MEMOIRS OF THE FACULTY OF SCIENCE, KYOTO UNIVERSITY, SERIES OF BIOLOGY
Vol. VII, pp. 31–46, March 1976

Sixth Report of the Regular Limnological Survery of Lake Biwa (1972) II. Benthos[1)2)]

By

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(Received November 28, 1973)

The regular limnological survey on benthos at four stations in Lake Biwa has been carrying on as a part of the routine work of the Otsu Hydrobiological Station. The aim of the research is to detect quantitative as well as qualitative changes in benthic communities extending over a long period (Mori et al. 1967) and also to offer basic data to IBP studies executing in this lake.

The sampling stations with conditions, the methods for collection and the results obtained during past six years have been reported in the previous papers (Mori et al. 1967; Mori 1970, 1971, 1972; Suzumi and Mori 1967, 1968).

The number of individual and fresh weight of three samples per 15×15 cm and their average values per m^2 are shown in Tables 1, 2, 3 and 4. In these tables the mark — means no specimen was collected.

The series of reports were edited by the Director of the Station, Syuiti Mori, and the present part, on the benthos, was arranged by Syuiti Mori and Tetsuya Narita. The collection of samples was mainly performed by T. Narita, A. Kawabata and T. Ueda, and other members of the Otsu Hydrobiological Station have assisted in many ways.

A. Benthic community at Station Ie-1

Station Ie-1 has a representative character of the oligotrophic northern part of the lake or main basin, where the depth is about 74 m and the bottom substratum is muddy.

1) Contribution from the Otsu Hydrobiological Station, Kyoto University, No. 254.
2) JIBP-PF Publication No. 176.

Table 1. Benthic faunal composition and its abundance at St. Ie-1

Date	January 12, 1972								February 16, 1972							
Sampling No.	1		2		3		Average		1		2		3		Average	
	No.	mg	No.	mg	No.	mg	No./m²	g/m²	No.	mg	No.	mg	No.	mg	No./m²	g/m²
Oligochaeta	10	156	16	546	17	391	635	16.2	20	461	24	261	28	707	1066	21.1
Amphipoda																
Anisogammarus annandalei (Tattersall)	4	41	2	17	—	—	89	0.9	—	—	—	—	—	—	—	—
Chironomidae larvae																
Spaniotoma akamusii Tokunaga	—	—	—	—	—	—	—	—	—	—	1	1	—	—	15	0.01

Date	March 16, 1972								April 14, 1972							
Sampling No.	1		2		3		Average		1		2		3		Average	
	No.	mg	No.	mg	No.	mg	No./m²	g/m²	No.	mg	No.	mg	No.	mg	No./m²	g/m²
Oligochaeta	17	704	25	719	15	238	844	24.6	16	377	16	746	37	1090	1021	32.6

Date	May 15, 1972								June 16, 1972							
Sampling No.	1		2		3		Average		1		2		3		Average	
	No.	mg	No.	mg	No.	mg	No./m²	g/m²	No.	mg	No.	mg	No.	mg	No./m²	g/m²
Oligochaeta	28	825	21	708	24	433	1079	29.1	27	793	26	844	29	1076	1212	40.1
Amphipoda																
Anisogammarus annandalei (Tattersall)	—	—	—	—	—	—	—	—	—	—	1	13	—	—	15	0.2

Date	July 10, 1972								August 15, 1972							
Sampling No.	1		2		3		Average		1		2		3		Average	
	No.	mg	No.	mg	No.	mg	No./m²	g/m²	No.	mg	No.	mg	No.	mg	No./m²	g/m²
Oligochaeta	23	827	31	828	52	788	1567	36.2	22	889	26	688	19	449	990	30.0
Amphipoda																
Anisogammarus annandalei (Tattersall)	—	—	—	—	—	—	—	—	1	5	—	—	—	—	15	0.1

Date	September 14, 1972								October 16, 1972							
Sampling No.	1		2		3		Average		1		2		3		Average	
	No.	mg	No.	mg	No.	mg	No./m²	g/m²	No.	mg	No.	mg	No.	mg	No./m²	g/m²
Oligochaeta	10	326	14	326	5	79	431	10.8	13	703	18	352	20	525	755	23.4
Amphipoda																
Anisogqmmarus annandalei (Tattersall)	2	7	—	—	—	—	30	0.1	1	12	2	15	8	125	164	2.2

Date	November 15, 1972								December 15, 1972							
Sampling No.	1		2		3		Average		1		2		3		Average	
	No.	mg	No.	mg	No.	mg	No./m²	g/m²	No.	mg	No.	mg	No.	mg	No./m²	g/m²
Oligochaeta	8	357	28	564	14	336	741	18.6	13	677	26	1024	14	341	786	30.2
Amphipoda																
Anisogammarus annadalei (Tettersall)	—	—	2	15	3	32	75	0.7	—	—	—	—	—	—	—	—

Result is shown in Table 1. Oligochaeta was most predominant and found everytime. The trend of increase of this animal still continued in this year. *Anisogammarus* was collected sometimes and Chironomidae larva (*Spaniotoma*) was found only in February.

B. Benthic communities at Stations Nb-2, Nb-5 and Na-3

Stations Nb-2, Nb-5 and Na-3 have a representative character of the mesotrophic southern part of the lake or sub-basin. Nb-2 (sand or sandy mud substratum) and Na-3 (muddy substratum) are the stations of 0.1 km off the east and west coast of the lake respectively and both are about 2 m in depth, while Nb-5 (muddy substratum) is in the contral part of the lake and about 4.5 m in depth.

Results are shown in Tables 2, 3 and 4. Animals found were Oligochaeta, Crustacea (5 species), Gastropoda (3 species), Pelecypoda (6 species) and Pisces (1 species).

The increasing trend of Oligochaeta at Station Nb-5, which had been lasted several years, disappeared in this year and the biomass was maintained nearly at the same level of the previous year, as in the cases of Stations Na-3 and Nb-2. The decreasing trend of *Unio biwae* still continued in this year. Also *Sphaerium japonicum biwaense*, which showed a conspicuous outbreak in 1971, decreased to some extent at all stations.

Table 2. Benthic faunal composition and its abundace at St. Nb–2

Date	January 12, 1972								February 15, 1972							
Sampling No.	1		2		3		Average		1		2		3		Average	
	No.	mg	No.	mg	No.	mg	No./m²	g/m²	No.	mg	No.	mg	No.	mg	No./m²	g/m²
Oligochaeta	2	6	2	15	2	6	89	0.4	2	5	4	22	3	29	133	0.8
Amphipoda																
Anisogammarus annandalei (Tattersall)	—	—	—	—	—	—	—	—	—	—	—	—	1	3	15	0.04
Chironomidae larvae																
Spaniotoma akamusii Tokunaga	—	—	—	—	—	—	—	—	—	—	1	11	1	6	31	0.3
Pelecypoda																
Corbicula sandai Reinhardt	—	—	2	420	1	720	44	17	—	—	—	—	1	620	15	9.3
Unio biwae Kobelt	—	—	1	10	—	—	15	0.1	—	—	—	—	—	—	—	—
Sphaerium japonicum biwaense Mori	—	—	—	—	—	—	—	—	5	40	3	40	8	58	287	2.0

Date	March 15, 1972								April 14, 1972							
Sampling No.	1		2		3		Average		1		2		3		Average	
	No.	mg	No.	mg	No.	mg	No./m²	g/m²	No.	mg	No.	mg	No.	mg	No./m²	g/m²
Oligochaeta	1	6	1	13	5	15	1012	0.5	3	5	2	6	1	3	89	0.2
Hirudinea	—	—	—	—	1	9	15	0.1	—	—	—	—	—	—	—	—
Chironomidae larvae																
Tendipes plumosus (Meigen)	1	23	—	—	—	—	15	0.3	—	—	—	—	—	—	—	—
Spaniotoma akamusii Tokunaga	—	—	—	—	1	18	15	0.3	—	—	—	—	—	—	—	—
Ephemeroptera																
Ephemerella longicaudata Uéno	1	59	—	—	—	—	15	0.9	—	—	—	—	—	—	—	—
Gastropoda																
Semisulcospira decipiens (Westerlund)	—	—	—	—	1	630	15	9.3	—	—	1	860	1	720	30	23.5
Sinotaia histrica (Gould)	2	1490	—	—	—	—	30	22.2	—	—	—	—	—	—	—	—

Date	March 15, 1972								April 14, 1972							
Sampling No.	1		2		3		Average		1		2		3		Average	
	No.	mg	No.	mg	No.	mg	No./m²	g/m²	No.	mg	No.	mg	No.	mg	No./m²	g/m²
Pelecypoda																
Corbicula sandai Reinhardt	—	—	2	5070	—	—	30	75.0	—	—	—	—	—	—	—	—
Corbicula leana Prime	—	—	—	—	1	260	15	4.0	—	—	—	—	—	—	—	—
Sphaerium japonicum biwaense Mori	2	20	—	—	5	80	103	1.3	3	130	1	40	5	215	144	5.7
Pisidium japonicum Pilsbry et Hirase	—	—	—	—	1	2	15	0.03	—	—	1	20	—	—	15	0.3

Date	May 15, 1972								June 16, 1972							
Sampling No.	1		2		3		Average		1		2		3		Average	
	No.	mg	No.	mg	No.	mg	No./m²	g/m²	No.	mg	No.	mg	No.	mg	No./m²	g/m²
Oligochaeta	9	5	17	16	7	5	488	0.4	14	4	10	6	1?	?	369	0.1
Chironomidae larvae																
Tendipes salinarius Kieffer	—	—	—	—	—	—	—	—	1	0.2	—	—	—	—	15	0.003
Clinotanypus sp.	—	—	—	—	—	—	—	—	—	—	1	1	—	—	15	0.02
Calopsectra sp. J	—	—	—	—	—	—	—	—	1	0.2	2	0.1	—	—	44	0.004
unidentified	—	—	1	0.3	—	—	15	0.004	2	0.4	—	—	—	—	30	0.01
Gastropods																
Semisulcospira decipiens (Westerlund)	—	—	1	20	—	—	15	0.3	—	—	—	—	2	40	30	0.6
Sinotaia histrica (Gould)	—	—	—	—	1	20	15	0.3	—	—	—	—	—	—	—	—
Pelecypods																
Corbicula sandai Reinhardt	2	20	1	10	—	—	44	0.4	2	60	1	15	2	40	74	1.7
Sphaerium japonicum biwaene Mori	2	320	1	170	—	—	44	7.1	—	—	1	3	—	—	15	0.04
Pisidium japonicum pilsbry et Hirase	1	30	1	20	—	—	30	0.8	—	—	—	—	—	—	—	—

Date	July 18, 1972								August 15, 1972							
Sampling No.	1		2		3		Average		1		2		3		Average	
	No.	mg	No.	mg	No.	mg	No./m²	g/m²	No.	mg	No.	mg	No.	mg	No./m²	g/m²
Oligochaeta	10	9	4	3	1	1	222	0.2	17	28	15	27	3	2	519	0.9
Chironomidae larvae																
Eifeldia sp. A	1	0.1	1	1	3	2	75	0.05	2	1	—	—	—	—	30	0.01
Clinotanypus sp.	—	—	—	—	—	—	—	—	1	6	—	—	—	—	15	0.1
Spaniotoma akamusii	—	—	—	—	—	—	—	—	1	22	—	—	—	—	15	0.3
Tokunaga unidentified	—	—	—	—	—	—	—	—	—	—	1	0.2	—	—	15	0.004
chironomid pupae	—	—	—	—	—	—	—	—	1	1	—	—	—	—	15	0.01
Gastropoda																
Semisulcospira decipiens (Westerlund)	—	—	—	—	—	—	—	—	1	1100	—	—	—	—	15	16.3
Sinotaia histrica (Gould)	—	—	—	—	2	130	30	1.9	2	940	3	320	1	70	89	19.7
Pelecypoda																
Corbicula sandai Reinhardt	2	250	2	340	4	6790	119	109.2	2	860	3	650	—	—	74	22.2
Unio biwae Kobelt	—	—	—	—	—	—	—	—	1	420	—	—	—	—	15	6.2
Sphaerium japonicum biwaense Mori	—	—	—	—	—	—	—	—	2	1	—	—	—	—	30	0.01

Date	September 18, 1972								October 18, 1972							
Sampling No.	1		2		3		Average		1		2		3		Average	
	No.	mg	No.	mg	No.	mg	No./m²	g/m²	No.	mg	No.	mg	No.	mg	No./m²	g/m²
Oligochaete	3	1	—	—	—	—	44	0.01	3	1	1	=0	1	0.4	75	0.02
Chironomidae larvae																
Eifeldia sp. A	1	1	—	—	—	—	15	0.01	—	—	—	—	—	—	—	—
Gastropoda																
Sinotaia histrica (Gould)	3	6480	—	—	—	—	44	95.9	—	—	—	—	—	—	—	—
Pelecypoda																
Corbicula sandai Reinhardt	4	7540	—	—	1	350	74	116.8	—	—	—	—	—	—	—	—
Unio biwae Kobelt	—	—	—	—	—	—	—	—	1	1050	—	—	—	—	15	15.5
Anodonta clipygos Kobelt	1	420	—	—	—	—	15	6.2	—	—	—	—	—	—	—	—

Date	November 15, 1972								December 15, 1972							
Sampling No.	1		2		3		Average		1		2		3		Average	
	No.	mg	No.	mg	No.	mg	No./m²	g/m²	No.	mg	No.	mg	No.	mg	No./m²	g/m²
Oligochaeta	11	13	14	13	7	49	475	1.1	17	66	13	69	29	104	888	3.5
Amphipoda																
Anisogammarus annandalei (Tattersal)	—	—	—	—	—	—	—	—	1	0.3	—	—	—	—	15	0.004
Chironomidae larvae																
Tendipes plumosus (Meigen)	—	—	1	3	—	—	15	0.04	7	75	6	18	1	3	209	1.4
Spaniotoma akamusii Tokunaga	—	—	—	—	1	29	15	4.2	—	—	—	—	—	—	—	—
Spaniotoma sp. A	—	—	—	—	—	—	—	—	1	2	—	—	—	—	15	0.02
Eifeldia sp. A	—	—	—	—	—	—	—	—	—	—	—	—	3	3	44	0.05
Gastropodsa																
Semisulcospira decipiens (Westerlund)	2	590	—	—	—	—	30	8.7	—	—	—	—	—	—	—	—
Sinotaia histrica (Gould)	—	—	—	—	2	2880	30	42.6	—	—	—	—	—	—	—	—
Pelecypoda																
Corbicula sandai Reinhardt	—	—	—	—	1	1110	15	16.4	—	—	—	—	—	—	—	—
Unio biwae Kobelt	1	420	—	—	—	—	15	6.2	—	—	—	—	—	—	—	—

Table 3. Benthic faunal composition and its abundance at St. Nb-5

Date	January 12, 1972								February 16, 1972							
Sampling No.	1		2		3		Average		1		2		3		Average	
	No.	mg	No.	mg	No.	mg	No./m²	g/m²	No.	mg	No.	mg	No.	mg	No./m²	g/m²
Oligochaeta	8	149	41	466	10	180	875	11.8	10	156	13	285	6	65	431	7.5
Hirudinea	1	11	1	8	1	3	44	0.3	—	—	—	—	—	—	—	—
Chironomidae larvae																
Tendipes plumosus (Meigen)	—	—	1	25	—	—	15	0.4	1	33	—	—	—	—	15	0.5
Spaniotoma akamusii Tokunaga	2	36	7	60	4	98	192	28.6	2	22	2	51	2	23	89	1.4
Procladius sp. C	1	2	—	—	—	—	15	0.02	—	—	—	—	—	—	—	—
Eifeldia sp. A	—	—	1	1	—	—	15	0.01	—	—	—	—	—	—	—	—
Clinotanypus sp. A	—	—	—	—	—	—	—	—	—	—	1	5	—	—	15	0.08

Date	March 16, 1972								April 14, 1972							
Sampling No.	1		2		3		Average		1		2		3		Average	
	No.	mg	No.	mg	No.	mg	No./m²	g/m²	No.	mg	No.	mg	No.	mg	No./m²	g/m²
Oligochaeta	8	144	12	148	19	222	577	7.6	13	150	4	98	14	41	457	4.3
Amphipoda																
Anisogammarus annandalei (Tattersall)	—	—	—	—	—	—	—	—	—	—	1	6	2	9	44	0.2
Chironomidae larvae																
Spaniotoma akamusii Tokunaga	2	9	—	—	4	38	133	0.7	2	34	1	21	—	—	44	0.8
Procladius sp. C	1	0.4	—	—	—	—	15	0.004	1	1	—	—	8	11	133	0.2
Tendipes salinarius Kieffer	—	—	—	—	—	—	—	—	—	—	—	—	1	0.3	15	0.004
Eifeldia sp.	—	—	—	—	—	—	—	—	1	2	—	—	—	—	15	0.03
Gastropoda																
Semisulcospira decipiens (Westerlund)	—	—	—	—	—	—	—	—	—	—	—	—	1	480	15	7.1
Pelecypoda																
Sphaerium japonicum biwaense Mori	—	—	—	—	—	—	—	—	—	—	—	—	1	110	15	1.6

Date	May 15, 1972								June 16, 1972							
Sampling No.	1		2		3		Average		1		2		3		Average	
	No.	mg	No.	mg	No.	mg	No./m²	g/m²	No.	mg	No.	mg	No.	mg	No./m²	g/m²
Oligochaeta	8	12	11	225	8	186	400	6.3	11	38	5	69	6	55	324	23.8
Chironomidae larvae																
Spaniotoma akamusii Tokunaga	1	3	—	—	—	—	15	0.04	—	—	—	—	—	—	—	—
Tendipes salinarius Kieffer	—	—	—	—	2	1	30	0.01	—	—	—	—	—	—	—	—
Clinotanypus sp.	3	4	2	3	—	—	75	0.1	—	—	1	2	—	—	15	0.03
Calopsectra sp. J	2	0.3	1	0.2	—	—	44	0.01	—	—	—	—	—	—	—	—
Pelecypoda																
Sphaerium japonicum biwaenese Mori	—	—	1	170	—	—	15	2.5	—	—	—	—	—	—	—	—

Date	July 10, 1972								August 15, 1972							
Sampling No.	1		2		3		Average		1		2		3		Average	
	No.	mg	No.	mg	No.	mg	No./m²	g/m²	No.	mg	No.	mg	No.	mg	No./m²	g/m²
Oligochaeta	5	61	6	43	10	99	311	3.0	2	3	4	45	21	382	400	6.4
Chironomidae larvae																
Tendipes plumosus (Meigen)	—	—	—	—	—	—	—	—	—	—	1	13	—	—	15	0.2
Procladius sp. C	1	1	—	—	—	—	15	0.01	—	—	1	1	—	—	15	0.01
Eifeldia sp. A	1	2	—	—	1	1	30	0.03	—	—	2	0.4	—	—	30	0.004
Gastropoda																
Semisulcospira decipiens (Westerlund)	—	—	—	—	—	—	—	—	1	170	1	1680	—	—	30	27.4
Pelecypoda																
Anodonta calipygos Kobelt	1	20440	—	—	—	—	15	302.5	—	—	—	—	—	—	—	—

Date	September 18, 1972								October 18, 1972							
Sampling No.	1		2		3		Average		1		2		3		Average	
	No.	mg	No.	mg	No.	mg	No./m²	g/m²	No.	mg	No.	mg	No.	mg	No./m²	g/m²
Oligochaeta	9	142	5	106	8	151	324	5.9	8	239	5	175	13	266	386	10.1
Gastropoda																
Semisulcospira decipiens (Westerlund)	1	430	—	—	—	—	15	6.3	2	620	—	—	—	—	30	9.2

Date	November 15, 1972								December 15, 1972							
Sampling No.	1		2		3		Average		1		2		3		Average	
	No.	mg	No.	mg	No.	mg	No./m²	g/m²	No.	mg	No.	mg	No.	mg	No./m²	g/m²
Oligochaeta	21	23	22	121	25	138	1008	4.2	22	376	19	702	23	417	946	22.1
Hirudinea	—	—	—	—	—	—	—	—	1	8	—	—	—	—	15	0.1
Chironomidae larvae																
Tendipes plumosus (Meigen)	—	—	2	28	3	59	75	1.3	3	49	—	—	—	—	44	0.7
Spaniotoma akmusii Tokunaga	—	—	3	80	1	22	58	1.5	—	—	1	10	—	—	15	0.2
Eifeldia sp. A	—	—	2	3	2	2	58	0.1	—	—	—	—	—	—	—	—
Clinotanypus sp.	1	1	1	18	—	—	30	0.04	—	—	—	—	—	—	—	—

Table 4 Benthic faunal composition and its abundance at St. Na-3

Date	January 12, 1972								February 16, 1972							
Sampling No.	1		2		3		Average		1		2		3		Average	
	No.	mg	No.	mg	No.	mg	No./m²	g/m²	No.	mg	No.	mg	No.	mg	No./m²	g/m²
Oligochaeta	8	87	9	174	26	263	635	7.9	91	604	16	49	16	337	1820	14.8
Chironomidae larvae																
Spaniotoma akamusii Tokunaga	—	—	3	54	3	51	89	1.6	7	9	1	15	4	4	178	0.4
Spaniotoma sp.	—	—	—	—	—	—	—	—	1	1	—	—	—	—	15	0.01
Tenipes plumosus (Meigen)	—	—	—	—	—	—	—	—	—	—	—	—	2	46	30	0.7
Gastropoda																
Semisulcospira decipiens (Westerlund)	—	—	2	1480	—	—	30	21.8	1	700	3	2160	—	—	59	42.2
Pelecypoda																
Sphaerium japonicum biwaense Mori	—	—	—	—	—	—	—	—	1	10	—	—	—	—	15	0.1
Pisces																
Rhinogobius similis (Gill)	1	104	—	—	—	—	15	1.5	—	—	—	—	—	—	—	—

Date	March 16, 1972								April 14, 1972							
Sampling No.	1		2		3		Average		1		2		3		Average	
	No.	mg	No.	mg	No.	mg	No./m²	g/m²	No.	mg	No.	mg	No.	mg	No./m²	g/m²
Oligochaeta	25	97	6	68	41	838	1066	14.8	26	220	7	35	11	161	653	6.2
Hirudinea	1	7	—	—	—	—	15	0.1	—	—	—	—	1	11	15	0.2
Amphipoda																
Anisogammarus annandalei (Westerlund)	1	1	—	—	—	—	15	0.01	—	—	2	10	—	—	30	0.2
Chironomidae larvae																
Spaniotoma akamusii Tokunaga	9	98	6	61	3	11	266	2.5	1	13	4	90	—	—	75	1.5
Tendipes plumosus (Meigen)	1	1	1	3	1	2	44	0.1	—	—	—	—	—	—	—	—
Clinotanypus sp.	—	—	—	—	—	—	—	—	—	—	1	3	—	—	15	0.05
Gastropoda																
Semisulcospira decipiens (Westerlund)	1	680	1	90	1	600	44	20.2	—	—	2	1100	—	—	30	16.4

Date	March 16, 1972								April 14, 1972							
Sampling No.	1		2		3		Average		1		2		3		Average	
	No.	mg	No.	mg	No.	mg	No./m²	g/m²	No.	mg	No.	mg	No.	mg	No./m²	g/m²
Sinotaia histrica (Gould)	—	—	—	—	—	—	—	—	—	—	—	—	1	1930	15	28.4
Pelecypoda																
Sphaerium japonicum biwaense Mori	—	—	1	20	—	—	15	0.3	1	15	—	—	—	—	15	0.2

Date	May 15, 1972								June 16, 1972							
Sampling No.	1		2		3		Average		1		2		3		Average	
	No.	mg	No.	mg	No.	mg	No./m²	g/m²	No.	mg	No.	mg	No.	mg	No./m²	g/m²
Oligochaeta	11	127	10	73	15	208	533	6.0	13	55	12	31	4	4	431	1.3
Oligochaeta, cocoon	3	17	—	—	—	—	44	0.2	—	—	—	—	—	—	—	—
Chironomidae larvae																
Procladius sp. C	—	—	—	—	—	—	—	—	1	0.4	—	—	—	—	15	0.004
Gastropoda																
Semisulcospira decipiens (Westerlund)	—	—	1	810	1	660	30	21.8	1	40	1	40	2	40	59	1.8

Date	July 10, 1972								August 15, 1972							
Sampling No.	1		2		3		Average		1		2		3		Average	
	No.	mg	No.	mg	No.	mg	No./m²	g/m²	No.	mg	No.	mg	No.	mg	No./m²	g/m²
Oligochaeta	22	23	11	86	8	11	608	1.8	33	90	26	69	37	248	1431	6.0
Hirudinea	—	—	—	—	2	14	30	0.2	—	—	—	—	—	—	—	—
Decapoda																
Palaemon paucidens De Haan	—	—	—	—	—	—	—	—	—	—	—	—	1	57	15	0.8
Tachea chinensis Thielemann	—	—	—	—	—	—	—	—	—	—	—	—	1	2	15	0.03
Chironomidae larvae																
Procladius sp. C	2	2	—	—	—	—	30	0.2	1	1	1	1	1	1	44	0.3
Cryptochironomus sp.	—	—	—	—	—	—	—	—	1	1	—	—	—	—	15	0.01
unidentified	—	—	—	—	—	—	—	—	—	—	—	—	1	0.4	15	0.004

Gastropoda																
Semisulcospira decipiens (Westerlund)	6	1370	1	1040	—	—	103	35.5	13	1880	7	940	3	90	341	43.1
Pelecypoda																
Corbicula sandai Reinhardt	—	—	—	—	1	260	15	3.9	—	—	—	—	—	—	—	—

Date	September 18, 1972								October 18, 1972							
Sampling No.	1		2		3		Average		1		2		3		Average	
	No.	mg	No.	mg	No.	mg	No./m²	g/m²	No.	mg	No.	mg	No.	mg	No./m²	g/m²
Oligochaeta	2	1	3	49	2	41	102	1.3	4	30	26	77	15	19	666	1.9
Decapoda																
Macrobrachium nipponensis (De Haan)	1	475	—	—	—	—	15	7.0	—	—	—	—	—	—	—	—
Gastropoda																
Semisulcopira decipiens (Westerlund)	7	260	5	110	3	210	222	8.4	4	1410	8	1090	5	670	252	46.9
Sinotaia histrica (Gould)	—	—	—	—	—	—	—	—	—	—	—	—	1	260	15	3.9

Date	November 15, 1972								December 15, 1972							
Sampling No.	1		2		3		Average		1		2		3		Average	
	No.	mg	No.	mg	No.	mg	No./m²	g/m²	No.	mg	No.	mg	No.	mg	No./m²	g/m²
Oligochaeta	51	227	34	99	30	53	1691	5.6	30	46	21	284	32	63	1230	5.8
Decappoda																
Paratya compressa (De Haan)	—	—	—	—	—	—	—	—	—	—	1	15	—	—	15	0.2
Chironomidae larvae																
Spaniotoma akamusii Tokunaga	—	—	—	—	—	—	—	—	2	32	1	9	—	—	44	0.6
Tendipes plumosus (Meigen)	1	4	—	—	—	—	15	0.2	—	—	—	—	—	—	—	—
Eifeldia sp. A	—	—	—	—	—	—	—	—	—	—	1	2	—	—	15	0.03
Clinotanypus sp.	—	—	—	—	1	3	15	0.1	—	—	1	3	—	—	15	0.04
Gastropoda																
Semisulcospira decipiens (Westerlund)	6	1500	6	2260	5	1400	252	76.4	3	970	7	4150	4	1610	207	99.6
Sinotaia histrica (Gould)	—	—	—	—	—	—	—	—	1	1430	—	—	—	—	15	21
Heterogen longispira (Smith)	1	2820	—	—	—	—	15	41.7	—	—	—	—	—	—	—	—

C. On some remarkable changes in biomass of benthic animals

1. Oligochaeta

Biomass change of Oligochaeta from 1966 through 1972 at each station is illustrated in Fig. 1. A constant increase in the northern lake (Ie-1) is very remarkable, which seems to indicate a progress of eutrophication there. In the southern lake the biomass is maintained nearly at the same level since 1970.

2. Gastropod mollusc, *Sinotaia histrica* (Gould)

This is a small viviparous gastropod inhabiting predominantly at rather polluted water areas. Sudden appearance of this water snail since 1970 at St. Na-3 and since 1971 at St. Nb-2 (Fig. 2) should be considered as a result of a progress of eutrophication of the lake, especially at littoral zone.

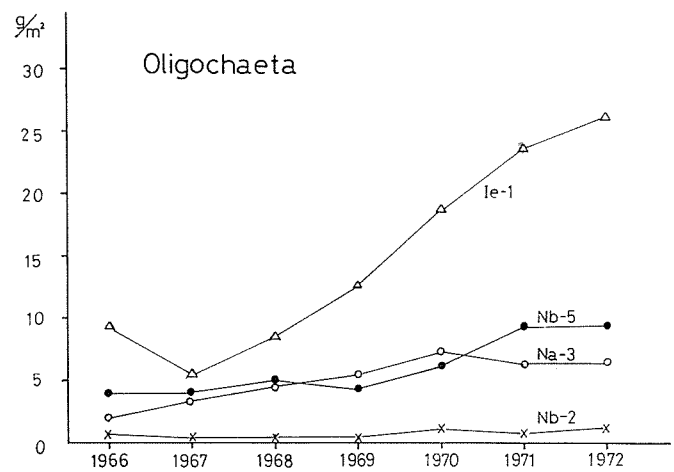

Fig. 1. Change of average biomass of oligochaete worms from 1966 through 1972.

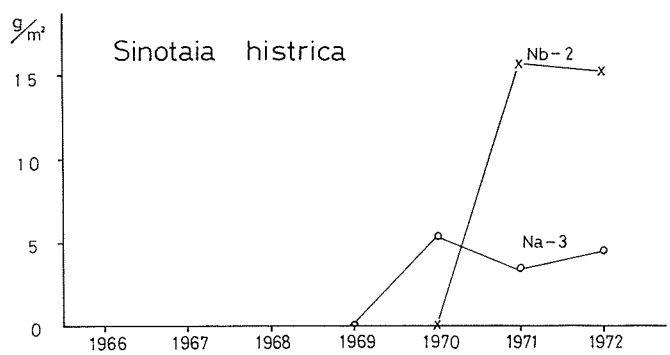

Fig. 2. Change of average biomass of *Sinotaia histrica* from 1966 through 1972.

3. Pelecypod mollusc, *Unio biwae* Kobelt

The decreasing tendency still continued in 1972 at every station (Fig. 3). The cause of this sudden decrease since 1971 is not clear at present.

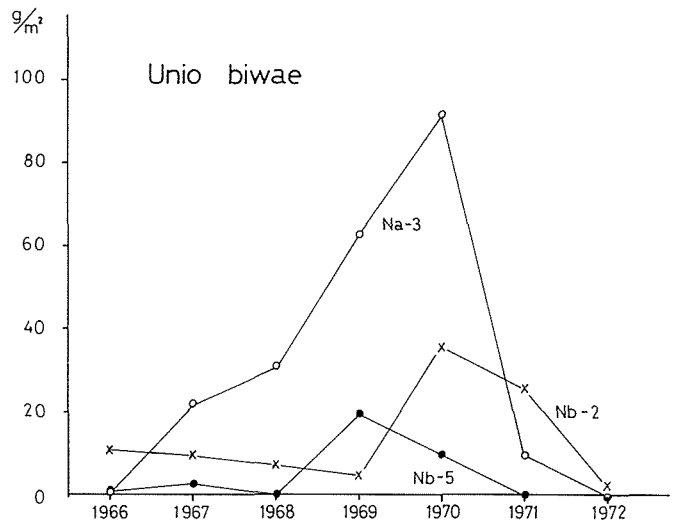

Fig. 3. Change of average biomass of *Unio biwae* from 1966 through 1972.

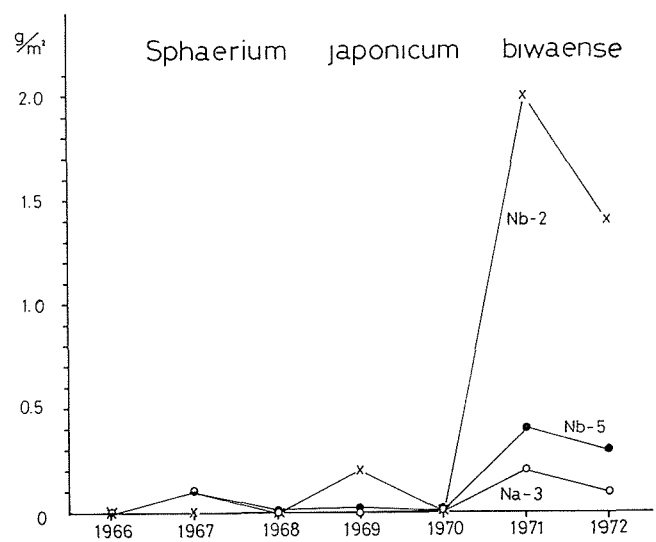

Fig. 4. Change of average biomass of *Sphaerium japonicum biwaense* from 1966 through 1972.

4. Pelecypod mollusc, *Sphaerium japonicum biwaense* Mori

The clear decrease was observed in this year following 1971's outbreak (Fig. 4). The cause of this decrease is not clear also at present.

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