

Fresh water Diatom flora of Penukonda region, Ananthapuramu District, Andhra Pradesh, India.

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ABSTRACT

Taxonomic study on Bacillariophyceae from South India was carried out by many workers. Literature on taxonomic studies of Diatoms elucidates that only a few taxa have been reported from Andhra Pradesh. Floristic studies on Diatoms have been carried out in Penukonda, which is historically known as a summer resort of Emperor Sri Krishnadevarayulu. Twenty samples were collected during 2013-2015 and examined for diatoms. The investigation of samples yielded thirteen genera represented by twenty one species. All of them were recorded and described with photomicrographs. The following is the list genera with number of species, viz. *Cocconeis* (2), *Craticula* (2), *Cyclotella* (1), *Cymbella* (2), *Encyonema* (1), *Hantzschia* (1), *Navicula* (4), *Nitzschia* (3), *Rhopalodia* (1), *Sellaphora* (1) *Stauroneis* (2), *Surirella* (1) and *Synedra* (1). The genera *Stauroneis* (Nitzsch) Ehr. and *Craticula* Grunow are new and hitherto not reported from the state of Andhra Pradesh, represented with two species each viz., *S. amphicephala* Kütz. and *S. phoenicenteron* (Nitzsch) Ehr. and *C. accomodiformis* Lange-Bertalot and *C. acidoclinata* Lange-Bertalot & Metzeltin respectively. The taxonomic key along with descriptions are appended.

Key words: Diatoms, Penukonda region, Andhra Pradesh.

Biodegradation Of Low Density Polyethylene (LDPE) By Microalgae

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ABSTRACT

The presence of Polythene in the environment causes serious problems in wastewater treatment plants and pollution of groundwater and surface water leading to long-term environmental, economic and waste management problems. The present work is a small initiative to find if algae can degrade plastics dumped in the water bodies. LDPE sheets were cut and immersed in the fresh water sample in a conical flask and incubated for 45 days and biofilm analysis showed the growth of algae like *Chaetophora sp.*, *Colechaete sp.*, *Aphanochaete sp.*, *Oedogonium sp.*, *Scenedesmus sp.*, *Oocystis sp.*, *Oscillatoria sp.*, *Phormidium sp.*, *Chroococcus sp.*, *Chlorella sp.*, *Lyngbya sp.*, *Synechocystis sp.* *Arthrospira sp.* Spectral analysis of treated LDPE sheet showed some new peaks after the period of biodegradation. Increase in carbonyl index (CI) of the sample sheet indicated the formation of carbonyl groups. Water sample, in which the LDPE sheets were immersed, showed changes in physical and chemical qualities. LDPE powder used as carbon source was added in different concentrations to the medium and inoculated with *Chlorella sp.*, *Lyngbya sp.*, *Arthrospira sp.*, *Phormidium sp.*, *Synechocystis sp.* Growth of the cultures were estimated at periodic intervals. *Chlorella sp.* and *Synechocystis sp.* were able to grow and sustain high concentration of LDPE even for longer periods while *Arthrospira sp.* did not grow in high concentration of LDPE. *Phormidium sp.* and *Lyngbya sp.* could not prolong and tolerate for longer period.

Keywords: LDPE, biodegradation, microalgae

Cytotoxic Activity of Marine Algae from South west and South east Coasts of India.

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ABSTRACT

Cytotoxic activity of marine algae representing classes Chlorophyceae, Phaeophyceae and Florideophyceae from south east and south west coasts of India were evaluated using Cytotoxicity Assay with Brine Shrimp. From among the 46 species of algae tested, 7 species showed 100% mortality. Among Chlorophyceae, *Caulerpa sertularioides* exhibited 100% mortality. Among Phaeophyceae, *Hydrclathrus clathratus* and *Sargassum tenerrimum* exhibited 100% mortality. Regarding Florideophyceae, 4 species, i.e., *Gracilaria edulis*, *Halymenia* sp., *Hypnea valentiae* and *Portieria hornemanni* exhibited 100% mortality. *Caulerpa taxifolia* and *Chaetomorpha media* showed 95% and 87.5% mortality respectively. *Spatoglossum asperum* exhibited 96.67% cytotoxicity. Among the red algae *Halymenia floresia*, *Amphiroa anceps*, *Laurencia obtusa* and *Asparagopsis taxiformis* showed 90% toxicity. Six species of algae were found to be inactive. The results indicate that compounds with cytotoxicity are widely distributed among algal species.

Keywords: Marine algae, Brine shrimp lethality assay, Cytotoxicity.

Members of Euglenaceae in Kancheepuram District, Tamil Nadu, India – *Euglena* Ehrenb.

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ABSTRACT

Euglenophyceae is one of the most promising groups of algae which are gaining importance nowadays in terms of their biochemical constituents. Biotechnologists have started exploiting these members for food, fertilizer, cosmetics and fuel in recent times. The Taxonomic studies on the members of Euglenophyceae are comparatively poor in Tamil Nadu. The only comprehensive work on these members is that of Philipose who has contributed to the study of Indian Euglenophyceae by a series of publications from, 1982 to 1988. His study is based on the samples collected only from a very few localities in Tamil Nadu. Hence a thorough study of these members was taken up by collecting samples from different types of water bodies distributed throughout Tamil Nadu. The present work deals with these members collected from Kancheepuram District of Tamil Nadu. Critical examination of the morphological characteristics revealed the presence of 95 taxa of the Euglenophyceae distributed in eight genera. The genera with number of species in parenthesis are given below: viz., *Euglena* Ehr., (11), *Lepocinclis* Perty (23), *Phacus* Duj., (30), *Trachelomonas* Ehr., (25), *Strombomonas* Defl., (3), *Menoidium* Perty (1), *Entosiphon* Stein (1), *Euglenaria* Linton *et al.*, (1). Among these, six taxa of *Euglena* viz., *E. deses* Ehr., *E. ehrenbergii* Klebs, *E. variabilis* Klebs, *E. mutabilis* Schz., *E. rubra* Hardy are being reported for the first time from Tamil Nadu and *Euglena adhaerens* Matv., new to India.

Taxa Of Desmidiaceae From Tamil Nadu, India – *Euastrum* Ehrenberg Ex Ralfs

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ABSTRACT

Documenting freshwater algae of Tamil Nadu was initiated with the aim of exploring Desmids of various aquatic habitats from Tamil Nadu. Iyengar and Vimala Bai (1941) were the first to publish a paper on Desmids. Later, Perumal and Anand (2008) had done an exhaustive study that resulted in Manual of Freshwater Algae of Tamil Nadu. Desmid is one of the interesting groups of algae which is widely distributed around the Other countries. The present work was initiated in the year 2013, in order to explore the nature in search of the organisms of this particular group from Tamil Nadu. Out of 32 districts, 22 districts were explored for the taxa of Desmidiaceae. Among these districts, about 16 Genera were collected from Kanyakumari, 11 Genera from Kancheepuram, 10 Genera from Dindigul and Tiruvannamalai respectively., whereas, Tanjavur, Chennai, Thiruvannamalai had resulted in least number of Genera. The result of the present study reveals the presence of 20 genera of members of Desmidiaceae, viz., *Cosmarium*, *Staurastrum*, *Closterium*, *Euastrum*, *Arthrodesmus*. Of these genera, the taxa of *Euastrum* Ehrenberg numbering 21 are presented here. Out of these the following two taxa: *E.spondylosioides* Coesel & Meesters, *E.coeselii* Kouvets are found to be new to India and another 17 of the remaining taxa are found to be new to Tamil Nadu.

Key words: Desmidiaceae, *Euastrum*, Freshwater algae.

Taxa Of Desmidiaceae From Tamil Nadu, India – *Micrasterias* Agardh

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ABSTRACT

Desmids, a unique group of organisms with diverse morphology, are widely distributed in freshwater habitats. They act as bio-indicators of pollution-free ecosystem. A detailed collection of samples from freshwater habitats in 30 out of 32 districts of Tamil Nadu has resulted in identification of 10 taxa of *Micrasterias* in 26 samples collected from 9 districts. viz., 1. *M. alata* Wallich, 2. *M. americana* Ehrenberg ex Ralfs, 3. *M. crux-melitensis* Ralfs, 4. *M. denticulata* Brèbisson ex Ralfs, 5. *M. foliacea* Bailey ex Ralfs, 6. *M. mahabuleshwariensis* Hobson, 7. *M. papillifera* Brèbisson ex Ralfs, 8. *M. pinnatifida* Ralfs, 9. *M. radians* Turner and 10. *M. thomasiana* var. *indica* var. nov. Of these *M. papillifera* Brèbisson ex Ralfs is found to be a new report to India. Four taxa such as *M. alata* Wallich, *M. americana* Ehrenberg ex Ralfs and *M. crux-melitensis* (Ehrenberg) Trevisan and *M. denticulata* Brèbisson ex Ralfs are found to be new reports to Tamil Nadu. *M. thomasiana* var. *indica* var. nov is a new addition to the taxa of the genus *Micrasterias*. The distribution, description and a key for identification of the taxa of *Micrasterias* collected from Tamil Nadu are presented in this paper.

Key words: Desmids, *Micrasterias*, Freshwater algae.

New records of *Trachelomonas* Ehrenberg from India with surface features observed under SEM.

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ABSTRACT

Members of the Euglenophyceae are unicellular motile organisms. They are morphologically differentiated from other algae by the presence of pellicle, paramylum bodies, and unique characteristics of their motility. Members of this group are gaining much attention for their biochemical constituents, use as a source of bio-fuel and bio-plastic apart from playing major role in aquatic food chain. Bloom formation is one of the important ecological factors that indicate the presence of these members. Samples for the present study were collected from 30 districts in Tamil Nadu. Samples were examined with a Scanning Electron Microscope besides observing them under a compound microscope. Of these, the taxa of *Trachelomonas* Ehrenberg are presented here. A total number of 136 taxa are already reported to occur in India out of which 25 are recorded in Tamil Nadu. Of these 4 taxa such as *T. armata* var. *rangpurense* Islam et Muniruzzaman, *T. cordata* Roll, *T. curta* Cunha var. *minima* Tell et Zalocar and *T. hispida* (Perty) Stein emend. Deflandre var. *hispida* are new reports for India. Examination of the organisms with bright field microscopy and Scanning Electron Microscopy (SEM) were found to be useful in observing the surface details of lorica of the taxa presented here.

Keywords:

Euglenophyceae, SEM pictures of *Trachelomonas*; Lorica; fresh water algae of Tamil Nadu.