Uttar Pradesh J. Zool. 12 (1) : 75-77, 1992 ISSN 0256-971X

YEARLY VARIATION IN CERTAIN PHYSICO-CHEMICAL PARAMETERS OF POND AT EASTERN DOON VALLEY

J.V.S. RAUTHAN, SHASHI BISHT AND S.P. GROVER
DEPARTMENT OF ZOOLOGY, D.A.V. (PG) COLLEGE, DEHRADUN-248001, INDIA.

Samples of water of the pond at Eastern Doon Valley were analysed for water and atmospheric temperature, pH value, dissolved oxygen, free carbondioxide, alkalinity, phosphates, nitrates, total dissolved solids (TDS), and total suspended solids (TSS).

The Doon Valley is situated between longitudes 77 30'10" and 78 18' 30" E and latitudes 29 58' 40" and 30-24" North. The diurnal variation in physico-chemical parameters of the rivers, lakes, and ponds, of India have been studied by Badola & Singh (1981), Bisht & Grover (1990), Geograge (1961), Saxena & Adoni (1973) and Chona (1990). However, very little information is available in the literature on the limnology of the coldwater streams or ponds for the Doon Valley. It is considerable insist to study the effect of these at Doon Valley.

Water transparency was obtained from standard secch disc and temperature was noted by centigrade thermometer. The pH value was determined by spot Philips pH meter. For water analysis, Standard methods APHA (1976) were opted. Collection of samples of water and physico-chemical data were performed from December 1990 to November 1991. Results of the tests conducted are presented in tabular form and discussed.

Water temperature varied considerably during different months minimum being 16^0 C in December and maximum being 28^0 C in July. The pH value of water varied from 7.0 to 8.0. The total alkalinity fluctuated within alkalinity during summer is due to an increase in the rate of decomposition and decrease in water level. Dissolved oxygen was higher during winter 9.6 mg/l in October and lower in summer range in 4.0 to 8.0 mg/l. The atmospheric temperature was higher in June 35^0 C and lower in winter 16^0 C January. It is in conformity with a low solubility of gases according to which the period of high temperature should be a period of low concentration level. During the high temperature there is a greater decomposition of water in which dissolved oxygen invariably used leading to fall in its value. The value of free carbondioxide varies from 19.30 mg/l to the total dissolved solids, and total suspended solids was minimum during December 600.0 mg/l and maximum in September 990.0 mg/l.

The biochemical amount of phosphate ranges from 4.5 to 8.2 mg/l, nitrates ranges from 2.3 to 3.8 mg/l and chloride ranged from 18.4 to 23.5 mg/l. It is explicit from the observations taken that the pond used was a polluted pond.

ACKNOWLEDGEMENTS

Sincere thanks are due to Prof. S.K. Sanghal, Head, Deptt. of Zoology for his invaluable guidance and encourgement.

Table I. Diurnal variation in Physico-chemical parameters during the year 1990-91.

	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.
Atmospheric temperature (^{0}C)	17	16	20	22	26	29	30	32	28	28	29	28
Water temperature (^{0}C)	17	16	20	22	22	23	26	25	26	27	22	20
Hydrogen, Ion (Conc.)	7.0	7.7	7.3	7.4	8.0	8.1	8.2	8.0	7.2	7.0	7.0	7.2
D.O. (mg/l)	4.8	4.2	4.0	4.8	5.2	6.4	7.0	7.5	8.8	9.0	9.6	8.0
Free CO2 (mg/l)	21.0	22.0	25.0	30.0	23.0	24.0	22.0	18.0	16.0	14.0	20.0	21.0
Total Alkalinity	102.2	100.2	122.0	123.0	150.0	140.0	138.0	134.0	115.0	105.0	98.0	96.0
Phosphates (mg/l)	7.0	8.0	8.2	8.1	4.5	4.6	5.5	5.8	5.5	5.8	5.5	6.5
Nitrates (mg/l)	2.7	2.3	3.5	3.4	2.2	2.4	3.0	3.2	3.6	3.1	3.8	3.6
Chlorides (mg/l)	20.4	21.6	18.2	20.0	22.4	23.2	23.4	22.5	22.0	20.0	19.0	18.4
T.S.S. (mg/l)	420.0	410.0	444.0	480.0	540.0	650.0	700.0	760.0	520.0	440.0	400.0	120.0
T.D.S. (mg/l)	600.0	610.0	640.0	700.0	750.0	800.0	865.0	770.0	990.0	780.0	660.0	700.0

REFERENCES

APHA 1976. In standard methods for the Examination of the water, and waste and waste water. 14th edn. New York.

BADOLA, S.P. & SINGH, H.R. 1981. Hydrobiology of the river Alaknanda of Garhwal Himalaya. *Indian J. Ecology. 8* : 269-276.

BISHT, SHASHI & GROVER, S.P. 1990. Hydrobiology of the river song in Eastern Doon Valley. *Uttar Pradesh J. Zool. 9* (1) : 121-123.

CHONA, M.K. 1991. Physico-Chemical complex of a polluted pond at Halomojra. *Him. J. Env. Zool. 5* : 42-44.

GEOGRAGE, M.G. 1961. Diurnal variation in two shallow ponds in Delhi. *Hydrobiologia. 18* : 265-273.

SAXENA, K.R. & ADONI, A.D. 1973. Diurnal variation in Sagar lakes, Sagar India - I. Studies in deep water area. *Hydrobiologia. 43* : 535-543.

VERMA, M. 1967. Diurnal variation in a fish pond in Seoni, India. *Ichtyologica. 30* : 129-137.

WELCH, P.S. 1948. *Limnological Methods*. The Blakiston Co., Philadelphia.