

#### **4.1.2 Light Microscopically Illustration of Phytoplankton Species from Study Site**

Selected photographs of phytoplankton species identified during this study are shown in Plates 4.1 to 4.80. The plates represent species from families: Chaetocerotaceae, Rhizosoleniaceae, Coscinodiscaceae, Pleurosigmataceae, Pinnulariaceae, Amphipleuraceae, Mastogloiaceae, Stauroneidaceae, Biddulphiaceae, Triceratiaceae, Melosiraceae, Skeletonemaceae, Thalassiosiraceae, Lauderiaceae, Stephanodiscaceae, Thalassionemataceae, Amphiproraceae, Catenulaceae, Fragilariaceae, Bellerucheaceae, Leptocylindraceae, Lithodesmiaceae, Surirellaceae, Cymbellaceae, Corethraceae, Desmidiaceae, Zygnemataceae, Chladophoraceae, Peridiniaceae and Oscillatoriaceae.

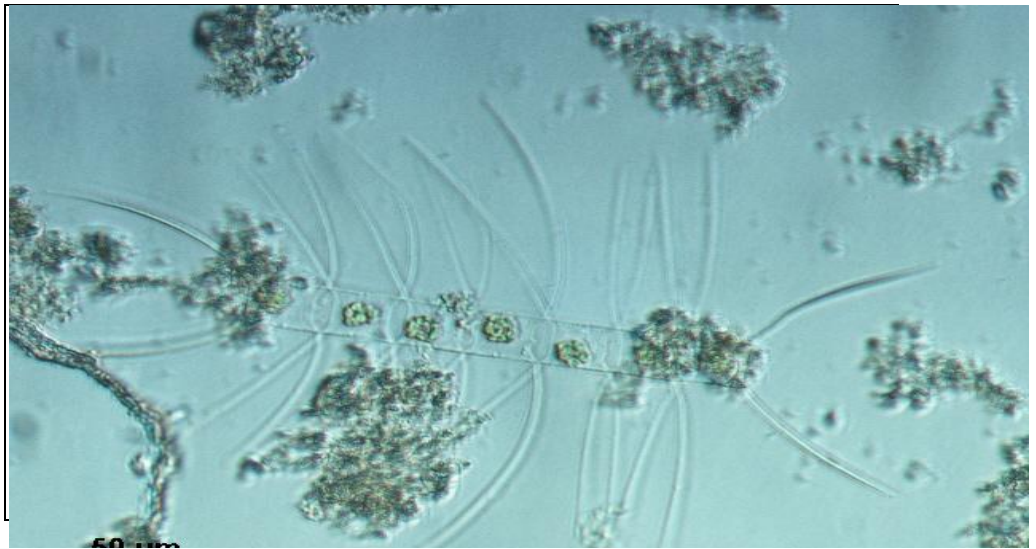


Plate 4.1: *Chaetoceros constrictum*

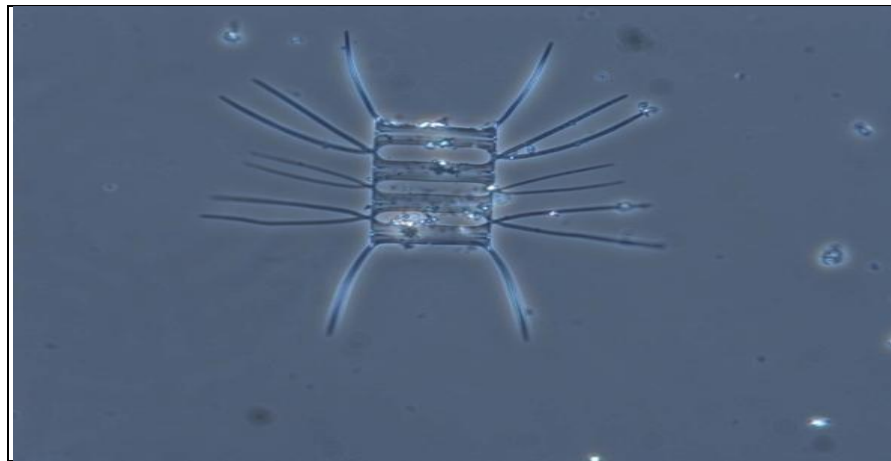


Plate 4.2: *Chaetoceros constrictus*



Plate 4.3: *Chaetoceros curvisetus*



Plate 4.4: *Chaetoceros debilis*

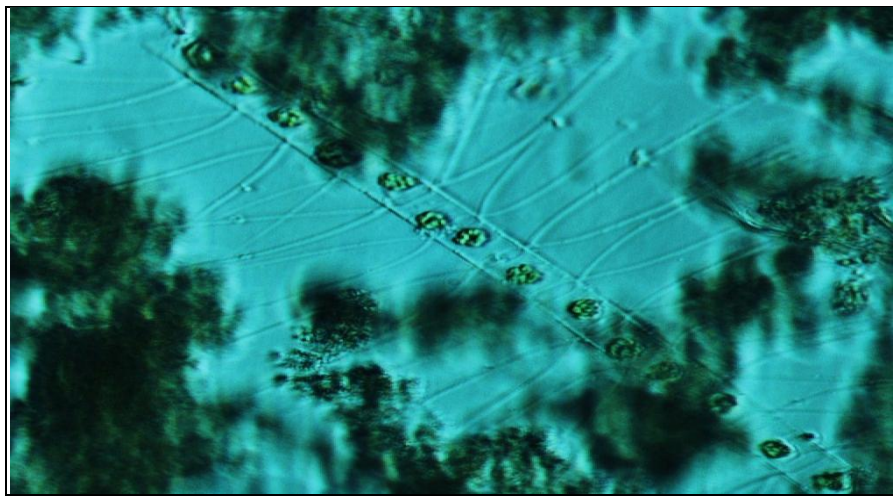


Plate 4.5: *Chaetoceros decipiens*

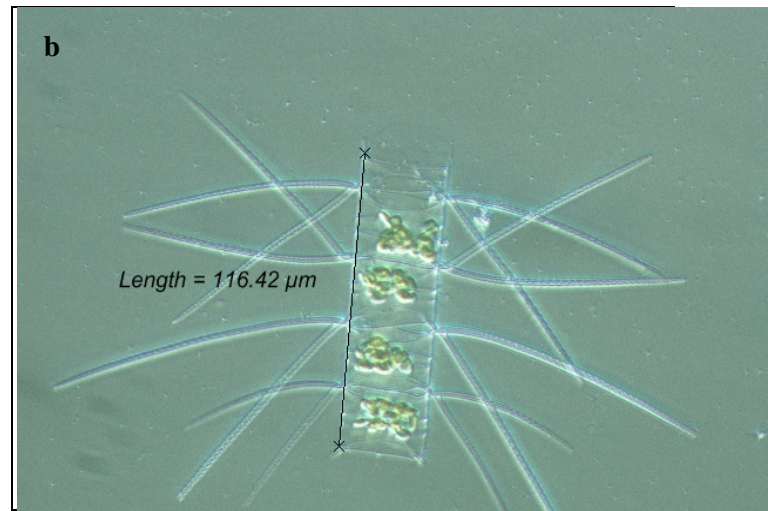
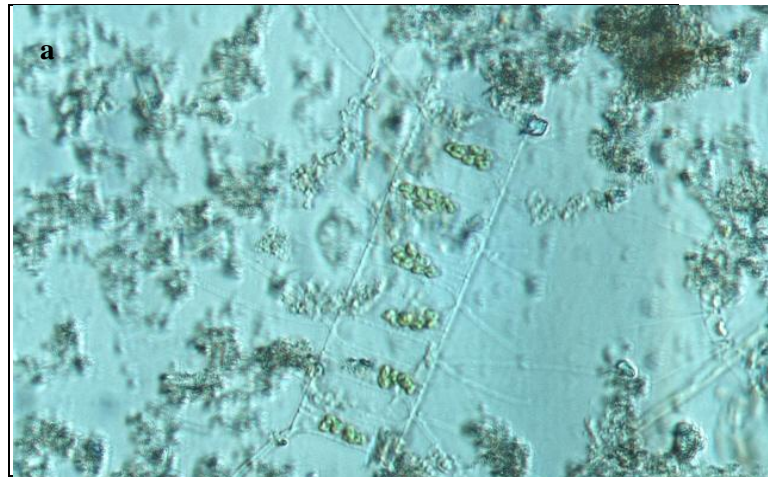


Plate 4.6 a) and b): *Chaetoceros lorenzianus*

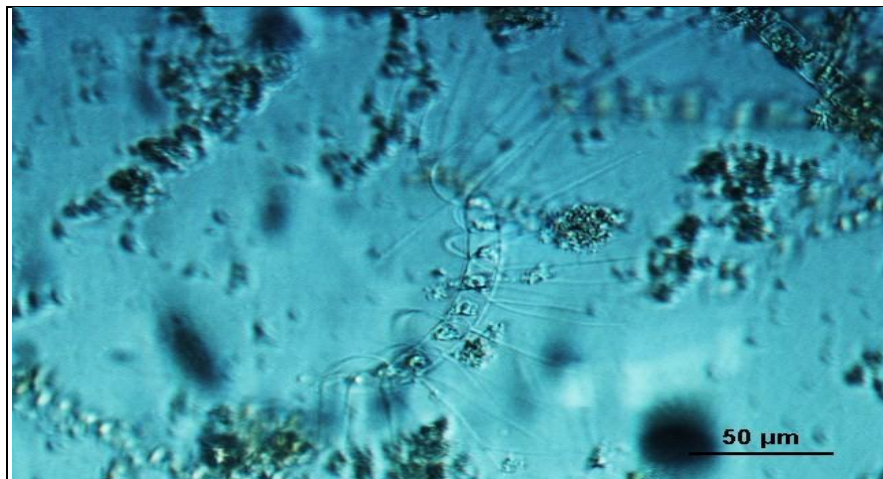


Plate 4.7: *Chaetoceros socialis*

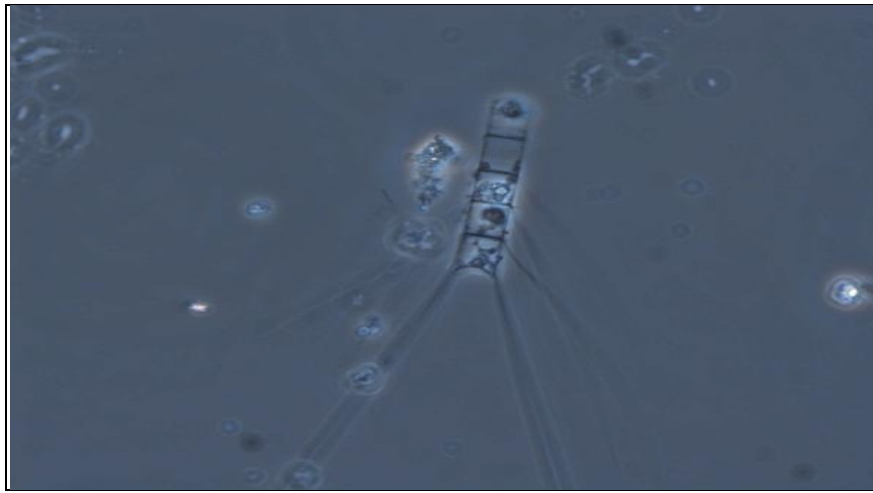


Plate 4.8: *Chaetoceros subtilis*

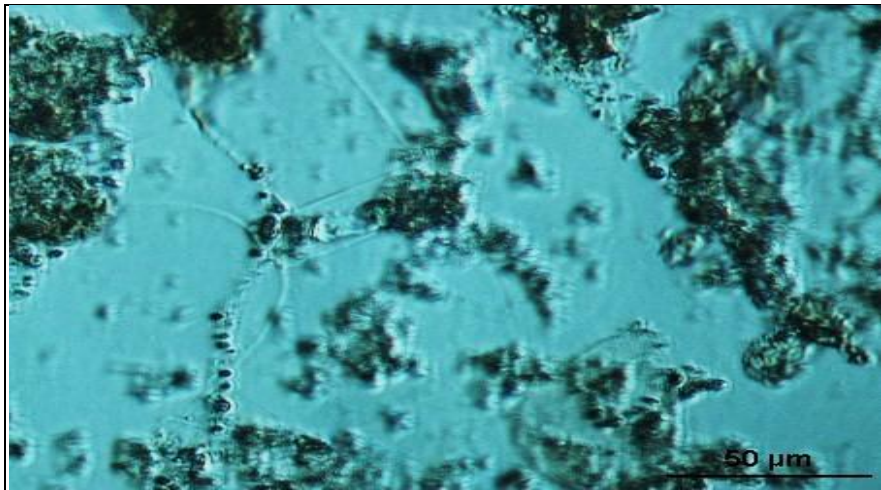


Plate 4.9: *Chaetoceros tenuissimus*

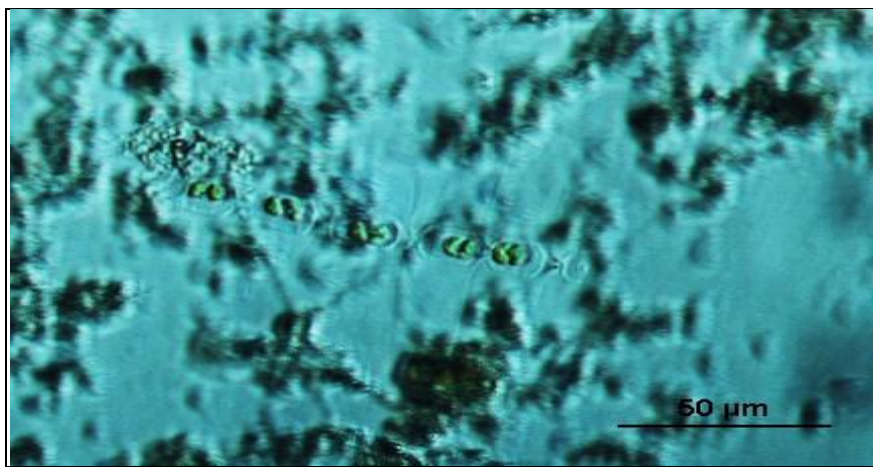


Plate 4.10: *Chaetoceros* sp. 1

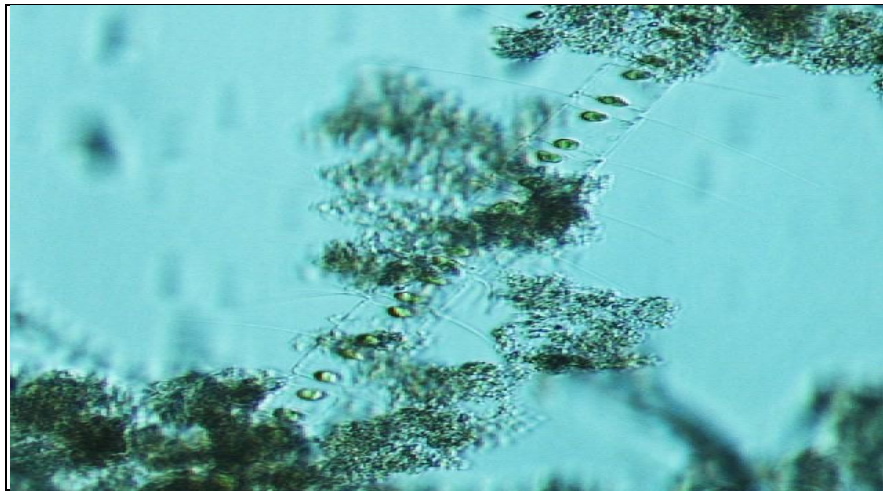


Plate 4.11: *Chaetoceros* sp. 2



Plate 4.12: *Chaetoceros* sp. 3



Plate 4.13: *Bacteriastrum comosum* (Girdle view)

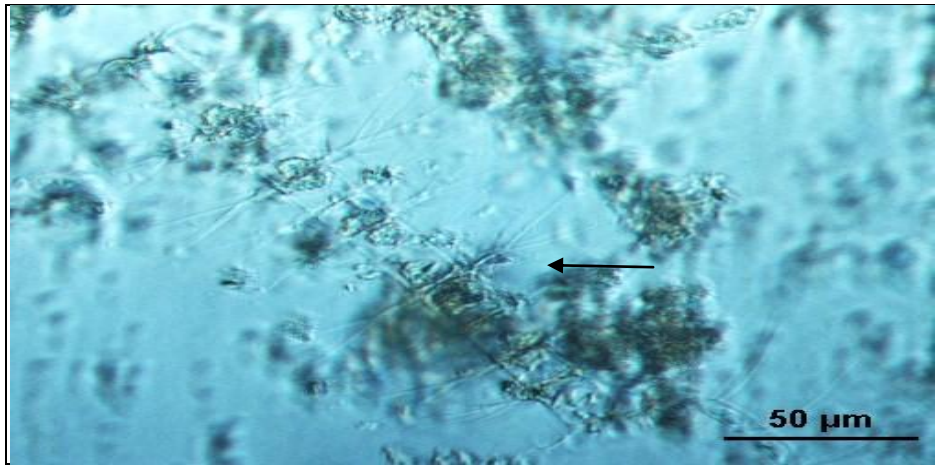


Plate 4.14: *Bacteriastrum delicatulum* (Girdle view)



Plate 4.15: *Bacteriastrum varians* (Valve view)

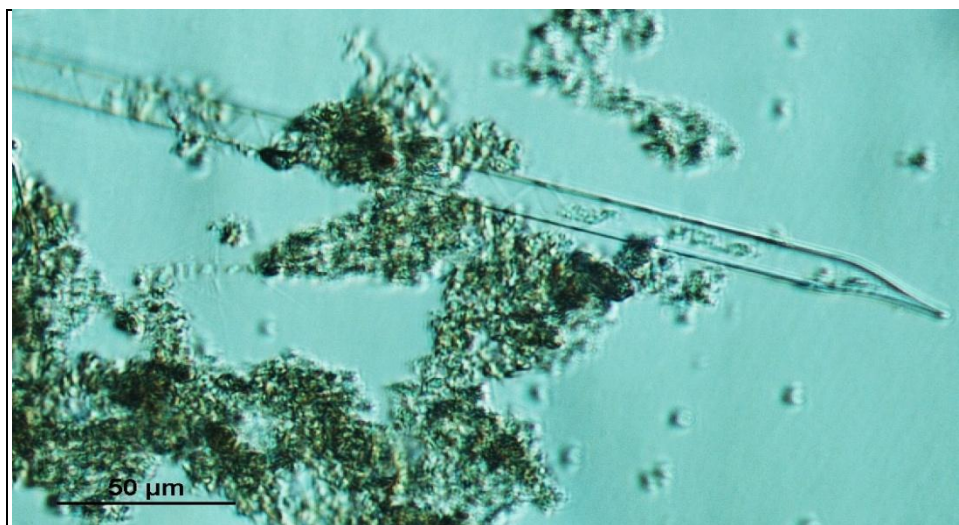


Plate 4.16: *Rhizosolenia alata*



Plate 4.17: *Rhizosolenia hebetata*

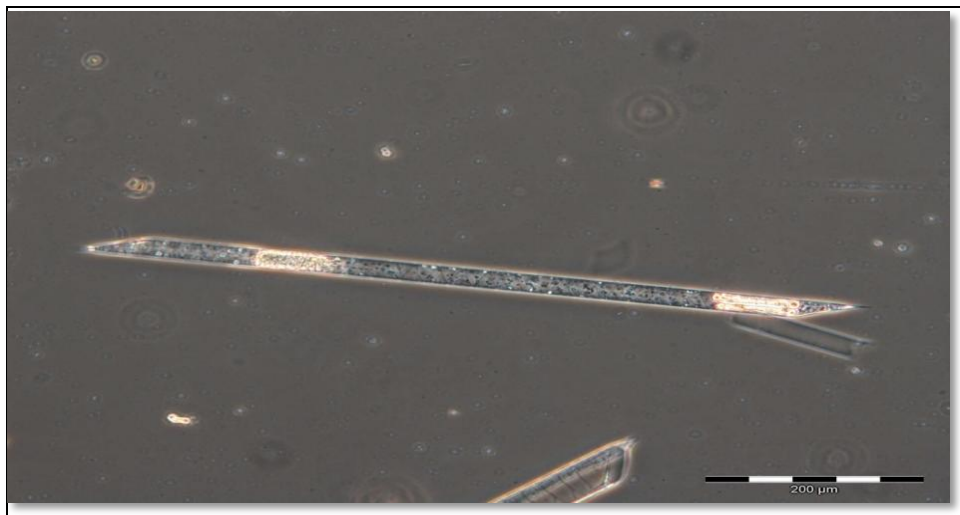


Plate 4.18: *Rhizosolenia imbricata*



Plate 4.19: *Rhizosolenia setigera*



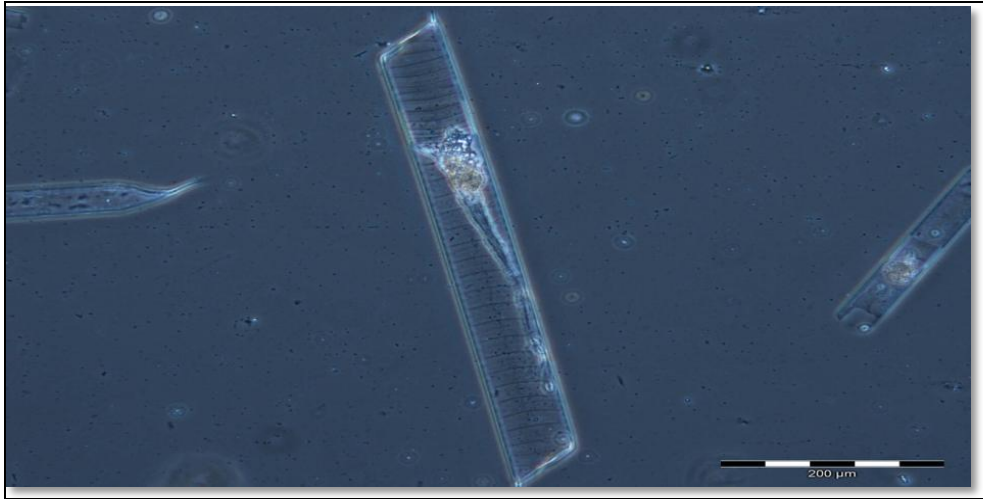


Plate 4.20: *Rhizosolenia striata*

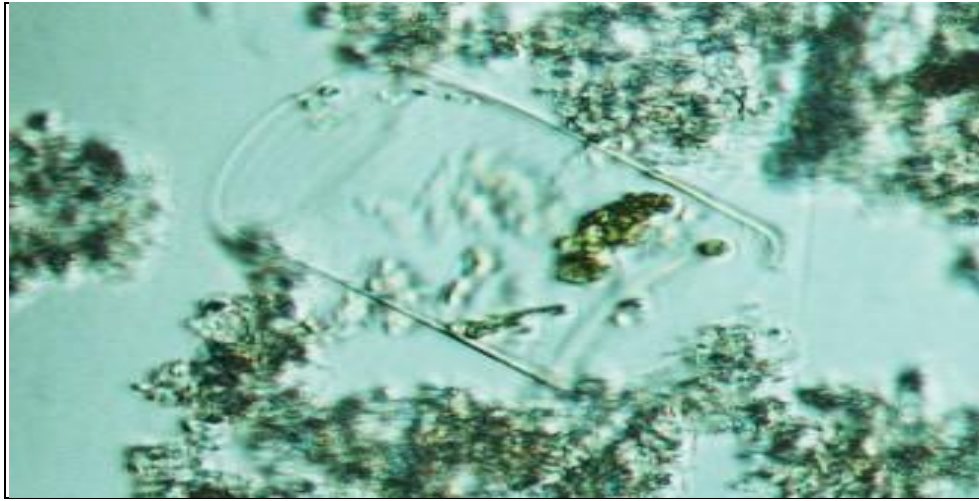


Plate 4.21: *Guinardia flaccida*

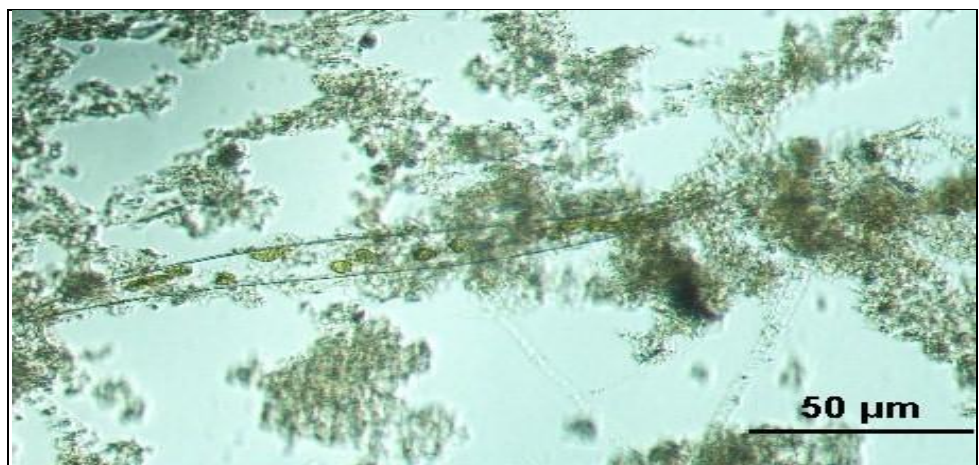


Plate 4.22: *Pleurosigma elongatum*

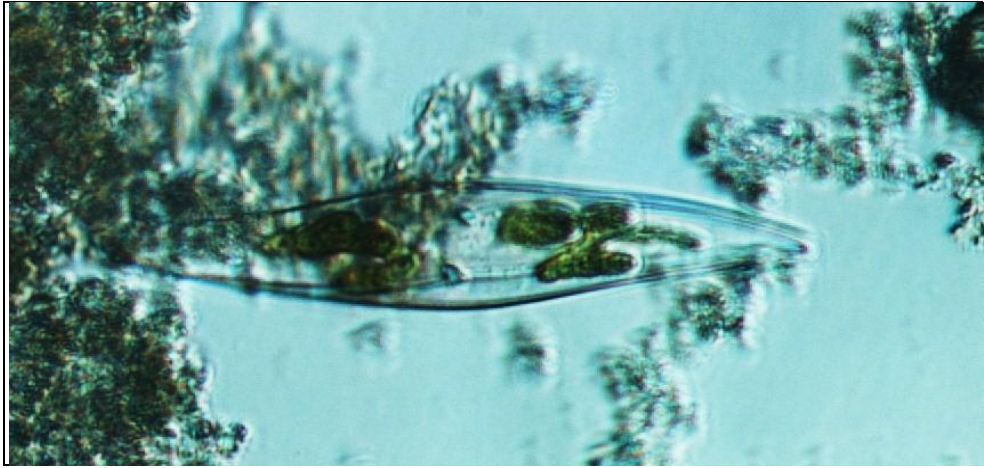


Plate 4.23: *Pleurosigma directum*



Plate 4.24: *Pleurosigma angulatum*



Plate 4.25: *Pleurosigma* sp. 1



Plate 4.26: *Gyrosigma scalproides*



Plate 4.27: *Gyrosigma spencerii*

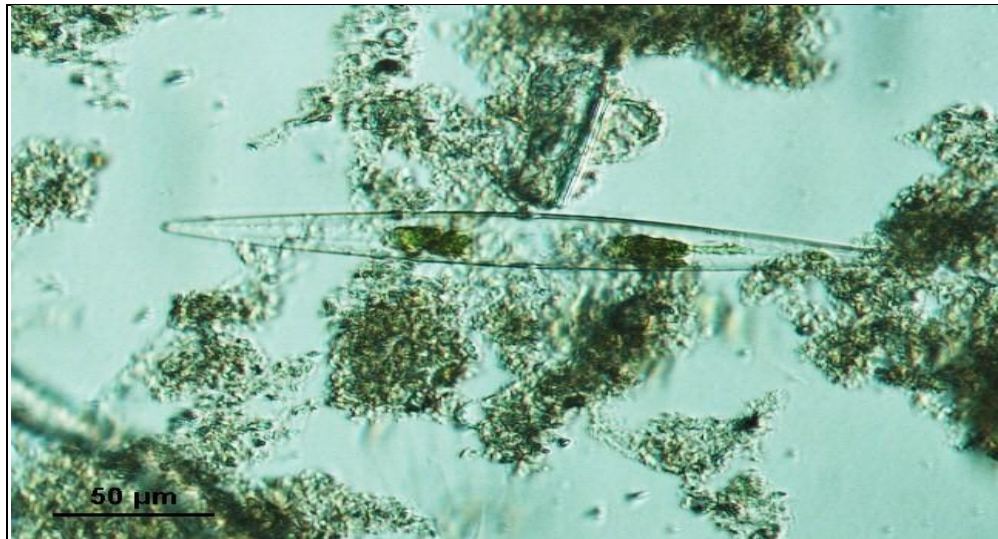


Plate 4.28: *Navicula peticolasii*

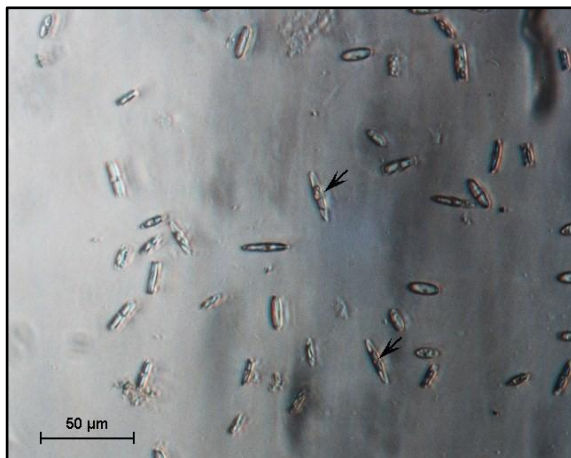


Plate 4.29: *Navicula radiosa*

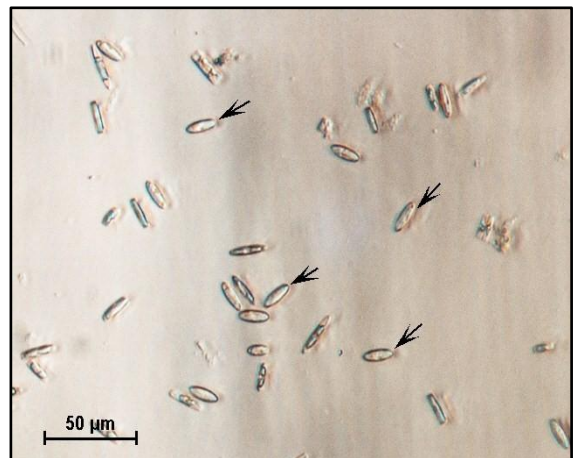


Plate 4.30: *Pinnularia acuminata*



Plate 4.31: *Pinnularia tabellaria*



Plate 4.32: *Pinnularia* sp.



Plate 4.33: *Coscinodiscus asteromphalus*



Plate 4.34: *Coscinodiscus centralis*



Plate 4.35: *Coscinodiscus concinnus* **a** valve view **b** girdle view



Plate 4.36: *Coscinodiscus gigas*



Plate 4.37: *Coscinodiscus lineatus*

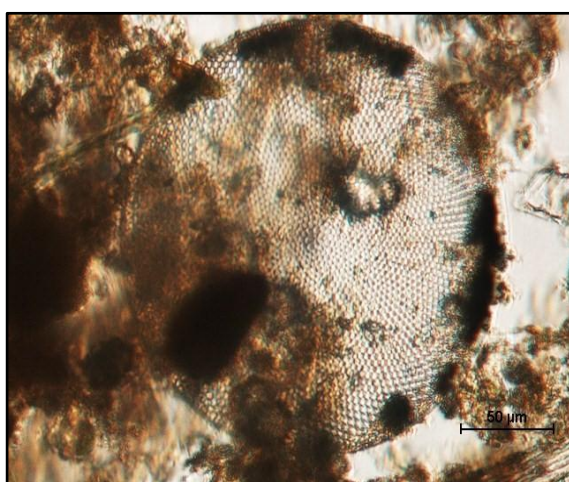


Plate 4.38: *Coscinodiscus rothii*

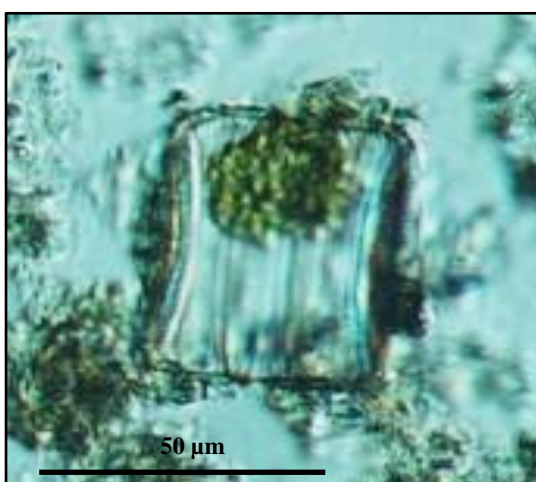


Plate 4.39: *Coscinodiscus* sp. 1 (girdle view)

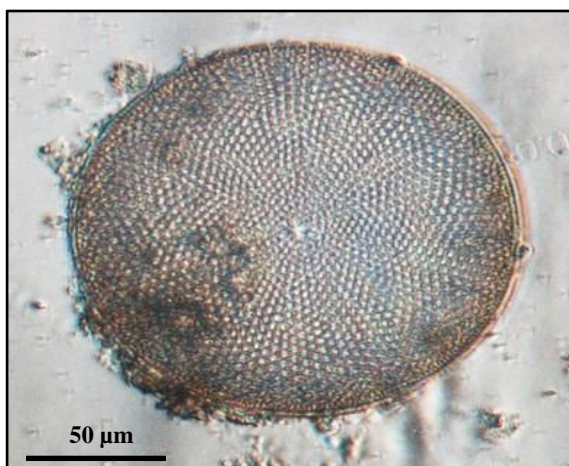


Plate 4.40: *Coscinodiscus subtilis*

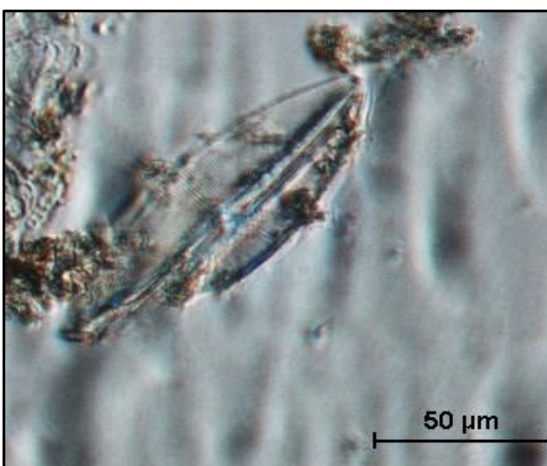


Plate 4.41: *Frustulia vulgaris*



Plate 4.42: *Stauroneis obtusa*



Plate 4.43: **a** *Biddulphia mobiliensis* **b** *Biddulphia longicuris*

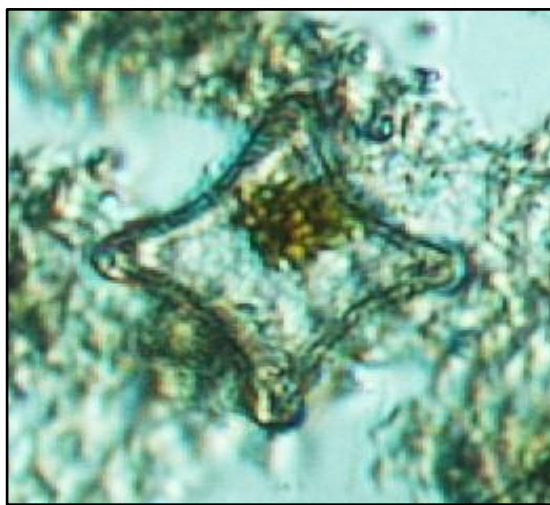


Plate 4.44: *Triceratium favus* f. *quadrata*

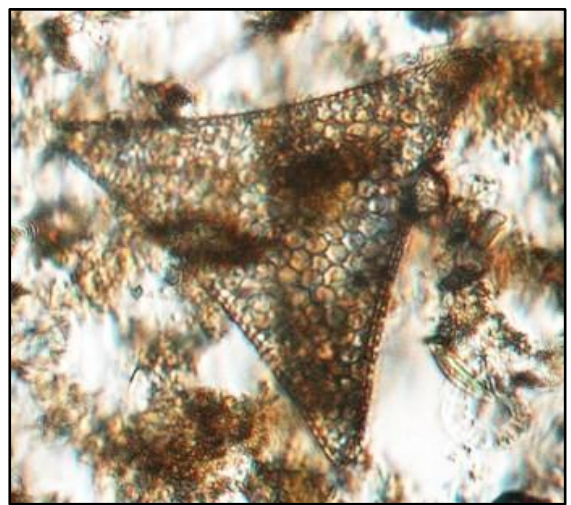


Plate 4.45: *Triceratium* sp.

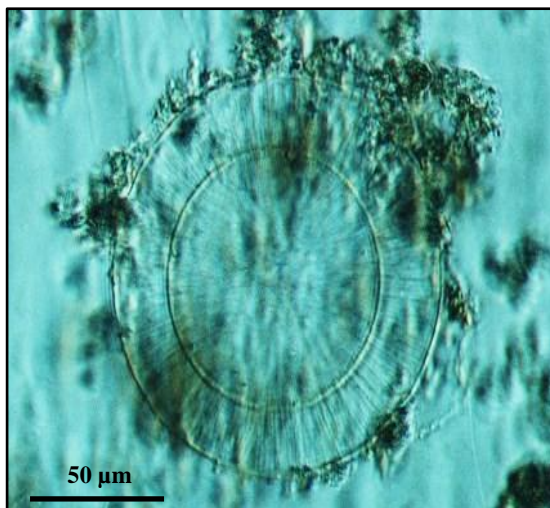


Plate 4.46: *Planktoniella sol*



Plate 4.47: *Cyclotella meneghiniana*



Plate 4.48: *Thalassionema nitzschooides*

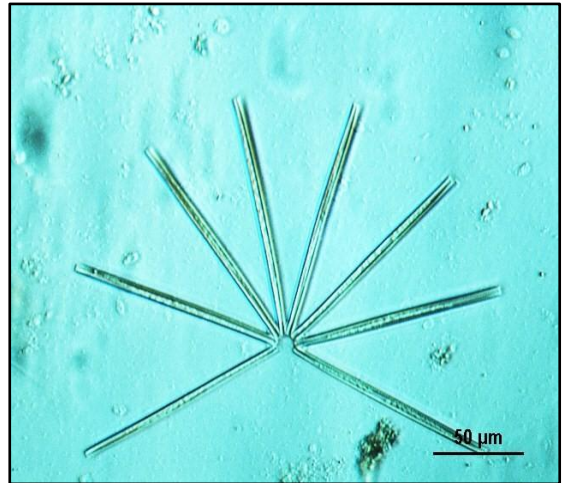


Plate 4.49: *Thalassiothrix frauenfeldii*



Plate 4.50: *Melosira moniliformis*



Plate 4.51: *Melosira nummuloides*



Plate 4.52: *Amphora quadrata*

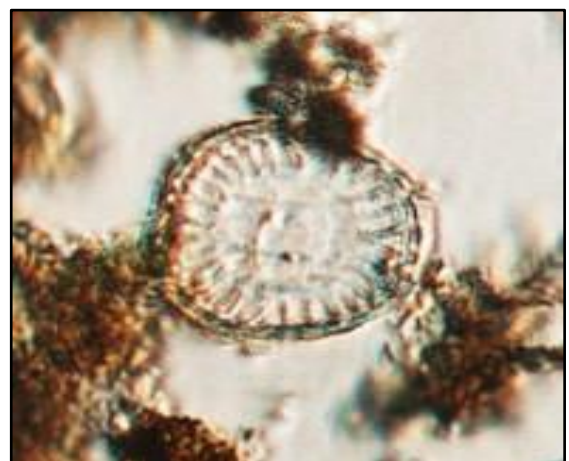


Plate 4.53: *Campylodiscus daemilianus*

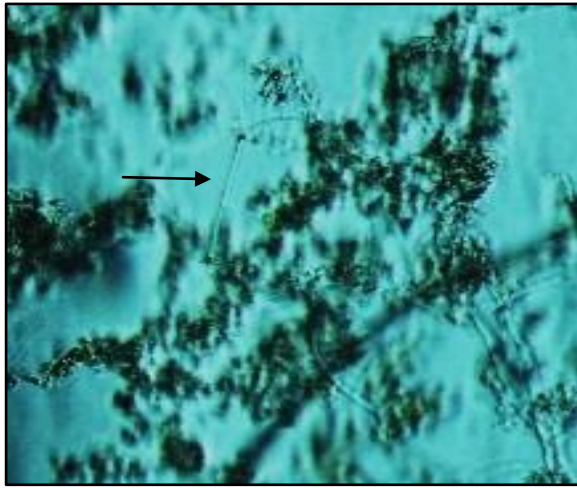


Plate 4.54: *Corethron criophilum*

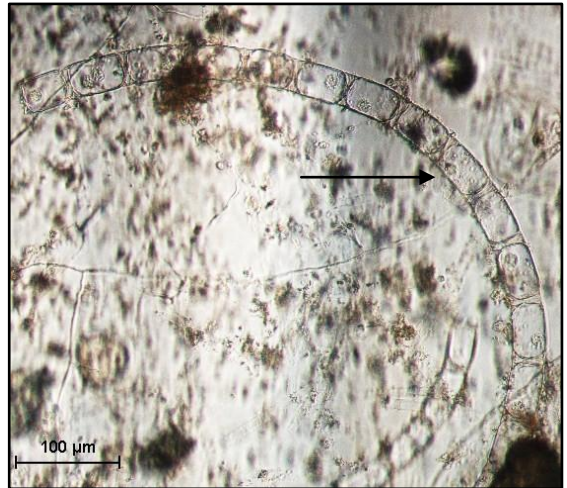


Plate 4.55: *Bellerochea horogicalis*



Plate 4.56: *Fragilaria pinnata* var *trigona*

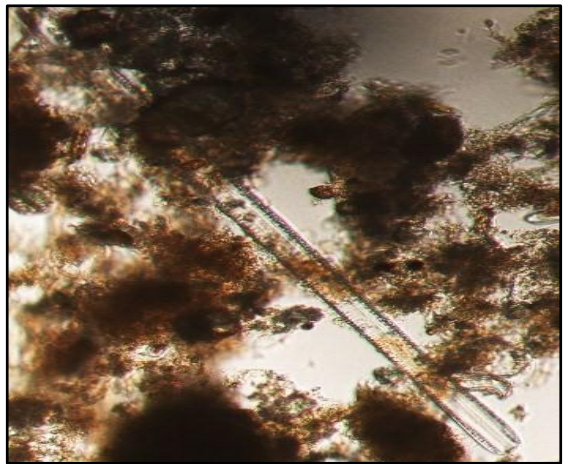


Plate 4.57: *Fragilaria* sp.



Plate 4.58: *Diatoma elongatum*

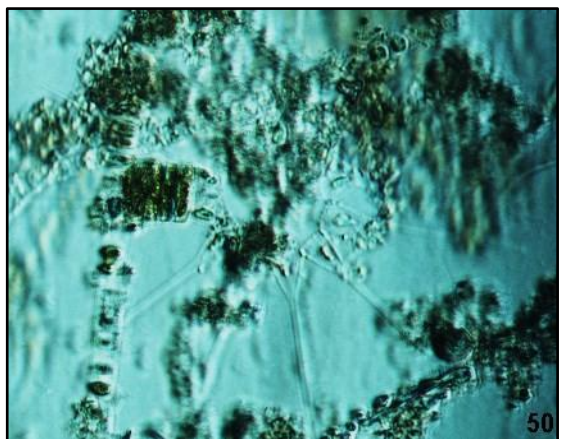


Plate 4.59: *Asterionellopsis glacialis*



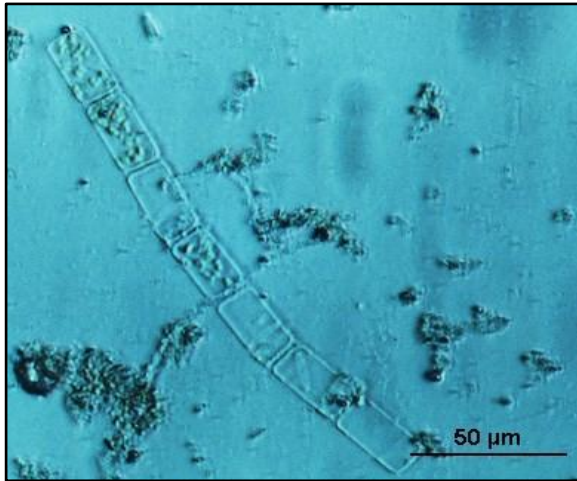


Plate 4.60: *Lauderia borealis*

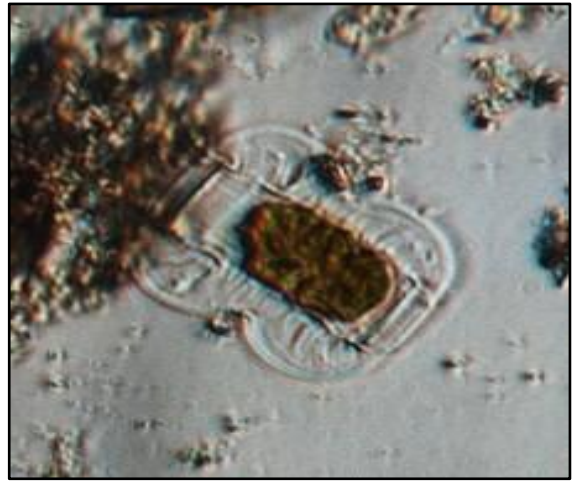


Plate 4.61: *Amphiprora alata*



Plate 4.62: *Leptocylindricus danicus*

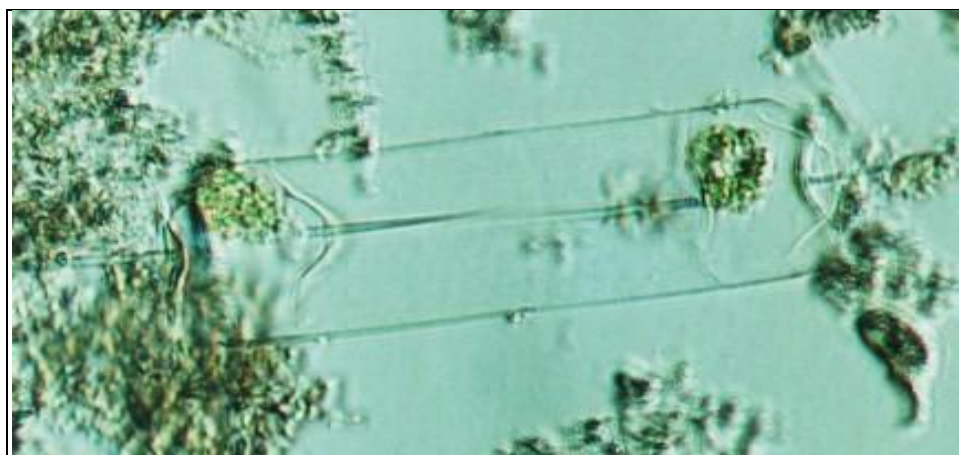


Plate 4.63: *Ditylum brightwelli*

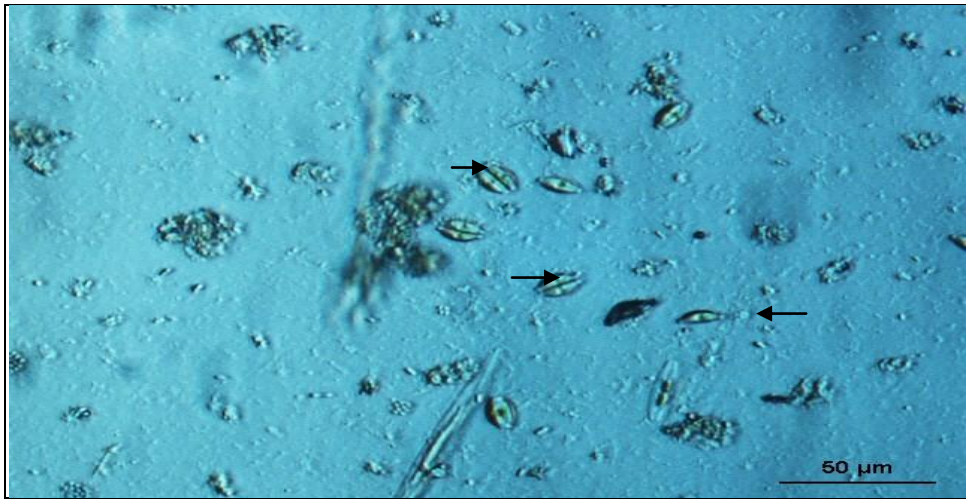


Plate 4.64: *Cymbella tumida*

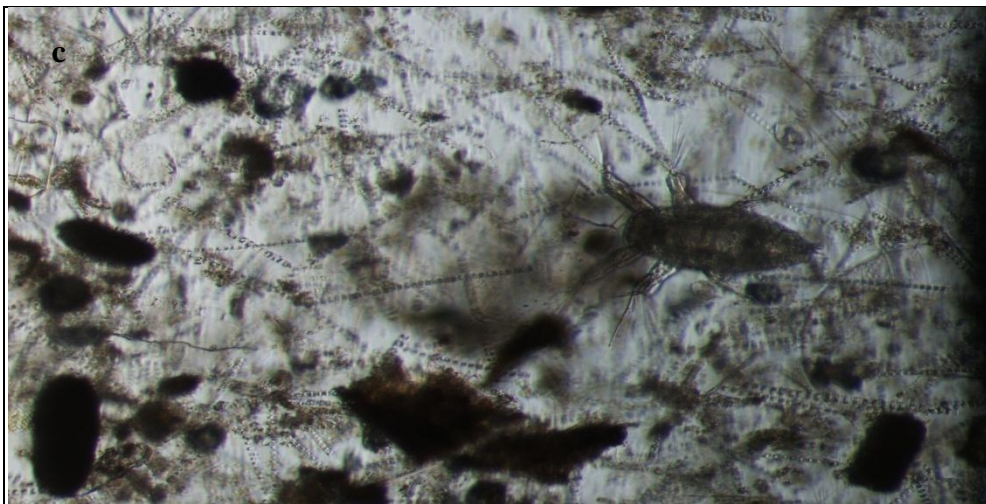
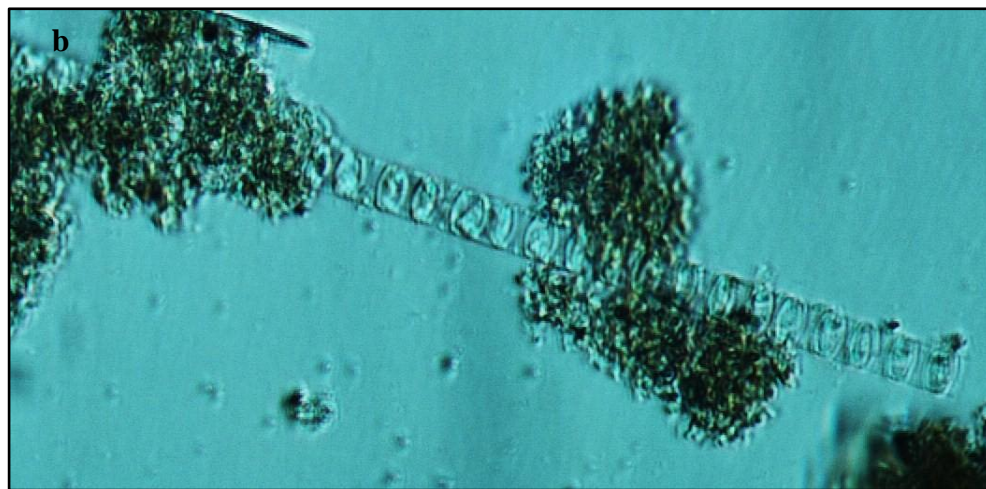
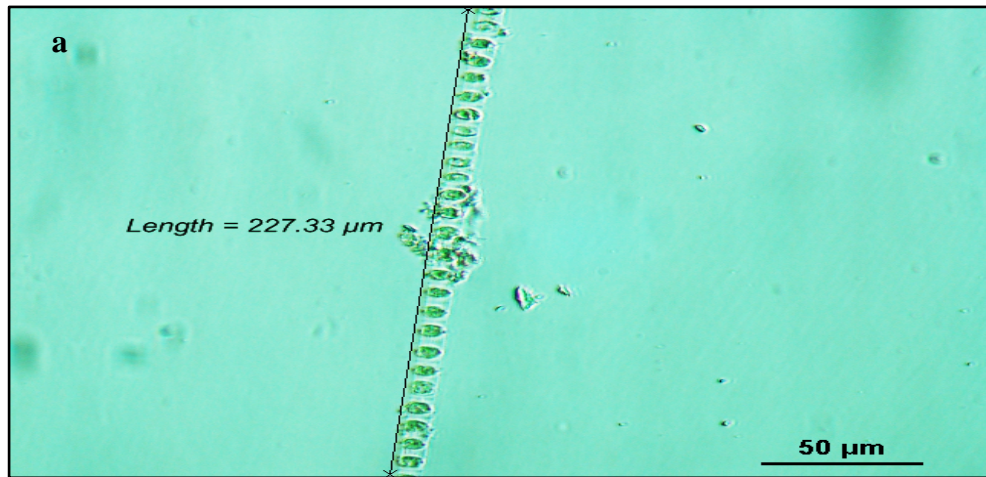


Plate 4.65: **a** and **b** A single colony of filamentous *Skeletonema costatum* **c** *S. costatum* colonies during monospecific outbreak.

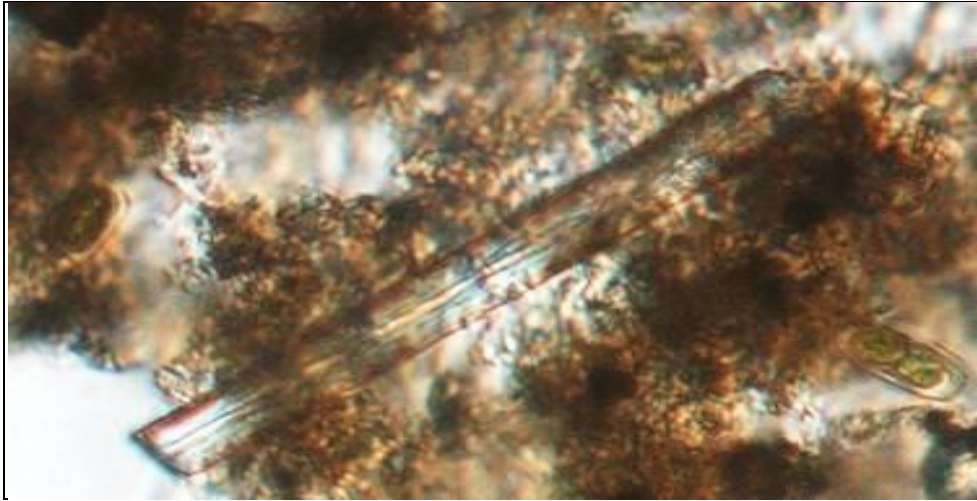


Plate 4.66: *Bacillaria paradoxa*

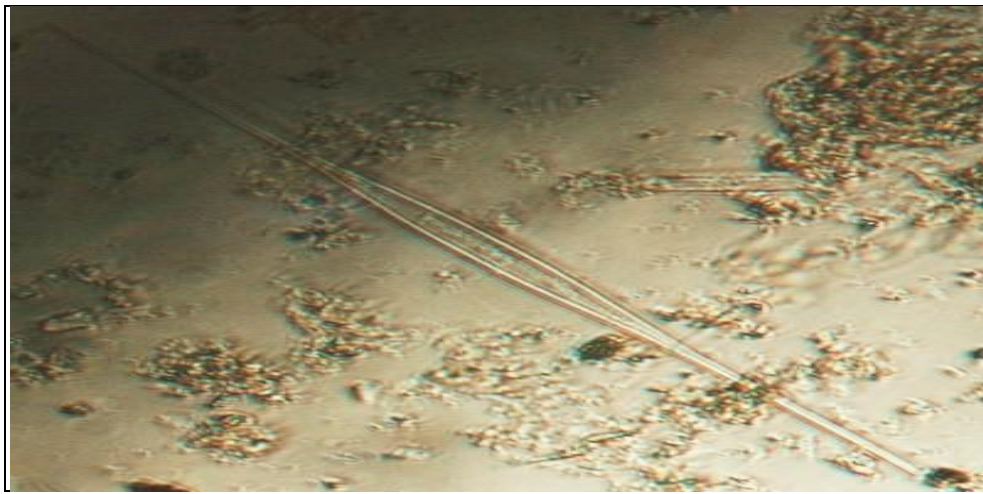


Plate 4.67: *Nitzschia acicularis*

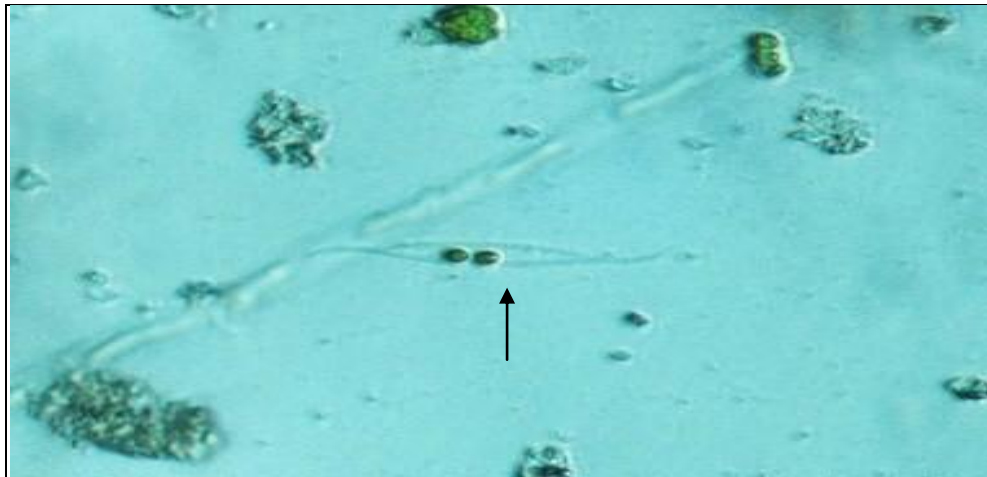


Plate 4.68: *Nitzschia longissima*

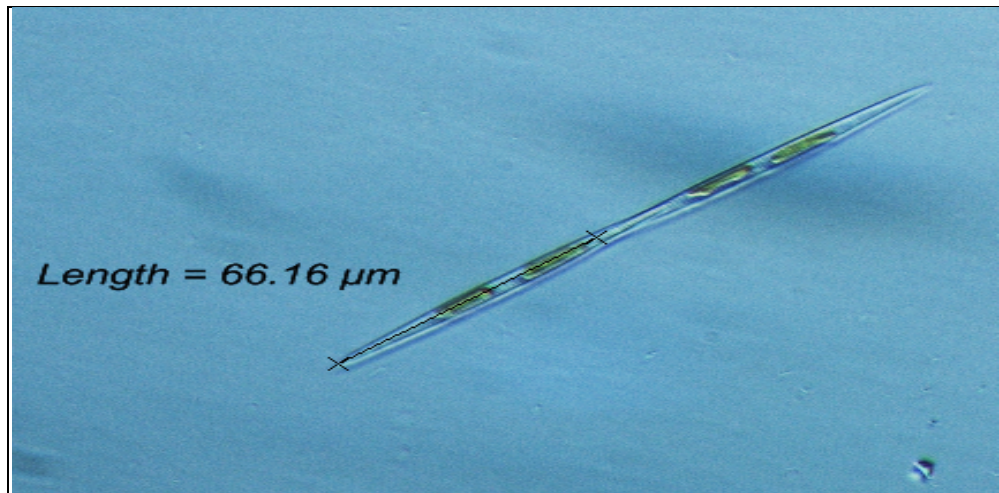


Plate 4.69: *Pseudo-nitzschia pungens*

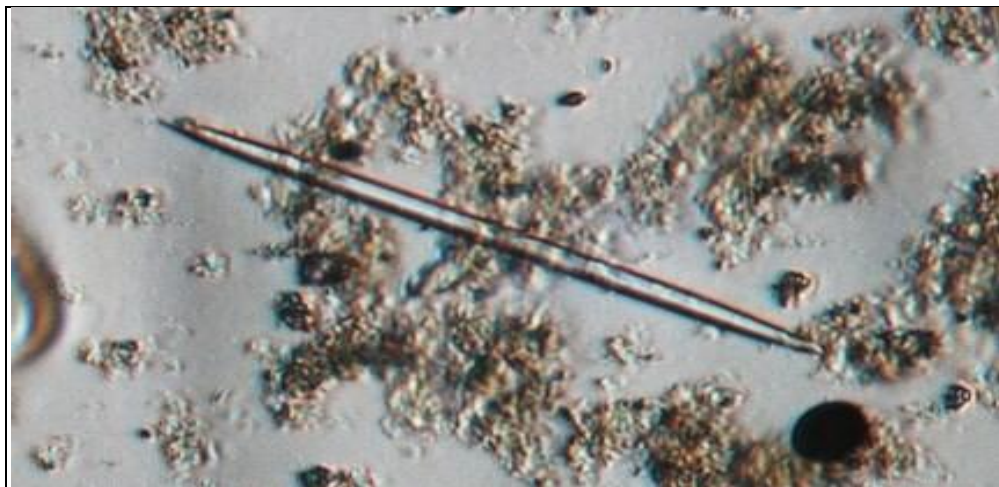


Plate 4.70: *Pseudo-nitzschia cuspidata*



Plate 4.71: *Stauroneis pusilla*

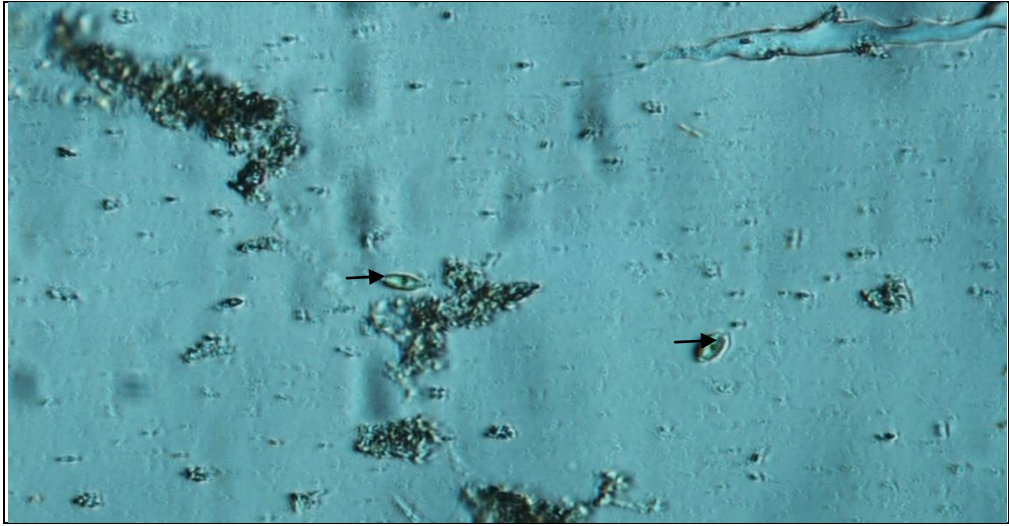


Plate 4.72: *Mastogloia smithii*



Plate 4.73: *Cosmarium humile* (reproductive cells)

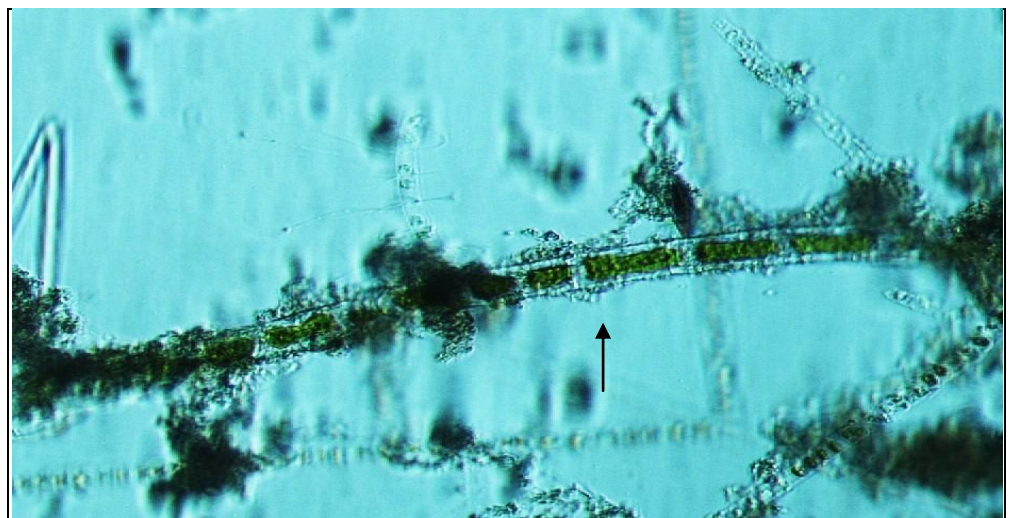


Plate 4.74: *Mougeotia* sp.

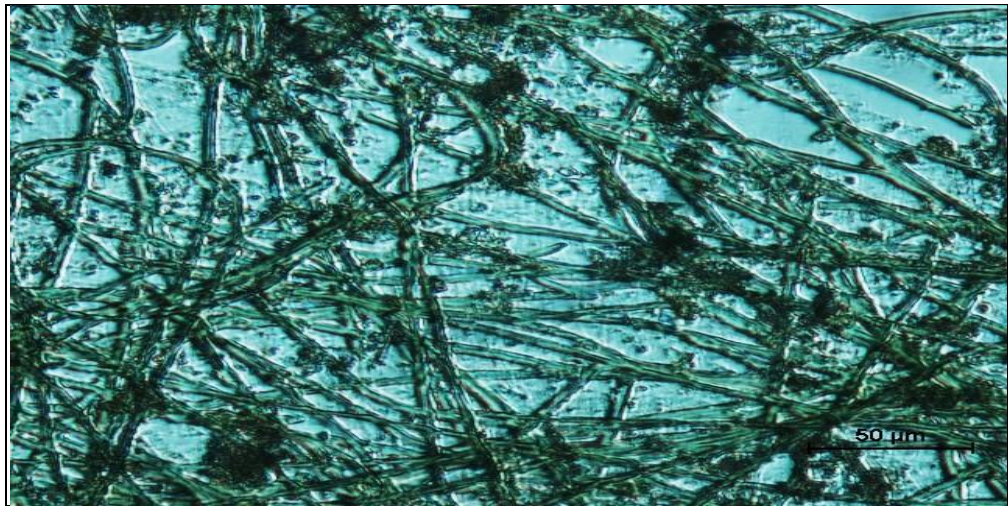


Plate 4.75: *Rhizoclonium* sp.

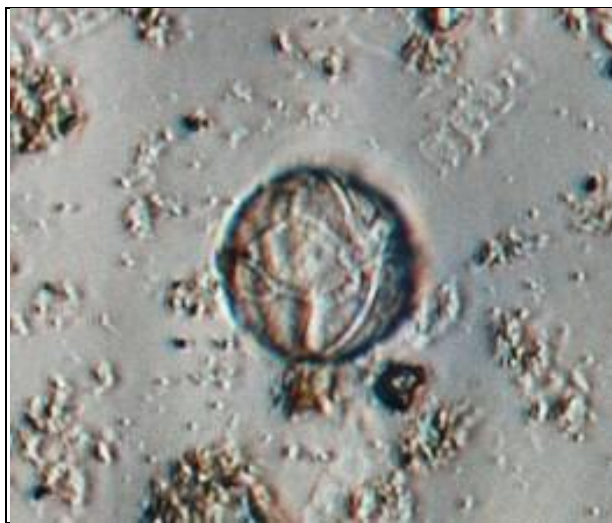


Plate 4.76: *Peridinium cinctum*

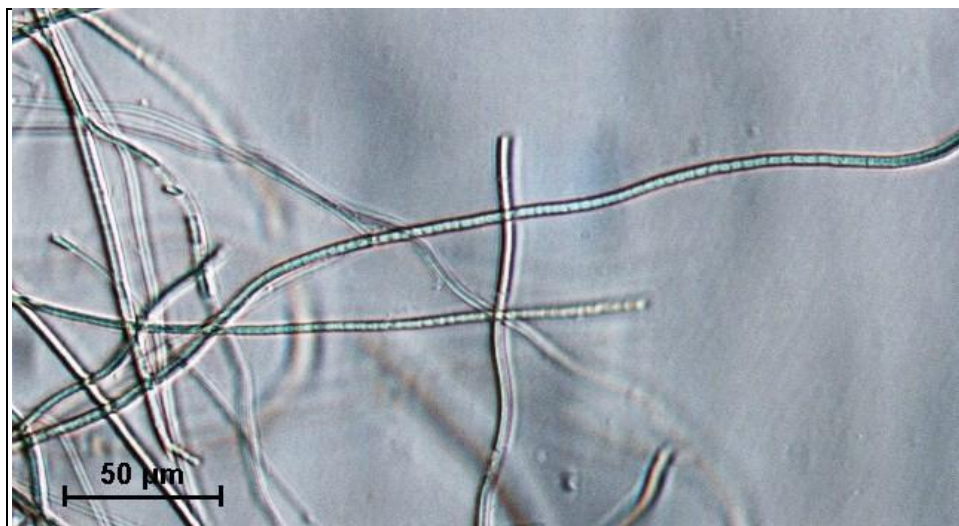


Plate 4.77: *Oscillatoria tenuis*

#### 4.1.3 Plates of Phytoplankton Using Scanning Electron Microscopy (SEM)

Below are the selected photographs of 3 phytoplankton species captured using scanning electron micrograph (SEM) with morphological elaboration.

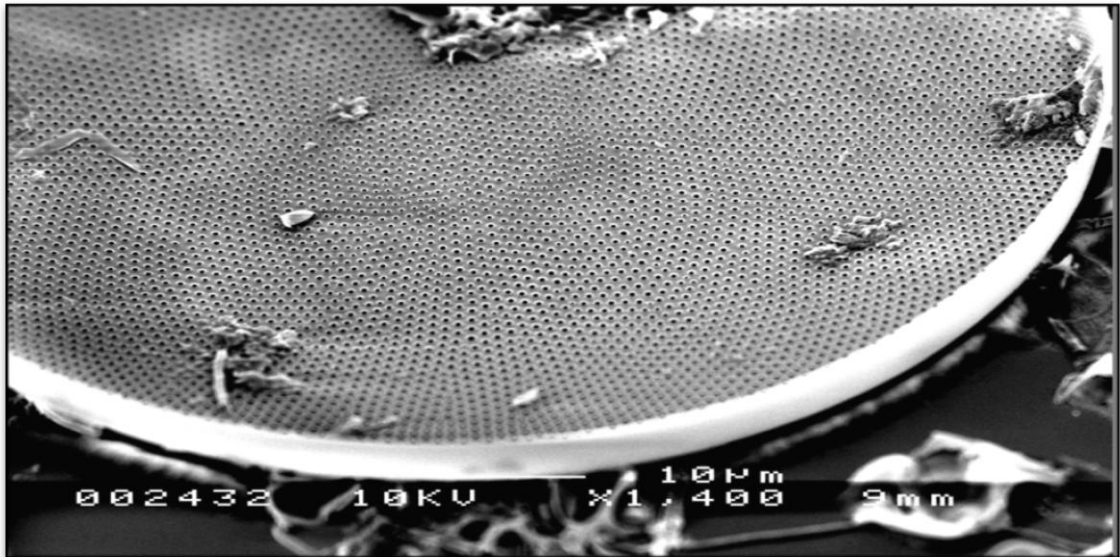


Plate 4.78: *Coscinodiscus rothii*. Rounded frustules with radial pattern areolae. 10-12 areolae in 10µm.

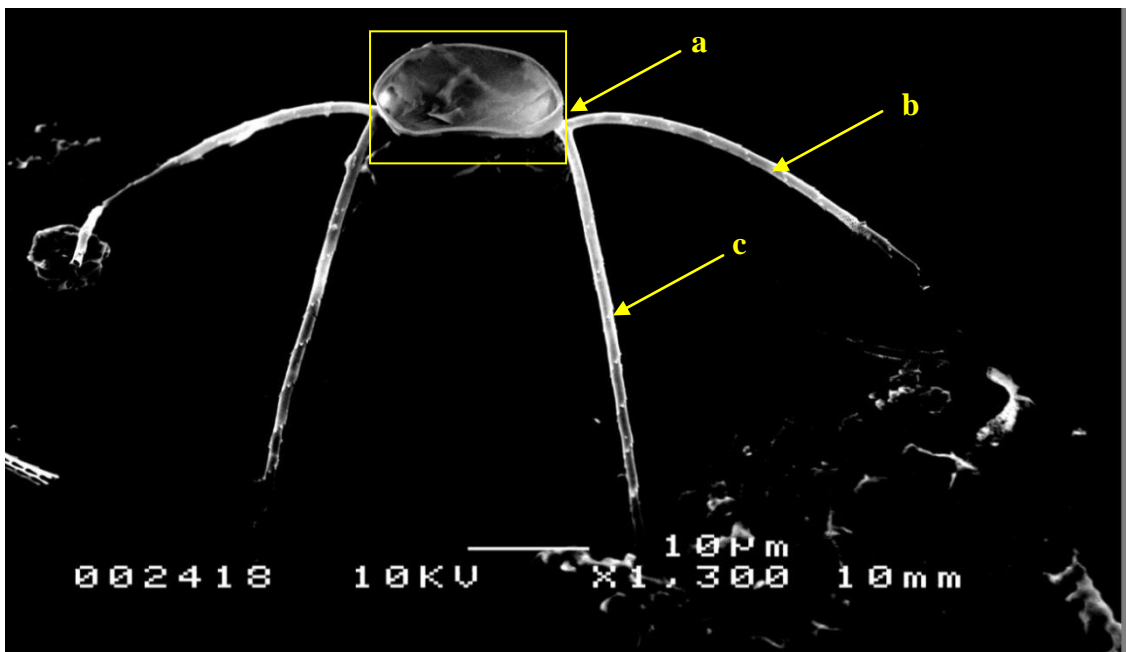


Plate 4.79: Single cell of *Chaetoceros curvisetus*. (a) Clear elliptical concaved vale. (b) long and thin setae that emerged from the apices of the valve margin. (c) Setae directed toward the outside of spiraling chain.



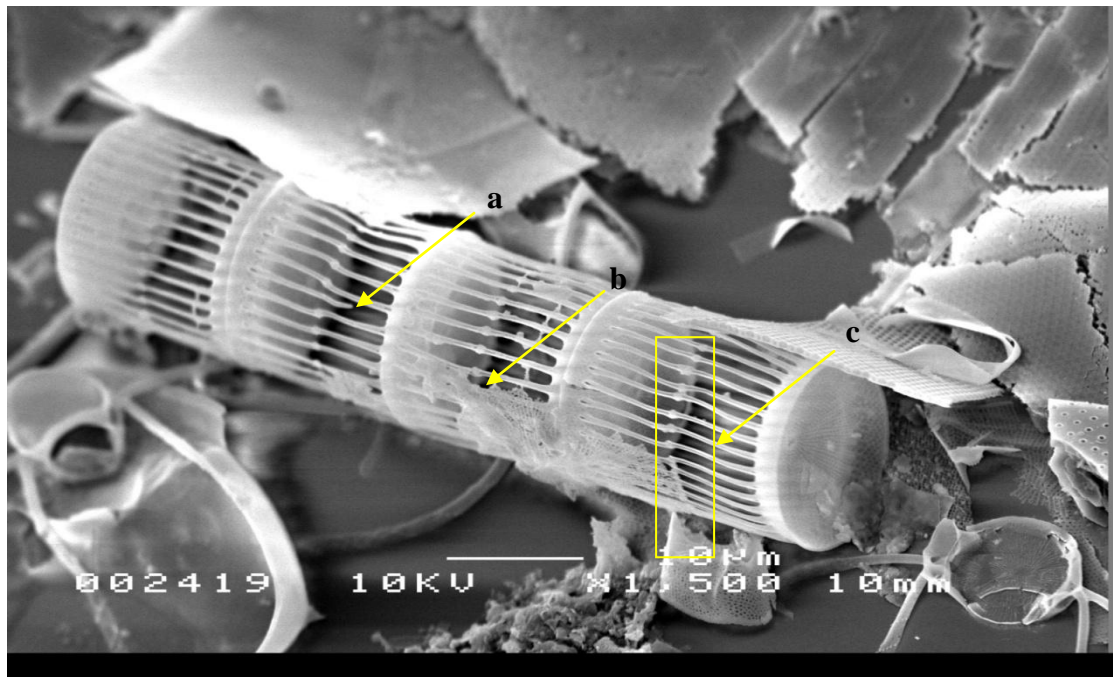


Plate 4.80: Chain forming *Skeletonema costatum*. (a) Intercalary fulcportula processes (IFPPs), is a closed tubes each with small pore at its base. (b) Joint of 2 IFPPs of adjacent valves. (c) Integration of 2 processes of 2 valves forming a suture line.