Impact of Seasonal Changes on Water Characterstics at Palakkad in 2021-2022

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ABSTRACT

Geometric increase in population coupled with rapid urbanization, industrialization and agricultural development has resulted in high impact on quality and quantity of water in India. Hence, the availability and the quality of the freshwater resources are the most pressing of the many environmental challenges in India (CPCB 2011). The quality of water is of vital concern for mankind, since it is directly linked with human welfare. Poor quality of water adversely affects the plant growth and human health (WHO 1984; Hem 1985). A number of studies on water quality have been carried out in different parts of India All these studies reveal that both rivers and groundwater in India are facing water quality issues.

The state of Kerala, located in the south-western corner of India, is blessed with 44 rivers and heavy rainfall of ~ 3000 mm/year. However, most of the water in the rivers is quickly drained into the Arabian Sea due to the steep seaward sloping of the state. Hence, in addition to rivers, the groundwater is also utilized to meet the water requirements of the state. The increase in population, development activities, urbanization, change in land-use pattern, etc. has created a concern among the people of Kerala regarding both the river water and groundwater quality of various river basins.

Keywords— Quantity of Water, 44 Rivers, Ground Water

I. INTRODUCTION

The project entitled ' Impact of seasonal changes on water characteristics at palakkad district in 2021-22 ' is an evaluation of potability of surface and ground water in palakkad district. Water quality is a major issue in this fast growing world. Water quality becomes a problem due to population explosion, socioeconomic growth and poor management of natural resources in the 21st century. Surface water namely rivers, ponds, lakes etc. have been contaminated at an alarming rate due to the dumping of waste materials in a meaningless way. The project reveals improper waste disposal system, dumping wastes in public water resources in an unsustainable manner in the study area. Ground water was the major source of drinking water in the early years but now due to over exploitation it is also contaminated and exhausted. In turn, humans are affected by the poor quality of water in the form of health impacts. The project gives general introduction with water quality and its global, Indian and Kerala scenario and the major reasons for poor quality of water. Since the study is supported by the concept that 'water quality has a major health impact', a brief statement about medical geography is also included. Medical geographical aspect is a sub division in the discipline of geography that explains about the influence of local conditions upon the human health. 'Statement of the problem' and the 'significance of the study area' that are explains about the present problem of investigation in the study area.

II. METHODOLOGY

The rivers of Kerala are monsoon-fed and fast-flowing. According to an estimate (PWD, 1974), the total runoff of the rivers of the state amounts to about 77,900 mm3 , of which 70,200 mm3 is from Kerala catchments and the remaining 7700 mm3 is from Karnataka and Tamil Nadu catchments. The available per capita fresh water resource in Kerala is less than the national average; hence it's important to conserve the aquatic ecosystems of the state. Aquatic ecosystem conservation and management requires collaborated research involving natural, social, and inter-disciplinary study aimed at understanding various components, such as monitoring of water quality, biodiversity and other activities, as an indispensable tool for formulating long term conservation strategies. In order

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to get the current status of these threatened ecosystems a state level water quality programme was developed.

Findings of this study address a wide range of water-quality issues related to potential effects on human health and aquatic ecosystems, for example, on the quality of water in streams, public-supply and domestic wells. The role of hydrology and contaminant transport on water quality, drinking water, and ecosystem health; Effects of agriculture and urbanization on aquatic health, nutrient enrichment, and stream ecosystems Changes in selected contaminants in streams and ground water over time

III. LITERATURE REVIEW

PRIYA MACHINCHERY et al[2015], This study was carried out to determine the Tirur River water quality based on the physicochemical and microbiological parameters, and its impacts on aquatic ecosystem. The water samples were collected from five stations along the river and water quality parameters were studied during October 2015 to March 2016. The study revealed that physiochemical and microbiological parameters of Tirur River fluctuated with season and location. Concentrations of many of the elements were higher than the desired limit as per BIS (Bureau of Indian Standards) and pollution has reduced the amount of dissolved oxygen in the Tirur River. This study demonstrated the poor microbiological quality of Tirur River and the studied four sites have high levels of E.coli. Construction of regulator cum bridge(RCB) at Koottayi negatively affected the quality of water due to the restriction of natural flushing action of the river and accumulation of pollutants. Results indicate that the water of Tirur River is highly contaminated except Ayyapanov (site near to origin), anthropogenic activities left it in the mouth of death.

SHIVANKAR V.M, A study of geochemical effect on the Physico chemical properties of different sources of water in Nagpur Municipal area of Maharastra, Shivankar V.M. reveals the facts that in the present investigation, 3 different water sources samples of Nagpur area were collected & various chemical parameters were studied from the results & discussion. It is concluded that in the same Nagpur municipal area, when compared the results in case of bore water, lake water and well water, lake water was found to be more suitable for human beings for all purposes

IV. LOCATION

Palakkad, also known as Palghat, is a city and municipality in the state of Kerala in India. It is spread over an area of 26.60 square kilometres (10.27 sq mi). It is the administrative headquarters of the Palakkad District. The city is situated about 350 kilometres (220 mi) north of state capital Thiruvananthapuram, 50 kilometres (31 mi) southwest of Coimbatore in Tamil Nadu, 66 kilometres (41 mi) northeast of Thrissur, and 127 kilometres (79 mi) southeast of Kozhikode, on the meeting point of two National Highways namely, Salem-Kochi National Highway NH 544, and Kozhikode-Malappuram-Palakkad National Highway NH 966. Palakkad is also known as the rice bowl of Kerala. The 18th-century Palakkad Fort has sturdy battlements, a moat, and a Hanuman temple on its grounds. North on the Kalpathy River, the 15th-century Viswanatha Swamy Temple is the main venue of the Ratholsavam chariot festival. Northeast, near Malampuzha Dam, the town of Malampuzha has a rock garden created from recycled materials. The river Bharathappuzha flows through Palakkad.Palakkad is located on the northern bank of Bharathappuzha River.

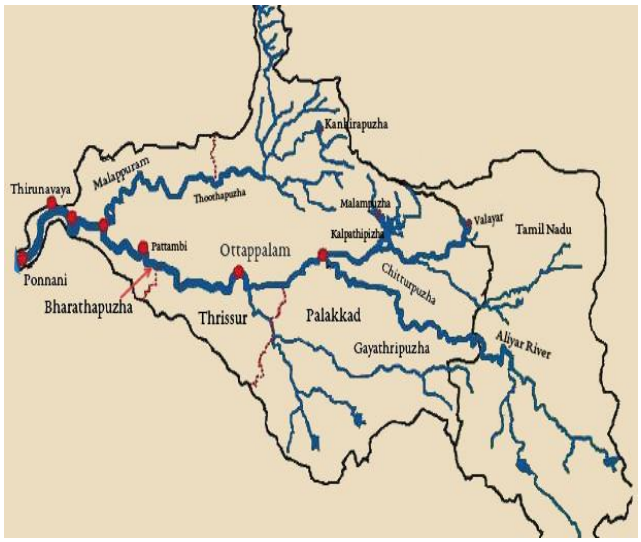

Figure 1: Palakkad river map

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Figure 2: Sample collection

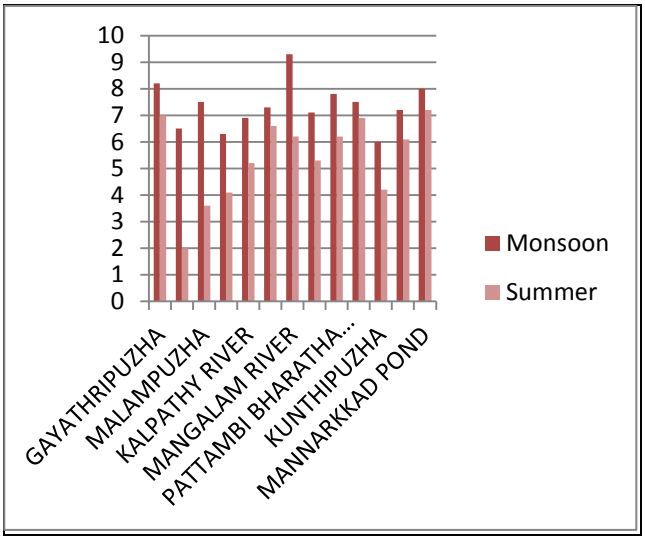
Figure 3: PH test

V. EXPERIMENTS AND RESULTS

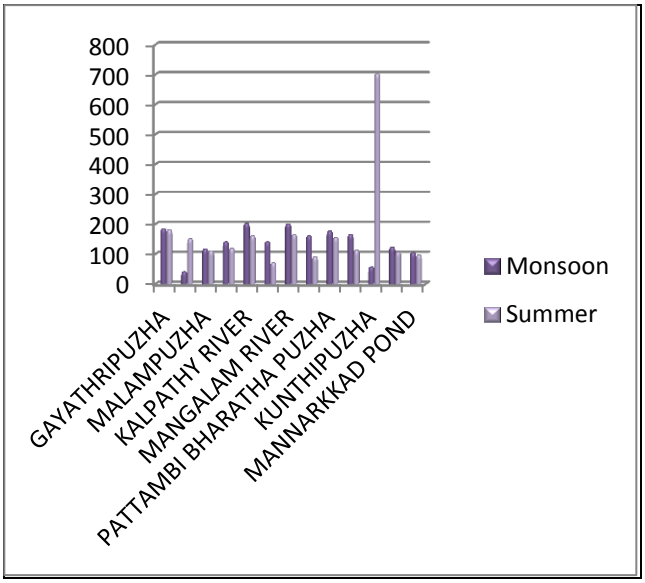
PH test

Location	Monsoon	Summer
GAYATHRIPUZHA	10	9
CHULLIYAR DAM	8	8.3
MALAMPUZHA	9	8.9
PLACHIMADA	9	8.7
KALPATHY RIVER	9	9.5
PLACHIMADA POND	8	8.1
MANGALAM RIVER	9	8.9
PARUTHIPULLLY POND	9	8.1
PATTAMBI BHARATHA PUZHA	10	8.9
OTTAPPALAM BHARATHA PUZHA	9	9
KUNTHIPUZHA	8.5	8.6
KANJIRAPUZHA DAM	8.7	8.7
MANNARKKAD POND	9	8.8

Turbidity (NTU)



Hardness (mg/l)



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Chloride (mg/l)

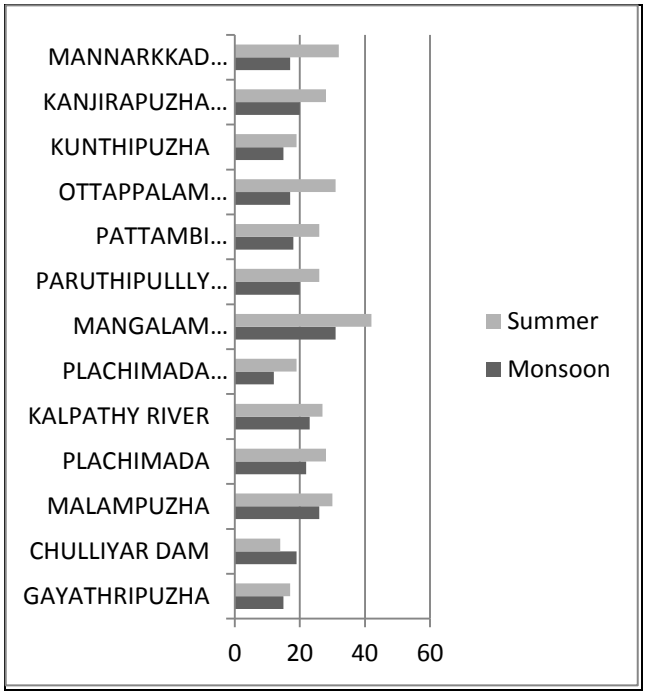
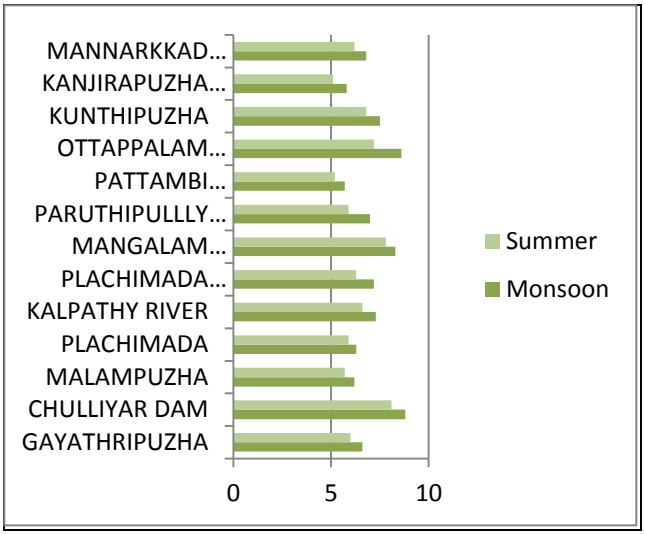
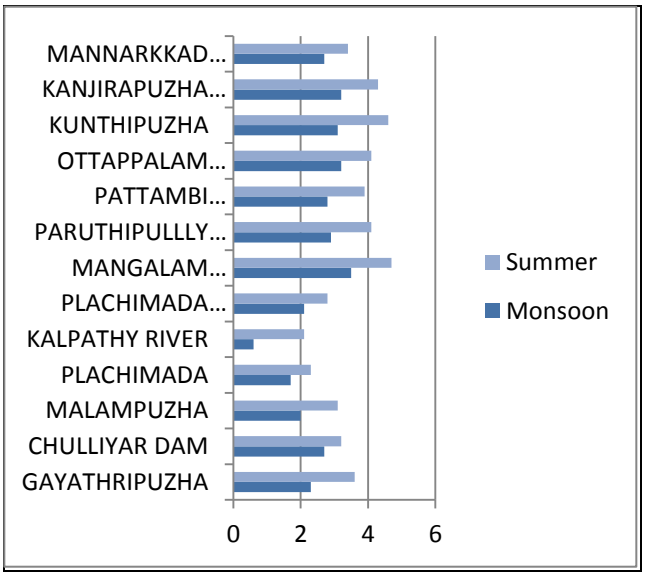


Figure 4: Performing lab tests

Dissolved oxygen (mg/l)



Biochemical oxygen demand (mg/l)



IV. CONCLUSION & SUGGESTIONS

From this study, we have arrived at an inference that the physical and chemical characteristics of river water changes during summer and monsoon seasons. These properties are not within permissible limit and it cannot be used without further treatment. Ground water was the major source of drinking water in the early years but now due to exploitation it is also contaminated and exhausted. So it is necessary to protect it from pollutions. The suggestions are the river water shouldn't be taken directly for drinking purpose, the water should be properly treated with appropriate treatment before using it for

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drinking purpose, the water characteristics is changing in day by day and also have changes in varying climates. The main reason for water pollution in our state is due to inflow of untreated domestic and industrial wastes and agricultural runoff. So it is necessary to protect rivers from pollutions

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