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'TAXONOMIC ALGAL DIVERSITY OF FAMILES NAVICULACEAE AND CYMBELLACEAE OF ORDER PINNALES IN PIMPLEGAON JOGE DAM FROM JUNNAR TEHSIL OF PUNE DISTRICT (MAHARASHTRA)"

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ABSTRACT:

The Junnar Tehsil in Pune District situated in between 19°7'0" Northern 73°44'0" Eastern latitude on the northern of Deccan Plateau & composed of undulating hills. Periodical collections of algae from the study area were done from the Pimpalgaon Joge dam as well as Rivers, Lake's, Puddles, Pulls etc. from Junnar tehsil. The samples were bringing to laboratory for identification; Identification were done with the help of Indian monographs other standard literature like Sarode and Kamat (1984). The collected algal forms had been preserved in 4% formalin. With the help of phytoplankton collected samples were investigated from Sept. 2018 to October 2019. The present investigation is undertaken with keep in mind that to study the algal population from selected stations of study area. All algal plants were identified up to genus, species, variety as well as forma level. We visit all stations from Junnar tehsil. Attempts have been undertaken to bring out the Algal flora of this region. There are 22 species, 26 varieties, 3 forma and 1 variety and forma belonging to 9 genera of 2 families from 1 order of 1 class from 1 division. Family Naviculaceae includes 5 genera, 13 species and 23 varieties, 2 forma and 1 variety and forma; while family Cymbellaceae include only 4 genus, 9 species and 3 varieties and 1 forma.

Key words: *- Pinnales, Junnar, Pune, Naviculaceae, Cymbellaceae, Pimpalgaon Joge dam*

INTRODUCTION:

Filamentous algae were collected from mass growths by hand. Sub-aerial algae growing attached to tree barks, on damp walls or other such substrata were collected by scraping with a scalpel and then picked up with the help of a forceps. Hand collected samples were investigated from September 2018 to October 2019. The present investigation is undertaken with keep in mind that to study the algal population from selected stations of study area.

MATERIALS AND METHODS:

The samples were preserved in a mixture of 50 ml of 95% ethyl alcohol, 5 ml of glacial acetic acid, 10 ml of 40% commercial formalin and 35 ml of water. The specimens are observed under microscope for 10X, 40X, 100X and Photographs were taken with the help digital camera under appropriate magnifications. Identification of specimens was mostly based on the keys given in standard monographs & literatures. The Vaucher specimens have been deposited at Dept. of Botany, Hon. Baladaheb Jadhav College, Ale, Tal. Junnar, Dist. Pune.

Periodical collections of algae from the study area were done from the Dams as well as Rivers, Lake's, Puddles, Pulls etc. from Junnar tehsil. Sampling stations were carried away. The samples were bringing to laboratory for identification; Identification was done with the help of Indian monographs and other standard literature like Anand (1998) and Sarode and Kamat (1984). The collected algal forms had been preserved in 4% formalin.

Algal samples were collected from various freshwater biotopes *viz.* ditches, puddles, pools, ponds, reservoirs, waterfalls, streams, rivers, paddy fields, moist soil, swamps and marshes of Study area. Phytoplanktons were collected by using phytoplankton net from surface waters of impoundments.

SUMMARY AND CONCLUSION:

Since the dawn of civilization, water has been the most important raw material for civilization. It is one of the vital sources of all kinds of life on the earth. Economically, culturally and biologically water is most useful natural resource on the earth. We use water for drinking, bathing, cooking, cooling, irrigation, transportation, energy power and recreation. Thus, water is nature's gift to the living world including human race. Our biosphere consists of 71 % of water out of which fresh water environment occupied only 2.6 %. For the usable purpose only 0.62 % water from lakes, streams, rivers and other

resources are available for the living organisms.

In India most of the cities, towns, villages and industries are situated at the bank of rivers and lakes. Due to uncontrolled population, the huge quantity of untreated sewage is being added every day in these different water reservoirs. Besides these, industrial wastes, residues of insecticides, pesticides, excess agricultural fertilizers also added in these fresh water eco-systems causing pollution and creates health hazards.

Present study is on the taxonomic data of algal specieswere collected from Pimpalgaon Joge dam, It is located on Ghod River at Dimbhe 11 kms away from Ghodegaon in Junnar tehsil.

Water samples were collected periodically from Pimpalgaon Joge dam. For qualitative analysis, water samples were collected separately in the bottles. Collections were done from streams, rivers, ponds, puddles, and impoundments during and after monsoon season from Junnar tehsil of Pune District. Algae of different habitats were collected from these localities such as - planktonic, benthic, epiphytic, terrestrial, epiphyllous and from tree-trunk.

Planktonic algal collection was made by using plankton net of bloting silk cloth 25 meshes/linear inch and analyzed qualitatively. Phytoplanktons were collected by using phytoplankton net from surface waters of impoundments. Quantitative estimation was done for phytoplankton by Lackey's drop method (Lackey, 1938). Algal identification was carried out by using standard literature and monographs. Microphotographs of algal plants encountered during investigation period were taken.

I have collected 52 algal specimens. These are from single orders of 1 class and 1 division. In which all 52 specimens' planktonic specimens

The present investigation shows 1 order, 2 families, 9 genus, 22 species, 26 varieties, 3 forma and 1 variety and forma from 1 division and 1 class. Present investigation shows dominance of Family Navculaceae represented by 39 species while family Cymbellaceae represented by 13 species.

CONCLUSIONS:

- This research work helps us to know type of algal flora of the study area.
- The data gathered serves as base line data for planning utilization and conservation strategies of algae.
- Phytoplankton studies helps us to know primary producers (Qualitatively and quantitatively) of the study area.
- This research work may help all the phycological students to study the algal vegetation in Ambegaon.

REFERENCES:

Anand, N. and Bhishan Singh Mahendra Pal Singh; 'Indian Freshwater Microalgae'; 1997

Gupta, R. K.; 'Algal Flora of Dehradun District Uttaranchal'; B. S. I.:2005

Iyengar, M. O. P. and G. S. Venkataraman; 'The ecology and seasonal succession of the river Cooum at Madras with special reference to the Diatomaceae'; J. Madras Univ. 21:140-192:1951

Kumawat, D.A., Y. P. Melche, H. E. Rane, S. B. Patil, R. B. Borse and S. D. Vanjari; 'Diatoms from Southern Satpura Hill anges of Maharashtra Genus *Gomphonema* Agardh'; J. Indian Botanical Society; Volume 87(1&2):61–66:2008

Kumawat D.A. and A. K. Jawale; 'Genus *Cymbella* Agardh from Fish Ponds at Anjale Faizpur, District Jalgaon, Maharashtra, India'; Biology and Biodiversity of Microalgae, Centre of Advanced Studies in Botany, Chennai, Madras:2009

Mahyavanshi, N.; 'Further studies on the Marine Planktonic Diatoms in the Coastal Waters of Saurashtra'; *Phykos* 14(1&2):99–112:1975.

Narkhede, P. N.; 'Genus *Nitzschia* and *Surirella* from Hatnur dam, Jalgaon district, Maharashtra'; J. Aqua. Biol. 21(2):19–22:2006

Narkhede, P. N., O. N. Bhoge and G. Ragothaman; 'Study of some Bacillariophyceae Members from Hartnur Dam in Faizpur, Jalgaon District, Maharashtra, India'; J. Indian Bot. Soc. Vol. 86 (1&2):44–46:2007

Raghothaman, G. and Johny Thomas; 'Studies on the Diatom Flora of Hajira Coast Gujarat'; *Phykos* 27:157–160:1988

Sarode, P. T. and N. D. Kamat; 'Diatoms of Marathwada, Maharashtra-II; *Phykos* 19(2):197:1980

Sarode, P. T. and N. D. Kamat; 'Diatoms of Marathwada, Marathwada Univ. JSD 22(15):13:1983

Sarode, P. T. and N. D. Kamat; 'Freshwater diatoms of Maharashtra'; Saikrupa Prakashan, Aurangabad:1-324:1984

Tagad Radhakisan N., Subhash D. Pingale and Ramchandra H. Bhoge; 'Diatoms from Junnar Tehsil of Pune District (Maharahstra)'; Advances in Plant Sciences; Vol. 25(1):5-14:2012.

Sr. No.	Name of Algal Specimen
Family	**Cymbellaceae**
Genus	***Cymbella***
1	***Cymbella aspera***(Ehr.) Cleve
2	***Cymbella bengalensis***Grun.
3	***Cymbella cistula*** (Hemp.) Grun.v. ***woosungensis*** Voigt
4	***Cymbella gracilis***(Rabh.) Cleve
5	***Cymbella lanceolata***(Ehr) V. H.
6	***Cymbella perpusilla*** A. Cl.
7	***Cymbella tumida***(Breb.) V. H. f. ***ventrincosa*** Gandhi
8	***Cymbella tumidula*** Grun.
Genus	***Amphora***
1	***Amphora acutiuscula*** Kuetz
Genus	***Epithemia***
1	***Epithemia zebra*** (Ehr.) Kuetz v. ***frickei*** A. Cl.
2	***Epithemia zebra*** (Ehr.) Kuetz v. ***proboscidea*** (Kuetz.) Grun
3	***Epithemia sorex*** Kuetz.
Genus	***Rhopalodia***
1	***Rhopalodia gibba***(Ehr.) Muell.
Family	**Naviculaceae**
Genus	**Navicula**
1	***Navicula cari*** Ehr. v. ***angusta*** Grun.
2	***Navicula cincta*** (Ehr.) Kuetz. v. ***heufleri*** (Grun.) Cleve
3	***Navicula cryptocephala*** Kuetz. v. ***veneta*** (Kuetz) Grun.
4	***Navicula cuspidata*** Kuetz. v. ***ambigua*** (Ehr.) Cleve
5	***Navicula dicephala*** (Ehr.) W. Smith v. ***sphaerophora*** A. Cl.
6	***Navicula feuerborni*** (Feuerb.) Hustedt
7	***Navicula gracilis*** Ehr.
8	***Navicula grimii*** Krasske
9	***Navicula mutica*** Kuetz. f. ***intermedia*** Hustedt.
10	***Navicula pupula*** Kuetz v. ***rostrate*** Hustedt.
11	***Navicula radiosa*** Kuetz. v.***minutissima*** (Grun.) Cleve
12	***Navicula similis*** Krasske
13	***Navicula subhamulata*** Grun.
14	***Navicula viridula*** Kuetz. v. ***capitata*** Mayer

Genus	***Diploneis***
1	***Diploneis subovalis*** Cleve
Genus	***Caloneis***
1	***Caloneis bacillum*** (Grun.) Meresch. v. ***fontinalis*** (Grun.) Mayer
2	***Caloneis beccariana*** Grun
3	***Caloneis beccariana*** Grun. v. ***hustedtii*** Gandhi
4	***Caloneis silicula*** (Ehr.) Cleve v. ***genuina***Mayer
5	***Caloneis silicula*** (Ehr.) Cleve v. ***minuta*** (Grun.)
6	***Caloneis silicula*** (Ehr.) Cleve v. ***truncatula*** (Grun.)Mayer
7	***Caloneis ventricosa*** (Ehr.) Meist. v. ***alpina*** (Cleve) Patr.
Genus	***Gyrosigma***
1	***Gyrosigma attenuatum*** Motum (Kuetz.) Rabh.
2	***Gyrosigma bhusavalensis*** sp. nov.
Genus	***Pinnularia***
1	***Pinnularia arraniensis*** Hustedt f. ***indica*** f. nov.
2	***Pinnularia borealis*** Ehr.
3	***Pinnularia braunii*** (Grun.) Cleve v. ***amphicephala*** (Mayer) Hustedt.
4	***Pinnularia borealis*** Ehr. v. ***lonavlensis*** Gandhi
5	***Pinnularia episcopalis*** Cleve
6	***Pinnularia major*** (Kuetz.) Cleve v. ***linearis*** Cleve
7	***Pinnularia major*** (Kuetz.) Cleve v. ***sendaiensis*** Hustedt
8	***Pinnularia mesolepta*** Ehr. v. ***stauroneiformis*** Grun.
9	***Pinnularia neglecta*** (Mayer) A. Berg v. ***undulata*** Gandhi
10	***Pinnularia platycephala*** (Ehr.) Cleve
11	***Pinnularia pseudoluculenta*** Gandhi
12	***Pinnularia stauroptera*** (Rabh.) Cleve v. ***parva*** Grun.
13	***Pinnularia stomatophorides*** Mayer v. ***ornata*** A. Cl. f. ***erlangensis*** Mayer
14	***Pinnularia subcapitata*** Greg. v. ***hilseana*** (Jan.) O. Muell.
15	***Pinnularia subcapitata*** Greg. v. ***lapponica*** A. Cl.

Plate 2

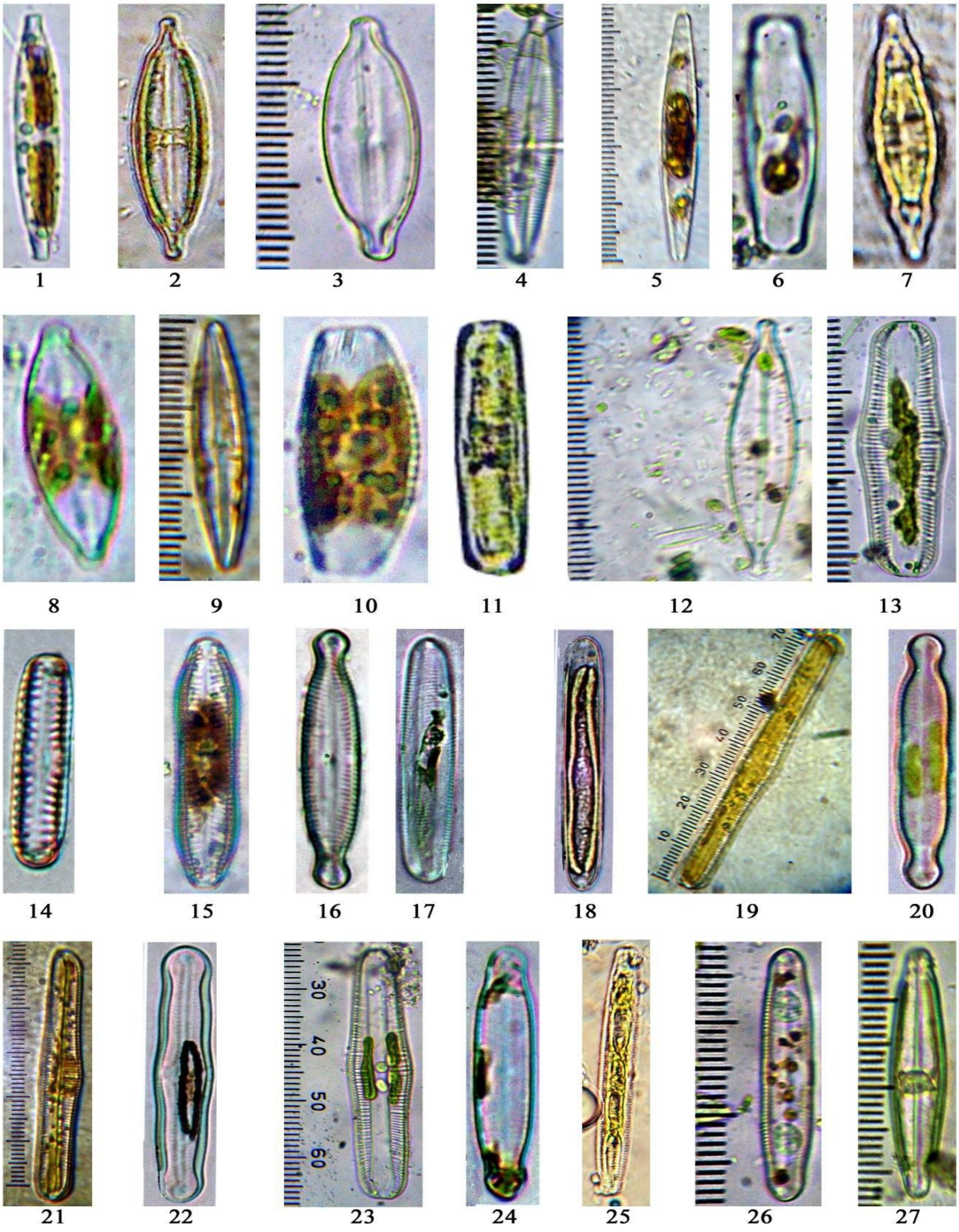

Fig. 1) Navicula cryptocephala v. veneta, 2) Navicula cuspidata v.ambigua, 3) Navicula dicephala v. sphaerophora, 4) Navicula feuerborni, 5) Navicula gracilis, 6) Navicula grimii, 7) Navicula mutica f. intermedia, 8) Navicula pupula v. rostata, 9) Navicula radiosa v. minutissima, 10) Navicula similis, 11) Navicula subhamulata, 12) Navicula viridula v. capitata, 13) Pinnularia arraniensis f. indica, 14) Pinnularia borealis, 15) Pinnularia borealis v. lonavlensis, 16) Pinnularia braunii v. amphicephala, 17) Pinnularia episcopalis, 18) Pinnularia major v. linearis, 19) Pinnularia major v. sendaiensis, 20) Pinnularia mesolepta v. stauroneiformis, 21) Pinnularia neglecta v. undulata, 22) Pinnularia platycephala, 23) Pinnularia pseudoluculenta, 24) Pinnularia stauroptera v. parva, 25) Pinnularia stomatophoroides v. ornata f. erlangensis, 26) Pinnularia subcapitata v. hilseana, 27) pinnularia subcapitata v. laponica