

CLADOCERANS ABUNDANCE IN AL-NIBAHEY LAKE AT NORTH
BAGHDAD

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ABSTRACT

Seasonal quantitative and qualitative of Cladocera were reported during August 1986 to September 1987 . Six species of cladocerans comprise the cladoceran fauna of Al-Nibaey lake, Macrothrix laticornis, Alona guttata, Moina affinis, Ceriodaphnia cornuta, Chydorus sphaericus and Simocephalus vetulus . Some of the genera were recorded through the study period but seasonally the highest number of species were found in May (4 species), total number of species ranging from one to six during sampling period .

Population density of cladocerans was studied for one year and it was found that the peak of abundance occurred in May with minimum in August .

INTRODUCTION

Al-Nibaey lake is situated on the 58 kilometer north Baghdad (Iraq) , formed nine years ago from Al-Nibaey quarry . It has an area of about nine hectares, this lake is flooded by underground water . Water level of this lake ranging from seven meter to nine meter depending on the water level of the Al-Ishaqi irrigation canal , which was established nearby .

Several works (1-6) , mainly concerned with the chemistry and plankton production, have been carried out in the natural aquatic habitats in Iraq but there is no informations published on zooplankton concerning this lake , and still the information about the plankton within the Al-Nibaey lake from a quantitative point of view is unknown .

The present work deals with some environmental

conditions such as salinity, pH, and water temperature and the cladocerans abundance as good food for fish culture.

Information which may be used in the assessment of this lake for commercial fish production .

MATERIALS AND METHODS

Quantitative samples were taken regularly , at fortnightly intervals from Al-Nibaey lake from August 1986 to September 1987 . Samples of 50L, were collected from a depth of 30-40 cm. using a graduated bucket (capacity 5L) . The samples were found through a plankton net (mesh size 0.1mm) and the animals were washed into a small Jar and preserved in 70% alcohol . The site was selected on the basis of providing adequate vegetation for cladocerans to shelter in for its temporary attachment . Counting was done in the laboratory, the sample was first made up to a known volume with water, and examined in petri dishes marked out with parallel lines defining the field of view of a binocular microscope . Counts of net organisms are expressed in number of individuals per liter .

Dissolved oxygen and water temperature were measured at the time of sampling , using portable oxygen meter (YSI Model 51B), the hydrogen ion concentration was determine , using a portable pH meter (Orion research digital pH meter model 221), the salinity was measured, using portable meter (YSI Model 33) .

RESULTS AND DISCUSSION

The cladocerans fauna collected is listed in Table 1 during the present study covering one year (Aug. 1986 to Sep. 1987) . Six species of Cladocera were found . Record of Alona guttata, is of particular interest faunistically . Macrothrix laticornis and Moina affinis were recorded from the lake for the first time of collection during Aug. 1986 . Some species Ceriodaphnia cornuta, Simocephalus vetulus and Chydorus sphaericus occurred during June 1987, as the individuals were in poor condition, they were perhaps not alive at the time of

Table 1 : List of Cladocera species , showing seasonal
occurrences during August 1986 - September 1987.
(Number / L)

Species	A	S	O	N	D	J	F	M	A	M	J	J	A	S
		1986								1987				
<u>Macrothrix</u>	1	-	-	-	-	-	-	-	-	-	-	-	-	-
<u>laticornis</u>														
<u>Moina</u>	1	-	-	-	-	-	-	-	-	2	-	-	-	-
<u>affinis</u>														
<u>Alona</u>	-	-	-	-	-	4	-	10	8	23	1	-	-	6
<u>guttata</u>														
<u>Ceriodaphnia</u>	-	-	-	-	-	-	-	-	1	1	1	-	-	-
<u>cornuta</u>														
<u>Simoccephalus</u>	-	-	-	-	-	-	-	-	-	4	1	-	-	-
<u>retulus</u>														
<u>Chydorus</u>	-	-	-	-	-	-	-	-	-	-	1	-	-	-
<u>sphaericus</u>														

collecting (7) . Alona is one of the most abundant cladocerans in the lake as shown in Fig.(IA) . It reached 76.5% of the cladocerans population density during May 1987 . Fig.(IB) shows seasonal changes in the relative abundance of the cladocerans, the density of population for any species depends to a large extent on the speed of development and on the frequency of the production of youngs after the animal becomes adult . During this study water temperature showed considerable seasonal changes . Its fluctuated between 10°C during December and 34°C during August . Seasonally the species number varied from one species during January to four species during May, the greatest number of species being in samples during May and June when water temperature was 24°C . This may have had an influence on the number of animals (8) . The presence or absence of a species is limited by the maximum and minimum temperatures which the animals are able to survive (9) . In general the number of specimens was low during the study period , this period is characterized by Copepods dominance (7). Kerfoot (10) have argued that variation in population occurrence is an adaptive response to size selective predation . There is considerable evidence that invertebrate planktivores, such as Copepods feed selectively on small individuals (11), although the spring plankton (May) was dominated by Cladocera, which sometimes comprised 99.8% of all individuals .

Salinity varies between 2.9‰ to 3‰, and did not show great variations relating to the cladocerans abundance (7). The pH values varied between 5.8 during March 1986 to 8.9 during November 1986 and did not show any relationship with total cladocerans abundance ($r=0.21$, $Y=7.479 + 0.021X$) . The average values of dissolved oxygen generally gave an indication of seasonal trends, it is apparent dissolved oxygen decreased in August and increased according to decreasing in water temperature . The maximum value of dissolved oxygen was 7.4 mg/l in December when the water temperature 10°C while the minimum value 3.0 mg/l in August when water temperature was 34°C .

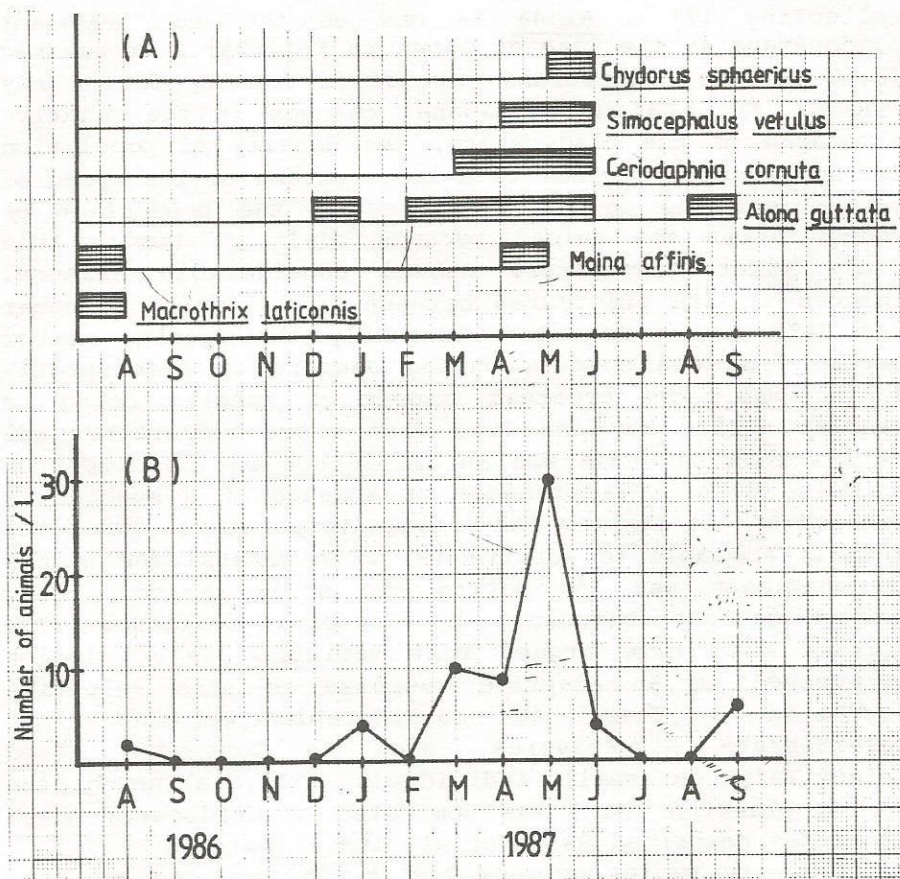


Figure 1 A- Seasonal occurrence of cladocerans during August 1986-September 1987 in Al-Nibaey Lake .

B- Relative abundance of the cladocerans population (number/L) during the present study .

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