

EVENTS IN A NATURAL POPULATION OF *DAPHNIA LUMHOLTZI*  
SARS (CRUSTACEA : CLADOCERA)

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1. INTRODUCTION

In India the information available on the natural population of zooplankton is scanty. However certain life cycle studies of cladocerans were made in the laboratory by Navaneethakrishnan and Michael (1971), Murugan and Sivaramakrishnan (1973, 1976) and Murugan (1975a, 1975b, 1977). The few studies made on the natural populations are by the Michael (1962) and S. Vijayaraghavan (1970) and Sharma and Dattagupta (1984). From Lake Pawa, Nepal, seasonality of *Daphnia lumholtzi* was studied by Swar and Fernando. (1979).

Near Madras, quite a number of perennial and semiperennial freshwater bodies are existing. Under a programme of studying the zooplankton periodicity of these freshwaters, periodical collections were made. In Kamakoti pond, near Kamak otinagar, 10 km. west of Madras city, a sudden bloom of *Daphnia lumholtzi*, a rare cladoceran was recorded for the first time. Hence a study was made with special reference to this phenomenon. This pond is having an area of 0.5 hectare with an average depth of 0.5 M. Only during rainy months this tank will be filled up with rain water.

2. MATERIAL AND METHODS

After noting down the air and water temperature, pH of the water was estimated by employing a Hellige-neo-comparator. The plankton collections were made by using a net with a diameter of 25 cm, (0.3 mm. meshsize). The net was thrown to that 2.55 M. of the attached rope was in the water. For each sample four throws were made. (Hebert, 1977). The collected samples were preserved in 5% formalin and made upto 250 ml. From this subsample of 2 ml. was examined in Sedgewick-rafter cell for counting purposes. Total number of specimens collected were given. Samples were collected from 5th February 1981 to 28th May 1981.

3. RESULTS

Between 5 February 1981 and 6 March 1981, plankton samples were represented with *Ceriodaphnia cornuta*, *Mesocyclops leuckartii* calanoid copepods and very few *Daphnia*

*lumholtzi*. But on 9 March 1981, the other forms were less in number and the collected sample was full of *Daphnia lumholtzi*. Again the sample collected on 13 March 1981 was almost like a monoculture of *Daphnia lumholtzi*. But on 21 March 1981, *Daphnia lumholtzi* started diminishing in numbers with few only on 26 March 1981. On 4 April 1981, only one example was encountered while counting. From 8 May 1981, these forms were completely absent.

### 3.1. COMPOSITION OF *DAPHNIA LUMHOLTZI*

	9th Mar.	13th Mar.	21st Mar.	26th Mar.
Parthenogenetic females with eggs.	250	725	375	125
Parthenogenetic females without eggs.	9375	8375	2625	875
Neonata	1250	4000	2000	250
Embryo with head rudiment	1375	125	375	250
Released eggs	5125	750	725	750

Also among *Daphnia lumholtzi* certain peculiar forms with bent shell spines were noted.

## 4. DISCUSSION

Eventhough there are instances of sudden blooming of certain cladocerans like *Daphnia magna* Straus, *Daphnia similis* Claus (Mitra and Thakurta, 1973) and *Moina dubia* (Parabramam et. al 1967) so far no account of blooming of *Daphnia lumholtzi* is available from India. Moreover *Daphnia lumholtzi* is a very rare cladoceran and as per Fernando (1980) not even a single representative was available from 95 zooplankton samples collected from tropical (south) India. However *Daphnia lumholtzi* has been recorded earlier by Brehm (1950), Biswas (1971), Nayar (1971), Michael (1973) and Sharma and Dutta Gupta (1984).

In Kamakoti tank; it is interesting to note that *Daphnia lumholtzi* started increasing in number from 9th March 1981 at such a rapid rate that the samples collected on 13 March 1981 were full of these forms. The population on the whole lasted only for a month as per the collections. During this period the temperature ranged from 26.0°C to 30.5°C and the pH was between 7.0 and 7.3. During the same period plenty of *Gerris* sp. were noted in the surface. In Lake Pawa, Nepal also maximum number of *Daphnia lumholtzi* was found in the samples during May and June. They reappeared in the samples in July and were present till December. (Swar and Fernando, 1979).

Here all the specimens of *Daphnia lumholtzi* collected including the egg bearing females were helmeted forms. But considering the previous records of *Daphnia lumholtzi* in India, reveals that among the specimens collected from probe bed of Pulta water works (Brehm, 1950) the females with eggs had unarmoured round head. The helmeted forms by egg bearing females were also recorded by him from a tank in Cuttack, Orissa. On the other hand Nayar (1971) recorded both the forms from two different places namely helmeted forms

form Mount Abu of Rajasthan and non-helmeted forms from Udaipur, Rajasthan. Biswas (1971) has recorded non-helmeted forms from Rajasthan. Swar and Fernando (1979) have recorded only helmeted forms from Nepal. While discussing about cyclomorphosis in *Daphnia lumholtzi*, Sharma and Dattagupta (1984) have attributed temperature as the main factor influencing the head and tail length.

In Chingleput tank near Madras, *Daphnia lumholtzi* were noted in the samples in few numbers only during January and February 1980. On the contrary *Daphnia lumholtzi* were collected in large numbers from Ooty lake at an altitude of 2500 M. both during 11th March 1978 and during 16th March 1979 (Raghunathan, 1985).

The specimens of *Daphnia lumholtzi* collected from Kamakoti tank, and the few specimens from Chingleput tank were helmeted. The specimens collected from Ooty lake were also helmeted but the helmet size were comparatively smaller. Further the few forms collected with bent shell spines from Kamakoti tank deserve further investigations.

#### SUMMARY

While qualitative collections of zooplankton were made from different freshwaters in and around Madras, *Daphnia Lumholtzi* Sars, a rare cladoceran was observed in large numbers from Kamakoti pond during March 1981. A study was made on this natural population of *Daphnia lumholtzi*.

*Key words* : *Daphnia lumholtzi*, cladocera, population.

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