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MACRO-BENTHIC FAUNA OF LAKE, HUSSAINSAGAR, HYDERABAD WITH REFERENCE TO MOLLUSCS AND CHIRONOMID LARVAE

S. V. A. CHANDRASEKHAR
Freshwater Biological Station
Zoological Survey of India
1-1-300/B, Ashoknagar
Hyderabad-500 020

INTRODUCTION

There are as many as 4 major lakes (Osmansagar, Himayatsagar, Miralam tank and Hussainsagar) and a number of minor water bodies in the metropolitan limits of the twin cities (Hyderabad and Secunderabad). All these lakes were initially constructed for drinking water and irrigation. Presently Osmansagar and Himayatsagar (oligotrophic) are the main sources of water supply to the twin cities. Miralam tank and Hussainsagar have become eutrophic because of domestic sewage and industrial effluents.

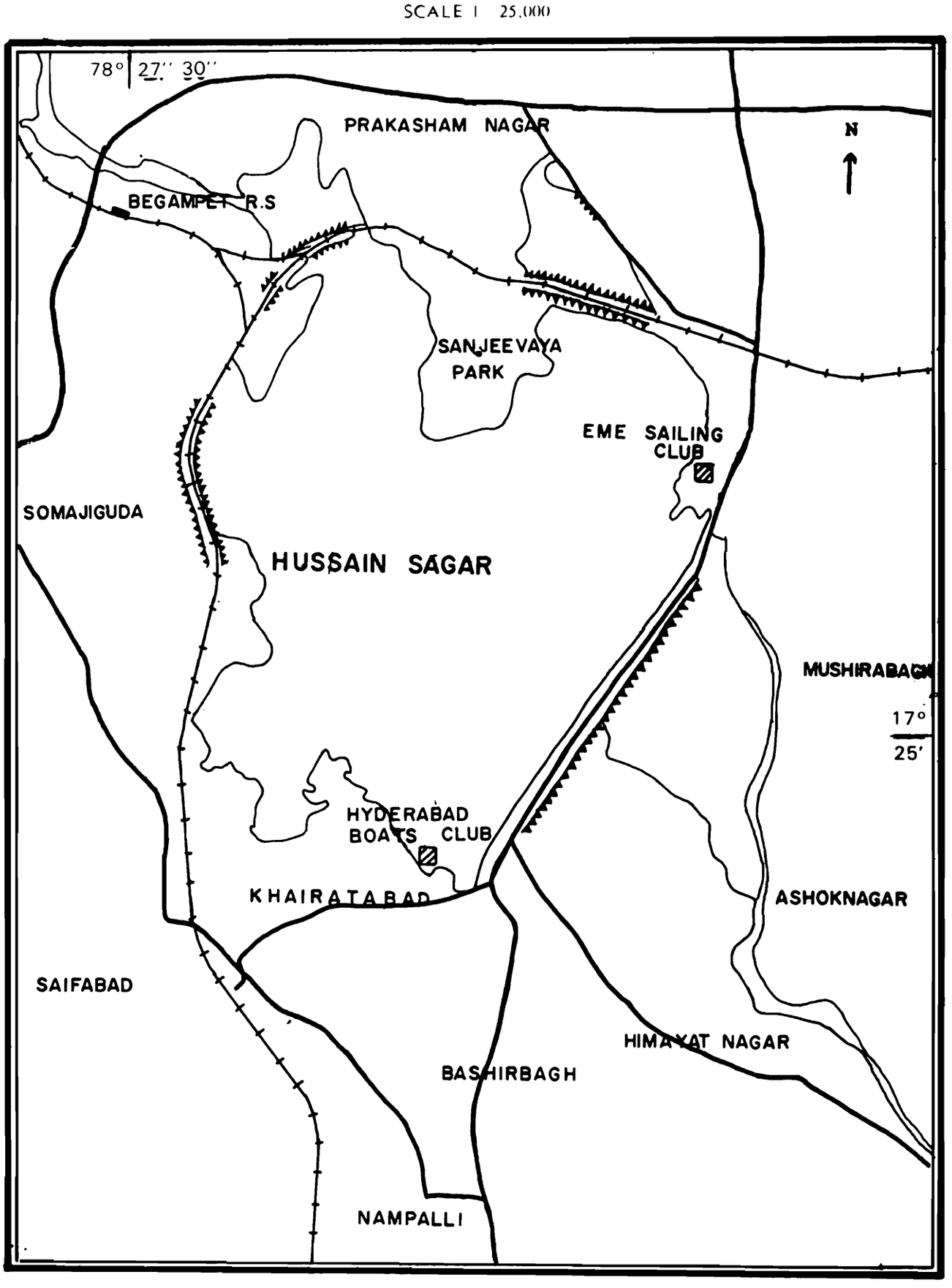
Historically, Butcher (1924) was the first to recognise biological analysis of overall assessment of environment. Hynes (1959, 1960) studied the river pollution using benthic invertebrates as indicators. Patil, S.G. (1984) studied the benthic organisms in lentic and lotic environments. As no attempt was made so far on the benthic fauna of Hussainsagar lake, the author has initiated the study.

Hussainsagar is one of the oldest lakes of 450 hectares, constructed during 1660-70 in the twin cities of Hyderabad and Secunderabad during the regime of Ibrahim Qutub Shah. The lake was initially constructed to store drinking water from Musi river. Since last decade, lot of industrial effluents and domestic sewage from the surroundings are being carried into the lake by Kukatpally stream, which has resulted in eutrophication.

In ecological aspect, Hussainsagar is a habitat not only for fishes but feeding and breeding site for some birds. This lake is an ideal place for water sports. The main feeding channel of this lake is Kukatpally stream which was originated from a tank Parki Cheruvu about 14 km north of Secunderabad — Bombay Highway. Either side of the lake there are about 350 industries of Public and Private sectors (Kodarkar et. al., 1992).

SAMPLING SITES :

HYDERABAD BOAT CLUB (HBC) : This zone is situated towards Hyderabad end of the tank bund where the Budha statue was installed on the rock of Gibraltor. b) KHAIRATABAD COLONY (KBC) : This is situated between Begumpet and Hyderabad Boat Club and here domestic sewage from the surrounding colonies and a lot of silt, paint, plastic, organics and others are entering through the immersion of Ganesh idols every year. c) BEGUMPET RAILWAY LINE



Map of Hussainsagar

Table Showing the Ranges of Physico-Chemical Parameters of the Lake at the Time of Collection

S.No.	Parameter	HBC	KBC	BRL	SJP	EME
1.	Temperature (Air) (°C)	25 – 35	25 – 35	25 – 36	25 – 35	26 – 35
2.	Temperature (Water) (°C)	24 – 30	24 – 30	25 – 29	25 – 30	24 – 31
3.	pH	7.6 – 8.7	7.5 – 8.6	7.4 – 8.2	7.5 – 8.2	8.1 – 8.3
4.	Conductivity (mho's/cm)	1628 – 2250	1639 – 2160	1259 – 2190	1289 – 2210	1623 – 2170
5.	Dissolved Oxygen (DO) (mg/lit)	1.0 – 8.4	2.0 – 8.0	0 – 4.0	0 – 8.8	1.2 – 7.0
6.	Carbonates "	Nil	Nil	Nil	Nil	Nil
7.	Bicarbonates "	336 – 476	336 – 445	305 – 439	311 – 445	229 – 427
8.	Free Carbondioxide "	12 – 14	16 – 18	16 – 18	18 – 20	18 – 20
9.	Chloride "	275 – 348	267 – 348	225 – 370	230 – 395	227 – 338
10.	Total Hardness "	190 – 565	185 – 410	210 – 350	205 – 310	195 – 310
11.	Calcium "	26 – 76	20 – 58	26 – 50	20 – 72	28 – 64
12.	Magnesium "	19.5 – 91	23 – 67	22 – 60	22 – 63	22 – 44

(BRL) This is situtated in the North-eastern direction of the lake, receiving water from Kukatpally stream is the main feeding channel. d) SANJIVAYYA PARK (SJP) : This zone is situated at the end of the lake towards Secunderabad this area of the lake is polluted because of washing activities. e) EME SAILING CLUB (EME) : This zone is situtated at Secunderabad end of Tank bund and is characterised by sports activities.

MATERIALS AND METHODS

About 2 kgs of bottom mud samples were collected with Ekman grab from the lakes transferred to polythene bags. Water samples were also collected alongwith these mud samples. The mud samples were brought to the laboratory and sieved with 500 microns I.S.S. Test sieves. The macro-fauna were collected from the sieves with forceps and brushes and preserved in formalin. The Dissolved Oxygen (DO) water samples were winklerized on the bank of the lake itself and water samples were brought to the laboratory for the rest of analysis. Identification of macro-benthic fauna was done with the help of standard manuals. The above collections were made between August, 1991 to June, 1993.

RESULTS AND DISCUSSION

The Following macro-benthic fauna was observed from the collections made during the study. Chironomid larvae and 6 species of Molluscs were found, details of which are given below.

Phylum : ARTHROPODA
Class : INSECTA
Order : DIPTERA
Family : TENDIPIDAE

1. *Tendepis* sp.

Phylum : MOLLUSCA
Class : GASTROPODA
Order : MESOGASTROPODA
Family : VIVIPARIDAE

2. *Bellamya bengalensis* (Lamarck)

Family : PILIDAE

3. *Pila virens* (Lamarck)

Family : THIARIDAE

4. *Thiara* (*Thiara*) *scabra* (Muller)

5. *Thiara* (*Thiara*) lineata (Gray)

Family : LYMNAEDAE

6. *Lymnaea* (*Pseudosuccinea*) *acuminata Lamarck*

Family PLANORBIDAE

7. *Indoplanorbis exustus* (Deshayes)

Chironomid larvae were found more during the monsoon season and less in summer. Among the 6 species of Molluscs found, *Pila virens* has predominated followed by *Thira* (*Thiara*) *scabra*, *Bellamya bengalensis* and *Indoplanorbis exustus*. Poor diversity was noticed in Post-Monsoon (3 species), but more and equal diversity (5 species) was seen in Pre-monsoon and Monsoons. *Pila virens* has shown its presence in all the seasons, but it was rich in Monsoon and poor in Post-Monsoon *Thiara* (*Thiara*) *lineata* and *Lymnaea* (*Pseudosuccinea*) *acuminata* has got its representations only.

The ranges of physico-chemical parameters of the lake at the time of collection are as in the table.

SUMMARY

A brief study on Macro-Benthic Fauna was undertaken on Hussainsagar, an eutrophic lake in Hyderabad during 1991-93. In all the 5 spots studied, Chironomid larvae and 6 species of Molluscs were observed. Water quality of the lake at the time of collection was also studied.

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