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Zooplankton Limnology of Beaver and Degray Reservoirs in Arkansas

Eugene H. Schmitz

University of Arkansas, Fayetteville

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by

Eugene H. Schmitz

Department of Zoology

AWRRC

Arkansas Water Resources Research Center

UNIVERSITY OF ARKANSAS

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ZOOPLANKTON LIMNOLOGY OF BEAVER AND DEGRAY RESERVOIRS IN ARKANSAS

Research during the year 1975-76 continued to emphasize studies of seasonal changes in patterns of zooplankton abundance and biomass in Beaver and DeGray Reservoirs. Zooplankton samples were taken monthly from three stations on Beaver Reservoir (Figure 1) during the period May 1975 through May 1976. Collections from DeGray Reservoir were made weekly from a single station (Station 1) during the period April 1975 through December 1975. Beaver collections were obtained by taking oblique tows using a Miller sampler equipped with no. 10 mesh. The DeGray program entailed stratified vertical samples taken at 5 m intervals to 20 m and 20 m to 2 m off of the bottom using a 29.5 cm aperture Birge closing net equipped with no. 20 mesh.

Beaver Reservoir

Abundance data for the three Beaver stations are given in Tables 1-3. Seasonal patterns based upon total organism densities are graphically illustrated in Figures 3-5. Spring pulses were evident at Stations B5 and B7; such were not recorded at B1, a relatively low standing crop having been characteristic of the entire sampling year. An autumn pulse also was observed for B7; both Copepoda (mostly nauplii, but all life history stages were present) and Cladocera (*Bosmina longirostris* was dominant) contributed to this increase. Figure 6 represents a mean seasonal pattern based on data from all three stations. The pattern does not resemble that for any given station; the appearance of a fall pulse is mostly influenced by B7 and to some extent by the overall autumn, winter, and early spring increase recorded for B5.

Tables 4-6 are compilations which summarize mean annual zooplankton densities at each of the three sampling stations for the periods April 1965 through June 1966, August 1970 through July 1971, and June 1972 through May 1976. At B1, significantly greater densities were recorded during 1965-66 (Applegate and Mullan, 1967) and 1970-71 (Damico, 1972) than during the entire period 1972-76, although a slight increase was detected in 1975-76. A slightly different pattern was noted at B5 and B7, where significant increases over 1972-75 were observed during 1975-76. In general, the period 1972-75 was characterized by low zooplankton production, slightly increasing from year to year, but increasing by nearly two-fold in 1975-76 over the previous year (Table 7). Lowest production was recorded for 1972-73 (a flood year). Maximum abundance values were obtained during 1970-71 at B5 (cf. Applegate and Mullan, 1967 and Damico, 1972 with our data).

Zooplankton biomass data for the period May 1975 through May 1976 are presented in Table 8. A summary of formulae used in the computation of biomass values is appended to Table 9. The method employed to obtain these data involved a much refined version of the procedure presented by Schmitz, et al (1975). Modifications embraced the separation procedure, production and preparation of glass fiber filters, drying procedure, and the use of a Cahn Electrobalance (Model M-10, and subsequently Model 4100). Details of these refinements will be the subject of a separate and subsequent report. It should be noted that all dry weight data were obtained from material preserved in 3% formalin.

Of considerable interest are data presented in Table 9. These data represent replicated zooplankton counts and replicated biomass determinations from all three stations for the period July 1975 through May 1976.

Comparisons reveal some degree of parallelism on a relative basis; i.e., note that greater biomass values generally correspond with greater abundance values, especially at B7. However, one for one correspondence cannot be expected since larger zooplankters in smaller numbers may equate to greater biomass than greater numbers of smaller zooplankters. Further, some replicated counts and some replicated biomass determinations show a considerable range of error. A similar data base extended over a much longer period of time is needed before general interpretations can be reasonably attempted. Even so, such interpretations are vulnerable to the dangers of not having weight data for individual species of dominant zooplankters.

Table 10 presents mean dry weight values from each of the three sampling stations for the period May 1975 through May 1976. Figures 7-9 are based upon these mean values, and are presented for the purpose of providing a better picture of seasonal zooplankton biomass patterns during the 1975-76 period. A small early winter peak and a well-defined spring pulse (1976) were evident at B1. Spring pulses (1975 and 1976) were apparent at B5. A bimodal pattern, involving a spring pulse (1975) and a fall pulse (1975) followed by a spring pulse (1976) was recorded at B7. A fundamental correspondence could be detected between overall seasonal abundance patterns and biomass patterns; however, pint for point correlations could not be established for reasons already stated above (cf. Figures 3-5 with 7-9).

In recognition of the probable ultimate need for dry weight data derived from individual zooplankton species and from size classes within species, two predominate species from Beaver Reservoir were selected for the purpose of assessing a procedure necessary to obtain such. A brief account of this procedure follows.

Specimens of *Daphnia parvula* and *Bosmina longirostris* were removed from the sample using Irwin loops and with the aid of a binocular dissecting microscope. All specimens were taken from a B5 sample collected on 22 May 1975. To ensure consistent counts and "clean" subsamples, each subsample was counted three times. *D. parvula* specimens were measured using a calibrated ocular micrometer and sorted into "large" (greater than 0.75 mm head to base of spine length) and "small" (less than 0.75 mm head to base of spine length) size classes. A predetermined number of individuals representing each species and size class were then placed in preweighed aluminum foil planchets. The planchet subsamples thus prepared were dried under vacuum at 60 C for 24 hr, removed to a dessicator until cooled to room temperature, and weighed on a Cahn Electrobalance (Model M-10). Results are given in Table 11.

Water samples for seston and dissolved solids determinations were taken monthly with a 3.1 l nonmetallic Kemmerer water bottle from B1, B5, and B7 during the period March 1975 through May 1976. Seston was removed using a Foerst centrifuge, dried for 24 hr at 60 C, weighed on a chain-o-matic analytic balance, combusted at 650 C for 20 min, and reweighed. Loss on ignition was taken as % organic seston. Seasonal patterns are given in Figures 10-12. The fragmentary nature of these patterns may be attributed to errors in procedure through December 1975. A modified procedure was instigated in January 1976 (so indicated on figures). Modifications entailed: (1) collection of seston on 15 mm glass fiber filters; (2) drying under vacuum at 60 C; (3) weighing with a more sensitive balance (Cahn Electrobalance, Model M-10); and (4) combustion for 2 hr at 450 C. A marked reduction in obvious errors stemming from inadequately sensitive gravimetric techniques was noted following initiation of these modifications.

For dissolved solids determinations, the water samples (from which seston had been removed) were evaporated. The total residue was collected in tared crucibles, dried at 60 C for 24 hr, weighed on a chain-o-matic analytic balance, combusted at 650 C for 20 min, and reweighed. Loss on ignition was taken as % organic dissolved solids. The only modification introduced into this set of procedures was drying under vacuum at 60 C beginning in January 1976. Seasonal patterns are presented graphically in Figures 13-15.

DeGray Reservoir

Table 12 presents weekly abundance data based upon continuous 50 m vertical net hauls taken at Station 1, DeGray Reservoir, during the period 9 April through 17 December 1975. Figure 16 represents a series of seasonal plots of these data. With the exception of the spring season, rotifers clearly were the dominant zooplankters in terms of abundance. Copepods generally were subdominant. Collectively, the Entomostraca almost never attained a position of dominance, owing to low densities of Cladocera. Strong pulses in total zooplankton abundance were not observed, although fluctuating maxima were recorded for both spring and fall seasons. No doubt, a classical bimodal pattern might have been more pronounced had a monthly sampling program been employed, although the relatively low total abundance values recorded throughout the collecting period would have dampened any sharp or contrasting patterns. However, these data must be interpreted with caution, for the low density values may be attributed in part to the clogging effects upon a relatively small net that is hauled through a 50 m water column.

Total net seston and zooplankton dry weight data for Station 1, DeGray Reservoir, during the period 16 April through 17 December 1975 are presented in Table 13. These data are represented as a series of seasonal plots in Figure 17. Fluctuating pulses in zooplankton biomass were recorded for late spring-early summer and fall seasons. When weekly data were meaned for each month, a bimodal pattern characterized by a spring pulse and a weaker fall maximum emerged (Figure 18).

Copepoda

Since 1972, continued efforts have been directed toward the establishment of an inventory of copepod species occurring in the limnetic waters of Beaver Reservoir. In 1974, the same goal was extended to include the copepod species inhabiting DeGray Reservoir. Early efforts revealed relatively few species in Beaver Reservoir (see Schmitz, 1974), presumably because of extremely low zooplankton production during 1972-73. It may be noted that this phenomenon occurred subsequent to flood conditions in 1971. Examination of samples representing the 1976-77 period yielded the greatest diversity of copepod species both for Beaver and DeGray Reservoirs.

A list of species identified to date is given for each reservoir. Cyclopoid specimens were prepared according to the method of Pennak (1963) and calanoids as necessary according to Yeatman (1959). The following sources were used in the confirmation of calanoid species: Herrick (1883), Humes and Wilson (1951), Schacht (1897, 1898), and Wilson (1959). Pennak (1963) and Yeatman (1959) were used for cyclopoids.

Beaver Reservoir

Calanoida:

Diaptomus reighardi Marsh 1895

Diaptomus sanguineus S. A. Forbes 1876

Osphranticum labronectum S. A. Forbes 1882

Cyclopoida:

Cyclops bicuspidatus thomasi S. A. Forbes 1882

Cyclops varicans rubellus Lilljeborg 1901

Cyclops vernalis Fischer 1853

Eucyclops prionophorus Kiefer 1931

Eucyclops agilis (Koch) 1838

Eucyclops speratus (Lilljeborg) 1901

Macrocyclops albidus (Jurine) 1820

Mesocyclops edax (S. A. Forbes) 1891

Orthocyclops modestus (Herrick) 1883

Paracyclops fimbriatus poppei (Rehberg) 1880

DeGray Reservoir

Calanoida:

Diaptomus reighardi Marsh 1895

Epischura fluviatilis Herrick 1883

Cyclopoida:

Cyclops bicuspidatus thomasi S. A. Forbes 1882

Cyclops varicans rubellus Lilljeborg 1901

Cyclops vernalis Fischer 1853

Eucyclops agilis (Koch) 1838

Eucyclops prionophorus Kiefer 1931

Eucyclops speratus (Lilljeborg)

Mesocyclops edax (S. A. Forbes) 1891

Orthocyclops modestus (Herrick) 1883

Tropocyclops prasinus (Fischer) 1860

Additional Remarks: Although the Harpacticoida are recognized as a benthic group, it is here noted that several specimens (at least six females with eggs) of Canthocamptus staphylinoides appeared in the 27 March 1977 sample taken from Station B5 on Beaver Reservoir.

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Figure and Table Legends

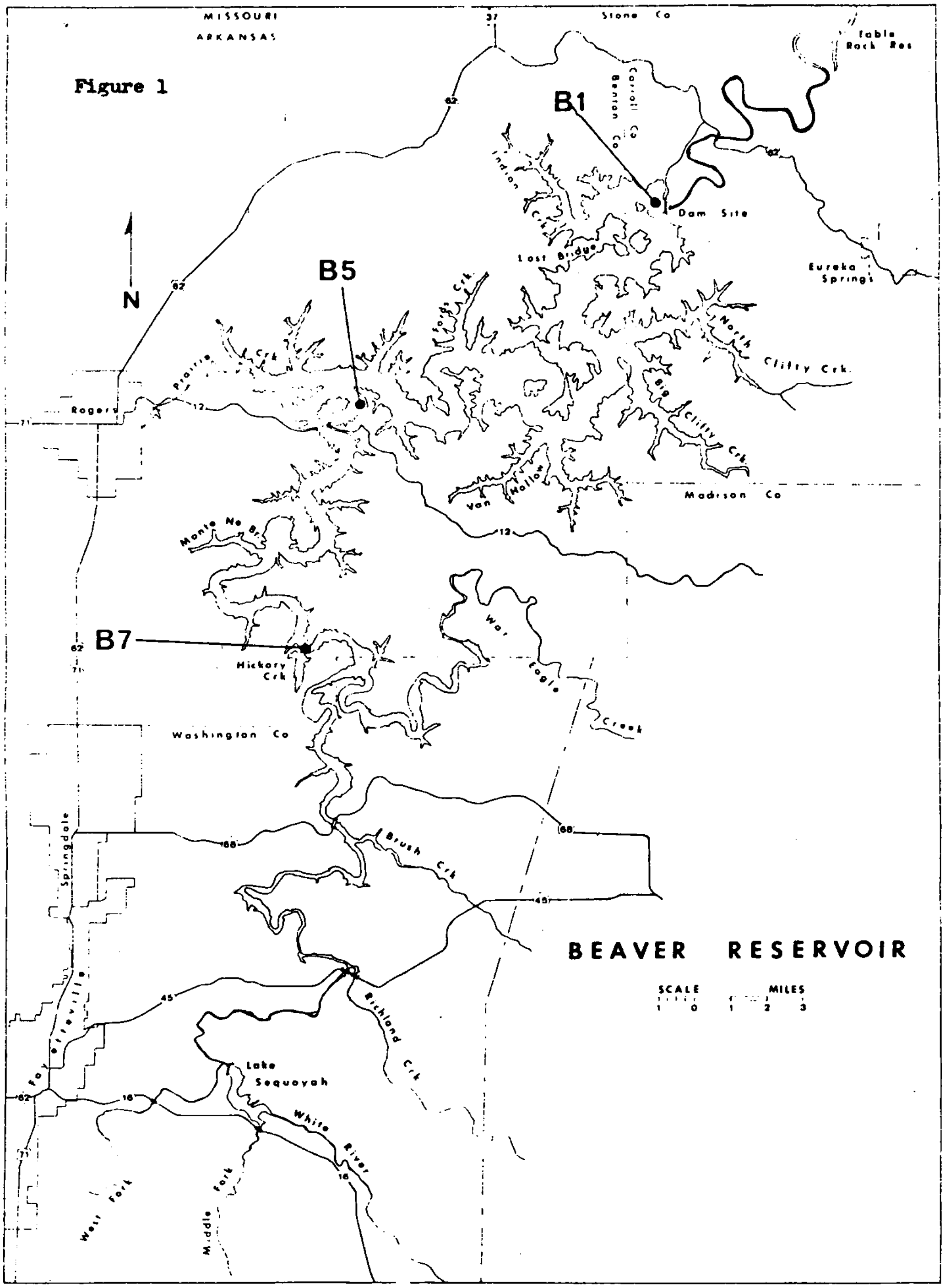
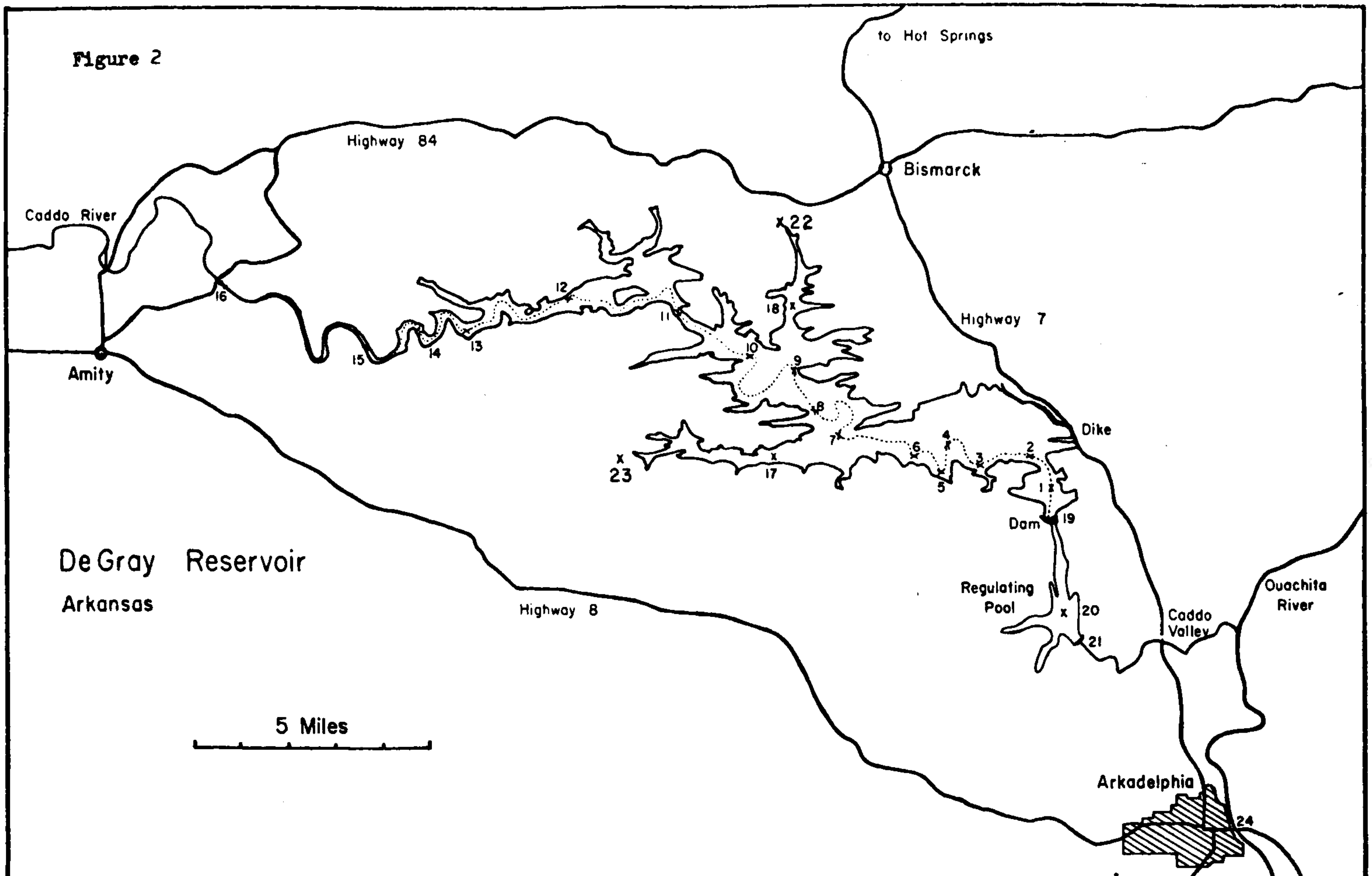


Figure 1
MISSOURI
ARKANSAS
Stone Co
Table Rock Res
Carroll Co
Benton Co
B1
Dam Site
Lost Bridge
Eureka Springs
N
B5
North Clifty Crk
Big Clifty Crk
Rogers
Madison Co
Van Hollow
Monte Ne Br.
B7
Hickory Crk
War Eagle Creek
Washington Co
Springdale
Brush Crk
BEAVER RESERVOIR
SCALE
MILES
Fayetteville
Richland Crk
Lake Sequoyah
White River
West Fork
Middle Fork

Figure 2



(Reproduced by permission from Nix, et al., 1975)

Table 1

B1	5/75	6/75	7/75	8/75	9/75	10/75	11/75	12/75	1/76	2/76	3/76	4/76	5/76
Copepoda													
Cyclopoida	1.81	0.69	0.60	1.20	0.93	0.77	0.50	2.60	1.60	1.19	2.31	0.82	0.86
Calanoida	1.59	0.25	0.26	0.41	0.57	0.16	0.08	0.63	0.33	0.75	0.82	0.51	0.30
Nauplii	0.15		0.01		0.68	0.03	0.02	0.31	0.70	0.25	0.10	0.11	0.20
Copepodid	1.22	0.18	0.21	0.29	0.03	0.17	0.08	1.00	0.01	3.34	2.27	1.29	1.58
Total Copepoda	4.77	1.12	1.08	1.90	2.21	1.13	0.68	4.54	3.64	5.53	5.57	2.73	2.94
Cladocera													
Daphnia parvula	1.29	0.02	0.05	0.04	0.54	0.12	0.07	0.16	0.12	0.13	0.11	TR	
D. galeata mendotae	0.15	1.30	1.31	0.30	0.18	0.03	0.02	0.03	TR				
D. schødleri		0.01	0.01	0.08	0.03	0.10	0.08		0.80	1.13	4.03	6.15	7.45
D. ambigua	0.06					TR							
Ceriodaphnia lacustris	0.08	0.13	0.08		0.02								
Diaphnanosoma leuchtenb.		0.07	0.14	0.01	0.02								
Bosmina longirostris	5.61	0.12	8.74	2.00	1.07	0.22	0.15	2.62	1.56	1.78	2.42	0.17	0.40
Alona guttata						0.04			TR				
Alona rectangula													
Pleuorxus denticulatus													
P. trigonellus							TR						
Moina micrura													
Leydigia quadrangularis													
Total Cladocera	7.19	1.65	10.33	2.43	1.86	0.51	0.32	2.81	2.48	3.04	6.56	6.32	7.85
Rotatoria													
Asplanchna priodonta	0.72	0.30			0.04	0.28		2.27	0.47	3.10	2.79	0.62	0.21
Polyarthra vulgaris				0.01				TR					
Brachionus calyciflorus											TR		
Total Rotatoria	0.72	0.30		0.01	0.04	0.28		2.27	0.47	3.10	2.79	0.62	0.21
Chaoborus punctipennis		TR	TR	TR	TR	TR		TR					
Total organisms/liter	12.68	3.07	11.41	4.34	4.11	1.92	1.00	9.62	6.59	11.67	14.92	9.67	11.00

Table 2

B5	5/75	6/75	7/75	8/75	9/75	10/75	11/75	12/75	1/76	2/76	3/76	4/76	5/76
Copepoda													
Cyclopoida	6.88	2.91	0.67	0.61	0.74	1.15	1.05	0.44	2.22	5.91	4.47	8.00	2.74
Calanoida	0.71	0.38	0.59	0.21	0.09	0.22	1.07	3.48	4.07	6.60	1.27	1.69	0.54
Nauplii	0.43		0.01	TR	0.03	0.19	0.38	0.39	0.20	0.38	0.90	0.37	0.61
Copepodid	2.35	0.62	0.33	0.17	0.56	0.20	0.36	1.97	2.52	5.02	8.55	8.71	2.66
Total Copepoda	10.37	3.91	1.60	0.99	1.42	1.76	2.86	6.28	9.01	17.91	15.19	18.77	6.55
Cladocera													
Daphnia parvula	2.70	0.03		TR	0.04	0.19	0.69	0.24	0.13	0.19	0.11	12.60	6.67
D. galeata mendotae		0.17	0.09	0.05	0.02	TR							0.03
D. schødleri			TR		TR			0.04			0.08	0.01	0.05
D. ambigua	0.24	0.03										0.23	0.37
Ceriodaphnia lacustris	0.20	1.14	0.30		0.03	0.06	0.06	0.05	0.07			0.01	0.48
Diaphnanosoma leuchtenb.	0.07	0.07	0.11	TR	0.15	0.12							0.05
Bosmina longirostris	17.86	0.21	0.41	0.12	0.60	3.06	4.68	5.34	9.63	11.35	2.02	29.64	4.14
Alona guttata						TR							
A. rectangula													
Pleuorxus denticulatus													
P. trigonellus													
Moina micrura													
Leydigia quadrangularis				TR		TR			TR	0.01			
Total Cladocera	21.08	1.65	0.91	0.17	0.84	3.43	5.43	5.67	9.83	11.55	2.21	42.49	11.79
Rotatoria													
Asplanchna priodonta	0.16	1.00	0.33	TR	0.02	0.62	1.64	1.32	0.50	0.06	1.02	1.54	0.26
Polyarthra vulgaris				TR	TR								
Brachionus calyciflorus											0.21	0.01	
Total Rotatoria	0.16	1.00	0.33	TR	0.02	0.62	1.64	1.32	0.50	0.06	1.23	1.55	0.26
Chaoborus punctipennis	0.01	TR	0.07	0.02	0.12	TR	0.01	TR	TR	TR	TR	0.03	TR
Total organisms/liter	31.62	6.56	2.91	1.18	2.40	5.81	9.94	13.27	19.34	29.52	18.63	62.84	18.60

Table 3

B7

	5/75	6/75	7/75	8/75	9/75	10/75	11/75	12/75	1/76	2/76	3/76	4/76	5/76
Copepoda													
Cyclopoida	3.70		0.12	0.11	0.72	4.02	2.75	0.83	0.41	0.35	2.70	9.40	23.48
Calanoida	0.20		TR		0.04	2.91	3.71	0.18	0.07	0.03	0.01	0.19	2.06
Nauplii	0.25		0.01	0.03	0.22	1.86	9.85	0.24	0.03	0.05	1.66	1.95	0.39
Copepodid	0.56		0.11	0.07	0.54	2.22	3.41	0.19	0.13	0.73	2.10	8.64	19.23
Total Copepoda	4.71		0.24	0.21	1.52	11.01	19.72	1.44	0.64	1.16	6.47	20.18	45.16
Cladocera													
Daphnia parvula	11.90			TR	0.01	8.26	0.62	0.09	0.02	0.03	0.32	13.87	20.10
D. galeata mendotae	TR				0.02								
D. schødleri					TR		0.01				0.01		
D. ambigua	1.36					0.04							0.29
Ceriodaphnia lacustris	0.62		TR	0.01	0.04	0.22	0.01						0.19
Diaphnanosoma leuchtenb.	0.77		0.04	0.17	0.60	0.83				TR		0.03	0.48
Bosmina longirostris	13.59		0.07	0.04	0.03	7.20	7.31	1.11	0.43	0.23	0.40	3.53	7.67
Alona guttata							0.11	0.04	TR				
A. rectangula						0.01							
Pleuorxus denticulatus							0.01						
P. trigonellus													
Moina micrura					0.16								
Leydigia quadrangularis						0.05		0.04	0.03	0.01		0.05	
Total Cladocera	28.24		0.11	0.22	0.86	16.61	8.07	2.08	0.48	0.27	0.73	17.48	28.74
Rotatoria													
Asplanchna priodonta	1.71		0.01	0.03	0.11	2.46	1.63	0.11	0.04	0.09	0.45	9.99	0.38
Polyarthra vulgaris	TR		TR	0.02			0.35						
Brachionus calyciflorus							0.23				2.10	4.29	0.10
Total Rotatoria	1.71		0.01	0.05	0.11	2.46	2.21	0.11	0.04	0.09	3.28	14.28	0.48
Chaoborus punctipennis	0.02		0.21	0.11	0.14	TR	TR	TR		TR	0.01	0.01	0.05
Total organisms/liter	34.68		0.57	0.59	2.63	30.08	30.00	3.63	1.16	1.52	10.49	51.95	74.42

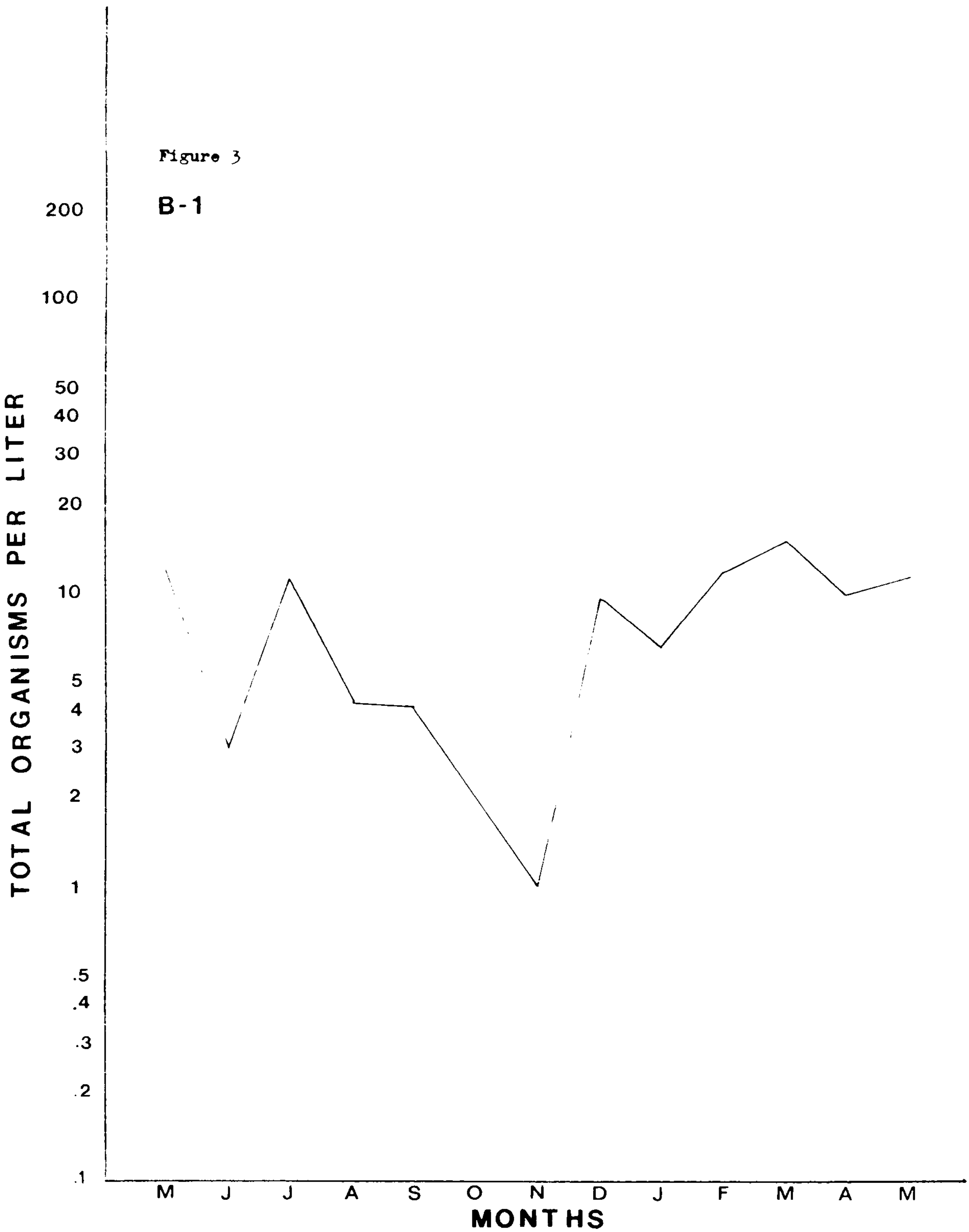
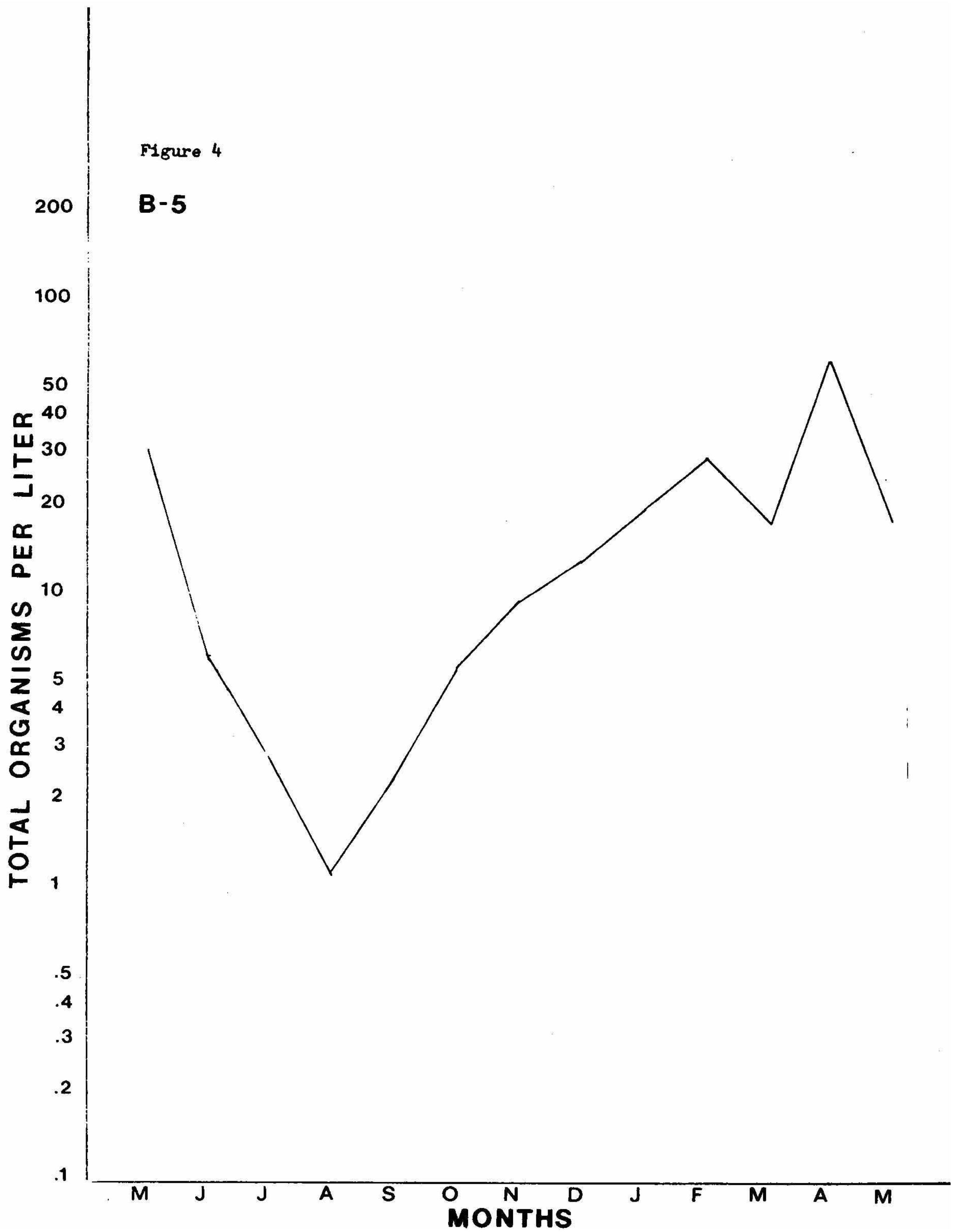


Figure 3
B-1
TOTAL ORGANISMS PER LITER
200
100
50
40
30
20
10
5
4
3
2
1
.5
.4
.3
.2
.1
M J J A S O N D J F M A M
MONTHS

Figure 4


B-5
200
100
50
40
30
20
10
5
4
3
2
1
.5
.4
.3
.2
.1
TOTAL ORGANISMS PER LITER
M J J A S O N D J F M A M
MONTHS

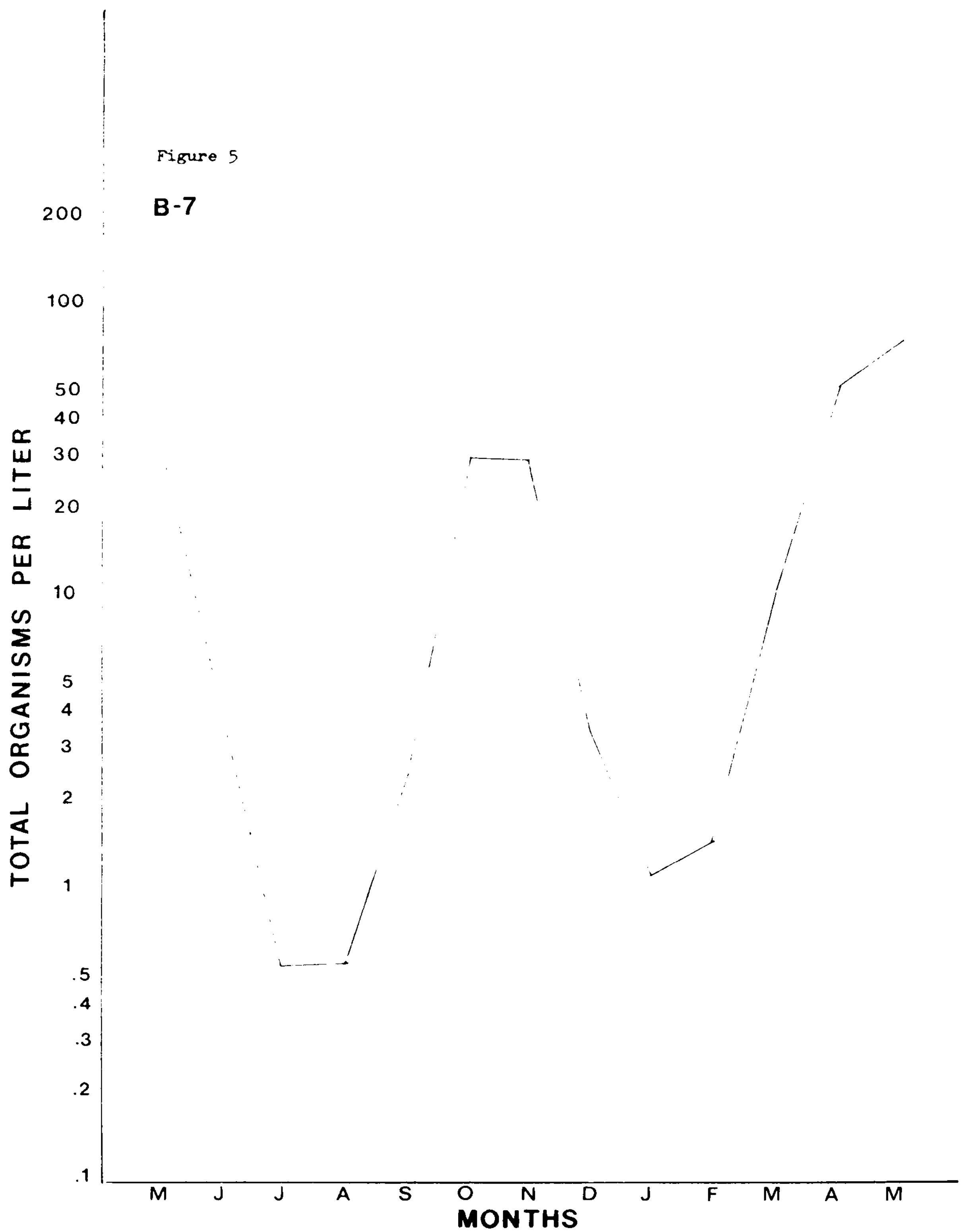


Figure 5
B-7
200
100
50
40
30
20
10
5
4
3
2
1
.5
.4
.3
.2
.1
TOTAL ORGANISMS PER LITER
M J J A S O N D J F M A M
MONTHS

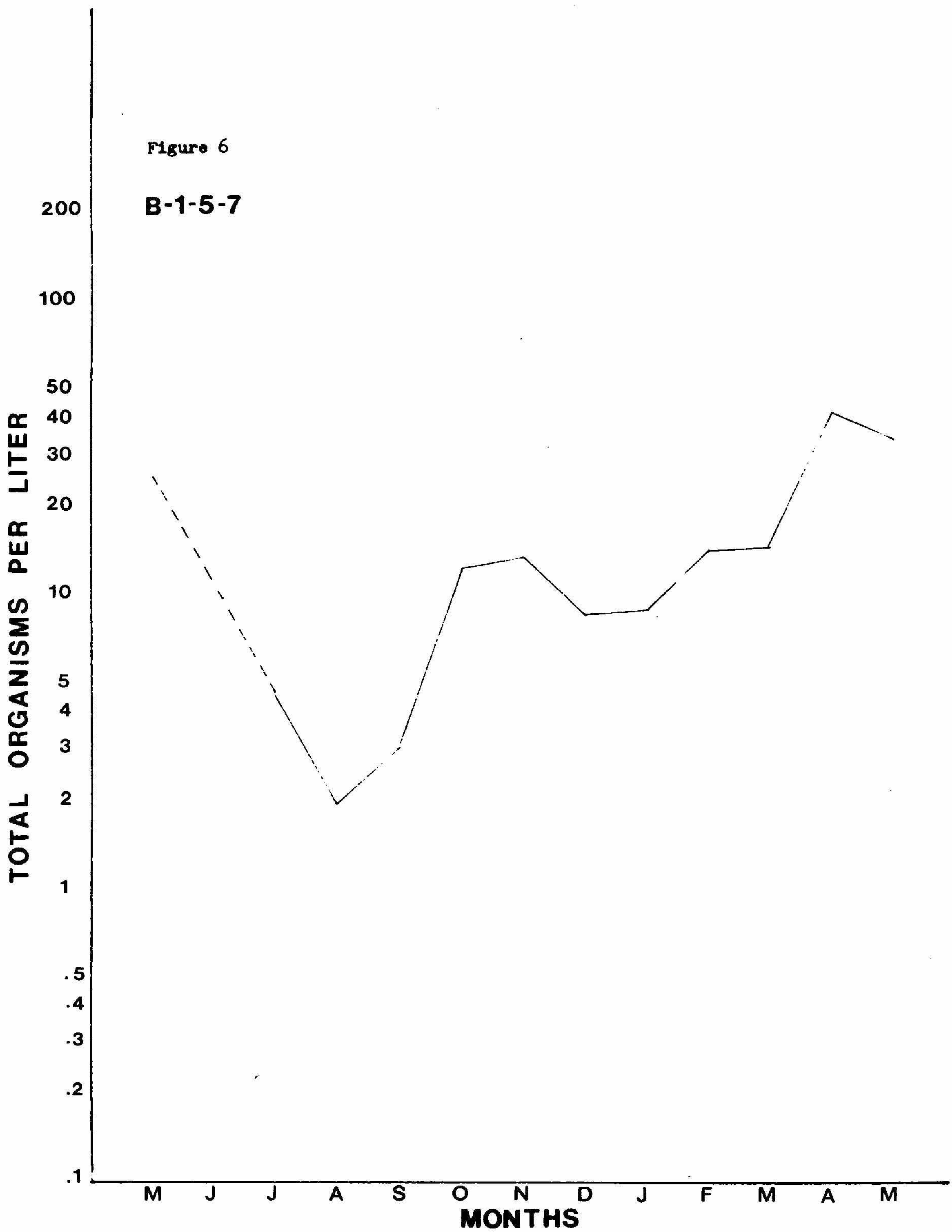


Figure 6
B-1-5-7
TOTAL ORGANISMS PER LITER
200
100
50
40
30
20
10
5
4
3
2
1
.5
.4
.3
.2
.1
M J J A S O N D J F M A M
MONTHS

Table 4

	April 1965 to June 1966	Aug. 1970 to July 1971	June 1972 to May 1973	June 1973 to May 1974	June 1974 to May 1975	May 1975 to May 1976
Cyclopoida	2.50	6.13	1.04	1.77	0.95	1.22
Calanoida	4.30	1.13	1.22	0.68	0.83	0.51
Copepodids+Nauplii		0.14	0.67	0.33	1.10	1.09
Daphnia	1.00	2.13	1.34	0.78	0.35	1.99
Bosmina	2.50	4.63	1.76	1.56	3.28	2.07
Ceriodaphnia	1.50	0.21	0.02	0.64	0.44	0.02
Diaphanosoma	1.20	0.28	0.03	0.03	0.05	0.02
Other Cladocera	0.10	TR		0.07	TR	TR
Asplanchna		3.20	0.72	0.52	1.63	0.83
Chaoborus	0.25	TR		0.01	TR	TR
Total org./liter	13.10	17.85	6.80	6.39	7.63	7.75

Table 5

	April 1965 to June 1966	Aug. 1970 to July 1971	June 1972 to May 1973	June 1973 to May 1974	June 1974 to May 1975	May 1975 to May 1976
Cyclopoida	2.50	7.35	0.82	1.81	1.25	2.91
Calanoida	7.20	3.84	0.41	1.08	0.26	1.61
Copepodids+Nauplii		0.45	0.45	1.08	1.04	2.92
Daphnia	1.30	2.35	0.31	0.63	0.73	1.92
Bosmina	1.00	8.09	1.23	1.58	2.48	6.85
Ceriodaphnia	2.00	1.35	0.12	0.84	0.37	0.18
Diaphanosoma	1.60	0.77	0.03	0.29	0.04	0.04
Other Cladocera	0.10	0.09	0.04	0.05	0.01	TR
Asplanchna		0.54	0.09	1.10	0.13	0.65
Chaoborus	0.07	0.03	0.01	0.05	0.02	0.02
Total org./liter	15.80	24.86	3.51	8.51	6.33	17.10

Table 6

	April 1965 to June 1966	Aug. 1970 to July 1971	June 1972 to May 1973	June 1973 to May 1974	June 1974 to May 1975	May 1975 to May 1976
Cyclopoida	2.00	3.64	0.45	1.28	1.67	4.05
Calanoida	5.00	1.48	0.18	0.80	0.47	0.72
Copepodids+Nauplii		0.27	0.22	0.44	1.01	4.54
Daphnia	5.80	4.63	0.53	1.02	1.92	4.74
Bosmina	0.70	3.43	0.69	1.49	1.99	3.47
Ceriodaphnia	2.80	1.07	0.19	1.03	0.36	0.09
Diaphanosoma	1.50	1.26	0.16	0.25	0.30	0.24
Other Cladocera	0.17	0.29	0.03	0.01	0.80	0.04
Asplanchna		2.06	0.20	0.64	0.36	1.42
Chaoborus	0.18	0.16	0.03	0.08	0.05	0.04
Total org./liter	19.70	18.29	2.65	7.04	8.21	19.35

Table 7

	April 1965 to June 1966	Aug. 1970 to July 1971	June 1972 to May 1973	June 1973 to May 1974	June 1974 to May 1975	May 1975 to May 1976
Cyclopoida	2.33	5.71	0.77	1.62	1.29	2.73
Calanoida	5.50	2.15	0.60	0.85	0.52	0.95
Copepodids+Nauplii		0.29	0.67	0.62	1.05	2.85
Daphnia	2.70	3.04	0.49	0.81	1.00	2.88
Bosmina	1.40	5.38	1.23	1.54	2.58	4.13
Ceriodaphnia	2.10	0.88	0.11	0.84	0.39	0.10
Diaphanosoma	1.43	0.77	0.07	0.19	0.13	0.10
Other Cladocera	0.63	0.13	0.03	0.04	0.03	0.01
Asplanchna		1.93	0.34	0.75	0.71	0.87
Chaoborus	0.09	0.06	0.01	0.05	0.02	0.02
Total org./liter	16.20	20.34	4.31	7.31	7.72	14.74

$$DW_c = \frac{V_c \times DW_s}{V_s} = \frac{DW_s}{DW_c} = \frac{V_s}{V_c}$$

$$DW_1 = \frac{DW_c}{K}$$

$$DW2 = DW_1 \times 10^3$$

DW_1 = mg/liter
DW_2 = μg/liter
DW_c = dry weight of concentrate
DW_s = dry weight of subsample
V_c = volume of concentrate
V_s = volume of subsample
K = total liters sampled

Table 8

Sta. #	Sample date	Vc ml	Vs ml	DWs mg	DWc mg	K	DW_1 mg/l	DW_2 ug/l
B1	5-15-75	75	10	11.339	85.04	6561	0.0130	13.0
B5	"	75	10	14.788	110.91	1863	0.0595	59.5
B7	"	30	10	10.389	31.167	1784	0.0655	65.5
B1	6-13-75	20	10	21.532	43.06	3377	0.0127	12.7
B5	"	No Sample						
B7	"	No Sample						
B1	7-14-75	20	10	27.232	54.46	3742	0.0145	14.5
B1	"	20	10	22.462	44.92	2821	0.0159	15.9
B5	"	20	10	22.395	44.79	2695	0.0166	16.6
B5	"	20	10	24.204	48.41	2672	0.0181	18.1
B7	"	20	10	9.679	19.36	1570	0.0123	12.3
B7	"	20	10	18.051	36.10	1558	0.0232	23.2
B1	8-12-75	20	10	14.635	29.26	4034	0.0073	7.3
B5	"	20	10	7.727	15.45	2030	0.0076	7.6
B5	"	20	10	9.542	19.08	2123	0.0090	9.0
B7	"	20	10	4.433	8.87	1409	0.0063	6.3
B7	"	20	10	5.385	10.77	1322	0.0081	8.1
B1	9-17-75	20	10	10.687	21.37	4262	0.0050	5.0
B5	"	20	10	7.471	14.94	1455	0.0103	10.3
B5	"	20	10	8.502	17.00	1549	0.0110	11.0
B7	"	20	10	6.322	12.64	1414	0.0089	8.9
B7	"	20	10	8.140	16.28	1053	0.0155	15.5
B1	10-22-75	20	10	9.129	18.25	3840	0.0047	4.7
B5	"	20	10	6.360	12.72	2062	0.0062	6.2
B7	"	25	10	14.908	37.27	1690	0.0441	44.1
B7	"	20	10	5.806	11.61	1264	0.0276	27.6
B1	11-17-75	20	10	4.693	9.39	4040	0.0023	2.3
B1	"	20	10	5.652	11.30	4097	0.0028	2.8
B5	"	20	10	15.877	31.77	2430	0.0131	13.1
B7	"	20	10	7.477	14.95	1082	0.0138	13.8
B7	"	20	10	9.065	18.13	1519	0.0119	11.9
B1	12-22-75	75	10	11.072	83.04	4490	0.0185	18.5
B1	"	75	10	10.127	75.95	5120	0.0148	14.8
B5	"	20	10	5.887	11.77	2824	0.0112	11.2
B7	"	20	10	7.380	14.76	1951	0.0076	7.6
B7	"	20	10	6.444	12.89	1880	0.0068	6.8
B1	1-21-76	25	10	12.571	31.43	5204	0.0060	6.0
B5	"	50	10	7.573	37.86	2383	0.0159	15.9
B5	"	50	10	11.895	59.47	2975	0.0200	20.0
B7	"	20	10	2.178	4.30	1764	0.0025	2.5
B7	"	20	10	1.985	3.97	2189	0.0018	1.8

Table 8--con'd

Sta. #	Sample date	Vc ml	Vs ml	DWs mg	DWc mg	K	DW_1 mg/l	DW_2 ug/l
B1	2-18-76	50	10	7.740	38.70	2928	0.0132	13.2
B1	"	50	10	10.120	50.60	2984	0.0170	17.0
B5	"	50	10	13.255	66.27	2526	0.0262	26.2
B7	"	20	10	2.650	53.00	1471	0.0036	3.6
B7	"	20	10	2.003	40.06	1101	0.0036	3.6
B1	3-15-76	75	10	20.190	151.42	5741	0.0264	26.4
B1	"	75	10	19.965	149.74	5205	0.0288	28.8
B5	"	25	10	16.431	41.08	1693	0.0243	24.3
B5	"	25	10	15.006	37.52	2704	0.0139	13.9
B7	"	50	10	9.052	45.26	1867	0.0242	24.2
B1	4-14-76	200	10	12.078	241.56	3950	0.0611	61.1
B1	"	200	10	11.148	222.96	4120	0.0541	54.1
B5	"	130	10	13.406	174.28	1895	0.0920	92.0
B5	"	130	10	20.878	271.41	2834	0.0958	95.8
B7	"	130	10	14.432	187.62	1832	0.1024	102.4
B1	5-16-76	200	10	15.574	311.48	4195	0.0742	74.2
B1	"	200	10	19.256	385.12	4519	0.0852	85.2
B5	"	130	10	7.448	96.82	3061	0.0316	31.6
B5	"	130	10	7.726	100.42	2616	0.0384	38.4
B7	"	130	10	13.728	178.46	1009	0.1769	176.9

Table 9

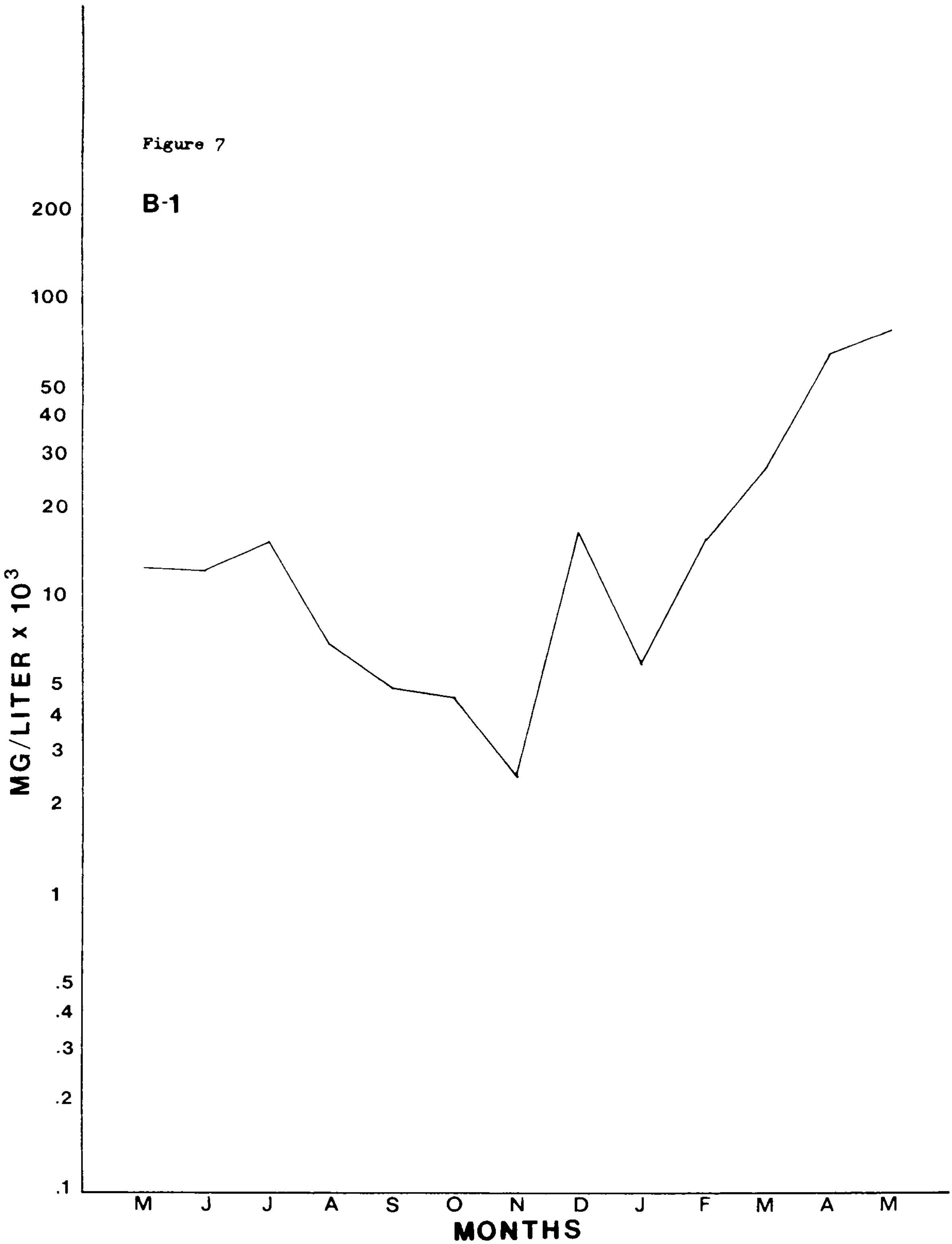
Sample Date	Station	R_1 0/1	R_2 0/1	R_1 µg/1	R_2 µg/1
7-14-75	B1	10.72	12.14	14.5	15.9
"	B5	2.97	2.90	16.6	18.1
"	B7	1.86	3.32	12.3	23.2
8-12-75	B5	1.13	1.26	7.6	9.0
"	B7	0.48	0.75	6.3	8.1
9-17-75	B5	2.41	2.42	10.3	11.0
"	B7	3.52	1.80	8.9	15.5
10-22-75	B7	25.59	34.62	44.1	27.6
11-17-75	B1	1.41	1.49	2.3	2.8
"	B7	32.90	27.12	13.8	11.9
12-22-75	B1	11.35	11.40	18.5	14.8
"	B7	3.45	2.25	7.6	6.8
1-21-76	B5	18.39	20.02	15.9	20.0
"	B7	1.38	0.95	2.5	1.8
2-18-76	B1	10.49	12.43	13.2	17.0
"	B7	1.81	1.26	3.6	3.6
3-15-76	B1	14.84	15.01	26.4	28.8
"	B5	22.44	14.86	24.3	13.9
4-14-76	B1	9.49	9.89	61.1	54.1
"	B5	62.82	62.86	92.0	95.8
5-16-76	B1	11.18	10.87	74.2	85.2
"	B5	16.42	20.83	31.6	38.4

Table 10

	May	June	July	Aug.	Sept.	Oct.	Nov.
B1	0.0130	0.0127	0.0152	0.0073	0.0050	0.0047	0.0025
B5	0.0595	------	0.0173	0.0083	0.0106	0.0062	0.0131
B7	0.0655	------	0.0177	0.0072	0.0122	0.0358	0.0128

	Dec.	Jan.	Feb.	March	April	May
B1	0.0166	0.0060	0.0151	0.0276	0.0576	0.0797
B5	0.0112	0.0179	0.0262	0.0191	0.0939	0.0350
B7	0.0080	0.0028	0.0036	0.0242	0.1024	0.1769

Figure 7


B-1
200
100
50
40
30
20
10
5
4
3
2
1
.5
.4
.3
.2
.1
MG/LITER x 10³
M J J A S O N D J F M A M
MONTHS

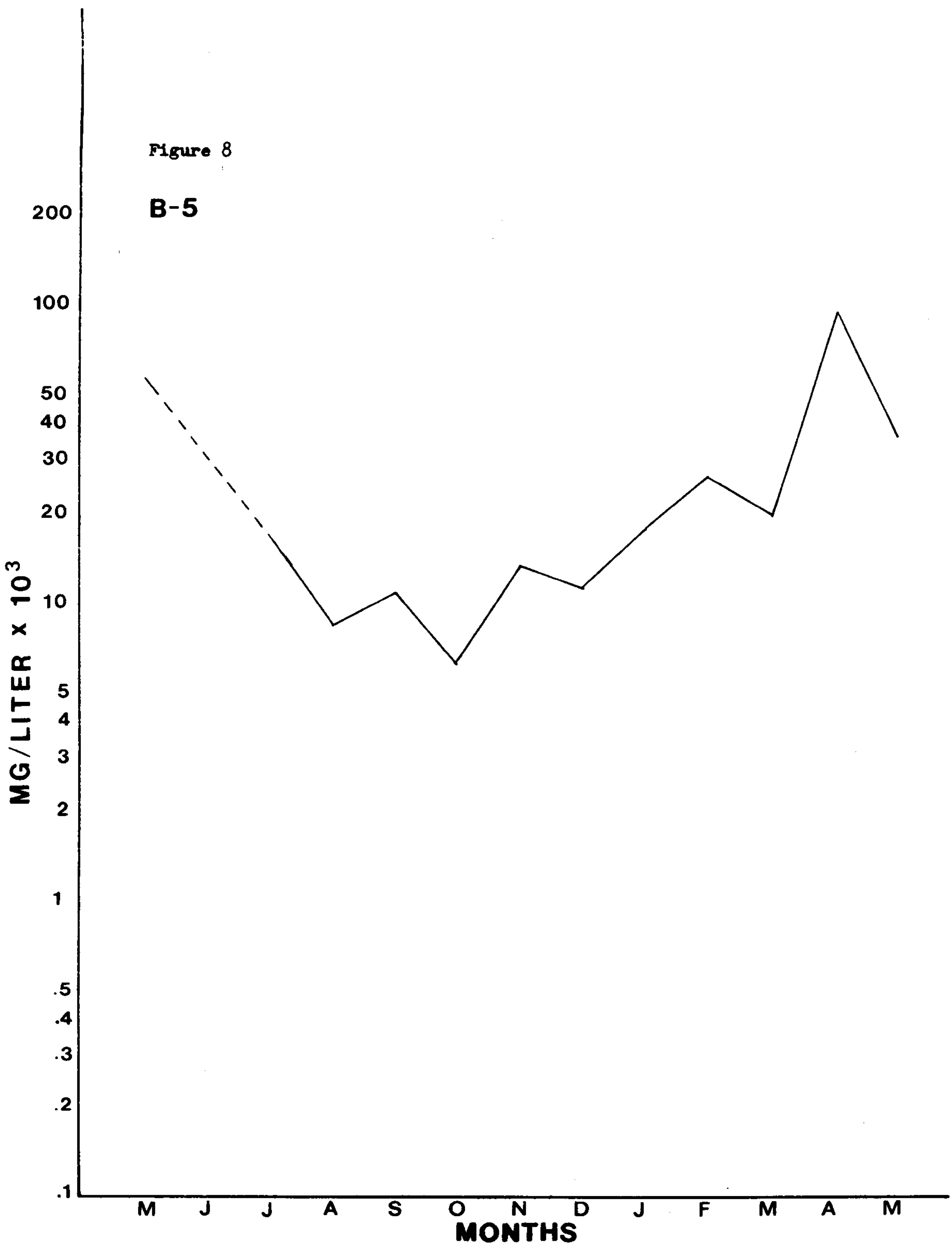


Figure 8
B-5
200
100
50
40
30
20
10
5
4
3
2
1
.5
.4
.3
.2
.1
MG/LITER x 10^3
M J J A S O N D J F M A M
MONTHS

Figure 9

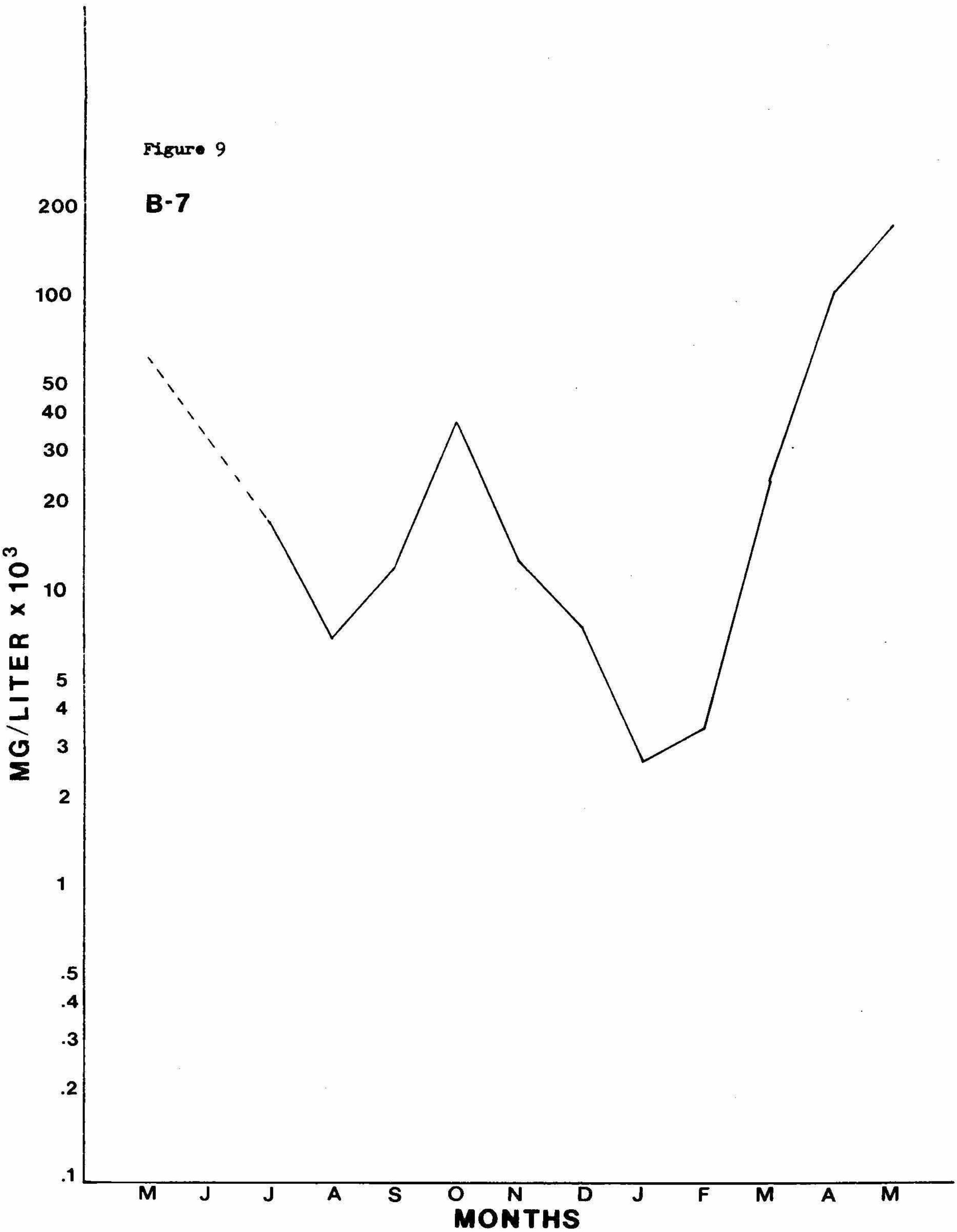

B-7
200
100
50
40
30
20
10
5
4
3
2
1
.5
.4
.3
.2
.1
MG/LITER x 10^3
M J J A S O N D J F M A M
MONTHS

Table 11

Daphnia parvula (large)

# Weighed	Total Weight	Weight Per Individual
25	0.100 mg	4.00 µg
25	0.115 mg	4.60 µg
25	0.133 mg	5.30 µg
75	0.337 mg	4.40 µg
75	0.346 mg	4.60 µg
75	0.386 mg	5.10 µg
Daphnia parvula (small)		
100	0.216 mg	2.16 µg
100	0.221 mg	2.21 µg
Bosmina longirostris		
250	0.207 mg	0.83 µg

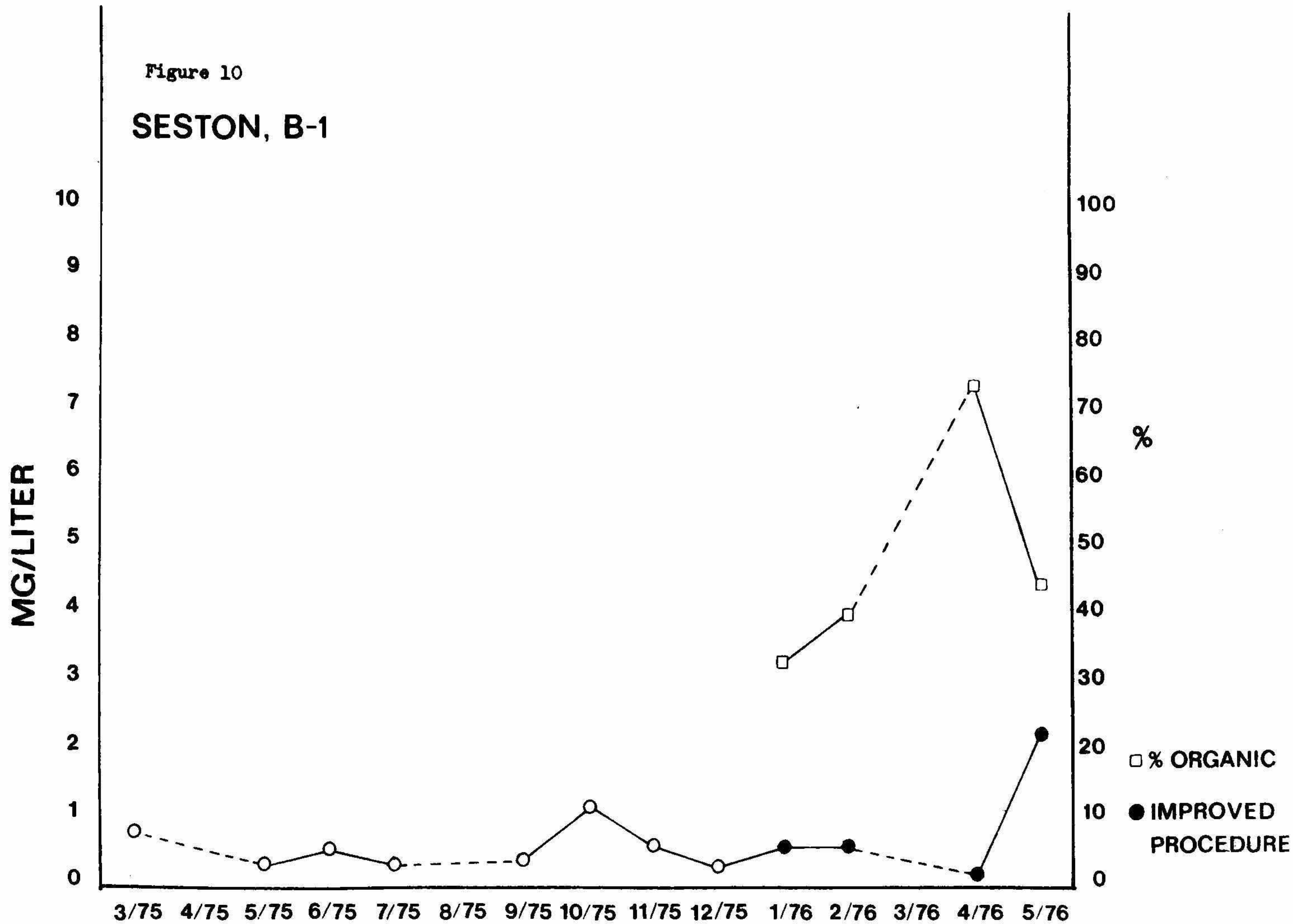
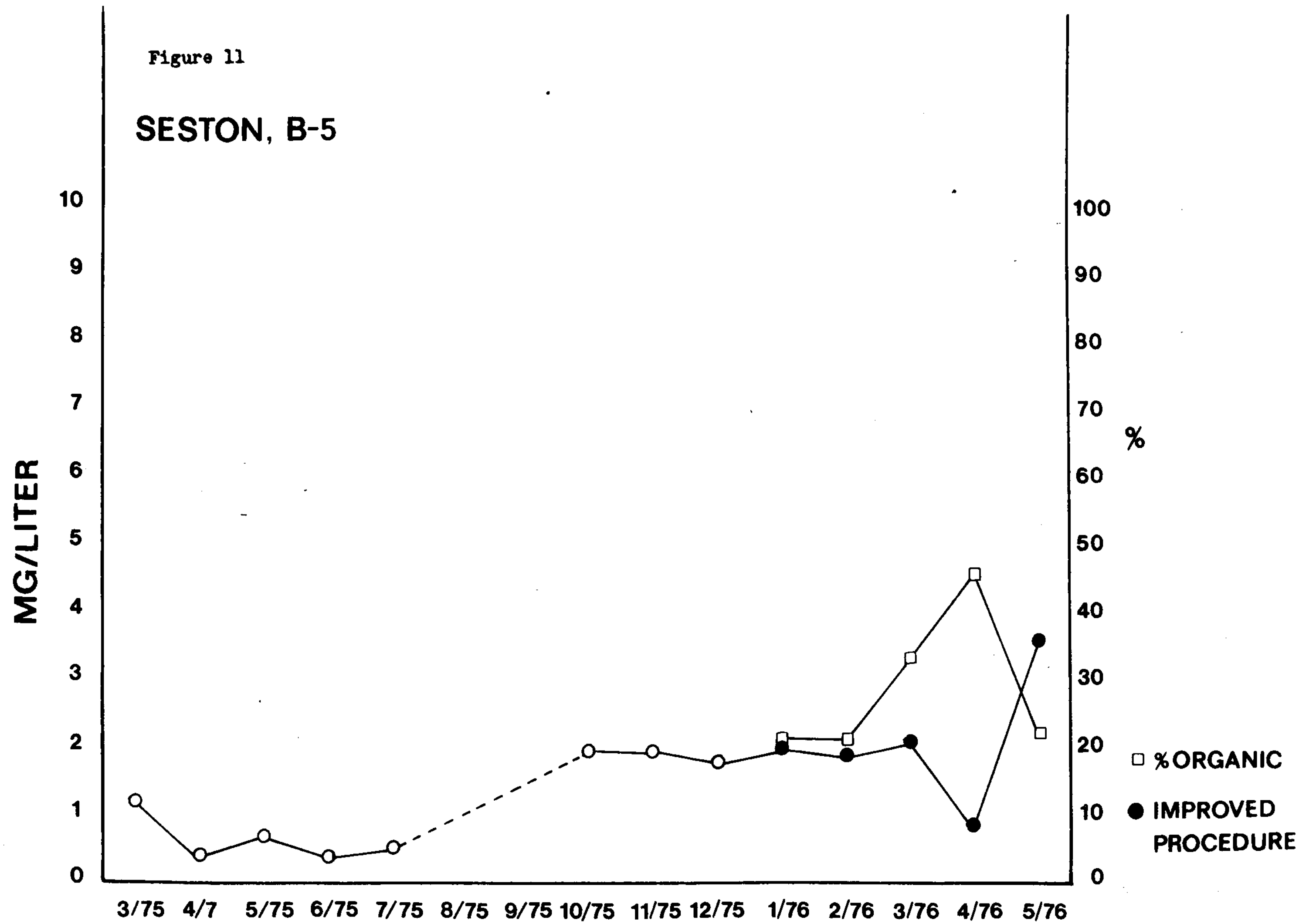

SESTON, B-1
MG/LITER
10
9
8
7
6
5
4
3
2
1
0
100
90
80
70
60
50
40
30
20
10
0
%
□ % ORGANIC
● IMPROVED PROCEDURE
3/75
4/75
5/75
6/75
7/75
8/75
9/75
10/75
11/75
12/75
1/76
2/76
3/76
4/76
5/76

Figure 10

Figure 11


SESTON, B-5
MG/LITER
%
0
1
2
3
4
5
6
7
8
9
10
0
10
20
30
40
50
60
70
80
90
100
3/75
4/7
5/75
6/75
7/75
8/75
9/75
10/75
11/75
12/75
1/76
2/76
3/76
4/76
5/76
%ORGANIC
IMPROVED PROCEDURE

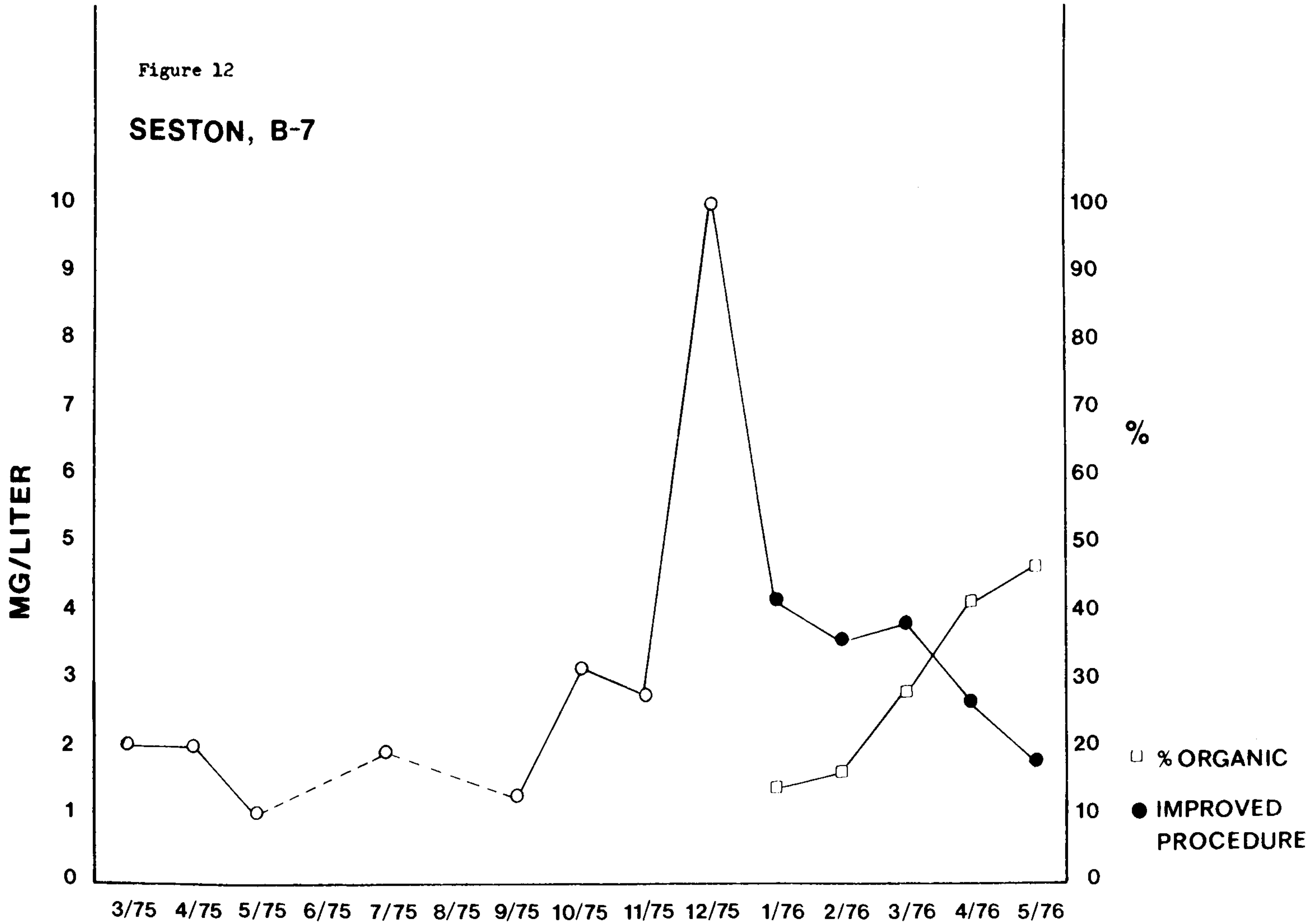


Figure 12

SESTON, B-7

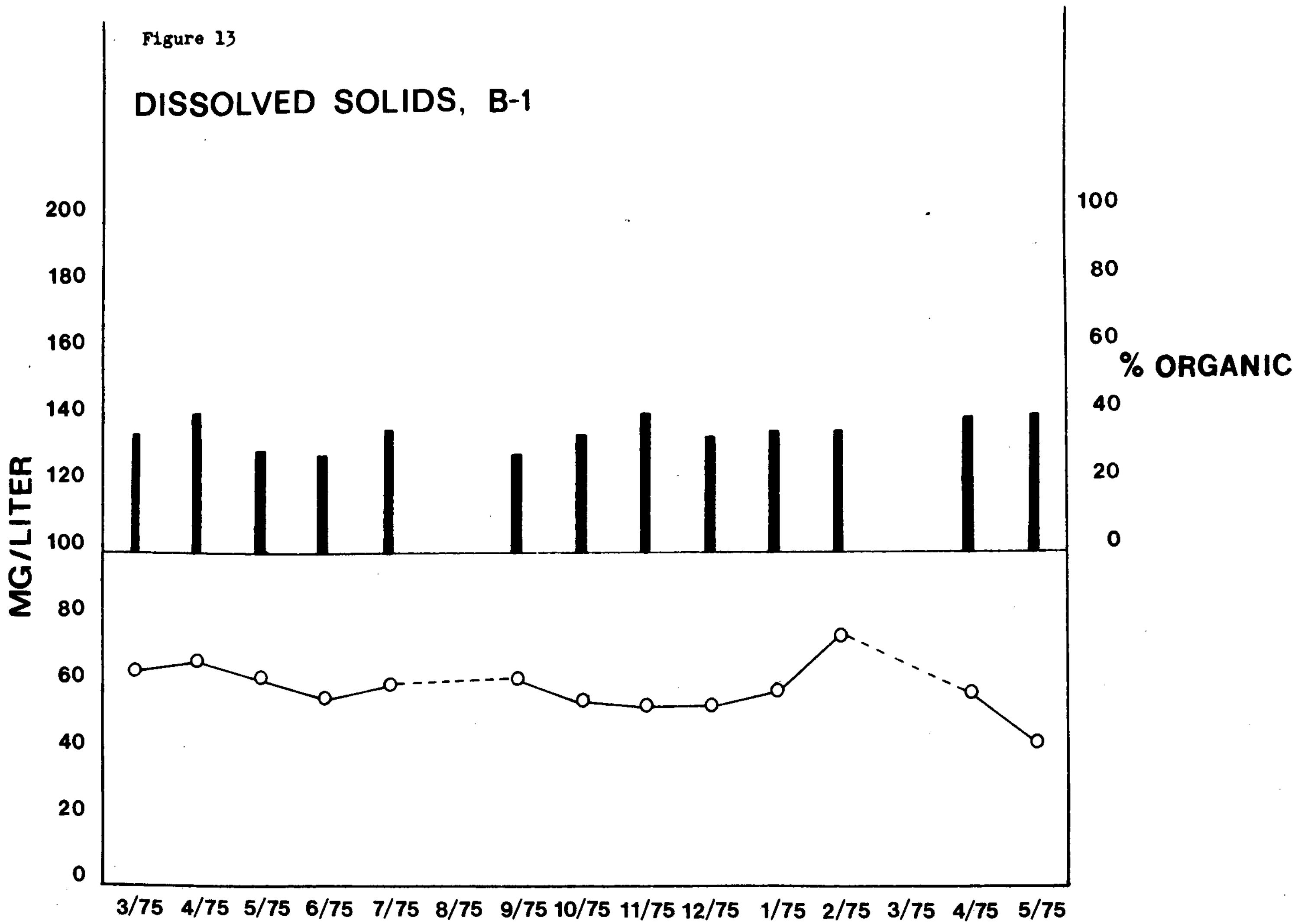
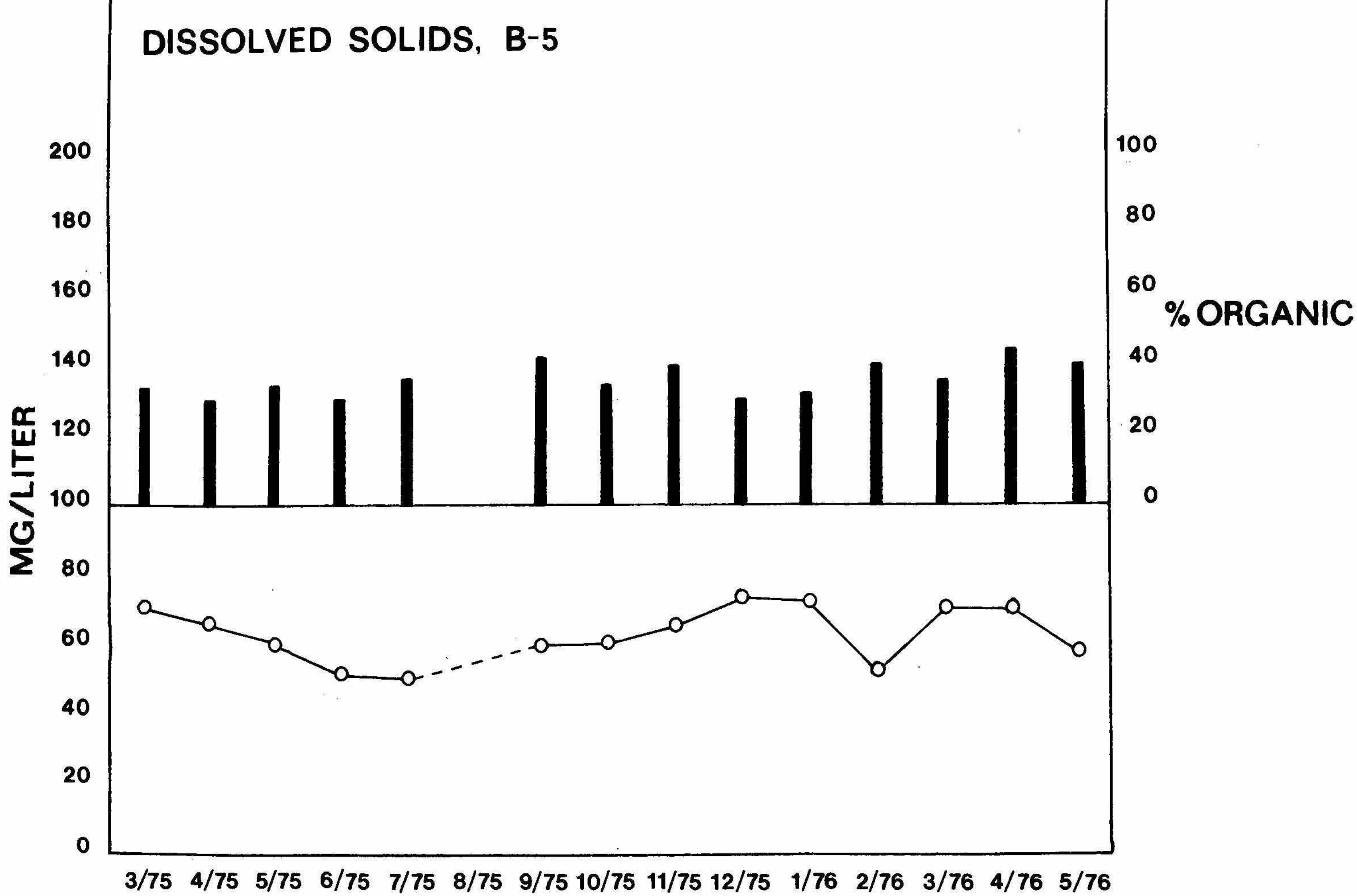


Figure 13

DISSOLVED SOLIDS, B-1

Figure 14



DISSOLVED SOLIDS, B-5
MG/LITER
200
180
160
140
120
100
80
60
40
20
0
% ORGANIC
100
80
60
40
20
0
3/75 4/75 5/75 6/75 7/75 8/75 9/75 10/75 11/75 12/75 1/76 2/76 3/76 4/76 5/76

Figure 15

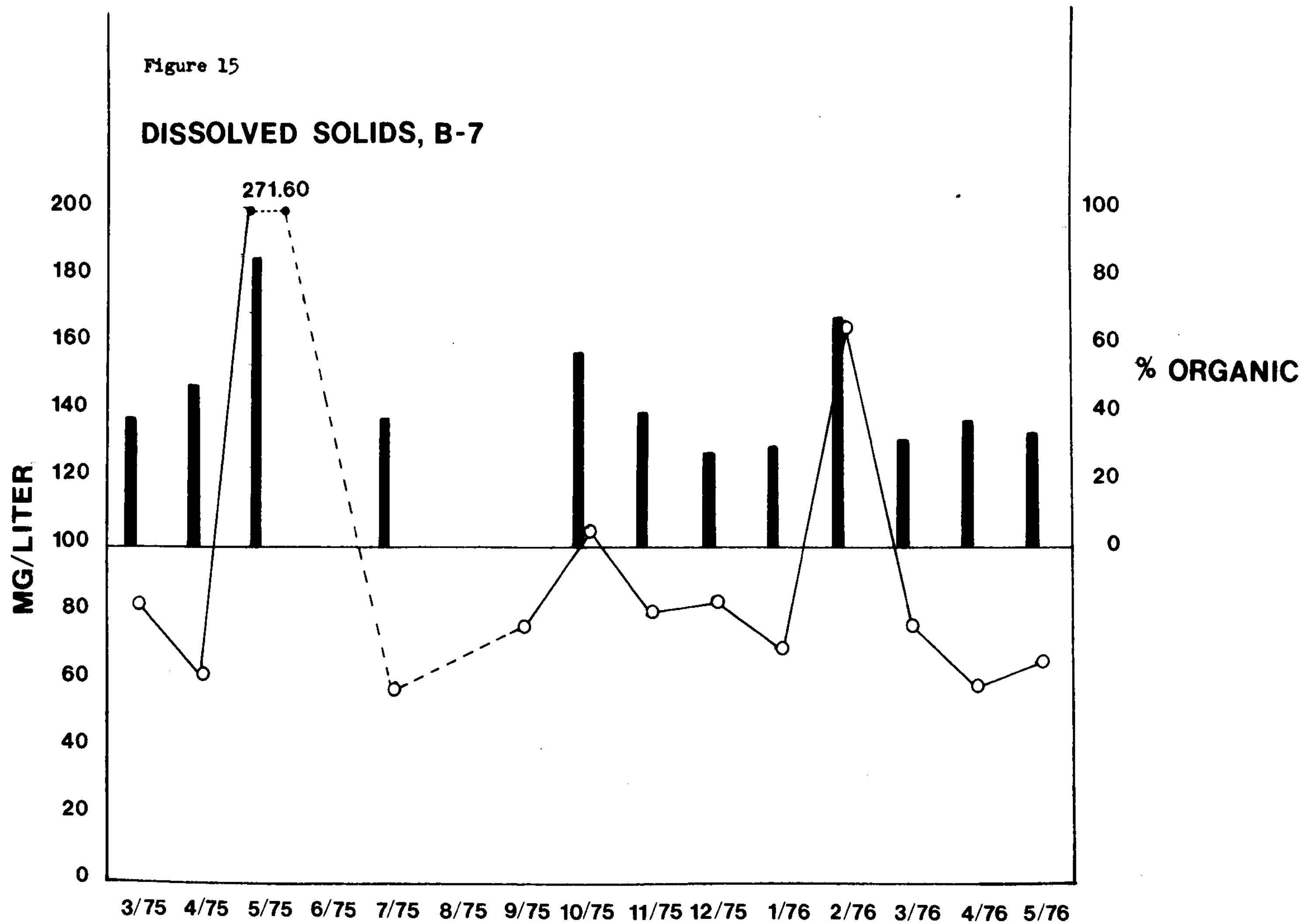

DISSOLVED SOLIDS, B-7
271.60
MG/LITER
200
180
160
140
120
100
80
60
40
20
0
100
80
60
40
20
0
% ORGANIC
3/75 4/75 5/75 6/75 7/75 8/75 9/75 10/75 11/75 12/75 1/76 2/76 3/76 4/76 5/76

Table 12

	4-9	4-16	4-23	4-30	5-7	5-14	5-21	5-28	6-4	6-11	6-18
ROTATORIA											
Asplanchna priodonta		TR							0.01	0.45	
Brachionus calycifloris											
Collotheca ornata	0.15	0.09	0.02	0.03	0.06	0.03	0.02	TR	0.11		0.11
Conochiloides coenobasis	0.01	0.05	0.04	0.02	0.03	0.04	0.04	0.16	0.34	0.42	0.20
Conochilus unicornis	2.88	0.57	0.32	1.11	1.38	1.82	0.51	0.72	2.44	1.44	1.80
Epiphanes senta	0.22										
Eothinia elongata						0.01					
Euchlanis dilatata											
Filinia longiseta	0.08	0.02	0.01	0.07	0.01	0.02	0.02	TR		0.15	0.20
Hexarthra mira											0.08
Kellicottia bostoniensis		0.01	TR	0.01	TR				TR		0.03
Keratella cochlearis	0.28	0.49	0.48	0.38	0.21	0.22	0.06	0.08	0.06	0.10	0.14
Lecane luna											
Macrochaetus longipes								TR			
Monostyla lunaris						0.01					
Ploesoma hudsoni		TR									
P. truncatum	0.02										
Polyarthra euryptera	0.03	0.02	0.06	0.10	0.20	0.33	0.05	0.01	0.01	0.01	0.01
P. vulgaris	0.37	0.33	0.36	0.51	0.60	0.76	0.36	0.88	0.56	1.09	1.28
Pompholyx sulcata	0.29	TR	0.02	0.02	0.03	0.04	0.02	0.02			0.05
Proalinopsis caudata						TR			TR	0.02	
Ptygura libera	TR										
Rotaria neptunia											
Synchaeta stylata		0.56	0.11	0.02	0.01	0.02					0.01
Trichocerca capucina		0.01	TR						0.01	0.03	0.05
T. longiseta			TR	TR		0.02	0.08	0.05	0.03	0.17	1.41
T. porcella		TR									
Total Rotatoria	4.39	2.16	1.42	2.27	2.52	3.30	1.17	1.93	3.56	3.87	5.36

Table 12--con'd

	4-9	4-16	4-23	4-30	5-7	5-14	5-21	5-28	6-4	6-11	6-18
COPEPODA											
Cyclopoida	0.02	0.07	0.09	0.15	0.12	0.36	0.17	0.11	0.09	0.25	0.38
Calanoida	0.13	0.33	0.40	0.64	0.54	0.91	0.57	0.76	0.40	0.70	0.67
Nauplius	1.26	1.61	2.02	2.53	1.70	2.98	1.47	1.19	0.89	1.28	1.09
Copepodid	0.25	0.52	0.53	0.39	0.23	0.45	0.26	0.21	0.06	0.13	0.20
Total Copepoda	1.66	2.53	3.03	3.72	2.59	4.69	2.45	2.27	1.44	2.36	2.34
CLADOCERA											
Alona costata						TR					
A. rectangula					TR						
A. quadrangularis							TR				
Bosmina longirostris	0.02	0.07	0.13	0.23	0.04	0.31	0.33	0.62	0.81	1.75	1.78
Bosminopsis sp.											
Ceriodaphnia lacustris		0.01	0.02		0.01	0.04	0.11	0.15	0.08	0.09	0.09
C. quadrangula							0.01	TR			
Chydorus barroisi											
C. sphaericus		TR	0.01	0.01	TR	0.01	0.01		TR		
Daphnia ambigua	0.02			0.03			0.01	0.01			
D. catawba									TR		
D. galeata	0.03	0.38	0.57	0.79	0.65	1.45	1.43	1.81	0.11	0.02	0.02
D. middendorffiana				0.04	0.01	0.02		TR			
D. parvula		0.03	0.24	0.34	0.21	0.48	0.20	0.11	0.02	0.01	
D. Pulex									TR		
D. schødleri											
Diaphanosoma leuchtenbergianum			TR			TR	0.04	0.04	0.01	0.10	0.34
Holopedium gibberum		0.03	0.03	0.03	0.05	0.30	0.29	0.55	0.07	0.07	0.02
Immature Cladocera		0.07	0.12	0.28	0.37	0.57	0.23	0.12	0.07	0.07	0.10
Total Cladocera		0.07	0.59	1.12	1.76	1.34	3.18	2.67	2.40	1.18	2.11
Chaoborus punctipennis											
Total Organisms	6.12	5.27	5.58	7.74	6.45	11.17	6.29	6.60	6.18	8.34	10.02

Table 12--con'd

	6-25	7-2	7-9	7-16	7-22	7-30	8-7	8-14	8-20	8-27	9-3	9-10	9-17
ROTATORIA													
Asplanchna priodonta	0.28	0.15	0.01	0.07	0.03	0.07	0.04	0.01	0.01	0.03			
Brachionus calycifloris													
Collotheca ornata	0.11	0.33	0.45	0.56	0.52	0.23	0.04	0.02	0.13	0.04	0.05	0.12	0.01
Conochiloides coenobasis	0.18	0.10	0.34	0.25	0.20	0.20	0.03	0.07	0.02	0.04	0.08	0.06	0.04
Conochilus unicornis	2.06	1.92	0.42	2.06	0.62	0.72	0.36	0.22	0.32	0.37	0.28	0.07	0.45
Epiphanes senta													
Eothinia elongata													
Euchlanis dilatata											TR		
Filinia longiseta	0.18	0.10	0.41	0.30	2.66	0.93	0.09	0.04	0.32	0.12	0.15	0.28	0.05
Hexarthra mira	1.38	4.33	0.69	0.39	0.12	0.08	0.02	0.02	0.16	0.07	0.06	0.13	0.13
Kellicottia bostoniensis		0.03	0.04	0.05	0.22	0.21	0.02	0.02	0.15	0.08	0.06	0.18	0.22
Keratella cochlearis	1.69	3.43	0.72	1.35	1.10	0.76	0.32	0.17	0.34	0.31	0.40	0.44	0.41
Lecane luna				TR					TR				
Macrochaetus longipes													
Monostyla lunaris													
Ploesoma hudsoni		TR	TR		0.02						0.01	0.02	
P. truncatum		0.11	0.38	0.10	0.74	0.09	0.02	0.02	0.15	0.04	0.18	0.10	0.07
Polyarthra euryptera	0.03	0.08	0.04	0.16	0.13	0.14	0.02	0.09	0.13	0.07	0.05	0.03	0.04
P. vulgaris	3.54	3.88	1.12	0.97	0.73	1.35	0.34	0.32	0.32	0.12	0.10	0.60	0.39
Pompholyx sulcata													
Proalinopsis caudata	0.02		TR	TR	0.03	0.02							
Ptygura libera			0.54	0.64	1.09	0.80	0.15	0.10	0.21	0.06	0.12	0.05	0.02
Rotaria neptunia												TR	
Synchaeta stylata	0.86		0.02	0.01	0.01	0.01		TR	0.01				0.01
Trichocerca capucina	0.60	0.16	0.04	0.04	0.08		0.02	0.04	0.18	0.09	0.04	0.03	0.05
T. longiseta	1.48	0.25	0.09	0.09	0.18	0.08	0.08	0.55	0.29	0.34	0.16	0.36	0.23
T. porcella			TR										
Total Rotatoria	12.40	14.87	5.31	7.04	8.46	5.68	1.55	1.67	2.73	1.77	1.73	2.46	2.13

Table 12--con'd

	6-25	7-2	7-9	7-16	7-22	7-30	8-7	8-14	8-20	8-27	9-3	9-10	9-17
COPEPODA													
Cyclopoida	0.31	0.23	0.24	0.27	0.59	0.22	0.04	0.09	0.20	0.14	0.05	0.20	0.19
Calanoida	0.46	0.34	0.14	0.18	0.15	0.12	0.04	0.04	0.02	0.05	0.02	0.02	0.03
Nauplius	2.23	2.63	1.67	1.10	1.18	0.94	0.40	0.23	0.57	0.29	0.23	0.19	0.29
Copepodid	0.65	0.27	0.07	0.09	0.23	0.04	0.02	0.02	0.12	0.10	0.03	0.04	0.06
Total Copepoda	3.65	3.47	2.12	1.64	2.16	1.32	0.50	0.38	0.90	0.58	0.33	0.48	0.56
CLADOCERA													
Alona costata													
A. rectangula					TR								
A. quadrangularis													
Bosmina longirostris	1.57	0.61	0.20	0.15	0.04	0.04	0.04	0.10	0.21	0.29	0.15	0.34	0.71
Bosminopsis sp.											0.02	TR	0.02
Ceriodaphnia lacustris	0.15	0.02											
C. quadrangula													
Chydorus barroisi												TR	
C. sphaericus			0.01		0.01				0.01		TR		
Daphnia ambigua													
D. catawba													
D. galeata	0.02	0.01	0.02	0.01	0.02			0.05	0.02	0.02	0.02	0.03	0.02
D. middendorffianum													
D. parvula	0.01				0.01							0.01	
D. pulex													
D. schødleri										TR	0.02		0.01
Diaphanosoma leuchten-bergianum	0.89	0.35	0.02	0.02		0.01	0.02	0.04	0.02	0.05	0.01	0.02	0.10
Holopedium gibberum													
Immature Cladocera	0.13	0.03	0.02						0.01	0.04	TR		0.01
Total Cladocera	2.76	1.00	0.26	0.18	0.08	0.05	0.06	0.18	0.27	0.41	0.22	0.40	0.85
Chaoborus punctipennis													TR
Total Organisms	18.82	19.35	7.69	8.86	10.69	7.05	2.11	2.27	3.91	2.76	2.28	3.31	3.55

Table 12--con'd

	9-24	10-8	10-15	10-22	10-30	11-5	11-12	11-19	12-3	12-10	12-17
ROTATORIA											
Asplanchna priodonta											
Brachionus calyciflorus					TR						
Collotheca ornata	0.07	0.01	0.02	0.02	0.09	0.07	0.24	0.18		0.05	0.05
Conochiloides coenobasis	0.02	0.01			0.01		0.07	0.02		0.02	0.01
Conochilus unicornis	0.10	1.98	0.48	0.23	0.56	0.28	0.62	0.37	0.02	0.18	0.11
Epiphanes senta											
Eothinia elongata											
Euchlanis dilatata											
Filinia longiseta	0.06	0.01		0.02	0.04	0.02	0.05	0.04	0.04	0.73	2.95
Hexarthra mira	0.05	TR	0.01			0.01					
Kellicottia bostoniensis	0.06	0.02	0.03	0.01	0.02	0.02	0.04	0.01		0.04	0.07
Keratella cochlearis	0.40	0.04	0.04	0.03	0.09	0.03	0.02	0.01		0.03	0.02
Lecane luna											
Macrochaetus longipes					TR						
Monostyla lunaris											
Ploesoma hudsoni											
P. truncatum	0.02										
Polyarthra euryptera	0.02	0.04	0.04	0.03	0.21	0.10	0.26	0.15	0.04	0.10	0.06
P. vulgaris	0.44	0.08	0.15	0.17	1.96	0.78	1.84	0.73	0.23	1.85	0.81
Pompholyx sulcata											
Proalinopsis caudata					TR					TR	
Ptygura libera	0.02										
Rotaria neptunia							TR				
Synchaeta stylata	0.01	0.01									
Trichocerca capucina	0.02	0.01			0.01						
T. longiseta	0.12	0.02	0.01	0.02	0.06	0.03	0.10	0.04	0.07	0.07	0.04
T. procella											
Total Rotatoria	1.38	2.23	0.78	0.52	3.05	1.33	3.24	1.55	0.39	3.08	4.13

Table 12--con'd

	9-24	10-8	10-15	10-22	10-30	11-5	11-12	11-19	12-3	12-10	12-17
COPEPODA											
Cyclopoida	0.06	0.07	0.23	0.06	0.15	0.08	0.43	0.16	0.09	0.12	0.22
Calanoida	0.02	0.04	0.04	0.02	0.02	0.02	0.15	0.06	0.03	0.04	0.04
Nauplius	0.10	0.35	0.16	0.07	0.38	0.19	0.73	0.32	0.06	0.33	0.73
Copepodid	0.06	0.07	0.05	0.04	0.12	0.06	0.22	0.05	0.01	0.08	0.22
Total Copepoda	0.24	0.53	0.48	0.18	0.68	0.35	1.52	0.59	0.19	0.58	1.22
CLADOCERA											
Alona costata											
A. rectangula											
A. quadrangularis											
Bosmina longirostris	0.16	0.48	0.27	0.04	0.12	0.04	0.07	0.02	0.02	0.01	0.02
Bosminopsis sp.	0.01										
Ceriodaphnia lacustris		0.02			0.01	0.01	0.04	0.02	0.03		
C. quadrangula											
Chydorus barroisi											
C. sphaericus											
Daphnia ambigua											
D. catawba											
D. galeata		TR			0.02	0.01	0.05	0.02	0.01	0.03	0.05
D. middendorffiana					TR						
D. parvula					0.02		0.01			0.01	
D. pulex											
D. schødleri	0.02										
Diaphanosoma leuchten-bergianum		0.04	0.02		0.13	0.06	0.80	0.33	0.25	0.23	0.23
Holopedium gibberum		0.05	0.29	0.04	0.12	0.05	0.08	0.11	0.02	0.01	
Immature Cladocera		0.04	0.01		0.07		0.06	0.03	0.02	0.02	
Total Cladocera	0.18	0.63	0.59	0.09	0.48	0.18	1.11	0.52	0.34	0.30	0.30
Chaoborus punctipennis											
Total Organisms	1.81	3.39	18.37	0.78	4.21	1.85	5.86	2.65	0.92	3.96	5.65

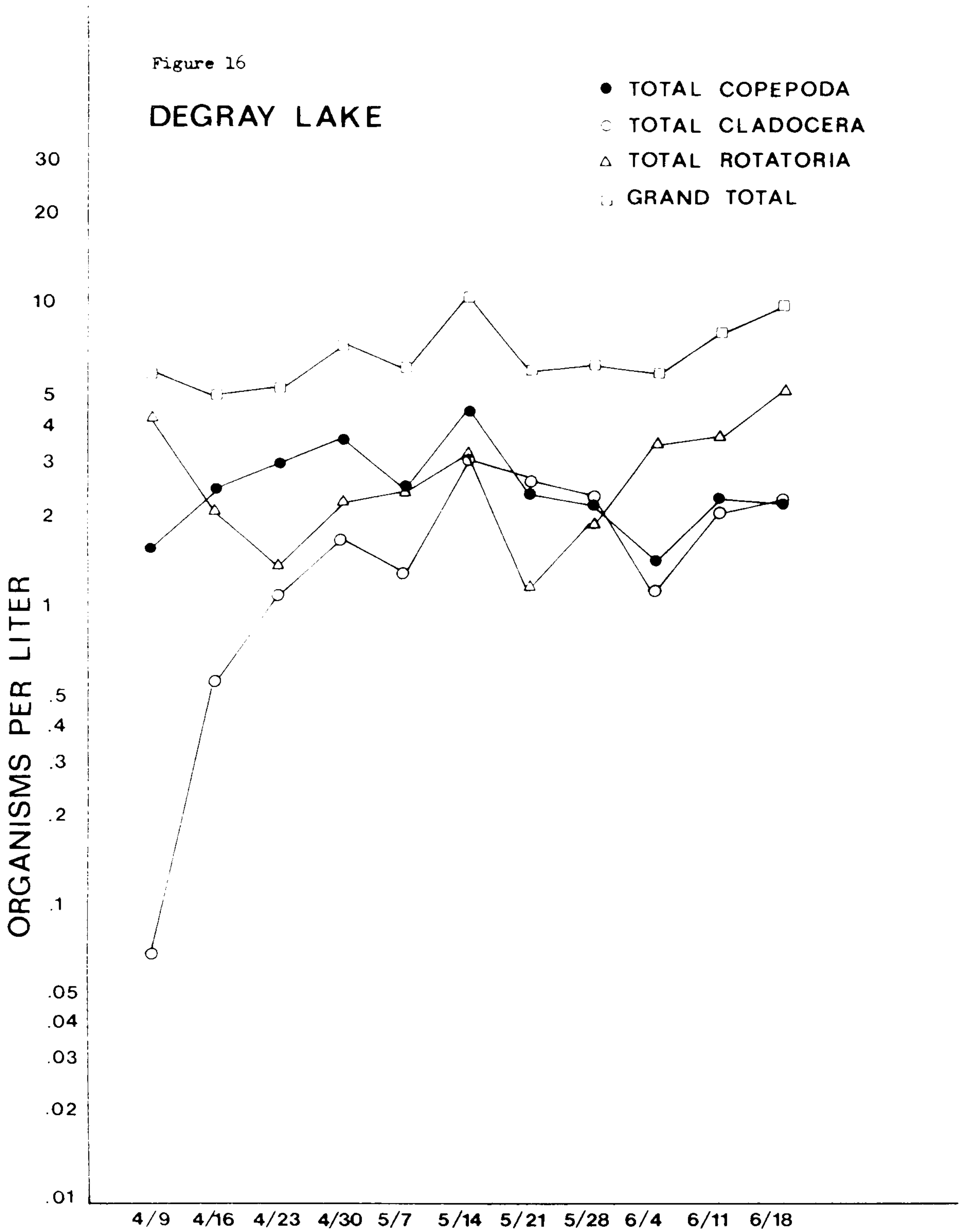


Figure 16
DEGRAY LAKE
TOTAL COPEPODA
TOTAL CLADOCERA
TOTAL ROTATORIA
GRAND TOTAL
ORGANISMS PER LITER
30
20
10
5
4
3
2
1
.5
.4
.3
.2
.1
.05
.04
.03
.02
.01
4/9
4/16
4/23
4/30
5/7
5/14
5/21
5/28
6/4
6/11
6/18

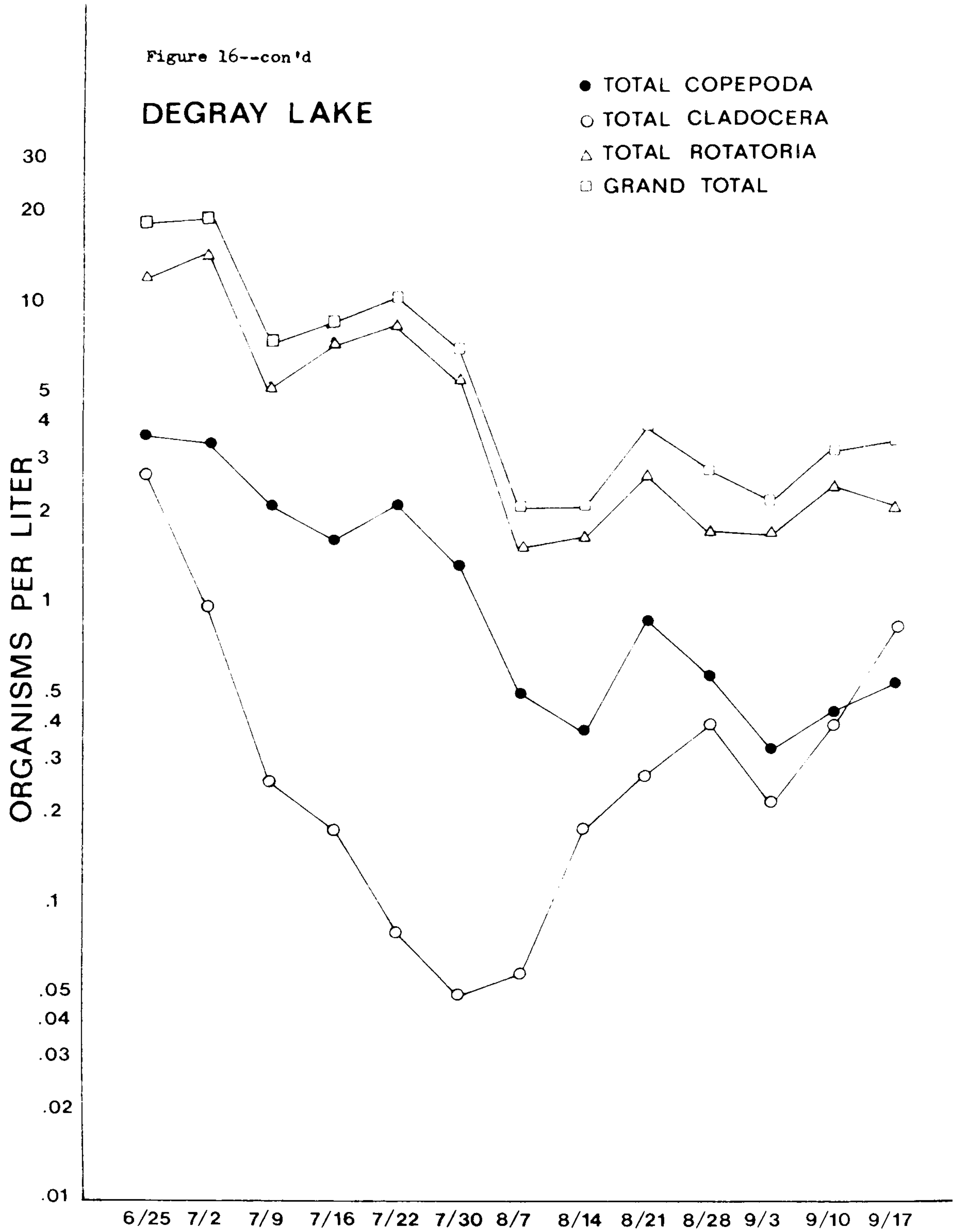


Figure 16--con'd
DEGRAY LAKE
TOTAL COPEPODA
TOTAL CLADOCERA
TOTAL ROTATORIA
GRAND TOTAL
ORGANISMS PER LITER
30
20
10
5
4
3
2
1
.5
.4
.3
.2
.1
.05
.04
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6/25
7/2
7/9
7/16
7/22
7/30
8/7
8/14
8/21
8/28
9/3
9/10
9/17

Figure 16--con'd

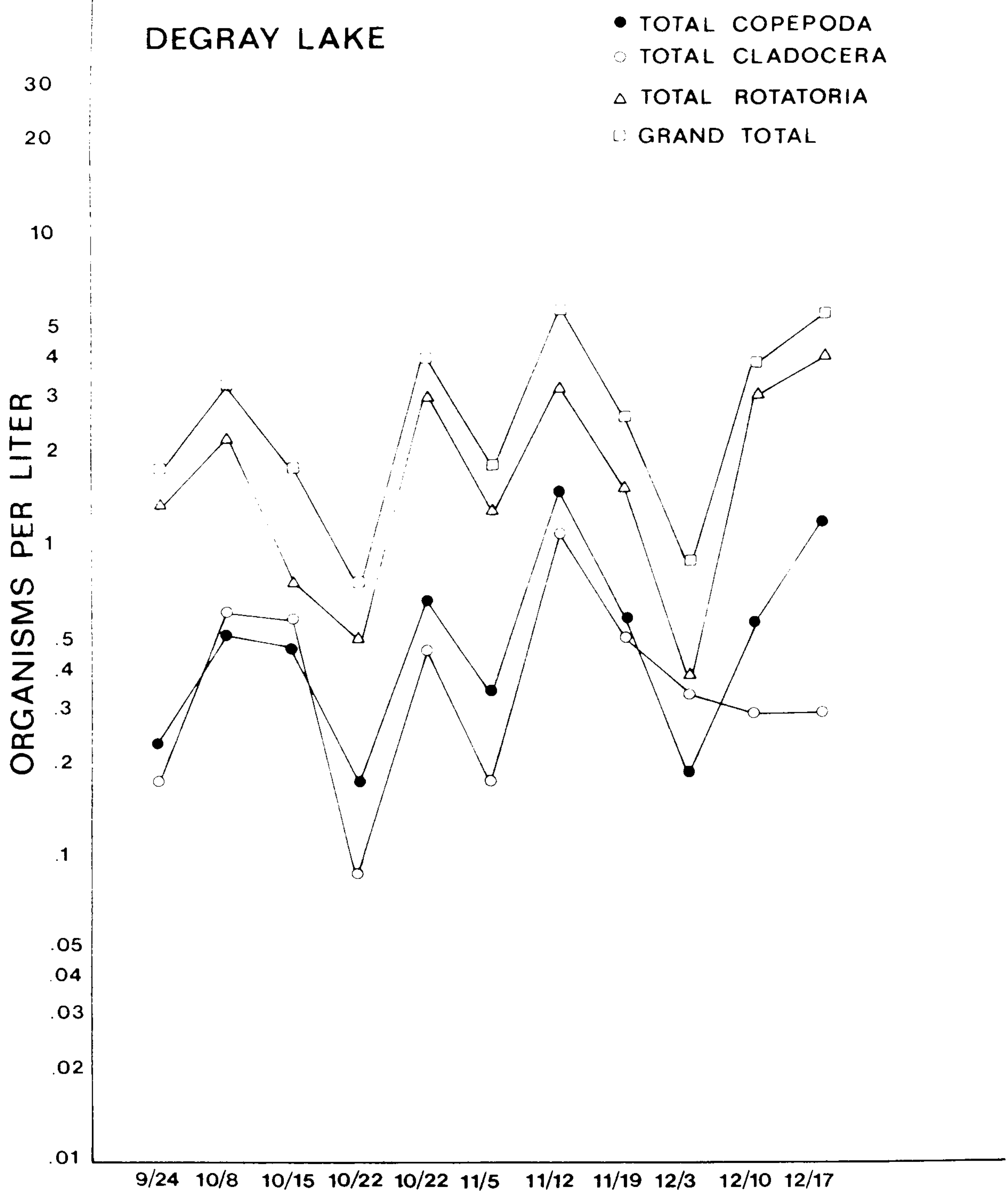


Table 13

Total (A) Fraction (B)	Date of Sample		Station & Depth	V_c	V_s	DW_s	DW_c	K	DW_1	DW_2
A	4/16/75		1-50-0	100	11	13.6	123.6	13,662.9	0.0090	9.0
B	4/16/75		1-50-0	100	11	0.7	6.4	13,662.9	0.0005	0.5
A	4/23/75		1-50-0	100	11	15.6	141.8	13,662.9	0.0104	10.4
B	4/23/75		1-50-0	100	11	11.8	107.3	13,662.9	0.0079	7.9
A	4/30/75		1-50-0	100	11	16.4	149.1	13,662.9	0.0109	10.9
B	4/30/75		1-50-0	100	11	9.1	82.7	13,662.9	0.0061	6.1
A	5/ 7/75		1-50-0	100	11	22.3	202.7	13,662.9	0.0148	14.8
B	5/ 7/75		1-50-0	100	11	17.3	157.3	13,662.9	0.0115	11.5
A	5/14/75		1-50-0	100	11	16.8	152.7	13,662.9	0.0112	11.2
B	5/14/75		1-50-0	100	11	6.1	55.5	13,662.9	0.0041	4.1
A	5/21/75		1-20-0	100	11	5.4	49.1	2,732.6	0.0180	18.0
B	5/21/75		1-20-0	100	11	5.1	46.4	2,732.6	0.0170	17.0
A	5/21/75	R^2	1- 5-0	100	11	4.7	42.7	1,024.7	0.0417	41.7
B	5/21/75		1- 5-0	100	11	4.6	41.8	1,024.7	0.0408	40.8
A	5/28/75	R_1	1- 5-0	100	11	2.7	24.5	1,024.7	0.0240	24.0
B	5/28/75		1- 5-0	100	11	2.4	21.8	1,024.7	0.0213	21.3
A	5/28/75	R_2	1- 5-0	20	10	8.8	17.6	1,024.7	0.0172	17.2
B	5/28/75		1- 5-0	20	10	2.4	4.8	1,024.7	0.0047	4.7
A	6/ 4/75	R_1	1- 5-0	20	10	12.1	24.2	1,024.7	0.0236	23.6
B	6/ 4/75		1- 5-0	20	10	12.0	24.0	1,024.7	0.0234	23.4
A	6/ 4/75	R_2	1- 5-0	100	11	21.7	197.3	1,024.7	0.1925	192.5
B	6/ 4/75		1- 5-0	100	11	10.6	96.4	1,024.7	0.0940	94.0
A	6/11/75		1-10-0	20	10	8.0	16.0	2,732.6	0.0059	5.9
B	6/11/75		1-10-0	20	10	6.8	13.6	2,732.6	0.0050	5.0
A	6/18/75		1-10-0	20	10	29.0	58.0	2,732.6	0.0212	21.2
B	6/18/75		1-10-0	20	10	27.7	55.4	2,732.6	0.0203	20.3
A	6/25/75		1- 5-0	30	11	11.4	31.1	341.6	0.0910	91.0
B	6/25/75		1- 5-0	30	11	2.8	7.6	341.6	0.0224	22.4
A	7/ 2/75		1- 5-0	20	10	20.6	41.2	2,732.6	0.0151	15.1
B	7/ 2/75		1- 5-0	20	10	5.1	10.2	2,732.6	0.0037	3.7
A	7/ 9/75		1-10-0	20	10	11.7	23.4	3,415.7	0.0069	6.9
B	7/ 9/75		1-10-0	20	10	2.128	4.256	3,415.7	0.0012	1.2
A	7/16/75		1-10-0	20	10	11.836	23.672	3,415.7	0.0069	6.9
B	7/16/75		1-10-0	20	10	2.464	4.928	3,415.7	0.0014	1.4
A	7/22/75		1-10-0	30	11	5.197	14.174	2,732.6	0.0052	5.2
B	7/22/75		1-10-0	30	11	1.917	5.228	2,732.8	0.0019	1.9
A	7/30/75		1-10-0	20	10	9.436	18.872	3,415.7	0.0055	5.5
B	7/30/75		1-10-0	20	10	5.704	11.408	3,415.7	0.0033	3.3
A	8/ 6/75		1-10-0	20	10	*6.782	13.564	2,732.8	0.0050	*5.0
B	8/ 6/75		1-10-0	20	10	*6.885	13.770	2,732.8	0.0050	*5.0
A	8/14/75		1-10-0	20	10	3.886	7.772	2,732.8	0.0028	2.8
B	8/14/75		1-10-0	20	10	2.490	4.980	2,732.8	0.0018	1.8
A	8/27/75		1-10-0	20	10	6.038	12.076	2,732.8	0.0044	4.4
B	8/27/75		1-10-0	20	10	5.410	10.820	2,732.8	0.0040	4.0
A	9/ 3/75		1-10-0	20	10	5.914	11.828	2,732.8	0.0043	4.3
B	9/ 3/75		1-10-0	20	10	4.940	9.880	2,732.8	0.0036	3.6
A	9/10/75		1-10-0	20	10	7.869	15.739	2,732.8	0.0058	5.8
B	9/10/75		1-10-0	20	10	4.068	8.136	2,732.8	0.0030	3.0

Table 13--con'd

Total (A) Fraction (B)	Date of Sample	Station & Depth	V_c	V_s	DW_s	DW_c	K	DW_1	DW_2
A	9/17/75	1-10-0	20	10	7.442	14.884	2,732.8	0.0054	5.4
B	9/17/75	1-10-0	20	10	7.122	14.244	2,732.8	0.0052	5.2
A	9/24/75	1-10-0	20	10	7.316	14.632	2,732.8	0.0054	5.4
B	9/24/75	1-10-0	20	10	3.763	7.526	2,732.8	0.0028	2.8
A	10/ 8/75	1-10-0	100	11	*1.780	16.182	2,732.8	0.0059	*5.9
B	10/ 8/75	1-10-0	100	11	*3.015	27.409	2,732.8	0.0100	*10.0
A	10/15/75	1-10-0	100	11	*3.251	29.555	2,732.8	0.0108	*10.8
B	10/15/75	1-10-0	100	11	*3.645	33.136	2,732.8	0.0121	*12.1
A	10/22/75	1-10-0	120	11	2.693	29.378	2,732.8	0.0108	10.8
B	10/22/75	1-10-0	120	11	1.044	11.389	2,732.8	0.0042	4.2
A	10/30/75	1-10-0	120	11	8.110	88.472	2,732.8	0.0324	32.4
B	10/30/75	1-10-0	120	11	5.457	59.531	2,732.8	0.0218	21.8
A	11/ 5/75	1-10-0	120	11	*4.571	49.866	2,732.8	0.0182	*18.2
B	11/ 5/75	1-10-0	120	11	*5.608	61.178	2,732.8	0.0224	*22.4
A	11/12/75	1-10-0	120	11	10.907	118.986	2,732.8	0.0435	43.5
B	11/12/75	1-10-0	120	11	1.462	15.949	2,732.8	0.0058	5.8
A	11/19/75	1-10-0	120	11	11.446	124.866	2,732.8	0.0457	45.7
B	11/19/75	1-10-0	120	11	2.768	30.196	2,732.8	0.0110	11.0
A	12/ 3/75	1-10-0	120	11	8.883	96.906	2,732.8	0.0355	35.5
B	12/ 3/75	1-10-0	120	11	1.152	12.567	2,732.8	0.0046	4.6
A	12/10/75	1-10-0	120	11	8.054	87.862	2,732.8	0.0322	32.2
B	12/10/75	1-10-0	120	11	1.178	12.851	2,732.8	0.0047	4.7
A	12/17/75	1-10-0	120	11	4.757	51.895	2,732.8	0.0190	19.9
B	12/17/75	1-10-0	120	11	1.504	16.407	2,732.8	0.0060	6.0

*Error; i.e., F > T

Replications where F > T:

A	10/ 8/75	1-10-0	100	11	*1.123	10.209	2,732.8	0.0037	3.7
B	10/ 8/75	1-10-0	100	11	*1/861	16.918	2,732.8	0.0061	6.2
A	10/15/75	1-10-0	100	11	*1.982	18.018	2,732.8	0.0066	6.6
B	10/15/75	1-10-0	100	11	*3.108	28.255	2,732.8	0.0103	10.3
A	11/ 5/75	1-10-0	120	11	4.696	51.229	2,732.8	0.0187	18.7
B	11/ 5/75	1-10-0	120	11	0.921	10.047	2,732.8	0.0037	3.7

*Continued error in replicate run; i.e., F > T

Figure 17

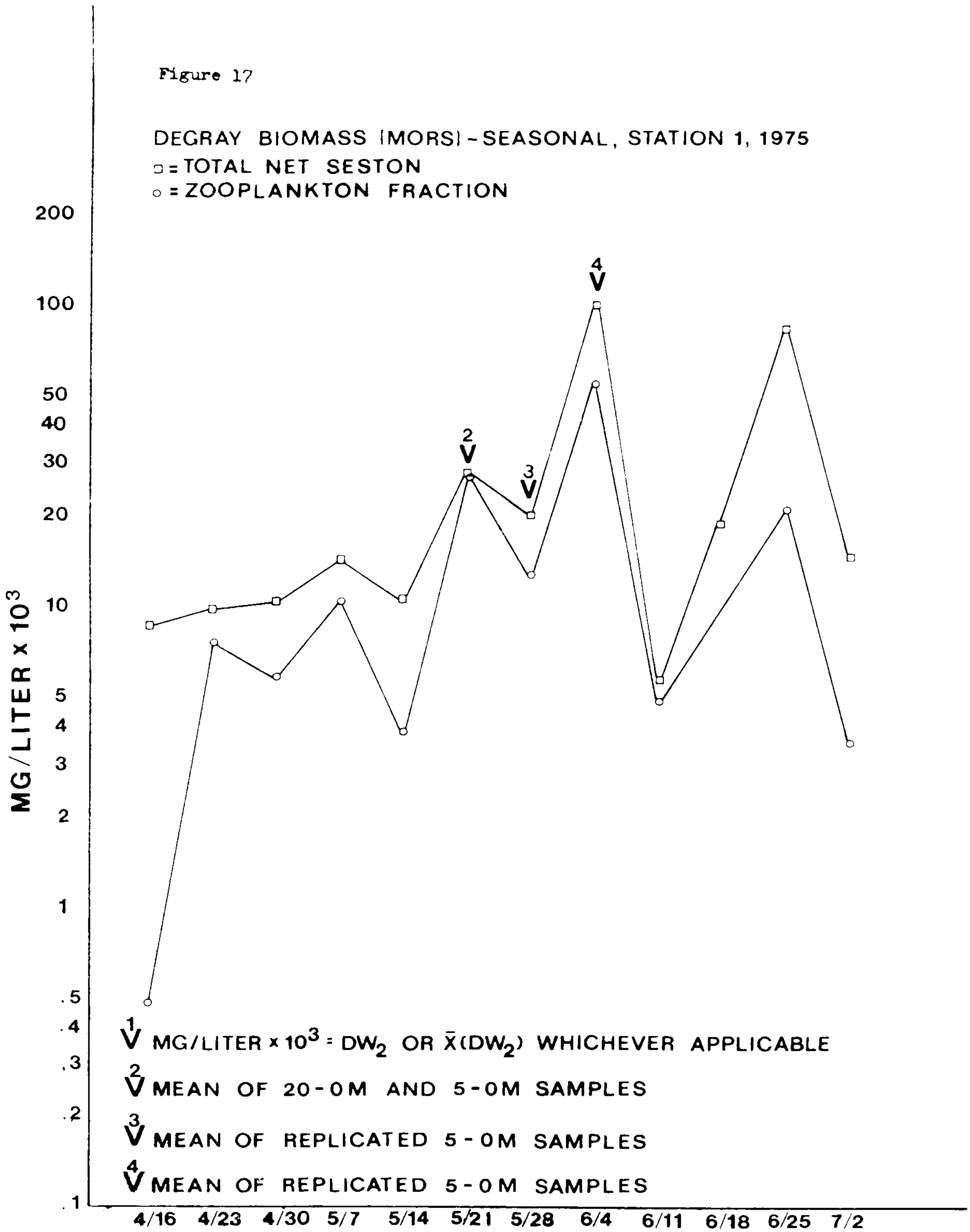

DEGRAY BIOMASS (MORS) - SEASONAL, STATION 1, 1975
□ = TOTAL NET SESTON
○ = ZOOPLANKTON FRACTION
MG/LITER x 10³
200
100
50
40
30
20
10
5
4
3
2
1
.5
.4
.3
.2
.1
4/16
4/23
4/30
5/7
5/14
5/21
5/28
6/4
6/11
6/18
6/25
7/2
1 V MG/LITER x 10³ = DW₂ OR X̄(DW₂) WHICHEVER APPLICABLE
2 V MEAN OF 20-0M AND 5-0M SAMPLES
3 V MEAN OF REPLICATED 5-0M SAMPLES
4 V MEAN OF REPLICATED 5-0M SAMPLES

Figure 17--con'd

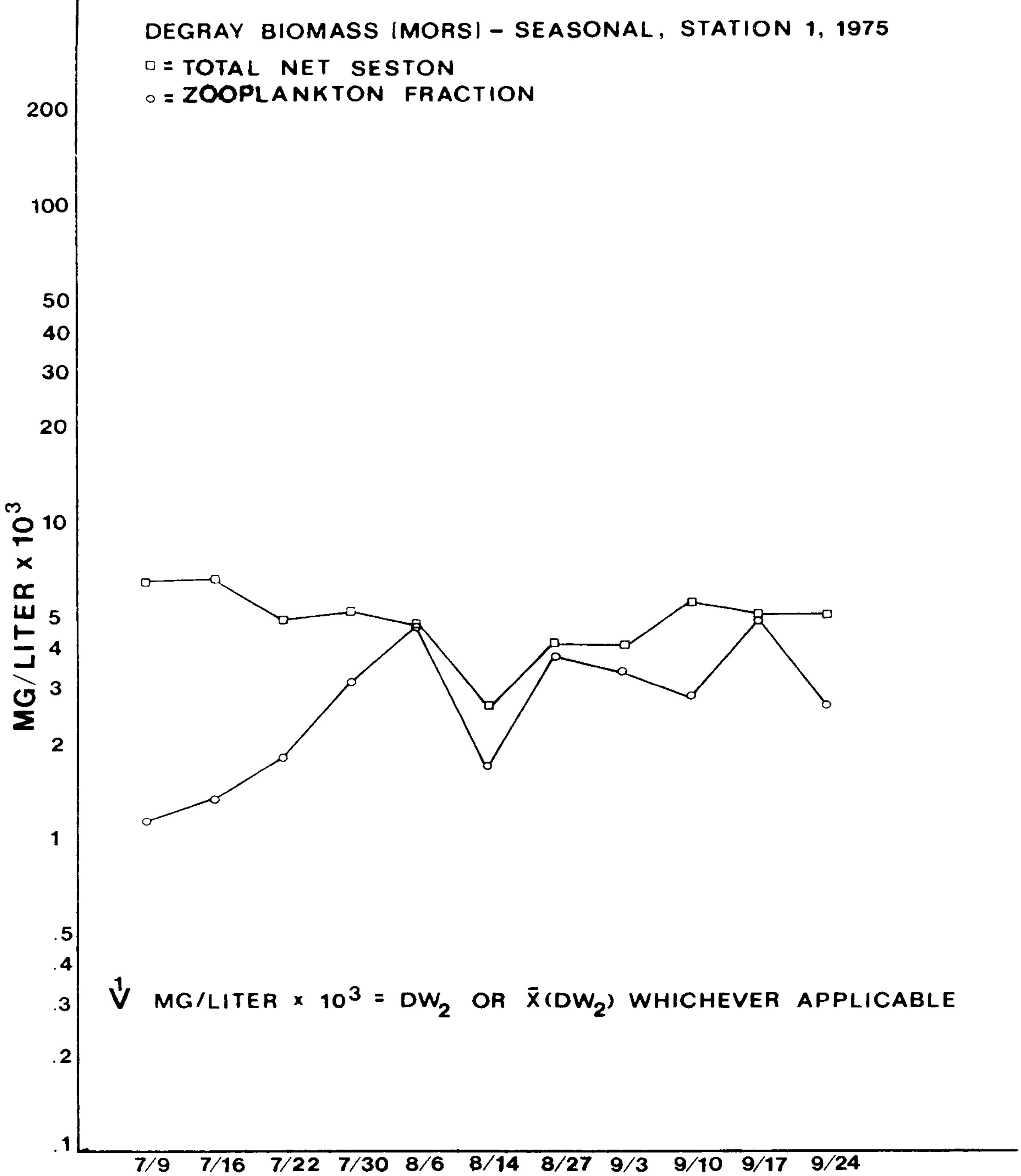
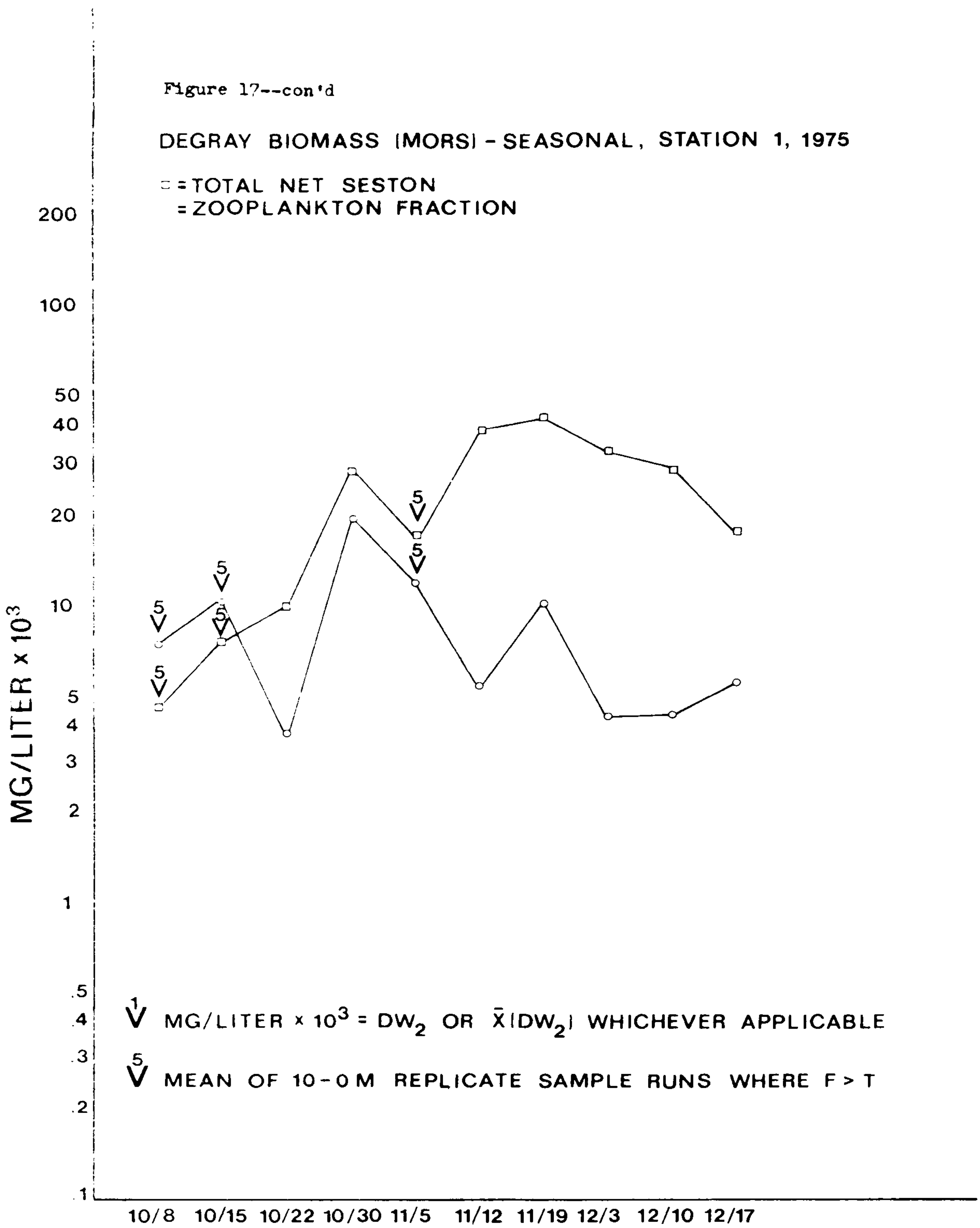


Figure 17--con'd



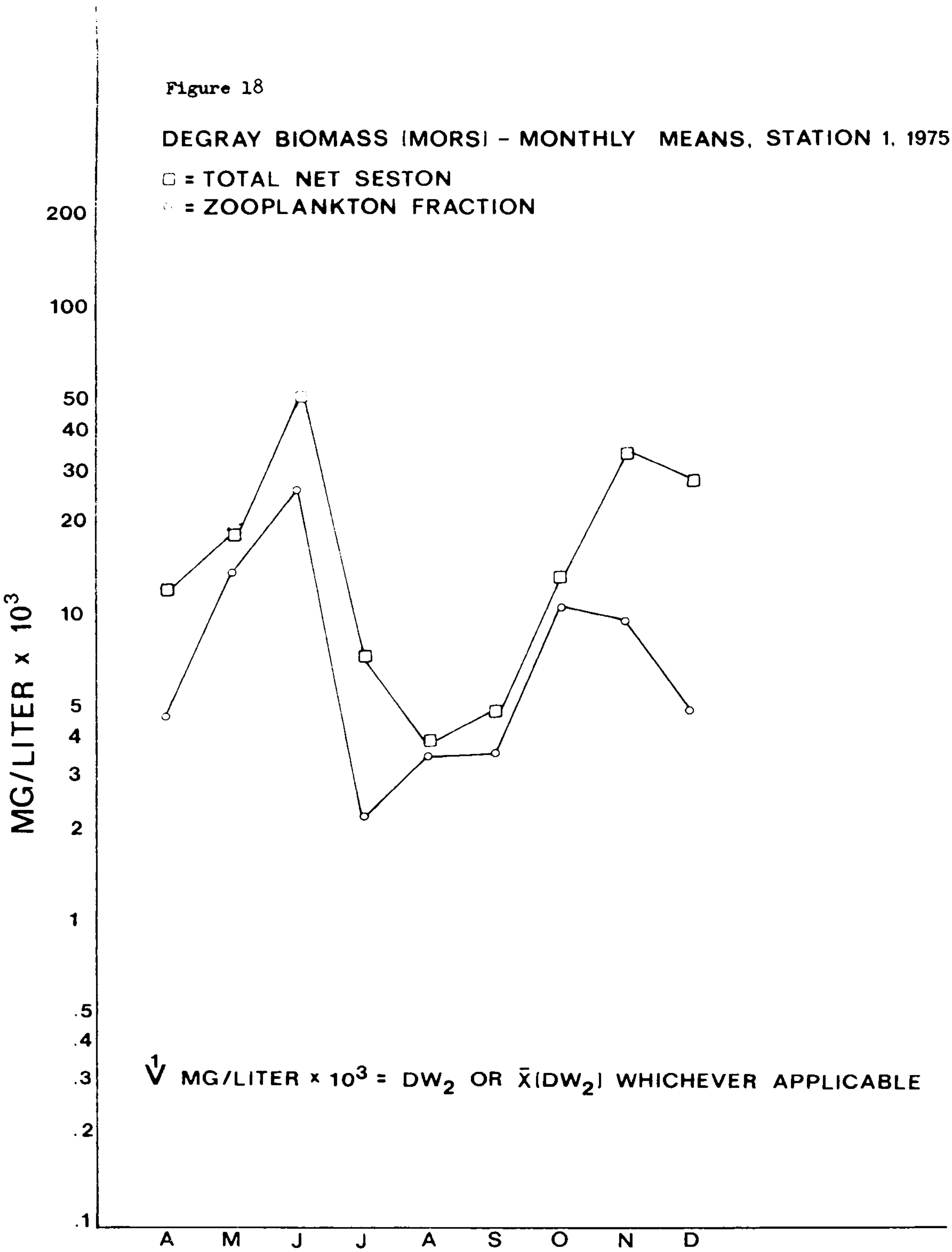


Figure 18
DEGRAY BIOMASS (MORS) - MONTHLY MEANS, STATION 1, 1975
□ = TOTAL NET SESTON
○ = ZOOPLANKTON FRACTION
MG/LITER x 10^3
200
100
50
40
30
20
10
5
4
3
2
1
.5
.4
.3
.2
.1
$\overset{1}{V}$ MG/LITER x 10^3 = DW_2 OR $\bar{X}(DW_2)$ WHICHEVER APPLICABLE
A
M
J
J
A
S
O
N
D