolis abounds with innumerable freshwater wetlands and even though several water bodies were surveyed from different parts of this mega city, the diversity and distribution of ciliates suggests that purposeful wetland specific surveys have not been conducted year round.

The present communication deals with 23 species of freeliving freshwater ciliates based on the survey conducted from April 2006 to December 2007 from Kolkata wetlands including Rabindra Sarovar, a National Lake, representing an important freshwater wetland in the heart of the metrocity of Kolkata.

MATERIALS AND METHODS

Water samples collected from various ponds, tanks and lakes along with some algae, water weeds and flocculent matter were kept in the laboratory for some

days for considerable increase in protozoa population in them. These samples were then thoroughly examined under the microscope from time to time. The freeliving ciliates occurring in them were isolated and examined in living condition by keeping them in a drop of natural medium. Schaudinn's fixative was used for making permanent slides which is very effective for keeping the exact shape of the specimen. For staining Heidenhain's iron haematoxylin was used. Dry silver impregnation method was also employed for studying the ciliates and the slides were mounted in DPX.

RESULTS AND DISCUSSION

A total of 23 species were identified of which 5 species are new reports from Kolkata wetlands *viz.*, *Dileptus monilatus*, *Loxophyllum levigatum*, *L. undulatum*, *Loxodes vorax* and *Leptopharynx torpens*. These 23 species belonging to 7 orders and 13 families.

(A) SYSTEMATIC LIST OF CILIATES RECORDED FROM KOLKATA WETLANDS

- | | |
|------------|----------------------|
| Subkingdom | PROTOZOA |
| Phylum | CILIOPHORA |
| Class | KINETOPHRAGMINOPHORA |
| Subclass | GYMNOSTOMATA |
| Order | PROSTOMATIDA |
| Suborder | PROSTOMATINA |
| Family | HOLOPHRYIDAE |
1. *Holophrya bengalensis* Ghosh
 2. *Holophrya annandale* Ghosh
- | | |
|----------|---------------|
| Suborder | PRORODONTINA |
| Family | PRORODONTIDAE |
3. *Prorodon discolor* (Ehrenberg)
 4. *Prorodon teres* Ehrenberg

- Family COLEPIDAE
5. *Coleps hirtus* (Muller)
Suborder HAPTORINA
Family ENCHELYIDAE
6. *Lacrymaria olor* (Muller)
Family TRACHELIIDAE
7. *Dileptus monilatus* (Stokes)
8. *Trachelius ovum* Ehrenberg
Order PLEUROSOMATIDA
Family AMPHILEPTIDAE
9. *Loxophyllum levigatum* Sauerby
10. *Loxophyllum undulatum* Sauerby
11. *Litonotus fasciola* (Ehrenberg)
Order KARYORELICTIDA
Family LOXODIDAE
12. *Loxodes vorax* Stokes
13. *Loxodes magnus* Stokes
14. *Loxodes striatus* (Engelmann)
Order COLPODIDA
Family COLPODIDAE
15. *Colpoda aspera* Kahl
16. *Colpoda cucullus* Muller
Order NASSULIDA
Family NASSULIDAE
17. *Nassula ornata* Ehrenberg
Suborder MICROTHORACINA
Family LEPTOPHARYNGIDAE
18. *Leptopharynx torpens* (Kahl)
19. *Pseudomicrothorax agilis* Mermod
Family MICROTHORACIDAE
20. *Microthorax pusillus* Engelmann
Order CRYPTOPHORIDA
Suborder CHLAMYDODONTINA
Family CHILODONELLIDAE
21. *Chilodonella cucullus* (Muller)
22. *Chilodonella uncinata* (Ehrenberg)
Order HYMENOSOMATIDA
Suborder PENICULINA
Family PARAMECIDAE
23. *Paramecium caudatum* Ehrenberg

(B) SYSTEMATIC ACCOUNT

- Subkingdom PROTOZOA
Phylum CILIOPHORA
Class KINETOPHRAGMINOPHORA
Subclass GYMNOSTOMATA
Order PROSOMATIDA
Suborder PROSOMATINA
Family HOLOPHRYIDAE

Body radially symmetrical, ciliation uniform, cytopharyngeal apparatus simple rhabdos type.

Genus *Holophrya* Ehrenberg

Cytostome round, simple and without any ciliary ring around it, cytopharynx absent or a short simple tube with or without trichites.

Key to the species

- 1(2) Macronucleus single, spindle shaped; contractile vacuole single, subterminal close to one side
..... *H. bengalensis*
- 2(1) Macronuclei two, spherical, contractile vacuole single, lateral and located at anterior half
..... *H. annandalei*

1. *Holophrya bengalensis* Ghosh

1919. *Holophrya bengalensis* Ghosh, *Rec. Indian Mus.*, **16**, p. 41, fig. 1.

Material examined : 2 exs. Rabindra Sarobar, Kolkata, 3.vii.2006.

Diagnosis : Body cylindrical, rounded at both ends; cytostome apical and circular : cytopharynx absent; macronucleus single, spindle -shaped; contractile vacuole single, subterminal and close to one side; size 70 μm to 40 μm .

Distribution : India : West Bengal (Kolkata); Rajasthan.

Remarks : Mahajan (1965) recorded this species from Rajasthan and created a subspecies *minor* on the size difference (75 μm \times 37 μm in *bengalensis* by Das *et al.* from West Bengal versus 34.2-48.9 μm \times 16.-19.5 μm in *bengalensis minor*).

2. *Holophrya annandalei* Ghosh

1919. *Holophrya annandalei* Ghosh, *Rec. Indian Mus.*, **16**, p. 41.

Diagnosis : Body cylindrical with rounded ends; cytostome subapical and circular; cytopharynx a slight depression; macronuclei two, spherical; contractile vacuole single, lateral and located at anterior half; size 60.3 µm-31.5 µm.

Distribution : India : West Bengal (Kolkata).

Suborder PRORODONTINA

Key to the families

- 1(2) Body barrel- shaped bearing armoured plates in longitudinal rows, cytostome round, without any prominent ciliation near anterior end
.....COLEPIDAE
- 2(1) Body oval to elongate, without bearing any armoured plate, cytostome and ciliation as above PRORODONTIDAE

Family PRORODONTIDAE

3. *Prorodon discolor* (Ehrenberg)

- 1835. *Holophrya discolor* Ehrenberg, *Abh. Preuss. Akad. Wiss., Berlin*, p. 251.
- 1930. *Prorodon (Holophrya) discolor* Kahl, *Urtiere order protozoa*, (in : Dahl's *Tierwelt* Disch.) Jena, pt. 18, p. 76, fig. 8(4).

Material examined : 1 ex. Rabindra Sadan, 5.viii.2007; 2 exs. Pond in lake garden. 16.viii.2007.

Diagnosis : Body oval, narrower posteriorly, mouth terminocentral, pharyngeal tube with trichites extending above one-fourth of the body; macronucleus single, rounded; contractile vacuole single and situated near posterior end; size 75-80 µm × 46-53 µm.

Distribution : India : West Bengal (Kolkata).

4. *Prorodon teres* Ehrenberg

- 1838. *Prorodon teres* Ehrenberg, *Die Infusionsthierchen als Vollkommene organismen*, Leipzig, p. 316, pt. 32, fig. 11.

Material examined : 1 ex. Indian Museum tank, 25.viii.2006; 2 exs. lake garden pond, 13.vi.2007.

Diagnosis : Body ovoid, anterior end slightly narrowed and posterior end considerably rounded; mouth terminal, pharyngeal tube slightly conical and with trichites, extending about one-fourth of the body length; contractile vacuole single and terminal, macronucleus spherical; size 68.4 µm × 55.2 µm.

Distribution : India : West Bengal (Kolkata).

Remarks : This species was reported from West Bengal by Mahajan and Nair (1971) and Das *et al.* (1993).

Family COLEPIDAE

5. *Coleps hirtus* (Muller)

- 1786. *Cercaria hirta* O.F. Muller, *Hafniae et Lipsidae*, p. 128, pl. 19, figs. 17-18.
- 1817. *Coleps hirtus* 3, Nitzsch, *Neue Schrift d. naturf. Ges. In Helle*, p. 4.

Material examined : 1 ex. Rabindra Sarobar, 4.ix.2006; 1 ex. Brace bridge Jheel. 21.viii.2006.

Diagnosis : Body barrel-shaped, ectoplasmic plates 18-20, anterior margin denticulate, posterior end with three spinous projections, cytostome apical and terminal, surrounded with slightly larger cilia; size 110 µm × 124 µm.

Remarks : Mahajan (1965) described this species from Rajasthan as *Hirtus minor* being smaller in size (75 µm × 46 µm).

Distribution : India : West Bengal : Rajasthan, Jammu and Kashmir.

Suborder HAPTORINA

Key to the families

- 1(2) Body of variable shape, but anterior end not truncate, cytostome in many species located at distal end of long flexible neck ... ENCHELYIDAE
- 2(1) Cytostome at the base of proboscis, located at considerable distance from anterior end of the body TRACHELIIDAE

Family ENCHELYIDAE

6. *Lacrymaria olor* (Muller)

- 1786. *Vibrio olor* Muller, *Animalc. fluiat et. marina. etc., Hafniae et Lipsiae*, p. 75, pl. 10. Figs. 12-15.
- 1832. *Lacrymaria olor*, Ehrenberg, *Abh. Preuss. Akad. Wiss., Berlin*, p. 105.

Material examined : 1 ex. Indian Museum Tank, 5.xi.2006; 2 exs. Maidan pond, 8.x.2006.

Diagnosis : Body elongate, posterior portion cylindrical with pointed posterior end; neck long, highly contractile oral cone well developed, contractile vacuoles two in number and located on either end of cylindrical body portion; macronucleus with two rounded parts united together; size 99 µm × 28 µm.

Distribution : India : West Bengal, Orissa, Rajasthan.

Family TRACHELIIDAE

7. *Dileptus monilatus* (Stokes)

1986. *Amphileptus monilatus* Stokes, *Ann. Mag. Nat. Hist.*, (5) **17**.

Material examined : 1 ex. Indian museum tank. 15.x.2006.

Diagnosis : Body elongated, posterior end uniformly cuspidate, neck elongated contractile and about one-fourth to one-half the length of the trunk; cytostome resembling previous species; macronucleus moniliform, contractile vacuole many; size 190 μm \times 49 μm .

Distribution : India : West Bengal (Hugli district).

Remarks : First report from Kolkata wetlands.

8. *Trachelis ovum* Ehrenberg

1833. *Trachelius ovum* Ehrenberg, *Abd. Preuss. Akad. Wiss.*, Berlin, 1835, pp. 265, 277.

Material examined : 1 ex. Indian museum tank, 28.xii.2006; 1 ex. Maidan pond, 13.xii.2006.

Diagnosis : Body spheroidal to ellipsoid, anterior end with finger like proboscis curved dorsally and posterior end broadly rounded; cytostome located at the base of the proboscis, macronucleus sausage shaped; contractile vacuole many; size 66 μm \times 52 μm .

Distribution : India : West Bengal, Rajasthan.

Family AMPHILEPTIDAE

Body lanceolate and laterally compressed; slit-like cytostome located at the convex ventral border of the anterior part of the body. Under this family two genera (*Loxophyllum* and *Litonotus*) are represented from this survey.

Genus *Loxophyllum* Dujardin

1(2) Body leaf-like with smooth border macronuclei 7-15 in number, globular and scattered

..... *L. levigatum*

2(1) Body leaf-like with undulating border, macronuclei many, elliptical and arranged along ventral line

..... *L. undulatum*

9. *Loxophyllum levigatum* Sauerby

1928. *Loxophyllum levigatum* Sauerby, *Arch. Protistenk.*, Jena, **62**, p. 377.

Material examined : 1 ex. Rabindra Sarobar, 3.ii.2007.

Diagnosis : Body leaf-like, anterior end with distinct beak, posterior end rounded; body margin smooth; macronuclei 7-15 in number, globular and scattered; contractile vacuole single and located at posterior end on dorsal side.

Distribution : India : West Bengal.

Remarks : First report from Kolkata wetlands.

10. *Loxophyllum undulatum* Sauerby

1928. *Loxophyllum undulatum* Sauerby, *Arch. Protistenk.*, Jena, **62**, p. 378.

Material examined : 1 ex. Rabindra Sarobar, 22.i.2007.

Diagnosis : Body flat, leaf-like, distinct beak at anterior end, posterior end very broadly rounded, vacuole single and located at posterior end on dorsal side.

Distribution : West Bengal.

Remarks : First report from Kolkata Wetlands.

11. *Litonotus fasciola* (Ehrenberg)

1838. *Amphileptus fasciola* Ehrenberg, *Die Infusionsthierehen als vollkommene organismen*, Leipzig, p. 356, pl. 38, fig. 17.

Material examined : 1 ex. Brace bridge Jheel. 7.i.2007.

Diagnosis : Body elongate, non contractile, neck not always sharply distinguished from body; macronucleus subcentral, consisting of two spherical lobes united to one another by a thread; contractile vacuole single and located near the posterior end of the body.

Distribution : India : West Bengal, Maharashtra, Rajasthan, Jammu & Kashmir.

Family LOXODIDAE

Genus *Loxodes* Ehrenberg

Leaf-like, flattened, anterior end with beak curved ventrally, right surface slightly convex, uniform ciliation on several longitudinal rows, macronuclei two or more, 2-25 strongly refractile Muller's vesicles in dorsal region.

Key to the species

1(4) Macronuclei two in number

2(3) Body leaf-like with rounded posterior end; both the macronuclei lying close to each other

..... *L. vorax*

3(2) Body leaf-like with pointed posterior end, both macronuclei are some distance apart from each other

..... *L. striatus*

4(1) Macronuclei many and scattered in endoplasm ..
..... *L. magnus*

12. *Loxodes vorax* Stokes

1885. *Loxodes vorax* Stokes, *Amer. Mon. micr. J.*, **6**, pp. 121-127.

Material examined : 1 ex. Rabindra Sarobar. 5.iii.2007.

Diagnosis : General body shape and size as in *L. striatus* but posterior end rounded; macronuclei two in number and lying very close to each other; size 200 µm × 280 µm.

Distribution : India : West Bengal.

Remarks : First report from Kolkata wetlands.

13. *Loxodes magnus* Stokes

1887. *Loxodes magnus* Stokes, *Ann. Mag. Nat. Hist.*, London, **20**, pp. 104-114, pl. 1.

Material examined : 1 ex. Rabindra Sarobar, 21.iv.2007; 1 ex. Indian Museum Tank, 3.iii.2007.

Diagnosis : leaf like, large in size, flattened, anterior end beak-like and curved ventrally, posterior end rounded; macronuclei many and scattered in endoplasm; 380 µm × 690 µm.

Distribution : India : West Bengal.

14. *Loxodes striatus* (Engelmann)

1862. *Drepanomonas striatum* Engelmann, *Z. Wiss. Zool., Leipzig*, **11**, pp. 382-383, pl. 21, fig. 7.

Material examined : 1 ex. Rabindra Sarobar, 8.vii.2006; 1 ex. Indian Museum Tank, 15.vi.2006. 1 ex. Brace Bridge Jheel, 25.viii.2007.

Diagnosis : Leaf-like, but smaller in size than *L. magnus*; posterior end pointed; macronuclei two in number; size 120 µm × 52 µm.

Distribution : India : West Bengal, Jammu & Kashmir, Rajasthan.

Family COLPODIDAE

Body typically reniform, with distorted ciliary rows, no conspicuous ciliary tuft at anterior end.

15. *Colpoda aspera* Kahl

1926. *Colpoda aspera* Kahl, *Arch. Protistenk.*, Jena, **55**, pp. 322-323, fig. 10(a-c).

Material examined : 1 ex. Rabindra Sarobar, 11.iv.2007; 1 ex. Lakegarden pond, 18.ix.2007.

Diagnosis : Body somewhat bean shaped; cytostome at about one-third from the anterior end;

frontal dentations 6-7 and meridians 14-16, macronucleus spherical, contractile vacuole single and posterior; size 78 µm × 109 µm.

Distribution : India : West Bengal.

17. *Colpoda cucullus* Muller

1773. *Colpoda cucullus* O.F. Muller, *Verminum terrest. et. Fluvialit S. animal infusor. etc. historia.*, Hafniane et Lipsiae, I & II.

Material examined : 1 ex. Indian Museum Pond, 29.x.2007; 1 ex. Lakegarden pond, 15.xi.2007.

Diagnosis : Body typically kidney-shaped, cytostome located about middle of the body, frontal dentations 8-10 and meridians 29-34; macronucleus oval; contractile vacuole single and posterior; size 40.5 µm × 30.7 µm.

Distribution : India : West Bengal, Andhra Pradesh, Assam, Karnataka, Maharashtra, Orissa, Tamil Nadu, Uttar Pradesh.

Family NASSULIDAE

Body ciliated all over the body, ciliation usually denser on ventral side than on dorsal one, hypostomial fringe short but multiple, cytopharyngeal apparatus prominent.

17. *Nassula ornata* Ehrenberg

1833. *Nassula ornata* Ehrenberg, *Abh. Preuss. Akad. Wiss., Berlin*, p. 169, pl. 1, fig. 2.

Material examined : 1 ex. Rabindra Sarobar, 30.x.2006; 1 ex. Indian Museum tank, 6.ii.2007; 1 ex.

Diagnosis : Body broadly oval, both end broadly rounded, macronucleus round, contractile vacuole single, located little below the middle of the body; size 125 µm × 151 µm.

Distribution : India : West Bengal, Rajasthan.

Family LEPTOPHARYNGIDAE

Key to the genera

- 1(2) Body more or less compressed, body surface marked with a broad longitudinal ridge with cross striation, furrows canal like.....
..... *Pseudomicrothoarx*
- 2(1) Body compressed, body surface with longitudinal furrows but without cross striations, canal like furrow absent..... *Leptopharynx*

18. *Leptopharynx torpens* (Kahl)

1931. *Trichopelma torpens* Kahl, *Urtiere order Protozoa* (in Dahl's *Tierwelt Disch.*), Jena, pt. 21, p. 303, fig. 51.

Material examined : 1 ex. Rabindra Sarobar, 15.viii.2006; 1 ex. Indian Museum Tank, 23.ii.2007.

Diagnosis : Ovoid in shape, with convex right margin and more or less straight ventral margin; ventral ridges unite to form a distinct beak near anterior end, pharyngeal basket lacking, presence of spines at the beginning of the cytostome; macronucleus oval; contractile vacuoles two and located below middle of the body; cytoplasm without green ingested food matter; size 160 μm \times 180 μm .

Distribution : India : West Bengal.

Remarks : First report from Kolkata wetlands.

19. *Pseudomicrothorax agilis* Mermod

1914. *Pseudomicrothorax agilis* Mermod, *Rev. Suisse Zool.*, 22.

Material examined : 1 ex. Indian Museum Tank, 12.xii.2007; 1 ex. Pond in Lakegarden, 26.viii.2007.

Diagnosis : Oval, smaller in dimension, ciliary meridian 12 in number, macronucleus spherical and located at the posterior half; size 65 μm \times 78 μm .

Distribution : India : West Bengal.

Family MICROTHORACIDAE

20. *Microthorax pusillus* Engelmann

1862. *Microthorax pusillus* Engelmann, *Zeitschr. f. wiss. zool.*, 11, pp. 347-393.

Material examined : 1 ex. Indian Museum Tank, 10.i.2008; 1 ex. Brace Bridge Jheel, 12.vi.2007.

Diagnosis : Body small, ovoid, with left border slightly sigmoid and right border more or less straight; oral depression on the dorsal side at the vicinity of ventral border; macronucleus spherical; contractile vacuole two in number and located below the middle half of the body; size 63 μm \times 72 μm .

Distribution : India : West Bengal.

Family CHILODONELLIDAE

Genus *Chilodonella*

Ovoid, dorsal surface convex, ventral surface flat and with ciliary rows, a cross-row of bristles on anteriorly flattened dorsal surface.

21. *Chilodonella cucullus* (Muller)

1883. *Kolpoda cucullus* Muller, *Verminum terrest, et. fluviatil S. animal infusor., etc. historia, Hafniae et Lipsiae*, p. 158.

Material examined : 1 ex. Indian Museum Tank, 4.v.2007; 1 ex. Rabindra Sarobar, 21.ix.2007.

Diagnosis : Body dorso-ventrally flattened, cytopharynx long and straight, macronucleus oval, contractile vacuole many and scattered; size 75 μm \times 151 μm .

Distribution : India : West Bengal; Jammu & Kashmir, Maharashtra, Rajasthan.

22. *Chilodonella uncinata* (Ehrenberg)

1838. *Chilodon uncinata* Ehrenberg, *Abh. Preuss. Akad. Wiss.*, Berlin, p. 337.

Material examined : 1 ex. Indian Museum Tank, 19.ix.2007; 1 ex. Pond in Salt Lake, 13.v.2007.

Diagnosis : Body dorsoventrally flattened, cytopharynx wider in front, narrow behind and spirally curved; macronucleus oval and not surrounded by any clear space, contractile vacuole single and terminal; size 65 μm \times 136 μm .

Distribution : India : West Bengal.

Family PARAMECIDAE

Genus *Paramecium* Hill

Cigar- shaped, peristome long, broad and slightly oblique, cytopharynx moderately long, with a row of very fine cilia attached to its dorsal wall.

23. *Paramecium caudatum* Ehrenberg

1833. *Paramecium caudatum* Ehrenberg, *Abhandl. D. konigl. Akad. d. Wissensch. Zu Berlin*, pp. 268, 323, pl. 3, fig. 2.

Material examined : 3 exs. Rabindra Sarobar, 28.v.2006; 2 exs. Indian Museum Tank, 24.viii.2007; 2 exs. Bracebridge Jheel, 17.viii.2006; 3 exs. Lakegarden pond, 2.vii.2007; 2 exs. Pond in Salt Lake, 5.ix.2007.

Diagnosis : Cigar shaped, anterior end broader and rounded and posterior end gradually tapering; micronuclei single and compact, lying close to massive and egg-shaped macronucleus; contractile vacuoles two; size 98 μm \times 42 μm .

Distribution : India : West Bengal, Orissa, Rajasthan, Uttar Pradesh, Jammu & Kashmir.

Table 1 : Occurrence of the species in different wetlands

Names of species	Names of wetlands					
	RS	IMT	BBJ	LGP	SLP	MP
1. <i>Holophrya bengalensis</i> Ghosh	+		+		+	
2. <i>Holophrya annandalei</i> Ghosh	+		+		+	+
3. <i>Prorodon discolor</i> (Ehrenberg)	+		+	+		
4. <i>Prorodon teres</i> Ehrenberg		+		+	+	
5. <i>Coleps hirtus</i> (Muller)	+		+	+		
6. <i>Lacrymaria olor</i> (Muller)		+			+	+
7. <i>Dileptus monilatus</i> (Stokes)		+				
8. <i>Trachelius ovum</i> Ehrenberg		+				+
9. <i>Loxophyllum levigatum</i> Sauerby	+					
10. <i>Loxophyllum undulatum</i> Sauerby	+					
11. <i>Litonotus fasciola</i> (Ehrenberg)			+			
12. <i>Loxodes vorax</i> Stokes	+					
13. <i>Loxodes magnus</i> Stokes	+	+				
14. <i>Loxodes striatus</i> (Engelmann)	+	+	+			
15. <i>Colpoda aspera</i> Kahl	+	+		+		
16. <i>Colpoda cucullus</i> Muller		+		+		+
17. <i>Nassula ornata</i> Ehrenberg	+	+				+
18. <i>Leptopharynx torpens</i> (Kahl)	+	+				
19. <i>Pseudomicrothorax agilis</i> Mermod		+		+		+
20. <i>Microthorax pusillus</i> Engelmann		+	+			+
21. <i>Chilodonella cucullus</i> (Muller)	+	+			+	+
22. <i>Chilodonella uncinata</i> (Ehrenberg)		+		+		+
23. <i>Paramecium caudatum</i> Ehrenberg	+	+	+	+	+	

RS–Rabindra Sarovar; IMT–Indian Museum Tank; BBJ–Brace Bridge Jheel; LGP–Pond in Lake Garden; SLP–Salt Lake Pond; MP–Maidan Pond.

(D) GENERAL REMARKS ON DISTRIBUTION

A perusal of literature of distribution in Kolkata reveals that the highest diversity of ciliates were recorded from the water body of Wellington square followed by Rabindra Sarobar and Indian Museum Tank. The 102 species recorded representing 60 genera under 46 families and 15 orders occurring in ponds, tanks and lakes of urban Kolkata. Of these 15 orders, peritrichid ciliates represent 19 species, followed by 15 species, each of prostomatid and heterotrichid ciliates. Incidentally wetland ecosystems of urban Kolkata represents the highest diversity of ciliate fauna in West Bengal. More than three and half times greater documentation of species is noted in Kolkata in

comparison to the next highest of 27 species from adjacent South 24-Parganas district.

SUMMARY

The paper deals with description, distribution and key for identification of 23 species under 16 genera of freeliving ciliates (protozoa) from Kolkata wetlands of which 5 species are reported for the first time from Kolkata wetlands.

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