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Research paper

On some Cladocerans recorded from Kalakad Mundenthurai Tiger reserve of Southern Western Ghats of Tamil Nadu

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Abstract:
Zooplankton being the foremost trophic link in food chain play an important role in aquatic ecosystems by transferring energy in the food web, energy transfer from primary producer to secondary consumers and cycling of organic materials in the aquatic ecosystem. The diversity of zooplankton reflects the water quality of an aquatic environment. The zooplankton is cosmopolitan in all aquatic habitat. They respond quickly to any changes in water quality because they are strongly affected by environmental conditions. They are considered as good bio indicators and are also helpful for monitoring polluted waters. In the present study efforts have been made to ascertain the abundance of Cladocera in the 11 water bodies of Kalakad Mundenthurai Tiger Reserve,Tamil Nadu, India. A total of 16 species of Cladocerans belonging to 13 genera, 2 orders under 6 families were recorded from the Tiger Reserve. All the Cladoceran species are reported for the first time from this area.
Keywords: Zooplankton, Ecosystem, Habitat, Cladocera, Kalakad Mundenthurai Tiger Reserve.

Introduction:

The Cladocera, commonly known as the 'Water fleas' forms an important constituent of freshwater organisms. They constitute an important link between primary producers and consumers of higher order in aquatic food webs. The size of Cladocera varies from 0.2 to 3.0 mm. The trunk is invariably covered with a bivalve carapace which is usually ornamented. Head bears the eye and the ocellus and two pairs of appendages. About 400 species of Cladocera are known from different parts of the world (Frey, 1967). Though a close to hundred species of Cladocerans have been described in detail from India by Michael & Sharma, 1988.

From the Western Ghats of Maharashtra and Goa, Padhye and Dumont (2015) recorded51 species of Cladocera under 6 families, with maximum number of species in the family Chydoridae. A checklist comprising of 81 species of Cladocera with major representation of family Chydoridae and Daphniidae from Tamil Nadu was provided by Raghunathan & Kumar (2002). As per the checklist provided by Thilak (2020) total of 63 species of Cladocera belonging to 33 genera, 2 orders under 7 families and 2 subfamilies were

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reported from the Western Ghats of India.Hitherto no work has been done on the Cladoceras of KMTR. The present paper deals with 16 species of Cladocerans belonging to 13 genera, 2 orders under 6 families from the samples collected from water bodies of KMTR.

Global and Indian Status:

The global diversity of Cladocerans is nearly 700 species Kotov (2011). As per the reports of Chatterjee *et. al.*, (2013), 137 species (among them, six exclusively marine species) belonging to 4 Orders, 59 genera under 12 families are recorded from India. Sharma & Sharma (2017) reported that the Indian Cladoceran diversity comprising of 131 species belonging to 48 genera, 4 orders under 11 families and 4 subfamilies.

Historical Resume:

The studies on Indian Cladocera were initiated by Baird (1860). Later various workers viz., Michael (1962), Navaneethakrishnam & Michael (1971), Murugan & Sivaramakrishnan (1973 & 1976), Murugan (1975), Sharma 1978; Battish, S.K. (1981), Sharma and Sharma, 1985; Sharma & Michael, (1983); Michael and Sharma, (1988); Battish, S. K. (1992); Venkataraman, (1983, 1991, 1992, 1993, 1994, 1995, 1998, 1999, 2000); Venkataraman & Das (2000); Raghunathan, (1990, 1995) Raghunathan & Ranae (2001); Raghunathan & Kumar (2003); Sharma, (2008); Sharma and Sharma (1985, 1999, 2001, 2008, 2009,2010, 2013, 2014, 2017)

Hitherto no work has been done on the Cladocerans from Kalakkad Mudenthurai Tiger Reserve. The present paper deals with a collection of 16 species of Cladocerans belonging to 13 genera, 2 orders under 6 families from the zooplankton collections from Kalakkad Mudenthurai Tiger Reserve and forms the first report of Cladocerans from this Tiger Reserve.

Material and Methods:

Description of Study Area:

Kalakkad Mundanthurai Tiger Reserve (KMTR) the second largest protected area in Tamil Nadu is a part of Agasthyamalai biosphere reserve is located in the Southern Western Ghats in Thirunelveli district and Kanyakumari district. The Agasthyamala hills in the core of KMTR is considered one of the five centres of biodiversity and endmism in India by the IUCN. The Western Ghats, Agasthyamalai Sub-Cluster, including all of Kalakkad Mundanthurai Tiger Reserve, is under consideration by the UNESCO World Heritage Committee for selection as a World Heritage Site.The Kalakkad Mundanthurai Tiger Reserve was created in 1988 by combining Kalakad Wildlife Sanctuary (251 km^2) and Mundanthurai Wildlife Sanctuary (567 km^2), both established in 1962. The KMTR covers an area of 1601.54 Sq. km including the core area of 895 Sq. km and buffer area is 706.54 Sq.km. The co-ordinates of the reserve located between latitude 8° 25' and 8° 53' N and longitude 77° 10' and 77° 35' E, about 45 km west of Tirunelveli (Figure-1). KMTR forms the catchment area for 14 rivers and streams. Among these the major Rivers and streams are the Ganga, Thamirabaranai, Ramanadi, Karayar, Servalar, Manimuthar, Pachayar, Kodaiyar, Gadnanathi River and Kallar. Seven major dams-Karaiyar, Lower Dam, Servalar, Manimuthar, Ramanadi, Gadnanathi River and Kodaiyar-owe their existence to these rivers (Figure-2). In addition to the above-mentioned Rivers and dams there are other water sources such as ponds, pools, streams etc.

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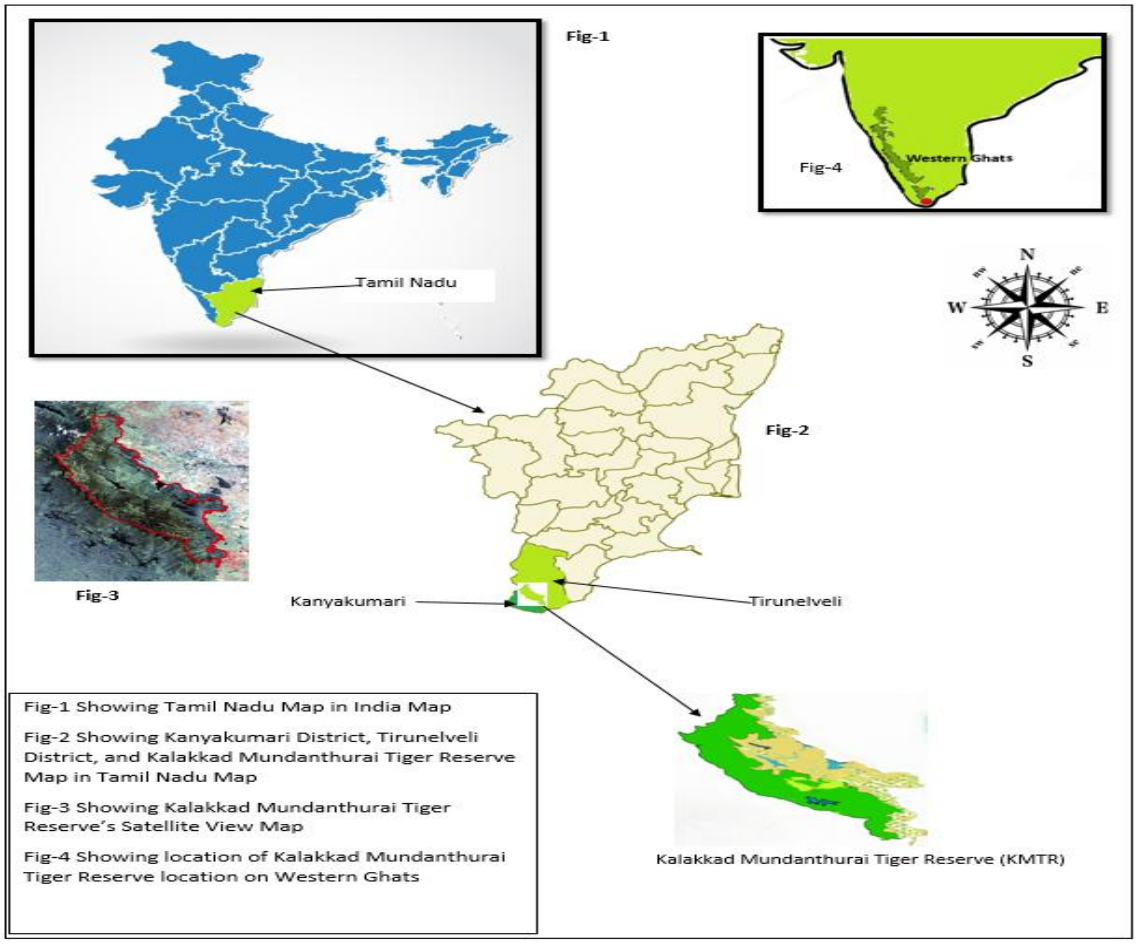

Figure: 1. Showing the location map of Kalakad Mundanthurai Tiger Reserve.

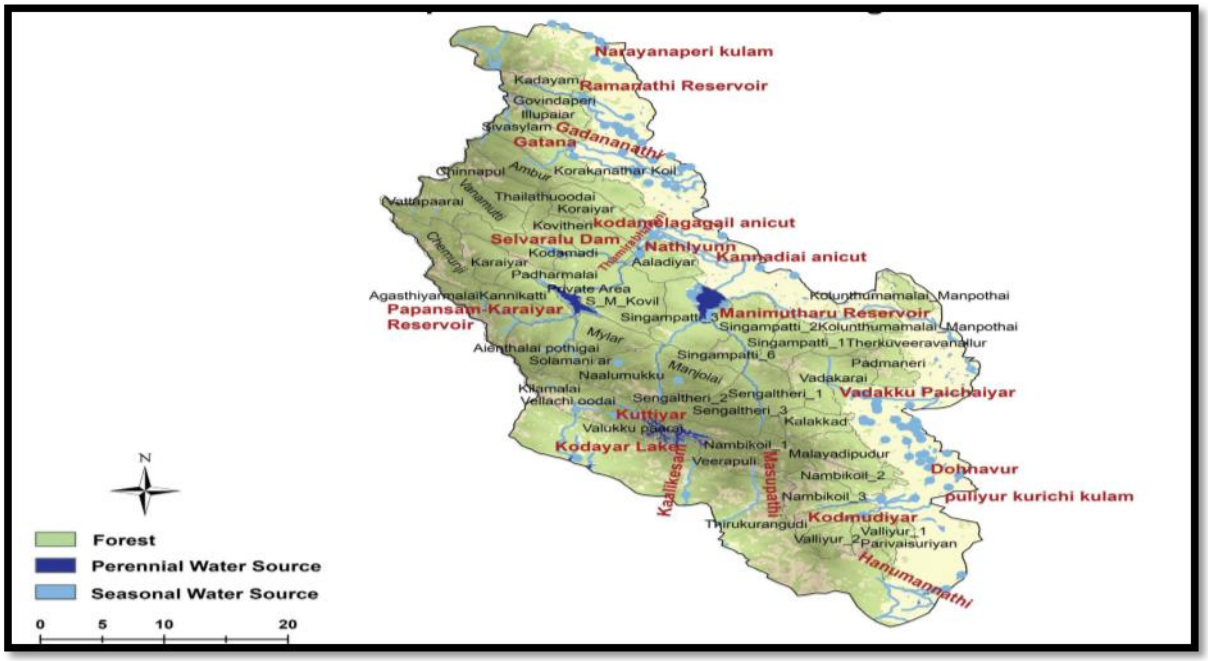

Figure: 2. Showing the water source map of Kalakad Mundanthurai Tiger Reserve (Source: Water Source Atlas of Tiger Reserves- National Tiger Conservation Authority, New Delhi)

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Methodology:

Samples were collected from 11 localities of Kalakad Mundenthurai Tiger Reserve (Tab-2). Qualitative sampling of zooplankton was done with the aid of plankton net of mesh size 60µ by sweeping it through water and also filtering by 50 liters of water through the net. The collected samples were preserved in 5% formalin- glycerol mixture. These were later sorted out using a dissection microscope. Detailed taxonomic identification was done with the help of a stereoscopic microscope having different magnifications. The standard literatures viz. Edmondson (1959), Michael & Sharma (1988),Smirnov (1971), Pennak, (1978), Sharma & Sharma (2008), Kotov (2011).

Result and Discussion:

SYSTEMATIC LIST OF CLADOCERANS RECORDED FROM KALAKAD MUNDENTHURAI TIGER RESERVE OF SOUTHERN WESTERN GHATS OF TAMIL NADU.

Class **BRANCHIOPODA**
Superorde**r CLADOCERA**
Order **CTENOPODA** Sars, 1865
Family **SIDIDAE** Baird, 1850
Genus *Diaphanosoma* Fischer, 1850
1. *Diaphanosoma sarsi* Richard, 1894
Order ANOMOPODA Sars, 1865
Family DAPHNIIDAE Straus, 1820
Genus *Ceriodaphnia* Dana, 1853

2. *Ceriodaphnia cornuta* Sars, 1885

3. *Ceriodaphnia quadrangula* (O.F. Muller, 1776)
Family **Moiniidae** Goulden, 1968
Genus *Moina* Baird, 1850

4. *Moina micrura* Kurz, 1874
Family **BOSMINIDAE** Baird, 1845 sensu Sars, 1865
Genus ***Bosmina*** Baird, 1845

5. *Bosmina (Bosmina) longirostris* (O. F. Muller, 1776)
Genus ***Bosminopsis*** Richard, 1895

6. *Bosminopsis dietersi* Richard, 1895
Family **MACRITHRICIDAE** Norman and Brady, 1867
Genus ***Macrothrix*** Baird, 1843

7. *Macrothrix laticornis* (Jurine, 1820) s.lat

8. *Macrothrix spinosa* King, 1853
Genus- Sars, 1862

9**.** *serricaudatus* **(**Fischer, 1849)
Family **CHYDORIDAE** Dybowski & Grochowski, 1894
Subfamily **ALONINAE** Dybowski & Grochowski, 1894
Genus ***Alona*** Baird, 1843 emend. Smirnov, 1971

10. *Alona costata* Sars, 1862 s.lat.

11 *Alona pulchella* King, 1853
Genus ***Coronatella*** Dybowski & Grochowski, 1894

12. *Coronatella rectangula* Sars, 1862 s.lat
Genus ***Chydorus*** Leach, 1816

13. *Chydorus sphaericus* (O.F. Muller, 1776)
Genus ***Alonella*** Sars, 1862

14. *Alonella (Alonella) excisa* (Fischer, 1854) s.lat.
Genus ***Pleuroxus*** Baird, 1843

15. *Pleuroxus aduncus* (Jurine, 1820) *s.lat*
Genus ***Dadaya*** Sars, 1901

16. *Dadaya macrops* (Daday, 1898)

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Table 1. Showing the collection localities of Kalakad Mundenthurai Tiger Reserve of Tamil Nadu.

Sl. No	Collection locality	Date	Latitude	Longitude	Altitude m
1	Pechiparai dam, Lower kodayaar, Tirunelveli dist	05.12.2018	N 08^0 28.689’	E 077^0 17.833’	329.6
2	Thalayaneri, Kalakkad R.F	25.09.2015	N 08^0 31.542’	E 077^0 29. 992’	728.3
3	Tamirakulam, Kalakad, Tirunelveli dist	12.12.2018	N 08^0 30.861’	E 077^0 32. 712’	523
4	Kovilammalpuram eri, on way to Nambicoil, Kalakad, Tirunelveli dist	13.12.2018	N 08^0 26.232’	E 077^0 31. 241’	406.6
5	Sengalamkuruchi eri, on way to Nambicoil, Kalakad,	13.12.2018	N 08^0 27.896’	E 077^0 34. 298’	370.4
6	Korayaar river, Downstream, Mundenthurai range, Thirunelveli dist	27-02-2014	N $08^0$65.896’	E 077^0 383’.	744
7	Thirukurangudi Peryakulam, on way to Nambikoil.	13-12-2018	N 08^0 26.219’	E 077^0 33. 601’	397.2
8	Agasthiyaar falls, Mundenthurai R.ange	24-09-2015	N$08^0$42·14.23’	E 77°21′49.07	1869
9	Sorimutha Iyanaar koil, Mundenthurai range	24-ix-2015	N$08^0$6556·14.23’	E 77.33’60.	500
10	Servalaar dam, Mundenthurai range, Tirunelveli dist	09.12.2018	N 08^0 41.344’	E 077^0 18.954’	694.3
11	Thalayanai, Kalakkad, Tirunelveli dist	11-xii-2018	N 08^0 31.549’	E 077^0 30. 242’	652.0

Table: 2 Showing the family wise % composition of Cladocera recorded from Kalakad Mundenthurai Tiger Reserve.

Sl.No	Name of Family	No of species	% composition
1	Sididae	1	6.25
2	Daphnidae	2	12.5
3	Moinidae	1	6.25
4	Bosminidae	2	12.5
5	Macrothricidae	3	18.75
6	Chydoridae	7	43.75

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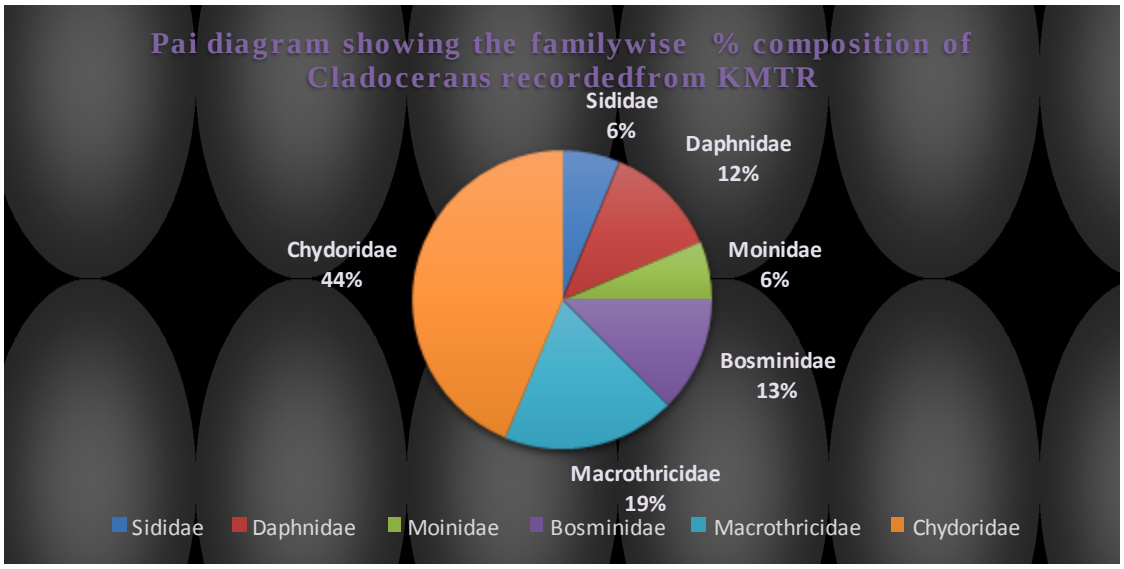

Figure: 3. Showing the familywise % composition of Cladocera recorded from Kalakad Mundenthurai Tiger Reserve.

Chydoridae represent the most dominant family with a representation.

Table: 3. Showing the occurrence of Cladocerans at the different collection localities of Kalakad Mundenthurai Tiger Reserve.

Sl. No	Name of species	Statios										
		1	2	3	4	5	6	7	8	9	10	11
1	*Diaphanosoma sarsi* Richard, 1894	*	*	*	*							
2	*Ceriodaphnia cornuta* Sars, 1885				*						*	
3	*Ceriodaphnia quadrangula* (O.F. Muller, 1776)	*										
4	*Moina micrura* Kurz, 1874	*				*						
5	*Bosmina (Bosmina) longirostris* (O. F. Muller, 1776)						*		*	*	*	
6	*Bosminopsis dietersi* Richard, 1895	*					*					
7	*Macrothrix laticornis* (Jurine, 1820) s.lat	*										
8	*Macrothrix spinosa* King, 1853	*				*						
9	*Streblocerrus serricaudatus* (Fischer, 1849)	*										
10	*Alona costata* Sars, 1862 s.lat.					*						
11	*Alona pulchella* King, 1853	*										
12	*Coronatella rectangula* Sars, 1862 s.lat									*		
13	*Chydorus sphaericus* (O.F. Muller, 1776)		*									
14	*Alonella (Alonella) excisa* (Fischer, 1854) s.lat	*										
15	*Pleuroxus aduncus* (Jurine, 1820) *s.lat*	*										
16	*Dadaya macrops* (Daday, 1898)	*										

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Table: 4. Showing the total species wise number of specimens and identified and the % composition of the of Cladocera specimens from the different localities of Kalakad Mundenthurai Tiger Reserve.

Sl. No	Name of species	No of specimens	% Composition
1	*Diaphanosoma sarsi* Richard, 1894	5	14.28
2	*Ceriodaphnia cornuta* Sars, 1885	2	5.71
3	*Ceriodaphnia quadrangula* (O.F. Muller, 1776)	1	2.86
4	*Moina micrura* Kurz, 1874	3	8.57
5	*Bosmina (Bosmina) longirostris* (O. F. Muller, 1776)	5	14.28
6	*Bosminopsis dietersi* Richard, 1895	1	2.86
7	*Macrothrix laticornis* (Jurine, 1820) s.lat	2	5.71
8	*Macrothrix spinosa* King, 1853	1	2.86
9	*Streblocerrus serricaudatus* **(**Fischer, 1849)	4	11.42
10	*Alona costata* Sars, 1862 s.lat.	2	5.71
11	*Alona pulchella* King, 1853	3	8.57
12	*Coronatella rectangula* Sars, 1862 s.lat	2	5.71
13	*Chydorus sphaericus* (O.F. Muller, 1776)	1	2.86
14	*Alonella (Alonella) excisa* (Fischer, 1854) s.lat	1	2.86
15	*Pleuroxus aduncus* (Jurine, 1820) *s.lat*	1	2.86
16	*Dadaya macrops* (Daday, 1898)	1	2.86

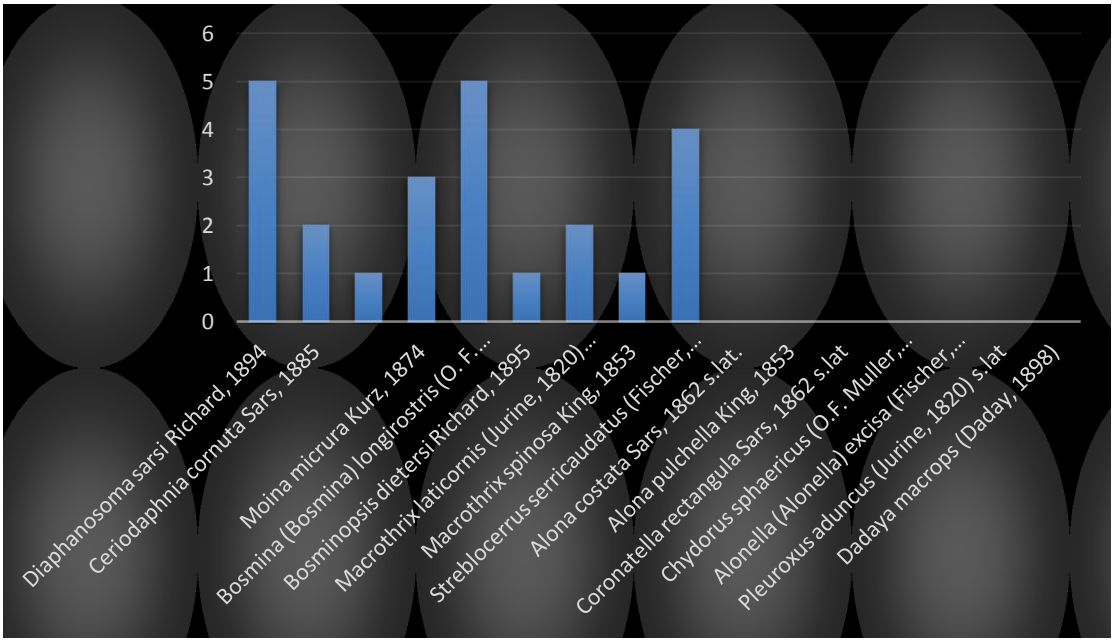

Figure: 4. Showing the total species wise number of Cladocera specimens and identified from the different localities of Kalakad Mundenthurai Tiger Reserve.

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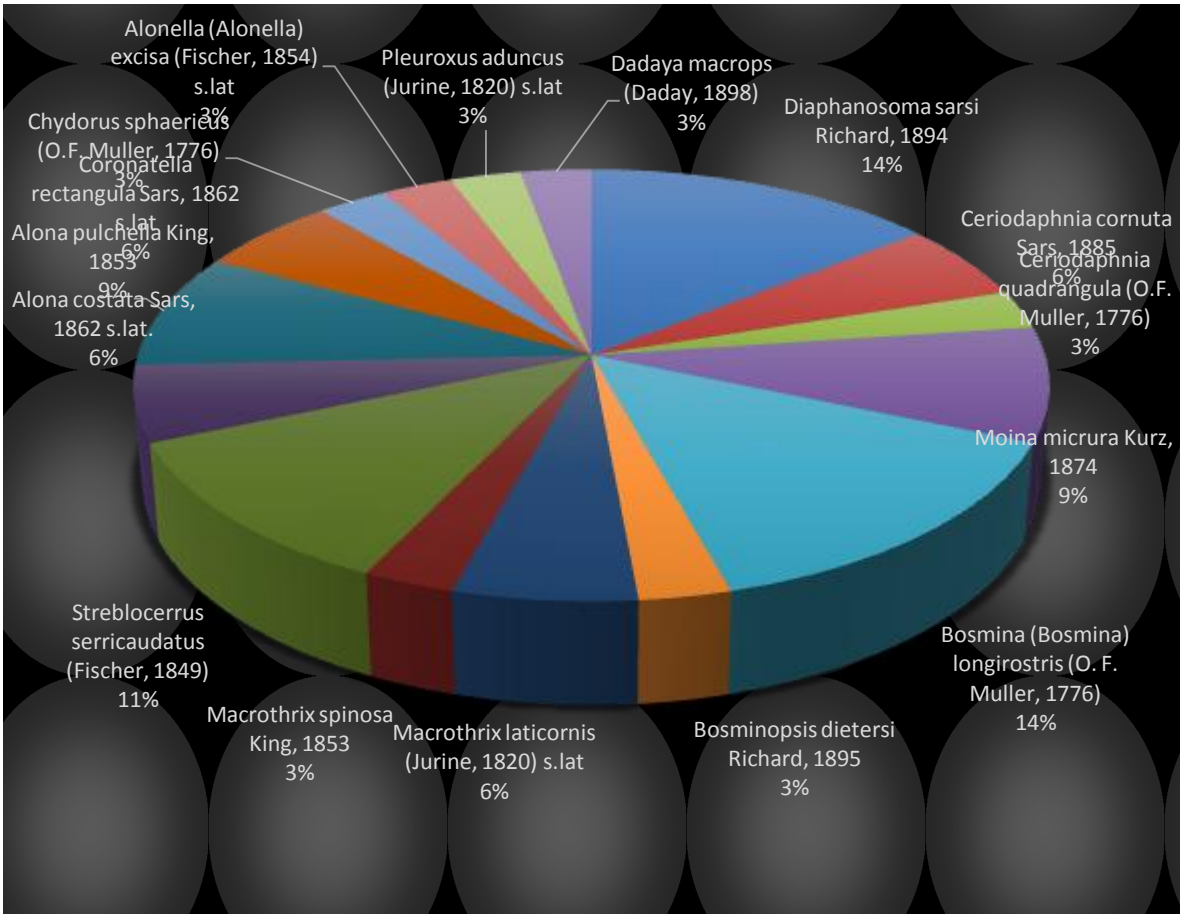

Figure: 5. Showing the total species wise % composition of Cladocera specimens and identified from the different localities of Kalakad Mundenthurai Tiger Reserve.

Chydoridae (44%) was the most frequently represented family with five genera and 7 species, followed by Macrothricidae (19%) (3 species). Families Daphnidae (12%), Bosminidae (12%) were represented by 2 species each, whereas Moinidae and Sididae (6%) were represented by only one species (Table-2, Figure-3). The species wise % composition of Cladocera specimens and identified from the different localities of Kalakad Mundenthurai Tiger Reserve were represented as (Figure-5). The *Diaphanosoma sarsi* and *Bosmina longirostris* were the most dominant species (Figure 4 and Table 4). The most frequent Cladocerans were *Diaphanosoma sarsi* (5 water bodies) and *Bosmina longirostris* (4 water bodies). The species *Ceriodaphnia cornuta*, *Moina micrura*, *Bosminopsis dietersi*, *Macrothrix spinosa* were present in two water bodies (Table-3). In the littoral zone the members of Chydoridae represent major part of cladocerans, as these organisms usually associate with macrophytes, periphyton or sediment (Wisniewski *et al*., 2002). Cladocerans prefer to live in clear waters Uttangi (2001). The smaller number of Cladocera may be due to over predation the higher trophic members like planktivorous fishes which regulate the zooplanktonic population in the water body.

Summary:
The present paper deals with a collection of 16 species of Cladocerans belonging to 13 genera, 2 orders under 6 families from the zooplankton collections from Kalakkad

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Mudenthurai Tiger Reserve. More studies will reveal a greater number of species.

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References:

Frey, D. G. (1967) Phylogenetic relationship in the family Chydoridae (Cladocera). Mar. Biol. Assoc. India., Proc. SAymposium on Crustacea, Part. I. P 29-37.

Michael, R. G and Sharma, B. K. (1988) Fauna of India and Adjacent countries, Indian Cladocera, (Crustacea: Branchiopoda: Cladocera). Ed. Director, Zoological Survey of India, Calcutta, pp.262.

Padhye. M. Sameer and Henri J. Dumont. (2015) Species richness of Cladocera (Crustacea: Branchiopoda) in the Western Ghats of Maharashtra and Goa (India), with biogeographical comments. J. Limnol., 74(1), 182-191.

Raghunathan, M. B and Kumar Suresh, R. (2002). Cladocera (Crustacea) of Tamil Nadu-Checklist and Bibilography. Zoos Print Journal. 17(12), 959-961.

Thilak Jayasree (2020) Crustacea: Branchiopoda: Cladocera. In Faunal Diversity of Biogeographic Zones of India: Western Ghats. p. 179-186. (Eds. Kailash Chandra, C. Raghunathan, P.M, Sureshan, K. A. Subramanian and Anjum N. Rizvi) (Published by Director, ZSI, Kolkata).

Chatterjee Tapas, Alexey A. Kotov, Kay Van Damme, S. V. A. Chandrasekhar and Sameer Padhye (2013) An annotated checklist of the Cladocera (Crustacea: Branchiopoda) from India. Zootaxa, 3667 (1), 1-89.

Sharma, B. K and Sharma, S. (2017) Crustacea: Branchiopoda (Cladocera). In current status of freshwater faunal diversity in India. (Eds. Kailash Chandra, Gopi K. C, Rao. D. V, Valarmathi, K and Alfred J.R.B). P. 199-223.

Baird, W. (1860) Description of the two new species of Entomostraceous Crustacea from India. Proc. Zool. Soc. London., 213-234.

Michael, R.G (1962) Seasonal events in natural population of cladoceran Ceriodaphnia cornuta Sars and observations on its life cycle, J. Zool. Soc. India., 14, 211-218

Navaneethakrishnam, P and Michael, R. G (1971). Egg production and relative growth in Daphnia carinata King. Proc. Ind. Acad. Sci., 73, 117-123.

Murugan, N and Sivaramakrishnam, K. G. (1973) The biology of Simocephalus acutirostratus (King) (Cladocera: Daphniidae). Laboratory studies of life span, instar duration, egg production, growth and stages in embryonic development. Freshwater, Biol., 3: 77-83.

Murugan, N and Sivaramakrishnam, K. G. (1976) Laboratory studies on the longevity, instar duration, growth, reproduction and embryonic development in *Scapholeberis kingi* Sars (1903) (Cladocera: Daphniidae). Hydrobiologia., 52, 129-134.

Murugan, N. (1975) Egg production, development and growth in *Moina micrura* Sharma, B. K. (1978). A note on freshwater cladocera from West Bengal. Bangladesh Journal of Zoology, 6, 149-151.

Battish, S. K. 1981. On some chydorid and macrothricid (Crustacea: Cladocera)from Punjab with the description of three new species. Researches on Crustacea, 11, 17-35.

Sharma, B.K. and Sharma, S. (1985) Contributions to the Cladoceran Fauna of West Bengal (Crustacea: Branchiopoda). Journal Meghalaya Science Society, 7 & 8, 10-24.

Sharma, B. K. and Michael, R. G. (1983). Redescription of *Alona taraporevalae* Shirgur & Naik, 1877 (Cladocera: Chydoridae: Aloninae). Rec. Zool. Surv. India., 81, 35-39.

Battish, S. K. (1992) Freshwater Zooplankton of India. Oxford and IBH Publishing Co. Pvt., Ltd., New Delhi. 233 pp.

Venkataraman, K. (1983) Taxonomy and Ecology of Cladocera of southern Tamil Nadu, Ph.D. thesis. Madurai Kamaraj University, India. pp.1-190.

Venkataraman, K. (1991) Freshwater Cladocera of Little Andaman. Andaman.Sci. Assoc., 7 (2), 43 - 49.

Venkataraman, K. (1992) I. Cladocera of Keoladeo National park, Bharatpur and its environs. J. Bombay. Nat.Hist. Soc., 89, 79 – 26.

Venkataraman, K. (1993) Cladocera of Port Blair, Andaman. J. Andaman. Sci. Assoc., 8 (2), 133 – 137.

Venkataraman, K. (1994) Two new records of cladocera of the genera Echinisca Lievin and Disparalona Fryer from India. Journal of the Bombay Natural History Society, 91, 334–337.

Venkataraman, K. (1995). Cladoceran males from the Indian region. Journal of the Bombay Natural History Society, 92, 378– 385.

Venkataraman K. (1998). Three new records of Cladocera (Crustacea) from India. Journal of the Bombay Natural History Society, 95, 527–530.

Venkataraman, K. (1999) Freshwater Cladocera (Crustacea) of Southern Tamil Nadu. Journal of the Bombay Natural History Society, 96, 268–280.

Venkataraman, K. (2000) Freshwater Cladocera (Crustacea: Branchiopoda) of the Andaman and Nicobar Islands. Journal of the Bombay Natural History Society, 97, 67–73.

Venkataraman, K. and Das, S. R. (2000) Cladocera fauna of Tripura. State Fauna Series, 7 (4): 277 – 316, Zoological Survey of India.

Raghunathan, M. B. (1990) Seasonal studies on freshwater Cladoceraof Chingleput Tank, Tamil Nadu. Records of the Zoological Survey of lndia. 86(2), 253-259.

Raghunathan, M. B. (1995) Studies on certain tank ecosystems in Tamil Nadu India. In: Timotius, K. H. and F. Goltenboth (editors). Tropical Limnology. Vol. II. Satyawacana University Press, Salatiga, Indonesia.

Raghunathan, M. B and Ranae, P. D. (2001) Rotifers. In: Editor-Director, 2001. Fauna of Nilgiri Biosphere Reserve, Fauna of Conservation Area Series, 11: 1-330 (Published_Director, ZSI, Kolkata): p. 31-37.

Raghunathan, M. B and Kumar Suresh, R. (2003). Checklist of Indian Cladocera. Zoos Print Journal. 18(8), 1180-1182.

Sharma, S and Sharma, B.K. (2008). Zooplankton Diversity in Floodplain Lakes of Assam. Rec. zool. Surv. India, Occ. Paper No., 290, 1-307.

Sharma, B. K. and Sharma, S. (1999). Freshwater cladocerans (Crustacea: Branchiopoda: Cladocera). In: Fauna of Meghalaya: State Fauna Series, 4, 469–550. Zoological Survey of India, Calcutta.

Sharma, B. K. and Sharma, S. (2001). Contributions to the cladoceran fauna (Crustacea: Branchiopoda: Cladocera) of Bihar. Records of zoological Survey of India, 99, 31-43.

Sharma, S and Sharma, B. K. (2008) Zooplankton Diversity in Floodplain Lakes of Assam. Rec. zool. Surv. India, Occ. Paper No., 290, 1-307.

Sharma, B. K. and Sharma, S. (2009) Faunal diversity of Cladocera (Crustacea: Branchiopoda) of Loktak Lake (a Ramsar site), Manipur (N.E. India). Journal of the Bombay Natural History Society, 106, 156-161.

Sharma, B. K. and Sharma, S. (2010) Diversity of Cladocera (Crustacea, Branchiopoda) in Floodplain Lakes of Manipur, Northeastern India. Records of Zoological Survey of India, 110(4), 19-29.

Sharma, S. and Sharma. B. K. (2013). Faunal Diversity of Aquatic Invertebrates of Deepor Beel (a Ramsar site), Assam, northeast India. Wetland Ecosystem Series, 17, 1-226 + 18 plates. Zool. Surv. India,Kolkata.

Sharma, B. K. and Sharma, S. (2014) Faunal diversity of Cladocera (Crustacea: Branchiopoda) in wetlands of Majuli (the largest river island), Assam, northeast India. *Opuscula Zoologica*, Budapest, 45(1), 83-94.

Edmondson, W. T. (1959) Freshwater Biology (Ed. Ward & Wipple) 2nd ed. John Wiley and Sons, Inc., New York, 1194-1202.

Smirnov, N. N. (1971) The World Chydorid fauna. USSR Acad. Sci. Zool. Institute. Nova . Ser. No. 101. Leningrad. 539.

Pennak, R. W. (1978) Freshwater Invertebrates of the United States. The Ronald Press. Co., New York: 769 pp.

Wisniewski, M., Rocha, O. & Matsumura-TundisI, T. (2001) First record of *Alona setigera* Brehm, (Cladocera, Chydoridae) in the neotropical region. Rev. Bras. Biol. 61(4), 701-702. Sao Carlos.

Uttangi, J. C. (2001) Conservation and management strategy for the water fowls of minor irrigation tank habitats and their importance as stopover site in the Dharwad district, pp. 179-221. In: B.B.
Hosetti and M. Venkateshwaralu, (Eds.), Trends in wildlife and management. Daya Publishing house, New Delhi, India.

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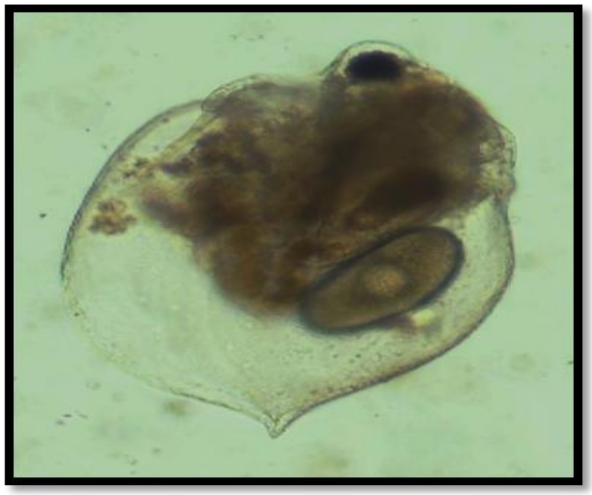
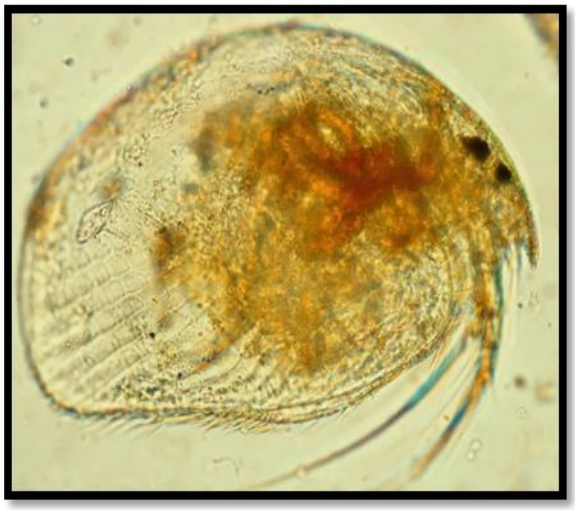
PLATE-1



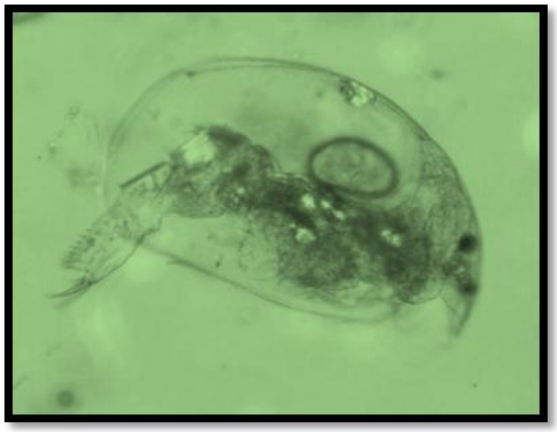
Ceriodaphnia cornuta Sars, 1885

Diaphanosoma sarsi Richard, 1894

Moina micrura Kurz, 1874



Alona costata Sars, 1862 s.lat.



Alona pulchella King, 1853

Bosmina (Bosmina) longirostris (O. F. Muller, 1776)

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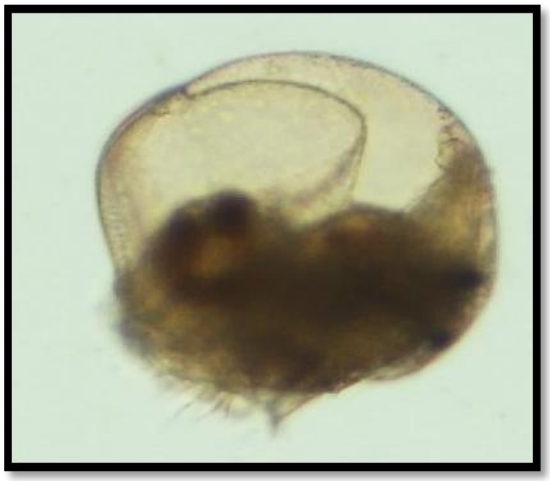
PLATE-2

Ceriodaphnia quadrangula (O.F. Muller, 1776)



Chydorus sphaericus (O.F. Muller, 1776)

Macrothrix spinosa King, 1853

Streblocerrus serricaudatus (Fischer, 1849)

Coronatella rectangula Sars, 1862 s.lat

Macrothrix laticornis (Jurine, 1820) s.lat

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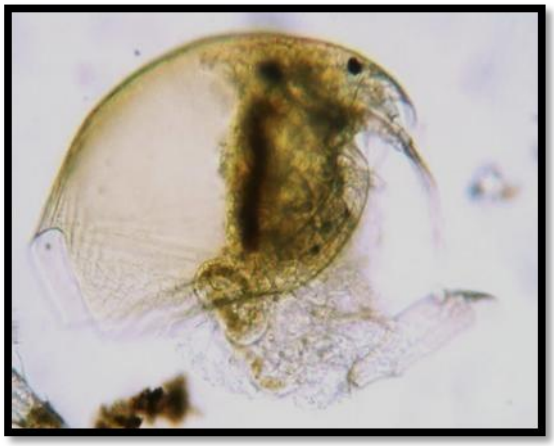
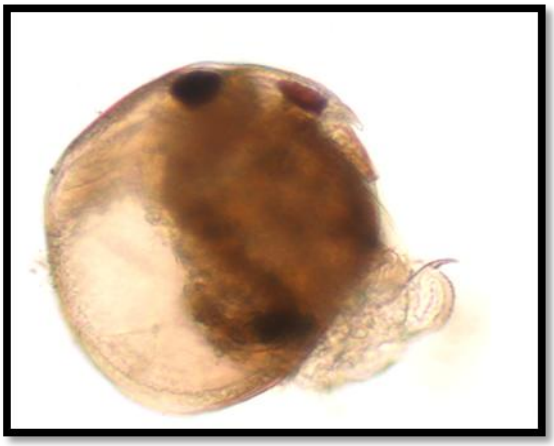
PLATE-3



Alonella (Alonella) excisa (Fischer, 1854) s.lat.



Dadaya macrops (Daday, 1898)

Pleuroxus aduncus (Jurine, 1820) s.lat