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Research Article

STUDIES ON THE PHYSICOCHEMICAL FACTORS OF MUTHUPET MANGROVES, TAMILNADU INDIA

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ABSTRACT

Mangroves are the fragile and highly productive ecosystem occurring along the coastal belt of our country. The water analyses revealed that the pH was high during the summer and was found to be low during the winter season. The BOD was also showed the same pattern. The Co2 status was negligible. The total hardness was high during the summer season and showed decline trend during the winter season. The heavy metals and the trace elements were found to be trace throughout the study period. The analyses revealed that the physico chemical factors showed significant variation between the seasons.

INTRODUCTION

Mangroves are the ecologically important coastal systems. In the tropics they are especially rich in flora and fauna. They are one of the most important productive ecosystems of great ecological and economical significance. Several reports have emphasized that the mangrove are one of the richest store house of Biological and Genetic diversity (Kathiresan, 2000; Sandilyan *et al*., 2010). Mangroves are distributed circumtrophically occurring in 112 countries and territories. Of the total coverage 41.4% exist in South Southeast Asia. Mangrove communities develop in the intertidal and subtidal area, but more between mid tidal level to extreme high water mark. The total global area of the mangroves is estimated at 18.1 million ha. Mangroves are the fragile and highly productive ecosystem occurring along the coastal belt of our country. Indian mangroves are distributed in about 6740 sq. km area constituting about 7% of the worlds mangrove and 8% of the total coverage of the Indian coastline. The mangroves are divided into deltaic, back water estuarine and insular categories. Mangrove forests are important wetlands among the tropical and subtropical coasts, providing environmental sustainability, ecological security and economic prosperity. Mangrove forests are the most productive ecosystem. These are often called as tidal forests, coastal woodlands or oceanic rain forests. The mangroves act as a buffer zone between land and sea. It also serves nursery for the estuarine and marine flora and fauna. However the coastal areas are undergoing dramatic changes due to intensive human activities such as touriusm, sand extraction and mangrove destruction. Hence an attempt has been made to analyze the water quality parameters of muthupet mangroves.

MATERIALS AND METHODS

The water samples were collected from the muthupet mangrove (10° 46°N; 79° 51°). The samples were collected during Jan 2014- Dec2014.The samples were brought to the laboratory aseptically. The temperature were recorded using Celsius thermometer & and the pH was recorded using the pen pH meter. The other parameters such as Dissolved oxygen (DO), BOD, COD Carbonate, salinity, calcium, chloride, Nitrite & Nitrate were estimated by using standard procedures (Eaton *et al*., 1994). The trace metals & heavy metal were estimated at District watershed Development Agency, Tiruchirappalli, Tamilnadu, India.

RESULTS

The water analyses revealed that the pH was high during the summer and was found to be low during the winter season. The BOD was also showed the same pattern. The Co2 status was negligible. The total hardness was high during the summer season and showed decline trend during the winter season. The heavy metals and the trace elements were found to be trace through out the study period. The data were represented in table I & II. The analyses revealed that the physico chemical factors showed significant variation between the seasons.

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PARAMETERS	JAN	FEB	MAR	APR	MAY	JUN
pH	8.4±0.3	8.32±0.3	8.67±0.2	8.9±0.6	8.9±0.6	9.0±0.2
Salinity	29±1.0	29.7±0.2	28.0±0.4	29.7±0.3	30.1±0.2	30.56±0.2
BOD	4.1±0.3	3.3±0.8	3.9±0.7	3.78±0.6	3.75±0.6	3.0.±0.6
COD	2.5±0.7	2.8±0.5	3.1±0.8	3.1±0.4	2.9±0.05	3.7±0.07
DO	2.3±0.03	2.78±0.08	2.97±0.08	2.0±0.09	3.10±0.08	3.21±0.08
CO2	trace	trace	trace	trace	trace	trace
Calcium	180.21±1.8	186.9±21	197±14	187±21	198.90±12.6	196.21±9,0
Magnesium	trace	trace	trace	trace	trace	trace
Hardness	876.21±9.8	987±0.8	900±10	921.89±0,23	765±15	798±24
Iron	trace	trace	trace	trace	trace	trace
Nitrate	0.029±0.009	0.027±0.05	0.034±0.001	0.067±0.009	0.078±0.001	0.008±0.0002
Nitrite	trace	trace	trace	trace	trace	trace
Chloride	520.4±0.15	525.4±0.15	522.4±0.15	528.4±0.15	526.4±0.15	527.4±0.15
Zinc	trace	trace	trace	trace	trace	trace
Mercury	trace	trace	trace	trace	trace	trace
Lead	trace	trace	trace	trace	trace	trace
Cadmium	trace	trace	trace	trace	trace	trace
Nickel	trace	trace	trace	trace	trace	trace
Copper	trace	trace	trace	trace	trace	trace

Table II Physico chemical parameters of muthupet mangrove

PARAMETERS	JUL	AUG	SEP	OCT	NOV	DEC
pH	9.1±0.3	9.4±0.3	8.62±0.3	8.42±0.2	8.1±0.6	7.9±0.2
Salinity	30.99±0.6	29±1.0	29.7±0.2	28.0±0.4	29.7±0.3	30.1±0.2
BOD	3.7±0.4	4.1±0.7	4.3±0.8	4.9±0.7	4.78±0.6	4.75±0.6
COD	3.9±0.09	3.5±0.7	3.8±0.5	3.81±0.8	4.1±0.4	4.9±0.05
DO	3.30±0.09	2.3±0.03	2.3±0.08	2.`1±0.08	2.0±0.09	2.1±0.08
CO2	trace	trace	trace	trace	trace	trace
Calcium	198±11	186.21±1.8	198.9±21	207±14	287±21	328.90±12.6
Magnesium	trace	trace	trace	trace	trace	trace
Hardness	895±0.28	976.21±9.8	967±0.8	980±10	1101.89±0,23	787±15
Iron	trace	trace	trace	trace	trace	trace
Nitrate	0.009±0.003	0.029±0.009	0.027±0.05	0.034±0.001	0.067±0.009	0.078±0.001
Nitrite	trace	trace	trace	trace	trace	trace
Chloride	529.4±0.15	540.4±0.15	625.4±0.15	672.4±0.15	728.4±0.15	726.4±0.15
Zinc	trace	trace	trace	trace	trace	trace
Mercury	trace	trace	trace	trace	trace	trace
Lead	trace	trace	trace	trace	trace	trace
Cadmium	trace	trace	trace	trace	trace	trace
Nickel	trace	trace	trace	trace	trace	trace
Copper	trace	trace	trace	trace	trace	trace

DISCUSSION

Mangroves are woody plants that grow in the tropical and subtropical latitudes along the land sea interface, bays, estuaries, lagoons. Backwaters and in the rivers. The mangroves reach upstream up to the point where the water still remains saline. These plants and their associated organisms constitute the mangrove forest community or the mangal. The mnangal and its associated abiotic community constitute the mangrove ecosystem. Minimum pH was recorded during the summer months could be due to the increased temperature coupled with high salinity. (Tiwari, 1990; Xavier *et al*., 1999). Salinity level was recorded maximum during the summer seasons. Similar results were recorded by Padmavathy and Sathyanarayana, (1999), Bhave and Borse (2001). Dissolved Oxygen content of the water body is greatly influenced by temperature, photosynthetic activity and respiration. (Tiwari, 1990). The analyses showed inverse relationship with the tempertature (Olsen and Summerfield, 1997), Goldman and Home, (1983), Bhave and Borse (2001).

Nutrients such as nitrare and inorganic phosphate were abundant during the monsoon due to the monsoonal rainflow of freshwater and land runoff.

A decreased nutrient level during summer and postmonsoon due to the prevailing hydrographic and meterological conditions. (Agadi and Untawala, 1978). Higher salinity would cause a profound impact on the animals such as planktons, fungi, benthyic forms, shrimps, crabs, fishes, etc., which live in and around the mangroves (Kathiresan, 2000: Siva and Sugumaran., 2013).

Refrences

Agadi, V.V., Untawale, A.G (1978). Marine alfal flora of Goa Coast.Sea weed Res. Uti.3 (1&2) 56-70.

Bhave, S.K., Borse,. P.V., (2001).Seasonal variation in the temperature, dissolved oxygen, Ph, salinity, and their influence on planktons, Innar riverwater Salgaon, Maharastra. Poll. Res 20(1) 79-82.

Eaton,A.D., Clesceri, L.S. and Green berg, A.E. 1995. Standard methods for the examination of water and waste water (19th Edn). American public Health Association. New York, Washington. DC. pp 2: 10-15; 5-25; 10-3; 10-16.

Goldman C.R., and Home, A.J (1983). Limnology International student edn. Mc Grawhill 89-93.

Jagadeesan, P., (1986). Studies on the environmental inventory of the marine zone of Coleroon Estuary and inshore waters of Pazhayaru, Ph D thesis submitted to Annamalai University. Tamilnadu, S. India.

Kathiresan K., (ed) (2000). Flora and Fauna in mangrove ecosystem a manual for identification. All India co ordinate project on coastal and marine biodiversity. training and capitivity building on coastal biodiversity, (east coast) Ministry of environment and forest CAS in Marine biology Parangipettai, India 389 pp 58.

Olsen R.D and Summerfield, M.R (1997). The physic chemical limnology of a desert reservoir. Hydrobiologia.53(2) :117-119.

Padmavathi, D and Sathyanarayana, D. (1999).Distribution of nutrients and major elements of riverine, estuarine coastal waters of Godavari, Bay of Bengal Indian J.MaRINE Sciences., 28:345-354.

Sandilyan., S., Thiyagarajan, K., Nagarajan., R., (2010).Major decline in species richness in the waterbirds in the Pichavaram mangroves wetlands Southern India. Wader study group Bull. 117(2) 91-98.

Siva,T., Sugumaran., M(2013). Physico chemical parameters of marine water from muthupet mangroves of south east coast of India. *Int. J. Research in Engneering and bioscinence*.:1(3) 40-48.

Tiwari ,.N.C.,(1990). Monitoring of the potomologic aspect of the stream Rauli gad. In: R.K. Trivedi(ed) River Pollution in India. Ashish publishing house, New Delhi.pp 53-57.

Xavier J.K., Balachandran, K.K., and Sandaranarayanan. N.V. Indian *J. Env.* Pro 19: 367-376.

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