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AN INTERESTING OBSERVATION ON A MONOSPECIFIC BLOOM OF A DIATOM *ATTHEYA ZACHARIASI*, BRUN FROM A MAN-MADE LAKE

The diatom *Attheya zachariasi*, Brun has heen recorded for the first time from India by Singh & Jha (1982) from the Getalsud reservoir. This reservoir has come into existence as a result of impoundment of the Subernarekha river near Getalsud village in Ranchi district (Bihar). The location of the area is at Lat. 23° 27′ 18″N and Long. 85° 33′ 30″ E. The reservoir has an area of 34.40 km^2 with mean depth ($\bar{Z}$) of 8.39 m at FRL. Monthly collections were made by vertical hauling of the entire column of water and numerical enumerations were made after Jhingran *et al.* (1969).

The spurt of diatom *Attheya* sp. was observed in January 1978 (2341636 u/m^3), followed by a bloom in February 1978 (17415511 u/m^3). A sudden decline in population was recorded during March 1978 (3349 u/m^3). This species did not contribute to plankton collections subsequently. The availability of this diatom coincided with the arrival of migratory birds and it is most likely that these birds were the prospective carriers.

Blooms ganerally reflect the trophic status of any water body. The study of physico-chemical characteristics bears a great significance, since, based on such a study one can understand the ecological requirements of diatoms in general and *Attheya zachariasi* in partiualar.

Hutchinson (1967) has emphasized the role of nutrients in the water coupled with other factors : turbidity, water temperature, pH, phosphate, silicate, and iron level being more important. In the present communication, an inverse correlation was observed between transparency and *Attheya* population, which assumed a bloom density during February when transparency was the least (Table-I). The role of water temperature in the development of organisms has been emphasized by Prescott (1939) In this case, a temperature range of 16.6° to 18·8°C was found to be favourable for the growth of this diatoms

The abundance of *Attheya* sp. population was associated with a fairly high level of dissolved oxygen and a pH range of 7·5 to 8.1 probably optimal for this species.

The importance of silica for the proliferation of diatoms is well documented. In the present observation, silica range of 13.10 to 17.40 ppm appeared to be the most conducive for the propagation of this species and a direct correlation was recorded. Hutchinson (*op. cit.*) has also reported silica range of 12·0 to 20·00 ppm to be suitable for better growth of diatoms. Jha (1977) has also observed a direct relation between the silica level of the medium and the diatom populations.

The phosphate content of the medium and *Attheya* sp. population showed an inverse relationship and the bloom was recorded during the period of least availablity of phosphate.

Munawar (1974) and Zafer (1967) have also reported that a low level of phosphate favours the growth of diatoms in natural waters. The present observation is in agreement with above inference, as further increase in phosphate level during March inhibited the growth of the diatom (Table-I).

TABLE I : **Physico-chemical features of water along with *Attheya* and *Ceratium* populations during January to March, 1978 in the lotic sector of Getalsud reservoir, Ranchi (Bihar).**

Parameters	January 1978	February 1978	March 1978
Water transparency (cm)	61·1	50·0	56·7
Water temperature (°C)	16·6	18.8	21·8
Dissolved oxygen (ppm)	9·8	9·2	9·1
pH	7·5	8·1	7·5
Total alkalinity (ppm)	53·5	58·5	56 7
Dissolved phosphate (ppm)	0 015	0 004	0·035
Silicate (ppm)	13·10	17 40	12·70
Ferric iron (ppm)	0·37	Traces	0·05
Attheya sp. (u/m^3)	2341636	17415511	3349
Ceratium sp. (u/m^3)	35594	12627	28957

The iron content had an inverse correlation with the bloom occuring only when the iron content was in traces.

Regarding the biotic interactions, phytoplankton assemblage in December 1977 was dominated by Myxophyceae and Chlorophyceae, these being succeeded by Bacillariophyceae during January 1978. This further enhanced and masked the population of blue-green and green algae.

There are two schools of thought regarding the phenomenon of single species bloom. Among the first, Allen 1946 opined that where diatoms are abundant, the dinoflaglelates are scarce and *vice-versa* and called it as 'diatom-dinofiagelate mutual exclusion' presumably modified by a chemical deterrent. The other school of thought has offered that the phenomenon of single species bloom is due to the presence of thermolabile antibiotic substances (Lefevre *et al.*, 1949). In the present case, an inverse correlation was observed between *Attheya* sp. and *Ceratium* sp. population and thus supports the former hypothesis.

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