ORIGINAL RESEARCH ARTICLE

PLANKTON COLLECTION, PRESERVATION AND MOUNTING WITH CASE STUDY OF COASTAL WATERS OF DIGHA, BAY OF BENGAL

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ABSTRACT:

The current research paper deals with the study of plankton collection, preservation and mounting with case study of coastal waters of Digha, Bay of Bengal.

KEYWORDS: Plankton collection, Preservation, Mounting.

INTRODUCTION:

Phytoplanktons are the primary producers in the sea and act as the base of marine food chain. These are the indicator of water quality. Zooplanktons are the drifting primary consumers that feed on the phytoplankton of the marine ecosystem.

Sunlight and nutrients are the limiting factor for phytoplankton growth and reproduction. Nutrients are distributed throughout the water body, but sunlight is restricted only to the photic zone. Thus the planktons always try to float and stay near the surface layer of the water column. Planktons are classified in to the following types based on their size.

Femtoplankton – 0.02-0.2µm
Picoplankton – 0.2-2µm
Nanoplankton – 2-20µm
Microplankton – 20-200µm
mesoplankton – 0.2-20mm
Megaplankton – 20-200mm

Plankton- Collection, Slide Preparation, Counting, Identification:

The water samples should be collected using Niskin water sampler and about 8-10 litres of water should be filtered through the plankton net of varying mesh size based on requirement. The samples are preserved in 5% formaldehyde solution followed by the addition of 0.08ml of Lugol's iodine to 10ml of the sample. This can be preserved for several days. After at least 24hr of preservation the sample should be centrifuged at 1000rpm for 10minutes. Discard the supernatant and the pellet is to be collected in a watch glass for mounting. Take a drop of DPX on a clean and dry glass slide. Transfer one to two drops of processed sample over DPX and mount with a cover slip. The slide should be allowed to dry completely. After 48hr of drying the slide can be observed under a microscope for identification of planktons.

Sample collection from Coastal waters of Digha, Bay of Bengal:

Water samples were collected from the coastal waters of digha, Bay of Bengal in the month of November 2015, January, 2016 and March, 2016. Sampling was done bimonthly using Trawlers hired from Shankarpur jetty which is 13 kms from Digha Sea Beach. Plankton samples from the surface water were collected by using Niskin water sampler and plastic bucket. Around 8-10 litres of water was filtered through the plankton net. After collection the sample was filtered through plankton net of 50µ mesh size and immediately preserved in 5% formaldehyde solution. Then 0.08ml Lugol's iodine was added to 10ml of sample. This can be preserved for several days. After at least 24hr of preservation the sample was centrifuged at 1000rpm for 10minutes. The supernatant was taken out without disturbing the pellet. Then the pellet was collected in a watch glass for mounting. A drop of DPX mount was taken on a clean and dry glass slide. Over the DPX one to two drops of collected sample was placed and mounted with a cover slip. The slide was labelled properly and left for drying. After 48hr of drying the slide was observed under a microscope for identification of planktons.

Counting using Sedgwick - Rafter cell:

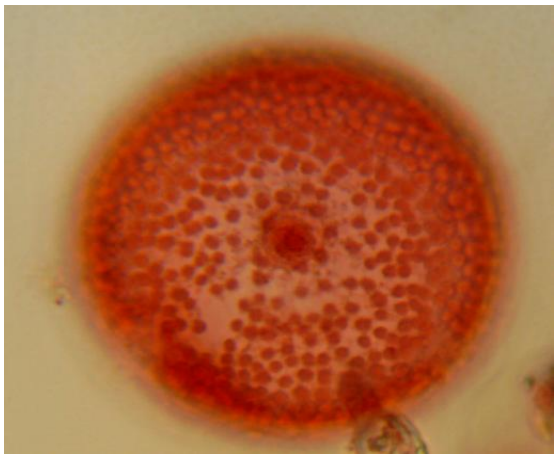
Sedgwick-Rafter cell is a rectangular cavity in the glass slide (50 x 20 x 1mm) having 1ml (1000mm3) capacity. The floor of the cavity is divided into 1 cubic mm square area. The concentrated sample was mixed properly and 1ml was transferred into the cell cavity. Cover slip was placed carefully avoiding air bubbles and allowed to settle for 15min. Planktons were counted under low magnification.

Identification:

Prepared slides were observed under compound microscope at magnification of 10x and 40x. Photographs of the observed planktons were taken with the help of a camera(Magnus Pro 3.7) which was connected to the microscope through an adapter and identified using various monographs, NIO Identification manual and from marinespecies.com web site.

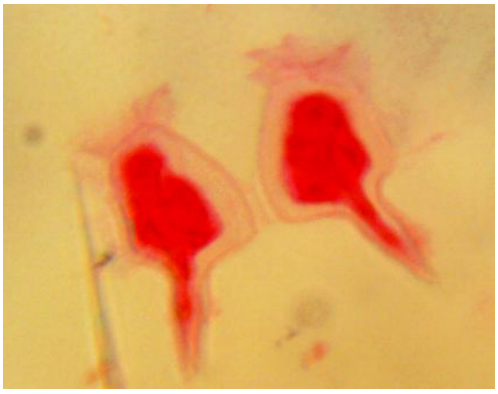
Shankarpur Jetty, Digha

Recorded planktons from Digha coast:



***Coscinodiscus sp.* (Ehrenberg, 1839) Valve view**

Systemic Position:		**Salient features:**
Phylum	Ocrophyta	1. Cells are circular with radiating or non radiating valves.
Class	Bacillariophyceae	2. Valves are convex.
Sub class	Coscinodiscophycidae	3. Outer layer is hard, porous and composed of silica.
Order	Coscinodiscales	
Family	Coscinodiscaceae	
Genus	Coscinodiscus	



***Dinophysis caudata* (Saville-Kent, 1881)**

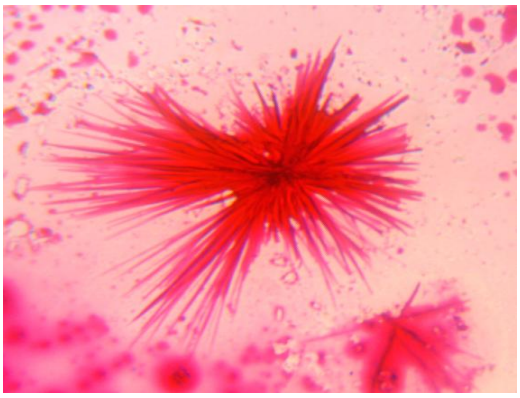
Systemic Position:		**Salient features:**
Phylum	Myzozoa	1. Cells have small epitheca and large hypotheca.
Class	Dinophyceae	2. Body girdle is surrounded by wing like structures.
Order	Dinophysiales	3. Presence of Sulcus is a prominent feature of Dinophyceae.
Family	Dinophysiaceae	
Genus	Dinophysis	
Species	caudata	

***Ceratium fusus* (Schrank, 1793,(Ehrenberg), Dujardin, 1841)**

Systemic Position:		**Salient features:**
Phylum	Pyrrophycophyta	1. Needle- shaped body.
Class	Dinophyceae	2. Epitheca long and tapers into slightly bent apical horn.
Order	Gonyaulacales	**3.** Hypotheca with left antapical horn usually longer than apical horn.
Family	Ceratiaceae	
Genus	Ceratium	

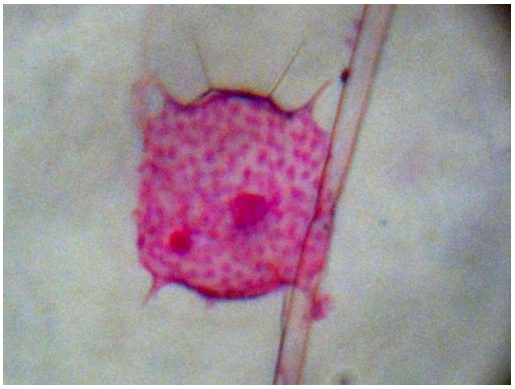
Pleurosigma sp. **(W. Smith, 1852)**

Systemic Position:		**Salient features:**
Phylum	Ochrophyta	1. Elongated cell with tapering ends.
Class	Bacillariophyceae	2. Central raphe is sigmoid.
Order	Naviculales	
Family	Pleurosigmataceae	
Genus	Pleurosigma	



Trichodesmium sp. **(Ehrenberg ex, Gomont, 1892)**

Systemic Position:		**Salient features:**
Phylum	Cyanobacteria	1. Forms blooms on the surface.
Class	Cyanophyceae	2. Presence of parallel trichomes.
Order	Oscillatoriales	
Family	Phormidiaceae	
Genus	Trichodesmium	



***Biddulphia mobiliensis* (With chromatophores) S.F Gray, 1821**

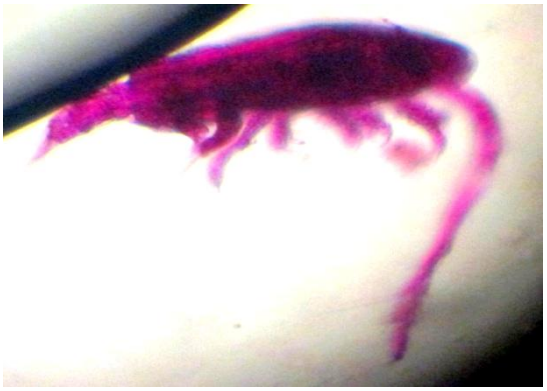
Systemic Position:		**Salient features:**
Phylum	Ochrophyta	1. Forms short chains.
Class	Bacillariophyceae	2. Surface of the valve has spines or ridges.
Order	Biddulphiales	
Family	Biddulphiaceae	
Genus	Biddulphia	

***Microsetella norvegica* (Boeck , 1865)**

Systemic Position:		**Salient features:**
Phylum	Arthropoda	1. Slender body laterally compressed.
Order	Harpacticoida	2. Urosome is as wide as prosome.
Family	Ectinosomatidae	3. Very long furcal setae.
Genus	Microsetella	
Species	norvegica	

***Protoperidinium sp.* (Bergh, 1882)**

Systemic Position:		**Salient features:**
Phylum	Myzozoa	1. Body is spherical or turnip shaped.
Class	Dinophyceae	2. Presence of short longitudinal flagellum
Order	Peridiniales	
Family	Protoperidiniaceae	
Genus	Protoperidinium	



***Acrocalanus longicornis* (Giesbrecht , 1888)**

Systemic Position:		**Salient features:**
Phylum	Arthropoda	1. Cephalosome is rounded.
Class	Maxillopoda	2. Teeth on the proximal portion are more in numerous.
Order	Calanoida	
Family	Paracalanidae	3. Armature of the distal portion of the terminal segment of 4th legs has few fine teeth.
Genus	Acrocalanus	
Species	longicornis	

***Tintinnid sp. (*Kofoid & Campbell, 1929)**

Systemic Position:		**Salient features:**
Phylum	Ciliophora	1. Vase shaped body.
Class	Oligotrichea	2. Outermost layer is known as Lorica.
Order	Choreotrichida	
Genus	Tintinnid	

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