1. INTRODUCTION

Fresh water is one of the basic necessities for the sustenance of life. Rapid population growth, urbanization and industrialization have led to a greater demand of water from an increasingly smaller supply of water resources in the country. Water is not only a vital environmental factor to all forms of life, but it has also a great role to play in socio-economical development of human population. Water is the most common yet the most precious resource on earth without there would be no life on earth. It provides major inorganic nutrients required by all living organisms in many metabolic and life processes. Water exhibits unique properties, which plays significant role. About 97% water on earth is in oceans, 2% in glaciers and polar ice, 0.009% in lakes and 0.00009% in rivers and the residue as ground water. Thus only 1% of total water present is being utilized by living organisms and that is why its quality must be maintained. It is said that if pure drinking water is provided, about 98% of the water related diseases can be controlled/cured. (Kudeshia V.P., 2003). The maximum production is obtained when physic-chemical factors are at optimum level (Sinha and Srivastav, 1991). Water quality is a paramount factor in ecosystem productivity.

Quality of an aquatic ecosystem is dependent on the physical and chemical qualities of water along with biological diversity of the habitat. (Cairns and Dickson, 1971, Jindal, S. and Gusain,D., 2007) stated that the analysis of biological materials along with chemical characteristics of water forms a valid method of quality assessment. The maximum production is obtained when physico-chemical factors are at optimum level (Sinha and Srivastav, 1991). Water quality is paramount factor in ecosystem productivity.

The most important physico-chemical parameters such as DO, Temperature, pH, Turbidity, EC, Alkalinity, TDS, etc. are directly associated with the water quality and the distribution and abundance of biological organisms. Thus, study of physico-chemical parameters along with some biological organisms will indicate the status of a particular water body.

Plankton community is one of them. It is a heterogenous group (phytoplanktom and zooplankton) of tiny organisms adapted to suspension in a sea and freshwater (Battish, 1992). Phytoplanmktom is a predominant type of a plant found in most water bodies.
The rotifers invariably constitute a dominant component of freshwater zooplankton and contribute significantly to their dynamics and production (Sharma, 1991). These organisms are regarded as valuable bioindicator to depict the trophic status of water quality (Pejler 1989) and Bhandarkar W.R., Bhandarkar S.V., Murkute V.B. (2008). Rotifers have a remarkable quality that they are able to survive for long periods in dried or frozen condition and will resume normal behaviour when rehydrated or thawed. Patil, G. P., G. T. Kedar and S. M. Yeole (2008). The present study is designed to monitor monthly variations in the water quality parameters of fresh water bodies and plankton diversity.

Origin of Topic

For last few years environment is highly polluted by many pollutants that affect our fresh water bodies. If water is badly polluted then it has some clear sign that something is wrong. Because of pollution plankton and water quality is affected. Plankton form an intermediate step in grazing food chain in aquatic ecosystem and they play an important role in aquatic biota so one has to know its seasonal variations. We need to conduct biological and physic-chemical analysis of fresh water bodies and analyze their effect on plankton diversity and existence.

Analysis of fresh water bodies determines the extent of pollution and studies of plankton tell us its qualitative and quantitative variations, which affect food chain of aquatic ecosystem.

About the study area

According to Mirat-e-Ahmedi, Ahmed shah, laid the foundation stone of Ahmedabad on 27th February, 1411, on the advice of his spiritual guide Saint Sheikh Ahmed Khattu of Sarkhej. The city was founded on the eastern banks of the Sabarmati river, just near the ancient cites of Asawal and karnavati. Currently, Ahmedabad district covers the area between Arbuda hill and Sabarmati river and is a part of Anarta area. The author of Haafat Ikleem had written in the year 1593 that Ahmedabad is a unique city of India in terms of cleanliness and prosperity and it is superior to other cities in terms of its beautiful monuments. Now a day Ahmedabad city becomes the heart of Gujarat state and is also rises as the commercial capital too. Ahmedabad city was founded by king Ahmed shah in the year 1410. It is located between Latitude 23.03° N from Longitude 72.58° E.
Water bodies of Ahmedabad

In Ahmedabad there is large number of water bodies. Many of them are natural and many of them are artificial. Initially all the water bodies in Ahmedabad were natural, but now a day some of these water bodies are improved by govt. authorities such as “Ahmedabad Urban Development Authority” (AUDA) and “Ahmedabad Municipal Corporation” (AMC) to restore the rain water and to recharge underground aquifers. AUDA had constructed percolating bore wells up to a depth of 80 meters and more. AUDA engineers believe percolating wells in lake will raise the underground water table, which has been descending due to continuous exploitation by multi-storied buildings due to non-availability of surface water for domestic use. As water in the lake recharges underground aquifers, therefore water of the lake should be monitored for various physico-chemical parameters at proper interval of time. And all the results available should be compared with the WHO standard to check the status of the water bodies. The water bodies of Ahmedabad listed below are selected for the study.

2. Vastrapur (Narsinh Mehta) lake
3. Malav talav and
4. Ropada (Makaraba)talav.

Of this first two sites are developed lakes where the boating and other recreation facilities are available, the third one is compared to other three is a small lake and water level remains low throughout the year. The last one is a natural lake and drainage water is mainly dumped or stored. The first one is located in the eastern part; the third one is located in the south-west of the city, while the second and fourth are located in the western part of the city. Thus their geographical locations and nature differs hence are considered for the present study.
Fig. 1 Map of Ahmedabad

Ahmedabad District

1. Maalav Lake
2. Vastrapur Lake
3. Kankaria Lake
4. Makarba Lake

Latitude 23.03957 Longitude 72.56600

Fig. 2 Map of Lakes

GPS Locations

1. Maalav Lake
Latitude 23.03493
Longitude 72.43023

2. Vastrapur Lake
Latitude 23.03957
Longitude 72.56600

3. Kankaria Lake
Latitude 23.04463
Longitude 72.42150

4. Makarba Lake
Latitude 23.03955
Longitude 72.56600