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First report of the high altitude cladoceran species *Streblocerus serricaudatus* (Fischer, 1849) S.LAT from the Western Ghats of India, Tamil Nadu

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Abstract
While studying the zooplankton collections from the Western Ghats of Tamil Nadu from 2015 to 2018, revealed a new report of Cladocera *Streblocerrus serricaudatus* (Fischer, 1849) along with other Cladocera species. It is the smallest species of the family Macrothricidae and postabdomen of this species is short and broad and has an incurvature at the middle.

Keywords: Zooplankton, Western Ghats, Tamil Nadu, Macrothricidae, Postabdomen

1. Introduction
The Cladocera or the 'Water fleas' which forms an important constituent of freshwater zoo planktonic organisms constitute an important link in aquatic food webs. Their size varies from 0.2 to 3.0 mm. The carapace encloses the trunk which is usually ornamented. The genus *Streblocerrus* was created by Sars (1882) [11] to accommodate the *Daphnia serricaudatus* (Fischer, 1849). Only two species of this genus have been reported from the world so far.

2. Materials and Methods
The Western Ghats are a chain of hills spread over1600 kms across six different Indian states *viz*. Kerala, Tamil Nadu, Karnataka, Goa, Maharashtra and Gujarat. In Tamil Nadu it covers the districts, *viz*. Coimbatore, Dharmapuri, Erode, Krishnagiri, Namakkal, Nilgiris, Salem, Tiruppur, Kanyakumari, Tirunelveli. The Nilgiris, Anamalai, Palani hills, Cardamom hills, Varasanadu, Andipetti and Agasthiyar hills are the major are the major hill stations of Western Ghats in Tamil Nadu. The present sample is collected from the Pechiparai dam and Lower kodayar dam, Kanyakumari district of Tamil Nadu as a part of Western Ghats survey. Pechiparai Reservoir forms the largest dam in the district of Kanyakumari in Tamil Nadu and is located at Pachiparai in the foothills of the Western Ghats. This Reservoir built across the Kodayar River at about 1.6 km below the confluence of the Kallar, Chittar and Kuttiyar tributaries which was formed by the construction of the Pachiparai Dam. This dam is built across the Kotai River is located 43 kilometers from the district capital Nagercoil. The catchment area of this dam is little in the ghats of Panakudi, Kalakad of Tirunelvei dist. The length of the dam is 425.5 meters and the height is 120.7 meters and its catchment area is 207.19 square kilometers and depth is 14.6 meters (48 feet). The co-ordinates of the locality of Lower Kodayar dam Power House II, is N-08030.012', E-077018.743, Alt. 358.2 Ft and of Pechiparai dam is 8.44249° N 77.31354°E, Alt 48 feet.

3. Methodology
Qualitative sampling of zooplankton was done filtering by 50 liters of water through the plankton net of mesh size 60µ and also by sweeping the net through water among aquatic weeds. The collected samples were preserved in 5% formalin-glycerol mixture. These were later sorted out using a dissection microscope and with the help of a stereoscopic microscope having different magnifications the detailed taxonomic identification was done. The standard literatures *viz*. Edmondson (1959) [6], Michael & Sharma (1988) [3], Smirnov (1992) [12], Chatterjee *et al*., (2013) [5].

Superclass Crustacea Pennant, 1777.
Class Branchiopoda Latreille, 1817.
Superorder Cladocera Latreille, 1829.
Order Anomopoda Sars, 1865.
Family Macrithricidae Norman and Brady, 1867.
Genus *Steblocerrus* Sars, 1862.
Streblocerrus serricaudatus (Fischer, 1849) S.LAT.

1849. *Daphnia serricaudata* Fischer. *Bull. Soc. Imp. Nat. Mosc*. 22: p.45-50, tab. IV, figs. 2-3.
1862. *Streblocerus minutus* Sars, Forhandl. *Videnskab. Selesk. Christinia* (1861), p. 284-285.
1988. *Streblocerrus serricaudatus* Michael & Sharma, Fauna of India. Indian Cladocera. P. 113-114, figs. 35, D-E.

Fig 1: Collection locality of Pechiparai dam

Fig 2: Kanyakumari district map showing Pechiparai dam

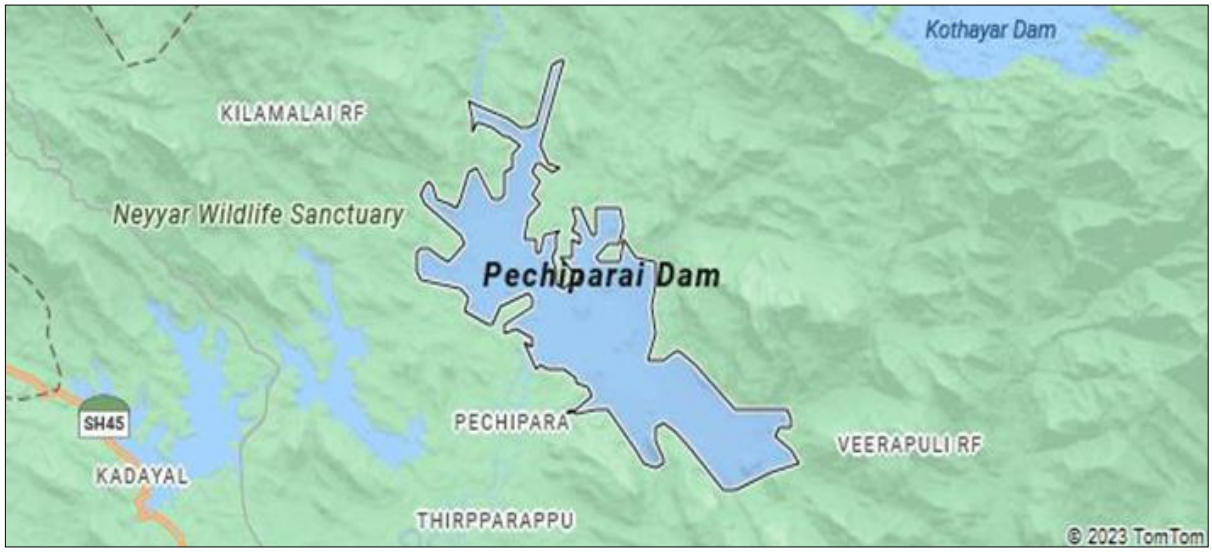

Fig 3: Google Map showing the Western Ghats of India and the collection locality Pechiparai dam in Tamil Nadu

3.1 Materials Examined 4

EXS., 04-vi-2015, Pechiparai dam, Lowerkodayaar, Mylaar, coll. S. Prabakaran; 3exs., 05-XII-2018, Lower Kodayaar, Power House II, Mothiramalai, Kanyakumari dist., coll. J. Thilak.

3.2 Diagnostic Characters

The genus *Streblocerus* comprises of the smallest Macrothricids characterised by a bent antennule bearing laterally a few long setae, convolutions in the gut and a short bilobed postabdomen. Small, rounded-oval shaped body with dorsum evenly arched, ventral surface produced in the middle, posterior end with indistinct protuberance. Valves reticulate, dorsal margin smooth and ventral margin with setae. Post abdomen with rounded anal part and with spines, preanal part serrate and bearing rows of fine setules on inner edge, claws small, curved and bears setae on its concave margin. Only females were recorded during the present study. Length-0.91-0.90mm.

3.3 Earlier Report

From India it is from Rajasthan (Biswas, 1971) [2], Manipur (Patil, 1976) [4]. It is Holarctic, predominantly in its northern portion, but some unrevised populations are found in Chile, New Zealand, Australia (Paggi 1976; Smirnov, 1992) [4, 12].

4. Distribution

Assam, Meghalaya, Manipur, Rajasthan, India.

5. Elsewhere

Europe and North America.

6. Acknowledgements

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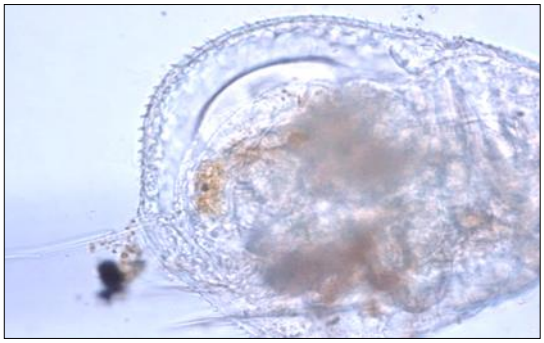

Fig 1: Posterior part of the body of *Streblocerrus serricaudatus* showing protuberances.

Fig 2&3: External structure of *Streblocerrus serricaudatus.*

Fig 4: Appendages

Fig 5: Carapace.

Fig 6: Bilobed Post abdomen.

Fig 7: Posterior part of the shell valve showing the reticulations.

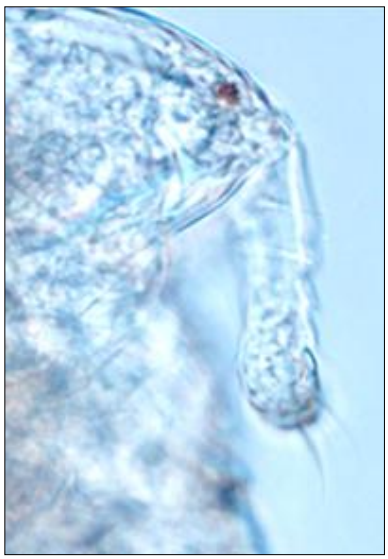

Fig 8: Antennule with 3 spines at the tip.

7. Conclusion

The study of Cladocera, commonly known as 'Water fleas', elucidates their vital role in freshwater ecosystems. Among these, the genus *Streblocerrus*, primarily represented by *Streblocerrus* serricaudatus, offers insights into the diversity within this group. The research, conducted in the Western Ghats of Tamil Nadu, employed meticulous methodologies including qualitative sampling and taxonomic identification. The findings underscored the unique morphological features of *Streblocerrus*, such as its bent antennule and characteristic post abdomen. Moreover, the study's documentation of distribution expands existing knowledge, confirming its presence in various Indian states. This comprehensive investigation enhances our understanding of freshwater biodiversity, enriching ecological discourse and conservation efforts.

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