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STATICAL ANALYSIS OF WATER QUALITY PARAMETERS IN NALLA -CHERUVU DURING SUMMER SEASON

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ABSTRACT:

The present study is an investigation that was carried on the physico-chemical parameters of Pedda Cheruvu located at Hyderabadt. The study has been carried out for a period of one year i.e., from June, 2020 to May, 2021.The Water Temperature was ranging from19.0^0 C to 31.0^0 C, Transparency was ranging from 18.50cm to 44.30cm, Total Dissolved Solids was ranging from200(mg/l) to 350(mg/l), PH ranges from 7.5 to 8.3, Dissolved Solids was ranges from5.2(mg/l) to 12.0(mg/l), Carbon di Oxide ranges from3.0(mg/l) to 9.2(mg/l) ,Total Hardness ranges from110(mg/l) to 210(mg/l), Total Alkalinity was ranging from 165(mg/l) to 300(mg/l), Chlorides was ranging from35.00(mg/l) to 50.20(mg/l), Phosphates was ranging from0.02(mg/l) to 0.16(mg/l), Nitrates was ranging from 0.02(mg/l) to 0.14(mg/l) and Biological Oxygen Demand from2.5(mg/l) to 7.0(mg/l) were analyzed. These parameters vary from month to month and in three different seasons. The results showed that the variation in these results parameters in four at the different sampling stations. The results indicated that physico-chemical parameters of the water were used for drinking, domestic use, irrigation and pisciculture.

Keywords: Hyderabad, Nalla cheruvu, Temperature, Hardness.

1. INTRODUCTION:

Water is essential natural resources for all living organisms, whether unicellular or multicellular. Biological production in any aquatic body gives direct correlation with its physicochemical status, which can be used as trophic status and fisheries resources potential (Jhingran, et al.1969). Life in aquatic environment is largely governed by physico chemical characteristics and their stability. The maintenance of a healthy aquatic ecosystem is dependent on the physico chemical

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properties of water and biological activity. The polluted state of water resources has led to a steady decline in an aquatic productivity. Therefore, limnological investigation is needed. So that monitoring of the lake water is necessary step to mark the trend pattern of pollutants and their effect on living organisms. In freshwater system the zooplankton forms are important group and constitute basic link of the food chain, planktons are very sensitive to the environment they live and any alternation in the environment leads to changes in the environment in the plankton communities in terms of tolerance abundance, diversity and dominance in the habitat (Mathivonam, 2007. The plankton study is very useful tool for the assessment of water quality in any type of water body and also contributes to an understanding of the basic nature and general economy of the water body. Plankton being the primary producer from the lowest trophic level in the food chain of freshwater ecosystem and plays a key role in fish culture .The density and diversity of the plankton are greatly influenced by the different physico chemical parameters of water (wet zel. 1975). The maintenance of a healthy aquatic ecosystem is dependent on the physico-chemical properties of water and biological activity. Further water condition play a very important role in the production of a breathing fishes. The polluted state of water resources has led to steady decline in aquatic productivity. Therefore, limnological investigation is needed. The maintenance of healthy aquatic ecosystem is dependent on the physico chemical properties of water. So that monitoring of the lake water is necessary step to mark the trend pattern of pollutants and their effect on living organisms. Aquatic biodiversity, is threatened primary by human abuse and management of both living resources and the ecosystem that support them. Most of the ponds are getting pollution due to domestic waste, sewage, industrial aquatic and agricultural effulents. The requirement of the water in all lives, from microorganisms to human beings is a serious problem of present day because of water resources have reached to a point of crisis due to unplanned urbanization, industrialisation and man-made activities. Many Biotic and abiotic processes contribute to variability in plankton diversity in aquatic ecosystems. Seasonal requirement of plankton assemblages are closely linked to seasonal changes in temperature, the external hydraulic nutrient loads and light availability (Malten et al. 1991) other process acting as a time periods on days to week, like material logical and hydrological events (Guillermo, 20090 and also pollution stress on

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them (Raja et al. 2008). Zooplankton diversity responds rapidly to changes in the aquatic environment. Several zooplankton species as bioindicators (Ahmed et al.2011). A number of studies has been carried out on ecological condition of fresh water bodies in various parts of India (Sing et. al.. 2002, smith et.al.. 2007, Rajagopal et. al.. 2010).

2. LITERATURE SURVEY

Biological production in any aquatic body gives direct correlation with its physico-chemical status, which can be used as trophic status and fisheries resources potential (Jhin gran et. al.. 1969) . Life in an aquatic environment largely governed by physico- chemical characteristics and their stability. These characteristics have enabled by biota to develop many adaptations that improve sustain productivity and regulate the Lake metabolism. The most important characteristics Criterion to assess the trophic structure of a lake remains to be primary productivity studies. The food chain in lake ecosystem is very simple comprising phytoplankton and aquatic vegetation as primary producers, zooplanktons as primary consumers, small fishes as secondary consumers and large fishes as tertiary consumers. Plankton is the most sensitive floating community which is being the first target of water pollution, does any undesirable change in aquatic ecosystem diversity as well as Biomass of this community. The measurement of planktons productivity helps to understand conversation ratio at various trophic level and Resources an essential input for proper management of Lake. Some notable studies on phytoplankton and zooplankton diversity have been made by (RAO and CHOUBEY, 199O, DEORARI, 1993 ARIYADEJ et.al. 2004; MISHRA et. al , 2010 and Joseph and YAMAKANAMARDI, 2011). Fishes occupy all three level such as primary ,secondary, tertiary consumer of Food Web in aquatic ecosystem .Man being the top carnivore in this food system as it is very good source of protein. Fish protein is supposed to be cheapest source. So study on limnological characteristic of lake JAKARAM has high importance, the study of their trophic status may help in optimum utilization and conservation. Therefore, the present investigation attempt to study of limnological parameter and their relationship, of phytoplankton, zooplankton status and diversity of fishes. Water has been one of the most critical strategic natural sources for mankind for the duration of the history. In developing international locations like India, wherein get right of entry to secure drinking water isn't assured for a majority of the populace.

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It is of incredible importance to hold the quality of surface water resources (Banu et al., 2007). Water used for drinking ought to be potable which means that that it may be ate up in any favored amount with damaging effect on health and that this crucial fluid need to be unfastened from turbidity, color and objectionable flavor (Jayalaxmi Devi and Belagadi 2005). The fresh water must be recognized because the "Blood of Society" (Wetzel, 2000). Today true nice water has turn out to be a precious commodity. The excellent of water getting vasty deteriorated because of unscientific waste disposal, mistaken water control and carelessness in the direction of surroundings. This has led to shortage of potable water affecting the human health (Agarkar, 2003). The excellent of water have to be assessed on the basis of physicchemical and biological parameters for you to provide the entire spectrum of facts for the cause of fisheries management. Several studies workers achieved studies on water first-class parameters of water impoundments in India like Yadav (2002), Fokmore and Musaddiq (2005), and Patil and Dongare (2006).

3. METHODOLOGY

In recent years, the increasing threat to groundwater quality due to human activities has become a matter of great concern. A vast majority of groundwater quality problems present today are caused by contamination and by overexploitation, or by combination of both. Rapid urbanization and industrialization in India has resulted in steep increase of generation of wastes. Due to lack of adequate infrastructure and resources the waste is not properly collected, treated and disposed; leading to accumulation and infiltration causing groundwater contamination. The problem is more severe in and around large cities as also various clusters of industries. In many of these areas groundwater is only source of drinking water, thus a large population is exposed to risk of consuming contaminated water. In this background Central Pollution Control Board with the help of its Zonal offices, the National Institute of Hydrology (NIH) and the Pollution Control Research Institute (PCRI) of Bharat Heavy Electricals Ltd. (BHEL) initiated a detailed survey of groundwater quality in problem areas of industrial clusters and metro cities of India. The results of this Survey with respect to 16 problem areas and 8 metro cities are summarized in this Report. The Report presents the environmental profiles of metropolitan cities and Problem Areas identified by CPCB and their groundwater quality status. The groundwater quality data obtained during Survey were evaluated against drinking water quality

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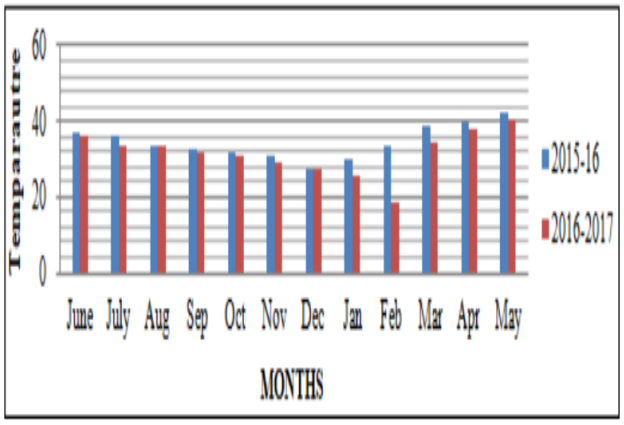
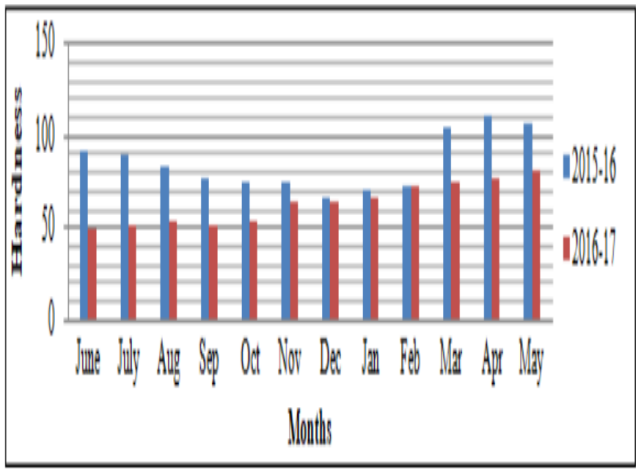
requirements [BIS 10500, (1991) & WHO (1996) Standards]. Salinity, nitrate, Coliform & Fluoride are the main water quality issues in the metro cities and problem areas of the country. Considering the competing demand on this scarce resource, the Report highlights the judicious use of groundwater and also remedial measures needed to overcome the problems.



The data obtained on the temperature content of water samples from Jakaram Lake during the year from June 2015 -May 2017 are presented in the table no(1 and 2). The data pertaining to temperature C0 of Jakaram Lake during the month of May in the year 2015-16 was observed as highest temperature 42.3Whereas lowest temperature 18.9 was observed during the year 2016-17in the month of Feb in 2016-17. Temperature controls the rate of all chemical reactions, and affects fish growth and their reproduction. Drastic change in temperature can be fatal to fish. In the present investigation the water temperature ranged from 18.9 to 42.3 which is found suitable for both carps and air breathing fishes.



Hardness: The total hardness was maximum recorded 11 1.33 in the month of May 2015 - 16 where as minimum recorded 50 in the month of June 2016 -17.The Higher Total hardness value in summer was also reported by Devi, (1985 and 1977). The total hardness more than 300 mg/l is generally uncongenial for fish production because of higher pH. Optimum total hardness for fish culture has been found to be around 75 - 150 mg/l (Das, 1996) sugunan (1990). The total hardness above 70 ppm is indicator of the better productivity.

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CONCLUSION

The present study examines a seasonal variation in physico - chemical parameters on phytoplankton community at Jakaram lake. The correlation results proved that the physico-chemical parameters are important for distribution, abundance and occurrence of phytoplankton species with esteemed to seasonal changes in Environmental parameters. Based on the present observation lake Jakaram is in rich in species diversity and composition and the nutrients status is high enough to support the plankton community. The water temperature is always found to be less than atmosphere temperature it is suitable for fish growth. pH was almost alkaline and suitable for fish growth. Higher value of oxygen during some months may be due to increased photosynthetic activity while lower may be due to its utilisation during decomposition of organic matter and respiration by micro and macro organisms. Higher value of nitrates and phosphates during the study period was due to incoming agriculture due to run off. On the basis of studied parameters in the lake Jakaram water appears to be moderate for all trophic levels.

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