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SELECTED WATER BODIES OF ANANTHAPURAMU
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RESEARCH ARTICLE

FLORISTIC STUDIES ON DIATOM FLORA FROM SELECTED WATER BODIES OF ANANTHAPURAMU DISTRICT ANDHRA PRADESH INDIA

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ABSTRACT

In the present study, fresh water diatoms of three water bodies viz. waterfalls, check dam and community water tank from Ananthapuramu district were studied. Thirty nine species represented by twenty one genera are identified, *Amphora*(1), *Anomoeonias* (1), *Aulacoseira* (1), *Cocconeis* (1), *Cyclotella* (1), *Cymbella* (3), *Diploneis* (2), *Encyonema* (2), *Epithemia* (1), *Eunotia* (1), *Fallacia* (1), *Fragilaria* (1), *Gomphonema* (1), *Gyrosigma* (2), *Hantzschia* (1), *Navicula* (3), *Nitzschia* (8), *Rhopalodia* (1), *Surirella* (1), *Synedra* (3) and *Tryblionella* (3).

Key words:

Diatoms, water bodies,
Ananthapuramu district, Andhra
Pradesh.

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INTRODUCTION

Diatoms are unicellular micro algae ubiquitous in their distribution. Diatoms having two cup like structures joined together by girdle band, resembling petri dish arrangement made of silica (SiO₂) called frustule. Frustule shows external ornamentation which is key feature in identifying and classifying these organisms. Diatom flora from different regions of India has been described by various workers, Venkataraman(1939,57), Krishnamurthy V (1954), Desikachary's *Atlas of the Diatoms* (Desikachary T.V & Ranjitha Devi 1986, Desikachary T.V & Prema 1987, Desikachary T.V *et al.* 1987, 1987a, Desikachary T.V 1988, 1989) made a significant contribution to the diatoms of South India. Gandhi (1955, 56, 57, 58, 67) carried out extensive studies on fresh water diatom flora of different parts of India. Prasad and Srivatsava (1992) provided detailed account of diatoms in "*The Algal flora of Andaman and Nicobar Islands (Volume-I)*", Gupta R.K. (2005), Jena *et al.* (2006), Karthick *et al.* (2011), Jadhawar and Papdiwar (2012), Prakash Narayan and GK. Barupal (2015), Rakesh K D and Pradeep K M (2015), Anandita and Ruma pal (2015) have worked on diatom distribution from different parts of India. Umamaheswar Rao M and Sreeramulu T (1964, 1970), Geetha Madhav V & Kondalrao B (2004) worked on marine Algae, Jyothi K & Narasimha Rao G M (2013) reported fresh water algae and

their seasonal distribution in selected water bodies from coastal Andhra Pradesh. Though, notable Phycological work was conducted in marine and estuarine habitats from the state, no attempts were made on fresh water bodies in the state of Andhra Pradesh.

Ananthapuramu district is situated between 21.21670 N, 86.7500⁰ E in southern part of peninsular India. Present study deals with the taxonomic evaluation of fresh water diatom flora of three selected water bodies from the district. This district is one of the highly drought prone area in India. Though drought persists the region possess permanent and temporary water bodies which are unique from the rest of the state. The three water bodies selected for diatom exploration are Aluru kona waterfalls, Putlur water tank and Bukkarayasamudram check dam.

MATERIALS AND METHODS

Water samples were randomly collected from three water bodies and fixed in 4% formalin at the site. Photo micrographs were made by using Olympus CH20i Biological microscope, and Olympus E-420 digital SLR camera. For this purpose material was treated with 30% hot H₂O₂ and dehydrated and mounted with DPX. Round *et al.*, (1990) classification opted for the present communication.

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RESULTS AND DISCUSSION

Exploration of three water bodies yield, a total of 39 taxa belongs to 21 genera have been reported. Identification of taxa done after consulting Gandhi (1955, 56, 57, 57b, 58, 67), Venkataraman (1939), Prasad and Srivatsava (1992) with additional help of Hustedt (1930), Cleve-Euler (1951-55) and Tiffany and Britton (1952).

Order: Aulacoseirales

Family: Aulacoseiraceae

Genus: Aulacoseira Thwaites

***A. granulata* (Ehr.) Simonsen var. *granulata* (Pl.1, fig.1)**

Hustedt, F., A. Pascher's *Die Susswasser* 1930, p.88, fig. 45. Venkataraman, G., 1939. A Systematic account of S.Indian Diatoms. p. 296, fig. 1.

Frustules cylindrical, form colonies, diameter 4-6µm, mantle height 8-15 µm. Rows of mantle areolae in linking valves curved slightly to right. Separation valves often with 1-2 short spines.

Order: Thalassiosirales

Family: Stephanodiscaceae

Genus: Cyclotella (Kütz.) Brébisson

***C. meneghiniana* Kütz. (Pl.1, fig.2)**

Hustedt, F., A. Pascher's *Die Susswasser* 1930, p.100, fig. 67, Prasad, B. N. and Srivastava M. N. 1992. Vol 1, p. 160, pl. 24. figs. 1-2.

Frustule small, radially symmetrical, valve view discoid, central area smooth. Diameter 10-15µm, striae 6-8 in 10 µm.

Order: Fragilariales

Family: Fragilariaceae

Genus: Fragilaria Lyngbye

***F. capucina* Desmazières (Pl.1, fig.3)**

Hustedt, F., A. Pascher's *Die Susswasser* 1930, p.138, Fig. 126, RK Gupta, Botanical Survey of India, 2005 p. 166, pl. 52. figs. 1a-b.

Valves linear narrow towards ends, ends slightly constricted. Length 25-80 µm, breadth 3-4 µm. Striae 16-18 in 10 µm.

Genus: Synedra Ehr.

***S. ulna* var. *aequalis* (Kütz.) Hust. (Pl.1, fig.18)**

Hustedt, F., A. Pascher's *Die Susswasser* 1930, p.152, fig. 164, D Mohanty & S P Adhikary Assesment of changes in Algal Diversity of Chilka Lagoon, jwarp.p.616, fig.27.

Valves linear, poles broad, pseudoraphe narrow. Central area small. Length 100-250µm, breadth 4-6 µm. Striae 8-10 in 10 µm.

***S. ulna* var. *oxyrhynchus* (Kütz.) van Heurck (Pl.1, fig.16)**

Hustedt, F., A. Pascher's *Die Susswasser*, 1930, p.152, fig. 160, Venkataraman, G., 1939. A Systematic account of S.Indian Diatoms. p. 307, fig.38.

Valves linear, rostrate ends, pseudo raphe narrow. Central area present. Length 75-95 µm, breadth 2-4 µm. Striae 10-15 in 10 µm.

***S. ulna* var. *subaequalis* (Grun.) van Heurck (Pl.1, fig.17)**

Cleve-Euler, *Dial. Schwed Finn*, II, 1953, f.382f-i (= *S. ulna* var. *subaequalis* Grun.), Gandhi H.P. Diatoms from Kolhapur, 1958 p. 494, pl.2, fig. 17.

Valves linear, broadly sub-capitate ends, pseudo raphe narrow. Central area present or insignificant. Length 150-225 µm, breadth 4-6 µm. Striae 8-10 in 10 µm.

Order: Eunotiales

Family: Eunotiaceae

Genus: Eunotia Ehr.

***E. tschirchiana* O. Müll (Pl.1, fig.4)**

Hustedt, F., 1938. p.173, pl.12. figs. 23-29; Prasad, B. N. and Srivastava M. N. 1992. Vol 1, p. 188, pl. 25. figs. 9-10.

Valve view linear, dorsal valve strongly arcuate convex, deep constriction towards apices, ventral side more or less straight, apices obliquely truncate. Terminal nodules, raphe small distinct on ventral side, Striae coarse, irregularly arranged in middle, dense, radiate towards apices. Length 30-40 µm, breadth. Striae 8-15 in 10 µm.

Order: Achnanthales

Family: Cocconeidaceae

Genus: Cocconeis Ehr.

***C. placentula* var. *placentula* Ehr. (Pl.1, fig.6)**

Tiffany, L.H. & Britton, M.E. (1952) (Pl.64, fig. 735, Pg. 241). Prasad, B. N. and Srivastava, M. N. (1992) Vol 1, p.198, pl.27, fig.6.

Valves elliptic to linear-elliptic and relatively flat. Axial area narrow, central area circular or oval. Length 30-45 µm, breadth 12-18 µm, Striae 14-16 in 10 µm.

Order: Cymbellales

Family: Anomoeoneidaceae

Genus: Anomoeoneis Pfitzer

***A. sphaerophora* E. Pfitzer (Pl.1, fig.7)**

Cleve-Euler, A, Plat, Schwed, Finn., III, 1953, 202, f. 928a (= *Asphabrophora*, genuine ACI.), Venkataraman, G., 1939. A Systematic account of S. Indian. p. 324, fig.75.

Valves elliptical-lanceolate. Apices broadly rounded, capitate. Length 50-55 µm, breadth 15-18 µm. Striae, 16-18 in 10µm.

Family: Cymbellaceae
Genus: Cymbella Agardh

***C.affinis* Kütz.(Pl.1, fig.8)**

Tiffany, L.H. and Britton, M.E., 1952. p.279, pl. 72.fig. 856. Prasad B. N. and Srivastava M. N. (1992) Vol 1, p. 266 pl. 34, fig.5.

Valves strongly dorsi-ventral, apices subrostrate-rostrate, dorsal margin strongly arched, ventral margin slightly concave or flat. Ventral Striae centre smaller than dorsal, stigma central. Length 20-30 µm, breadth 4-6 µm, middle striae 8-12, 12-14 in 10 µm towards ends.

***C. aspera* (Ehr.) Cleve(Pl.1, fig.15)**

Hustedt, F., A. Pascher's *Die Susswasser* 1930, p. 365, fig. 680, Gandhi H.P.1959 Fresh water diatoms.Sagar. Mysore. p.323, fig. 45.

Valves dorsi-ventral, margin convex dorsal, ventral straight. Apices blunt. Raphe eccentric, arcuate, axial area straight. Length 100-220 µm, breadth 20-30 µm. Striae proximal 8-10, distal 12-15 in 10 µm.

***C.turgidula* Grun.(Pl.1, fig.9)**

Hustedt, F., A. Pascher's *Die Susswasser* 1930, p.362, Fig. 670 Alakananda, B., Karthick B., Mahesh M. K, Ramachandr T.V. 2011, Diatom based pollution. p. 47, fig. CTGL.

Valves slightly dorsi-ventral, broadly lanceolate, margin strongly convex dorsal, straightventral. Apices blunt, rostrate-truncate, protracted. Length 30-45 µm, breadth 10-15 µm.Striae proximal 9-11, distal 12-14 in 10 µm.

Genus: Encyonema Kütz.
***E. minutum* (Hilse) Mann in Round, Crawford & Mann(Pl.1, fig.10)**

Synonym *Cymbella ventricosa* Kutz. 1844 *pro parte*

Prasad, B. N. and Srivastava M. N. (1992) Vol 1, p. 268 pl. 34, fig.7, Isabelle Lavoie *et al.*, (2008) p.123. pl.32.Fig.ENVE, Jiunn-Tzong Wu *et al* (2011) V-I, p. 333, pl. 111, figs. c-i.

Valves cymbelloid margindorsal arched, ventral straight-slightly arcuate. Apices rostrate. Raphe straight, proximal raphe deflected dorsally. Length 10-20 µm, breadth 3-6 µm. Striae 10-15 in 10 µm.

***E. silesiacum* (Bleisch) D.G.Mann (Pl.1, fig.11)**

Synonym *Cymbella ventricosa* Kutz. 1844 *pro parte*;
Cymbella ventricosa var. *silesiaca* (Bleisch)

Hustedt, F., A. Pascher's *Die Susswasser* 1930, p.359, Fig. 661, Gandhi H.P. Diatoms from Partabgarh, 1955, p. 326, fig. 28.

Valves dorsiventral, symmetrical to the transapical axis. Margin dorsal arched, ventral straight. Apices rounded-rostrate. Length 14-45 µm, breadth 7-15 µm, striae 10-22 in 10µm.

Family: Gomphonemataceae
Genus: Gomphonema Ehr.

***G.lanceolatum* Her. var. insignis (Greg.) Cleve(Pl.1, fig.12)**

Hustedt, F., A. Pascher's *Die Susswasser* 1930, p.376, fig. 701, Prasad B. N. and Srivastava M. N. 1992. Vol 1, p. 253. pl. 33.fig. 2.

Valves linear-lanceolate, centre slightly inflated, apices rounded, base broadly rounded. Raphe thick, median, terminal fissures curved forming hook like structure. Central area unilateral, puncta present. Length 50-65 µm, breadth 8-12 µm. Striae 10-12 µm in 10 µm.

Order: Naviculales
Sub-order: Diploneidinea
Family: Diploneidaceae
Genus: Diploneis Ehrenberg in Cleve

***D.elliptica* (Kütz.) Cleve(Pl.1, fig.13)**

Basionym *Navicula elliptica* Kutzing 1844 Hustedt, Bacil, 1930, p.250,fig. 395; Cleve-Euler, Dial, *SchwedFinn.*, III, 1953, '78, f.646b (=D.ellipticav. *genuine* Meister), Gandhi H.P.1959 Fresh water diatoms. Sagar. Mysore. p.315, figs.10-11.

Valves elliptical, apices broadly rounded, central area small. Length 20-115 µm, breadth 10-60 µm, striae 10-14 in 10 µm.

***D.smithii* (Brébisson) Cleve(Pl.1, fig.14)**

Hustedt, F., A. Pascher's *Die Susswasser* 1930, p.253, Fig. 402, R Subrahmanyam A systematic account of Diatoms of Madras coast, 1946, p. 180. fig. 399.

Valves elliptical, central nodule prominent, horns robust. Length 30-45 µm, breadth 1-15-22 µm.

Family: Naciculaceae
Genus: Navicula Bory de Saint-Vincent

***N.cryptocephala* Kütz.(Pl.2, fig.1)**

Kützing, F.T. (1844). Die Kieselschaligen. pp. [i-vii], [1]-152, pls 1-30, Hustedt, F., A. Pascher's *Die Susswasser* 1930, p. 295, fig. 496., Prasad B. N. and Srivastava M. N. (1992) Vol 1, p.204 pl. 29, fig.2

Valves lanceolate, apices protracted, axial area narrow, straight. Central area large circular. Length 20-30 µm, breadth 5-10 µm, striae 12-16 in 10µm.

***N. radiosa* Kütz.(Pl.2, fig.2)**

Valves lanceolate, apices acutely rounded. Striae proximal radiate, distal convergent. Central area expanded 2 or 3 central shorter. Polar raphe fissures hooked to one side. Length 45-70 µm, breadth 10-12 µm. Striae 10-12 in 10 µm.

***N. viridula* Kütz.(Pl.2, fig.3)**

Hustedt, F., A. Pascher's *Die Süsswasser* 1930, p.297, fig. 503, Rashmi Pareek *et al.*,(2011) Some fresh water diatoms of Galta kund(2011), p. 112, fig.1k.

Valves linear to lanceolate, capitate ends. Axial area narrow, central area wide. Length 55-65 µm, breadth 6-8 µm.

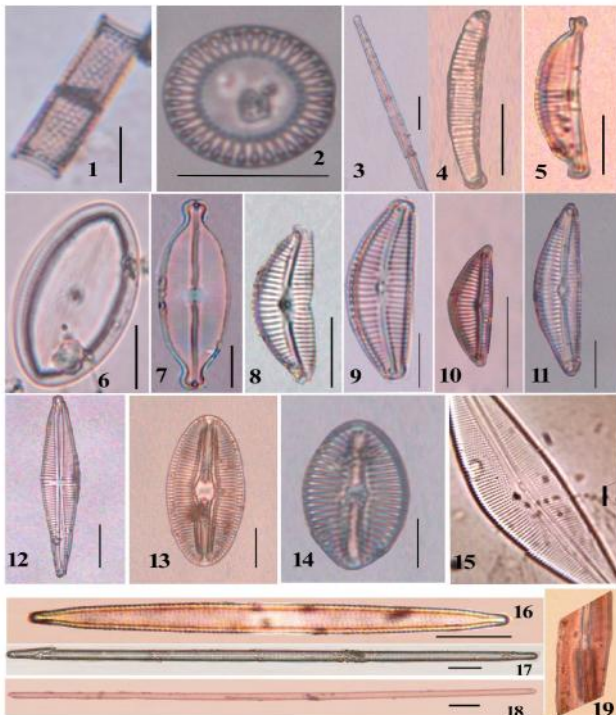


Plate-1

Plate-1

1) *Aulacoseira granulata* (Ehr.) Simonsen 2) *Cyclotella meneghiniana* Kütz. 3) *Fragilaria capucina* Desmazières 4) *Eunotia tschirchiana* O. Müll 5) *Amphora coffeaeformis* Agardh 6) *Cocconeis placentula* var. *placentula* Ehr. 7) *Anomoeoneis sphaerophora* E. Pfitzer 8) *Cymbella affinis* Kütz. 9) *C. turgidula* Grun. 10) *Encyonema minutum* (Hilse) Mann in Round, Crawford & Mann 11) *E. silesiacum* (Bleisch) D.G.Mann 12) *Gomphonema lanceolatum* Her. var. *insignis* 13) *D. elliptica* (Kütz.) Cleve 14) *D. smithii* (Brébisson) Cleve 15) *Cymbella aspera* (Ehr.) Cleve 16) *Synedra ulna* var. *oxyrhynchus* 17) *S. ulna* var. *subaequalis* (Grun.) van Heurck 18) *S. ulna* var. *aequalis* (Kütz.) Hust. 19) *G. acuminatum* (Kütz.) Rabh. Scale-15 µm

Family: Sellaphoraceae

Genus: Fallacia Stickle & Mann in Round, Crawford & Mann

***F. pygmaea* (Kütz.) Stickle & Mann in Round, Crawford & Mann (Pl.2, fig.4)**

Hustedt, F., A. Pascher's *Die Süsswasser* 1930, p.312, fig. 561, Cleve-Euler, Dial, Schwed Finn., III,1953,f.708, Kz. Original aus Sudfinland. Prasad B. N. and Srivastava M. N. 1992. Vol 1, p. 212, pl. 29, fig.14.

Valves elliptical, apices broadly rounded, raphe thin, straight. Axial area narrow, central area small, sulcus slightly arched, interrupted on each side of raphe at center and apex. Hyaline area "H" shaped. Length 40 µm, breadth 15 µm.

Order: Thalassiophysales

Family: Catenulaceae

Genus: Amphora Ehrenberg in Kützing

***A. coffeaeformis* Agardh(Pl.1, fig.5)**

Hustedt, F., A. Pascher's *Die Süsswasser* 1930, p. 345, fig. 634, Venkataraman, G., 1939. A Systematic account of S.Indian. p. 341, figs.104-105.

Valves dorsi-ventral. Dorsal margin arcuate, ventral straight-slightly curved, apices capitate. Length 30-40 µm, breadth 10-15 µm. Striae very fine 15-20 in 10 µm.

Family: Pleurosigmales

Genus: Gyrosigma Hassall

***G. acuminatum*(Kütz.) Rabh.(Pl.2, fig.5&Pl.1, fig. 19)**

Hustedt, F., A. Pascher's *Die Süsswasser* 1930, p. 222, fig. 329 & 332b

Valves slender, sigmoid, apices acutely rounded. Central area small, elliptical, curved in opposite directions. Raphe central sigmoid, slightly eccentric toward convex side. Axial area narrow. Transverse, longitudinal Striae fine. Length 80-160 µm, breadth 10-18 µm. Striae longitudinal, trasverse 15-20 in 10 µm.

***G. attenuatum*(Kütz.) Rabh.(Pl.2, fig.6)**

Hustedt, F., A. Pascher's *Die Süsswasser* 1930, p.224, fig. 330, RK Gupta, Botanical Survey of India,2005 p. 183, pl. 52. fig. 6.

Valves sigmoid, gradually tapering towards ends, rounded ends. Axial area narrow, central area ovoid- elliptical. Length 85-100 µm, breadth 10-12 µm. Striae fine unresolvable in present specimen.

Order: Bacillariales

Family: Bacillariaceae

Genus: Hantzschia Grun.

***H. amphioxys*(Ehr.) Kütz. (Pl.2, fig.7)**

Hustedt, F., A. Pascher's *Die Süsswasser* 1930, p.394, fig. 747, RK Gupta, Botanical Survey of India, 2005 p.190. pl. 54. fig. 15.

Valves slightly arcuate, apices rostrate. Margin dorsal slightly concave, ventral almost straight. Ventral side depressed in middle. Length 70-80 µm, breadth 8-10 µm, striae 15-25 in 10 µm. Keel excentric punctate.

Genus: *Tryblionella* W. Smith

***T. calida* (Grun.) Mann. (Pl.2, fig.8)**

Prasad B. N. and Srivastava M. N. (1992) Vol 1, p. 310 pl. 36, fig.7, Isabelle Lavoie *et al.*, 2008 p.175. pl.55.fig. TCAL. Jiunn-Tzong Wu *et al* 2011, p. 301, pl 95 figs. f-k.

Valves elliptical-lanceolate, apices obtuse. Striae linear, undulate, keel distinct marginal. Length 30-40 µm, breadth 8-12 µm. Striae fine 8-12 in 10 µm, fibulae 4-6 in 10 µm.

***T. compressa*(Bailey) Poulin *et al.*(Pl.2, fig.10)**

Poulin *et al.* (1990): 96, fig .98, Jiunn-Tzong Wu *et al* Vol. 1, (2011), p.76, pl. 96, figs. b-d.

Valves broad elliptic, apices rostrate, raphe eccentric. Length 20-45 µm, breadth 5-12 µm. Striae coarse 8-12 in 10 µm. Fibulae distinct.

***T. levidensis* (W.Smith) Grun.(Pl.2, fig.9)**

Hustedt, F., A. Pascher's *Die Süsswasser*, 1930, p. 399, fig. 760, Prasad B. N. and Srivastava M. N. 1992. Vol 1, p. 297, pl. 35. fig. 7.

Valves linear, broad, margins slightly concave, apices attenuated. Length 45-65 µm, breadth 6-8 µm. Striae 15-20 in 10 µm.

Genus: *Nitzschia* Hassall

***N.amphibia* Grun.(Pl.2, fig.11)**

Hustedt, F., A. Pascher's *Die Süsswasser* 1930, p.414, fig. 793, Prasad B. N. and Srivastava M. N. (1992) Vol 1, p. 285, pls. 36&37, figs.16-17.

Frustules isopolar, bilaterally symmetrical, linear-lanceolate. Length 20-70 µm, breadth 2-6 µm, striae 16-20 in 10µm. Margins fibulate.

***N.archibaldii* Lange-Bertalot. (Pl.2, fig.12)**

Lange-Bertalot 1980: 44; pl. 1, fig. 14-18; pl. 7, fig. 115-121, Supriya G, Sachin P, Meena D 2013, Phytoplankton diversity Rajaram reservoir, p. 263, S.no. 107.

Valves lanceolate, apices tapering to knob-like, rounded. Length 15-40 µm, breadth 2-3 µm, Striae 14-16 in 10µm. Fibulae present on both margins.

***N.dissipata* (Kütz.) Rabenhorst. (Pl.2, fig.13)**

Basionym, *Synedra dissipata* Kutzing 1844

Hustedt, F., A. Pascher's *Die Süsswasser* 1930, p. 412, fig. 789, Prasad B. N. and Srivastava M. N. (1992) Vol 1, p. 291, pl. 35, fig.12.

Valves linearly lanceolate, apices rostrate. Raphe fibulate, subcentral. Length 40-95 µm, breadth 2-4 µm. Striae 20-30 in 10 µm.

***N.fonticola* Grun.(Pl.2, fig.14)**

Basionym *Nitzschia kützingiana* var. *fonticola* Grunow in Cleve & Grunow 1880

Hustedt, F., A. Pascher's *Die Süsswasser* 1930, p. 415, fig. 800, Krishnamurthy V. 1954. Contribution to the diatom south.Ind, p.379, fig.73.

Frustules isopolar, bilaterally symmetrical, lanceolate, apices rostrate-subcapitate. Length 15-55 µm, breadth 3-6 µm, Striae 20-35 in 10 µm. Fibulae small regularly placed.

***N.frustulum* (Kütz.) Grun.(Pl.2, fig.15)**

Hustedt, F., A. Pascher's *Die Süsswasser* 1930, p. 414, fig. 795, Prasad, B. N. and Srivastava, M. N. (1992) Vol 1, p.293 pl. 36, fig.8, RK Gupta, Botanical Survey of India, 2005 p.163.pl.51. fig.3, Isabelle Lavoie *et al.*, (2008) p.181. pl.58. fig.NIFR, Jiunn-Tzong Wu *et al* (2011), P. 277, pl 83, figs.h-j.

Valves small. Apices constricted, rounded ends. Margins parallel. Length 25-30 µm, breadth 4 µm. Striae 18-20 in 10 µm. Fibulae distinct.

***N. obtusa* var. *scalpelliformis* Grun.(Pl.2, fig.16)**

Hustedt, F., A. Pascher's *Die Süsswasser* 1930, p. 422, fig. 817d, Cleve-Eu'ler, A, plat.Schwed, Finn, V, 1952: figs.1476 f-h (= *N. Sm. obtusav, scalpelliformis* Gurn.,), Prasad B. N. and Srivastava M. N. 1992. Vol 1, p. 301, pl. 37. fig. 1.

Valves linear. Apices bend opposite directions, margins parallel, ventral valve middle constriction present, keel punctate excentric. Length 80-100 µm, breadth 6-8 µm. Striae fine 25-30 in 10 µm.

***N. palea* (Kütz.) W. Smith (Pl.2, fig.17)**

Hustedt, F., A. Pascher's *Die Süsswasser* 1930, p.414, fig. 801, Prasad B. N. and Srivastava M. N. (1992) Vol 1, p. 303 pl. 35 & 37, figs. 5&11, RK Gupta, Botanical Survey of India, 2005 p.163.pl.51. fig.4.

Valves bilaterally symmetrical, linear-lanceolate. Apices shortly rostrate, subrostrate, subcapitate. Length 20-75 µm, breadth 2-6 µm, fibulae 8-12 in 10 µm.

***N. sociabilis* Hust.(Pl.2, fig.18)**

Hustedt. F (1957). Die Diatomeenflora des Flus-systems der Weser in Gebiet der Hansestadt Bremen. Abh. Naturw. Ver. Bremen 34: 181-440. p. 354, Prasad B. N. and Srivastava M. N. 1992. Vol 1, p. 307, pl. 35. figs. 15.

Valves linear-lanceolate, apices acute. Length 15-20 µm, breadth 2-4 µm. Striae fine unresolvable in present specimen. Fibulae 6-8 in 10 µm.

Order: Rhopalodiales
Family: Rhopalodiaceae
Genus: Epithemia Brébisson

***E. sorex*(Ehr.)Kütz.(Pl.2, fig.19)**

Hustedt, F., A. Pascher's *Die Susswasser*1930, p. 388, fig. 736. Valves dorsi-ventral, margin dorsal convex, ventral concave. Apices rounded-rostrate. The raphe canal arched towards dorsal margins from poles. Length 20-30 µm, breadth 6-8 µm. Striae 10-12 in 10 µm.

Genus: Rhopalodia O. Müller
***R. gibba* (Ehr.) O. Müll.(Pl.2, fig.21)**

Hustedt, F., A. Pascher's *Die Susswasser*1930, p.390, fig.740, Cleve-Eu`ler, A, plat.Swed, Finn.,V, 1952 :44,-fig1416 a,e (=R., *gibbav.*, *genuine* Grun.,), Santosh kumar Tripathi *et al.*, (2012)Phykos 42 (2): 14-34 (2012) p. 32, pl.4, fig.1.

Frustule linearly lanceolate-lanceolate. Apices cuneate. Inflated centre. Length 45-140µm, breadth 6-12 µm. striae distinct, 12-18 in 10 µm. Costae prominent 6-8 in 10µm, raphe fibulate 6-8 in 10 µm.

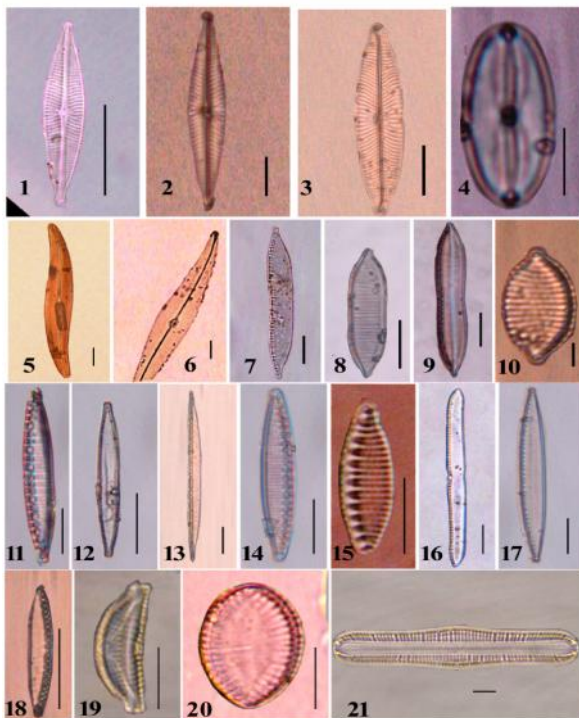


Plate-2

Order: Surirellales
Family: Surirellaceae
Genus: Surirella Turpin
***S. ovalis* Brébisson(Pl.2, fig.20)**

Hustedt, F., A. Pascher's *Die Susswasser* 1930, p.442, fig. 860-861, Prasad, B. N. and Srivastava, M. N. 1992. Vol 1, p. 317, pl. 38. Figs. 4.

Valves ovoid, apices cuneate. Pseudo raphe narrow, coastae thick Keel marginal. Length 20-30 µm, breadth 8-12 µm, fibulae 4-6 in 10 µm.

Table 1 Distribution of Diatoms in the selected water bodies

S.No	List of diatoms	*Alr	**Bks	***Ptr
1	<i>Amphora coffeaeformis</i> Agardh	-	-	+
2	<i>Anomoeoneis sphaerophora</i> E.Pfitzer	-	+	+
3	<i>Aulacoseira granulata</i> (Ehrenberg) Simonsen var. <i>granulata</i> Cocconeis	-	+	-
4	<i>placentula</i> var. <i>placentula</i> Ehrenberg	+	+	-
5	<i>Cyclotella meneghiniana</i> Kütz <i>Cymbella</i> Agardh	-	-	+
6	<i>C affinis</i> Kütz.	+	-	+
7	<i>C aspera</i> (Ehr.) Cleve	+	-	-
8	<i>C turgidula</i> Grun.	-	-	+
9	<i>Diploneis</i> Ehrenberg in Cleve	-	-	-
10	<i>D elliptica</i> (Kütz.) Cleve <i>D smithii</i> (Brébisson) Cleve Encyonema Kützing	+	-	+
11	<i>E minutum</i> (Hilse) Mann in Round, Crawford & Mann	-	-	+
12	<i>E. silesiacum</i> (Bleisch) D.G.Mann	+	-	-
13	<i>Epithemia sorex</i> (Ehr.)Kütz.	-	+	-
14	<i>Eunotia tschirchiana</i> O. Müll	+	-	-
15	<i>Fallacia pygmaea</i> (Kütz.) Stickle & Mann in Round, Crawford & Mann	-	-	+
16	<i>Fragilaria capucina</i> Desmazières	-	-	+
17	<i>Gomphonema lanceolatum</i> Her. var. <i>insignis</i> (Greg.) Cleve <i>Gyrosigma</i> Hassall	-	+	-
18	<i>G acuminatum</i> (Kütz.) Rabh.	-	-	+
19	<i>G attenuatum</i> (Kütz.) Rabh.	+	-	-
20	<i>Hantzschia amphioxys</i> (Ehr.) Kütz. Navicula Bory de Saint-Vincent	-	-	+
21	<i>N cryptocephala</i> Kütz.	-	-	+
22	<i>N radiosa</i> Kütz.	-	-	+
23	<i>N viridula</i> Kütz. <i>Nitzschia</i> Hassall	-	-	+
24	<i>N amphibia</i> Grun.	+	-	+
25	<i>N archibaldii</i> Lange-Bertalot	+	-	+
26	<i>N dissipata</i> (Kütz.) Rabenhorst	-	-	+
27	<i>N fonticola</i> Grun.	+	-	+
28	<i>N frustulum</i> (Kütz.) Grun.	+	-	+
29	<i>N obtusa</i> var. <i>scalpelliformis</i> Grun.	-	+	-
30	<i>N palea</i> (Kütz.) W. Smith	-	-	+
31	<i>N sociabilis</i> Hust.	+	-	-
32	<i>Rhopalodia gibba</i> (Ehr.) O. Müll.	-	+	+
33	<i>Surirella ovalis</i> Brébisson <i>Synedra</i> Ehr.	-	-	+
34	<i>S ulna</i> var. <i>aequalis</i> (Kütz.) Hust.	+	-	-
35	<i>S ulna</i> var. <i>oxyrhynchus</i> (Kütz.) van Heurck	+	-	-
36	<i>S ulna</i> var. <i>subaequalis</i> (Grunow) van Heurck	-	+	-
37	<i>Tryblionella</i> W. Smith <i>T calida</i> (Grunow) Mann.	-	-	+
38	<i>T compressa</i> (Bailey) Poulin in Poulin et al.	+	-	-
39	<i>T levidensis</i> (W.Smith) Grun.	+	-	-

*Alr = Aluru kona water falls, **Bks = Bukkarayasamudram check dam, ***Ptr = Putluru

Plate-2

1) *Navicula cryptocephala* Kütz. 2) *N. radiosa* Kütz. 3) *N. viridula* Kütz. 4) *Fallacia pygmaea* (Kütz.) Stickle & Mann in Round, Crawford & Mann 5) *Gyrosigma acuminatum* (Kütz.) Rabh. 6) *G. attenuatum* (Kütz.) Rabh. 7) *Hantzschia amphioxys* (Ehr.) Kütz. 8) *Tryblionella calida* (Grunow) Mann. 9) *T. levidensis* (W.Smith) Grun. 10) *T. compressa* (Bailey) Poulin in 11) *Nitzschia amphibia* Grun. 12) *N. archibaldii* Lange-Bertalot 13) *N. dissipata* (Kütz.) Rabenhorst 14) *N. fonticola* Grun. 15) *N. frustulum* (Kütz.) Grun. 16) *N. obtusa* var. *scalpelliformis* Grun. 17) *N. palea* (Kütz.) W. Smith 18) *N. sociabilis* Hust. 19) *Epithemia sorex* (Ehr.) Kütz. 20) *Surirella ovalis* Brébisson 21) *Rhopalodia gibba* (Ehr.) O. Müll. **Scale-15 µm**

CONCLUSION

Genus *Fallacia* is first time reported from Andhra Pradesh. Genus *Nitzschia* presence common in Aluru kona and Putlur, whereas *Rhopalodia* common in Bukkarayasamudram and Putlur. Diatom diversity is less in Bukkarayasamudram checkdam compared to Aluru kona and Putlur. The selected locality receives significantly less rain fall and second lowest in India after Jaisalmer, hence the present work gains importance.

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