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"PRELIMINARY SURVEY OF PHYTOPLANKTON DIVERSITY OF PARSEONI LAKE OF NAGPUR DISTRICT, MAHARASHTRA STATE (INDIA)".

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ABSTRACT:
In present paper preliminary survey of phytoplankton diversity of Parseoni lake from of Nagpur District of Maharashtra state ,India Total 33 species of phytoplankton recorded from four taxonomic groups namely Chlorophyceae (10species), Bacillariophyceae (10species) ,Cyanophyceae (12 species) and Euglenophyceae (01 species). Chlorophyceae and Cyanophyceae group shows dominance over all other groups. Chlorophyceae group shows 30.30% of phytoplankton and Bacillariophyceae possess 30.30% followed by Cyanophyceae possess 36.36% and number of Euglenophyceae groups possess only03.03%.Euglenophyceae groups possess *Euglena* Spe. it indicates that this lake is much polluted with organic pollution because of the anthropogenic activities as it is present near the Parseoni city.

Keywords: Phytoplankton diversity, Lake, anthropogenic activity, Pollution.

Introduction:
Phytoplankton are microscopic, unicellular free floating and colonial autotrophic organisms grows in aquatic ecosystems and their movement more or less controlled by water currents (Millman *et al*., 2005). Phytoplankton play a key role in the changing of organic matter and energy through the ecosystem as they responds to ecosystem alterations very rapidly (Telesh, 2004). Phytoplankton are pioneer of an aquatic ecosystem and play a significant role in food chain of the lakes and forms the basic link of food chain in aquatic ecosystem. Productivity in aquatic ecosystem is directly depends on density of phytoplankton and phytoplankton diversity and density is controlled by water quality and other biotic communities in a water bodies.
Phytolankton constitutes the basis of nutritional cycle of an ecosystem (Reid and Wood, 1976; Kaushik *et al*., 1991; Misra *et.al*., 1992). They form a bulk of food for zooplankton, fish and other aquatic ecosystem dependant on the abiotic characteristics of water and the biologicaldiversity (Harikishan *et al*., 1999). Phytoplankton play important contribution to the biological diversity in lakes andreservoirs. Its community structure is important to higher trophic levels because it influences theefficiency of carbon and energy transfer between trophic levels in any given system (Mallin *et al*., 1991). Phytoplankton are significant component of an aquatic flora and they maintainingequilibrium between biotic and abiotic components of an aquatic ecosystem (Pandey *et al.,* 2004). Phytoplankton study is a very useful tool for the assessment of water quality in anytype of water body and also contributes to understanding of the basic nature of general economy of the lake (Pawar *et al*., 2006). Number of researchers studied phytoplankton from different parts of India like (Raut and Pejaver, 2005; Telkhede *et al*., 2008 and 2009; Tapashi and Mithra, 2011; Vasantha *et al*., 2012; Sarwade and Kamble, 2014; Jitesh and Radhakrishnan, 2015). The present survey was carried out to document diversity of phytoplankton diversity of Parseoni Lake of Nagpur district.

Material and Methods
Study area:

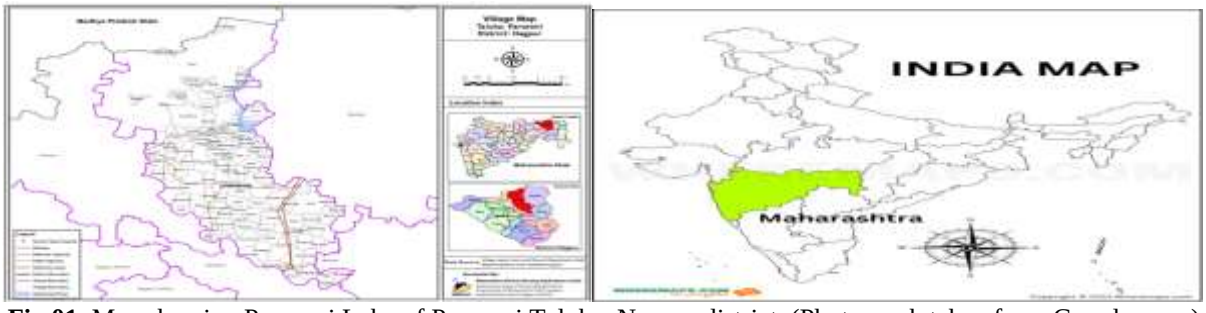

Fig.01. Map showing Parseoni Lake of Parseoni Taluka, Nagpur district. (Photograph taken from Google map.)

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Parseoni lake is located at 21.375526°N and 79.157775°E of Parseoni city. The lake is situated at North Direction to Parseoni city. Parseoni is a Taluka place of Nagpur district of Maharashtra State, India. The distance from Nagpur to Parseoni is 50K.M. The lake length is 700 meters, height of the lake is 5 Meters. The water of this lake is use for irrigation and fishing. It is a famous spot for picnic locally called 'Chota Goa'.

Plankton analysis

Phytoplankton was collected and studied during frequent visit to the Parseoni Lake. Water sample were collected at morning between 8.30 am. to 10.30 am. once in a month during September 2021 to December 2022 of Parseoni Lake ferom Parseoni Taluka of Nagpur District for phytoplankton study. The samples were collected by filtering 50 liters of water through plankton net. The plankton mesh of size 56.00µm made up of bolting silk cloth. The samples were allowed to settle by adding Lugol`s Iodin, centrifuged and the concentrate was made up to 50 ml with preservation of 4% formalin. Preserved samples were examined under binocular microscope and identified by available literature (Hutchinson, 1957; Edmondson, 1963; Fritsch, 1965; Biswas, 1980; Prescott, 1982 and Sarode and Kamat, 1984).

Results and discussions

Result of preliminary survey of phytoplankton diversity of Parseoni lake given inTable.01. In present survey total 33 phytoplankton recorded from four taxonomic groups namely Cyanophyceae (12species) Chlorophyceae (10species), Bacillariophyaceae (10species) and Euglenophyceae posseses (01 species) Cyanophyceae (36.36%) groups shows dominance on Bacillariophyaceae (30.30%), Chlorophyceae (30.30%), and Euglenophyceae(03.03%) respectively.

Chlorophyceae groups possess 10 species like *Mougeotia capucina* Spe., *Chlorella* Spe., *Cladophora* Spe., *Closterium* Spe, *Cosmarium* Spe. *Hydrodictyon* Spe., *Oedogonium* Spe., *Pediastrum* Spe., *Scenedesmus* Spe., *Spirogyra* Spe.,*chara* Spe, shows dominance and flourishingly present in lake. Similar results like Chlorophyceae showing dominance also shown by other researchers (Khanna and Singh, 2000; Fule *et al*., 2012).

Another important group Cyanophyceae groups possesses also 12 species namely *Anabaena* Spe.,*Microcystis* Spe., *Nostoc* Spe., *Oscillatoria* Spe., *Chroococcus* spe.,*Gleotheca* spe.,*Merismopediya* spe.,*Gleocapsa* spe.,*Phormidium* spe.,*Gleotrichia* spe.,and *Spirulina* Spe. Bacillariophyceae groups shows 10 species like *cyclotella* Spe.,*Fragilaria* Spe., *Melosira spe. Gyrosigma* Spe., *Navicula* Spe., *Pinnularia* Spe.,*Synendra* spe.,*Cymbella* spe.,*Tabellaria spe.*and *Gomphonema*.spe. This Bacillariophyceae group after Cyanophyceae .Euglenophyceae groups possesses 01 species namely Euglena Spe. Euglenophyceae groups possess five species indicates that water is organically polluted (Pawar *et al*., 2006). Phytoplankton population and distribution are greatly affected by physical and chemical properties of water (Sharma and Diwan, 1997).

Distribution of phytoplankton and theirvariation at different zones of water body is known to be influenced by physicochemicalparameters of water. Phytoplankton study provides a relevant and convenient point of focus forresearch on the mechanism of eutrophication and its adverse impact on aquatic ecosystem (Shinde et al., 2012).

Table.01. Preliminary survey of Phytoplankton diversity of Parseoni Lake from Parseoni Taluka of Nagpur District of Maharashtra (India).

Algal group (Family): *Cyanophyceae*
Name of the algae
1. Anabaena fertillissima **C.B.Rao.**
2. Microcystis flos-aquae **(Wittr.)Kirchner.**
3. Microcystis robusta **(H.W.Clark),Nygaard.**

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4. Nostoc commune **VaucherexBornet andFlahault.**
5. Spirulina major **kutz.ExGomont.**
6. Phormidium anomala **Rao,C.B.**
7. Merismopedia punctata **Nageli.**
8. Merismopedia glauca **Ehrenberg.**
9. Gloeothece samoensis **Wille.**
10. Oscillatoria willei **Gardner,em.Drouet.**
11. Oscillatoria splendid **Vaucher.**
12. Oscillatoria subbrevis **Schmidle.**
Algal group (Family): *Chlorophyceae*
Name of the algae
1. Oedogonium intermedium **Hirn.**
2. Mougeotia capucina **C.Agardh.**
3. Chlorela vulgaris **Beyer; (Smith).**
4. Cosmarium reniforme **(Ralfs), W.Archer.**
5. Hydrodictyon reticulatum ***(Linnaeus) Bory.***
6. Chara zeylanica ***Willdenow, C.L.***
7. Spirogyra ternate **Ripart.**
8. Scenedesmus acutus ***Meyen.***
9. Closterium incurvum **Brebisson.**
10 Pediastrum tetras **Ehrenberg.**

Algal group (Family): *Bacillariophyceae*
Name of the algae
Navicula radiosa var.tenella **Kutzing.**
2. Synedra ulna ***(Nitz), Ehrenberg.***
3. Melosira variance ***C. Agardh.***
4. Pinnularia viridis **(Nitzsch) Ehrenberg.**
5. Fragillaria vaucheriaei **(Kutz.)Peterson,A.Cl.**
6. Gomphonema affine **Kutzing.**
7. Cyclotellameneghiniana **Kutzing.**
8. Cymbella cistula **(Hemprich)Grun. var.woosangisisVirget.**
9. Gyrosigma attenuatum ***(Kutzing)Rabenhorst.***
10. Tabellaria fenestrate ***(Ehrenberg)Kutzing.***

Algal group (Family):*Euglenophyceae*
Name of the algae
Euglena viridis **Klebs.**

Conclusion:

Present preliminary survey of Parseoni lake shows 33 species of phytoplankton diversity from 04 taxonomic groups namely Chlorophyceae, Bracillariaceae, Cyanophyceae and Euglenophyceae. Chlorphyceae group (10 species) shows dominance over all other groups. Cyanophyceae groups(12 species) shows 36.36% .Chlorophyceae group shows 30.30% of phytoplankton and Bacillariophyceae group (10species) shows 30.30% followed by Euglenophyceae groups possess (01species) shows only 03.03%.As the Euglenophyceae group shows one species namely Euglena Species. It indicates that this lake is much polluted with organic pollution, as this lake is present near Parseoni village area and get affected by human anthropogenic activities .Phytoplankton diversity and distribution can vary along with season and with the physico chemical properties of water.

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