

LIMNOLOGICAL STUDIES ON CHAMBAL RIVER-I

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Considerable variability existed in the river water of Chambal at Kota. A direct correlation of Chlorides with Bicarbonate alkalinity was observed. The values for hardness and other chemical parameters were maximum in June and minimum in months of November and December. Biotic and abiotic features of the river Chambal contributed to the knowledge about river ecosystem.

Keywords : Limnological studies; Decomposition; Pollution; Aquatic life.

The primary objective of the limnological and ecological studies of river Chambal (South-East Rajasthan) is to reveal some of the principles governing the biotic and abiotic features of the river and to contribute to the knowledge about river ecosystems. The present paper is a preliminary report on the limnological features of the river Chambal.

Limnological investigations of the river were carried from March, 88 to February, 89. Water samples were collected monthly from four sites, in the morning hours between 7.30 and 9.00 a.m., for the estimation of temperature, transparency, pH, dissolved oxygen, carbonate, bicarbonate and alkalinity following the methods of APHA (1976).

Observations on the physico-chemical features of Chambal river water been presented in Table 1.

Water analysis revealed some interesting features. pH varied from 7.8 to 8.5 showing alkaline conditions throughout the period of observation. Dissolved oxygen fluctuated from 7.5 to 17.3 ppm, minimum during June and maximum during February. Higher dissolved oxygen content was recorded when temperature was slow or *vice versa*. It is in conformity with the law of solubility of gases, according to which the periods of high temperature should be the periods of low oxygen content. The rate of decomposition also played an important role in controlling the oxygen level. Higher temperature induces the rate

Table 1. Physico-chemical characters of the river Chambal.

Parameters	Range at different sites			
	1	2	3	4
Temperature Air (°C)	17.2-38.6	18.1-39.7	17.6-38.0	18.3-39
Temperature Water (°C)	16.0-35.2	14.1-36.3	16.2-37.4	15.0-35.2
Transparency (Cm)	5.0-50.3	5-30	5-46	5-48
pH	7.8-8.1	7.6-8.3	7.2-8.0	7.3-8.5
Dissolved Oxygen (ppm)	7.5-15.6	8-14.1	8.6-17.0	9-17.3
Carbonate (ppm)	5-7.5	4-21	3-7.2	4-7.5
Bicarbonate (ppm)	50-135	155-210	90-170	70-130
Phosphate (ppm)	0.12-0.25	0.14-0.30	0.9-0.27	0.13-0.39
Chloride (ppm)	2.1-7.6	3.6-8.1	4.2-12.8	3.1-9.3
Hardness (ppm)	106-400	193-416.0	231.6-326.5	153-403.2

of decomposition in which dissolved oxygen is invariably utilized. Minimum value of oxygen reflects the nature and extent of pollution in the water body, which is quite deleterious for the aquatic life.

Higher values of phosphate were obtained during summer months which may be attributed to the depletion in water level and decomposition of organic matter. The chloride content ranged from 2.1 to 12.8 ppm. Higher chloride values of the river water was due to inflow of sewage and drains rich in animal refuse and night soil. Similar results have been obtained by Adoni (1975). This study also confirmed the view of Selot (1977) that there has been a direct correlation of chlorides with bicarbonate alkalinity. The values for hardness were observed to be maxi-

imum in the month of November and December.

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